# **SECTION EXE**

# CONTENTS

| BASIC INSPECTION5   |
|---|
| DIAGNOSIS AND REPAIR WORKFLOW   |
| SYSTEM DESCRIPTION8   |
| HEADLAMP SYSTEM8System Diagram8System Description8Component Parts Location9Component Description9 |
| DAYTIME RUNNING LIGHT SYSTEM10  |
| System Diagram10<br>System Description10  |
| Component Parts Location  |
| AUTO LIGHT SYSTEM12   |
| System Diagram12<br>System Description12  |
| Component Parts Location  |
| FRONT FOG LAMP SYSTEM15   |
| System Diagram15<br>System Description15  |
| Component Parts Location15  |
| Component Description16   |
| TURN SIGNAL AND HAZARD WARNING<br>LAMP SYSTEM17   |
| System Diagram17  |
| System Description17<br>Component Parts Location  |
| Component Description   |
| PARKING, LICENSE PLATE, SIDE MARKER<br>AND TAIL LAMPS SYSTEM19                                    |
| System Diagram19  |

System Description ......19

| Component Parts Location20<br>Component Description20          | F  |
|--|----|
| EXTERIOR LAMP BATTERY SAVER SYS-<br>TEM                        | G  |
| DIAGNOSIS SYSTEM (BCM) (WITH INTELLI-<br>GENT KEY SYSTEM)23    | I  |
| COMMON ITEM  | J  |
| HEADLAMP24<br>HEADLAMP : CONSULT Function (BCM - HEAD<br>LAMP) | K  |
| FLASHER  | EX |
| DIAGNOSIS SYSTEM (BCM) (WITHOUT IN-<br>TELLIGENT KEY SYSTEM)29 | N  |
| COMMON ITEM  | Ν  |
| HEADLAMP29<br>HEADLAMP : CONSULT Function (BCM - HEAD<br>LAMP) | С  |
| FLASHER  | Ρ  |
| DIAGNOSIS SYSTEM (IPDM E/R) (WITH IN-<br>TELLIGENT KEY SYSTEM) |    |

D

Е

| CONSULT Function (IPDM E/R)   |
|---|
| DIAGNOSIS SYSTEM (IPDM E/R) (WITHOUT<br>INTELLIGENT KEY SYSTEM)   |
| DTC/CIRCUIT DIAGNOSIS   |
| POWER SUPPLY AND GROUND CIRCUIT 42  |
| BCM (BODY CONTROL SYSTEM) (WITH INTEL-<br>LIGENT KEY SYSTEM)  |
| BCM (BODY CONTROL SYSTEM) (WITHOUT IN-<br>TELLIGENT KEY SYSTEM)42BCM (BODY CONTROL SYSTEM) (WITHOUT<br>INTELLIGENT KEY SYSTEM) : Diagnosis Proce-<br>dure42 |
| IPDM E/R (WITH INTELLIGENT KEY SYSTEM) 43<br>IPDM E/R (WITH INTELLIGENT KEY SYSTEM) :<br>Diagnosis Procedure  |
| IPDM E/R (WITHOUT INTELLIGENT KEY SYS-<br>TEM)44IPDM E/R (WITHOUT INTELLIGENT KEY SYS-<br>TEM) : Diagnosis Procedure44                                      |
| HEADLAMP (HI) CIRCUIT46Component Function Check46Diagnosis Procedure46  |
| HEADLAMP (LO) CIRCUIT   |
| WITH DAYTIME RUNNING LIGHT SYSTEM 49<br>WITH DAYTIME RUNNING LIGHT SYSTEM : Di-<br>agnosis Procedure  |
| WITHOUT DAYTIME RUNNING LIGHT SYSTEM 52<br>WITHOUT DAYTIME RUNNING LIGHT SYSTEM<br>: Diagnosis Procedure  |
| FRONT FOG LAMP CIRCUIT54Component Function Check54Diagnosis Procedure54   |
| DAYTIME RUNNING LIGHT RELAY CIRCUIT   |
|   |
| PARKING LAMP CIRCUIT  |

| TURN SIGNAL LAMP CIRCUIT                                     |
|--|
| Description61<br>Component Function Check61                  |
| Diagnosis Procedure61  |
| OPTICAL SENSOR63   |
| Description  |
| Component Function Check                                     |
| HAZARD SWITCH  |
| Component Function Check                                     |
| Diagnosis Procedure66  |
| TAIL LAMP CIRCUIT  |
| Component Function Check                                     |
| C C  |
| REAR SIDE MARKER LAMP CIRCUIT                                |
| Diagnosis Procedure  |
| LICENSE PLATE LAMP CIRCUIT                                   |
| Component Function Check71                                   |
| Diagnosis Procedure71  |
| HEADLAMP SYSTEM  |
| Wiring Diagram - HEADLAMP72                                  |
| AUTO LIGHT SYSTEM  |
| DAYTIME RUNNING LIGHT SYSTEM                                 |
| Wiring Diagram - DAYTIME RUNNING LIGHT SYSTEM74              |
| FRONT FOG LAMP SYSTEM  |
| Wiring Diagram - FRONT FOG LAMP                              |
| TURN SIGNAL AND HAZARD WARNING                               |
| LAMP SYSTEM  |
| Wiring Diagram - TURN AND HAZARD WARN-                       |
| ING LAMPS  |
| PARKING, LICENSE PLATE, SIDE MARKER<br>AND TAIL LAMPS SYSTEM |
| Wiring Diagram - PARKING, LICENSE PLATE,                     |
| SIDE MARKER AND TAIL LAMPS                                   |
| STOP LAMP  |
| Wiring Diagram - STOP LAMP80                                 |
| BACK-UP LAMP   |
| Wiring Diagram - BACK-UP LAMP81                              |
| ECU DIAGNOSIS INFORMATION 82                                 |
| BCM (BODY CONTROL MODULE) 82                                 |
| WITH INTELLIGENT KEY82                                       |
| WITH INTELLIGENT KEY : Reference Value 82                    |

| WITH INTELLIGENT KEY : Wiring Diagram -                                  |    |
|--|----|
| BCM  | 03 |
| WITH INTELLIGENT KEY : Fail-safe 1                                       | 06 |
| WITH INTELLIGENT KEY :   |    |
| DTC Inspection Priority Chart1   |    |
| WITH INTELLIGENT KEY : DTC Index 1                                       | 80 |
|  |    |
| WITHOUT INTELLIGENT KEY 1  |    |
| WITHOUT INTELLIGENT KEY : Reference Value. 1                             | 10 |
| WITHOUT INTELLIGENT KEY : Wiring Diagram -                               |    |
| BCM 1  |    |
| WITHOUT INTELLIGENT KEY : Fail-safe 1                                    | 26 |
| WITHOUT INTELLIGENT KEY :  |    |
| DTC Inspection Priority Chart1   | 27 |
| WITHOUT INTELLIGENT KEY : DTC Index 1                                    |    |
|  |    |
| IPDM E/R (INTELLIGENT POWER DISTRI-                                      |    |
| BUTION MODULE ENGINE ROOM)1  | 29 |
| ,  |    |
| WITH INTELLIGENT KEY1  |    |
| WITH INTELLIGENT KEY : Reference Value 1                                 | 29 |
| WITH INTELLIGENT KEY : Wiring Diagram —                                  |    |
| IPDM E/R — 1   | 36 |
| WITH INTELLIGENT KEY : Fail-Safe   | 38 |
| WITH INTELLIGENT KEY : DTC Index   |    |
|  |    |
| WITHOUT INTELLIGENT KEY1   | 40 |
| WITHOUT INTELLIGENT KEY : Reference Value. 1                             | 40 |
| WITHOUT INTELLIGENT KEY : Wiring Diagram                                 |    |
| — IPDM E/R — 1   | 47 |
| WITHOUT INTELLIGENT KEY : Fail-Safe                                      |    |
| WITHOUT INTELLIGENT KEY : DTC Index 1                                    |    |
|  |    |
| SYMPTOM DIAGNOSIS1   | 52 |
|  |    |
| EXTERIOR LIGHTING SYSTEM SYMPTOMS.1                                      | 52 |
| WITHOUT DAYTIME RUNNING LIGHT SYSTEM 1                                   | 52 |
| WITHOUT DAYTIME RUNNING LIGHT SYSTEM.                                    | 52 |
|  |    |
| : Symptom Table1   | 52 |
| WITH DAYTIME RUNNING LIGHT SYSTEM 1                                      | 53 |
| WITH DAYTIME RUNNING LIGHT SYSTEM :                                      | 00 |
| Symptom Table  | 53 |
|  | 55 |
| NORMAL OPERATING CONDITION1  | 57 |
| Description1   |    |
|  | 0. |
| BOTH SIDE HEADLAMPS (HI) ARE NOT   |    |
| TURNED ON1   | 58 |
| Description1   |    |
| Diagnosis Procedure1   |    |
|  | 50 |
| BOTH SIDE HEADLAMPS (LO) ARE NOT   |    |
| TURNED ON  | 59 |
| Description  |    |
| Diagnosis Procedure1   |    |
| ษาสุราบอเอ เ าบบอนนาย 1  | 79 |
|  |    |
| PARKING, LICENSE PLATE. SIDE MARKER                                      |    |
| PARKING, LICENSE PLATE, SIDE MARKER<br>AND TAIL LAMPS ARE NOT TURNED ON1 | 60 |
| AND TAIL LAMPS ARE NOT TURNED ON1  |    |
| • •  | 60 |

| BOTH SIDE FRONT FOG LAMPS ARE NOT<br>TURNED ON161   | А   |
|---|-----|
| Description   | 2.4 |
| PRECAUTION 162  | В   |
| PRECAUTIONS   | С   |
| PERIODIC MAINTENANCE 163  | D   |
| HEADLAMP AIMING ADJUSTMENT  | Е   |
| FRONT FOG LAMP AIMING ADJUSTMENT . 166<br>Description   | F   |
| REMOVAL AND INSTALLATION 168  | G   |
| FRONT COMBINATION LAMP168Exploded View168Removal and Installation168Replacement169Disassembly and Assembly169 | Н   |
| FRONT FOG LAMP171Exploded View171Removal and Installation171Replacement171                                    | J   |
| OPTICAL SENSOR  | К   |
| LIGHTING & TURN SIGNAL SWITCH   | EXL |
| SIDE TURN SIGNAL LAMP   | Μ   |
| HAZARD SWITCH   | N   |
| REAR COMBINATION LAMP178Exploded View178Removal and Installation178Replacement179                             | P   |
| REAR SIDE MARKER LAMP181Exploded View181Removal and Installation181Replacement181                             |     |
| HIGH-MOUNTED STOP LAMP  |     |

| Exploded View<br>Removal and Installation<br>Replacement                       | 182 |
|--|-----|
| LICENSE PLATE LAMP<br>Exploded View<br>Removal and Installation<br>Replacement |     |

# SERVICE DATA AND SPECIFICATIONS

# SERVICE DATA AND SPECIFICATIONS

| (SDS)               | .186 |
|---------------------|------|
| Bulb Specifications |      |

< BASIC INSPECTION >

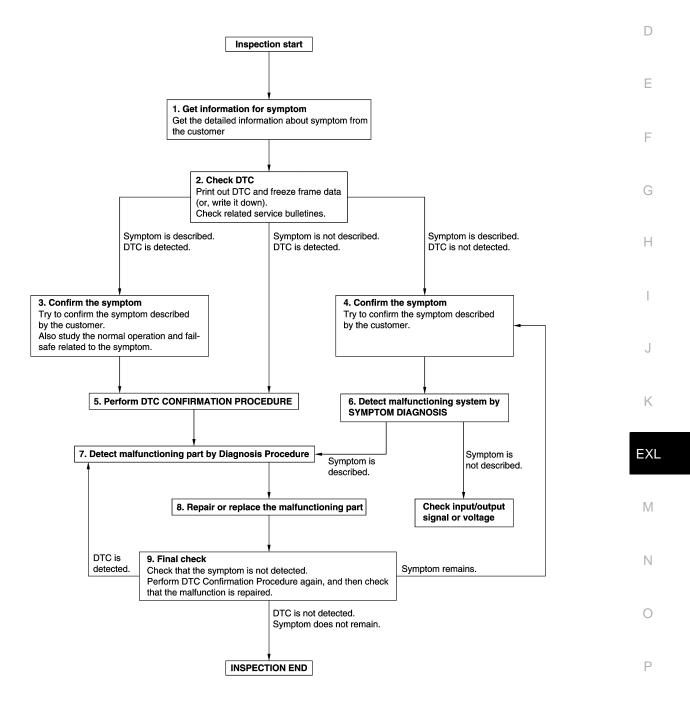
# BASIC INSPECTION DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000007772523

А

**OVERALL SEQUENCE** 



JMKIA8652GB

DETAILED FLOW

< BASIC INSPECTION >

# **1.**GET INFORMATION FOR SYMPTOM

- 1. Get detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurs).
- 2. Check operation condition of the function that is malfunctioning.

#### >> GO TO 2.

# 2.CHECK DTC

- 1. Check DTC.
- 2. Perform the following procedure if DTC is detected.
- Record DTC and freeze frame data (Print them out using CONSULT.)
- Erase DTC.
- Study the relationship between the cause detected by DTC and the symptom described by the customer.
- 3. Check related service bulletins for information.

#### Are any symptoms described and any DTC detected?

Symptom is described, DTC is detected>>GO TO 3. Symptom is described, DTC is not detected>>GO TO 4. Symptom is not described, DTC is detected>>GO TO 5.

#### **3.**CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer. Also study the normal operation and fail-safe related to the symptom. Verify relation between the symptom and the condition when the symptom is detected.

#### >> GO TO 5.

#### **4.**CONFIRM THE SYMPTOM

Try to confirm the symptom described by the customer. Verify relation between the symptom and the condition when the symptom is detected.

#### >> GO TO 6.

#### **5.**PERFORM DTC CONFIRMATION PROCEDURE

Perform DTC CONFIRMATION PROCEDURE for the detected DTC, and then check that DTC is detected again. At this time, always connect CONSULT to the vehicle, and check self diagnostic results in real time. If two or more DTCs are detected, refer to DTC INSPECTION PRIORITY CHART, and determine trouble diagnosis order.

#### NOTE:

- Freeze frame data is useful if the DTC is not detected.
- Perform Component Function Check if DTC CONFIRMATION PROCEDURE is not included on Service Manual. This simplified check procedure is an effective alternative though DTC cannot be detected during this check.

If the result of Component Function Check is NG, it is the same as the detection of DTC by DTC CONFIR-MATION PROCEDURE.

#### Is DTC detected?

YES >> GO TO 7.

NO >> Check according to <u>GI-41, "Intermittent Incident"</u>.

6. Detect malfunctioning system by symptom diagnosis

Detect malfunctioning system according to SYMPTOM DIAGNOSIS based on the confirmed symptom in step 4, and determine the trouble diagnosis order based on possible causes and symptom.

#### Is the symptom described?

- YES >> GO TO 7.
- NO >> Monitor input data from related sensors or check voltage of related module terminals using CON-SULT.
- 7. DETECT MALFUNCTIONING PART BY DIAGNOSIS PROCEDURE

# DIAGNOSIS AND REPAIR WORKFLOW

| < BASIC INSPECTION >  |   |
|---|---|
| Inspect according to Diagnosis Procedure of the system.   |   |
| Is malfunctioning part detected?  | А |
| YES >> GO TO 8.   |   |
| NO >> Check according to <u>GI-41, "Intermittent Incident"</u> .  | В |
| 8.REPAIR OR REPLACE THE MALFUNCTIONING PART   | D |
| <ol> <li>Repair or replace the malfunctioning part.</li> <li>Reconnect parts or connectors disconnected during Diagnosis Procedure again after repair and replacement.</li> </ol> | С |
| 3. Check DTC. If DTC is detected, erase it.   |   |
| >> GO TO 9.   | D |
| 9.FINAL CHECK   |   |
| When DTC is detected in step 2, perform DTC CONFIRMATION PROCEDURE again, and then check that the malfunction is repaired securely.   | Е |
| When symptom is described by the customer, refer to confirmed symptom in step 3 or 4, and check that the  |   |
| symptom is not detected.  | F |
| <u>Is DTC detected and does symptom remain?</u><br>YES-1 >> DTC is detected: GO TO 7.   |   |
| YES-1 >> Symptom remains: GO TO 4.  | G |
| NO >> Before returning the vehicle to the customer, always erase DTC.   | G |
|   |   |
|   | Н |
|   |   |

EXL

J

Κ

M

Ν

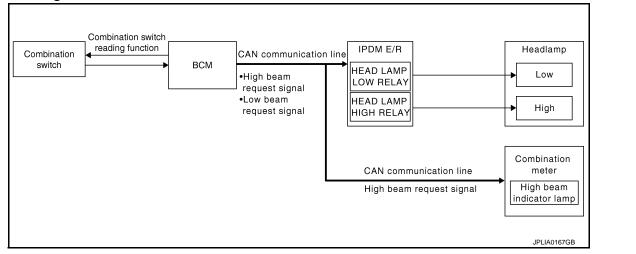
0

Ρ

## < SYSTEM DESCRIPTION >

# SYSTEM DESCRIPTION HEADLAMP SYSTEM

#### System Diagram



#### System Description

INFOID:000000007772525

INFOID:000000007772524

#### OUTLINE

Headlamp is controlled by combination switch reading function and headlamp control function of BCM, and relay control function of IPDM E/R.

#### HEADLAMP (LO) OPERATION

- BCM detects the combination switch condition with the combination switch reading function.
- BCM transmits the low beam request signal to IPDM E/R with CAN communication according to the headlamp (LO) ON condition.

Headlamp (LO) ON condition

- Lighting switch 2ND
- Lighting switch AUTO, and the auto light function ON judgment (With auto light system)
- IPDM E/R turns the integrated headlamp low relay ON, and turns the headlamp ON according to the low beam request signal.

#### NOTE:

Daytime running light model goes through the daytime running light relay-2 in headlamp low (RH) circuit. For details, refer to <u>EXL-10, "System Description"</u>.

#### HEADLAMP (HI) OPERATION

• BCM transmits the high beam request signal to IPDM E/R and the combination meter with CAN communication according to the headlamp (HI) ON condition.

#### Headlamp (HI) ON condition

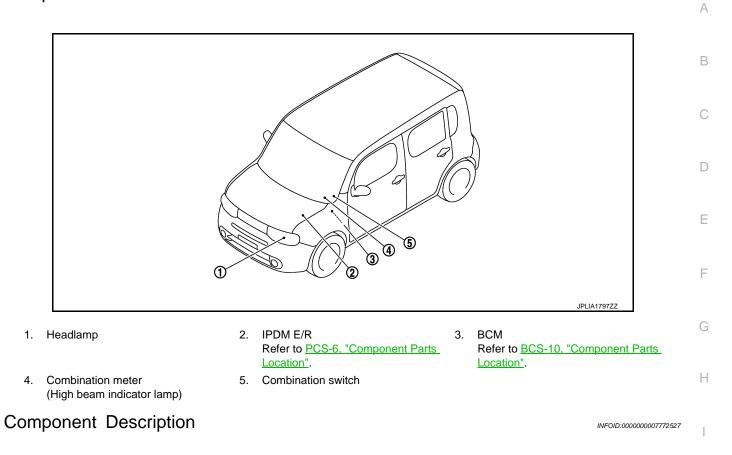
- Lighting switch HI with the lighting switch 2ND or AUTO (auto light function ON judgment)
- Lighting switch PASS
- Combination meter turns the high beam indicator lamp ON according to the high beam request signal.
- IPDM E/R turns the integrated headlamp high relay ON, and turns the headlamp ON according to the high beam request signal.

# **HEADLAMP SYSTEM**

#### < SYSTEM DESCRIPTION >

# **Component Parts Location**

INFOID:000000007772526



| Part  | Description   |
|---|---|
| BCM   | <ul> <li>Detects each switch condition by the combination switch reading function.</li> <li>Judges that the headlamp is turned ON according to the vehicle condition.</li> <li>Requests the headlamp relay (HI/LO) ON to IPDM E/R (with CAN communication).</li> <li>Requests the high beam indicator lamp ON to the combination meter (with CAN communication).</li> </ul> |
| IPDM E/R  | Controls the integrated relay, and supplies voltage to the load according to the request from BCM (with CAN communication).   |
| Combination switch<br>(Lighting & turn signal switch) | Refer to BCS-11, "System Diagram".  |
| Combination meter<br>(High beam indicator lamp)       | Turns the high beam indicator lamp ON according to the request from BCM (with CAN communication).   |

Ν

Ο

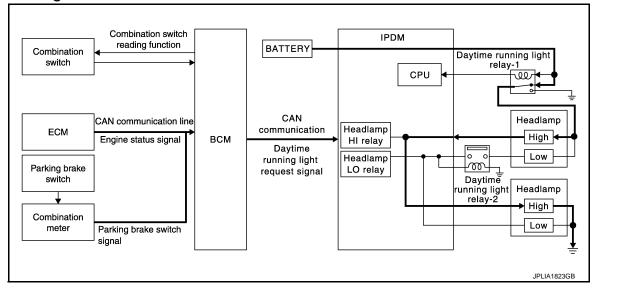
Ρ

# DAYTIME RUNNING LIGHT SYSTEM

#### < SYSTEM DESCRIPTION >

# DAYTIME RUNNING LIGHT SYSTEM

#### System Diagram



#### System Description

INFOID:000000007772529

INFOID:000000007772528

#### OUTLINE

- Turns the headlamp high ON (high beam at approximately half illumination) as the daytime running light.
- Daytime running light is controlled by daytime running light control function and combination switch reading function of BCM, and relay control function of IPDM E/R.

#### DAYTIME RUNNING LIGHT OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM detects the engine condition by the engine status signal received from ECM with CAN communication.
- BCM detects the parking brake condition by the parking brake switch signal received from combination meter with CAN communication.
- BCM transmits the daytime running light request signal to IPDM E/R with CAN communication according to the daytime running light ON condition.

Daytime running light ON condition

- Éngine running
- Lighting switch OFF or 1ST
- Parking brake switch OFF
- IPDM E/R controls the daytime running light relay-1 (ground-side) to turn ON according to the daytime running light request signal.
- Power is supplied from the daytime running light relay-1 through headlamp high (RH) and IPDM E/R to headlamp high (LH). And high beam headlamps are illuminated (approximately half illumination) as the day-time running light.

#### NOTE:

- Daytime running light relay-2 is turned ON when headlamp is low.
- Daytime running light relay-2 is OFF to cut voltage of headlamp low circuit when daytime running light is ON.

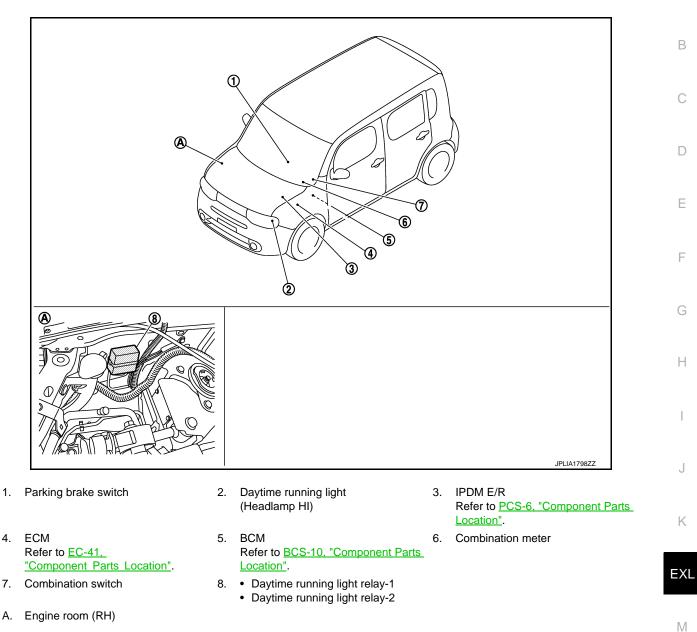
# DAYTIME RUNNING LIGHT SYSTEM

#### < SYSTEM DESCRIPTION >

# **Component Parts Location**

INFOID:000000007772530

А



# **Component Description**

INFOID:000000007772531

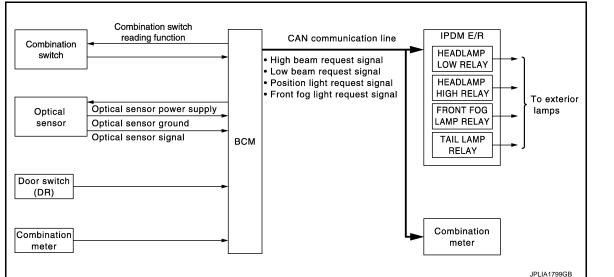
| Part  | Description   |  |
|---|---|--|
| BCM   | <ul> <li>Detects each switch condition with the combination switch reading function.</li> <li>Judges each lamps ON/OFF condition according to the vehicle condition.</li> <li>Requests the each relay ON to IPDM E/R (with CAN communication).</li> </ul> |  |
| IPDM E/R  | Controls the relay and supplies voltage to the load according to the request from BCM (with CAN communication).   |  |
| Daytime running light relay-1                         | Switches headlamp (HI) circuit to illuminate the daytime running light.   |  |
| Daytime running light relay-2                         | Cuts voltage of headlamp low circuit when daytime running light is ON.  |  |
| Combination switch<br>(Lighting & turn signal switch) | Refer to <u>BCS-11, "System Diagram"</u> .  |  |
| ECM   | Transmits the engine status signal to BCM (with CAN communication).   |  |
| Combination meter                                     | Transmits the parking brake switch signal to BCM (with CAN communication).  |  |

# AUTO LIGHT SYSTEM

# < SYSTEM DESCRIPTION >

# AUTO LIGHT SYSTEM

#### System Diagram



# System Description

INFOID:000000007772533

INFOID:000000007772532

#### OUTLINE

• Auto light system is controlled by each function of BCM and IPDM E/R.

#### Control by BCM

- Combination switch reading function
- Headlamp control function
- Auto light function
- Delay timer function
- Wiper linked auto lighting function

#### Control by IPDM E/R

- Relay control function
- Auto light system has the auto light function (with twilight lighting function<sup>\*1</sup>), wiper linked auto lighting function and delay timer function.

\*1:For USA only

- Auto light function automatically turns ON/OFF the exterior lamps<sup>\*2</sup> and each illumination automatically, depending on the outside brightness.
- Wiper linked auto lighting function automatically turns ON/OFF the exterior lamps\* and each illumination when the light switch is in the AUTO position, according to a front wiper operation.
- When auto light system turns the exterior lamps ON with the ignition switch OFF, delay timer function turns the exterior lamps OFF, depending on the vehicle condition with the auto light function after a certain period of time.

\*2: Headlamp (LO/HI), parking lamp (illuminated as front side marker lamps too), tail lamp, rear side marker lamp and front fog lamp (Headlamp HI and front fog lamp depend on the combination switch condition.) **NOTE:** 

The settings of the twilight lighting function and the wiper linked auto lighting function can be changed with CONSULT. Refer to <u>EXL-24</u>, "<u>HEADLAMP</u> : <u>CONSULT Function</u> (<u>BCM - HEAD LAMP</u>)".

#### AUTO LIGHT FUNCTION (WITH TWILIGHT LIGHTING FUNCTION)

#### Description

- BCM detects the combination switch condition with the combination switch reading function.
- BCM supplies voltage to the optical sensor when the ignition switch is turned ON or ACC.
- Optical sensor converts outside brightness (lux) to voltage and transmits the optical sensor signal to BCM.
- BCM detects outside brightness from the optical sensor signal and judges ON/OFF condition of the exterior lamp and each illumination, depending on the outside brightness condition (standard or twilight).

# **AUTO LIGHT SYSTEM**

#### < SYSTEM DESCRIPTION >

• BCM transmits each request signal to IPDM E/R via CAN communication, according to ON/OFF condition by the auto light function.

#### NOTE:

As to ON/OFF timing, the sensitivity depends on settings. The settings can be changed with CONSULT. Refer to EXL-24, "HEADLAMP : CONSULT Function (BCM - HEAD LAMP)".

#### Auto Lighting Timing Table

When the light switch is in AUTO position and the ignition switch is ON, the exterior lamps turns ON/OFF in the following condition.

| Exterior lamps | Standard Light ON<br>(Sudden increase/decrease in brightness) | Twilight Light ON<br>(Gradual increase/decrease in brightness) |   |
|----------------|---|--|---|
| ON             | Outside brightness is 1250 lx or less for 3 seconds or more.  | Filtered brightness is 3000 lx or less                         | L |
| OFF            | Outside brightness is 2500 lx or more for 5 seconds or more.  | Filtered brightness is 5000 lx or more                         | E |

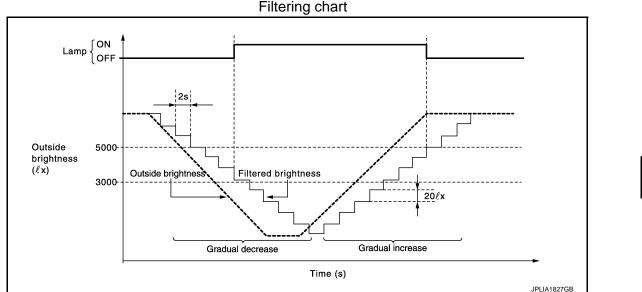
#### Standard Light ON

BCM turns exterior lamps ON when outside brightness obtained from the optical sensor signal is 1250 lx or less for 3 seconds or more. And BCM turns exterior lamp OFF when outside brightness from the optical sensor signal is 2500 lx or more for 5 seconds or more.

#### Twilight Light ON (Twilight Lighting Function)

BCM detects twilight by filtered brightness.

- BCM filters outside brightness to block the impact of the rapid change in brightness, based on the optical sensor signal, and judges outside brightness.
- BCM detects changes in outside brightness, based on outside brightness obtained from the optical sensor H signal and filtered brightness and judges ON/OFF of the exterior lamps.



- BCM starts filtering 0.3 seconds after the ignition switch is turned ON and the light switch is turned to AUTO.
- BCM filters signals from the optical sensor at intervals of 2 seconds. When the filtered brightness is higher than outside brightness (signal from the optical sensor), BCM decreases the filtered brightness by 20 lx<sup>\*</sup>. When the filtered brightness is lower than outside brightness, BCM increases the filtered brightness by 20 lx<sup>\*</sup>.
- BCM turns ON the exterior lamps when filtered brightness reaches 3000 lx and turns OFF when reaching 5000 lx.
- \*:When vehicle speed is 5 km/h or less, BCM decreases/increases the filtered brightness by 5 lx.

#### WIPER LINKED AUTO LIGHTING FUNCTION

BCM turns the exterior lamp ON when detecting 4 operations of the front wiper work the light switch in AUTO position.

#### NOTE:

BCM turns OFF the headlamps 3 seconds after the front wiper switch is turned from HI⇒OFF.

#### **EXL-13**

А

В

F

Κ

EXL

M

Ν

#### < SYSTEM DESCRIPTION >

#### **DELAY TIMER FUNCTION**

BCM turns the exterior lamp OFF depending on the vehicle condition with the auto light function when the ignition switch is turned OFF.

- Turns the exterior lamp OFF 5 minutes after detecting that any door opens (Door switch ON).
- Turns the exterior lamp OFF a certain period of time\* after closing all doors (Door switch ON→OFF).
- Turns the exterior lamp OFF with the ignition switch ACC or the light switch OFF.

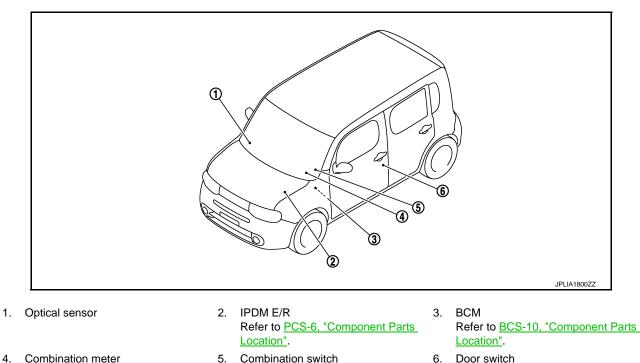
\*: The preset time is 45 seconds. The timer operating time can be set by CONSULT. Refer to EXL-24, "HEAD-LAMP : CONSULT Function (BCM - HEAD LAMP)".

#### NOTE:

When any position other than the light switch AUTO is set, the auto light system function switches to the exterior lamp battery saver function.

#### **Component Parts Location**

INFOID:000000007772534



# Component Description

1.

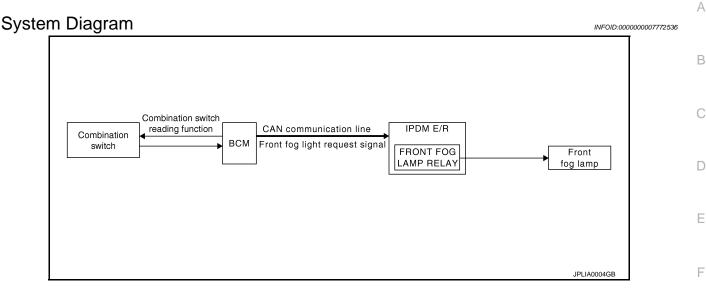
INFOID:000000007772535

| Part  | Description  |  |  |
|---|--|--|--|
| BCM   | <ul> <li>Detects each switch condition by the combination switch reading function.</li> <li>Judges the outside brightness from the optical sensor signal.</li> <li>Judges the OFF timing according to the vehicle condition.</li> <li>Judges the ON/OFF status of the exterior lamp and each illumination according to the outside brightness and the vehicle condition.</li> <li>Requests ON/OFF of each relay to IPDM E/R (with CAN communication).</li> </ul> |  |  |
| IPDM E/R  | Controls the integrated relay, and supplies voltage to the load according to the request from BCM (with CAN communication).  |  |  |
| Combination switch<br>(Lighting & turn signal switch) | Refer to BCS-11, "System Diagram".   |  |  |
| Optical sensor  | Refer to EXL-63, "Description".  |  |  |

## FRONT FOG LAMP SYSTEM

#### < SYSTEM DESCRIPTION >

# FRONT FOG LAMP SYSTEM



#### System Description

INFOID:000000007772537

INFOID:000000007772538

Н

Κ

#### OUTLINE

Front fog lamp is controlled by combination switch reading function and front fog lamp control function of BCM, and relay control function of IPDM E/R.

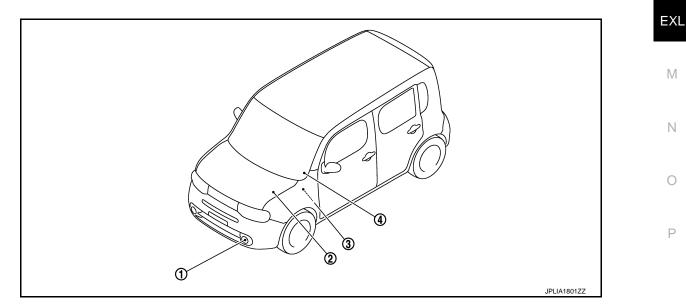
#### FRONT FOG LAMP OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the front fog lights request signal to IPDM E/R with CAN communication according to the front fog lamp ON condition.

#### Front fog lamp ON condition

- Front fog lamp switch ON with headlamp ON (except for the high beam ON)
- IPDM E/R turns the integrated front fog lamp relay ON, and turns the front fog lamp ON according to the front fog lights request signal.

#### **Component Parts Location**



Revision: 2011 November

#### < SYSTEM DESCRIPTION >

1. Front fog lamp

2. IPDM E/R Refer to <u>PCS-6, "Component Parts</u> Location". 3. BCM Refer to <u>BCS-10, "Component Parts</u> <u>Location"</u>.

4. Combination switch

#### **Component Description**

INFOID:000000007772539

| Part  | Description  |  |  |
|---|--|--|--|
| BCM   | <ul> <li>Detects each switch condition by the combination switch reading function.</li> <li>Judges the front fog lamp ON/OFF status according to the vehicle condition.</li> <li>Requests the front fog lamp relay ON to IPDM E/R (with CAN communication).</li> </ul> |  |  |
| IPDM E/R  | Controls the integrated relay and supplies voltage to the load according to the request from BCM (with CAN communication).   |  |  |
| Combination switch<br>(Lighting & turn signal switch) | Refer to BCS-11, "System Diagram".   |  |  |

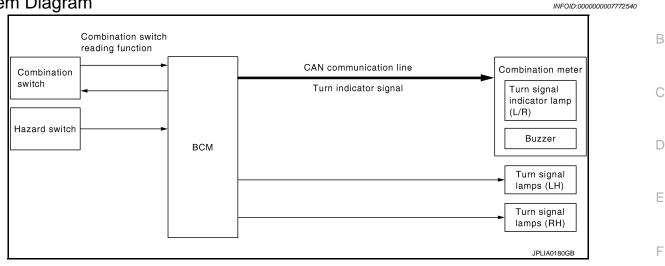
# FRONT FOG LAMP SYSTEM

# TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

#### < SYSTEM DESCRIPTION >

# TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

#### System Diagram



#### System Description

INFOID:000000007772541

Н

J

Κ

А

#### OUTLINE

Turn signal lamp and the hazard warning lamp is controlled by combination switch reading function and the flasher control function of BCM.

#### TURN SIGNAL LAMP OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM supplies voltage to the right (left) turn signal lamp circuit when the ignition switch is turned ON and the turn signal switch is in the right (left) position. BCM blinks the turn signal lamp.

#### HAZARD WARNING LAMP OPERATION

BCM supplies voltage to both turn signal lamp circuit when the hazard switch is turned ON. BCM blinks the hazard warning lamp.

#### TURN SIGNAL INDICATOR LAMP AND TURN SIGNAL OPERATION

- BCM transmits the turn signal indicator lamp signal to the combination meter with CAN communication while the turn signal lamp and the hazard warning lamp are operating.
- Combination meter outputs the turn signal sound with the integrated buzzer while blinking the turn signal indicator lamp according to the turn signal indicator lamp signal.

#### HIGH FLASHER OPERATION

- BCM detects the turn signal lamp circuit status from the terminal voltage.
- BCM increases the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected with the turn signal lamp blinking speed if the bulb or harness open is detected

#### NOTE:

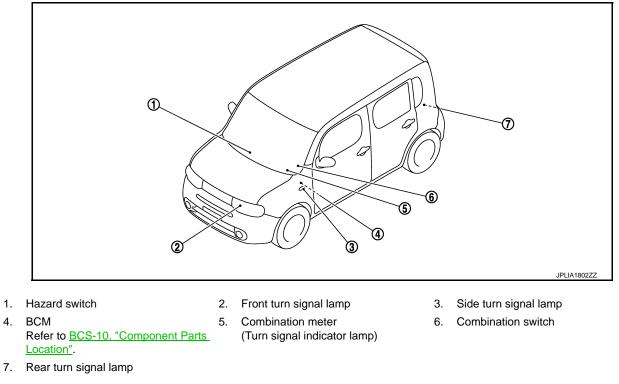
The blinking speed is normal while operating the hazard warning lamp.

Ρ

# TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

#### < SYSTEM DESCRIPTION >

# Component Parts Location



# **Component Description**

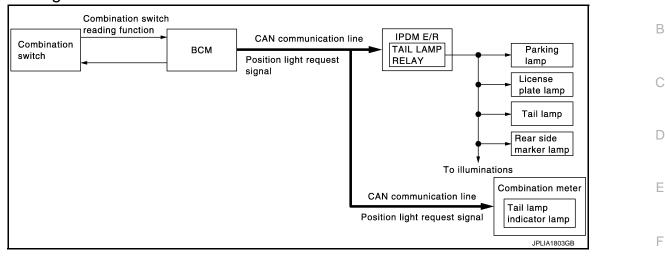
INFOID:000000007772543

| Part   | Description   |  |  |
|--|---|--|--|
| BCM  | <ul> <li>Detects each switch condition by the combination switch reading function.</li> <li>Judges the blinks of the turn signal lamp and the hazard warning lamp from each switch status. The applicable turn signal lamp blinks.</li> <li>Requests the turn signal indicator lamp blink to the combination meter (with CAN communication).</li> </ul> |  |  |
| Combination switch<br>(Lighting & turn signal switch)      | Refer to <u>BCS-11, "System Diagram"</u> .  |  |  |
| Hazard switch  | Inputs the hazard switch ON/OFF signal to BCM.  |  |  |
| Combination meter<br>(Turn signal indicator lamp & buzzer) | Blinks the turn signal indicator lamp and outputs the turn signal operating sound with integrated buzzer according to the request from BCM (with CAN communication).  |  |  |

# PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS SYSTEM < SYSTEM DESCRIPTION >

# PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS SYSTEM

#### System Diagram



#### System Description

INFOID:000000007772545

Κ

EXL

Μ

Ν

Ρ

А

INFOID:000000007772544

#### OUTLINE

Parking<sup>\*</sup>, license plate, tail and rear side marker lamps are controlled by combination switch reading function and headlamp control function of BCM, and relay control function of IPDM E/R. \*: Illuminated as front side marker lamps too.

#### PARKING, LICENSE PLATE, TAIL AND REAR SIDE MARKER LAMPS OPERATION

- BCM detects the combination switch condition by the combination switch reading function.
- BCM transmits the position light request signal to IPDM E/R and the combination meter with CAN communication according to the ON/OFF condition of the parking, license plate, tail and rear side marker lamps.

Parking, license plate, tail and rear side marker lamps ON condition

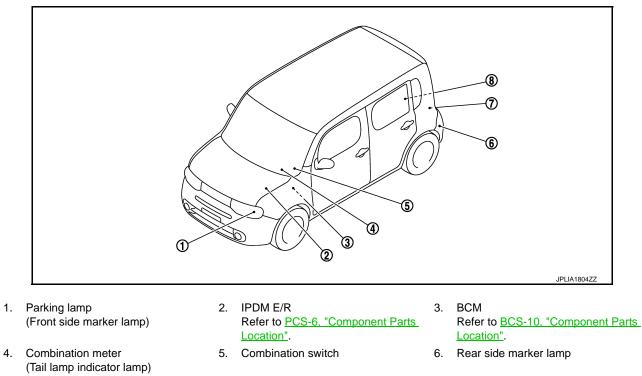
- Lighting switch 1ST
- Lighting switch 2ND
- Lighting switch AUTO, and the auto light function ON judgment (with auto light system)
- IPDM E/R turns the integrated tail lamp relay ON and turns the parking lamp, the license plate, tail and rear side marker lamps ON according to the position light request signal.
- Combination meter turns the tail lamp indicator lamp ON according to the position light request signal.

# PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS SYSTEM

< SYSTEM DESCRIPTION >

# **Component Parts Location**

INFOID:000000007772546



7. Tail lamp

# **Component Description**

INFOID:000000007772547

| Part  | Description  |  |  |
|---|--|--|--|
| ВСМ   | <ul> <li>Detects each switch condition by the combination switch reading function.</li> <li>Judges the ON/OFF status of the parking, license plate, tail and rear side marker lamps according to the vehicle condition.</li> <li>Requests the tail lamp relay ON to IPDM E/R (with CAN communication).</li> <li>Requests the tail lamp indicator lamp ON to the combination meter (with CAN communication).</li> </ul> |  |  |
| IPDM E/R  | Controls the integrated relay and supplies voltage to the load according to the request from BCM (with CAN communication).   |  |  |
| Combination switch<br>(Lighting & turn signal switch) | Refer to BCS-11, "System Diagram".   |  |  |
| Combination meter<br>(Tail lamp indicator lamp)       | Turns the tail lamp indicator lamp ON according to the request from BCM (with CAN communication).  |  |  |

8. License plate lamp

## EXTERIOR LAMP BATTERY SAVER SYSTEM

#### < SYSTEM DESCRIPTION >

# EXTERIOR LAMP BATTERY SAVER SYSTEM

#### System Diagram

INFOID:000000007772548

А

В

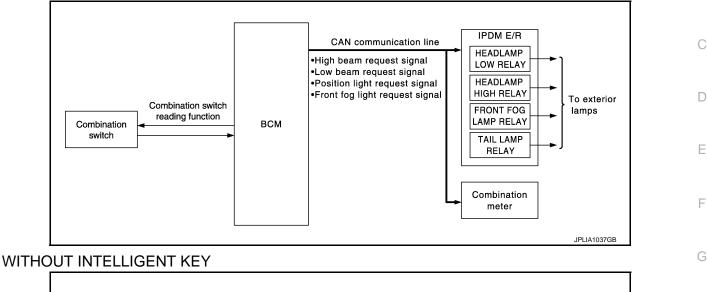
Н

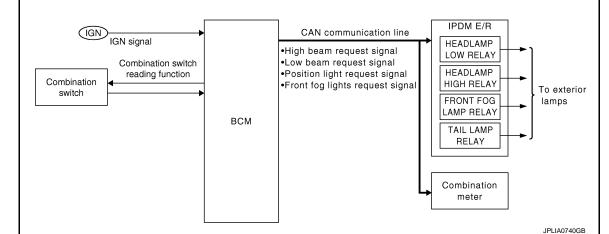
Κ

EXL

INFOID:000000007772549

#### WITH INTELLIGENT KEY





### System Description

 OUTLINE
 M

 • Exterior lamp battery saver system is controlled by each function of BCM and IPDM E/R.
 N

 Control by BCM
 - Combination switch reading function
 N

 - Headlamp control function
 N
 N

 - Exterior lamp battery saver function
 N
 N

 - Exterior lamp battery saver function
 N
 N

 Control by IPDM E/R
 O
 N

 - Relay control function
 N
 O

 • BCM turns the exterior lamp\* OFF after a period of time to prevent the battery from over-discharge when the ignition switch is turned OFF with the exterior lamp ON.
 P

 \*: Headlamp (LO/HI), parking (front side marker) lamp, tail lamp, license plate lamp, rear side marker lamp and front fog lamp
 P

#### EXTERIOR LAMP BATTERY SAVER ACTIVATION

BCM activates the timer and turns the exterior lamp OFF 5 minutes after the ignition switch is turned from ON  $\rightarrow$  OFF with the exterior lamps ON.

#### NOTE:

#### **EXL-21**

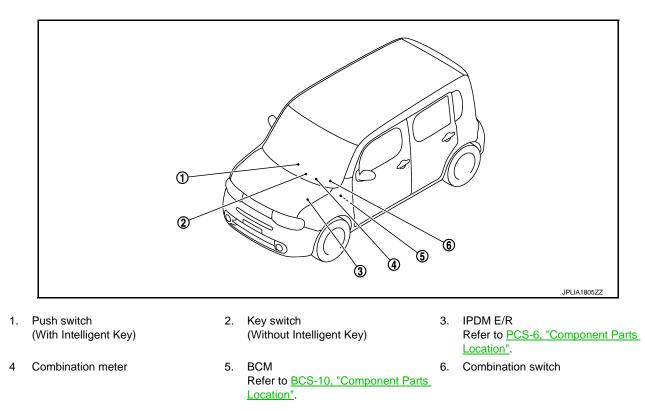
## EXTERIOR LAMP BATTERY SAVER SYSTEM

#### < SYSTEM DESCRIPTION >

- Headlamp control function turns the exterior lamps ON normally when the ignition switch is turned ACC or the engine started (both before and after the exterior lamp battery saver is turned OFF).
- The timer starts at the time that the lighting switch is turned from OFF  $\rightarrow$  1ST or 2ND with the exterior lamp OFF.

#### **Component Parts Location**

INFOID:000000007772550



# **Component Description**

INFOID:000000007772551

| Part  | Description  |  |  |
|---|--|--|--|
| BCM   | <ul> <li>Detects each switch condition by the combination switch reading function.</li> <li>Activates the battery saver to turn the exterior lamps OFF according to the vehicle condition.</li> <li>Requests each relay OFF to IPDM E/R (with CAN communication).</li> </ul> |  |  |
| IPDM E/R  | Controls the integrated relay according to the request from BCM (with CAN communi-<br>cation).   |  |  |
| Combination switch<br>(Lighting & turn signal switch) | Refer to BCS-11, "System Diagram".   |  |  |

< SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (BCM) (WITH INTELLIGENT KEY SYSTEM) COMMON ITEM

# COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000007946341

А

В

С

1.1

#### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

| Diagnosis mode           | Function Description   |   |
|--------------------------|--|---|
| Work Support             | Changes the setting for each system function.  |   |
| Self Diagnostic Result   | Displays the diagnosis results judged by BCM.  | D |
| CAN Diag Support Monitor | Monitors the reception status of CAN communication viewed from BCM.  |   |
| Data Monitor             | The BCM input/output signals are displayed.  | E |
| Active Test              | The signals used to activate each device are forcibly supplied from BCM.   |   |
| Ecu Identification       | The BCM part number is displayed.  |   |
| Configuration            | <ul><li>Read and save the vehicle specification.</li><li>Write the vehicle specification when replacing BCM.</li></ul> | F |

#### SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

| System   | Sub system selection item   | Diagnosis mode |              |             |
|--|-----------------------------|----------------|--------------|-------------|
|  |                             | Work Support   | Data Monitor | Active Test |
| Door lock  | DOOR LOCK                   | ×              | ×            | ×           |
| Rear window defogger   | REAR DEFOGGER               |                | ×            | ×           |
| Warning chime  | BUZZER                      |                | ×            | ×           |
| Interior room lamp timer   | INT LAMP                    | ×              | ×            | ×           |
| Exterior lamp  | HEAD LAMP                   | ×              | ×            | ×           |
| Wiper and washer   | WIPER                       | ×              | ×            | ×           |
| Turn signal and hazard warning lamps                                       | FLASHER                     | ×              | ×            | ×           |
| <ul><li>Automatic air conditioner</li><li>Manual air conditioner</li></ul> | AIR CONDITONER              |                | ×            | ×*          |
| <ul><li>Intelligent Key system</li><li>Engine start system</li></ul>       | INTELLIGENT KEY             | ×              | ×            | ×           |
| Combination switch   | COMB SW                     |                | ×            |             |
| Body control system  | ВСМ                         | ×              |              |             |
| NVIS - NATS  | IMMU                        | ×              | ×            | ×           |
| Interior room lamp battery saver   | BATTERY SAVER               | ×              | ×            | ×           |
| Back door  | TRUNK                       |                | ×            |             |
| Vehicle security system  | THEFT ALM                   | ×              | ×            | ×           |
| RAP system   | RETAINED PWR                |                | ×            |             |
| Signal buffer system   | SIGNAL BUFFER               |                | ×            | ×           |
| TPMS   | TPMS (AIR PRESSURE MONITOR) | ×              | ×            | ×           |

\*: For models with automatic air conditioner, this model is not used.

#### FREEZE FRAME DATA (FFD)

The BCM records the following vehicle condition at the time a particular DTC is detected, and displays on CONSULT.

#### < SYSTEM DESCRIPTION >

| CONSULT screen item | Indication/Unit |  | Description  |  |
|---------------------|-----------------|--|--|--|
| Vehicle Speed       | km/h            | Vehicle speed of the moment a particular DTC is detected   |  |  |
| Odo/Trip Meter      | km              | Total mileage (Odometer value) of the moment a particular DTC is detected  |  |  |
|                     | SLEEP>LOCK      |  | While turning BCM status from low power consumption mode to  |  |
|                     |                 |  | normal mode (Power supply position is "LOCK" <sup>*</sup> )  |  |
|                     | SLEEP>OFF       |  | While turning BCM status from low power consumption mode to normal mode (Power supply position is "OFF".)                |  |
|                     | LOCK>ACC        |  | While turning power supply position from "LOCK" <sup>*</sup> to "ACC"  |  |
|                     | ACC>ON          |  | While turning power supply position from "ACC" to "IGN"  |  |
|                     | RUN>ACC         |  | While turning power supply position from "RUN" to "ACC" (Vehicle is stopping and selector lever is except P position.)   |  |
|                     | CRANK>RUN       |  | While turning power supply position from "CRANKING" to "RUN" (From cranking up the engine to run it)                     |  |
|                     | RUN>URGENT      |  | While turning power supply position from "RUN" to "ACC" (Emer-<br>gency stop operation)                                  |  |
|                     | ACC>OFF         |  | While turning power supply position from "ACC" to "OFF"  |  |
|                     | OFF>LOCK        | Power position status of<br>the moment a particular<br>DTC is detected   | While turning power supply position from "OFF" to "LOCK"*  |  |
| Vehicle Condition   | OFF>ACC         |  | While turning power supply position from "OFF" to "ACC"  |  |
|                     | ON>CRANK        |  | While turning power supply position from "IGN" to "CRANKING"   |  |
|                     | OFF>SLEEP       |  | While turning BCM status from normal mode (Power supply posi-<br>tion is "OFF".) to low power consumption mode           |  |
|                     | LOCK>SLEEP      |  | While turning BCM status from normal mode (Power supply position is "LOCK" <sup>*</sup> .) to low power consumption mode |  |
|                     | LOCK            |  | Power supply position is "LOCK"*   |  |
|                     | OFF             |  | Power supply position is "OFF" (Ignition switch OFF)   |  |
|                     | ACC             |  | Power supply position is "ACC" (Ignition switch ACC)   |  |
|                     | ON              |  | Power supply position is "IGN" (Ignition switch ON with engine stopped)  |  |
|                     | ENGINE RUN      |  | Power supply position is "RUN" (Ignition switch ON with engine running)  |  |
|                     | CRANKING        |  | Power supply position is "CRANKING" (At engine cranking)   |  |
| IGN Counter         | 0 - 39          | <ul> <li>The number of times that ignition switch is turned ON after DTC is detected</li> <li>The number is 0 when a malfunction is detected now.</li> <li>The number increases like 1 → 2 → 338 → 39 after returning to the normal condition whenever ignition switch OFF → ON.</li> <li>The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.</li> </ul> |  |  |

#### NOTE:

\*: Power position shifts to "LOCK" from "OFF", when ignition switch is in the OFF position, selector lever is in the P position (CVT models), and any of the following conditions are met.

- Closing door
- Opening door
- Door is locked using door request switch
- Door is locked using Intelligent Key

The power position shifts to "ACC" when the push-button ignition switch (push switch) is pushed at "LOCK". HEADLAMP

### HEADLAMP : CONSULT Function (BCM - HEAD LAMP)

INFOID:000000007772553

#### WORK SUPPORT

For USA

#### < SYSTEM DESCRIPTION >

| Service item           | Setting<br>item     | Setting   |   |  |
|------------------------|---------------------|---|---|--|
|                        | MODE 1 <sup>*</sup> | With twilight ON custom & with wiper INT, LO and HI   |   |  |
|                        | MODE 2              | With twilight ON custom & with wiper LO and HI  |   |  |
| AUTO LIGHT LOGIC SET   | MODE 3              | With twilight ON custom & without   |   |  |
|                        | MODE 4              | Without twilight ON custon  | n & with wiper INT, LO and HI                             |  |
|                        | MODE 5              | Without twilight ON custon  | n & with wiper LO and HI                                  |  |
|                        | MODE 6              | Without twilight ON custon  | n & without   |  |
|                        | MODE 1 <sup>*</sup> | Normal  |   |  |
|                        | MODE 2              | More sensitive setting than   | n normal setting (Turns ON earlier than normal operation. |  |
| CUSTOM A/LIGHT SETTING | MODE 3              | More sensitive setting than MODE 2 (Turns ON earlier than MODE 2.)  |   |  |
|                        | MODE 4              | Without twilight ON custom & less sensitive setting than normal setting (Turns ON later than normal operation.) |   |  |
| BATTERY SAVER SET      | On <sup>*</sup>     | With the exterior lamp battery saver function   |   |  |
| DATTERT SAVER SET      | Off                 | Without the exterior lamp battery saver function  |   |  |
|                        | MODE 1 <sup>*</sup> | 45 sec.   |   |  |
|                        | MODE 2              | Without the function  |   |  |
|                        | MODE 3              | 30 sec.   | -   |  |
| ILL DELAY SET          | MODE 4              | 60 sec.   | Sets delay timer function timer operation time.           |  |
|                        | MODE 5              | 90 sec.   | (All doors closed)  |  |
|                        | MODE 6              | 120 sec.  |   |  |
|                        | MODE 7              | 150 sec.  |   |  |
|                        | MODE 8              | 180 sec.  |   |  |

# \*: Factory setting

#### For CANADA

| Service item           | Setting<br>item     | Setting  |  |  |
|------------------------|---------------------|--|--|--|
|                        | MODE 1              |  |  |  |
|                        | MODE 2              |  |  |  |
| AUTO LIGHT LOGIC SET   | MODE 3              | NOTE:  |  |  |
| AUTO LIGHT LOGIC SET   | MODE 4              | The item is indicated, but not operated.   |  |  |
|                        | MODE 5              |  |  |  |
|                        | MODE 6              |  |  |  |
| CUSTOM A/LIGHT SETTING | MODE 1 <sup>*</sup> | Normal   |  |  |
|                        | MODE 2              | More sensitive setting than normal setting (Turns ON earlier than normal operation.) |  |  |
|                        | MODE 3              | More sensitive setting than MODE 2 (Turns ON earlier than MODE 2.)                   |  |  |
|                        | MODE 4              | Less sensitive setting than normal setting (Turns ON later than normal operation.)   |  |  |
| BATTERY SAVER SET      | On <sup>*</sup>     | With the exterior lamp battery saver function  |  |  |
|                        | Off                 | Without the exterior lamp battery saver function                                     |  |  |

#### < SYSTEM DESCRIPTION >

| Service item  | Setting<br>item     | Setting              |   |  |
|---------------|---------------------|----------------------|---|--|
|               | MODE 1 <sup>*</sup> | 45 sec.              |   |  |
|               | MODE 2              | Without the function |   |  |
|               | MODE 3              | 30 sec.              |   |  |
| ILL DELAY SET | MODE 4              | 60 sec.              | Sets delay timer function timer operation time. |  |
|               | MODE 5              | 90 sec.              | (All doors closed)                              |  |
|               | MODE 6              | 120 sec.             |   |  |
|               | MODE 7              | 150 sec.             |   |  |
|               | MODE 8              | 180 sec.             |   |  |

\*: Factory setting

#### DATA MONITOR

| Monitor item<br>[Unit]                 | Description  |  |  |
|--|--|--|--|
| PUSH SW<br>[On/Off]                    | The switch status input from push-button ignition switch                                   |  |  |
| ENGINE STATE<br>[Stop/Stall/Crank/Run] | The engine status received from ECM with CAN communication                                 |  |  |
| VEH SPEED 1<br>[km/h]                  | The value of the vehicle speed received from combination meter with CAN commu-<br>nication |  |  |
| HI BEAM SW<br>[On/Off]                 |  |  |  |
| HEAD LAMP SW1<br>[On/Off]              |  |  |  |
| HEAD LAMP SW2<br>[On/Off]              |  |  |  |
| LIGHT SW 1ST<br>[On/Off]               | Each switch status that BCM judges from the combination switch reading function            |  |  |
| PASSING SW<br>[On/Off]                 |  |  |  |
| FR FOG SW<br>[On/Off]                  |  |  |  |
| AUTO LIGHT SW<br>[On/Off]              |  |  |  |
| DOOR SW-DR<br>[On/Off]                 | The switch status input from front door switch (driver side)                               |  |  |
| DOOR SW-AS<br>[On/Off]                 | The switch status input from front door switch (passenger side)                            |  |  |
| DOOR SW-RR<br>[On/Off]                 | The switch status input from rear door switch RH   |  |  |
| DOOR SW- RL<br>[On/Off]                | The switch status input from rear door switch LH   |  |  |
| BACK DOOR SW<br>[On/Off]               | The switch status input from back door switch  |  |  |
| TURN SIGNAL R<br>[On/Off]              |  |  |  |
| TURN SIGNAL L<br>[On/Off]              | Each switch status that BCM judges from the combination switch reading function            |  |  |
| TAIL LAMP SW<br>[On/Off]               |  |  |  |

#### < SYSTEM DESCRIPTION >

| Monitor item<br>[Unit]     | Description   | A |
|----------------------------|---|---|
| OPTICAL SENSOR<br>[On/Off] | The sensor status input from optical sensor                           |   |
| OPTI SEN (DTCT)<br>[V]     | The value of outside brightness voltage input from the optical sensor |   |
| OPTI SEN (FILT)<br>[V]     | The value of outside brightness voltage filtered by BCM               | С |

#### ACTIVE TEST

| Test item      | Operation | Description  |
|----------------|-----------|--|
| TAIL LAMP      | On        | Transmits the position light request signal to IPDM E/R with CAN com-<br>munication to turn the tail lamp ON.        |
|                | Off       | Stops the tail lamp request signal transmission.   |
| HEAD LAMP      | Hi        | Transmits the high beam request signal with CAN communication to turn the headlamp (HI).                             |
|                | Lo        | Transmits the low beam request signal with CAN communication to turn the headlamp (LO).                              |
|                | Off       | Stops the high & low beam request signal transmission.   |
| FR FOG LAMP    | On        | Transmits the front fog lights request signal to IPDM E/R with CAN com-<br>munication to turn the front fog lamp ON. |
|                | Off       | Stops the front fog lights request signal transmission.  |
| ILL DIM SIGNAL | On        | NOTE:  |
|                | Off       | The item is indicated, but cannot be tested.   |

# FLASHER

# FLASHER : CONSULT Function (BCM - FLASHER)

#### WORK SUPPORT

| Service item  | Setting item           |                        | Setting  |     |  |
|---------------|------------------------|------------------------|--|-----|--|
|               | Lock Only              | With locking only      |  |     |  |
| HAZARD ANSWER | Unlk Only              | With unlocking only    | Sets the hazard warning lamp answer back function                    | EXI |  |
| BACK          | Lock/Unlk <sup>*</sup> | With locking/unlocking | when the door is lock/unlock with the request switch or the key fob. |     |  |
|               | Off                    | Without the function   | •  |     |  |

\*: Factory setting

#### DATA MONITOR

| Monitor item<br>[Unit]    | Description  |  |  |
|---------------------------|--|--|--|
| REQ SW-DR<br>[On/Off]     | The switch status input from the request switch (driver side)                    |  |  |
| REQ SW-AS<br>[On/Off]     | The switch status input from the request switch (passenger side)                 |  |  |
| PUSH SW<br>[On/Off]       | The switch status input from the push-button ignition switch                     |  |  |
| TURN SIGNAL R<br>[On/Off] | Each quitch status that DCM datasts from the combination quitch reading function |  |  |
| TURN SIGNAL L<br>[On/Off] | Each switch status that BCM detects from the combination switch reading function |  |  |

INFOID:000000007772554

J

Μ

#### < SYSTEM DESCRIPTION >

| Monitor item<br>[Unit] | Description   |  |
|------------------------|---|--|
| HAZARD SW<br>[On/Off]  | The switch status input from the hazard switch                            |  |
| RKE-LOCK<br>[On/Off]   | Lock signal status received from the remote keyless entry receiver        |  |
| RKE-UNLOCK<br>[On/Off] | Unlock signal status received from the remote keyless entry receiver      |  |
| RKE-PANIC<br>[On/Off]  | Panic alarm signal status received from the remote keyless entry receiver |  |

#### ACTIVE TEST

| Test item | Operation | Description  |
|-----------|-----------|--|
|           | RH        | Outputs the voltage to blink the right side turn signal lamps. |
| FLASHER   | LH        | Outputs the voltage to blink the left side turn signal lamps.  |
|           | Off       | Stops the voltage to turn the turn signal lamps OFF.           |

< SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (BCM) (WITHOUT INTELLIGENT KEY SYSTEM) COMMON ITEM

## COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000007946342

А

В

С

#### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

| Diagnosis mode           | Function Description   |   |
|--------------------------|--|---|
| Work Support             | Changes the setting for each system function.  |   |
| Self Diagnostic Result   | Displays the diagnosis results judged by BCM.  |   |
| CAN Diag Support Monitor | Monitors the reception status of CAN communication viewed from BCM.  |   |
| Data Monitor             | The BCM input/output signals are displayed.  |   |
| Active Test              | The signals used to activate each device are forcibly supplied from BCM.   |   |
| Ecu Identification       | ation The BCM part number is displayed.  |   |
| Configuration            | <ul><li>Read and save the vehicle specification.</li><li>Write the vehicle specification when replacing BCM.</li></ul> | F |

#### SYSTEM APPLICATION

BCM can perform the following functions for each system.

NOTE:

It can perform the diagnosis modes except the following for all sub system selection items.

| System                               | Sub aveter colection item   | Diagnosis mode |              |             |   |
|--------------------------------------|-----------------------------|----------------|--------------|-------------|---|
|                                      | Sub system selection item   | Work Support   | Data Monitor | Active Test | - |
| Door lock                            | DOOR LOCK                   | ×              | ×            | ×           | - |
| Rear window defogger                 | REAR DEFOGGER               |                | ×            | ×           | - |
| Warning chime                        | BUZZER                      |                | ×            | ×           | - |
| Interior room lamp control           | INT LAMP                    | ×              | ×            | ×           | - |
| Remote keyless entry system          | MULTI REMOTE ENT            | ×              | ×            | ×           | - |
| Exterior lamp                        | HEAD LAMP                   | ×              | ×            | ×           | - |
| Wiper and washer                     | WIPER                       | ×              | ×            | ×           | - |
| Turn signal and hazard warning lamps | FLASHER                     |                | ×            | ×           |   |
| Manual air conditioner               | AIR CONDITONER              |                | ×            | ×           |   |
| Combination switch                   | COMB SW                     |                | ×            |             | - |
| Body control system                  | BCM                         | ×              |              |             | - |
| NVIS - NATS                          | IMMU                        | ×              | ×            | ×           | - |
| Interior room lamp battery saver     | BATTERY SAVER               | ×              | ×            | ×           | - |
| Back door                            | TRUNK                       |                | ×            |             | - |
| Vehicle security system              | THEFT ALM                   | ×              | ×            | ×           | - |
| RAP system                           | RETAINED PWR                |                | ×            | ×           | - |
| Signal buffer system                 | SIGNAL BUFFER               |                | ×            | ×           | - |
| TPMS                                 | TPMS (AIR PRESSURE MONITOR) | ×              | ×            | ×           | - |
| Panic alarm system                   | PANIC ALARM                 |                |              | ×           | - |

#### HEADLAMP

# HEADLAMP : CONSULT Function (BCM - HEAD LAMP)

WORK SUPPORT

INFOID:000000007772556

< SYSTEM DESCRIPTION >

For USA

| Service item         | Setting<br>item     | Setting   |  |  |  |
|----------------------|---------------------|---|--|--|--|
|                      | MODE 1 <sup>*</sup> | With twilight ON custom & with wiper INT, LO and HI |  |  |  |
|                      | MODE 2              | With twilight ON custom & with wiper LO and HI      |  |  |  |
| AUTO LIGHT LOGIC SET | MODE 3              | With twilight ON custom & without                   |  |  |  |
|                      | MODE 4              | Without twilight ON custom                          | Without twilight ON custom & with wiper INT, LO and HI |  |  |
|                      | MODE 5              | Without twilight ON custom                          | & with wiper LO and HI                                 |  |  |
|                      | MODE 6              | Without twilight ON custom                          | Without twilight ON custom & without                   |  |  |
| BATTERY SAVER SET    | On <sup>*</sup>     | With the exterior lamp battery saver function       |  |  |  |
|                      | Off                 | Without the exterior lamp battery saver function    |  |  |  |
|                      | MODE 1 <sup>*</sup> | 45 sec.   |  |  |  |
|                      | MODE 2              | Without the function                                |  |  |  |
|                      | MODE 3              | 30 sec.   |  |  |  |
| ILL DELAY SET        | MODE 4              | 60 sec.   | Sets delay timer function timer operation time.        |  |  |
|                      | MODE 5              | 90 sec.   | (All doors closed)                                     |  |  |
|                      | MODE 6              | 120 sec.  |  |  |  |
|                      | MODE 7              | 150 sec.  |  |  |  |
|                      | MODE 8              | 180 sec.  |  |  |  |

# \*: Factory setting

#### For CANADA

| Service item         | Setting<br>item     | Setting  |   |  |
|----------------------|---------------------|--|---|--|
|                      | MODE 1              |  |   |  |
|                      | MODE 2              |  |   |  |
| AUTO LIGHT LOGIC SET | MODE 3              | <b>NOTE:</b><br>The item is indicated, but not operated. |   |  |
| AUTO LIGHT LOGIC SET | MODE 4              |  |   |  |
|                      | MODE 5              |  |   |  |
|                      | MODE 6              |  |   |  |
| BATTERY SAVER SET    | On <sup>*</sup>     | With the exterior lamp battery saver function            |   |  |
| DATERT GAVER GET     | Off                 | Without the exterior lamp battery saver function         |   |  |
|                      | MODE 1 <sup>*</sup> | 45 sec.  |   |  |
|                      | MODE 2              | Without the function                                     |   |  |
|                      | MODE 3              | 30 sec.  |   |  |
| ILL DELAY SET        | MODE 4              | 60 sec.  | Sets delay timer function timer operation time. |  |
|                      | MODE 5              | 90 sec.  | (All doors closed)                              |  |
|                      | MODE 6              | 120 sec.   |   |  |
|                      | MODE 7              | 150 sec.   |   |  |
|                      | MODE 8              | 180 sec.   |   |  |

\*: Factory setting

DATA MONITOR

#### < SYSTEM DESCRIPTION >

| Monitor item<br>[Unit]    | Description  |  |  |
|---------------------------|--|--|--|
| IGN ON SW<br>[On/Off]     | Ignition switch (ON) status judged from IGN signal (ignition power supply)                 |  |  |
| ACC SW<br>[On/Off]        | Ignition switch (ACC) status judged from ACC signal (ACC power supply)                     |  |  |
| VEH SPEED<br>[km/h]       | The value of the vehicle speed received from combination meter with CAN commu-<br>nication |  |  |
| HI BEAM SW<br>[On/Off]    |  |  |  |
| HEAD LAMP SW1<br>[On/Off] |  |  |  |
| HEAD LAMP SW2<br>[On/Off] | Each quitch status that DCM indees from the combination quitch reading function            |  |  |
| PASSING SW<br>[On/Off]    | Each switch status that BCM judges from the combination switch reading function            |  |  |
| FR FOG SW<br>[On/Off]     |  |  |  |
| AUTO LIGHT SW<br>[On/Off] |  |  |  |
| RR FOG SW<br>[On/Off]     | NOTE:<br>The item is indicated, but not monitored  |  |  |
| DOOR SW-DR<br>[On/Off]    | The switch status input from front door switch (driver side)                               |  |  |
| DOOR SW-AS<br>[On/Off]    | The switch status input from front door switch (passenger side)                            |  |  |
| DOOR SW-RR<br>[On/Off]    | The switch status input from rear door switch RH   |  |  |
| DOOR SW- RL<br>[On/Off]   | The switch status input from rear door switch LH   |  |  |
| BACK DOOR SW<br>[On/Off]  | The switch status input from back door switch  |  |  |
| TURN SIGNAL R<br>[On/Off] |  |  |  |
| TURN SIGNAL L<br>[On/Off] | Each switch status that BCM judges from the combination switch reading function            |  |  |
| TAIL LAMP SW<br>[On/Off]  |  |  |  |
| KEY ON SW<br>[On/Off]     | The switch status input from key on switch   |  |  |
| KEYLESS LOCK<br>[On/Off]  | Lock signal status received from remote keyless entry receiver (integrated in the BCM)     |  |  |
| PKB SW<br>[On/Off]        | The parking brake switch status received from combination meter with CAN communication     |  |  |
| ENGINE RUN<br>[On/Off]    | The engine status received from ECM with CAN communication                                 |  |  |
| LIG SEN COND<br>[On/Off]  | The sensor condition received from light sensor  |  |  |
| OPTI SEN (DTCT)<br>[V]    | The value of outside brightness voltage input from the optical sensor                      |  |  |
| OPTI SEN (FILT)<br>[V]    | The value of outside brightness voltage filtered by BCM                                    |  |  |

ACTIVE TEST

#### < SYSTEM DESCRIPTION >

| Test item      | Operation | Description  |
|----------------|-----------|--|
| TAIL LAMP      | On        | Transmits the position light request signal to IPDM E/R with CAN com-<br>munication to turn the tail lamp ON.        |
|                | Off       | Stops the tail lamp request signal transmission.   |
|                | Hi        | Transmits the high beam request signal with CAN communication to turn the headlamp (HI).                             |
| HEAD LAMP      | Lo        | Transmits the low beam request signal with CAN communication to turn the headlamp (LO).                              |
|                | Off       | Stops the high & low beam request signal transmission.   |
| FR FOG LAMP    | On        | Transmits the front fog lights request signal to IPDM E/R with CAN com-<br>munication to turn the front fog lamp ON. |
|                | Off       | Stops the front fog lights request signal transmission.  |
| ILL DIM SIGNAL | On        | NOTE:  |
| ILL DIW SIGNAL | Off       | The item is indicated, but cannot be tested.   |

# FLASHER

# FLASHER : CONSULT Function (BCM - FLASHER)

INFOID:000000007772557

#### DATA MONITOR

| Monitor item<br>[Unit]    | Description   |  |
|---------------------------|---|--|
| IGN ON SW<br>[On/Off]     | Ignition switch (ON) status judged from IGN signal (ignition power supply)                          |  |
| TURN SIGNAL R<br>[On/Off] | <ul> <li>Each switch status that BCM detects from the combination switch reading functio</li> </ul> |  |
| TURN SIGNAL L<br>[On/Off] |   |  |
| HAZARD SW<br>[On/Off]     | The switch status input from the hazard switch  |  |

#### ACTIVE TEST

| Test item | Operation | Description  |
|-----------|-----------|--|
|           | RH        | Outputs the voltage to blink the right side turn signal lamps. |
| FLASHER   | LH        | Outputs the voltage to blink the left side turn signal lamps.  |
|           | Off       | Stops the voltage to turn the turn signal lamps OFF.           |

#### < SYSTEM DESCRIPTION > DIAGNOSIS SYSTEM (IPDM E/R) (WITH INTELLIGENT KEY SYSTEM) А Diagnosis Description INFOID:000000007946343 AUTO ACTIVE TEST В Description In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation. Oil pressure warning lamp Rear window defogger Front wiper (LO, HI) Parking lamps D Side marker lamp License plate lamps Tail lamps Е Front fog lamps Headlamps (LO, HI) A/C compressor (magnet clutch) Cooling fan F **Operation Procedure** 1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation) NOTE: When auto active test is performed with hood opened, sprinkle water on windshield beforehand. Н 2. Turn the ignition switch OFF. 3. Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF. **CAUTION:** Close passenger door. 4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts. The oil pressure warning lamp starts blinking when the auto active test starts. 5. 6. After a series of the following operations is repeated 3 times, auto active test is completed. NOTE: Κ When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF. CAUTION: If auto active test mode cannot be actuated, check door switch system. Refer to DLK-55, EXL "Component Function Check".

• Do not start the engine.

Inspection in Auto Active Test Mode

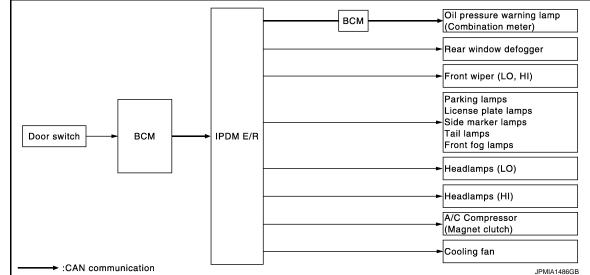
When auto active test mode is actuated, the following 6 steps are repeated 3 times.

| Operation sequence | Inspection location  | cation Operation  |  |
|--------------------|--|---|--|
| А                  | Oil pressure warning lamp  | Blinks continuously during operation of auto active test            |  |
| 1                  | Rear window defogger   | 10 seconds  |  |
| 2                  | Front wiper  | LO for 5 seconds $\rightarrow$ HI for 5 seconds                     |  |
| 3                  | <ul> <li>Parking lamps</li> <li>Side marker lamps</li> <li>License plate lamps</li> <li>Tail lamps</li> <li>Front fog lamps</li> </ul> | 10 seconds  |  |
| 4                  | Headlamps  | LO for 10 seconds $\rightarrow$ HI ON $\Leftrightarrow$ OFF 5 times |  |
| 5                  | A/C compressor (magnet clutch)   | $ON \Leftrightarrow OFF 5 times$                                    |  |
| 6                  | Cooling fan  | LO for 5 seconds $\rightarrow$ HI for 5 seconds                     |  |

Μ

#### < SYSTEM DESCRIPTION >

Concept of auto active test



- IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.
- The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

| Symptom  | Inspection contents  |     | Possible cause  |
|--|--|-----|---|
|  |  | YES | BCM signal input circuit  |
| Rear window defogger does not operate  | Perform auto active test.<br>Does the rear window defog-<br>ger operate? | NO  | <ul> <li>Rear window defogger</li> <li>Rear window defogger<br/>ground circuit</li> <li>Harness or connector be-<br/>tween IPDM E/R and rear<br/>window defogger</li> <li>IPDM E/R</li> </ul> |
| Any of the following components do not operate   |  | YES | BCM signal input circuit  |
| <ul> <li>Parking lamps</li> <li>Side marker lamps</li> <li>License plate lamps</li> <li>Tail lamps</li> <li>Front fog lamps</li> <li>Headlamps (HI, LO)</li> <li>Front wiper (HI, LO)</li> </ul> | Perform auto active test.<br>Does the applicable system<br>operate?      | NO  | <ul> <li>Lamp or motor</li> <li>Lamp or motor ground circuit</li> <li>Harness or connector between IPDM E/R and applicable system</li> <li>IPDM E/R</li> </ul>                                |
| A/C compressor does not operate  | Perform auto active test.<br>Does the magnet clutch oper-<br>ate?        | YES | <ul> <li>A/C amp. signal input circuit</li> <li>CAN communication signal<br/>between A/C amp. and<br/>ECM</li> <li>CAN communication signal<br/>between ECM and IPDM E/<br/>R</li> </ul>      |
|  |  | NO  | <ul> <li>Magnet clutch</li> <li>Harness or connector be-<br/>tween IPDM E/R and mag-<br/>net clutch</li> <li>IPDM E/R</li> </ul>  |

#### < SYSTEM DESCRIPTION >

| Symptom                                    | Inspection contents   |     | Possible cause   |
|--|---|-----|--|
|  | Perform auto active test.<br>Does the oil pressure warning<br>lamp blink? | YES | <ul> <li>Harness or connector be-<br/>tween IPDM E/R and oil<br/>pressure switch</li> <li>Oil pressure switch</li> <li>IPDM E/R</li> </ul>   |
| Oil pressure warning lamp does not operate |   | NO  | <ul> <li>CAN communication signal<br/>between IPDM E/R and<br/>BCM</li> <li>CAN communication signal<br/>between BCM and combi-<br/>nation meter</li> <li>Combination meter</li> </ul> |
|  | Perform auto active test.<br>Does the cooling fan operate?                | YES | <ul> <li>ECM signal input circuit</li> <li>CAN communication signal<br/>between ECM and IPDM E/<br/>R</li> </ul>   |
| Cooling fan does not operate               |   | NO  | <ul> <li>Cooling fan motor</li> <li>Harness or connector be-<br/>tween IPDM E/R and cool-<br/>ing fan motor</li> <li>IPDM E/R</li> </ul>   |

# CONSULT Function (IPDM E/R)

INFOID:000000007946344

Н

EXL

#### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R.

| Diagnosis mode           | Description   |  |
|--------------------------|---|--|
| Ecu Identification       | Allows confirmation of IPDM E/R part number.  |  |
| Self Diagnostic Result   | Displays the diagnosis results judged by IPDM E/R.  |  |
| Data Monitor             | Displays the real-time input/output data from IPDM E/R input/output data.                     |  |
| Active Test              | IPDM E/R can provide a drive signal to electronic components to check their operations.       |  |
| CAN Diag Support Monitor | g Support Monitor The results of transmit/receive diagnosis of CAN communication can be read. |  |

#### SELF DIAGNOSTIC RESULT Refer to EXL-140, "WITH INTELLIGENT KEY : DTC Index".

# DATA MONITOR

Monitor item

| Monitor Item<br>[Unit]           | MAIN SIG-<br>NALS | Description   |
|----------------------------------|-------------------|---|
| MOTOR FAN REQ<br>[1/2/3/4]       | ×                 | Displays the value of the cooling fan speed request signal received from ECM via CAN communication. |
| AC COMP REQ<br>[Off/On]          | ×                 | Displays the status of the A/C compressor request signal received from ECM via CAN communication.   |
| TAIL&CLR REQ<br>[Off/On]         | ×                 | Displays the status of the position light request signal received from BCM via CAN communication.   |
| HL LO REQ<br>[Off/On]            | ×                 | Displays the status of the low beam request signal received from BCM via CAN communication.         |
| HL HI REQ<br>[Off/On]            | ×                 | Displays the status of the high beam request signal received from BCM via CAN communication.        |
| FR FOG REQ<br>[Off/On]           | ×                 | Displays the status of the front fog light request signal received from BCM via CAN communication.  |
| FR WIP REQ<br>[Stop/1LOW/Low/Hi] | ×                 | Displays the status of the front wiper request signal received from BCM via CAN communication.      |

#### < SYSTEM DESCRIPTION >

| Monitor Item<br>[Unit]                    | MAIN SIG-<br>NALS | Description  |
|---|-------------------|--|
| WIP AUTO STOP<br>[STOP P/ACT P]           | ×                 | Displays the status of the front wiper auto stop signal judged by IPDM E/R.  |
| WIP PROT<br>[Off/BLOCK]                   | ×                 | Displays the status of the front wiper fail-safe operation judged by IPDM E/R.   |
| IGN RLY1 -REQ<br>[Off/On]                 |                   | Displays the status of the ignition switch ON signal received from BCM via CAN communication.  |
| IGN RLY<br>[Off/On]                       | ×                 | Displays the status of the ignition relay judged by IPDM E/R.  |
| PUSH SW<br>[Off/On]                       |                   | Displays the status of the push-button ignition switch judged by IPDM E/R.   |
| INTER/NP SW<br>[Off/On]                   |                   | Displays the status of the clutch interlock switch (M/T models) or shift position (CVT models) judged by IPDM E/R.   |
| ST RLY CONT<br>[Off/On]                   |                   | Displays the status of the starter relay status signal received from BCM via CAN communication.  |
| IHBT RLY -REQ<br>[Off/On]                 |                   | Displays the status of the starter control relay signal received from BCM via CAN communication.   |
| ST/INHI RLY<br>[Off/ ST ON/INHI ON/UNKWN] |                   | Displays the status of the starter relay and starter control relay judged by IPDM E/R.   |
| DETENT SW<br>[Off/On]                     |                   | Displays the status of the CVT shift selector (detention switch) judged by IPDM E/ R.  |
| S/L RLY -REQ<br>[Off/On]                  |                   | NOTE:<br>The item is indicated, but not monitored.   |
| S/L STATE<br>[LOCK/UNLOCK/UNKWN]          |                   | NOTE:<br>The item is indicated, but not monitored.   |
| DTRL REQ<br>[Off/On]                      |                   | Displays the status of the daytime running light request signal received from BCM via CAN communication.<br><b>NOTE:</b><br>This item is monitored only the vehicle with daytime running light system. |
| OIL P SW<br>[Open/Close]                  |                   | Displays the status of the oil pressure switch judged by IPDM E/R.   |
| HOOD SW<br>[Off/On]                       |                   | NOTE:<br>The item is indicated, but not monitored.   |
| THFT HRN REQ<br>[Off/On]                  |                   | Displays the status of the theft warning horn request signal received from BCM via CAN communication.  |
| HORN CHIRP<br>[Off/On]                    |                   | Displays the status of the horn reminder signal received from BCM via CAN com-<br>munication.  |

#### ACTIVE TEST

Test item

| Test item   | Operation | Description  |  |
|-------------|-----------|--|--|
| HORN        | On        | Operates horn relay for 20 ms.                             |  |
|             | Off       | OFF  |  |
| FRONT WIPER | Lo        | Operates the front wiper relay.                            |  |
|             | Hi        | Operates the front wiper relay and front wiper high relay. |  |
|             | 1         | OFF  |  |
| MOTOR FAN   | 2         | Operates the cooling fan relay (LO operation).             |  |
|             | 3         | Operates the cooling for roles (11) operation)             |  |
|             | 4         | Operates the cooling fan relay (HI operation).             |  |

## < SYSTEM DESCRIPTION >

| Test item      | Operation | Description  |   |
|----------------|-----------|--|---|
|                | Off       | OFF  | 1 |
| EXTERNAL LAMPS | TAIL      | Operates the tail lamp relay.  |   |
|                | Lo        | Operates the headlamp low relay.   | E |
|                | Hi        | Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 sec-<br>ond intervals. |   |
|                | Fog       | Operates the front fog lamp relay.   | ( |

D

Е

F

G

Н

J

Κ

EXL

Μ

Ν

Ο

Ρ

< SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (IPDM E/R) (WITHOUT INTELLIGENT KEY SYS-TEM)

Diagnosis Description

INFOID:000000007946345

## AUTO ACTIVE TEST

Description

In auto active test mode, the IPDM E/R sends a drive signal to the following systems to check their operation.

- Oil pressure warning lamp
- Rear window defogger
- Front wiper (LO, HI)
- Parking lamps
- Side marker lamp
- License plate lamps
- Tail lamps
- Front fog lamps
- Headlamps (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan

### **Operation Procedure**

1. Close the hood and lift the wiper arms from the windshield. (Prevent windshield damage due to wiper operation)

#### NOTE:

When auto active test is performed with hood opened, sprinkle water on windshield beforehand.

- 2. Turn the ignition switch OFF.
- Turn the ignition switch ON, and within 20 seconds, press the driver door switch 10 times. Then turn the ignition switch OFF.
   CAUTION:

#### Close passenger door.

- 4. Turn the ignition switch ON within 10 seconds. After that the horn sounds once and the auto active test starts.
- 5. The oil pressure warning lamp starts blinking when the auto active test starts.
- 6. After a series of the following operations is repeated 3 times, auto active test is completed.

#### NOTE:

When auto active test mode has to be cancelled halfway through test, turn the ignition switch OFF. **CAUTION:** 

- If auto active test mode cannot be actuated, check door switch system. Refer to <u>DLK-55,</u> <u>"Component Function Check"</u>.
- Do not start the engine.

#### Inspection in Auto Active Test Mode

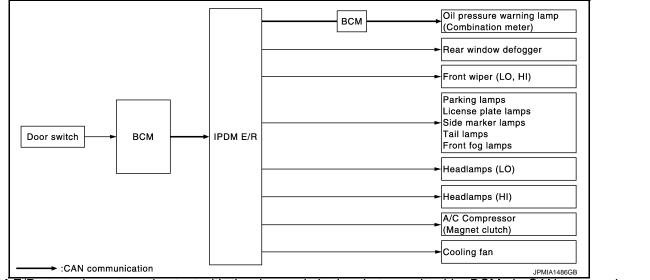
When auto active test mode is actuated, the following 6 steps are repeated 3 times.

| Operation sequence | Inspection location  | Operation   |
|--------------------|--|---|
| А                  | Oil pressure warning lamp  | Blinks continuously during operation of auto active test            |
| 1                  | Rear window defogger   | 10 seconds  |
| 2                  | Front wiper  | LO for 5 seconds $\rightarrow$ HI for 5 seconds                     |
| 3                  | <ul> <li>Parking lamps</li> <li>Side marker lamps</li> <li>License plate lamps</li> <li>Tail lamps</li> <li>Front fog lamps</li> </ul> | 10 seconds  |
| 4                  | Headlamps  | LO for 10 seconds $\rightarrow$ HI ON $\Leftrightarrow$ OFF 5 times |

#### < SYSTEM DESCRIPTION >

| Operation sequence | Inspection location            | Operation                                       | А |
|--------------------|--------------------------------|---|---|
| 5                  | A/C compressor (magnet clutch) | $ON \Leftrightarrow OFF 5 times$                |   |
| 6                  | Cooling fan                    | LO for 5 seconds $\rightarrow$ HI for 5 seconds | R |

#### Concept of auto active test



• IPDM E/R starts the auto active test with the door switch signals transmitted by BCM via CAN communication. Therefore, the CAN communication line between IPDM E/R and BCM is considered normal if the auto active test starts successfully.

• The auto active test facilitates troubleshooting if any systems controlled by IPDM E/R cannot be operated.

Diagnosis chart in auto active test mode

| Symptom  | Inspection contents  |     | Possible cause  |   |
|--|--|-----|---|---|
|  |  | YES | BCM signal input circuit  |   |
| Rear window defogger does not operate  | Perform auto active test.<br>Does the rear window defog-<br>ger operate? | NO  | <ul> <li>Rear window defogger</li> <li>Rear window defogger<br/>ground circuit</li> <li>Harness or connector be-<br/>tween IPDM E/R and rear<br/>window defogger</li> <li>IPDM E/R</li> </ul> | ŀ |
| Any of the following components do not operate   |  | YES | BCM signal input circuit  |   |
| <ul> <li>Parking lamps</li> <li>Side marker lamps</li> <li>License plate lamps</li> <li>Tail lamps</li> <li>Front fog lamps</li> <li>Headlamps (HI, LO)</li> <li>Front wiper (HI, LO)</li> </ul> | Perform auto active test.<br>Does the applicable system<br>operate?      |     | <ul> <li>Lamp or motor</li> <li>Lamp or motor ground circuit</li> <li>Harness or connector between IPDM E/R and applicable system</li> <li>IPDM E/R</li> </ul>                                | 1 |
| A/C compressor does not operate  | Perform auto active test.<br>Does the magnet clutch oper-<br>ate?        | YES | <ul> <li>A/C amp. signal input circuit</li> <li>CAN communication signal<br/>between A/C amp. and<br/>ECM</li> <li>CAN communication signal<br/>between ECM and IPDM E/<br/>R</li> </ul>      | ( |
|  | ale :  | NO  | <ul> <li>Magnet clutch</li> <li>Harness or connector be-<br/>tween IPDM E/R and mag-<br/>net clutch</li> <li>IPDM E/R</li> </ul>  |   |

D

Ε

F

Н

### < SYSTEM DESCRIPTION >

| Symptom                                    | Inspection contents   |     | Possible cause   |
|--|---|-----|--|
|  | Perform auto active test.<br>Does the oil pressure warning<br>lamp blink? | YES | <ul> <li>Harness or connector be-<br/>tween IPDM E/R and oil<br/>pressure switch</li> <li>Oil pressure switch</li> <li>IPDM E/R</li> </ul>   |
| Oil pressure warning lamp does not operate |   | NO  | <ul> <li>CAN communication signal<br/>between IPDM E/R and<br/>BCM</li> <li>CAN communication signal<br/>between BCM and combi-<br/>nation meter</li> <li>Combination meter</li> </ul> |
|  | Perform auto active test.   | YES | <ul> <li>ECM signal input circuit</li> <li>CAN communication signal<br/>between ECM and IPDM E/<br/>R</li> </ul>   |
| Cooling fan does not operate               | Does the cooling fan operate?   | NO  | <ul> <li>Cooling fan motor</li> <li>Harness or connector be-<br/>tween IPDM E/R and cool-<br/>ing fan motor</li> <li>IPDM E/R</li> </ul>   |

# CONSULT Function (IPDM E/R)

INFOID:000000007946346

### APPLICATION ITEM

CONSULT performs the following functions via CAN communication with IPDM E/R.

| Diagnosis mode           | Description   |
|--------------------------|---|
| Ecu Identification       | Allows confirmation of IPDM E/R part number.  |
| Self Diagnostic Result   | Displays the diagnosis results judged by IPDM E/R.                                      |
| Data Monitor             | Displays the real-time input/output data from IPDM E/R input/output data.               |
| Active Test              | IPDM E/R can provide a drive signal to electronic components to check their operations. |
| CAN Diag Support Monitor | The results of transmit/receive diagnosis of CAN communication can be read.             |

### SELF DIAGNOSTIC RESULT Refer to <u>EXL-151, "WITHOUT INTELLIGENT KEY : DTC Index"</u>.

## DATA MONITOR

Monitor item

| Monitor Item<br>[Unit]           | MAIN SIG-<br>NALS | Description   |  |
|----------------------------------|-------------------|---|--|
| MOTOR FAN REQ<br>[1/2/3/4]       | ×                 | Displays the value of the cooling fan speed request signal received from ECM via CAN communication. |  |
| AC COMP REQ<br>[Off/On]          | ×                 | Displays the status of the A/C compressor request signal received from ECM via CAN communication.   |  |
| TAIL&CLR REQ<br>[Off/On]         | ×                 | Displays the status of the position light request signal received from BCM via CAN communication.   |  |
| HL LO REQ<br>[Off/On]            | ×                 | Displays the status of the low beam request signal received from BCM via CAN communication.         |  |
| HL HI REQ<br>[Off/On]            | ×                 | Displays the status of the high beam request signal received from BCM via CAN communication.        |  |
| FR FOG REQ<br>[Off/On]           | ×                 | Displays the status of the front fog light request signal received from BCM via CAN communication.  |  |
| FR WIP REQ<br>[Stop/1LOW/Low/Hi] | ×                 | Displays the status of the front wiper request signal received from BCM via CAN communication.      |  |

#### < SYSTEM DESCRIPTION >

| Monitor Item<br>[Unit]          | MAIN SIG-<br>NALS | Description  |  |
|---------------------------------|-------------------|--|--|
| WIP AUTO STOP<br>[STOP P/ACT P] | ×                 | Displays the status of the front wiper auto stop signal judged by IPDM E/R.  |  |
| WIP PROT<br>[Off/BLOCK]         | ×                 | Displays the status of the front wiper fail-safe operation judged by IPDM E/R.   |  |
| IGN RLY<br>[Off/On]             | ×                 | Displays the status of the ignition relay judged by IPDM E/R.  |  |
| INTER/NP SW<br>[Off/On]         |                   | Displays the status of the shift position (CVT models) judged by IPDM E/R.   |  |
| ST RLY-REQ<br>[Off/On]          |                   | Displays the status of the starter relay status signal received from BCM via CAN communication.  |  |
| DTRL REQ<br>[Off/On]            |                   | Displays the status of the daytime running light request signal received from BC via CAN communication.<br>NOTE:<br>This item is monitored only the vehicle with daytime running light system. |  |
| OIL P SW<br>[Open/Close]        |                   | Displays the status of the oil pressure switch judged by IPDM E/R.   |  |
| HOOD SW<br>[Off/On]             |                   | NOTE:<br>The item is indicated, but not monitored.   |  |
| THFT HRN REQ<br>[Off/On]        |                   | Displays the status of the theft warning horn request signal received from BCM via CAN communication.  |  |
| HORN CHIRP<br>[Off/On]          |                   | Displays the status of the horn reminder signal received from BCM via CAN com-<br>munication.  |  |

#### ACTIVE TEST

Test item

| Test item      | Operation | Description  |
|----------------|-----------|--|
| HORN           | On        | Operates horn relay for 20 ms.   |
|                | Off       | OFF  |
| FRONT WIPER    | Lo        | Operates the front wiper relay.  |
|                | Hi        | Operates the front wiper relay and front wiper high relay.                                     |
| MOTOR FAN      | 1         | OFF  |
|                | 2         | Operates the cooling fan relay (LO operation).   |
|                | 3         | Operates the cooling for relay (HI operation)  |
|                | 4         | Operates the cooling fan relay (HI operation).   |
|                | Off       | OFF  |
|                | TAIL      | Operates the tail lamp relay.  |
| EXTERNAL LAMPS | Lo        | Operates the headlamp low relay.   |
|                | Hi        | Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 sec-<br>ond intervals. |
|                | Fog       | Operates the front fog lamp relay.   |

### < DTC/CIRCUIT DIAGNOSIS >

# DTC/CIRCUIT DIAGNOSIS

## POWER SUPPLY AND GROUND CIRCUIT BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM)

## BCM (BODY CONTROL SYSTEM) (WITH INTELLIGENT KEY SYSTEM) : Diagnosis Procedure

INFOID:000000007946348

## 1.CHECK FUSE AND FUSIBLE LINK

Check that the following fuse and fusible link are not blown.

| Signal name          | Fuse and fusible link No. |  |
|----------------------|---------------------------|--|
| Battony power supply | G                         |  |
| Battery power supply | 8                         |  |

Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.

NO >> GO TO 2.

## 2.CHECK POWER SUPPLY CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect BCM connectors.
- Check voltage between BCM harness connector and ground. 3.

| (•        | +)                 | ()     | Voltage<br>(Approx.) |
|-----------|--------------------|--------|----------------------|
| B         | CM                 |        | (Approx.)            |
| Connector | Connector Terminal |        |                      |
| M70       | 70                 | Ground | Pottony voltage      |
| WI7 U     | 57                 |        | Battery voltage      |

Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair harness or connector.

 ${f 3.}$ CHECK GROUND CIRCUIT

Check continuity between BCM harness connector and ground.

| B         | CM       |        | Continuity |
|-----------|----------|--------|------------|
| Connector | Terminal | Ground | Continuity |
| M70       | 67       | *      | Existed    |

#### Does continuity exist?

YES >> INSPECTION END

NO >> Repair harness or connector.

BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM)

#### BCM (BODY CONTROL SYSTEM) (WITHOUT INTELLIGENT KEY SYSTEM) : Diagnosis Procedure INFOID:000000007946349

1. CHECK FUSES AND FUSIBLE LINK

Check that the following fuses and fusible link are not fusing.

#### < DTC/CIRCUIT DIAGNOSIS >

| Signal name   |  |  |  |                    |  | Fuses and fusible link No.  |
|---|--|--|--|--------------------|--|---|
|   | Br   | attery power s   | supply                                     |                    |  | 8   |
| Dattery power suppry  |  |  |  |                    |  | G   |
|   | A  | ACC power su   | ipply                                      |                    |  | 20  |
|   | lgı  | nition power s   | supply                                     |                    |  | 2   |
| NO >><br>2.CHECK<br>1. Turn ig<br>2. Discon   | <ul> <li>Replace</li> <li>blown.</li> <li>GO TO 2</li> <li>POWER \$</li> <li>pnition switted</li> </ul>  | SUPPLY C   | IRCUIT                                     |                    |  | ring the affected circuit if a fuse or fusible link is            |
|   | Terminals  |  |  |                    |  |   |
| (+  |  |  | Igniti                                     | on switch po       | osition                                    |   |
| BC  | CM   | (-)  | OFF  | ACC                | ON   |   |
| Connector   | Terminal   |  |  |                    |  |   |
| M67   | 70<br>57   | -  | Battery voltage                            | Battery voltage    | Battery voltage                            |   |
| M65   | 11   | Ground   | Approx.<br>0 V                             | Battery<br>voltage | Battery voltage                            |   |
| M65 -   |  |  | Approx                                     | Approx.            | <b>D</b>                                   |   |
|   | 38<br>surement v   | /alue norm   | Approx.<br>0 V<br>al?                      | 0 V                | Battery<br>voltage                         |   |
| <u>s the meas</u><br>YES >><br>NO >><br><b>3.</b> CHECK   | surement v<br>> GO TO 3<br>> Repair ha<br>GROUND   | arness or c<br>CIRCUIT   | al?<br>onnector.                           | 0 V                | voltage                                    |   |
| Is the meas<br>YES >><br>NO >><br><b>3.</b> CHECK   | surement v<br>> GO TO 3<br>> Repair ha<br>GROUND<br>tinuity betw   | arness or c<br>CIRCUIT   | al?<br>onnector.                           | 0 V                | voltage                                    | ıd.   |
| Is the meas<br>YES >><br>NO >><br><b>3.</b> CHECK<br>Check cont   | SUREMENT V<br>SOTO 3<br>SREPAIR ha<br>GROUND<br>tinuity betw<br>BCM  | arness or c<br>CIRCUIT<br>veen BCM   | onnector.                                  | onnector           | voltage                                    | d.  |
| Is the meas<br>YES >><br>NO >><br><b>3.</b> CHECK   | SUREMENT V<br>SOTO 3<br>SREPAIR ha<br>GROUND<br>tinuity betw<br>BCM  | arness or c<br>CIRCUIT   | al?<br>onnector.                           | onnector           | voltage<br>and grour                       | d.  |
| Is the meas<br>YES >><br>NO >><br>3.CHECK<br>Check cont<br>Connecto<br>M67<br>Does contin<br>YES >>   | SUREMENT V<br>S GO TO 3<br>S Repair ha<br>GROUND<br>tinuity betw<br>BCM<br>Dr Te<br>nuity exist?<br>S INSPECT<br>S Repair ha   | CIRCUIT<br>veen BCM<br>erminal<br>67<br>CION END<br>arness or c                        | onnector.<br>harness c<br>Ground           | onnector<br>C      | and grour<br>ontinuity<br>Existed          |   |
| Is the meas<br>YES >><br>NO >><br>3.CHECK<br>Check cont<br>Connecto<br>M67<br>Does contin<br>YES >><br>NO >><br>IPDM E/I                        | SUITEMENT V<br>SOTO 3<br>SOTO 3<br>S | CIRCUIT<br>veen BCM<br>erminal<br>67<br>CION END<br>arness or c<br>HINTEL              | onnector.<br>harness c<br>Ground           | onnector           | and grour<br>ontinuity<br>Existed          |   |
| Is the meas<br>YES >><br>NO >><br>3.CHECK<br>Check cont<br>Connecto<br>M67<br>Does contin<br>YES >><br>NO >><br>IPDM E/I<br>IPDM E/I<br>1.CHECK | SUITEMENT V<br>SOTO 3<br>SOTO 3<br>S | CIRCUIT<br>veen BCM<br>erminal<br>67<br>CION END<br>arness or c<br>HINTEL<br>INTEL     | onnector.<br>harness c<br>Ground<br>LIGENT | onnector           | and grour<br>ontinuity<br>Existed<br>SYSTE | M)<br>) : Diagnosis Procedure INFOID:000000007946350              |
| Is the meas<br>YES >><br>NO >><br>3.CHECK<br>Check cont<br>Connecto<br>M67<br>Does contin<br>YES >><br>NO >><br>IPDM E/                         | SUITEMENT V<br>SOTO 3<br>SOTO 3<br>S | CIRCUIT<br>veen BCM<br>erminal<br>67<br>CION END<br>arness or c<br>HINTEL<br>INTEL     | onnector.<br>harness c<br>Ground<br>LIGENT | onnector           | and grour<br>ontinuity<br>Existed<br>SYSTE | M)<br>) : Diagnosis Procedure INFOID:000000007946350              |
| Is the meas<br>YES >><br>NO >><br>3.CHECK<br>Check cont<br>Connecto<br>M67<br>Does contir<br>YES >><br>NO >><br>IPDM E/I<br>IPDM E/I<br>1.CHECK | Surement V<br>SGO TO 3<br>Repair ha<br>GROUND<br>tinuity betw<br>BCM<br>Dr Te<br>NSPECT<br>NSPECT<br>Repair ha<br>(WITH<br>R (WITH<br>FUSES A<br>the followi   | CIRCUIT<br>veen BCM<br>erminal<br>67<br>CION END<br>arness or c<br>HINTEL<br>INTEL     | onnector.<br>harness c<br>Ground<br>LIGENT | onnector           | and grour<br>ontinuity<br>Existed<br>SYSTE | M)<br>) : Diagnosis Procedure INFOID:000000007946350              |
| Is the meas<br>YES >><br>NO >><br>3.CHECK<br>Check cont<br>Connecto<br>M67<br>Does contir<br>YES >><br>NO >><br>IPDM E/I<br>IPDM E/I<br>1.CHECK | Surement V<br>GO TO 3<br>Repair ha<br>GROUND<br>tinuity betw<br>BCM<br>or Te<br>nuity exist?<br>NSPECT<br>Repair ha<br>Repair ha<br>R (WITH<br>FUSES A<br>the followi<br>Sign  | CIRCUIT<br>Veen BCM<br>erminal<br>67<br>CION END<br>arness or c<br>HINTELL<br>ND FUSIB | onnector.<br>harness c<br>Ground<br>LIGENT | onnector           | and grour<br>ontinuity<br>Existed<br>SYSTE | M)<br>) : Diagnosis Procedure ™FOID:000000007946350<br>not blown. |

Is the fuse fusing?

< DTC/CIRCUIT DIAGNOSIS >

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.

NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector.
- 3. Check voltage between IPDM E/R harness connector and the ground.

|           | Terminals          |        |                      |
|-----------|--------------------|--------|----------------------|
| (1        | +)                 | (-)    | Voltage<br>(Approx.) |
| IPDN      | /I E/R             | (-)    | (Approx.)            |
| Connector | Connector Terminal |        |                      |
| E9        | 1                  | Ground |                      |
| 23        | 2                  | Cround | Battery voltage      |
| E10       | 8                  |        |                      |

Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair the harness or connector.

## **3.**CHECK GROUND CIRCUIT

Check continuity between IPDM E/R harness connectors and the ground.

| IPDM E    | E/R      |        | Continuity |  |
|-----------|----------|--------|------------|--|
| Connector | Terminal | Ground | Continuity |  |
| E11       | 9        | Ground | Existed    |  |
| E12       | 19       |        | Existed    |  |

Does continuity exist?

YES >> INSPECTION END

NO >> Repair the harness or connector.

## IPDM E/R (WITHOUT INTELLIGENT KEY SYSTEM)

# IPDM E/R (WITHOUT INTELLIGENT KEY SYSTEM) : Diagnosis Procedure

INFOID:000000007946351

## **1.**CHECK FUSES AND FUSIBLE LINK

Check that the following IPDM E/R fuses or fusible links are not blown.

| Signal name          | Fuses and fusible link No. |
|----------------------|----------------------------|
|                      | C                          |
| Battery power supply | D                          |
|                      | J                          |

Is the fuse fusing?

YES >> Replace the blown fuse or fusible link after repairing the affected circuit if a fuse or fusible link is blown.

NO >> GO TO 2.

2. CHECK POWER SUPPLY CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect IPDM E/R connector.

3. Check voltage between IPDM E/R harness connector and the ground.

#### < DTC/CIRCUIT DIAGNOSIS >

| (+)       (-)       Voltage<br>(Approx.)         Connector       Terminal       (-)         E9       1       Ground       Battery voltage         E10       8       Connector         NO       >> Repair the harness or connector.         3C-HECK IGNITION POWER SUPPLY CIRCUIT         1. Turn the ignition switch ON.         2. Check voltage between IPDM E/R harness connector and the ground.         (+)       (-)       Voltage<br>(Approx.)         Connector       Terminal       Ground         Is the measurement value normal?       YES         YES       > GO TO 4.       NO         NO       >> Repair the harness or connector.         4CHECK GROUND CIRCUIT       Iter instruct of FF.         2. Check continuity between IPDM E/R harness connectors and the ground.         Image: Solution Switch OFF.       Ground         Connector       Terminal       Ground         Existed       19       Existed  |   | Terminals  |  |  |                 |  |
|---|---|--|--|--|-----------------|--|
| E9       1       Ground       Battery voltage         E10       8       Battery voltage         s the measurement value normal?       YES       >> GO TO 3.         NO       >> Repair the harness or connector.       A.CHECK IGNITION POWER SUPPLY CIRCUIT         1. Turn the ignition switch ON.       Concertor       Terminals         (+)       (-)       Voltage         (+)       (-)       Voltage         (+)       (-)       Voltage         (Approx.)       Connector       Terminal         Ground       Battery voltage         s the measurement value normal?       Yes         YES       >S OT 0 4.         NO       >> Repair the harness or connector.         4. CHECK GROUND CIRCUIT       1.         1. Turn the ignition switch OFF.       2.         2. Check continuity between IPDM E/R harness connectors and the ground.         IPDM E/R       Ground         E11       9         E12       19         Open E/R       Ground         Existed       Existed  |   |  | - (-)  |  |                 |  |
| E9       2       Ground       Battery voltage         E10       8       Ground       Battery voltage         Is the measurement value normal?       YES       >> GO TO 3.         NO       >> Repair the harness or connector.         3. CHECK IGNITION POWER SUPPLY CIRCUIT         1. Turn the ignition switch ON.       2.         2. Check voltage between IPDM E/R harness connector and the ground.         IPDM E/R       (-)         (+)       (-)         Voltage       (Approx.)         Connector       Terminal         (+)       (-)         Voltage       (Approx.)         Connector       Terminal         State measurement value normal?       YES         YES       >> GO TO 4.         NO       >> Repair the harness or connector.         4.CHECK GROUND CIRCUIT       1.         1. Turn the ignition switch OFF.       2.         2. Check continuity between IPDM E/R harness connectors and the ground.         IPDM E/R       Ground         E11       9         E12       19         Does continuity exist?         YES       >> INSPECTION END  | Connector   | Terminal   |  |  |                 |  |
| Is the measurement value normal?         YES       >> GO TO 3.         NO       >> Repair the harness or connector.         3.CHECK IGNITION POWER SUPPLY CIRCUIT         1. Turn the ignition switch ON.         2. Check voltage between IPDM E/R harness connector and the ground.         Image: the measurement value normal?         YES       >> GO TO 4.         NO       >> Repair the harness or connector.         4. CHECK GROUND CIRCUIT         1. Turn the ignition switch OFF.         2. Check continuity between IPDM E/R harness connectors and the ground.         Image: the measurement value normal?         YES       >> GO TO 4.         NO       >> Repair the harness or connector.         4.CHECK GROUND CIRCUIT         1. Turn the ignition switch OFF.         2. Check continuity between IPDM E/R harness connectors and the ground.         IPDM E/R       Continuity         Ground       Continuity         E11       9         E12       19         Does continuity existi?         YES       >> INSPECTION END   | E9 -  |  | Ground   | Battery voltage                            | -               |  |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $  | E10   | 8  |  |  |                 |  |
| NO       >> Repair the harness or connector.         3. CHECK IGNITION POWER SUPPLY CIRCUIT         1. Turn the ignition switch ON.         2. Check voltage between IPDM E/R harness connector and the ground.         Image: team of the ignition switch ON.         2. Check voltage between IPDM E/R harness connector and the ground.         Image: team of the ignition switch ON.         Image: team of team o | s the measure   | ement value  | normal?  |  |                 |  |
| 1. Turn the ignition switch ON.         2. Check voltage between IPDM E/R harness connector and the ground.         Terminals         (+)       (-)         Voltage<br>(Approx.)         Connector       Terminal         E12       18         S the measurement value normal?         YES       >> GO TO 4.         NO       >> Repair the harness or connector.         4.CHECK GROUND CIRCUIT         1. Turn the ignition switch OFF.         2. Check continuity between IPDM E/R harness connectors and the ground.         IPDM E/R         Ground         IPDM E/R         Ground         Image: Continuity between IPDM E/R harness connectors and the ground.         Image: Continuity between IPDM E/R harness connectors and the ground.         Image: Continuity between IPDM E/R         E11       9         E12       19         Consector       Terminal         Ground       Existed         Does continuity exist?       YES         YES       > INSPECTION END   | NO >> Re  | epair the hari   |  |  |                 |  |
| Terminals         (+)       (-)       Voltage<br>(Approx.)         Connector       Terminal       Ground         E12       18       Battery voltage         s the measurement value normal?       YES       >> GO TO 4.         YES       >> GO TO 4.       Battery voltage         NO       >> Repair the harness or connector.       4.         4. CHECK GROUND CIRCUIT       1.       Turn the ignition switch OFF.         2.       Check continuity between IPDM E/R harness connectors and the ground.         IPDM E/R       Ground       Continuity         E11       9       Ground       Existed         Does continuity exist?       YES       >> INSPECTION END   | . Turn the ig   | gnition switch   | n ON.  |  |                 |  |
| (+)       (-)       Voltage<br>(Approx.)         Connector       Terminal       Ground         E12       18       Battery voltage         Is the measurement value normal?<br>YES >> GO TO 4.<br>NO >> Repair the harness or connector.       Battery voltage         1. Turn the ignition switch OFF.       Check continuity between IPDM E/R harness connectors and the ground.         Image: the trained between the trained betw   | . Check vol   | tage betweer   | n IPDM E/R ha  | rness connector ar                         | d the ground.   |  |
| (+)       (-)       Voltage<br>(Approx.)         Connector       Terminal       Ground         E12       18       Battery voltage         Is the measurement value normal?<br>YES >> GO TO 4.<br>NO >> Repair the harness or connector.       Battery voltage         1. Turn the ignition switch OFF.       Check continuity between IPDM E/R harness connectors and the ground.         Image: the trained between the trained betw   |   | <b>T.</b>  |  |  |                 |  |
| IPDM E/R     Ground       Connector     Terminal       E12     18       Battery voltage       Is the measurement value normal?       YES     >> GO TO 4.       NO     >> Repair the harness or connector.       4.CHECK GROUND CIRCUIT       1.     Turn the ignition switch OFF.       2.     Check continuity between IPDM E/R harness connectors and the ground.       IPDM E/R     Continuity       Ground     Existed       E11     9       E12     19       Does continuity exist?       YES     >> INSPECTION END  | /   |  | ( )  |  |                 |  |
| Connector       Terminal       Ground         E12       18       Battery voltage         Is the measurement value normal?       YES >> GO TO 4.         YES >> GO TO 4.       NO >> Repair the harness or connector.         A.CHECK GROUND CIRCUIT       1. Turn the ignition switch OFF.         1. Turn the ignition switch OFF.       2. Check continuity between IPDM E/R harness connectors and the ground.         Image: PDM E/R       Ground         Image: Ground       Continuity         E11       9         E12       19         Does continuity exist?       YES >> INSPECTION END  |   |  | (-)  |  |                 |  |
| E12     18     Battery voltage       Is the measurement value normal?<br>YES >> GO TO 4.<br>NO >> Repair the harness or connector.     A.CHECK GROUND CIRCUIT       1. Turn the ignition switch OFF.     2. Check continuity between IPDM E/R harness connectors and the ground.       IPDM E/R     Continuity       E11     9       E12     19       Does continuity exist?       YES >> INSPECTION END  |   |  | Ground   | /·   |                 |  |
| Is the measurement value normal?         YES       >> GO TO 4.         NO       >> Repair the harness or connector. <b>4.CHECK GROUND CIRCUIT</b> 1. Turn the ignition switch OFF.         2. Check continuity between IPDM E/R harness connectors and the ground.         IPDM E/R         Ground         E11       9         E12       19         Does continuity exist?         YES       >> INSPECTION END  |   |  | Giodila  | Battery voltage                            | -               |  |
| YES >> GO TO 4.<br>NO >> Repair the harness or connector.<br>4.CHECK GROUND CIRCUIT<br>1. Turn the ignition switch OFF.<br>2. Check continuity between IPDM E/R harness connectors and the ground.<br>IPDM E/R       Continuity         Ground       Continuity         E11       9         E12       19         Does continuity exist?         YES       >> INSPECTION END   |   | 10   |  | Dattery voltage                            |                 |  |
| 2. Check continuity between IPDM E/R harness connectors and the ground.          IPDM E/R       Continuity         Connector       Terminal         Ground       Ground         E11       9         E12       19         Does continuity exist?         YES       >> INSPECTION END   | YES >> G  | O TO 4.  |  | tor  | -               |  |
| Connector     Terminal       E11     9       E12     19       Does continuity exist?       YES     >> INSPECTION END  | YES >> G<br>NO >> R<br>CHECK GF   | O TO 4.<br>epair the han<br>ROUND CIR(   | ness or connec<br>CUIT                                     | tor.                                       |                 |  |
| E11     9       E12     19       Does continuity exist?       YES       >> INSPECTION END   | YES >> G<br>NO >> R<br>CHECK GF   | O TO 4.<br>epair the harn<br>ROUND CIRC<br>gnition switch  | ness or connec<br>CUIT<br>1 OFF.                           |  | and the ground. |  |
| Does continuity exist?<br>YES >> INSPECTION END   | YES >> G<br>NO >> R<br>CHECK GF<br>. Turn the iq<br>. Check cor   | O TO 4.<br>epair the ham<br>ROUND CIRC<br>gnition switch<br>ntinuity betwe   | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I           | harness connector                          | and the ground. |  |
| YES >> INSPECTION END   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the iq<br>Check cor<br>IPDM B<br>Connector<br>E11                                       | O TO 4.<br>epair the ham<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9  | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I           | harness connector                          | and the ground. |  |
|   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the ig<br>Check cor<br>IPDM I<br>Connector<br>E11<br>E12                                | O TO 4.<br>epair the harn<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9<br>19                                 | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I           | harness connector                          | and the ground. |  |
|   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the ig<br>Check cor<br>IPDM F<br>Connector<br>E11<br>E12<br>Does continuit<br>YES >> IN | O TO 4.<br>epair the harr<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9<br>19<br>19<br>ty exist?<br>ISPECTION | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I<br>Ground | harness connector<br>Continuity<br>Existed | and the ground. |  |
|   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the ig<br>Check cor<br>IPDM F<br>Connector<br>E11<br>E12<br>Does continuit<br>YES >> IN | O TO 4.<br>epair the harr<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9<br>19<br>19<br>ty exist?<br>ISPECTION | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I<br>Ground | harness connector<br>Continuity<br>Existed | and the ground. |  |
|   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the ig<br>Check cor<br>IPDM F<br>Connector<br>E11<br>E12<br>Does continuit<br>YES >> IN | O TO 4.<br>epair the harr<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9<br>19<br>19<br>ty exist?<br>ISPECTION | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I<br>Ground | harness connector<br>Continuity<br>Existed | and the ground. |  |
|   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the ig<br>Check cor<br>IPDM F<br>Connector<br>E11<br>E12<br>Does continuit<br>YES >> IN | O TO 4.<br>epair the harr<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9<br>19<br>19<br>ty exist?<br>ISPECTION | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I<br>Ground | harness connector<br>Continuity<br>Existed | and the ground. |  |
|   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the ig<br>Check cor<br>IPDM F<br>Connector<br>E11<br>E12<br>Does continuit<br>YES >> IN | O TO 4.<br>epair the harr<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9<br>19<br>19<br>ty exist?<br>ISPECTION | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I<br>Ground | harness connector<br>Continuity<br>Existed | and the ground. |  |
|   | YES >> G<br>NO >> R<br>CHECK GF<br>Turn the ig<br>Check cor<br>IPDM F<br>Connector<br>E11<br>E12<br>Does continuit<br>YES >> IN | O TO 4.<br>epair the harr<br>ROUND CIRC<br>gnition switch<br>ntinuity betwee<br>E/R<br>Terminal<br>9<br>19<br>19<br>ty exist?<br>ISPECTION | ness or connec<br>CUIT<br>OFF.<br>een IPDM E/R I<br>Ground | harness connector<br>Continuity<br>Existed | and the ground. |  |

< DTC/CIRCUIT DIAGNOSIS >

# HEADLAMP (HI) CIRCUIT

## Component Function Check

INFOID:000000007772570

## **1.**CHECK HEADLAMP (HI) OPERATION

**®**IPDM E/R AUTO ACTIVE TEST

- 1. Start IPDM E/R auto active test. Refer to <u>EXL-33</u>, "<u>Diagnosis Description</u>" (with Intelligent Key) or <u>EXL-38</u>, "<u>Diagnosis Description</u>" (without Intelligent Key).
- 2. Check that the headlamp switches to the high beam.

CONSULT ACTIVE TEST

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With operating the test items, check that the headlamp (HI) is turned ON.
  - Hi : Headlamp (HI) ON

#### Off : Headlamp (HI) OFF

#### NOTE:

ON/OFF is repeated 1 second each.

#### Is the headlamp (HI) turned ON?

- YES >> Headlamp (HI) circuit is normal.
- NO >> Refer to EXL-46. "Diagnosis Procedure".

### Diagnosis Procedure

1.CHECK HEADLAMP (HI) OUTPUT VOLTAGE

**CONSULT ACTIVE TEST** 

- 1. Turn the ignition switch OFF.
- 2. Disconnect the headlamp connector.
- 3. Turn the ignition switch ON.
- 4. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 5. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

|     | Т                  | erminals |        | Test item |                    |  |
|-----|--------------------|----------|--------|-----------|--------------------|--|
|     | (+)                |          | (-)    |           | Voltage            |  |
|     | IPDM E             | /R       |        | EXTERNAL  | (Approx.)          |  |
| Cor | Connector Terminal |          |        | LAMPS     |                    |  |
| RH  |                    | 49       | Ground | Hi        | Battery<br>voltage |  |
|     | E15                |          | Clound | Off       | 0 V                |  |
| LH  | 210                | 50       |        | Hi        | Battery voltage    |  |
|     |                    |          |        | Off       | 0 V                |  |

Is the measurement value normal?

NO >> GO TO 3.

2. CHECK HEADLAMP (HI) OPEN CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect the IPDM E/R connector.

3. Check continuity between the IPDM E/R harness connector and the headlamp harness connector.

INFOID:000000007772571

#### < DTC/CIRCUIT DIAGNOSIS >

| IPDM E/R               |                     | 'R                                    |                   | Headl                 | amp                               | Continuity   |                              |
|------------------------|---------------------|---------------------------------------|-------------------|-----------------------|-----------------------------------|--------------|------------------------------|
| Conr                   | nector              | Terminal                              | Co                | onnector              | Terminal                          | - Continuity |                              |
| RH                     | E15                 | 49                                    |                   | E45                   | 1                                 | Existed      |                              |
| LH                     | E13 -               | 50                                    |                   | E26                   | 1                                 | LAISIEU      |                              |
| YES (\<br>YES (\<br>NO | Vith dayt<br>>> Rep | laytime ru<br>time runn<br>air the ha | ing lig<br>arness | t syster<br>ses or co | stem)>>G<br>m)>>GO T<br>nnectors. |              |                              |
|                        |                     | DLAMP (<br>ition swite                |                   |                       |                                   |              |                              |
| 2. Che                 | eck that t          | he follow                             | ring fu           | ses are r             | not fusing.                       |              |                              |
|                        | Unit                |                                       | Loo               | cation                | Fuse No.                          | Capacity     |                              |
| Headlan                | np HI (RH)          |                                       | IPD               | M E/R                 | #51                               | 10 A         |                              |
| Headlan                | np HI (LH)          |                                       | IPD               | M E/R                 | #52                               | 10 A         |                              |
| ls the fu              | se fusing           | <u>g?</u>                             |                   |                       | ·                                 | •            | •                            |
| YES<br>NO              | >> GO<br>>> Rep     | TO 4.<br>lace IPD                     | M E/R             | ł.                    |                                   |              |                              |
| 4                      |                     |                                       |                   |                       | ORT CIRC                          | UIT          |                              |
| 1. Dise                | connect             | the IPDN                              | 1 E/R (           | connecto              | r.                                |              |                              |
| 2. Che                 | eck conti           | nuity betv                            | ween t            | the IPDN              | I E/R harn                        | ess connec   | tor terminal and the ground. |
|                        | IPDM                | E/D                                   |                   |                       |                                   |              |                              |
| <u> </u>               | nnector             | E/R<br>Term                           | vinal             |                       |                                   | Continuity   |                              |
| RH                     |                     | 49                                    |                   | Gro                   | ound                              |              |                              |
|                        | E15                 | 4:                                    |                   |                       |                                   | Not existed  |                              |
|                        | ontinuity           |                                       | 5                 |                       |                                   |              |                              |
| YES                    |                     |                                       | arness            | ses or co             | nnectors                          | And then re  | place the fuse.              |
| NO                     |                     |                                       |                   |                       |                                   |              | is fusing again.)            |
| 5.сне                  | CK HEA              | DLAMP (                               | (HI) GI           | ROUND                 | OPEN CII                          | RCUIT        |                              |
|                        |                     |                                       |                   |                       |                                   |              | nd the ground.               |
|                        |                     |                                       |                   |                       |                                   |              |                              |
|                        | Headl               | amp                                   |                   |                       |                                   | 0            |                              |
| Со                     | nnector             | Term                                  | inal              | -                     |                                   | Continuity   |                              |
| RH                     | E45                 | 2                                     | 2                 | Gro                   | ound –                            |              |                              |
| LH                     | E26                 | 2                                     | 2                 |                       |                                   | Existed      |                              |
| Does co                | ontinuity           | exist?                                |                   |                       |                                   |              |                              |
| YES<br>NO              | >> Rep              | lace the                              |                   |                       | bulb.<br>nnectors.                |              |                              |
| -                      | •                   |                                       |                   |                       |                                   | RCUIT (LH)   |                              |
| 6.сн⊧                  |                     |                                       | . ,               |                       |                                   | . ,          | or and the ground.           |
|                        | ontinuit            | hotwoor                               | C                 | ieauid[]]             | л сп нате                         | SS CONNECT   |                              |
|                        | ontinuity           | <sup>,</sup> betweer                  |                   |                       |                                   |              |                              |
|                        | -                   |                                       |                   |                       |                                   | Continuity   |                              |
| Check c                | continuity<br>Headl |                                       |                   |                       | bund                              | Continuity   |                              |

Does continuity exist?

E26

2

LH

< DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 7.

NO >> Repair the harnesses or connectors.

**7.**CHECK CONTINUITY BETWEEN HEADLAMP HIGH (RH) AND DAYTIME RUNNING LIGHT RELAY-1

- 1. Remove the daytime running light relay-1.
- 2. Check continuity between the headlamp RH harness connector and the daytime running light relay-1 harness connector.

| Headlamp |        |          | Daytime runnin | Continuity |         |
|----------|--------|----------|----------------|------------|---------|
| Conr     | nector | Terminal | Connector      | Terminal   | Existed |
| RH       | E45    | 2        | E57            | 1          | LAISted |

Does continuity exist?

YES >> GO TO 8.

NO >> Repair the harness or connector.

 $\mathbf{8}$ . CHECK THE DAYTIME RUNNING LIGHT RELAY-1 GROUND OPEN CIRCUIT

Check continuity between the daytime running light relay-1 harness connector and the ground.

| Daytime running I | ight relay-1 |          | Continuity |
|-------------------|--------------|----------|------------|
| Connector         | Terminal     | Ground   | Existed    |
| E57               | 4            | <b>†</b> | LAISLEU    |

Does continuity exist?

YES >> GO TO 9.

NO >> Repair the harness or connector.

9.CHECK THE DAYTIME RUNNING LIGHT RELAY-1

Check the daytime running light relay-1. Refer to EXL-57, "Component Inspection (Daytime Running Light Relay-1)".

Is the daytime running light relay-1 normal?

- YES >> Replace the headlamp (HI) bulb.
- NO >> Replace the daytime running light relay-1.

< DTC/CIRCUIT DIAGNOSIS > HEADLAMP (LO) CIRCUIT А **Component Function Check** INFOID:000000007772572 **1.**CHECK HEADLAMP (LO) OPERATION В IPDM E/R AUTO ACTIVE TEST Start IPDM E/R auto active test. Refer to EXL-33, "Diagnosis Description" (with Intelligent Key) or EXL-38, 1. "Diagnosis Description" (without Intelligent Key). 2. Check that the headlamp is turned ON. **©CONSULT ACTIVE TEST** 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item. D 2. With operating the test items, check that the headlamp (LO) is turned ON. Lo : Headlamp (LO) ON Е : Headlamp (LO) OFF Off Is the headlamp (LO) turned ON? F YES >> Headlamp (LO) is normal. NO (With daytime running light system)>>Refer to EXL-49, "WITH DAYTIME RUNNING LIGHT SYSTEM : Diagnosis Procedure". NO (Without daytime running light system)>>Refer to EXL-52, "WITHOUT DAYTIME RUNNING LIGHT SYSTEM : Diagnosis Procedure". WITH DAYTIME RUNNING LIGHT SYSTEM Н WITH DAYTIME RUNNING LIGHT SYSTEM : Diagnosis Procedure INFOID:000000007772573 **1.**CHECK HEADLAMP LOW (LH) OUTPUT VOLTAGE CONSULT ACTIVE TEST 1. Turn the ignition switch OFF. Disconnect the headlamp LH connector. 3. Turn the ignition switch ON. Select "EXTERNAL LAMPS" of IPDM E/R active test item. 4.

5. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

|           | Terminals | Test item |           |                 |
|-----------|-----------|-----------|-----------|-----------------|
| (         | (+)       |           | Test item | Voltage         |
| IPDN      | IPDM E/R  |           | EXTERNAL  | (Approx.)       |
| Connector | Terminal  |           | LAMPS     |                 |
| E15       | E15 51    |           | Lo        | Battery voltage |
|           |           |           | Off       | 0 V             |
|           |           |           |           |                 |

Is the measurement value normal?

YES >> GO TO 2. NO >> GO TO 8.

2.CHECK HEADLAMP LOW (RH) OUTPUT VOLTAGE

CONSULT ACTIVE TEST

- 1. Turn the ignition switch OFF.
- 2. Remove the daytime running light relay-2.
- 3. Turn the ignition switch ON.
- 4. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 5. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

Κ

EXL

Μ

Ν

Ρ

#### < DTC/CIRCUIT DIAGNOSIS >

|           | Terminals     | Test item |          |                 |
|-----------|---------------|-----------|----------|-----------------|
| (+        | (+) (–)       |           |          | Voltage         |
| IPDN      | I E/R         |           | EXTERNAL | (Approx.)       |
| Connector | Terminal      |           | LAMPS    |                 |
| E15       | Gro<br>E15 52 |           | Lo       | Battery voltage |
|           |               |           | Off      | 0 V             |

Is the measurement value normal?

YES >> GO TO 3.

NO >> GO TO 8.

 ${
m 3.check}$  headlamp low (LH) open circuit

- 1. Turn the ignition switch OFF.
- 2. Disconnect the IPDM E/R connector.
- 3. Check continuity between the IPDM E/R harness connector and the headlamp LH harness connector.

| IPDM      | E/R      | Headlar            | Continuity |            |
|-----------|----------|--------------------|------------|------------|
| Connector | Terminal | Connector Terminal |            | Continuity |
| E15       | 51       | E26                | 3          | Existed    |

Does continuity exist?

YES >> GO TO 4.

NO >> Repair the harnesses or connectors.

**4.**CHECK CONTINUITY BETWEEN IPDM E/R AND THE DAYTIME RUNNING LIGHT RELAY-2

1. Turn the ignition switch OFF.

- 2. Disconnect the IPDM E/R connector.
- 3. Check continuity between the IPDM E/R harness connector and the daytime running light relay-2 harness connector.

| IPDM E/R  |          | Daytime running    | Continuity |            |  |
|-----------|----------|--------------------|------------|------------|--|
| Connector | Terminal | Connector Terminal |            | Continuity |  |
| E15       | 52       | E59                | 2          | Existed    |  |
| LIJ       | 52       | L39                | 5          | LAISIEU    |  |

#### Does continuity exist?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

### ${f 5.}$ CHECK THE DAYTIME RUNNING LIGHT RELAY-2 GROUND OPEN CIRCUIT

Check continuity between the daytime running light relay-2 harness connector and the ground.

| Daytime runnii | ng light relay-2 |        | Continuity |
|----------------|------------------|--------|------------|
| Connector      | Terminal         | Ground | Continuity |
| E59            | 1                |        | Existed    |

Does continuity exist?

YES >> GO TO 6.

NO >> Repair the harnesses or connectors.

6.CHECK CONTINUITY BETWEEN THE DAYTIME RUNNING LIGHT RELAY-2 AND HEADLAMP RH

- 1. Turn the ignition switch OFF.
- 2. Disconnect the headlamp RH connector.
- 3. Check continuity between the daytime running light relay-2 harness connector and the headlamp RH harness connector.

#### < DTC/CIRCUIT DIAGNOSIS >

| Daytime runnii   | ng light relay-2                                     | 2 Headla                         | mp RH              |                                | -   |
|--|--|----------------------------------|--------------------|--------------------------------|---|
| Connector  | Terminal   | Connector                        | Terminal           | <ul> <li>Continuity</li> </ul> |   |
| E59  | 3  | E45                              | 3                  | Existed                        | -   |
| Does continu   | -  |                                  |                    |                                | -   |
|  | GO TO 7.   |                                  |                    |                                |   |
| NO >> F  | Repair the h   | arnesses or co                   | nnectors.          |                                |   |
| 7. СНЕСК Т   | HE DAYTIN  | IE RUNNING L                     | IGHT REL           | AY-2                           |   |
|  | aytime runr  | ning light relay-                | 2. Refer to        | ) <u>EXL-58,</u> "(            | Component Inspection (Daytime Running Light |
| <u>Relay-2)"</u>                                       |  |                                  |                    |                                |   |
|  |  | ght relay-2 norr                 | <u>nal?</u>        |                                |   |
|  | GO TO 10.<br>Replace the                             | daytime runnir                   | na liaht rela      | v-2                            |   |
| В.снеск н  | •  | •                                | ig light fold      | y 2.                           |   |
|  |  |                                  |                    |                                |   |
|  | ignition swi<br>at the follov                        | ton OFF.                         | not fusina.        |                                |   |
|  |  |                                  |                    |                                |   |
| Un   | it   | Location                         | Fuse No.           | Capacity                       |   |
| Headlamp LO  | (LH)   | IPDM E/R                         | #53                | 10 A                           |   |
| Headlamp LO  | (RH)   | IPDM E/R                         | #54                | 10 A                           |   |
| s the fuse fu  | sing?  |                                  |                    |                                |   |
| YES >> 0   | GO TO 9.   |                                  |                    |                                |   |
| ~  | Replace IPD  |                                  |                    |                                |   |
| <b>J.</b> CHECK H                                      | IEADLAMP   | (LO) SHORT (                     | CIRCUIT            |                                |   |
| 1. Disconne  | ect the IPDN   | A E/R connecto                   | or.                |                                |   |
| 2. Check co  | ontinuity bet  | ween the IPDN                    | /I E/R harne       | ess connect                    | or terminal and the ground.                 |
|  |  |                                  |                    |                                |   |
|  | PDM E/R  |                                  |                    | Continuity                     |   |
| Connecto   |  |                                  | ound               |                                |   |
|  | E15  | 51                               |                    | Not existed                    |   |
| RH   | 5  | 52                               |                    |                                |   |
| Does continu   | •  |                                  |                    |                                |   |
|  |  | arnesses or co<br>fuse. (Replace |                    |                                |   |
|  | •  | · ·                              |                    |                                | <b>o o</b> <i>i</i>                         |
|  |  | IP (LO) GROUI                    |                    |                                |   |
| Check contin   | uity betwee  | n the headlam                    | p LH harne         | ss connecto                    | r and the ground.                           |
|  |  |                                  |                    |                                |   |
|  | adlamp RH  |                                  |                    | Continuity                     |   |
| Connecto   |  |                                  | ound               | Existed                        |   |
|  | E26 2  | 2                                |                    |                                |   |
|  | · · · · · · · · · · · · · · · · · · ·                |                                  |                    |                                |   |
| Does continu   | -  |                                  |                    |                                |   |
| Does continu<br>YES >> (                               | GO TO 11.  |                                  | nnostoro           |                                |   |
| Does continu<br>YES >> (<br>NO >> F                    | GO TO 11.<br>Repair the h                            | arnesses or co                   |                    |                                |   |
| <u>Does continu</u><br>YES >> (<br>NO >> F<br>11.CHECK | GO TO 11.<br>Repair the h<br>CONTINUI                | TY BETWEEN                       | HEADLAN            | IP LOW (RH                     | ) AND DAYTIME RUNNING LIGHT RELAY-1         |
| Does continu<br>YES >> (<br>NO >> F<br>11.CHECK        | GO TO 11.<br>Repair the h<br>CONTINUI<br>the daytime | TY BETWEEN                       | HEADLAN<br>elay-1. |                                | ) AND DAYTIME RUNNING LIGHT RELAY-1         |

### < DTC/CIRCUIT DIAGNOSIS >

| Headlamp RH |                  |   | Daytime running | Continuity |         |
|-------------|------------------|---|-----------------|------------|---------|
| Conr        | Connector Termin |   | Connector       | Terminal   | Existed |
| RH          | E45              | 2 | E57             | 3          | LAISIEU |

#### Does continuity exist?

YES >> GO TO 12.

NO >> Repair the harness or connector.

# 12. CHECK THE DAYTIME RUNNING LIGHT RELAY-1 GROUND OPEN CIRCUIT

Check continuity between the daytime running light relay-1 harness connector and the ground.

| Daytime running I | ight relay-1 |        | Continuity |
|-------------------|--------------|--------|------------|
| Connector         | Terminal     | Ground | Existed    |
| E57               | 4            | †<br>  | LAISted    |

Does continuity exist?

YES >> GO TO 13.

NO >> Repair the harness or connector.

**13.**CHECK THE DAYTIME RUNNING LIGHT RELAY-1

Check the daytime running light relay-1. Refer to EXL-57. "Component Inspection (Daytime Running Light Relay-1)".

Is the daytime running light relay-1 normal?

YES >> Replace the headlamp (LO) bulb. (Bulb socket is abnormally.)

NO >> Replace the daytime running light relay-1.

WITHOUT DAYTIME RUNNING LIGHT SYSTEM

WITHOUT DAYTIME RUNNING LIGHT SYSTEM : Diagnosis Procedure

### **1.**CHECK HEADLAMP (LO) OUTPUT VOLTAGE

### CONSULT ACTIVE TEST

- 1. Turn the ignition switch OFF.
- 2. Disconnect the headlamp connector.
- 3. Turn the ignition switch ON.
- 4. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 5. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

|                   |        | Terminals            | Test item  |          |                 |
|-------------------|--------|----------------------|------------|----------|-----------------|
|                   | (      | +)                   | (-)        | restitem | Voltage         |
|                   | IPD    | /I E/R               |            | EXTERNAL | (Approx.)       |
| Conr              | nector | Terminal             |            | LAMPS    |                 |
| RH                |        | 52                   | Ground     | Lo       | Battery voltage |
|                   | E15    |                      |            | Off      | 0 V             |
| LH                | - E15  | 5                    |            | Lo       | Battery voltage |
|                   |        |                      |            | Off      | 0 V             |
| Is the            | meas   | urement valu         | ie normal? |          |                 |
| YES<br>NO<br>2 CL | >>     | GO TO 2.<br>GO TO 3. | (LO) OPEN  |          |                 |

1. Turn the ignition switch OFF.

## HEADI AMP (I.O) CIRCUIT

|  |   |  |                            |  |   | _                                   |  |
|--|---|--|----------------------------|--|---|-------------------------------------|--|
|  | IPDM E  | E/R  | Headlamp                   |  | Continuity  | _                                   |  |
| Conn   | ector   | Terminal   | Connector                  | Terminal   | Continuity  |                                     |  |
| RH   | E15 —   | 52   | E45                        | 3  | Existed   |                                     |  |
| LH   | 210   | 51   | E26                        | 3  | Exiotod   | _                                   |  |
| YES<br>NO  | >> G<br>>> R  | •  | arnesses or (<br>(LO) FUSE | connectors.  |   |                                     |  |
|  |   | gnition swi<br>t the follow  | tch OFF.<br>wing fuses are | e not fusing.                                      |   |                                     |  |
|  | Unit  |  | Lotion                     | Fuse No.   | Capacity  | -                                   |  |
| Headla   | amp LO (F   | RH)  | IPDM E/R                   | #54  | 15 A  | -                                   |  |
| Headla   | amp LO (L   | _H)  | IPDM E/R                   | #53  | 15 A  | -                                   |  |
| үез<br>NO<br><b>1.</b> сні   | >> R<br>ECK HE  | O TO 4.<br>eplace IPI<br>ADLAMP  | (LO) SHORT                 |  |   |                                     |  |
| YES<br>NO<br><b>1.</b> CHI   | >> G<br>>> R<br>ECK HE<br>sconned<br>neck cor   | O TO 4.<br>eplace IPI<br>ADLAMP<br>ct the IPDI<br>ntinuity be  | (LO) SHORT                 | tor.   | ess connec  | _<br>ctor and the ground.<br>_      |  |
| YES<br>NO<br><b>1.</b> CHI<br>. Dia<br>2. Ch   | >> G<br>>> R<br>ECK HE<br>sconned<br>neck cor   | O TO 4.<br>eplace IPI<br>ADLAMP<br>ct the IPDI   | (LO) SHORT                 | tor.<br>DM E/R harn                                | ess connec<br>Continuity  | <br>ctor and the ground.<br>_       |  |
| YES<br>NO<br>1.CHI<br>. Dis<br>2. Cr<br>Cor<br>RH<br>LH  | >> G<br>>> R<br>ECK HE<br>sconned<br>neck cor<br>IPE<br>nnector<br>E15  | O TO 4.<br>eplace IPI<br>ADLAMP<br>ot the IPDI<br>ntinuity be<br>DM E/R<br>Termi<br>52<br>51   | (LO) SHORT                 | ound   |   | _<br>ctor and the ground.<br>_<br>_ |  |
| YES<br>NO<br>1.CHI<br>. Di:<br>2. Cr<br>Cor<br>RH<br>LH<br>Does C<br>YES<br>NO<br>5.CHI          | >> G<br>>> R<br>ECK HE<br>sconnec<br>neck cor<br>IPE<br>nector<br>E15<br>>> R<br>>> R<br>ECK HE                         | O TO 4.<br>eplace IPI<br>ADLAMP<br>t the IPDI<br>ntinuity be<br>DM E/R<br>Termi<br>52<br>51<br>y exist?<br>epair the h<br>eplace the<br>ADLAMP                   | (LO) SHORT                 | ound<br>connectors. /<br>ce IPDM E/F               | Continuity<br>Not existed<br>And then re<br>R if the fuse<br>RCUIT                | ctor and the ground.<br>            |  |
| YES<br>NO<br>1.CHI<br>. Di:<br>2. Cr<br>Cor<br>RH<br>LH<br>Does C<br>YES<br>NO<br>5.CHI          | >> G<br>>> R<br>ECK HE<br>sconnec<br>neck cor<br>IPE<br>nector<br>E15<br>continuit<br>>> R<br>ECK HE<br>continu         | O TO 4.<br>eplace IPI<br>ADLAMP<br>the IPDI<br>ntinuity be<br>M E/R<br>Termi<br>52<br>51<br><u>y exist?</u><br>epair the h<br>eplace the<br>ADLAMP<br>ity betwee | (LO) SHORT                 | ound<br>connectors. /<br>ce IPDM E/F               | Continuity<br>Not existed<br>And then re<br>R if the fuse<br>RCUIT                | eplace the fuse.                    |  |
| YES<br>NO<br>1.CHI<br>. Dis<br>2. Cr<br>Cor<br>RH<br>LH<br>Does C<br>YES<br>NO<br>D.CHI<br>Check | >> G<br>>> R<br>ECK HE<br>sconnec<br>neck cor<br>IPE<br>nector<br>E15<br>continuit<br>>> R<br>ECK HE<br>continu         | O TO 4.<br>eplace IPI<br>ADLAMP<br>t the IPDI<br>ntinuity be<br>DM E/R<br>Termi<br>52<br>51<br>y exist?<br>epair the h<br>eplace the<br>ADLAMP                   | (LO) SHORT                 | ound<br>connectors. /<br>ce IPDM E/F<br>ID OPEN CI | Continuity<br>Not existed<br>And then re<br>R if the fuse<br>RCUIT                | eplace the fuse.                    |  |
| YES<br>NO<br>1.CHI<br>. Dis<br>2. Cr<br>Cor<br>RH<br>LH<br>Does C<br>YES<br>NO<br>D.CHI<br>Check | >> G<br>>> R<br>ECK HE<br>sconnec<br>neck con<br>IPE<br>nector<br>E15<br>continuit<br>>> R<br>>> R<br>ECK HE<br>continu | O TO 4.<br>eplace IPI<br>ADLAMP<br>the IPDI<br>ntinuity be<br>DM E/R<br>Termi<br>52<br>51<br><u>y exist?</u><br>eplace the<br>ADLAMP<br>ity betwee               | (LO) SHORT                 | ound<br>connectors. Acce IPDM E/R<br>ID OPEN CI    | Continuity<br>Not existed<br>And then re<br>R if the fuse<br>RCUIT<br>connector a | eplace the fuse.                    |  |

YES >> Replace the headlamp (LO) bulb. (Bulb socket is abnormally.) NO >> Repair the harnesses or connectors.

Ρ

< DTC/CIRCUIT DIAGNOSIS >

## FRONT FOG LAMP CIRCUIT

## Component Function Check

**1.**CHECK FRONT FOG LAMP OPERATION

**®IPDM E/R AUTO ACTIVE TEST** 

- 1. Start IPDM E/R auto active test. Refer to <u>EXL-33</u>, "Diagnosis Description" (with Intelligent Key) or <u>EXL-38</u>, "Diagnosis Description" (without Intelligent Key).
- 2. Check that the front fog lamp is turned ON.

CONSULT ACTIVE TEST

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With operating the test items, check that the front fog lamp is turned ON.

### Fog : Front fog lamp ON

#### Off : Front fog lamp OFF

#### Is the front fog lamp turned ON?

YES >> Front fog lamp circuit is normal.

NO >> Refer to EXL-54, "Diagnosis Procedure".

### Diagnosis Procedure

### **1.**CHECK FRONT FOG LAMP FUSE

1. Turn the ignition switch OFF.

2. Check that the following fuse is not fusing.

| Unit           | Location | Fuse No. | Capacity |
|----------------|----------|----------|----------|
| Front fog lamp | IPDM E/R | #50      | 15 A     |

Is the fuse fusing?

YES >> GO TO 2. NO >> GO TO 3.

NO *>>* GOTO 3. **7** 

## 2. CHECK FRONT FOG LAMP SHORT CIRCUIT

1. Disconnect IPDM E/R connector and the front fog connector.

2. Check continuity between the IPDM E/R harness connector and the ground.

| IPDM E/R |           |    |        | Continuity  |  |
|----------|-----------|----|--------|-------------|--|
| Conr     | Connector |    | Ground | Continuity  |  |
| RH       | E12       | 21 | Ground | Not existed |  |
| LH       | E12       | 22 |        | NUL EXISTED |  |

Does continuity exist?

YES >> Repair the harnesses or connectors. And then replace the fuse.

NO >> Replace the fuse. (Replace IPDM E/R if the fuse is fusing again.)

3.CHECK FRONT FOG LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

YES >> GO TO 4.

NO >> Replace the bulb.

**4.**CHECK FRONT FOG LAMP OUTPUT VOLTAGE

### CONSULT ACTIVE TEST

1. Disconnect the front fog lamp connector.

- 2. Turn the ignition switch ON.
- 3. Select "EXTERNAL LAMPS" of IPDM E/R active test item.

## EXL-54

INFOID:000000007772575

INFOID:000000007772576

## FRONT FOG LAMP CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

4. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

|    | т        | erminals  |        |           |                 |     |
|----|----------|-----------|--------|-----------|-----------------|-----|
|    |          | Ciriniais |        | Test item |                 |     |
|    | (+)      |           | (-)    |           | Voltage         |     |
|    | IPDM E/R |           |        | EXTERNAL  | (Approx.)       |     |
| Co | nnector  | Terminal  |        | LAMPS     |                 |     |
| RH |          | 21        | Ground | Fog       | Battery voltage |     |
|    | E12      | 22        |        | Ground    | Off             | 0 V |
| LH |          |           | 1      | Fog       | Battery voltage |     |
|    |          |           |        | Off       | 0 V             |     |

Is the measurement value normal?

YES >> GO TO 5.

NO >> Replace IPDM E/R.

## 5. CHECK FRONT FOG LAMP OPEN CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect IPDM E/R connector.

3. Check continuity between the IPDM E/R harness connector and the front fog lamp harness connector.

|      | IPDM E | /R       | Front fog | Continuity |            |  |
|------|--------|----------|-----------|------------|------------|--|
| Conr | nector | Terminal | Connector | Terminal   | Continuity |  |
| RH   | E12    | 21       | E48       | 1          | Existed    |  |
| LH   | E12    | 22       | E30       | 1          | EXISTED    |  |

Does continuity exist?

YES >> GO TO 6.

NO >> Repair the harnesses or connectors.

#### 6.CHECK FRONT FOG LAMP GROUND CIRCUIT OPEN CIRCUIT

Check continuity between the front fog lamp harness connector and the ground.

|      | Front fog la | amp |        | Continuity |
|------|--------------|-----|--------|------------|
| Conr | Connector    |     | Ground | Continuity |
| RH   | E48          | 2   | Ground | Existed    |
| LH   | E30          | 2   |        | Existed    |

Does continuity exist?

YES >> Replace the front fog lamp.

NO >> Repair the harnesses or connectors.

Ρ

Ν

А

F

Н

Κ

EXL

Μ

## DAYTIME RUNNING LIGHT RELAY CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

## DAYTIME RUNNING LIGHT RELAY CIRCUIT

### Component Function Check

#### NOTE:

Check the headlamp (HI) circuit if the headlamp (HI) is not turned ON. Refer to EXL-46, "Component Function Check".

#### **CAUTION:**

#### Before performing the diagnosis, check that the headlamp (HI) bulb is normal.

**1**.CHECK DAYTIME RUNNING LIGHT OPERATION

#### **©CONSULT ACTIVE TEST**

- 1. Select "DAYTIME RUNNING LIGHT" of BCM (HEADLAMP) active test item.
- 2. With operating the test items, check that daytime running light operation.
  - On : Daytime running light ON

#### Off : Daytime running light OFF

#### Is the daytime running light turned ON/OFF?

YES >> Daytime running light relay-1 circuit is normal. >> Refer to <u>EXL-56, "Diagnosis Procedure"</u>.

NO

### **Diagnosis** Procedure

#### **1**.CHECK DAYTIME RUNNING LIGHT RELAY FUSE

Check that the following fuse is not fusing.

| Unit                          | Location                       | Fuse No. | Capacity |
|-------------------------------|--------------------------------|----------|----------|
| Daytime running light relay-1 | Fuse and fusible<br>link block | #32      | 10A      |

### Is the fuse fusina?

YES >> Replace the fuse after repairing the applicable circuit.

NO >> GO TO 2.

# **2.**CHECK DAYTIME RUNNING LIGHT RELAY-1 POWER SUPPLY

- Remove daytime running light relay-1. 1.
- Check voltage between daytime running light relay-1 harness connector and the ground. 2.

|              | Terminals         |        |                   |  |  |  |
|--------------|-------------------|--------|-------------------|--|--|--|
| (            | +)                | ()     | Voltage (Approx.) |  |  |  |
| Daytime runn | ing light relay-1 |        |                   |  |  |  |
| Connector    | Terminal          | Ground |                   |  |  |  |
| E57          | 2                 | Giouna | Pattony voltage   |  |  |  |
| EST          | 5                 |        | Battery voltage   |  |  |  |

#### Is the measurement value normal?

YES >> GO TO 3.

NO >> Repair harnesses or connectors.

 ${
m 3.}$ CHECK DAYTIME RUNNING LIGHT RELAY-1

Check daytime running light relay-1. Refer to EXL-57, "Component Inspection (Daytime Running Light Relay-<u>1)"</u>.

### Is the daytime running light relay-1 normal?

YES >> GO TO 4.

>> Replace daytime running light relay-1. NO

 ${f 4}.$ CHECK DAYTIME RUNNING LIGHT RELAY-1 CONTROL SIGNAL OUTPUT

### **EXL-56**

INFOID:000000007772577

INFOID:000000007772578

## DAYTIME RUNNING LIGHT RELAY CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

|   |   |   | >   |  |   |                    |
|---|---|---|---|--|---|--------------------|
|   | LT ACTIVE   | E TEST  |   |  |   |                    |
|   | ne ignition   | switch OFF  |   |  |   | А                  |
|   |   | Inning light  | relay-1.  |  |   |                    |
|   |   | switch ON.<br>= RUNNIN(   | GLIGHT" of I  | BCM (HEAD LA   | AMP) active test item.                            | _                  |
|   |   |   |   |  | DM E/R harness connector and the ground.          | В                  |
|   | _   |   |   | -  |   |                    |
|   | Terminals   |   | <b>-</b>  |  | =   | С                  |
| (+  | -)  | (–)   | Test item   |  |   | 0                  |
| IPDM  | I E/R   |   | DAYTIME   | Voltage (Approx.)  | )   |                    |
| Connector   | Terminal  |   | RUNNING   |  |   | D                  |
|   | Terrinidi   | Ground  | LIGHT   | 0.14   | _   |                    |
| E13   | 28  |   | On  | 0 V  | _   | _                  |
|   |   | _   | Off   | Battery voltage  | _   | E                  |
| Is the meas   |   |   |   |  |   |                    |
| YES >>  |   | aytime run<br>Light Relay   |   | ay-1 circuit. Re   | efer to EXL-57, "Component Inspection (Daytime    | F                  |
| Fixed at 0  | V >> GO   |   | <u></u> .   |  |   |                    |
| Fixed at b  | attery volt   | age >>Rep   | lace IPDM E   | /R.  |   |                    |
| <b>5.</b> CHECK   | DAYTIME   |   | LIGHT REL   | AY-1 CONTRO  | DL SIGNAL OPEN CIRCUIT                            | G                  |
|   |   | running lig   |   |  |   |                    |
|   |   |   | ess connecto  | r.   |   |                    |
|   |   | between I   | PDM E/R ha  | rness connecto   | or and daytime running light relay-1 harness con- | Н                  |
| nector.   |   |   |   |  |   |                    |
|   | /IE/R   | Douting a ru  | aning light roles   | . 4  |   | 1                  |
|   |   | -   | nning light relay   | — Continuity   |   |                    |
| Connector   | Terminal  | Connecto<br>E57   |   |  |   |                    |
|   | 28  |   | 1   | Existed  |   |                    |
| E13   | -   |   | •   |  |   | J                  |
| Does conti  | nuity exist   | ?   |   |  |   | J                  |
| Does conti<br>YES >>  | nuity exist   | <u>?</u><br>6.  |   | tors   |   |                    |
| Does conti<br>YES >><br>NO >>   | nuity exist<br>> GO TO 6<br>> Repair th   | ?<br>?<br>ie harnesse   | es or connec  |  |   | J<br>K             |
| Does contil<br>YES >><br>NO >><br>6.CHECK   | nuity exist<br>> GO TO 6<br>> Repair th<br>DAYTIME  | ?<br>be harnesse<br>RUNNING   | s or connec   | AY- CONTROL  | SIGNAL SHORT CIRCUIT                              |                    |
| Does contil<br>YES >><br>NO >><br>6.CHECK   | nuity exist<br>> GO TO 6<br>> Repair th<br>DAYTIME  | ?<br>be harnesse<br>RUNNING   | s or connec   |  |   | K                  |
| Does contil<br>YES >><br>NO >><br>6.CHECK   | nuity exist<br>- GO TO 6<br>- Repair th<br>DAYTIME<br>tinuity betw  | ?<br>be harnesse<br>RUNNING   | s or connec   | AY- CONTROL  |   |                    |
| Does conti<br>YES >><br>NO >><br>6.CHECK<br>Check cont  | nuity exist<br>GO TO 6<br>Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R  | ?<br>ie harnesse<br>RUNNING<br>veen IPDM  | es or connec<br>i LIGHT REL<br>E/R harness  | AY- CONTROL  |   | K                  |
| Does contil<br>YES >><br>NO >><br>6.CHECK<br>Check cont   | nuity exist<br>GO TO 6<br>Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R  | ?<br>ie harnesse<br>RUNNING<br>veen IPDM<br>erminal   | s or connec   | AY- CONTROI  |   | K                  |
| Does conti<br>YES >><br>NO >><br>6.CHECK<br>Check cont<br>Connecto<br>E13   | nuity exist<br>GO TO 6<br>Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>or To   | 2<br>ie harnesse<br>E RUNNING<br>veen IPDM<br>erminal<br>28   | es or connec<br>i LIGHT REL<br>E/R harness  | AY- CONTROI  |   | K                  |
| Does conti<br>YES >><br>NO >><br>6.CHECK<br>Check cont<br>Connecto<br>E13<br>Does conti   | nuity exist<br>GO TO 6<br>> Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>pr To<br>nuity exist  | ?<br>ie harnesse<br>RUNNING<br>veen IPDM<br>erminal<br>28<br>?  | es or connect<br>LIGHT REL<br>E/R harness<br>Ground   | AY- CONTROL<br>s connector and<br>Continuity<br>Not existed                                  |   | K<br>EXL<br>M      |
| Does contil<br>YES >><br>NO >><br>6.CHECK<br>Check cont<br>Connecto<br>E13<br>Does contil<br>YES >>   | nuity exist<br>- GO TO 6<br>- Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>pr To<br>nuity exist<br>- Repair th   | ?<br>ie harnesse<br>RUNNING<br>veen IPDM<br>erminal<br>28<br>?  | es or connec<br>i LIGHT REL<br>E/R harness  | AY- CONTROL<br>s connector and<br>Continuity<br>Not existed                                  |   | K                  |
| Does conti<br>YES >><br>NO >><br>6.CHECK<br>Check cont<br>Connecto<br>E13<br>Does conti<br>YES >><br>NO >>  | nuity exist<br>GO TO 6<br>Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>or To<br>nuity exist<br>Repair th<br>Repair ch  | 2<br>3.<br>4.<br>5.<br>5.<br>5.<br>5.<br>5.<br>5.<br>5.<br>5.<br>5.<br>5                              | es or connect<br>ELIGHT REL<br>E/R harness<br>Ground  | AY- CONTROL<br>s connector and<br>Continuity<br>Not existed                                  | the ground.                                       | K<br>EXL<br>M      |
| Does contil<br>YES >><br>NO >><br>6.CHECK<br>Check cont<br>E13<br>Does contil<br>YES >><br>NO >><br>Compon  | nuity exist<br>- GO TO 6<br>- Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>- Tr<br>- nuity exist<br>- Repair th<br>- Replace<br>ent Insp   | e harnesse<br>RUNNING<br>veen IPDM<br>erminal<br>28<br>PDM E/R.<br>ection (E                          | es or connect<br>ELIGHT REL<br>E/R harness<br>Ground  | AY- CONTROL<br>s connector and<br>Continuity<br>Not existed<br>tors.                         | the ground.                                       | K<br>EXL<br>M      |
| Does contil<br>YES >><br>NO >><br>6.CHECK<br>Check conti<br>Connecto<br>E13<br>Does contil<br>YES >><br>NO >><br>Compon<br>1.CHECK<br>1. Turn th              | nuity exist<br>> GO TO 6<br>> Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>or To<br>nuity exist<br>> Repair th<br>> Replace<br>ent Insp<br>DAYTIME<br>ne ignition  | P<br>RUNNING<br>RUNNING<br>RUNNING<br>reminal<br>28<br>PDM E/R.<br>ection (E<br>RUNNING<br>switch OFF | es or connect<br>ELIGHT REL<br>E/R harness<br>Ground<br>es or connect<br>Daytime R<br>ELIGHT REL                  | AY- CONTROL<br>s connector and<br>Continuity<br>Not existed<br>tors.                         | the ground.                                       | K<br>EXL<br>M      |
| Does conti<br>YES >><br>NO >><br>6.CHECK<br>Check cont<br>Connecto<br>E13<br>Does conti<br>YES >><br>NO >><br>Compon<br>1.CHECK<br>1. Turn th<br>2. Remov     | nuity exist<br>> GO TO 6<br>> Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>or To<br>nuity exist<br>> Repair th<br>> Replace<br>ent Insp<br>DAYTIME<br>ne ignition<br>/e daytime                                | P P P P P P P P P P P P P P P P P P P   | es or connect<br>E LIGHT REL<br>E/R harness<br>Ground<br>es or connect<br>Daytime R<br>E LIGHT REL<br>ht relay-1. | AY- CONTROL<br>s connector and<br>Continuity<br>Not existed<br>tors.<br>unning Light         | t Relay-1)  | K<br>EXL<br>M<br>N |
| Does contil<br>YES >><br>NO >><br>6.CHECK<br>Check cont<br>E13<br>Does contil<br>YES >><br>NO >><br>Compon<br>1.CHECK<br>1. Turn th<br>2. Remov<br>3. Apply b | nuity exist<br>- GO TO 6<br>- Repair th<br>DAYTIME<br>tinuity betw<br>IPDM E/R<br>or To<br>nuity exist<br>- Repair th<br>- Repair th<br>- Replace<br>ent Insp<br>DAYTIME<br>the ignition<br>/e daytime<br>pattery vol | P P P P P P P P P P P P P P P P P P P   | es or connect<br>E LIGHT REL<br>E/R harness<br>Ground<br>es or connect<br>Daytime R<br>E LIGHT REL<br>ht relay-1. | AY- CONTROL<br>s connector and<br>Continuity<br>Not existed<br>tors.<br>unning Light<br>AY-1 | the ground.                                       | K<br>EXL<br>M<br>N |

## DAYTIME RUNNING LIGHT RELAY CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

| Daytime runni | ng light relay-1 | Condition | Continuity  |
|---------------|------------------|-----------|-------------|
| Terr          | minal            | Voltage   | Continuity  |
| 5             |                  | Apply     | Existed     |
| 5             | 3                | Not Apply | Not existed |
| 4             |                  | Apply     | Not existed |
| 4             |                  | Not Apply | Existed     |

Does continuity exist?

YES >> Daytime running light relay-1 is normal.

NO >> Replace daytime running light relay-1.

## Component Inspection (Daytime Running Light Relay-2)

INFOID:000000007772580

# **1.**CHECK DAYTIME RUNNING LIGHT RELAY-2

- 1. Turn the ignition switch OFF.
- 2. Disconnect daytime running light relay-2.
- 3. Apply battery voltage to daytime running light relay-2 between terminals 1 and 2.
- 4. Check continuity daytime running light of relay-2.

| Daytime runn | ing light relay-1 | Condition | Continuity  |
|--------------|-------------------|-----------|-------------|
| Ter          | Terminal          |           | Continuity  |
| 3            | 5                 | Apply     | Existed     |
| 3            | 5                 | Not Apply | Not existed |

#### Does continuity exist?

- YES >> Daytime running light relay-2 is normal.
- NO >> Replace Daytime running light relay-2.

## **PARKING LAMP CIRCUIT**

| PARKING LAMP   |  |                                   |                        |                       |     |
|--|--|-----------------------------------|------------------------|-----------------------|-----|
| Component Function   |  |                                   |                        | INF0ID:00000007772581 | А   |
| 1.CHECK PARKING L  |  | ON                                |                        |                       | В   |
| <ul> <li>PDM E/R AUTO ACT</li> <li>Start IPDM E/R auto</li> <li><u>"Diagnosis Descript</u></li> <li>Check that the park</li> <li>CONSULT ACTIVE T</li> <li>Select "EXTERNAL</li> <li>With operating the t</li> </ul> | o active test. Ref<br>tion" (without Intr<br>ing lamp is turne<br>EST<br>. LAMPS" of IPD | elligent Ke<br>ed ON.<br>M E/R ac | ey).<br>tive test iten |                       | C   |
|  | ing lamp ON  |                                   |                        |                       | Е   |
| Off : Park   | ing lamp OFF   |                                   |                        |                       |     |
| YES >> Parking lam   | p circuit is norm<br>L-59, "Diagnosis  |                                   | <u>ire"</u> .          |                       | F   |
| Diagnosis Procedu  | ire  |                                   |                        | INFOID:00000007772582 | G   |
| 1.CHECK PARKING L  | AMP FUSE   |                                   |                        |                       | 0   |
| <ol> <li>Turn the ignition sw</li> <li>Check that the follo</li> </ol>   |  | not fusing.                       |                        |                       | Η   |
| Unit   | Location   | Fuse No.                          | Capacity               | -                     |     |
| <ul> <li>Parking lamp</li> <li>License plate lamp</li> <li>Side marker lamp</li> <li>Tail lamp</li> </ul>  | IPDM E/R   | #47                               | 10 A                   | -                     | J   |
| $\begin{array}{llllllllllllllllllllllllllllllllllll$   | AMP SHORT CI   | RCUIT                             |                        |                       | K   |
| <ol> <li>Disconnect IPDM E</li> <li>Check continuity be</li> </ol>   |  |                                   |                        |                       | EXL |
|  | minal Gro  | und -                             | Continuity             |                       | M   |
| E14  | 36   |                                   | Not existed            |                       | Ν   |
| Does continuity exist?   | I  |                                   |                        |                       |     |
| NO >> Replace the  | narnesses or col<br>e fuse. (Replace   |                                   |                        |                       | 0   |
| 3.CHECK PARKING L  |  |                                   |                        |                       | Ρ   |
| Check the applicable lan<br>Is the bulb normal?  | מוטמ קווו.   |                                   |                        |                       |     |
| YES >> GO TO 4.<br>NO >> Replace the   | e bulb.  |                                   |                        |                       |     |
| 4.CHECK PARKING L  | AMP OUTPUT \   | /OLTAGE                           |                        |                       |     |
| CONSULT ACTIVE T   | EST  |                                   |                        |                       |     |

< DTC/CIRCUIT DIAGNOSIS >

## PARKING LAMP CIRCUIT

#### < DTC/CIRCUIT DIAGNOSIS >

- 1. Disconnect the parking lamp connector.
- 2. Turn the ignition switch ON.
- 3. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 4. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

|     | Terminals |          |        | Test item |                 |
|-----|-----------|----------|--------|-----------|-----------------|
|     | (+)       |          | (-)    | iest item | Voltage         |
|     | IPDM E    | /R       |        | EXTERNAL  | (Approx.)       |
| Cor | nnector   | Terminal |        | LAMPS     |                 |
| RH  | E14       | 37       | Ground | TAIL      | Battery voltage |
| LH  |           | 36       |        | OFF       | 0 V             |

Is the measurement value normal?

YES >> GO TO 5.

NO >> Replace IPDM E/R.

5. CHECK PARKING LAMP OPEN CIRCUIT

1. Turn the ignition switch OFF.

- 2. Disconnect IPDM E/R connector.
- 3. Check continuity between the IPDM E/R harness connector and the parking lamp harness connector.

| IPDM E |        | /R       | Parking lamp |          | Continuity |
|--------|--------|----------|--------------|----------|------------|
| Conr   | nector | Terminal | Connector    | Terminal | Continuity |
| RH     | E14    | 37       | E43          | 1        | Existed    |
| LH     | L14    | 36       | E24          | 1        | LAISteu    |

Does continuity exist?

YES >> GO TO 6.

NO >> Repair the harnesses or connectors.

## 6. CHECK PARKING LAMP GROUND OPEN CIRCUIT

Check continuity between the parking lamp harness connector and the ground.

| Parking lamp |        |          |        | Continuity |
|--------------|--------|----------|--------|------------|
| Conr         | nector | Terminal | Ground | Continuity |
| RH           | E43    | 2        | Giouna | Existed    |
| LH           | LH E24 |          |        | Existed    |

Does continuity exist?

YES >> Replace the front combination lamp.

NO >> Repair the harnesses or connectors.

## **TURN SIGNAL LAMP CIRCUIT**

| Description NFOID:00000007772583 BCM performs the high flasher operation if any bulb or harness of the turn signal lamp circuit is open. NOTE:   |
|--|
|  |
|  |
| The turn signal lamp blinks at normal speed when using the hazard warning lamp.  |
| Component Function Check   |
| 1.CHECK TURN SIGNAL LAMP   |
| <ul> <li>CONSULT ACTIVE TEST</li> <li>Select "FLASHER" of BCM (FLASHER) active test item.</li> <li>With operating the test items, check that the turn signal lamps blink.</li> </ul>   |
| LH : Turn signal lamps (LH) blink  |
| RH : Turn signal lamps (RH) blink  |
| Off : Turn signal lamps OFF  |
| Does the turn signal lamps blink?  |
| YES >> Turn signal lamp circuit is normal.<br>NO >> Refer to <u>EXL-61, "Diagnosis Procedure"</u> .  |
| Diagnosis Procedure  |
|  |
| 1.CHECK TURN SIGNAL LAMP BULB  |
| Check the applicable lamp bulb.<br>Is the bulb normal?   |
| YES >> GO TO 2.  |
| NO >> Replace the bulb.  |
| 2.CHECK TURN SIGNAL LAMP OPEN CIRCUIT  |
| 1. Turn the ignition switch OFF.   |
| <ol> <li>Disconnect BCM connector.</li> <li>Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> </ol>   |
|  |
| <ol> <li>Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal</li> </ol>   |
| <ol> <li>Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> </ol>  |
| <ul> <li>Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> </ul>   |
| <ul> <li>3. Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>4. Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> </ul> Front turn signal lamp           Example         Example         Example         Existed   |
| <ul> <li>Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> </ul> Front turn signal lamp           Front turn signal lamp         Continuity           BCM         Front turn signal lamp         Continuity           Connector         Terminal         Connector         Terminal           RH         M67         61         E46         1           LH         M67         60         E27         1         Existed   |
| <ul> <li>Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> </ul> Front turn signal lamp           Front turn signal lamp         Continuity <u>BCM</u> <u>Front turn signal lamp</u> <u>Connector</u> <u>Connector</u> <u>Continuity</u> <u>Continuity</u> <u>Side turn signal lamp</u> <u>Continuity</u>   |
| <ul> <li>3. Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>4. Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> <li>Front turn signal lamp         <ul> <li>Front turn signal lamp</li> <li>Connector</li> <li>Terminal</li> <li>Continuity</li> </ul> </li> <li>Front turn signal lamp</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Continuity</li> <li>Continuity</li> <li>Side turn signal lamp</li> <li>Continuity</li> </ul>   |
| <ul> <li>3. Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>4. Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> <li>Front turn signal lamp         <ul> <li>Front turn signal lamp</li> <li>Connector</li> <li>Terminal</li> <li>Continuity</li> </ul> <ul> <li>Connector</li> <li>Terminal</li> <li>Continuity</li> </ul> <ul> <li>Continuity</li> </ul> </li> </ul>   |
| <ul> <li>3. Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>4. Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> <li>Front turn signal lamp         <ul> <li><u>BCM</u> Front turn signal lamp</li> <li><u>Connector</u> Terminal Connector Terminal</li> <li><u>Continuity</u></li> <li><u>Connector</u> 1 Existed</li> </ul> </li> <li>Side turn signal lamp</li> <li><u>BCM</u> Side turn signal lamp</li> <li><u>Continuity</u></li> <li><u>Connector</u> Terminal Connector Terminal</li> </ul>  |
| <ul> <li>3. Disconnect the front turn signal lamp connector, side turn signal lamp connector, or the rear combination lamp connector.</li> <li>4. Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp harness connector.</li> <li>Front turn signal lamp         <ul> <li>Front turn signal lamp</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Continuity</li> </ul> </li> <li>BCM</li> <li>Front turn signal lamp</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> </ul> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> <li>Connector</li> <li>Terminal</li> <li>Connector</li> |

BCMRear combination lampConnectorTerminalConnectorTerminalRHM6761B594ExistedLH60B804Existed

## **TURN SIGNAL LAMP CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

Does continuity exist?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

3. CHECK TURN SIGNAL LAMP SHORT CIRCUIT

Check continuity between the BCM harness connector and the ground.

| BCM       |       |                    |        | Continuity  |
|-----------|-------|--------------------|--------|-------------|
| Connector |       | Connector Terminal |        | Continuity  |
| RH        | M67   | 61                 | Ground | Not existed |
| LH        | IVIO7 | 60                 |        | NOT EXISTED |

#### Does continuity exist?

YES >> Repair the harnesses or connectors.

NO >> GO TO 4.

### **4.**CHECK TURN SIGNAL LAMP GROUND OPEN CIRCUIT

Check continuity between the BCM harness connector and the front turn signal lamp, side turn signal lamp or the rear combination lamp and the ground.

Front turn signal lamp

| Front turn signal lamp |     |          |        | Continuity |
|------------------------|-----|----------|--------|------------|
| Connector Terminal     |     | Ground   |        |            |
| RH                     | E46 | 2        | Ground | Existed    |
| LH                     | E27 | 2        |        |            |
| Side turn signal lamp  |     |          |        |            |
| Side turn signal lamp  |     |          |        | Orationity |
|                        | 0   | <b>T</b> | -      | Continuity |

| Connector |     | Terminal | Ground |         |
|-----------|-----|----------|--------|---------|
| RH        | E40 | 2        | Cround | Existed |
| LH        | E23 | 2        |        | Existed |
|           |     |          |        |         |

Rear turn signal lamp

|           | Rear combinat | ion lamp |        | Continuity |
|-----------|---------------|----------|--------|------------|
| Connector |               | Terminal | Ground | Continuity |
| RH        | B59           | 3        | Giouna | Existed    |
| LH        | B80           | 5        |        | LAISTER    |

Does continuity exist?

YES >> Replace BCM.

NO >> Repair the harnesses or connectors.

## **OPTICAL SENSOR**

## < DTC/CIRCUIT DIAGNOSIS >

# OPTICAL SENSOR

| Description                        | ו                             |                           |                            | INFOID:000000007772586                         |
|------------------------------------|-------------------------------|---------------------------|----------------------------|--|
| Optical senso                      | or converts                   | the outside brightn       | ess (lux) to voltage ar    | nd transmits the optical sensor signal to BCM. |
| Componer                           | nt Functio                    | on Check                  |                            | INFOID:000000007772587                         |
| 1 CUECKO                           |                               | NSOR SIGNAL B             |                            |  |
|                                    |                               |                           | CONSULI                    |  |
| CONSULT<br>1. Turn the             | DATA MOR                      |                           |                            |  |
| 2. Select "O                       | PTISEN (C                     | TCT)" of BCM (HE          | ADLAMP) data moni          | tor item.                                      |
|                                    | lighting swi<br>optical sens  |                           | eck the monitor status     | 8.   |
|                                    |                               | <b>U</b> ,                |                            |  |
| Monitor item                       |                               | Condition                 | Voltage (Approx.)          |  |
| OPTISEN                            | Optical                       | When illuminating         | 3.1 V or more *            |  |
| (DTCT)                             | sensor                        | When shutting off ligh    |                            |  |
|                                    |                               |                           | ss than the standard value | if brightness is weak.                         |
| <u>Is the item sta</u><br>YES >> C |                               | or is normal.             |                            |  |
|                                    |                               | <u>-63, "Diagnosis Pi</u> | ocedure".                  |  |
| Diagnosis                          | Procedu                       | re                        |                            | INFOID:000000007772588                         |
|                                    |                               |                           |                            |  |
| T.CHECK O                          | PTICAL SE                     | NSOR POWER S              | JPPLY INPUT                |  |
|                                    | ignition swi                  |                           |                            |  |
|                                    | lighting swi<br>e voltage b   |                           | sensor harness conn        | ector and the ground.                          |
|                                    |                               |                           |                            |  |
|                                    | Termina                       | ls                        |                            |  |
|                                    | (+)                           | (-)                       | Voltage                    |  |
|                                    | al sensor                     |                           | (Approx.)                  |  |
| Connector                          | Termina                       | al Ground                 |                            |  |
| M17                                | 1                             |                           | 5 V                        |  |
| <u>Is the measur</u><br>YES >> G   | <u>ement valu</u><br>30 TO 2. | ie normal?                |                            |  |
|                                    | GO TO 2.<br>GO TO 4.          |                           |                            |  |
| 2.снеско                           | PTICAL SE                     | NSOR GROUND               | NPUT                       |  |
|                                    |                               |                           | or harness connecto        | r and the ground.                              |
|                                    | <u> </u>                      |                           |                            | 5  |
|                                    | Termina                       | ls                        |                            |  |
|                                    | (+)                           | (-)                       | Voltage                    |  |
| Optica                             | al sensor                     |                           | (Approx.)                  |  |
| Connector                          | Termina                       | al Ground                 |                            |  |
| M17                                | 3                             |                           | 0 V                        |  |
| Is the measur                      |                               | <u>ie normal?</u>         |                            |  |
|                                    | GO TO 3.<br>GO TO 6.          |                           |                            |  |
| -                                  |                               | NSOR SIGNAL O             |                            |  |
| J.CHECK U                          | F HUAL SE                     | INSUR SIGNAL U            | JIFUI                      |  |

## **OPTICAL SENSOR**

#### < DTC/CIRCUIT DIAGNOSIS >

With illuminating the optical sensor, check the voltage between the optical sensor harness connector and the ground.

| -         | Terminals  |        | Condition               |                 |  |
|-----------|------------|--------|-------------------------|-----------------|--|
| (+        | ·)         | (-)    | Condition               | Voltage         |  |
| Optical   | cal sensor |        | Optical sensor          | (Approx.)       |  |
| Connector | Terminal   | Ground | Optical sensor          |                 |  |
| M17       | 2          | Giouna | When illuminating       | 3.1 V or more * |  |
|           | 2          |        | When shutting off light | 0.6 V or less   |  |

\*: Illuminate the optical sensor. The value may be less than the standard if brightness is weak.

Is the measurement value normal?

YES >> GO TO 7.

NO >> Replace the optical sensor.

4.CHECK OPTICAL SENSOR OPEN CIRCUIT

1. Turn the ignition switch OFF.

- 2. Disconnect the optical sensor connector and BCM connector.
- 3. Check continuity between the optical sensor harness connector and the BCM harness connector.

| Optical   | sensor   | B         | CM       | Continuity |
|-----------|----------|-----------|----------|------------|
| Connector | Terminal | Connector | Terminal | Continuity |
| M17       | 1        | M68       | 17       | Existed    |

Does continuity exist?

YES >> GO TO 5.

NO >> Repair the harnesses or connectors.

5.CHECK OPTICAL SENSOR SHORT CIRCUIT

Check the continuity between the optical sensor harness connector and the ground.

| Optica    | l sensor |        | Continuity  |
|-----------|----------|--------|-------------|
| Connector | Terminal | Ground | Continuity  |
| M17       | 1        |        | Not existed |

Does continuity exist?

YES >> Repair the harnesses or connectors.

NO >> Replace BCM.

#### **6.**CHECK OPTICAL SENSOR GROUND OPEN CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect the optical sensor connector and BCM connector.
- 3. Check continuity between the optical sensor harness connector and the BCM harness connector.

| Optica    | sensor   | B         | Continuity |            |
|-----------|----------|-----------|------------|------------|
| Connector | Terminal | Connector | Terminal   | Continuity |
| M17       | 3        | M68       | 18         | Existed    |

Does continuity exist?

YES >> Replace BCM.

NO >> Repair the harnesses or connectors.

7. CHECK OPTICAL SENSOR SIGNAL OPEN CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect the optical sensor connector and BCM connector.
- 3. Check continuity between the optical sensor harness connector and the BCM harness connector.

## **OPTICAL SENSOR**

### < DTC/CIRCUIT DIAGNOSIS >

|                |               |              |             | 1           | _     | _   |      |       |        |        |         |     |  |
|----------------|---------------|--------------|-------------|-------------|-------|-----|------|-------|--------|--------|---------|-----|--|
| Optical s      |               |              | M           | Continuity  | v     |     |      |       |        |        |         |     |  |
| onnector       | Terminal      | Connector    | Terminal    |             | ,     | _   |      |       |        |        |         |     |  |
| M17            | 2             | M68          | 14          | Existed     | _     | -   |      |       |        |        |         |     |  |
| es continui    |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                | O TO 8.       | orpoooo or   | aannaatara  |             |       |     |      |       |        |        |         |     |  |
|                |               | arnesses or  |             |             |       |     |      |       |        |        |         |     |  |
|                |               | NSOR SHO     |             |             |       |     |      |       |        |        |         |     |  |
| ck the cor     | ntinuity betw | ween the opt | ical sensor | harness con | onnec | nec | ecto | ector | tor ar | and th | ie grou | nd. |  |
|                |               |              | i           |             |       |     |      |       |        |        |         |     |  |
|                | al sensor     |              |             | Continuity  |       |     |      |       |        |        |         |     |  |
| Connector      | Termina       | l Gr         | ound        |             |       | _   |      |       |        |        |         |     |  |
| M17            | 2             |              |             | Not existed |       | -   |      |       |        |        |         |     |  |
| es continui    | ty exist?     |              |             |             |       |     |      |       |        |        |         |     |  |
| S >> R<br>>> R | epair the ha  | arnesses or  | connectors. |             |       |     |      |       |        |        |         |     |  |
| >> R           | eplace BCI    | И.           |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |
|                |               |              |             |             |       |     |      |       |        |        |         |     |  |

## < DTC/CIRCUIT DIAGNOSIS >

## HAZARD SWITCH

## Component Function Check

1. CHECK HAZARD SWITCH SIGNAL BY CONSULT

CONSULT DATA MONITOR

1. Turn the ignition switch ON.

2. Select "HAZARD SW" of BCM (FLASHER) data monitor item.

3. With operating the hazard switch, check the monitor status.

| Monitor item | Con            | dition | Monitor status |
|--------------|----------------|--------|----------------|
| HAZARD SW    | Hazard switch  | ON     | On             |
|              | TIAZATU SWILCH | OFF    | Off            |

Is the item status normal?

YES >> Hazard switch circuit is normal.

NO >> Refer to EXL-66, "Diagnosis Procedure".

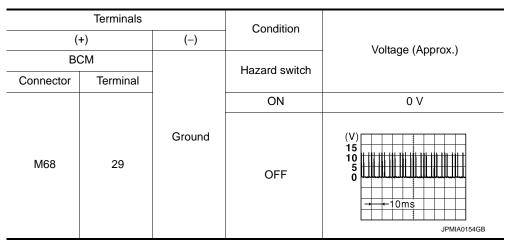
## **Diagnosis Procedure**

INFOID:000000007772590

INFOID:000000007772589

## 1.CHECK HAZARD SWITCH SIGNAL INPUT

With operating the hazard switch, check the voltage between the BCM harness connector and the ground.



Is the measurement value normal?

YES >> Replace BCM. Refer to <u>BCS-142, "Exploded View"</u>.

NO >> GO TO 2.

**2.**CHECK HAZARD SWITCH SIGNAL OPEN CIRCUIT

1. Turn the ignition switch OFF.

2. Disconnect the hazard switch connector and BCM connector.

3. Check continuity between the hazard switch harness connector and the BCM harness connector.

| Hazaro    | d switch | B         | Continuity |         |
|-----------|----------|-----------|------------|---------|
| Connector | Terminal | Connector | Continuity |         |
| M45       | 2        | M68       | 29         | Existed |

Does continuity exist?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

 $\mathbf{3.}$  CHECK HAZARD SWITCH SIGNAL SHORT CIRCUIT

Check continuity between the hazard switch harness connector and the ground.

### **EXL-66**

## HAZARD SWITCH

### < DTC/CIRCUIT DIAGNOSIS >

| M45       2       Not existed         s continuity exist?       S       >> Repair the harnesses or connectors.         S       >> GO TO 4.       S         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT       Continuity between the hazard switch harness connector and the ground.         Hazard switch       Continuity         Connector       Terminal         M45       1         S continuity exist?         S       >> Replace the hazard switch.   | Innector       Terminal       Ground       Continuity         M45       2       Not existed         continuity exist?       Not existed         >> Repair the harnesses or connectors.       >> GO TO 4.         HECK HAZARD SWITCH GROUND OPEN CIRCUIT       K continuity between the hazard switch harness connector and the ground.         Hazard switch       Ground       Continuity         M45       1       Continuity         M45       1       Existed         continuity exist?       >> Replace the hazard switch.   | Connector       Terminal       Ground       Continuity         M45       2       Not existed         Not existed       Not existed         SS continuity exist?       S         SS >> Repair the harnesses or connectors.       >> GO TO 4.         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT       Continuity         eck continuity between the hazard switch harness connector and the ground.         Hazard switch       Continuity         Connector       Terminal         M45       1         Ves continuity exist?       S         SS continuity exist?       S         SS >> Replace the hazard switch.       Existed   |                      |                  |                    |                                |  |
|---|---|---|----------------------|------------------|--------------------|--------------------------------|--|
| Connector       Terminal       Ground         M45       2       Not existed         S continuity exist?       S         S >> Repair the harnesses or connectors.       >> GO TO 4.         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT       Continuity between the hazard switch harness connector and the ground.         Hazard switch       Ground       Continuity         M45       1       Ground         S continuity exist?       S         S scontinuity exist?       S         S >> Replace the hazard switch.       State | Immedia     Ground       M45     2       Not existed       continuity exist?       >> Repair the harnesses or connectors.       >> GO TO 4.       HECK HAZARD SWITCH GROUND OPEN CIRCUIT       K continuity between the hazard switch harness connector and the ground.       Hazard switch       Onnector     Terminal       Ground     Continuity       M45     1       Continuity exist?       >> Replace the hazard switch.   | Connector       Terminal       Ground         M45       2       Not existed         iss continuity exist?       Image: Source of the second | Hazaro               | d switch         |                    | Continuity                     |  |
| s continuity exist?         S       >> Repair the harnesses or connectors.         >>> GO TO 4.         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT         ck continuity between the hazard switch harness connector and the ground.         Hazard switch         Connector       Terminal         Ground       Continuity         M45       1         S continuity exist?         S       >> Replace the hazard switch.  | continuity exist?         >> Repair the harnesses or connectors.         >> GO TO 4.         HECK HAZARD SWITCH GROUND OPEN CIRCUIT         k continuity between the hazard switch harness connector and the ground.         Hazard switch         onnector       Terminal         Ground       Continuity         M45       1         Continuity exist?         >> Replace the hazard switch.  | es continuity exist?         S       >> Repair the harnesses or connectors.         D       >> GO TO 4.         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT         eck continuity between the hazard switch harness connector and the ground.         Hazard switch         Connector       Terminal         M45       1         es continuity exist?         S       >> Replace the hazard switch.  | Connector            | Terminal         | Ground             | Continuity                     |  |
| S       >> Repair the harnesses or connectors.         >> GO TO 4.         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT         ck continuity between the hazard switch harness connector and the ground.         Hazard switch         Connector       Terminal         M45       1         S continuity exist?         S       >> Replace the hazard switch.   | >> Repair the harnesses or connectors.<br>>> GO TO 4. HECK HAZARD SWITCH GROUND OPEN CIRCUIT A continuity between the hazard switch harness connector and the ground.          Hazard switch       Continuity         Image: Continuity exist?       Continuity         >> Replace the hazard switch.       Existed   | S       >> Repair the harnesses or connectors.         O       >> GO TO 4.         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT         eck continuity between the hazard switch harness connector and the ground.         Hazard switch       Continuity         Connector       Terminal         M45       1         Es continuity exist?         S       >> Replace the hazard switch.  | M45                  | 2                |                    | Not existed                    |  |
| <ul> <li>&gt;&gt; GO TO 4.</li> <li>CHECK HAZARD SWITCH GROUND OPEN CIRCUIT</li> <li>ck continuity between the hazard switch harness connector and the ground.</li> <li>Hazard switch         <ul> <li>Ground</li> <li>Continuity</li> <li>M45 1</li> <li>Ground</li> <li>Existed</li> </ul> </li> <li>s continuity exist?</li> <li>S &gt;&gt; Replace the hazard switch.</li> </ul>  | >> GO TO 4.   HECK HAZARD SWITCH GROUND OPEN CIRCUIT   k continuity between the hazard switch harness connector and the ground.     Hazard switch   Image: marked barrier | >> GO TO 4.         CHECK HAZARD SWITCH GROUND OPEN CIRCUIT         eck continuity between the hazard switch harness connector and the ground.         Hazard switch         Gonnector       Terminal         M45       1         Es continuity exist?         S       >> Replace the hazard switch.  | pes continuit        | <u>y exist?</u>  |                    |                                |  |
| CHECK HAZARD SWITCH GROUND OPEN CIRCUIT         ck continuity between the hazard switch harness connector and the ground.         Hazard switch         Connector       Terminal         M45       1         S continuity exist?         S >> Replace the hazard switch.  | HECK HAZARD SWITCH GROUND OPEN CIRCUIT         k continuity between the hazard switch harness connector and the ground.         Hazard switch         Image: Mass of the mass                 | CHECK HAZARD SWITCH GROUND OPEN CIRCUIT         eck continuity between the hazard switch harness connector and the ground.         Hazard switch       Continuity         Ground       Continuity         M45       1         Es continuity exist?       Existed         S       >> Replace the hazard switch.  | ′ES >> Re<br>IO >> G | epair the harnes | sses or connector  | S.                             |  |
| Label continuity between the hazard switch harness connector and the ground.         Hazard switch         Continuity         Continuity         Continuity         Continuity         M45       Continuity         M45       Continuity         S continuity exist?         S >> Replace the hazard switch.  | K continuity between the hazard switch harness connector and the ground.         Hazard switch         Continuity         Onnector       Terminal       Continuity         M45       Existed         Continuity         Continuity         S Replace the hazard switch.   | Ack continuity between the hazard switch harness connector and the ground.         Hazard switch         Continuity         Continuity         Continuity         M45       Continuity         M45       Continuity         M45       Continuity         Existed         S continuity exist?         S >> Replace the hazard switch.  |                      |                  |                    |                                |  |
| Hazard switch       Connector     Terminal     Ground       M45     1     Existed       s continuity exist?     S       S     >> Replace the hazard switch.   | Hazard switch       Onnector     Terminal     Ground       M45     1     Existed       continuity exist?     >> Replace the hazard switch.  | Hazard switch       Connector     Terminal     Ground       M45     1     Existed       es continuity exist?     Existed  |                      |                  |                    |                                |  |
| Connector     Terminal     Ground       M45     1     Existed       s continuity exist?     S       S     >> Replace the hazard switch.   | Image: marked background     Continuity       M45     1     Existed       Continuity exist?     >> Replace the hazard switch.   | Connector     Terminal     Ground       M45     1     Existed       es continuity exist?     Existed       ES     >> Replace the hazard switch.   | ieck continu         | ity between the  | a nazaru switch na | mess connector and the ground. |  |
| Connector     Terminal     Ground       M45     1     Existed       s continuity exist?     S     >> Replace the hazard switch.   | Image: Second system     Ground       M45     1       Existed       continuity exist?       >> Replace the hazard switch.   | Connector     Terminal     Ground       M45     1     Existed       es continuity exist?     Existed       ES     >> Replace the hazard switch.   | Hazar                | d switch         |                    | Continuity                     |  |
| <u>s continuity exist?</u><br>S    >> Replace the hazard switch.  | continuity exist?<br>>> Replace the hazard switch.  | es continuity exist?<br>S >> Replace the hazard switch.   | Connector            | Terminal         | Ground             | Continuity                     |  |
| S >> Replace the hazard switch.   | >> Replace the hazard switch.   | S >> Replace the hazard switch.   | M45                  | 1                |                    | Existed                        |  |
| S >> Replace the hazard switch.   | >> Replace the hazard switch.   | S >> Replace the hazard switch.   | oes continuit        | v exist?         |                    |                                |  |
| >> Repair the harnesses or connectors.  | >> Repair the harnesses or connectors.  | > Repair the harnesses or connectors.   |                      |                  | ard switch.        |                                |  |
|   |   |   | D >> Re              | pair the harnes  | sses or connector  | S.                             |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |
|   |   |   |                      |                  |                    |                                |  |

#### < DTC/CIRCUIT DIAGNOSIS >

## TAIL LAMP CIRCUIT

### **Component Function Check**

NOTE:

Check the parking lamp circuit if the parking lamp and the tail lamp are not turned ON.

**1.**CHECK TAIL LAMP OPERATION

DIPDM E/R AUTO ACTIVE TEST

- 1. Start IPDM E/R auto active test. Refer to <u>EXL-33</u>, "Diagnosis Description" (with Intelligent Key) or <u>EXL-38</u>, "Diagnosis Description" (without Intelligent Key).
- 2. Check that the tail lamp is turned ON.

**CONSULT ACTIVE TEST** 

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With operating the test items, check that the tail lamp is turned ON.

TAIL : Tail lamp ON

Off : Tail lamp OFF

Is the tail lamp turned ON?

YES >> Tail lamp circuit is normal.

NO >> Refer to EXL-68, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:000000007772592

### **1.**CHECK TAIL LAMP OUTPUT VOLTAGE

CONSULT ACTIVE TEST

- 1. Disconnect the rear combination lamp connector.
- 2. Turn the ignition switch ON.
- 3. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 4. With operating the test items, check the voltage between the IPDM E/R harness connector and the ground.

|    | ٦        | Ferminals |        | Test item |                      |  |
|----|----------|-----------|--------|-----------|----------------------|--|
|    | (+)      |           | (–)    | iest item | Voltage              |  |
|    | IPDM E   | /R        |        | EXTERNAL  | (Approx.)            |  |
| Co | onnector | Terminal  |        | LAMPS     |                      |  |
| RH | RH 38    | 38        | Ground | TAIL      | Battery volt-<br>age |  |
|    | E14      |           | Ciouna | Off       | 0 V                  |  |
| LH |          | 41        |        | TAIL      | Battery volt-<br>age |  |
|    |          |           |        | Off       | 0 V                  |  |

Is the measurement value normal?

YES >> GO TO 2.

NO >> Replace IPDM E/R.

2. CHECK TAIL LAMP OPEN CIRCUIT

1. Turn the ignition switch OFF.

- 2. Disconnect IPDM E/R connector.
- Check continuity between the IPDM E/R harness connector and the rear combination lamp harness connector.

INFOID:000000007772591

## TAIL LAMP CIRCUIT

### < DTC/CIRCUIT DIAGNOSIS >

| IPDM E/R |                                    | Rear combination lamp |          | Continuity |         |
|----------|------------------------------------|-----------------------|----------|------------|---------|
| C        | Connector Terminal Connector Termi |                       | Terminal | Continuity |         |
| RH       | E14                                | 38                    | B59      | 6          | Existed |
| LH       |                                    | 41                    | B80      | 6          | LXISIEU |

Does continuity exist?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

**3.**CHECK TAIL LAMP GROUND OPEN CIRCUIT

Check continuity between the rear combination lamp harness connector and the ground.

|    | Rear combinat | ion lamp |         | Continuity |
|----|---------------|----------|---------|------------|
|    | Connector     | Terminal | Ground  | Continuity |
| RH | B59           | 3        | Giodila | Existed    |
| LH | B80           | 3        |         | EXISTED    |

Does continuity exist?

YES >> Replace the rear combination lamp.

NO >> Repair the harnesses or connectors.

EXL

Μ

Ν

Ο

Ρ

А

В

С

D

Е

F

G

Н

J

Κ

< DTC/CIRCUIT DIAGNOSIS >

## REAR SIDE MARKER LAMP CIRCUIT

## Component Function Check

INFOID:000000007772593

#### NOTE:

Check the parking lamp circuit if the parking lamp and the rear side marker lamp are not turned ON.

**1.**CHECK REAR SIDE MARKER LAMP OPERATION

DIPDM E/R AUTO ACTIVE TEST

- 1. Start IPDM E/R auto active test. Refer to <u>EXL-33</u>, "<u>Diagnosis Description</u>" (with Intelligent Key) or <u>EXL-38</u>, "<u>Diagnosis Description</u>" (without Intelligent Key).
- 2. Check that the rear side marker lamp is turned ON.

**CONSULT ACTIVE TEST** 

- 1. Select "EXTERNAL LAMPS" of IPDM E/R active test item.
- 2. With operating the test items, check that the rear side marker lamp is turned ON.

TAIL : Rear side marker lamp ON

#### Off : Rear side marker lamp OFF

Is the rear side marker lamp turned ON/OFF?

YES >> Rear side marker lamp circuit is normal.

NO >> Refer to EXL-70, "Diagnosis Procedure".

### Diagnosis Procedure

**1.**CHECK REAR SIDE MARKER LAMP BULB

Check the applicable lamp bulb.

Is the bulb normal?

YES >> GO TO 2.

NO >> Replace the bulb.

2. CHECK REAR SIDE MARKER LAMP OPEN CIRCUIT

- 1. Turn the ignition switch OFF.
- 2. Disconnect IPDM E/R connector and the rear side marker lamp connector.
- 3. Check continuity between the IPDM E/R harness connector and the rear side marker lamp harness connector.

| IPDM E/R |           | Rear side marker lamp |                    | Continuity |            |  |
|----------|-----------|-----------------------|--------------------|------------|------------|--|
| C        | Connector | Terminal              | Connector Terminal |            | Continuity |  |
| RH       | E14       | 41                    | T5                 | 1          | Existed    |  |
| LH       | L14       | 41                    | T4                 | 1          | LNSIEU     |  |

Does continuity exist?

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

3.CHECK REAR SIDE MARKER LAMP GROUND OPEN CIRCUIT

Check continuity between the rear side marker lamp harness connector and the ground.

|                | Rear side mar | ker lamp |        | Continuity |  |
|----------------|---------------|----------|--------|------------|--|
| Connector Term |               | Terminal | Ground | Continuity |  |
| RH             | T5            | 1        | Giouna | Existed    |  |
| LH             | T4            | 1        |        | Existed    |  |

Does continuity exist?

YES >> Replace the rear side marker lamp assembly.

NO >> Repair the harnesses or connectors.

INFOID:000000007772594

## LICENSE PLATE LAMP CIRCUIT

| < DTC/CIRCUIT DIAGNOSIS >   |   |
|---|---|
| LICENSE PLATE LAMP CIRCUIT  | А |
| Component Function Check  | A |
| NOTE:<br>Check the parking lamp circuit if the parking lamp and the license plate lamp are not turned ON.<br>1.CHECK LICENSE PLATE LAMP OPERATION   | В |
| <ul> <li>IPDM E/R AUTO ACTIVE TEST</li> <li>Start IPDM E/R auto active test. Refer to <u>EXL-33</u>, "Diagnosis Description" (with Intelligent Key) or <u>EXL-38</u>, "Diagnosis Descriptingent Key) (with Intelligent Key) or <u>EXL-38</u>, "Diagnosis Desc</li></ul> | С |
| <ul> <li><u>"Diagnosis Description"</u> (without Intelligent Key).</li> <li>Check that the license plate lamp is turned ON.</li> <li>CONSULT ACTIVE TEST</li> </ul>   | D |
| <ol> <li>Select "EXTERNAL LAMPS" of IPDM E/R active test item.</li> <li>With operating the lighting switch, check that the license plate lamp is turned ON.</li> </ol>  | Е |
| TAIL       : License plate lamp ON         Off       : License plate lamp OFF   | F |
| <u>Is the license plate lamp turned ON?</u><br>YES >> License plate lamp circuit is normal.<br>NO >> Refer to <u>EXL-71, "Diagnosis Procedure"</u> .  | G |
| Diagnosis Procedure   |   |
| 1.CHECK LICENSE PLATE LAMP BULB   | Н |
| Check the applicable lamp bulb.         Is the bulb normal?         YES       >> GO TO 2.         NO       >> Replace the bulb.   | I |
| 2. CHECK LICENSE PLATE LAMP OPEN CIRCUIT  | J |
| <ol> <li>Turn the ignition switch OFF.</li> <li>Disconnect IPDM E/R connector and the license plate lamp connector.</li> <li>Check continuity between the IPDM E/R harness connector and the license plate lamp harness connector.</li> </ol>   | K |

| Continuity | late lamp          | License p | IPDM E/R |          |    |
|------------|--------------------|-----------|----------|----------|----|
| Continuity | Connector Terminal |           | Terminal | onnector | С  |
| Existed    | 1                  | Т3        | 41       | F14      | RH |
| LAISIEU    | 1                  | T2        | 41       | L14      | LH |

Does continuity exist?

tor.

YES >> GO TO 3.

NO >> Repair the harnesses or connectors.

## **3.**CHECK LICENSE PLATE LAMP GROUND OPEN CIRCUIT

Check continuity between the license plate lamp harness connector and the ground.

|           | License plate | e lamp   |        | Continuity |  |
|-----------|---------------|----------|--------|------------|--|
| Connector |               | Terminal | Ground | Continuity |  |
| RH        | T3            | 2        | Ground | Existed    |  |
| LH        | T2            | 2        | 1      | LAISted    |  |

Does continuity exist?

YES >> Replace the license plate lamp.

NO >> Repair the harnesses or connectors.

EXL

Μ

Ν

Ο

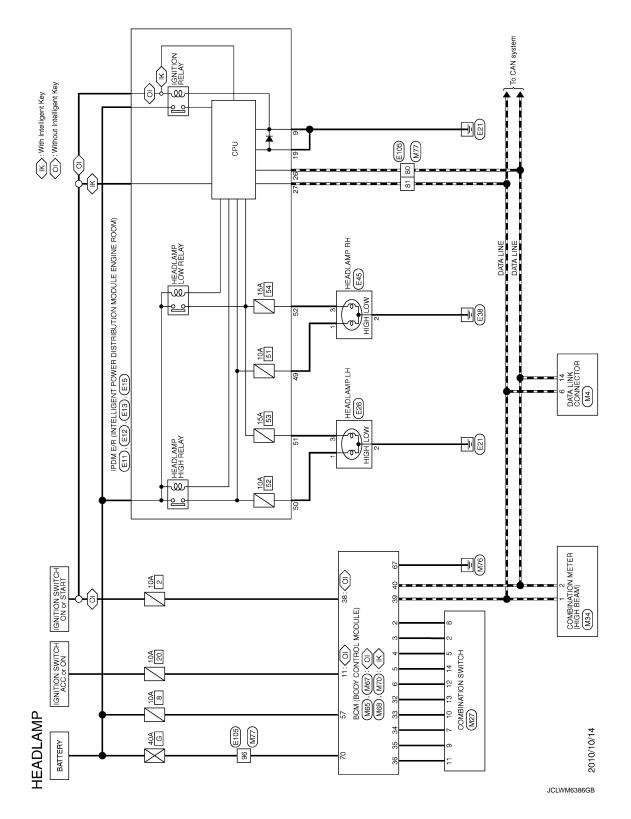
Ρ

## HEADLAMP SYSTEM

Wiring Diagram - HEADLAMP -

INFOID:000000007772597

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.

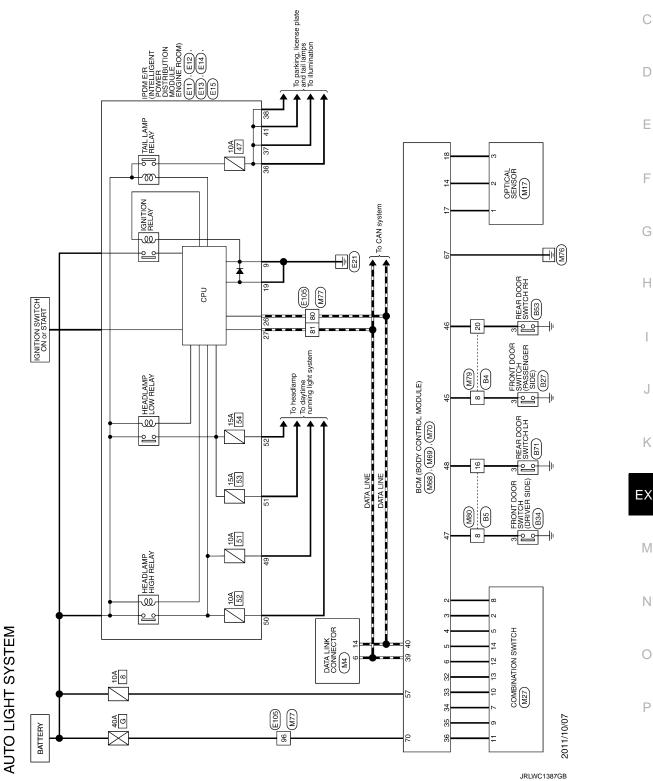


< DTC/CIRCUIT DIAGNOSIS >

# **AUTO LIGHT SYSTEM**

Wiring Diagram - AUTO LIGHT SYSTEM -

For connector terminal arrangements, harness layouts, and alphabets in a 🔿 (option abbreviation; if not В described in wiring diagram), refer to GI-12, "Connector Information".



INFOID:000000007772598

А

Κ

Ο



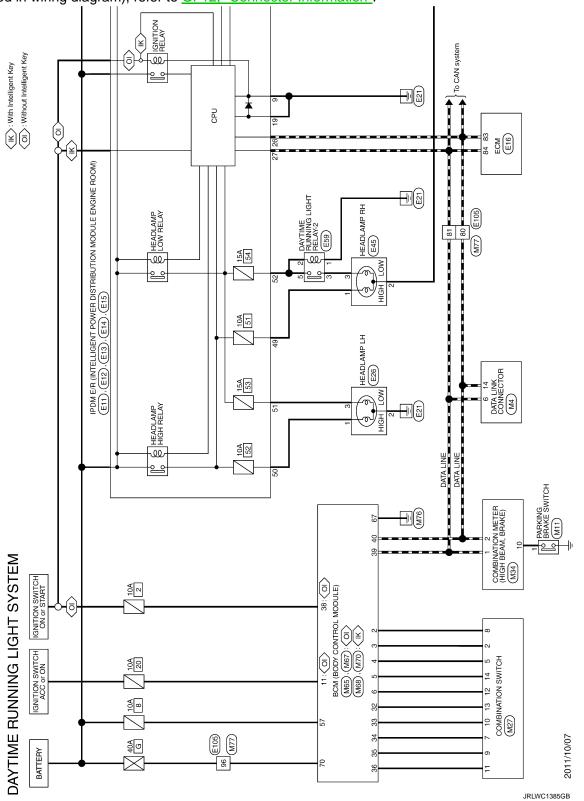
< DTC/CIRCUIT DIAGNOSIS >

### DAYTIME RUNNING LIGHT SYSTEM

### Wiring Diagram - DAYTIME RUNNING LIGHT SYSTEM -

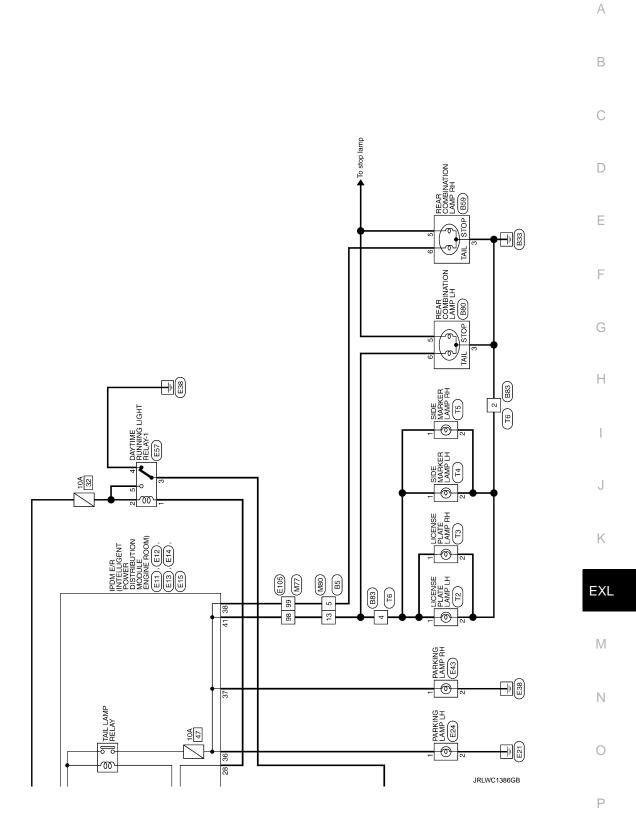
INFOID:000000007772599

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.



### DAYTIME RUNNING LIGHT SYSTEM

< DTC/CIRCUIT DIAGNOSIS >



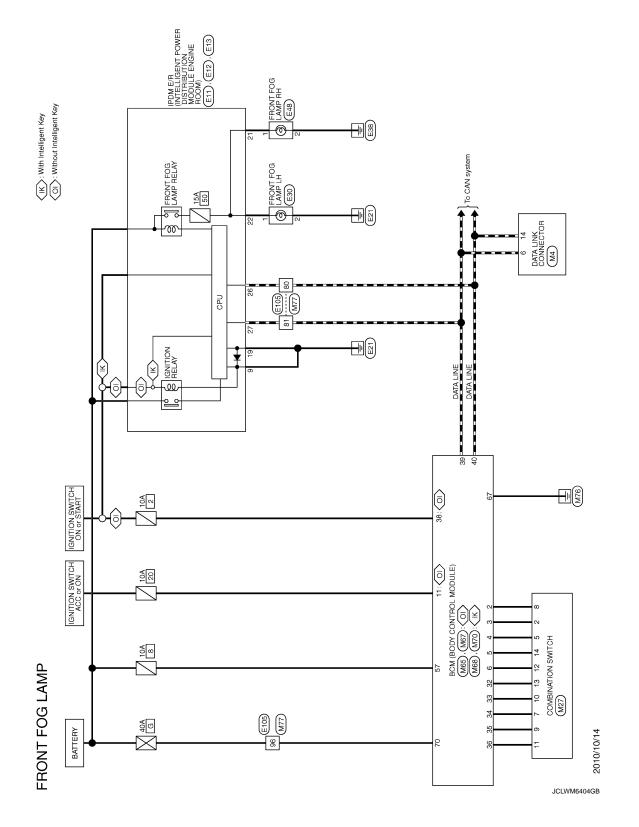
< DTC/CIRCUIT DIAGNOSIS >

### FRONT FOG LAMP SYSTEM

### Wiring Diagram - FRONT FOG LAMP -

INFOID:000000007772600

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.



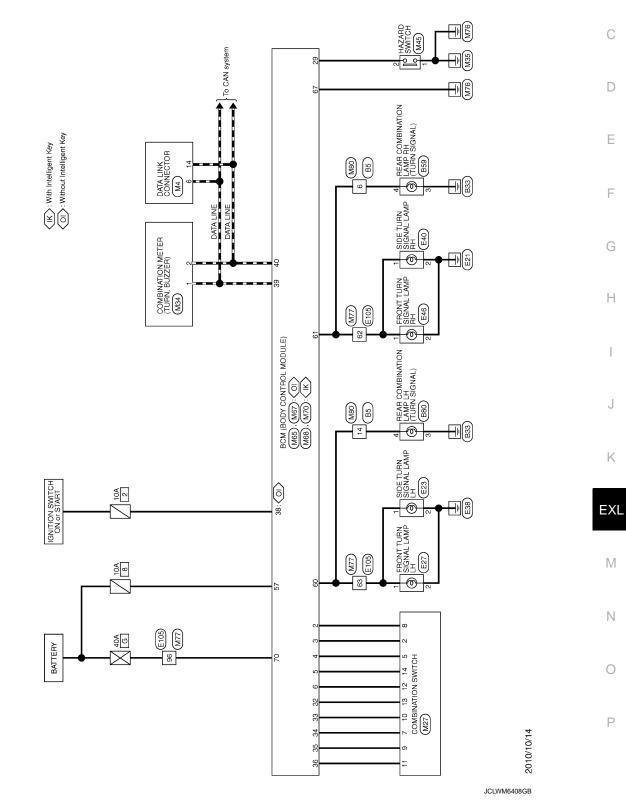
### TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

### TURN SIGNAL AND HAZARD WARNING LAMP SYSTEM

Wiring Diagram - TURN AND HAZARD WARNING LAMPS -

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.



TURN SIGNAL AND HAZARD WARNING LAMPS

А

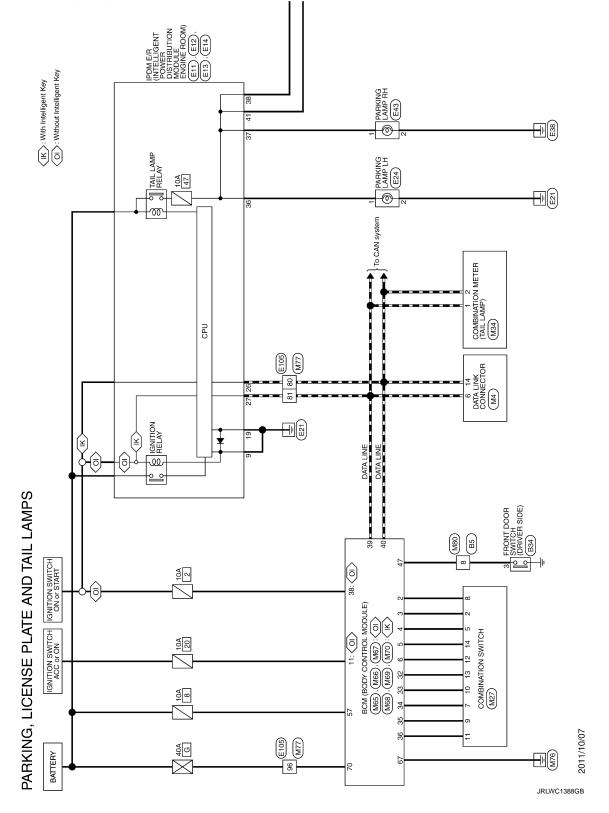
INFOID:000000007772601

# PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS SYSTEM < DTC/CIRCUIT DIAGNOSIS >

PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS SYSTEM Wiring Diagram - PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS -

INFOID:000000007772602

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.



# PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS SYSTEM < DTC/CIRCUIT DIAGNOSIS >

REAR COMBINATION LAMP RH B59 В To stop lamp С STOP D TAIL REAR COMBINATION LAMP LH B80 Е F STOP 0 0 G TAIL SIDE MARKER T5 T5 Н ŝ \_\_\_\_\_\_, Left SIDE MARKER T4 LAMP LH J  $\odot$ LICENSE PLATE LAMP T3 Κ LICENSE PLATE LAMP LH T2 EXL 10 BB3 <u>\_</u> 4 Μ BS ഹ c M80 Ν (LM) 66 86 E105 Ο JRLWC1389GB

Ρ

А

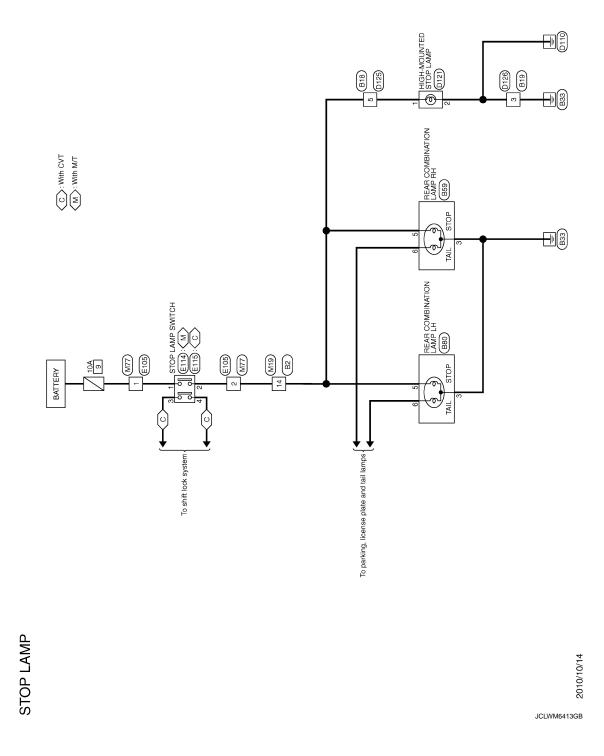
< DTC/CIRCUIT DIAGNOSIS >

# STOP LAMP

Wiring Diagram - STOP LAMP -

INFOID:000000007772603

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.

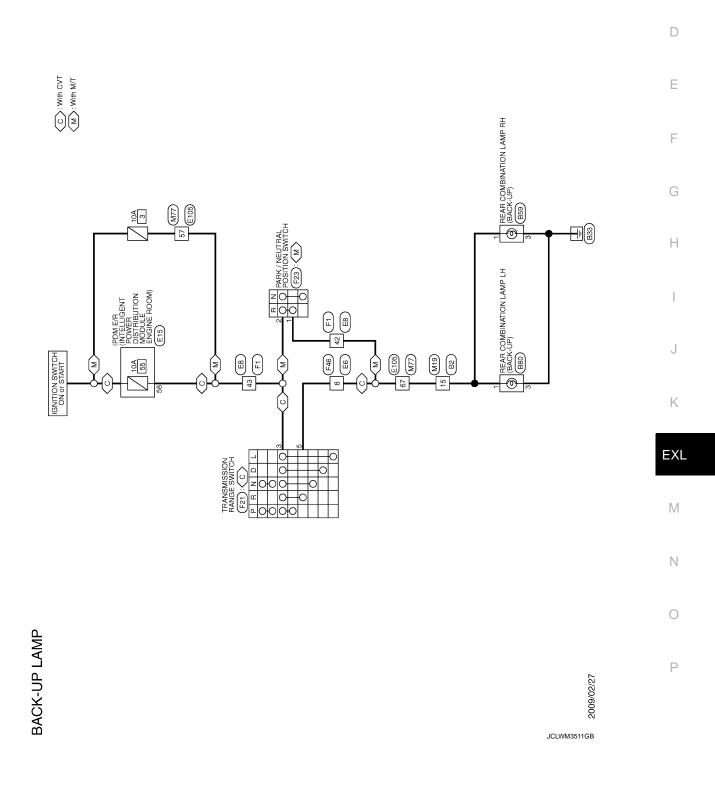




### BACK-UP LAMP

### Wiring Diagram - BACK-UP LAMP -

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.



А

С

INFOID:000000007772604

< ECU DIAGNOSIS INFORMATION >

# ECU DIAGNOSIS INFORMATION BCM (BODY CONTROL MODULE)

WITH INTELLIGENT KEY

### WITH INTELLIGENT KEY : Reference Value

INFOID:000000007946352

#### VALUES ON THE DIAGNOSIS TOOL

#### CONSULT MONITOR ITEM

| Monitor Item      | Condition   | Value/Status                     |
|-------------------|---|----------------------------------|
| FR WIPER HI       | Other than front wiper switch HI                    | Off                              |
|                   | Front wiper switch HI                               | On                               |
| FR WIPER LOW      | Other than front wiper switch LO                    | Off                              |
| FR WIPER LOW      | Front wiper switch LO                               | On                               |
|                   | Front washer switch OFF                             | Off                              |
| FR WASHER SW      | Front washer switch ON                              | On                               |
| FR WIPER INT      | Other than front wiper switch INT                   | Off                              |
|                   | Front wiper switch INT                              | On                               |
|                   | Front wiper is not in STOP position                 | Off                              |
| FR WIPER STOP     | Front wiper is in STOP position                     | On                               |
| INT VOLUME        | Wiper intermittent dial is in a dial position 1 - 7 | Wiper intermittent dial position |
| RR WIPER ON       | Other than rear wiper switch ON                     | Off                              |
|                   | Rear wiper switch ON                                | On                               |
| RR WIPER INT      | Other than rear wiper switch INT                    | Off                              |
|                   | Rear wiper switch INT                               | On                               |
|                   | Rear washer switch OFF                              | Off                              |
| RR WASHER SW      | Rear washer switch ON                               | On                               |
|                   | Rear wiper is in STOP position                      | Off                              |
| RR WIPER STOP     | Rear wiper is not in STOP position                  | On                               |
| TURN SIGNAL R     | Other than turn signal switch RH                    | Off                              |
| I URN SIGNAL R    | Turn signal switch RH                               | On                               |
| TURN SIGNAL L     | Other than turn signal switch LH                    | Off                              |
| TORN SIGNAL L     | Turn signal switch LH                               | On                               |
| TAIL LAMP SW      | Other than lighting switch 1ST and 2ND              | Off                              |
| TAIL LAWF SW      | Lighting switch 1ST or 2ND                          | On                               |
| HI BEAM SW        | Other than lighting switch HI                       | Off                              |
|                   | Lighting switch HI                                  | On                               |
| HEAD LAMP SW 1    | Other than lighting switch 2ND                      | Off                              |
| HEAD LAWF SVV I   | Lighting switch 2ND                                 | On                               |
| HEAD LAMP SW 2    | Other than lighting switch 2ND                      | Off                              |
| HEAD LAIVIP SVV 2 | Lighting switch 2ND                                 | On                               |
|                   | Other than lighting switch PASS                     | Off                              |
| PASSING SW        | Lighting switch PASS                                | On                               |
|                   | Other than lighting switch AUTO                     | Off                              |
| AUTO LIGHT SW     | Lighting switch AUTO                                | On                               |

| Monitor Item  | Condition  | Value/Status |  |  |  |
|---------------|--|--------------|--|--|--|
| FR FOG SW     | Front fog lamp switch OFF  | Off          |  |  |  |
| FR FUG SW     | Front fog lamp switch ON   | On           |  |  |  |
|               | Driver door closed   | Off          |  |  |  |
| DOOR SW-DR    | Driver door opened   | On           |  |  |  |
|               | Passenger door closed  | Off          |  |  |  |
| DOOR SW-AS    | Passenger door opened  | On           |  |  |  |
|               | Rear RH door closed  | Off          |  |  |  |
| DOOR SW-RR    |  |              |  |  |  |
|               | Rear LH door closed  | Off          |  |  |  |
| DOOR SW-RL    | Rear LH door opened  | On           |  |  |  |
|               | Back door closed   | Off          |  |  |  |
| DOOR SW-BK    | Back door opened   | On           |  |  |  |
|               | Other than power door lock switch LOCK                               | Off          |  |  |  |
| CDL LOCK SW   | Power door lock switch LOCK  | On           |  |  |  |
|               | Other than power door lock switch UNLOCK                             | Off          |  |  |  |
| CDL UNLOCK SW | Power door lock switch UNLOCK  | On           |  |  |  |
|               | Other than driver door key cylinder LOCK position                    | Off          |  |  |  |
| KEY CYL LK-SW | Driver door key cylinder LOCK position                               | On           |  |  |  |
|               | Other than driver door key cylinder UNLOCK position                  | Off          |  |  |  |
| KEY CYL UN-SW | Driver door key cylinder UNLOCK position                             | On           |  |  |  |
|               | Hazard switch is OFF   | Off          |  |  |  |
| HAZARD SW     | Hazard switch is ON  | On           |  |  |  |
|               | Rear window defogger switch OFF                                      | Off          |  |  |  |
| REAR DEF SW   | Rear window defogger switch ON                                       | On           |  |  |  |
|               | NOTE:  |              |  |  |  |
| TR/BD OPEN SW | The item is indicated, but not monitored.                            | Off          |  |  |  |
| TRNK/HAT MNTR | NOTE:<br>The item is indicated, but not monitored.                   | Off          |  |  |  |
|               | Blower fan OFF   | Off          |  |  |  |
| FAN ON SIG    | Blower fan ON  | On           |  |  |  |
|               | Air conditioner OFF (A/C switch indicator OFF)                       | Off          |  |  |  |
| AIR COND SW   | Air conditioner ON (A/C switch indicator ON)                         | On           |  |  |  |
|               | LOCK button of the key is not pressed                                | Off          |  |  |  |
| RKE-LOCK      | LOCK button of the key is pressed                                    | On           |  |  |  |
|               | UNLOCK button of the key is not pressed                              | Off          |  |  |  |
| RKE-UNLOCK    | UNLOCK button of the key is pressed                                  | On           |  |  |  |
|               | BACK DOOR OPEN button of the key is not pressed                      | Off          |  |  |  |
| RKE-TR/BD     | BACK DOOR OPEN button of the key is pressed                          | On           |  |  |  |
|               | PANIC button of the key is not pressed                               | Off          |  |  |  |
| RKE-PANIC     | PANIC button of the key is pressed                                   | On           |  |  |  |
|               | LOCK/UNLOCK button of the key is not pressed and held simultaneously | Off          |  |  |  |
| RKE-MODE CHG  | LOCK/UNLOCK button of the key is not pressed and held simultaneously | On           |  |  |  |
|               | Bright outside of the vehicle  | Close to 5 V |  |  |  |
|               |  |              |  |  |  |

#### < ECU DIAGNOSIS INFORMATION >

| Monitor Item    | Condition  | Value/Status    |
|-----------------|--|-----------------|
|                 | Bright outside of the vehicle (Lighting switch AUTO)                               | Close to 5 V    |
| OPTI SEN (FILT) | Dark outside of the vehicle (Lighting switch AUTO)                                 | Close to 1.50 V |
| OPTICAL SENSOR  | NOTE:<br>The item is indicated, but not monitored.                                 | Off             |
| RAIN SENSOR     | NOTE:<br>The item is indicated, but not monitored.                                 | Off             |
| REQ SW -DR      | Driver door request switch is not pressed  | Off             |
|                 | Driver door request switch is pressed  | On              |
| REQ SW -AS      | Passenger door request switch is not pressed                                       | Off             |
|                 | Passenger door request switch is pressed   | On              |
| REQ SW -RR      | <b>NOTE:</b><br>The item is indicated, but not monitored.                          | Off             |
| REQ SW -RL      | NOTE:<br>The item is indicated, but not monitored.                                 | Off             |
| REQ SW -BD/TR   | Back door request switch is not pressed  | Off             |
| NEQ 3W -DD/TR   | Back door request switch is pressed  | On              |
| PUSH SW         | Push-button ignition switch (push switch) is not pressed                           | Off             |
| F03H 3W         | Push-button ignition switch (push switch) is pressed                               | On              |
| CLUCH SW        | The clutch pedal is not depressed.   | Off             |
| CEUCITION       | The clutch pedal is depressed  | On              |
|                 | The brake pedal is not depressed   | Off             |
| BRAKE SW 1      | The brake pedal is depressed   | On              |
|                 | The brake pedal is depressed when No. 9 fuse is blown                              | Off             |
| BRAKE SW 2      | The brake pedal is not depressed when No. 9 fuse is blown, or No. 9 fuse is normal | On              |
| DETE/CANCL SW   | Selector lever in P position   | Off             |
| DETE/CANCE SW   | Selector lever in any position other than P  | On              |
| SFT PN/N SW     | Selector lever in any position other than P and N                                  | Off             |
| 5FT PIN/IN 5VV  | Selector lever in P or N position  | On              |
| S/L -LOCK       | NOTE:<br>The item is indicated, but not monitored.                                 | Off             |
| S/L -UNLOCK     | NOTE:<br>The item is indicated, but not monitored.                                 | Off             |
| S/L RELAY-F/B   | NOTE:<br>The item is indicated, but not monitored.                                 | Off             |
| UNLK SEN -DR    | Driver door is locked  | Off             |
| UNER SEN -DR    | Driver door is unlocked  | On              |
| PUSH SW -IPDM   | Push-button ignition switch (push-switch) is not pressed                           | Off             |
|                 | Push-button ignition switch (push-switch) is pressed                               | On              |
| IGN RLY1 -F/B   | Ignition switch in OFF or ACC position   | Off             |
|                 | Ignition switch in ON position   | On              |
| DETE SW -IPDM   | Selector lever in any position other than P  | Off             |
|                 | Selector lever in P position   | On              |
| SFT PN -IPDM    | Selector lever in any position other than P and N                                  | Off             |
|                 | Selector lever in P or N position  | On              |
| SET D MET       | Selector lever in any position other than P  | Off             |
| SFT P -MET      | Selector lever in P position   | On              |

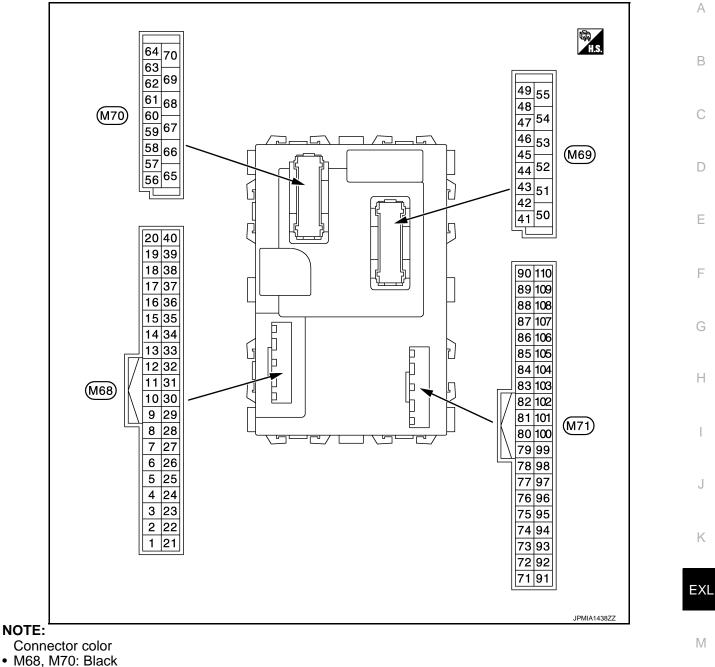
Revision: 2011 November

| Monitor Item  | Condition  | Value/Status                           |
|---------------|--|--|
| SFT N -MET    | Selector lever in any position other than N  | Off                                    |
|               | Selector lever in N position   | On                                     |
|               | Engine stopped   | Stop                                   |
| ENGINE STATE  | While the engine stalls  | Stall                                  |
|               | At engine cranking   | Crank                                  |
|               | Engine running   | Run                                    |
| S/L LOCK-IPDM | NOTE:<br>The item is indicated, but not monitored.   | Off                                    |
| S/L UNLK-IPDM | NOTE:<br>The item is indicated, but not monitored.   | Off                                    |
| S/L RELAY-REQ | NOTE:<br>The item is indicated, but not monitored.   | Off                                    |
| VEH SPEED 1   | While driving  | Equivalent to speed-<br>ometer reading |
| VEH SPEED 2   | While driving  | Equivalent to speed-<br>ometer reading |
|               | Driver door is locked  | LOCK                                   |
| DOOR STAT-DR  | Wait with selective UNLOCK operation (5 seconds)   | READY                                  |
|               | Driver door is unlocked  | UNLOCK                                 |
|               | Passenger door is locked   | LOCK                                   |
| DOOR STAT-AS  | Wait with selective UNLOCK operation (5 seconds)   | READY                                  |
|               | Passenger door is unlocked   | UNLOCK                                 |
| ID OK FLAG    | Driver side door is open after ignition switch is turned OFF (Selector lever is in the P position except for M/T models) | Reset                                  |
|               | Ignition switch ON   | Set                                    |
|               | The engine start is prohibited   | Reset                                  |
| PRMT ENG STRT | The engine start is permitted  | Set                                    |
| PRMT RKE STRT | NOTE:<br>The item is indicated, but not monitored.   | Reset                                  |
| RKE OPE COUN1 | During the operation of the key  | Operation frequency<br>of the key      |
| RKE OPE COUN2 | NOTE:<br>The item is indicated, but not monitored.   | _                                      |
| CONFRM ID ALL | The key ID that the key slot receives is not recognized by any key ID reg-<br>istered to BCM.                            | Yet                                    |
|               | The key ID that the key slot receives is recognized by any key ID registered to BCM.                                     | Done                                   |
| CONFIRM ID4   | The key ID that the key slot receives is not recognized by the fourth key ID registered to BCM.                          | Yet                                    |
|               | The key ID that the key slot receives is recognized by the fourth key ID reg-<br>istered to BCM.                         | Done                                   |
|               | The key ID that the key slot receives is not recognized by the third key ID registered to BCM.                           | Yet                                    |
| CONFIRM ID3   | The key ID that the key slot receives is recognized by the third key ID reg-<br>istered to BCM.                          | Done                                   |
| CONFIRM ID2   | The key ID that the key slot receives is not recognized by the second key ID registered to BCM.                          | Yet                                    |
|               | The key ID that the key slot receives is recognized by the second key ID registered to BCM.                              | Done                                   |

| Monitor Item   | Condition   | Value/Status                    |
|----------------|---|---------------------------------|
| CONFIRM ID1    | The key ID that the key slot receives is not recognized by the first key ID registered to BCM.  | Yet                             |
|                | The key ID that the key slot receives is recognized by the first key ID reg-<br>istered to BCM. | Done                            |
|                | BCM detects registered key ID, or BCM does not detect key ID.                                   | ID OK                           |
| NOT REGISTERED | BCM detects non-registration key ID.  | ID NG                           |
| TP 4           | The ID of fourth key is not registered to BCM   | Yet                             |
| 1P 4           | The ID of fourth key is registered to BCM   | Done                            |
| TP 3           | The ID of third key is not registered to BCM  | Yet                             |
| 1 - 3          | The ID of third key is registered to BCM  | Done                            |
| TP 2           | The ID of second key is not registered to BCM   | Yet                             |
| IF Z           | The ID of second key is registered to BCM   | Done                            |
| TP 1           | The ID of first key is not registered to BCM  | Yet                             |
| 1 - 1          | The ID of first key is registered to BCM  | Done                            |
| AIR PRESS FL   | Ignition switch ON (Only when the signal from the transmitter is received)                      | Air pressure of fron<br>LH tire |
| AIR PRESS FR   | Ignition switch ON (Only when the signal from the transmitter is received)                      | Air pressure of from<br>RH tire |
| AIR PRESS RR   | Ignition switch ON (Only when the signal from the transmitter is received)                      | Air pressure of rea<br>RH tire  |
| AIR PRESS RL   | Ignition switch ON (Only when the signal from the transmitter is received)                      | Air pressure of rea<br>LH tire  |
|                | ID of front LH tire transmitter is registered   | Done                            |
| ID REGST FL1   | ID of front LH tire transmitter is not registered   | Yet                             |
|                | ID of front RH tire transmitter is registered   | Done                            |
| ID REGST FR1   | ID of front RH tire transmitter is not registered   | Yet                             |
| ID REGST RR1   | ID of rear RH tire transmitter is registered  | Done                            |
|                | ID of rear RH tire transmitter is not registered  | Yet                             |
| ID REGST RL1   | ID of rear LH tire transmitter is registered  | Done                            |
|                | ID of rear LH tire transmitter is not registered  | Yet                             |
| WARNING LAMP   | Tire pressure indicator OFF   | Off                             |
|                | Tire pressure indicator ON  | On                              |
| BUZZER         | Tire pressure warning alarm is not sounding   | Off                             |
| DULLIN         | Tire pressure warning alarm is sounding   | On                              |

#### < ECU DIAGNOSIS INFORMATION >

### **TERMINAL LAYOUT**



• M69, M71: White

PHYSICAL VALUES

Ν

Ο

Ρ

| Terminal No.<br>(Wire color) |        | Description                       |                  |   |   | Value  |  |
|------------------------------|--------|-----------------------------------|------------------|---|---|--|--|
| (Wire<br>+                   | color) | Signal name                       | Input/<br>Output |   | Condition   | (Approx.)  |  |
|                              |        |                                   |                  |   | All switch OFF<br>Turn signal switch RH<br>Lighting switch HI | 0 V  |  |
| 2<br>(BR/W)                  | Ground | Combination switch                | Input            | Combination<br>switch<br>(Wiper intermit- | Lighting switch 1ST   | 5<br>0<br>++10ms<br>PKIB4958J<br>1.0 V                                   |  |
| 、 <i>,</i>                   |        |                                   |                  | tent dial 4)                              | Lighting switch 2ND   | (V)<br>15<br>10<br>5<br>0<br>++10 ms<br>                                 |  |
|                              |        |                                   |                  | Combination                               | All switch OFF  | 0 V  |  |
|                              |        | und Combination switch<br>INPUT 4 |                  |   | Turn signal switch LH   |  |  |
|                              |        |                                   |                  |   | Lighting switch PASS  | (V)<br>15  |  |
| 3                            |        |                                   |                  |   | Lighting switch 2ND   | 10<br>5<br>0<br>++10ms<br>PKIB4958J                                      |  |
| 3<br>(GR)                    | Ground |                                   | Input            | switch<br>(Wiper intermit-                |   | 1.0 V  |  |
| . ,                          |        |                                   |                  | tent dial 4)                              | Front fog lamp switch ON                                      | (V)<br>15<br>10<br>5<br>0<br>• • • 10ms<br>• • • 10ms<br>• • • PKIB4956J |  |
|                              |        |                                   |                  |   |   | 0.8 V  |  |
|                              |        |                                   |                  |   | All switch OFF  | 0 V  |  |
|                              |        |                                   |                  |   | Front wiper switch LO   | (V)+   |  |
| 4                            | _      | Combination switch<br>INPUT 3     |                  | Combination switch                        | Front wiper switch MIST<br>Front wiper switch INT             | (V)<br>15<br>10<br>5   |  |
| 4<br>(L/Y)                   | Ground |                                   | Input            | (Wiper intermit-<br>tent dial 4)          | Lighting switch AUTO  | 0<br>↓ ↓ 10ms<br>↓ ↓ 10ms<br>PKIB4958J<br>1.0 V                          |  |

### < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |          | Description                   |                  | Condition          |  | Value   |  |
|------------------------------|----------|-------------------------------|------------------|--------------------|--|---|--|
| (vvire<br>+                  | - COIOF) | Signal name                   | Input/<br>Output |                    | Condition  | (Approx.)   |  |
|                              |          |                               |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)  | 0 V   |  |
|                              |          |                               |                  |                    | Front washer switch<br>(Wiper intermittent dial 4)<br>Rear washer ON   |   |  |
|                              |          |                               |                  |                    | (Wiper intermittent dial 4)<br>Any of the condition below<br>with all switch OFF   | 5<br>0<br>++10ms  |  |
| 5<br>(G)                     | Ground   | Combination switch INPUT 2    | Input            | Combination switch | <ul> <li>Wiper intermittent dial 1</li> <li>Wiper intermittent dial 5</li> <li>Wiper intermittent dial 6</li> </ul>                      | □ □ □ ↓ ↓ ↓ □ □ □ □ □ □ □ □ □ □ □ □ □ □   |  |
|                              |          |                               |                  |                    | Rear wiper switch ON<br>(Wiper intermittent dial 4)  | (V)<br>15<br>10<br>5<br>0   |  |
|                              |          |                               |                  |                    |  | ++10ms<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►   |  |
|                              |          |                               |                  |                    | All switch OFF<br>(Wiper intermittent dial 4)  | 0 V   |  |
|                              |          |                               |                  |                    | Front wiper switch HI<br>(Wiper intermittent dial 4)   | (V)<br>15   |  |
|                              |          |                               |                  |                    | Rear wiper switch INT<br>(Wiper intermittent dial 4)   |   |  |
|                              |          |                               |                  |                    | Wiper intermittent dial 3<br>(All switch OFF)  | ++10ms<br>PKIB4958J<br>1.0 V  |  |
|                              |          |                               |                  |                    |  |   |  |
| 6<br>(L/R)                   | Ground   | Combination switch<br>INPUT 1 | Input            | Combination switch | Any of the condition below<br>with all switch OFF  | (V)<br>15<br>10<br>5<br>0   |  |
|                              |          |                               |                  |                    | <ul> <li>Wiper intermittent dial 1</li> <li>Wiper intermittent dial 2</li> </ul>   | → +10ms → +10 |  |
|                              |          |                               |                  |                    |  | (V)<br>15   |  |
|                              |          |                               |                  |                    | <ul><li>Any of the condition below<br/>with all switch OFF</li><li>Wiper intermittent dial 6</li><li>Wiper intermittent dial 7</li></ul> | 10<br>10<br>0<br>0<br>+++10ms   |  |
|                              |          |                               |                  |                    |  | PKIB4956J   |  |

Revision: 2011 November

| Terminal No. |             | Description                           |                  |                                |   | Value   |
|--------------|-------------|---------------------------------------|------------------|--------------------------------|---|---|
| (Wire<br>+   | color)<br>– | Signal name                           | Input/<br>Output |                                | Condition                                     | (Approx.)   |
| 7<br>(W/R)   | Ground      | Door key cylinder<br>switch UNLOCK    | Input            | Door key cylin-<br>der switch  | NEUTRAL position                              | (V) <sub>15</sub><br>10<br>5<br>0<br>• • 10ms<br>JPMIA0587GB<br>8.0 - 8.5 V |
|              |             |                                       |                  |                                | UNLOCK position                               | 0 V   |
| 8            | Oneveral    | Door key cylinder                     | lased            | Door key cylin-                | NEUTRAL position                              | 12 V  |
| (W/B)        | Ground      | switch LOCK                           | Input            | der switch                     | LOCK position                                 | 0 V   |
| 9            | Ground      | Stop Jomp quitch 1                    | laput            | Stop lamp                      | OFF (Brake pedal is not depressed)            | 0 V   |
| (R)          | Ground      | Stop lamp switch 1                    | Input            | switch                         | ON (Brake pedal is de-<br>pressed)            | Battery voltage   |
| 12<br>(GR)   | Ground      | Door lock and unlock<br>switch LOCK   | Input            | Door lock and<br>unlock switch | NEUTRAL position                              | (V)<br>15<br>10<br>5<br>10<br>10<br>10<br>10<br>JPMIA0012GB<br>1.0 - 1.5 V  |
|              |             |                                       |                  |                                | LOCK position                                 | 0 V   |
| 13<br>(BR)   | Ground      | Door lock and unlock<br>switch UNLOCK | Input            | Door lock and<br>unlock switch | NEUTRAL position                              | (V)<br>15<br>10<br>5<br>0<br>10 ms<br>JPMIA0012GB                           |
|              |             |                                       |                  |                                |   | 1.0 - 1.5 V   |
|              |             |                                       |                  |                                | UNLOCK position<br>When bright outside of the | 0 V   |
| 14           | Ground      | Ontical sensor                        | Innut            | Ignition switch                | vehicle                                       | Close to 5 V  |
| (L/G)        | Ground      | Optical sensor                        | Input            | ON                             | When dark outside of the vehicle              | Close to 0 V  |
| 15<br>(W/L)  | Ground      | Rear window defog-<br>ger switch      | Input            | Rear window<br>defogger switch | Not pressed                                   | (V)<br>15<br>0<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10        |
|              |             |                                       |                  |                                | Pressed                                       | 0 V   |
| 17           | Ground      | Optical sensor pow-                   | Output           | Ignition switch                | OFF, ACC                                      | 0 V   |
| (R/G)        |             | er supply                             |                  | 5                              | ON  | 5 V   |

#### < ECU DIAGNOSIS INFORMATION >

|                  | nal No.<br>color) | Description                |                  | Condition  |   | Value   | А   |
|------------------|-------------------|----------------------------|------------------|--|---|---|-----|
| +                | -                 | Signal name                | Input/<br>Output |  |   | (Approx.)   |     |
| 18<br>(V)        | Ground            | Sensor ground              | Input            | Ignition switch O  | N   | 0 V   | В   |
| 21<br>(P/L)      | Ground            | NATS antenna amp.          | Input/<br>Output | Intelligent Key:<br>Intelligent Key<br>battery is re-<br>moved | Brake pedal: Depressed<br><b>NOTE:</b><br>Waveform varies each<br>time when brake pedal is<br>depressed | (V)<br>15<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10 | C   |
|                  |                   |                            |                  |  | Brake pedal: Not de-<br>pressed   | 12 V  | E   |
|                  |                   |                            |                  |  | ON  | 0 V   |     |
| 23<br>(R/Y)      | Ground            | Security indicator<br>lamp | Output           | Security indica-<br>tor  | Blinking (Ignition switch OFF)  | (V) <sub>15</sub><br>10<br>5<br>0                                     | F   |
|                  |                   |                            |                  |  | OFF   | JPMIA0590GB<br>12.0 V<br>Battery voltage                              | Н   |
| 24* <sup>1</sup> |                   |                            | Input/           |  | -   |   |     |
| (SB)             | Ground            | Dongle link                | Output           | Ignition switch O  | FF  | 5 V   | 1   |
|                  |                   |                            |                  |  | Brake pedal: Depressed<br><b>NOTE:</b><br>Waveform varies each  | (V)<br>15<br>10<br>5<br>5   | J   |
| 25<br>(LG)       | Ground            | NATS antenna amp.          | Input/<br>Output | During waiting   | time when brake pedal is<br>depressed   | → ← 40ms  | К   |
|                  |                   |                            |                  |  | Brake pedal: Not de-<br>pressed   | 12 V  | EXL |
| 26* <sup>2</sup> | Ground            | Thermo control amp.        | Input            | Ignition switch O  | N   | 0 V   |     |
| (GR)             | Croand            |                            | mpor             | Evaporator is ext  | tremely low temperature   | 12 V  | M   |

Ν

0

Ρ

|             | nal No. | Description  |                  |               |   | Value   |
|-------------|---------|--|------------------|---------------|---|---|
| (Wire<br>+  | color)  | Signal name  | Input/<br>Output |               | Condition                                     | (Approx.)   |
|             |         | A/C ON (Automatic<br>A/C)                                    |                  | A/C           | OFF (A/C switch indicator:<br>OFF)            | (V)<br>15<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10   |
| 27<br>(O)   | Ground  |  | Input            |               | ON (A/C switch indicator:<br>ON)              | 0 V   |
|             |         | A/C switch (Manual<br>A/C)                                   |                  | A/C switch    | OFF   | (V)<br>15<br>0<br>10<br>10<br>ms<br>JPMIA0012GB<br>1.0 - 1.5 V  |
|             |         |  |                  |               | ON  | 0 V   |
|             |         |  |                  |               | Blower fan switch OFF                         | 0 V   |
| 28          | Ground  | Blower fan switch<br>(Automatic A/C)                         |                  | Fan switch    | Blower fan switch ON                          | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V   |
| (G/W)       |         | Blower fan switch<br>(Manual A/C)                            | Input            |               | Blower fan switch OFF<br>Blower fan switch ON | (V)<br>10<br>5<br>0<br>• • 10ms<br>PIIB7730J<br>1.5 - 2.0 V<br>0 V  |
| 29          |         |  |                  |               | OFF   | 12 V  |
| (L/W)       | Ground  | Hazard switch  | Input            | Hazard switch | ON  | 0 V   |
| 31<br>(G/B) | Ground  | Front door lock as-<br>sembly driver side<br>(Unlock sensor) | Input            | Driver door   | LOCK status (Unlock sensor switch OFF)        | (V)<br>15<br>0<br>5<br>0<br>• • • 10ms<br>• • • 10ms<br>• • • 10ms<br>• • • • 10ms<br>• • • • 10ms<br>• • • • 10ms<br>• • • • • • • • • • • • • • • • • • • |
|             |         |  |                  |               | UNLOCK status (Unlock sensor switch ON)       | 0 V   |

#### < ECU DIAGNOSIS INFORMATION >

|             | nal No. | Description                    |                  |                       |   | Value  |             |  |  |  |                             |                  |   |
|-------------|---------|--------------------------------|------------------|-----------------------|---|--|-------------|--|--|--|-----------------------------|------------------|---|
| (Wire       | color)  | Signal name                    | Input/<br>Output |                       | Condition   | (Approx.)  | A           |  |  |  |                             |                  |   |
|             |         | O antiaction and the           |                  | Quarkinsting          | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0       | B<br>C<br>D |  |  |  |                             |                  |   |
| 32<br>(LG)  | Ground  | Combination switch<br>OUTPUT 5 | Output           | Combination<br>switch | Front fog lamp switch ON<br>(Wiper intermittent dial 4)   |  |             |  |  |  |                             |                  |   |
|             |         |                                |                  |                       | Rear wiper switch ON<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5   | E           |  |  |  |                             |                  |   |
|             |         |                                |                  |                       | Any of the condition below<br>with all switch OFF<br>• Wiper intermittent dial 1<br>• Wiper intermittent dial 2     | 0 t  | F           |  |  |  |                             |                  |   |
|             |         |                                |                  |                       | <ul><li>Wiper intermittent dial 6</li><li>Wiper intermittent dial 7</li></ul>                                       | PKIB4956J<br>1.0 V   | G           |  |  |  |                             |                  |   |
|             |         |                                |                  |                       | All switch OFF  | $\begin{pmatrix} V \\ 15 \\ 10 \\ 5 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ $ | Н           |  |  |  |                             |                  |   |
|             |         |                                |                  |                       |   |  |             |  |  |  | (Wiper intermittent dial 4) | ← 10ms PKIB4960J | I |
| 33<br>(Y/L) | Ground  | Combination switch<br>OUTPUT 4 | Output           | Combination switch    | Lighting switch 1ST<br>(Wiper intermittent dial 4)  | 7.0 - 8.0 V  | J           |  |  |  |                             |                  |   |
| (.,_)       |         | 001P01 4                       |                  | SWITCH                | Lighting switch AUTO<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10  | K           |  |  |  |                             |                  |   |
|             |         |                                |                  |                       | Rear wiper switch INT<br>(Wiper intermittent dial 4)  | 5<br>0<br>++10ms<br>PKIB4958J<br>1.2 V   |             |  |  |  |                             |                  |   |
|             |         |                                |                  |                       | Any of the condition below with all switch OFF  |  | EXL         |  |  |  |                             |                  |   |
|             |         |                                |                  |                       | <ul> <li>Wiper intermittent dial 1</li> <li>Wiper intermittent dial 5</li> <li>Wiper intermittent dial 6</li> </ul> |  | Μ           |  |  |  |                             |                  |   |

Ν

0

Ρ

|             | nal No. | Description                    |                  |   |  | Value  |  |
|-------------|---------|--------------------------------|------------------|---|--|--|--|
| (Wire       | color)  | Signal name                    | Input/<br>Output |   | Condition  | (Approx.)  |  |
|             |         |                                |                  |   | All switch OFF<br>(Wiper intermittent dial 4)  | (V)<br>10<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 |  |
| 34<br>(W)   | Ground  | Combination switch<br>OUTPUT 3 | Output           | Combination switch  | Lighting switch 2ND<br>(Wiper intermittent dial 4)   | 7.0 ° 0.0 V  |  |
|             |         |                                |                  |   | Lighting switch HI<br>(Wiper intermittent dial 4)  | (V)<br>15<br>10  |  |
|             |         |                                |                  |   | Rear washer switch ON<br>(Wiper intermittent dial 4)   | 5  |  |
|             |         |                                |                  |   | Any of the condition below<br>with all switch OFF<br>• Wiper intermittent dial 1<br>• Wiper intermittent dial 2<br>• Wiper intermittent dial 3 | PKIB4958J<br>1.2 V   |  |
|             |         | Combination switch<br>OUTPUT 2 | Output           | Combination<br>switch<br>(Wiper intermit-<br>tent dial 4) | All switch OFF   | (V)<br>15<br>0<br>• • 10ms<br>• • KIB4960J                                 |  |
| 35<br>(R/L) | Ground  |                                |                  |   | Lighting switch 2ND  | 7.0 - 8.0 V  |  |
|             |         |                                |                  |   | Lighting switch PASS   | (V)<br>15  |  |
|             |         |                                |                  |   | Front wiper switch INT   |  |  |
|             |         |                                |                  |   | Front wiper switch HI  | +10ms<br>PKIB4958J<br>1.2 V  |  |
| 36          |         |                                |                  | Combination   | All switch OFF   | (V)<br>10<br>50<br>↓ 10ms<br>→ 10ms<br>PKIB4960J<br>7.0 - 8.0 V            |  |
| (L/O)       | Ground  | Combination switch<br>OUTPUT 1 | Output           | switch<br>(Wiper intermit-<br>tent dial 4)                | Turn signal switch RH  | (V)<br>15<br>10<br>5<br>0  |  |
|             |         |                                |                  |   | Turn signal switch LH  |  |  |
|             |         |                                |                  |   | Front wiper switch LO<br>(Front wiper switch MIST)   |  |  |
|             |         |                                |                  |   | Front washer switch ON   | ++10ms<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►<br>►    |  |
|             |         |                                |                  |   |  | 1.2 V  |  |

#### < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |        | Description                           |                  |   | Condition   | Value  |  |                           |         |   |
|------------------------------|--------|---------------------------------------|------------------|---|---|--|--|---------------------------|---------|---|
| +                            | -      | Signal name                           | Input/<br>Output |   | Condition   | (Approx.)  |  |                           |         |   |
| 37<br>(G/O)                  | Ground | Selector lever P po-<br>sition switch | Input            | Selector lever  | P position<br>Any position other than P                       | 0 V<br>12 V  |  |                           |         |   |
|                              |        |                                       |                  | Ignition switch<br>OFF (Remote<br>keyless entry<br>communication) | Waiting<br>When operating either<br>button on Intelligent Key | 12 V   |  |                           |         |   |
| 38<br>(G/Y)                  | Ground | Receiver communi-<br>cation           | Input/<br>Output |   |   |  |  | Output<br>Ignition switch | Waiting | (V)<br>15<br>10<br>5<br>0<br>100 ms<br>JMMA0573GB |
|                              |        |                                       |                  | ON (TPMS<br>communication)  | When receiving signal from tire pressure sensor               | (V)<br>15<br>10<br>5<br>0<br>100 ms<br>JMMIA0574GB                         |  |                           |         |   |
| 39<br>(L)                    | Ground | CAN-H                                 | Input/<br>Output |   | _   | _  |  |                           |         |   |
| 40<br>(P)                    | Ground | CAN-L                                 | Input/<br>Output |   | _   | _  |  |                           |         |   |
| 43<br>(W)                    | Ground | Back door switch                      | Input            | Back door<br>switch   | OFF<br>(When back door closed)                                | (V)<br>10<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 |  |                           |         |   |
|                              |        |                                       |                  |   | ON<br>(When back door opened)                                 | 0 V  |  |                           |         |   |
| 44                           | Organi | Rear wiper stop po-                   | 10               | Ignition switch   | Rear wiper stop position                                      | 12 V   |  |                           |         |   |
| (LG)                         | Ground | sition                                | Input            | ON  | Any position other than<br>rear wiper stop position           | 0 V  |  |                           |         |   |

Ρ

|              | nal No. | Description              |                  |                          |  | Value  |
|--------------|---------|--------------------------|------------------|--------------------------|--|--|
| (Wire<br>+   | color)  | Signal name              | Input/<br>Output |                          | Condition  | (Approx.)  |
| 45<br>(SB)   | Ground  | Passenger door<br>switch | Input            | Passenger door<br>switch | OFF (When passenger<br>door closed)              | (V)<br>15<br>0<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V                             |
|              |         |                          |                  |                          | ON (When passenger door opened)                  | 0 V  |
| 46<br>(GR/L) | Ground  | Rear RH door switch      | Input            | Rear RH door<br>switch   | OFF (When rear RH door<br>closed)                | (V)<br>10<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0                 |
|              |         |                          |                  |                          | ON (When rear RH door opened)                    | 0 V  |
| 47<br>(BR/Y) | Ground  | Driver door switch       | Input            | Driver door<br>switch    | OFF (When driver door<br>closed)                 | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V                            |
|              |         |                          |                  |                          | ON (When driver door opened)                     | 0 V  |
| 48<br>(W/G)  | Ground  | Rear LH door switch      | Input            | Rear LH door<br>switch   | OFF (When rear LH door<br>closed)                | (V)<br>15<br>10<br>5<br>0<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• |
|              |         |                          |                  |                          | ON (When rear door LH opened)                    | 0 V  |
| 50           | Ground  | Back door lock actu-     | Output           | Back door                | LOCK (Actuator is activat-<br>ed)                | 0 V  |
| (R/W)        |         | ator relay control       | Calput           |                          | Other than LOCK (Actua-<br>tor is not activated) | Battery voltage  |
| 51           | Ground  | Back door request        | Input            | Back door re-            | ON (Pressed)                                     | 0 V  |
| (W)          |         | switch                   |                  | quest switch             | OFF (Not pressed)                                | 12 V   |
| 54<br>(LG)   | Ground  | Rear wiper               | Output           | Rear wiper               | OFF (Stopped)<br>ON (Activated)                  | 0 V<br>12 V  |
| · - /        |         |                          |                  |                          |  | 12 V   |

#### < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |         | Description                          |                  |                       |   | Value  |   |
|------------------------------|---------|--------------------------------------|------------------|-----------------------|---|--|---|
| (vvire<br>+                  |         | Signal name                          | Input/<br>Output |                       | Condition   | (Approx.)  | Α |
| 55                           | Ground  | Rear door UNLOCK                     | Output           | Rear door             | UNLOCK (Actuator is activated)                            | 12 V   | E |
| (G)                          | Cround  |                                      | Output           |                       | Other then UNLOCK (Ac-<br>tuator is not activated)        | 0 V  |   |
|                              |         |                                      |                  |                       | p battery saver is activated.<br>room lamp power supply)  | 0 V  | ( |
| 56<br>(L)                    | Ground  | Interior room lamp<br>power supply   | Output           | vated.                | p battery saver is not acti-<br>rior room lamp power sup- | 12 V   | [ |
| 57<br>(Y)                    | Ground  | Battery power sup-<br>ply            | Input            | Ignition switch O     | FF  | Battery voltage  | E |
| 59                           | Ground  | Passenger door UN-                   | Output           | Passenger door        | UNLOCK (Actuator is activated)                            | 12 V   | F |
| (G)                          | Ground  | LOCK                                 | Output           | Fassenger door        | Other then UNLOCK (Ac-<br>tuator is not activated)        | 0 V  |   |
|                              |         |                                      |                  |                       | Turn signal switch OFF                                    | 0 V  | ( |
| 60<br>(W/B)                  | Ground  | Turn signal LH                       | Output           | Ignition switch<br>ON | Turn signal switch LH                                     | (V)<br>15<br>10<br>5<br>0<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15        | F |
|                              |         |                                      |                  |                       | Turn signal switch OFF                                    | 0 V  |   |
| 61<br>(W/L)                  | Ground  | Turn signal RH                       | Output           | Ignition switch<br>ON | Turn signal switch RH                                     | (V)<br>15<br>10<br>5<br>0<br>+ +<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15 | ł |
| 62                           |         | Interior room lown                   |                  | Interior room         | OFF   | 6.0 V<br>12 V  | N |
| 63<br>(BR)                   | Ground  | Interior room lamp<br>control signal | Output           | lamp                  | ON  | 0 V  |   |
| 65                           | Crownel |                                      | Quit             |                       | LOCK (Actuator is activat-<br>ed)                         | 12 V   | I |
| (V)                          | Ground  | All doors LOCK                       | Output           | All doors             | Other then LOCK (Actua-<br>tor is not activated)          | 0 V  |   |
| 66                           | Ground  | Driver door UN-                      | Output           | Driver door           | UNLOCK (Actuator is activated)                            | 12 V   | ( |
| (L/B)                        | Ground  | LOCK                                 | Juipui           |                       | Other then UNLOCK (Ac-<br>tuator is not activated)        | 0 V  |   |
| 67<br>(B)                    | Ground  | Ground                               | Output           | Ignition switch O     | N   | 0 V  |   |
| 68<br>(L)                    | Ground  | P/W power supply<br>(IGN)            | Output           | Ignition switch O     | N   | 12 V   |   |
| 69<br>(P)                    | Ground  | P/W power supply (BAT)               | Output           | Ignition switch O     | FF  | 12 V   |   |

Revision: 2011 November

|                          | nal No.  | Description               |  |  |  | Value  |
|--------------------------|--|---------------------------|--|--|--|--|
| (vvire<br>+              | color)   | Signal name               | Input/<br>Output   | Condition  |  | (Approx.)  |
| 70<br>(Y)                | Ground   | Battery power sup-<br>ply | Input  | Ignition switch O  | FF   | Battery voltage  |
| 72* <sup>2</sup><br>(SB) | Ground   | A/C indicator             | Output   | A/C indicator  | OFF<br>ON  | 12 V<br>0 V  |
| 75                       |  | Driver door request       |  | Driver door re-  | ON (Pressed)   | 0 V  |
| (SB)                     | Ground   | switch                    | Input  | quest switch   | OFF (Not pressed)  | 12 V   |
| 76                       |  | Push-button ignition      |  | Push-button ig-  | Pressed  | 0 V  |
| (L/O)                    | Ground   | switch (push switch)      | Input  | nition switch<br>(push switch)   | Not pressed  | 12 V   |
| 78                       | Ground   | Driver door antenna       | Output   | When the driver door request   | When Intelligent Key is<br>not in the antenna detec-<br>tion area<br>(The distance between In-<br>telligent Key and antenna:<br>Approx. 2 m) | (V)<br>15<br>10<br>50<br>500 ms<br>JMKIA5954GB   |
| (LG)                     | Giouna   | (+)                       |  | switch is operat-<br>ed with ignition<br>switch ON   | When Intelligent Key is in<br>the antenna detection<br>area<br>(The distance between In-<br>telligent Key and antenna:<br>80 cm or less)     | (V)<br>15<br>10<br>5<br>0<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5           |
| 79                       | Ground Driver door antenna<br>(-) Output door request<br>switch is opera |                           | When Intelligent Key is<br>not in the antenna detec-<br>tion area<br>(The distance between In-<br>telligent Key and antenna:<br>Approx. 2 m) | (V)<br>15<br>10<br>5<br>0<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5 |  |  |
| (V)                      |  |                           | Uniput   | switch is operat-<br>ed with ignition<br>switch ON   | When Intelligent Key is in<br>the antenna detection<br>area<br>(The distance between In-<br>telligent Key and antenna:<br>80 cm or less)     | (V)<br>15<br>10<br>5<br>0<br>5<br>0<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5 |

| Terminal No.<br>(Wire color) |               | Description        |                  | 0   |  | Value  |             |
|------------------------------|---------------|--------------------|------------------|---|--|--|-------------|
| (Wire                        | e color)<br>– | Signal name        | Input/<br>Output |   | Condition  | (Approx.)  | A           |
| 80                           |               | Passenger door an- |                  | When the pas-<br>senger door re-  | When Intelligent Key is<br>not in the antenna detec-<br>tion area<br>(The distance between In-<br>telligent Key and antenna:<br>Approx. 2 m) | (V)<br>15<br>10<br>50<br>500 ms<br>JMKIA5954GB       | B<br>C<br>D |
| (BR/Y)                       | Ground        | tenna (+)          | Output           | quest switch is<br>operated with<br>ignition switch<br>ON                                     | When Intelligent Key is in<br>the antenna detection<br>area<br>(The distance between In-<br>telligent Key and antenna:<br>80 cm or less)     | (V)<br>15<br>10<br>5<br>0<br>500 ms<br>JMKIA5955GB   | E           |
| 81                           |               | Passenger door an- |                  | When the pas-<br>senger door re-<br>quest switch is<br>operated with<br>ignition switch<br>ON | When Intelligent Key is<br>not in the antenna detec-<br>tion area<br>(The distance between In-<br>telligent Key and antenna:<br>Approx. 2 m) | (V)<br>15<br>10<br>5<br>0<br>500 ms<br>JMKIA5954GB   | G<br>H<br>I |
| (L/Y)                        | Ground        | tenna (-)          | Output           |   | When Intelligent Key is in<br>the antenna detection<br>area<br>(The distance between In-<br>telligent Key and antenna:<br>80 cm or less)     | (V)<br>15<br>10<br>0<br>50<br>500 ms<br>JMKIA5955GB  | J<br>K      |
| 82                           |               | Back door antenna  |                  | When the back<br>door request   | When Intelligent Key is<br>not in the antenna detec-<br>tion area<br>(The distance between In-<br>telligent Key and antenna:<br>Approx. 2 m) | (V)<br>15<br>10<br>5<br>0<br>500 ms<br>JMKIA5954GB   | M           |
| (W/B)                        | Ground        | (+)                | Output           | switch is operat-<br>ed with ignition<br>switch ON  | When Intelligent Key is in<br>the antenna detection<br>area<br>(The distance between In-<br>telligent Key and antenna:<br>80 cm or less)     | (V)<br>15<br>10<br>50<br>50<br>500 ms<br>JMKIA5955GB | O           |

|             | nal No. | Description                             |                  |  |  | Value  |  |
|-------------|---------|---|------------------|--|--|--|--|
| (vvire<br>+ | color)  | Signal name                             | Input/<br>Output |  | Condition  | (Approx.)  |  |
| 83          |         | Back door antenna (-                    |                  | When the back door request                         | When Intelligent Key is<br>not in the antenna detec-<br>tion area<br>(The distance between In-<br>telligent Key and antenna:<br>Approx. 2 m) | (V)<br>15<br>10<br>50<br>50<br>500 ms<br>JMKIA5954GB   |  |
| (B/W)       | Ground  | )                                       | Output           | switch is operat-<br>ed with ignition<br>switch ON | When Intelligent Key is in<br>the antenna detection<br>area<br>(The distance between In-<br>telligent Key and antenna:<br>80 cm or less)     | (V)<br>15<br>10<br>5<br>0<br>500 ms<br>JMKIA5955GB   |  |
| 84          | Ground  | Room antenna (+)<br>(Instrument center) | Output           | Ignition switch<br>ON                              | When Intelligent Key is<br>not in the antenna detec-<br>tion area  | (V)<br>15<br>0<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10   |  |
| (Y/G)       |         |   |                  |  | When Intelligent Key is in the antenna detection area  | (V)<br>15<br>10<br>5<br>0<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1   |  |
| 85          | Ground  | Room antenna (-)                        | Outout           | Ignition switch                                    | When Intelligent Key is<br>not in the antenna detec-<br>tion area  | (V)<br>15<br>10<br>5<br>0<br>11<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1  |  |
| (Y/L)       | Ground  | nd (Instrument center)                  | Output           | ŎN   | When Intelligent Key is in the antenna detection area  | (V)<br>15<br>10<br>5<br>0<br>1 5<br>0<br>1 5<br>0<br>1 5<br>0<br>1 5<br>0<br>1 5<br>0<br>1 5<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>5<br>0<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>10<br>15<br>15<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10 |  |

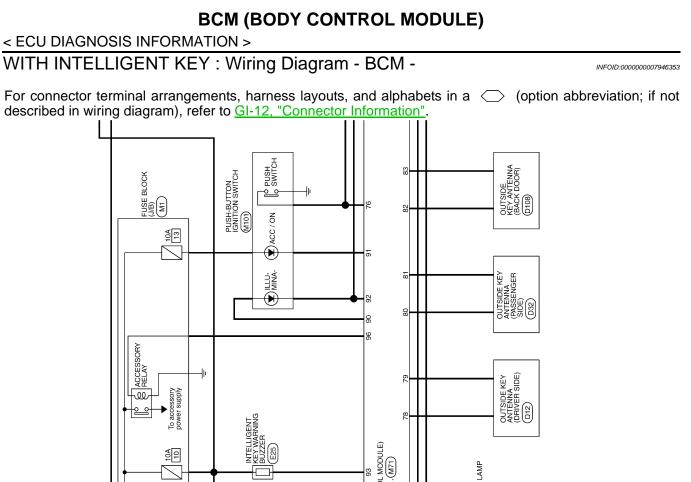
|              | nal No. | Description   |        |                                 |   | Value  | ٨             |
|--------------|---------|---|--------|---------------------------------|---|--|---------------|
|              | color)  | Signal name   | Input/ |                                 | Condition   | (Approx.)  | А             |
| +            | _       |   | Output |                                 |   | 00   | В             |
| 86           |         |   |        | Ignition switch<br>ON           | When Intelligent Key is<br>not in the antenna detec-<br>tion area | (V)<br>15<br>10<br>5<br>0<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1   | C             |
| (P)          | Ground  | tenna (+)   |        |                                 | When Intelligent Key is in the antenna detection area             | (V)<br>15<br>10<br>5<br>0<br>1 s<br>JMKIA3839GB  | E             |
| 87           | Ground  | Luggage room an-                                      | Output | Ignition switch                 | When Intelligent Key is<br>not in the antenna detec-<br>tion area | (V)<br>15<br>10<br>5<br>0<br>1 s<br>JMKIA5951GB  | G<br>H        |
| (L)          |         | tenna (-)   | Cupu   | ON                              | When Intelligent Key is in the antenna detection area             | (V)<br>15<br>0<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>1   | J<br>K<br>EXL |
| 90           |         | Push-button ignition                                  |        | Push-button ig-                 | ON  | 12 V   |               |
| 90<br>(W/L)  | Ground  | switch illumination                                   | Output | nition switch illu-<br>mination | OFF   | 0 V  | M             |
| 91           | Ground  | ACC/ON indicator                                      | 0      |                                 | OFF   | Battery voltage  | 141           |
| (Y)          | Ground  | lamp  | Output | Ignition switch                 | ACC or ON   | 0.5 V  |               |
| 92<br>(BR/R) | Ground  | Push-button ignition<br>switch illumination<br>ground | Output | Tail lamp                       | OFF   | 0 V<br>NOTE:<br>When the illumination brighten-<br>ing/dimming level is in the neutral<br>position<br>(V)<br>15<br>10<br>10 ms<br>JPMIA1554GB<br>6.0 - 7.0 V | N<br>O<br>P   |

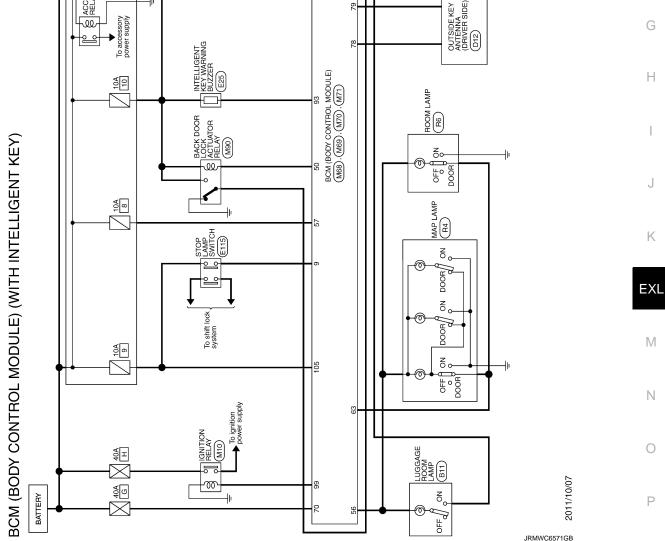
#### < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |        | Description  |                  |                               |  | Value   |
|------------------------------|--------|--|------------------|-------------------------------|--|---|
| +                            | -      | Signal name  | Input/<br>Output |                               | Condition                                      | (Approx.)   |
| 93                           | Ground | Intelligent Key warn-                                    | Output           | Intelligent Key               | Sounding                                       | 0 V   |
| (GR/W)                       | Ground | ing buzzer   | Output           | warning buzzer                | Not sounding                                   | 12 V  |
| 96                           | Ground | ACC rolay control  | Output           | Ignition switch               | OFF  | 0 V   |
| (BR/W)                       | Ground | ACC relay control  | Output           | Ignition switch               | ACC or ON                                      | 12 V  |
| 97                           | Ground | Starter relay control                                    | Output           | Ignition switch               | When selector lever is in P or N position      | Battery voltage   |
| (L/R)                        | Ground | Starter relay control                                    | Output           | ON                            | When selector lever is not in P or N position  | 0 V   |
| 98                           | Ground | Ignition relay (IPDM                                     | Output           | Ignition owitch               | OFF or ACC                                     | 12 V  |
| (BR)                         | Ground | E/R) control   | Output           | Ignition switch               | ON   | 0 V   |
| 99                           | Ground | Ignition relay control                                   | Output           | Ignition switch               | OFF or ACC                                     | 0 V   |
| (W/R)                        | Ground | Ignition relay control                                   | Output           | Ignition Switch               | ON   | 12 V  |
| 100                          | Ground | Passenger door re-                                       | Input            | Passenger door request switch | ON (Pressed)                                   | 0 V   |
| (G)                          | Giouna | quest switch   | input            |                               | OFF (Not pressed)                              | 12 V  |
| 102                          | Ground | Selector lever P/N                                       | Input            | Selector lever                | P or N position                                | Battery voltage   |
| (G)                          | Ground | position   | mput             | Selector level                | Except P and N positions                       | 0 V   |
|                              |        |  |                  |                               | A/C mode defroster ON position                 | 0 V   |
| 103* <sup>2</sup><br>(G/Y)   | Ground | Front defroster<br>switch                                | Input            | Ignition switch<br>ON         | Other than A/C mode de-<br>froster ON position | (V)<br>15<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 |
| 104<br>(Y/R)                 | Ground | CVT shift selector<br>(detention switch)<br>power supply | Output           | Ignition switch ON            |  | 12 V  |
| 105<br>(B/O)                 | Ground | Stop lamp switch 2                                       | Input            | Ignition switch O             | FF   | Battery voltage   |
| 106                          | Ground | Blower fan motor re-                                     | Output           | Ignition switch               | OFF or ACC                                     | 0 V   |
| (Y/B)                        | Ground | lay control  | Supul            |                               | ON   | 12 V  |

\*1: For Canada

\*2: Manual air conditioner





Revision: 2011 November

А

В

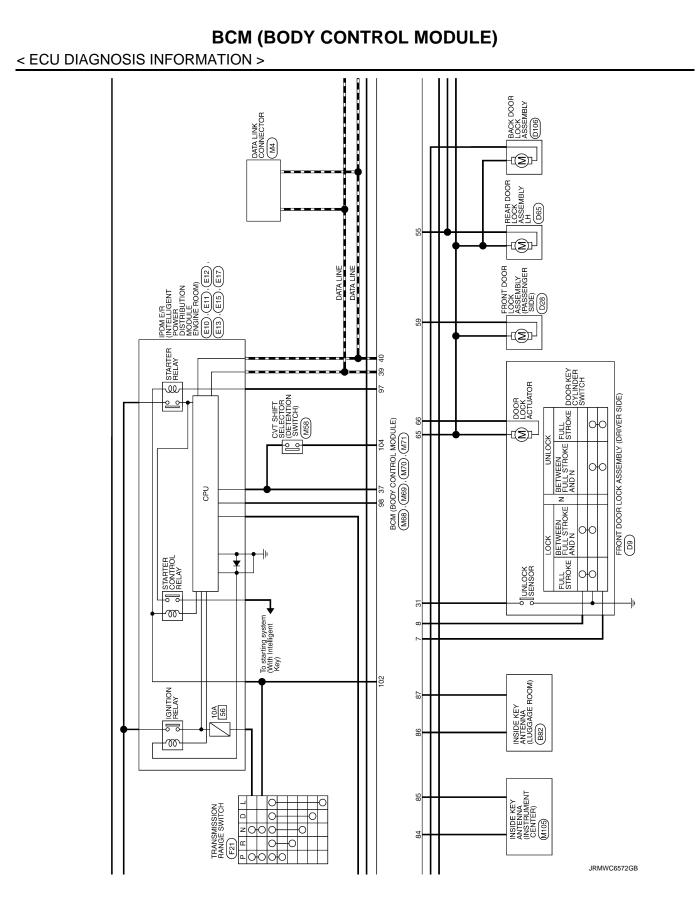
С

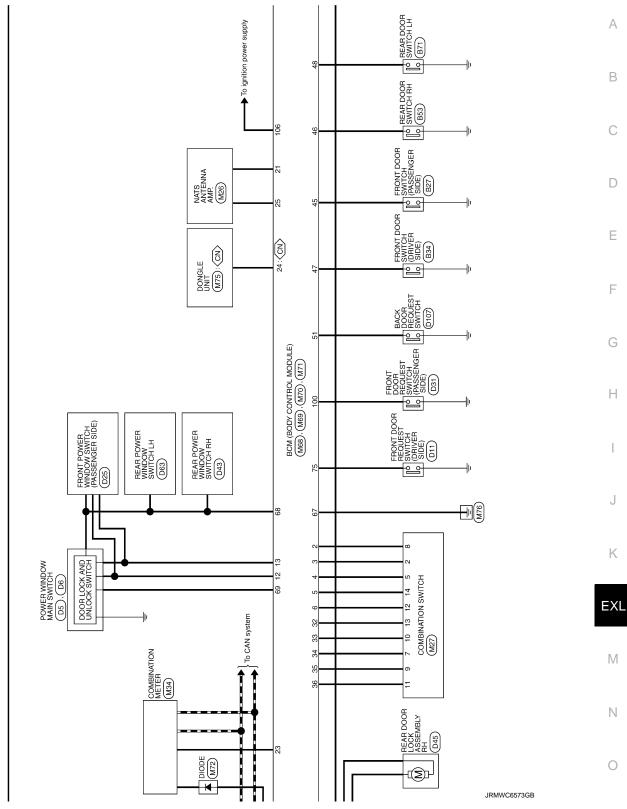
D

Ε

F

J





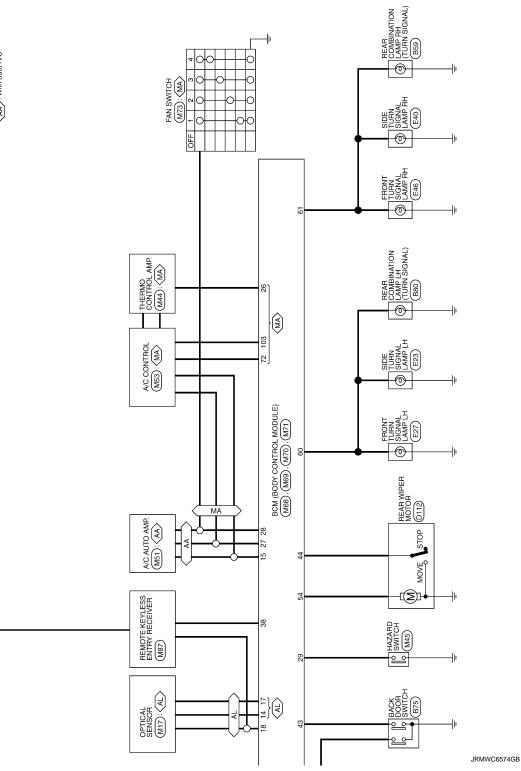
#### < ECU DIAGNOSIS INFORMATION >

 CN>: For Canada

 (MA): With manual A/C

 (AL): With autolight system

 (AA): With auto A/C



### WITH INTELLIGENT KEY : Fail-safe

### FAIL-SAFE CONTROL BY DTC

BCM performs fail-safe control when any DTC are detected.

INFOID:000000007946354

#### < ECU DIAGNOSIS INFORMATION >

| Display contents of CONSULT | Fail-safe   | Cancellation   |
|-----------------------------|---|--|
| B2192: ID DISCORD BCM-ECM   | Inhibit engine cranking                                   | Erase DTC  |
| B2193: CHAIN OF BCM-ECM     | Inhibit engine cranking                                   | Erase DTC  |
| B2195: ANTI-SCANNING        | Inhibit engine cranking                                   | Ignition switch $ON \rightarrow OFF$   |
| B2196: DONGLE NG            | Inhibit engine cranking                                   | Erase DTC  |
| B2198: NATS ANTENNA AMP     | Inhibit engine cranking                                   | Erase DTC  |
| B2608: STARTER RELAY        | Inhibit engine cranking                                   | <ul> <li>500 ms after the following signal communication status becomes consistent</li> <li>Starter relay control signal</li> <li>Starter relay status signal (CAN)</li> </ul>                                     |
| B260F: ENG STATE SIG LOST   | Inhibit engine cranking                                   | <ul><li>When any of the following conditions are fulfilled</li><li>Power position changes to ACC</li><li>Receives engine status signal (CAN)</li></ul>   |
| B26F1: IGN RELAY OFF        | Inhibit engine cranking                                   | <ul> <li>When the following conditions are fulfilled</li> <li>Ignition switch ON signal (CAN: Transmitted from BCM): ON</li> <li>Ignition switch ON signal (CAN: Transmitted from IPDM E/R): ON</li> </ul>         |
| B26F2: IGN RELAY ON         | Inhibit engine cranking                                   | <ul> <li>When the following conditions are fulfilled</li> <li>Ignition switch ON signal (CAN: Transmitted from BCM): OFF</li> <li>Ignition switch ON signal (CAN: Transmitted from IPDM E/R): OFF</li> </ul>       |
| B26F3: START CONT RLY ON    | Inhibit engine cranking                                   | <ul> <li>When the following conditions are fulfilled</li> <li>Starter control relay signal (CAN: Transmitted from BCM): OFF</li> <li>Starter control relay signal (CAN: Transmitted from IPDM E/R): OFF</li> </ul> |
| B26F4: START CONT RLY OFF   | Inhibit engine cranking                                   | <ul> <li>When the following conditions are fulfilled</li> <li>Starter control relay signal (CAN: Transmitted from BCM): ON</li> <li>Starter control relay signal (CAN: Transmitted from IPDM E/R): ON</li> </ul>   |
| B26F7: BCM                  | Inhibit engine cranking<br>by Intelligent Key sys-<br>tem | When room antenna and luggage room antenna functions normally  |

#### REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper stop position signal. When the rear wiper stop position signal does not change for more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

Condition of cancellation

- 1. More than 1 minute is passed after the rear wiper stop.
- 2. Turn rear wiper switch OFF.
- 3. Operate the rear wiper switch or rear washer switch.

FAIL-SAFE CONTROL OF COMBINATION SWITCH READING FUNCTION CAUSED BY LOW POWER SUPPLY VOLTAGE

If voltage of battery power supply lower, BCM maintains combination switch reading to the status when input voltage is less than approximately 9 V.

#### NOTE:

When voltage of battery power supply is approximately 9 V or more, combination switch reading function returns to normal operation.

### WITH INTELLIGENT KEY : DTC Inspection Priority Chart

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

| Priority | DTC   |
|----------|---|
| 1        | B2562: LOW VOLTAGE                                    |
| 2        | U1000: CAN COMM CIRCUIT     U1010: CONTROL UNIT (CAN) |

INFOID:000000007946355

Κ

EXL

М

Ν

Ρ

#### < ECU DIAGNOSIS INFORMATION >

| Priority | DTC   |
|----------|---|
| 3        | <ul> <li>B2192: ID DISCORD BCM-ECM</li> <li>B2193: CHAIN OF BCM-ECM</li> <li>B2195: ANTI-SCANNING</li> <li>B2196: DONGLE NG</li> <li>B2198: NATS ANTENNA AMP</li> </ul>   |
| 4        | <ul> <li>B2555: STOP LAMP</li> <li>B2556: PUSH-BTN IGN SW</li> <li>B2557: VEHICLE SPEED</li> <li>B2601: SHIFT POSITION</li> <li>B2602: SHIFT POSITION</li> <li>B2603: SHIFT POSI STATUS</li> <li>B2604: PNP/CLUTCH SW</li> <li>B2605: PNP/CLUTCH SW</li> <li>B2605: STARTER RELAY</li> <li>B260F: ENG STATE SIG LOST</li> <li>B2614: BCM</li> <li>B2615: BCM</li> <li>B2616: BCM</li> <li>B2618: BCM</li> <li>B2618: BCM</li> <li>B2614: PUSH-BTN IGN SW</li> <li>B2617: IGN RELAY OFF</li> <li>B26F4: START CONT RLY ON</li> <li>B26F4: START CONT RLY OFF</li> <li>B26F6: BCM</li> <li>B26F6: BCM</li> <li>B26F7: BCM</li> <li>B26F6: BCM</li> <li>B26F6: BCM</li> <li>B26F7: BCM</li> <li>B26F6: BCM</li> <li>B26F7: BCM</li> <li>B26F7: BCM</li> <li>B26F7: BCM</li> <li>B26F8: BCM</li> <li>B26F6: STARTON</li> <li>C1729: VHCL SPEED SIG ERR</li> <li>U0415: VEHICLE SPEED</li> </ul> |
| 5        | <ul> <li>C1704: LOW PRESSURE FL</li> <li>C1705: LOW PRESSURE FR</li> <li>C1706: LOW PRESSURE RR</li> <li>C1707: LOW PRESSURE RL</li> <li>C1708: [NO DATA] FL</li> <li>C1709: [NO DATA] FR</li> <li>C1710: [NO DATA] RR</li> <li>C1711: [NO DATA] RL</li> <li>C1716: [PRESSDATA ERR] FL</li> <li>C1717: [PRESSDATA ERR] FR</li> <li>C1718: [PRESSDATA ERR] RR</li> <li>C1719: [PRESSDATA ERR] RL</li> </ul>  |
| 6        | B2621: INSIDE ANTENNA     B2622: INSIDE ANTENNA   |
| 7        | B2626: OUTSIDE ANTENNA     B2627: OUTSIDE ANTENNA     B2628: OUTSIDE ANTENNA  |

### WITH INTELLIGENT KEY : DTC Index

#### NOTE:

The details of time display are as follows.

• CRNT: A malfunction is detected now.

• PAST: A malfunction was detected in the past.

IGN counter is displayed on Freeze Frame Data. For details of Freeze Frame Data, refer to <u>INL-13, "COM-MON ITEM : CONSULT Function (BCM - COMMON ITEM)"</u>.

INFOID:000000007946356

| CONSULT display  | Fail-safe | Freeze Frame<br>Data<br>•Vehicle Speed<br>•Odo/Trip Meter<br>•Vehicle Condi-<br>tion | Intelligent Key<br>warning lamp ON | Tire pressure<br>monitor warning<br>lamp ON | Reference<br>page | A  |
|--|-----------|--|------------------------------------|---|-------------------|----|
| No DTC is detected.<br>further testing<br>may be required. | _         | _  | _                                  | _   | _                 | С  |
| U1000: CAN COMM  | —         | _  | _                                  | _   | BCS-40            |    |
| U1010: CONTROL UNIT (CAN)                                  | _         |  | _                                  | _   | BCS-41            | D  |
| U0415: VEHICLE SPEED                                       | _         |  | ×                                  | _   | BCS-42            |    |
| B2192: ID DISCORD BCM-ECM                                  | ×         | _  | _                                  | —   | <u>SEC-38</u>     |    |
| B2193: CHAIN OF BCM-ECM                                    | ×         |  | _                                  |   | <u>SEC-40</u>     | E  |
| B2195: ANTI-SCANNING                                       | ×         |  | _                                  | _   | <u>SEC-41</u>     |    |
| B2196: DONGLE NG   | ×         | _  | _                                  | —   | <u>SEC-42</u>     | F  |
| B2198: NATS ANTENNA AMP                                    | ×         | _  | _                                  | _   | <u>SEC-44</u>     |    |
| B2555: STOP LAMP   | _         | ×  | ×                                  |   | <u>SEC-48</u>     |    |
| B2556: PUSH-BTN IGN SW                                     | —         | ×  | ×                                  | —   | <u>SEC-50</u>     | G  |
| B2557: VEHICLE SPEED                                       | _         | ×  | ×                                  | _   | <u>SEC-52</u>     |    |
| B2562: LOW VOLTAGE   | _         | ×  | _                                  | _   | BCS-43            | Н  |
| B2601: SHIFT POSITION                                      | _         | ×  | ×                                  | _   | <u>SEC-53</u>     |    |
| B2602: SHIFT POSITION                                      | —         | ×  | ×                                  | —   | <u>SEC-56</u>     |    |
| B2603: SHIFT POSI STATUS                                   | _         | ×  | ×                                  | _   | <u>SEC-59</u>     |    |
| B2604: PNP/CLUTCH SW                                       | _         | ×  | ×                                  | _   | <u>SEC-64</u>     |    |
| B2605: PNP/CLUTCH SW                                       | —         | ×  | ×                                  | _   | <u>SEC-67</u>     |    |
| B2608: STARTER RELAY                                       | ×         | ×  | ×                                  | _   | <u>SEC-69</u>     | 0  |
| B260F: ENG STATE SIG LOST                                  | ×         | ×  | ×                                  | _   | <u>SEC-71</u>     |    |
| B2614: BCM   | _         | ×  | ×                                  | _   | PCS-75            | K  |
| B2615: BCM   | —         | ×  | ×                                  | —   | PCS-78            |    |
| B2616: BCM   | —         | ×  | ×                                  | —   | PCS-81            | ΓV |
| B2618: BCM   | _         | ×  | ×                                  | _   | PCS-84            | EX |
| B261A: PUSH-BTN IGN SW                                     | _         | ×  | ×                                  | _   | PCS-85            |    |
| B2621: INSIDE ANTENNA                                      | _         | ×  | _                                  | _   | <u>DLK-44</u>     | N  |
| B2622: INSIDE ANTENNA                                      | _         | ×  | —                                  | _   | <u>DLK-46</u>     |    |
| B2626: OUTSIDE ANTENNA                                     | _         | ×  | _                                  | _   | <u>DLK-50</u>     |    |
| B2627: OUTSIDE ANTENNA                                     | —         | ×  | —                                  | —   | <u>DLK-48</u>     | N  |
| B2628: OUTSIDE ANTENNA                                     | _         | ×  | _                                  | _   | DLK-52            |    |
| B26F1: IGN RELAY OFF                                       | ×         | ×  | ×                                  | _   | PCS-87            | 0  |
| B26F2: IGN RELAY ON  | ×         | ×  | ×                                  | _   | PCS-89            |    |
| B26F3: START CONT RLY ON                                   | ×         | ×  | ×                                  |   | <u>SEC-72</u>     |    |
| B26F4: START CONT RLY OFF                                  | ×         | ×  | ×                                  | _   | <u>SEC-73</u>     | Ρ  |
| B26F6: BCM   | _         | ×  | ×                                  | _   | PCS-91            |    |
| B26F7: BCM   | ×         | ×  | ×                                  | —   | <u>SEC-75</u>     |    |
| B26F8: BCM   | _         | ×  | ×                                  | _   | <u>SEC-76</u>     |    |
| B26FC: KEY REGISTRATION                                    |           | ×  | ×                                  |   | <u>SEC-77</u>     |    |

#### < ECU DIAGNOSIS INFORMATION >

| CONSULT display           | Fail-safe | Freeze Frame<br>Data<br>•Vehicle Speed<br>•Odo/Trip Meter<br>•Vehicle Condi-<br>tion | Intelligent Key<br>warning lamp ON | Tire pressure<br>monitor warning<br>lamp ON | Reference<br>page |
|---------------------------|-----------|--|------------------------------------|---|-------------------|
| C1704: LOW PRESSURE FL    | —         | —  | —                                  | ×   |                   |
| C1705: LOW PRESSURE FR    | —         | —  | —                                  | ×   |                   |
| C1706: LOW PRESSURE RR    | —         | —  | _                                  | ×   | <u>WT-22</u>      |
| C1707: LOW PRESSURE RL    | —         | —  | _                                  | ×   |                   |
| C1708: [NO DATA] FL       | —         | —  | _                                  | ×   |                   |
| C1709: [NO DATA] FR       | —         | —  | —                                  | ×   | <u>WT-24</u>      |
| C1710: [NO DATA] RR       | —         | —  | —                                  | ×   | <u>vv1-24</u>     |
| C1711: [NO DATA] RL       | —         | —  | —                                  | ×   |                   |
| C1716: [PRESSDATA ERR] FL | —         | —  | _                                  | ×   |                   |
| C1717: [PRESSDATA ERR] FR | —         | —  | _                                  | ×   | <u>WT-27</u>      |
| C1718: [PRESSDATA ERR] RR | —         | —  | —                                  | ×   | <u>vv1-27</u>     |
| C1719: [PRESSDATA ERR] RL | —         | —  | —                                  | ×   | 1                 |
| C1729: VHCL SPEED SIG ERR | —         | —  | _                                  | ×   | <u>WT-29</u>      |

# WITHOUT INTELLIGENT KEY WITHOUT INTELLIGENT KEY : Reference Value

INFOID:000000007946359

#### VALUES ON THE DIAGNOSIS TOOL

| Monitor Item  | Condition  | Value/Status |
|---------------|--|--------------|
| IGN ON SW     | Ignition switch OFF or ACC                         | Off          |
| IGN ON SW     | Ignition switch ON                                 | On           |
|               | Mechanical key is removed from key cylinder        | Off          |
| KEY ON SW     | Mechanical key is inserted to key cylinder         | On           |
|               | Door lock/unlock switch does not operate           | Off          |
| CDL LOCK SW   | Press door lock/unlock switch to the lock side     | On           |
|               | Door lock/unlock switch does not operate           | Off          |
| CDL UNLOCK SW | Press door lock/unlock switch to the unlock side   | On           |
|               | Driver's door closed                               | Off          |
| DOOR SW-DR    | Driver's door opened                               | On           |
|               | Passenger door closed                              | Off          |
| DOOR SW-AS    | Passenger door opened                              | On           |
|               | Rear RH door closed                                | Off          |
| DOOR SW-RR    | Rear RH door opened                                | On           |
|               | Rear LH door closed                                | Off          |
| DOOR SW-RL    | Rear LH door opened                                | On           |
|               | Back door closed                                   | Off          |
| BACK DOOR SW  | Back door opened                                   | On           |
| LOCK STATUS   | NOTE:<br>The item is indicated, but not monitored. | Off          |
|               | Ignition switch OFF                                | Off          |
| ACC ON SW     | Ignition switch ACC or ON                          | On           |

#### < ECU DIAGNOSIS INFORMATION >

| Monitor Item   | Condition  | Value/Status                           |
|----------------|--|--|
| KEYLESS LOCK   | "LOCK" button of key fob is not pressed  | Off                                    |
| ALTELSS LOOK   | "LOCK" button of key fob is pressed  | On                                     |
| KEYLESS UNLOCK | "UNLOCK" button of key fob is not pressed                                      | Off                                    |
| RETLESS UNLOCK | "UNLOCK" button of key fob is pressed  | On                                     |
| SHOCK SENSOR   | NOTE:<br>The item is indicated, but not monitored.                             | NORMAL                                 |
|                | Other than driver door key cylinder LOCK position                              | Off                                    |
| KEY CYL LK-SW  | Driver door key cylinder LOCK position   | On                                     |
| KEY CYL UN-SW  | Other than driver door key cylinder UNLOCK position                            | Off                                    |
| REFUTE UN-SW   | Driver door key cylinder UNLOCK position                                       | On                                     |
| VEHICLE SPEED  | While driving  | Equivalent to speed-<br>ometer reading |
|                | Rear window defogger switch OFF  | Off                                    |
| REAR DEF SW    | Rear window defogger switch ON   | On                                     |
| REVERSE SW CAN | NOTE:  | Off                                    |
|                | The item is indicated, but not used.   | On                                     |
| TAIL LAMP SW   | Lighting switch OFF  | Off                                    |
| TAIL LAIVIE OV | Lighting switch 1ST  | On                                     |
| FR FOG SW      | NOTE:<br>The item is indicated, but not monitored.                             | Off                                    |
| BUCKLE SW      | The seat belt (driver side) is fastened. [Seat belt switch (driver side) OFF]  | Off                                    |
| BUCKLE SW      | The seat belt (driver side) is unfastened. [Seat belt switch (driver side) ON] | On                                     |
| TRNK/HAT MNTR  | NOTE:<br>The item is indicated, but not monitored.                             | Off                                    |
| ACC SW         | Ignition switch OFF  | Off                                    |
| ACC 311        | Ignition switch ACC or ON  | On                                     |
| KYLS TRNK/HAT  | NOTE:<br>The item is indicated, but not monitored.                             | Off                                    |
| KEYLESS PANIC  | PANIC button of key fob is not pressed   | Off                                    |
| RETLESS PAINIC | PANIC button of key fob is pressed   | On                                     |
|                | Lighting switch OFF  | Off                                    |
| HI BEAM SW     | Lighting switch HI   | On                                     |
|                | Lighting switch OFF  | Off                                    |
| HEAD LAMP SW 1 | Lighting switch 2ND  | On                                     |
|                | Lighting switch OFF  | Off                                    |
| HEAD LAMP SW 2 | Lighting switch 2ND  | On                                     |
| AUTO LIGHT SW  | NOTE:<br>The item is indicated, but not monitored.                             | Off                                    |
|                | Other than lighting switch PASS  | Off                                    |
| PASSING SW     | Lighting switch PASS   | On                                     |
| RR FOG SW      | NOTE:<br>The item is indicated, but not monitored.                             | Off                                    |
|                | Turn signal switch OFF   | Off                                    |
| TURN SIGNAL R  | Turn signal switch RH  | On                                     |
|                | Turn signal switch OFF   | Off                                    |
| TURN SIGNAL L  | Turn signal switch LH  | On                                     |

Revision: 2011 November

| Monitor Item    | Condition   | Value/Status |
|-----------------|---|--------------|
| PKB SW          | Parking brake switch is OFF                         | Off          |
| FRD SW          | Parking brake switch is ON                          | On           |
|                 | Engine stopped                                      | Off          |
| ENGINE RUN      | Engine running                                      | On           |
| OPTI SEN (DTCT) | NOTE:<br>The item is indicated, but not monitored.  | Close to 5 V |
| OPTI SEN (FILT) | NOTE:<br>The item is indicated, but not monitored.  | Close to 5 V |
| LIG SEN COND    | NOTE:<br>The item is indicated, but not monitored.  | OFF          |
|                 | Ignition switch OFF or ACC                          | Off          |
| IGN SW CAN      | Ignition switch ON                                  | On           |
|                 | Front wiper switch OFF                              | Off          |
| FR WIPER HI     | Front wiper switch HI                               | On           |
|                 | Front wiper switch OFF                              | Off          |
| FR WIPER LOW    | Front wiper switch LO                               | On           |
|                 | Front wiper switch OFF                              | Off          |
| FR WIPER INT    | Front wiper switch INT                              | On           |
|                 | Front washer switch OFF                             | Off          |
| FR WASHER SW    | Front washer switch ON                              | On           |
| INT VOLUME      | Wiper intermittent dial is in a dial position 1 - 7 | 1 - 7        |
|                 | Any position other than front wiper stop position   | Off          |
| FR WIPER STOP   | Front wiper stop position                           | On           |
|                 | Rear wiper switch OFF                               | Off          |
| RR WIPER ON     | Rear wiper switch ON                                | On           |
|                 | Rear wiper switch OFF                               | Off          |
| RR WIPER INT    | Rear wiper switch INT                               | On           |
|                 | Rear washer switch OFF                              | Off          |
| RR WASHER SW    | Rear washer switch ON                               | On           |
|                 | Rear wiper stop position                            | Off          |
| RR WIPER STOP   | Other than rear wiper stop position                 | On           |
| RAIN SENSOR     | NOTE:<br>The item is indicated, but not monitored.  | Off          |
|                 | Hazard switch OFF                                   | Off          |
| HAZARD SW       | Hazard switch ON                                    | On           |
|                 | Blower control dial OFF                             | Off          |
| FAN ON SIG      | Other than blower control dial OFF                  | On           |
|                 | A/C switch OFF                                      | Off          |
| AIR COND SW     | A/C switch ON                                       | On           |
|                 | Ignition switch ON                                  | Off          |
| THERMO AMP      | Evaporator is extremely low temperature             | On           |
|                 | Other than A/C mode defroster ON position           | Off          |
| FR DEF SW       | A/C mode defroster ON position                      | On           |
| KEYLESS TRUNK   | NOTE:<br>The item is indicated, but not monitored.  | Off          |

#### < ECU DIAGNOSIS INFORMATION >

| Monitor Item  | Condition  | Value/Status |
|---------------|--|--------------|
| TRNK OPNR SW  | NOTE:<br>The item is indicated, but not monitored.             | Off          |
| TRNK OPN MNTR | NOTE:<br>The item is indicated, but not monitored.             | Off          |
| HOOD SW       | Close the hood   | Off          |
|               | Open the hood  | On           |
|               | Other than the ignition switch is ON by key registered to BCM. | Off          |
| TRANSPONDER   | The ignition switch is ON by key registered to BCM.            | On           |
| INTELLI KEY   | NOTE:<br>The item is indicated, but not used.                  | Off          |
| AUTO RELOCK   | NOTE:<br>The item is indicated, but not monitored.             | Off          |
| OIL PRESS SW  | Ignition switch OFF or ACC     Engine running                  | Off          |
|               | Ignition switch ON   | On           |
| BRAKE SW      | Brake pedal is not depressed                                   | Off          |
| DRARE JVV     | Brake pedal is depressed                                       | On           |

Н

J

Κ

EXL

Μ

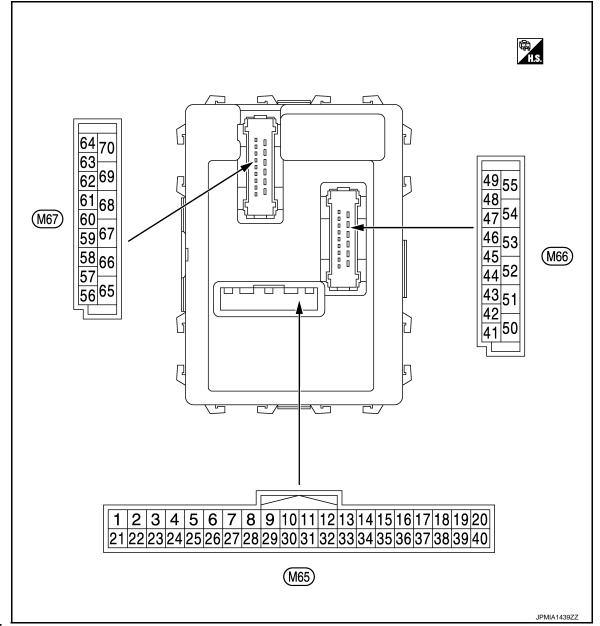
Ν

Ο

Ρ

#### < ECU DIAGNOSIS INFORMATION >

#### **TERMINAL LAYOUT**



#### NOTE:

• M65, M66: White

• M67: Black

PHYSICAL VALUES

#### < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |        | Description                              |  | -   |  | Value   |  |
|------------------------------|--------|--|--|---|--|---|--|
| +                            | -      | Signal name                              | Input/<br>Output                           | Condition   |  | (Approx.)   |  |
|                              |        |  |  |   | All switch OFF   | 0 V   |  |
|                              |        |  |  |   | Turn signal switch RH  |   |  |
|                              |        |  |  |   | Lighting switch HI   | (V)<br>15   |  |
| 2<br>(BR/W)                  | Ground | Combination switch<br>INPUT 5            | Input                                      | Combination<br>switch<br>(Wiper intermit-                 | Lighting switch 1ST  | 10<br>5<br>0<br>• • • 10ms<br>• • • • • • • • • • • • • • • • • • • |  |
| (BR/W) 0101                  |        |  | 015  | tent dial 4)  | Lighting switch 2ND  | (V)<br>15<br>10<br>5<br>0<br>••••10 ms<br>••••10 ms<br>JPMIA0342JP<br>2.0 V   |  |
|                              |        |  |  |   | All switch OFF   | 0 V   |  |
|                              |        | round Combination switch INPUT 4         | Input                                      | Combination<br>switch<br>(Wiper intermit-<br>tent dial 4) | Turn signal switch LH  |   |  |
|                              |        |  |  |   | Lighting switch PASS   | (V)<br>15   |  |
| 3<br>(GR) G                  | Ground |  |  |   | Lighting switch 2ND  | PKIB4958J<br>1.0 V  |  |
|                              |        |  |  |   | All switch OFF   | 0 V   |  |
|                              |        |  |  |   | Front wiper switch LO  |   |  |
| 4<br>(L/Y) Groun             |        |  |  | Combination   | Front wiper switch MIST  | (V)<br>15   |  |
|                              | Ground | ound Combination switch<br>INPUT 3 Input | switch<br>(Wiper intermit-<br>tent dial 4) | Front wiper switch INT                                    | 10<br>5<br>0<br>• • • 10ms<br>• • • 10ms<br>• • • 10ms<br>• • • 10ms<br>• • • 10ms |   |  |

Ν

0

Ρ

| Terminal No. |        | Description                    |                  |                       |   | Value  |  |
|--------------|--------|--------------------------------|------------------|-----------------------|---|--|--|
| (Wire<br>+   | color) | Signal name                    | Input/<br>Output | Condition             |   | (Approx.)  |  |
|              |        |                                |                  |                       | All switch OFF<br>(Wiper intermittent dial 4)   | 0 V  |  |
|              |        |                                |                  |                       | Front washer switch<br>(Wiper intermittent dial 4)  | (V)<br>15  |  |
|              |        |                                |                  |                       | Rear washer switch ON<br>(Wiper intermittent dial 4)  |  |  |
| 5<br>(G)     | Ground | Combination switch<br>INPUT 2  | Input            | Combination<br>switch | Any of the condition below<br>with all switch OFF<br>• Wiper intermittent dial 1<br>• Wiper intermittent dial 5<br>• Wiper intermittent dial 6                | + 10ms<br>PKIB4958J<br>1.0 V   |  |
|              |        |                                |                  |                       | Rear wiper switch ON<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>+10ms<br>PKIB4956J<br>0.8 V   |  |
|              |        | round Combination switch Input | Input            | Combination<br>switch | All switch OFF<br>(Wiper intermittent dial 4)   | 0 V  |  |
|              |        |                                |                  |                       | Front wiper switch HI<br>(Wiper intermittent dial 4)<br>Rear wiper switch INT<br>(Wiper intermittent dial 4)<br>Wiper intermittent dial 3<br>(All switch OFF) | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>FKIB4958J<br>1.0 V  |  |
| 6<br>(L/R)   | Ground |                                |                  |                       | Any of the condition below<br>with all switch OFF<br>• Wiper intermittent dial 1<br>• Wiper intermittent dial 2   | (V)<br>15<br>10<br>5<br>0<br>• 10ms<br>• 10ms<br>PKIB4952J<br>1.9 V  |  |
|              |        |                                |                  |                       | Any of the condition below<br>with all switch OFF<br>• Wiper intermittent dial 6<br>• Wiper intermittent dial 7   | (V)<br>15<br>0<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>••••10ms<br>•••••10ms<br>•••••10ms<br>•••••10ms<br>•••••10ms<br>••••••10ms<br>•••••••••••••••••••••••••••••••••••• |  |

#### < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |          | Description                        |                  |                               |                                     | Value   |
|------------------------------|----------|------------------------------------|------------------|-------------------------------|-------------------------------------|---|
| (Wire<br>+                   | e color) | Signal name                        | Input/<br>Output |                               | Condition                           | (Approx.)   |
| 7<br>(W/R)                   | Ground   | Door key cylinder<br>switch UNLOCK | Input            | Door key cylin-<br>der switch | NEUTRAL position                    | (V)<br>15<br>10<br>5<br>0<br>→ + 10ms<br>→ + 10ms<br>→ FKIB4960J<br>7.0 - 8.0 V |
|                              |          |                                    |                  |                               | UNLOCK position                     | 0 V   |
| 8                            | 0        | Door key cylinder                  | 1                | Door key cylin-               | NEUTRAL position                    | 12 V  |
| (W/B)                        | Ground   | switch LOCK                        | Input            | der switch                    | LOCK position                       | 0 V   |
| 9                            | Ground   | Stop lamp switch                   | Input            | Stop lamp                     | OFF (Brake pedal is not depressed)  | 0 V   |
| (R)                          | Ground   | Stop lamp Switch                   | Input            | switch                        | ON (Brake pedal is de-<br>pressed)  | Battery voltage   |
| 10                           | Ground   | Rear window defog-                 | Input            | Rear window                   | OFF (Not pressed)                   | 12 V  |
| (W/L)                        | Ground   | ger switch                         | input            | defogger switch               | ON (Pressed)                        | 0 V   |
| 11                           | Ground   | Ignition switch ACC                | Input            | Ignition switch O             | FF                                  | 0 V   |
| (L/Y)                        | Croand   | ignition ownon 700                 | mput             | Ignition switch ACC or ON     |                                     | Battery voltage   |
| 12<br>(SB)                   | Ground   | Passenger door<br>switch           | Input            | Passenger door<br>switch      | OFF (When passenger<br>door closed) | (V)<br>15<br>0<br>↓ ↓ 10ms<br>PKIB4960J<br>7.0 - 8.0 V                          |
|                              |          |                                    |                  |                               | ON (When passenger door opened)     | 0 V   |
| 13<br>(GR/L)                 | Ground   | Rear RH door switch                | Input            | Rear RH door<br>switch        | OFF (When rear RH door<br>closed)   | (V)<br>15<br>0<br>  |
|                              |          |                                    |                  |                               | ON (When rear RH door opened)       | 0 V   |
| 18<br>(V)                    | Ground   | Receiver ground                    | Input            | Ignition switch O             | N                                   | 0 V   |

Ρ

|               | rminal No. Description |   | Value            |   |  |   |
|---------------|------------------------|---|------------------|---|--|---|
| (Wire<br>+    | color)<br>–            | Signal name   | Input/<br>Output |   | Condition  | (Approx.)   |
|               |                        |   |                  |   | Insert mechanical key into ignition key cylinder                         | 0 V   |
|               |                        | Pomoto koviloso on                                    |                  |   | Remove mechanical key<br>from ignition key cylinder<br>(Any door opened) | 5 V   |
| 19<br>(BR)    | Ground                 | Remote keyless en-<br>try receiver power<br>supply    | Input            | Ignition switch<br>OFF                  | Remove mechanical key<br>from ignition key cylinder<br>(Any door closed) | (V)<br>6<br>4<br>0<br>•••0.2 s<br>JPMIA0338JP   |
|               |                        |   |                  |   | Insert mechanical key into ignition key cylinder                         | 0 V   |
| 20<br>(G/Y)   | Ground                 | Remote keyless en-<br>try receiver commu-<br>nication | Input            | Ignition switch<br>OFF                  | Waiting  | (V)<br>6<br>4<br>2<br>0<br>••••1.0ms<br>PIIB7728J   |
|               |                        |   |                  |   | Signal receiving   | (V)<br>6<br>2<br>0<br>••••1.0ms<br>PIIB7729J  |
| 21<br>(P/L)   | Ground                 | NATS antenna amp.                                     | Input/<br>Output | Just after insertin<br>Other than above | g ignition key in key cylinder   | Pointer of tester should move<br>0 V  |
|               |                        |   |                  |   | ON   | 0 V   |
| 23<br>(R/Y)   | Ground                 | Security indicator                                    | Input            | Security indica-<br>tor                 | Blinking (Ignition switch<br>OFF)  | (V)<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>0<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15<br>15 |
|               |                        |   |                  |   | OFF  | 12 V  |
| 24*<br>(GR/B) | Ground                 | Dongle link   | Input/<br>Output | Ignition switch O                       | <br>FF   | 5 V   |
| 25<br>(LG)    | Ground                 | NATS antenna amp.                                     | Input/           |   | g ignition key in key cylinder   | Pointer of tester should move   |
|               |                        |   | Output           | Other than above Ignition switch O      |  | 0 V<br>0 V  |
| 26<br>(GR)    | Ground                 | Thermo control amp.                                   | Input            |   | remely low temperature   | 12 V  |

| Terminal No.<br>(Wire color) |        | Description               |                  |                       |   | Value  |  |
|------------------------------|--------|---------------------------|------------------|-----------------------|---|--|--|
| +                            | -      | Signal name               | Input/<br>Output |                       | Condition   | (Approx.)  |  |
| 27<br>(Y/G)                  | Ground | A/C switch                | Input            | A/C switch            | OFF   | (V)<br>15<br>10<br>5<br>10<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V                            |  |
|                              |        |                           |                  |                       | ON  | 0 V  |  |
| 28<br>(G/W)                  | Ground | Blower fan switch         | Input            | Fan switch            | Blower fan switch OFF   | (V)<br>10<br>5<br>0<br>→ + 10ms<br>PKIB4960J<br>7.0 - 8.0 V                                  |  |
|                              |        |                           |                  |                       | Blower fan switch ON  | 0 V  |  |
| 29                           | Ground | Hazard switch             | Input            | Hazard switch         | OFF   | Battery voltage  |  |
| (L/W)                        | Giound |                           | input            | Hazalu Switch         | ON  | 0 V  |  |
|                              |        |                           |                  |                       | A/C mode defroster ON position  | 0 V  |  |
| 31<br>(G/Y)                  | Ground | Front defroster<br>switch | Input            | Ignition switch<br>ON | Other than A/C mode de-<br>froster ON position  | (V)<br>10<br>5<br>0<br><b>•</b> • 2ms<br>JPMIA0589GB<br>8.0 - 9.0 V                          |  |
| 32                           |        | Combination switch        |                  | Combination           | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V                              |  |
| (LG)                         | Ground | OUTPUT 5                  | Output           | switch                | Rear wiper switch ON<br>(Wiper intermittent dial 4)   | (V)<br>15  |  |
|                              |        |                           |                  |                       | Any of the condition below<br>with all switch OFF<br>• Wiper intermittent dial 1<br>• Wiper intermittent dial 2<br>• Wiper intermittent dial 6<br>• Wiper intermittent dial 7 | 10<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 |  |

### < ECU DIAGNOSIS INFORMATION >

| Terminal No. Description |               |                             |                  |                                  | Value   |   |
|--------------------------|---------------|-----------------------------|------------------|----------------------------------|---|---|
| (Wire                    | e color)<br>– | Signal name                 | Input/<br>Output | Condition                        |   | (Approx.)   |
| 33                       | Ground        | Combination switch          | Quant            | Combination                      | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>15<br>0<br>5<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 |
| (Y/L)                    | Ground        | OUTPUT 4                    | Output           | switch                           | Lighting switch 1ST<br>(Wiper intermittent dial 4)<br>Rear wiper switch INT<br>(Wiper intermittent dial 4)  | (V)<br>15<br>10<br>5<br>0   |
|                          |               |                             |                  |                                  | <ul> <li>Any of the condition below<br/>with all switch OFF</li> <li>Wiper intermittent dial 1</li> <li>Wiper intermittent dial 5</li> <li>Wiper intermittent dial 6</li> </ul> | 0<br>+ +10ms<br>PKIB4956J<br>1.2 V  |
|                          |               |                             |                  |                                  | All switch OFF<br>(Wiper intermittent dial 4)   | (V)<br>10<br>50<br>•••••••••••••••••••••••••••••••••  |
| 34<br>(W)                | Ground        | Combination switch OUTPUT 3 | Output           | Combination switch               | Lighting switch 2ND<br>(Wiper intermittent dial 4)  |   |
|                          |               |                             |                  |                                  | Lighting switch HI<br>(Wiper intermittent dial 4)   |   |
|                          |               |                             |                  |                                  | Rear washer switch ON<br>(Wiper intermittent dial 4)  |   |
|                          |               |                             |                  |                                  | Any of the condition below<br>with all switch OFF<br>• Wiper intermittent dial 1<br>• Wiper intermittent dial 2<br>• Wiper intermittent dial 3                                  | PKIB4958J<br>1.2 V  |
| 35                       | Ground        | Combination switch          | Output           | Combination                      | All switch OFF  | (V)<br>15<br>10<br>50<br>•••••••••••••••••••••••••••••••••  |
| (R/L)                    | Ground        | OUTPUT 2                    | Output           | (Wiper intermit-<br>tent dial 4) | Lighting switch 2ND<br>Lighting switch PASS   | (V)<br>15   |
|                          |               |                             |                  |                                  | Front wiper switch INT  |   |
|                          |               |                             |                  |                                  | Front wiper switch HI   |   |
|                          |               |                             |                  |                                  |   | 1.2 V   |

Revision: 2011 November

| Terminal No.<br>(Wire color) |               | Description                         |                  |   |  | Value  |
|------------------------------|---------------|-------------------------------------|------------------|---|--|--|
| (Wire<br>+                   | e color)<br>_ | Signal name                         | Input/<br>Output |   | Condition  | (Approx.)  |
|                              |               |                                     |                  | All switch OFF  |  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms  |
| 36<br>(L/O)                  | Ground        | Combination switch<br>OUTPUT 1      | Output           | Combination<br>switch<br>(Wiper intermit-<br>tent dial 4) | Turn signal switch RH<br>Turn signal switch LH<br>Front wiper switch LO<br>(Front wiper switch MIST) | PKIB4960J<br>7.0 - 8.0 V   |
|                              |               |                                     |                  |   | Front washer switch ON   | ++10ms<br>PKIB4958J<br>1.2 V   |
| 37                           |               |                                     |                  | Insert mechanica<br>der                                   | al key into ignition key cylin-  | Battery voltage  |
| (R/W)                        | Ground        | Key switch                          | Input            |   | nical key from ignition key  | 0 V  |
| 38                           | Cround        | Institute outline ON                | lanut            | Ignition switch O   | FF or ACC  | 0 V  |
| (O)                          | Ground        | Ignition switch ON                  | Input            | Ignition switch O   | N  | Battery voltage  |
| 39<br>(L)                    | Ground        | CAN-H                               | Input/<br>Output |   | _  | _  |
| 40<br>(P)                    | Ground        | CAN-L                               | Input/<br>Output |   | —  | —  |
| 43<br>(W)                    | Ground        | Back door switch                    | Input            | Back door<br>switch                                       | OFF (When back door closed)  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J   |
|                              |               |                                     |                  |   | ON (When back door   | 7.0 - 8.0 V  |
|                              |               |                                     |                  |   | opened)<br>Rear wiper stop position  | 12 V   |
| 44<br>(LG)                   | Ground        | Rear wiper stop po-<br>sition       | Input            | Ignition switch<br>ON                                     | Any position other than<br>rear wiper stop position  | 0 V  |
| 45<br>(GR)                   | Ground        | Door lock and unlock<br>switch LOCK | Input            | Door lock and<br>unlock switch                            | NEUTRAL position   | (V)<br>15<br>10<br>5<br>0<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>1 |
|                              |               |                                     |                  |   |  | 1.0 - 1.5 V  |
|                              |               |                                     |                  |   | LOCK position  | 0 V  |

| Terminal No.<br>(Wire color) |         | Description                           |                  |   |  | Value   |
|------------------------------|---------|---------------------------------------|------------------|---|--|---|
| (Wire                        | color)  | Signal name                           | Input/<br>Output |   | Condition  | (Approx.)   |
| 46<br>(BR)                   | Ground  | Door lock and unlock<br>switch UNLOCK | Input            | Door lock and<br>unlock switch  | NEUTRAL position   | (V)<br>15<br>10<br>50<br>10 ms<br>JPMIA0012GB<br>1.0 - 1.5 V                  |
|                              |         |                                       |                  |   | UNLOCK position  | 0 V   |
| 47<br>(BR/Y)                 | Ground  | Driver door switch                    | Input            | Driver door<br>switch   | OFF (When driver door<br>closed)   | (V)<br>15<br>10<br>5<br>0<br>4<br>4<br>10ms<br>10<br>FKIB4960J<br>7.0 - 8.0 V |
|                              |         |                                       |                  |   | ON (When driver door opened)   | 0 V   |
| 48<br>(W/G)                  | Ground  | Rear LH door switch                   | Input            | Rear LH door<br>switch  | OFF (When rear LH door<br>closed)  | (V)<br>15<br>10<br>5<br>0<br>+ 10ms<br>PKIB4960J<br>7.0 - 8.0 V               |
|                              |         |                                       |                  |   | ON (When rear LH door opened)  | 0 V   |
| 50                           | Ground  | A/C indicator                         | Output           | A/C indicator   | OFF  | 12 V  |
| (SB)                         |         |                                       |                  |   | ON   | 0 V   |
| 54                           | Ground  | Rear wiper                            | Output           | Ignition switch   | Rear wiper switch OFF  | 0 V   |
| (LG)                         |         |                                       | -                |   | Rear wiper switch ON<br>p battery saver is activated.<br>room lamp power supply) | 12 V<br>0 V   |
| 56<br>(L)                    | Ground  | Interior room lamp<br>power supply    | Output           | Interior room lamp battery saver is not activated.<br>(Outputs the interior room lamp power supply) |  | 12 V  |
| 57<br>(Y)                    | Ground  | Battery power sup-<br>ply             | Input            | Ignition switch OFF   |  | Battery voltage   |
| 59                           | Ground  | Driver door UN-                       | Output           | Driver door   | UNLOCK (Actuator is activated)   | 12 V  |
| (L/B)                        | e. sund | LOCK                                  | pu               |   | Other then UNLOCK (Ac-<br>tuator is not activated)                               | 0 V   |

### < ECU DIAGNOSIS INFORMATION >

| Terminal No.<br>(Wire color) |          | Description                          |                  |                       |  | Value   |   |
|------------------------------|----------|--------------------------------------|------------------|-----------------------|--|---|---|
| (vvire<br>+                  | - COIOF) | Signal name                          | Input/<br>Output | Condition             |  | (Approx.)   | A |
|                              |          |                                      |                  |                       | Turn signal switch OFF                             | 0 V   | E |
| 60<br>(W/B)                  | Ground   | Turn signal LH                       | Output           | Ignition switch<br>ON | Turn signal switch LH                              | (V)<br>15<br>10<br>5<br>0<br>+<br>15<br>  | ( |
|                              |          |                                      |                  |                       | Turn signal switch OFF                             | 6.0 V<br>0 V  | E |
| 61<br>(W/L)                  | Ground   | Turn signal RH                       | Output           | Ignition switch<br>ON | Turn signal switch RH                              | (V)<br>15<br>10<br>5<br>0<br>15<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10 | F |
|                              |          |                                      |                  |                       |  | страна<br>ркіссаятое<br>6.0 V   | 0 |
| 63<br>(BR)                   | Ground   | Interior room lamp<br>control signal | Output           | Interior room<br>lamp | OFF<br>ON  | 12 V<br>0 V   | ŀ |
| 65                           | Ground   | All doors LOCK                       | Output           | All doors             | LOCK (Actuator is activat-<br>ed)                  | 12 V  |   |
| (V)                          | Ciouna   |                                      | Output           | All doors             | Other then LOCK (Actua-<br>tor is not activated)   | 0 V   |   |
| 66                           | Ground   | Passenger door and                   | Output           | Passenger door        | UNLOCK (Actuator is activated)                     | 12 V  |   |
| (G)                          | Ground   | rear door UNLOCK                     | Output           | and rear door         | Other then UNLOCK (Ac-<br>tuator is not activated) | 0 V   | - |
| 67<br>(B)                    | Ground   | Ground                               | Output           | Ignition switch O     | N  | 0 V   |   |
| 68<br>(L)                    | Ground   | P/W power supply (IGN)               | Output           | Ignition switch ON    |  | 12 V  | Е |
| 69<br>(P)                    | Ground   | P/W power supply (BAT)               | Output           | Ignition switch OFF   |  | 12 V  |   |
| 70<br>(Y)                    | Ground   | Battery power sup-<br>ply            | Input            | Ignition switch O     | FF   | Battery voltage   |   |

Ο

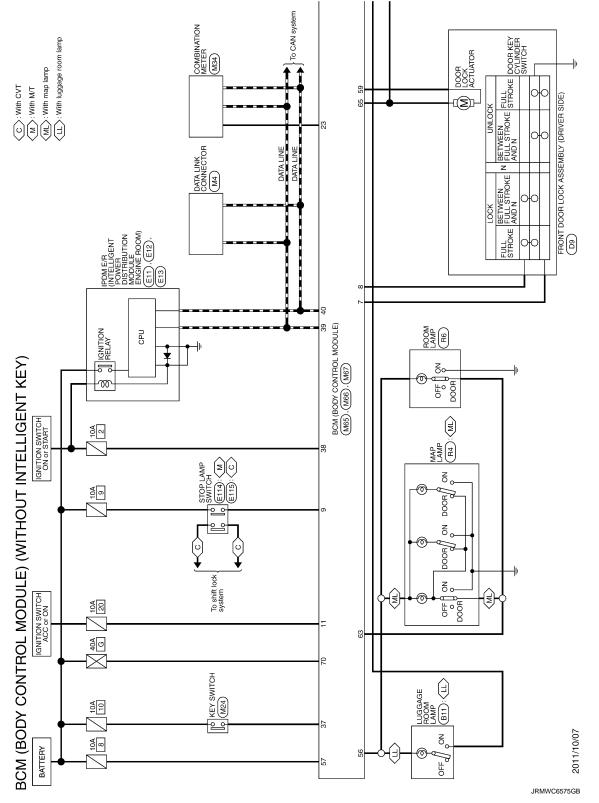
Ρ

#### < ECU DIAGNOSIS INFORMATION >

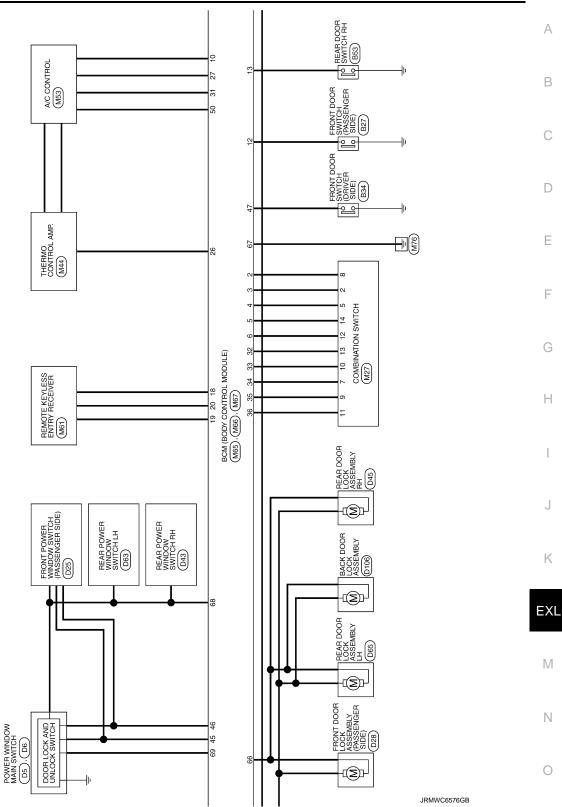
#### WITHOUT INTELLIGENT KEY : Wiring Diagram - BCM -

INFOID:000000007946360

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12, "Connector Information"</u>.



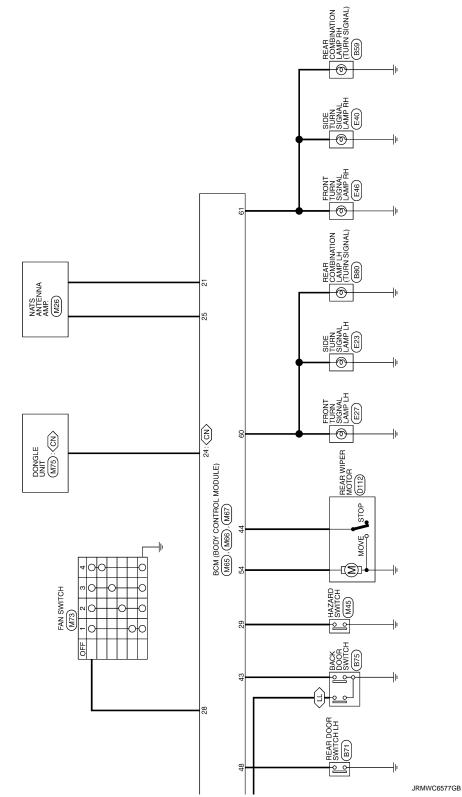
< ECU DIAGNOSIS INFORMATION >



Ρ

#### < ECU DIAGNOSIS INFORMATION >

CN : For Canada LL : With luggage room lamp



### WITHOUT INTELLIGENT KEY : Fail-safe

### FAIL-SAFE CONTROL BY DTC

BCM performs fail-safe control when any DTC are detected.

INFOID:000000007946361

#### < ECU DIAGNOSIS INFORMATION >

| Display contents of CONSULT | Fail-safe               | Cancellation                         | A |
|-----------------------------|-------------------------|--------------------------------------|---|
| B2190: NATS ANTENNA AMP     | Inhibit engine cranking | Erase DTC                            |   |
| B2191: DIFFERENCE OF KEY    | Inhibit engine cranking | Erase DTC                            |   |
| B2192: ID DISCORD BCM-ECM   | Inhibit engine cranking | Erase DTC                            | В |
| B2193: CHAIN OF BCM-ECM     | Inhibit engine cranking | Erase DTC                            |   |
| B2195: ANTI SCANNING        | Inhibit engine cranking | Ignition switch $ON \rightarrow OFF$ | С |
| B2196: DONGLE NG            | Inhibit engine cranking | Erase DTC                            |   |

#### REAR WIPER MOTOR PROTECTION

BCM detects the rear wiper stopping position according to the rear wiper auto stop signal. When the rear wiper auto stop signal does not change more than 5 seconds while driving the rear wiper, BCM stops power supply to protect the rear wiper motor.

Condition of cancellation

- 1. Pass more than 1 minute after the rear wiper stop.
- 2. Turn rear wiper switch OFF.
- 3. Operate the rear wiper switch or rear washer switch.

### WITHOUT INTELLIGENT KEY : DTC Inspection Priority Chart

INFOID:000000007946362

D

Ε

F

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.

| Priority | DTC   | Н                  |
|----------|---|--------------------|
| 1        | U1000: CAN COMM     U1010: CONTROL UNIT (CAN)   |                    |
| 2        | <ul> <li>B2190: NATS ANTENNA AMP</li> <li>B2191: DIFFERENCE OF KEY</li> <li>B2192: ID DISCORD BCM-ECM</li> <li>B2193: CHAIN OF BCM-ECM</li> <li>B2195: ANTI SCANNING</li> <li>B2196: DONGLE NG</li> </ul>   | J                  |
| 3        | C1735: IGN CIRCUIT OPEN   |                    |
| 4        | <ul> <li>C1704: LOW PRESSURE FL</li> <li>C1705: LOW PRESSURE FR</li> <li>C1706: LOW PRESSURE RR</li> <li>C1707: LOW PRESSURE RL</li> <li>C1708: [NO DATA] FL</li> <li>C1709: [NO DATA] FR</li> <li>C1710: [NO DATA] RR</li> <li>C1711: [NO DATA] RL</li> <li>C1716: [PRESSDATA ERR] FL</li> <li>C1717: [PRESSDATA ERR] FR</li> <li>C1718: [PRESSDATA ERR] RR</li> <li>C1719: [PRESSDATA ERR] RL</li> <li>C1729: VHCL SPEED SIG ERR</li> </ul> | K<br>EXL<br>M<br>N |

### WITHOUT INTELLIGENT KEY : DTC Index

#### NOTE:

Details of time display

- CRNT: Displays when there is a malfunction now or after returning to the normal condition until turning ignition switch OFF → ON again.
- 1 39: Displayed if any previous malfunction is present when current condition is normal. It increases like 1
   → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. The counter
   remains at 39 even if the number of cycles exceeds it. It is counted from 1 again when turning ignition switch
   OFF → ON after returning to the normal condition if the malfunction is detected again.

INFOID:000000007946363

| CONSULT display            | Fail-safe | Tire pressure<br>monitor warn-<br>ing lamp ON | Reference      |
|----------------------------|-----------|---|----------------|
| U1000: CAN COMM            |           | _   | <u>BCS-113</u> |
| U1010: CONTROL UNIT (CAN)  | _         | —   | <u>BCS-114</u> |
| B2190: NATS ANTENNA AMP    | ×         | —   | <u>SEC-173</u> |
| B2191: DIFFERENCE OF KEY   | ×         | —   | <u>SEC-176</u> |
| B2192: ID DISCORD BCM-ECM  | ×         | _   | <u>SEC-177</u> |
| B2193: CHAIN OF BCM-ECM    | ×         | —   | <u>SEC-178</u> |
| B2195: ANTI SCANNING       | ×         | _   | <u>SEC-179</u> |
| B2196: DONGLE NG           | ×         | _   | <u>SEC-180</u> |
| C1704: LOW PRESSURE FL     | _         | ×   |                |
| C1705: LOW PRESSURE FR     | —         | ×   |                |
| C1706: LOW PRESSURE RR     | _         | ×   | <u>WT-22</u>   |
| C1707: LOW PRESSURE RL     | _         | ×   |                |
| C1708: [NO DATA] FL        | _         | ×   |                |
| C1709: [NO DATA] FR        | —         | ×   |                |
| C1710: [NO DATA] RR        | —         | ×   | <u>WT-24</u>   |
| C1711: [NO DATA] RL        | _         | ×   |                |
| C1716: [PRESS DATA ERR] FL | —         | ×   |                |
| C1717: [PRESS DATA ERR] FR | —         | ×   |                |
| C1718: [PRESS DATA ERR] RR | —         | ×   | <u>WT-27</u>   |
| C1719: [PRESS DATA ERR] RL | —         | ×   |                |
| C1729: VHCL SPEED SIG ERR  | —         | ×   | <u>WT-29</u>   |
| C1735: IGN CIRCUIT OPEN    | —         | _   | BCS-115        |

< ECU DIAGNOSIS INFORMATION >

# IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) WITH INTELLIGENT KEY

### WITH INTELLIGENT KEY : Reference Value

INFOID:000000007946364

А

В

С

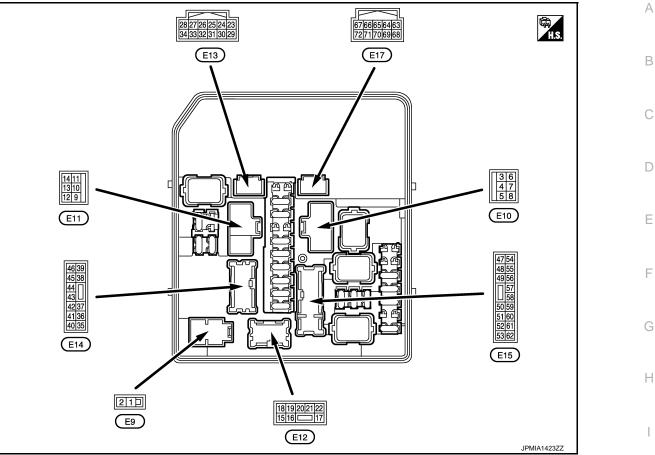
#### VALUES ON THE DIAGNOSIS TOOL

| Monitor Item  |                                  | Value/Status   | -       |   |
|---------------|----------------------------------|--|---------|---|
| MOTOR FAN REQ | Engine idle speed                | Changes depending on engine<br>coolant temperature, air conditioner<br>operation status, vehicle speed,<br>etc.              | 1/2/3/4 | _ |
|               |                                  | A/C switch OFF   | Off     |   |
| AC COMP REQ   | Engine running                   | A/C switch ON<br>(Compressor is operating)   | On      | _ |
|               | Lighting switch OFF              |  | Off     | _ |
| TAIL&CLR REQ  | Lighting switch 1ST, 2ND, HI or  | AUTO (Light is illuminated)  | On      |   |
|               | Lighting switch OFF              |  | Off     | - |
| HL LO REQ     | Lighting switch 2ND, HI or AUT   | O (Light is illuminated)   | On      |   |
|               | Lighting switch OFF              |  | Off     |   |
| HL HI REQ     | Lighting switch HI               |  | On      | - |
|               | Lighting switch 2ND or           | Front fog lamp switch OFF  | Off     | - |
| FR FOG REQ    | AUTO (Light is illuminated)      | Front fog lamp switch ON   | On      | - |
|               |                                  | Front wiper switch OFF   | Stop    |   |
|               |                                  | Front wiper switch INT   | 1LOW    |   |
| FR WIP REQ    | Ignition switch ON               | Front wiper switch LO  | Low     | - |
|               |                                  | Front wiper switch HI  | Hi      |   |
|               |                                  | Front wiper stop position  | STOP P  | _ |
| WIP AUTO STOP | Ignition switch ON               | Any position other than front wiper stop position  | ACT P   | - |
|               |                                  | Front wiper operates normally  | Off     | - |
| WIP PROT      | Ignition switch ON               | Front wiper stops at fail-safe opera-<br>tion  | BLOCK   | - |
|               | Ignition switch OFF or ACC       |  | Off     | _ |
| IGN RLY1 -REQ | Ignition switch ON               |  | On      | - |
|               | Ignition switch OFF or ACC       |  | Off     | - |
| IGN RLY       | Ignition switch ON               |  | On      | - |
|               | Release the push-button ignition | n switch   | Off     | - |
| PUSH SW       | Press the push-button ignition s | On   | -       |   |
| INTER/NP SW   | Ignition switch ON               | <ul> <li>Selector lever in any position other than P or N (CVT models)</li> <li>Release clutch pedal (M/T models)</li> </ul> | Off     |   |
| INTER/INF OW  |                                  | <ul> <li>Selector lever in P or N position<br/>(CVT models)</li> <li>Depress clutch pedal (M/T mod-<br/>els)</li> </ul>      | On      | _ |
| ST RLY CONT   | Ignition switch ON               |  | Off     |   |
| STILLI GONT   | At engine cranking               | On   |         |   |

| Monitor Item  | Con  | dition   | Value/Status        |  |  |
|---|--|--|---------------------|--|--|
| IHBT RLY -REQ   |  |  |                     |  |  |
|   | At engine cranking   |  | On                  |  |  |
|   | Ignition switch ON   |  | Off                 |  |  |
|   | At engine cranking   |  | $INHI\:ON\toST\:ON$ |  |  |
| ST/INHI RLY   |  | control relay cannot be recognized by when the starter relay is ON and the   | UNKWN               |  |  |
| DETENT SW   | Ignition switch ON   | <ul> <li>Pull the selector lever with selector lever in P position</li> <li>Selector lever in any position other than P</li> </ul> | Off                 |  |  |
|   | Release the selector lever with sele<br><b>NOTE:</b><br>Fixed On for M/T models                | ector lever in P position  | On                  |  |  |
| S/L RLY -REQ  | NOTE:<br>The item is indicated, but not monited  | Off  |                     |  |  |
| S/L STATE   | <b>NOTE:</b><br>The item is indicated, but not monited   | ored.  | UNLOCK              |  |  |
| DTRL REQ  | Not operation  |  | Off                 |  |  |
| <b>NOTE:</b><br>This item is monitored only on<br>the vehicle with the daytime<br>running light system. | Daytime running light system is ope  | erated.  | On                  |  |  |
| OIL P SW  | Ignition switch OFF, ACC or engine   | running  | Open                |  |  |
| OIL P SW  | Ignition switch ON   |  | Close               |  |  |
| HOOD SW   | <b>NOTE:</b><br>The item is indicated, but not monited   | Off  |                     |  |  |
|   | Not operation  |  | Off                 |  |  |
| THFT HRN REQ  | <ul> <li>Panic alarm is activated</li> <li>Horn is activated with VEHICLE S<br/>TEM</li> </ul> | On   |                     |  |  |
|   | Not operating  |  | Off                 |  |  |
| HORN CHIRP  | Door locking with Intelligent Key (ho  | orn chirp mode)  | On                  |  |  |

< ECU DIAGNOSIS INFORMATION >

### TERMINAL LAYOUT



#### PHYSICAL VALUES

| Terminal NO.<br>(Wire color) |             | Description                         |                  |                         | Value           |     |
|------------------------------|-------------|-------------------------------------|------------------|-------------------------|-----------------|-----|
| (Wire<br>+                   | color)<br>— | Signal name                         | Input/<br>Output | Condition               | (Approx.)       | K   |
| 1<br>(R)                     | Ground      | Battery power supply                | Input            | Ignition switch OFF     | Battery voltage | _   |
| 2<br>(G)                     | Ground      | Battery power supply                | Input            | Ignition switch OFF     | Battery voltage | EX  |
| 3                            | Ground      | Starter motor                       | Quitouit         | Ignition switch ON      | 0 V             |     |
| (BR)                         | Giouna      | Starter motor                       | Output           | At engine cranking      | Battery voltage | M   |
| 4<br>(P)                     | Ground      | Battery power supply                | Input            | Ignition switch OFF     | Battery voltage |     |
| 5                            | Ground      | Cooling fan relay-1                 | Quitouit         | Cooling fan OFF         | 0 V             | — N |
| (LG)                         | Ground      | power supply                        | Output           | Cooling fan operated    | Battery voltage | _   |
| _                            |             |                                     |                  | Cooling fan OFF         | 0 V             | 0   |
| 7<br>(Y)                     | Ground      | Cooling fan relay-2<br>power supply | Output           | Cooling fan LO operated | 9.0 V           | _   |
| (.)                          |             | pone cappi                          |                  | Cooling fan HI operated | Battery voltage |     |
| 8<br>(V)                     | Ground      | Battery power supply                | Input            | Ignition switch OFF     | Battery voltage | — P |
| 9<br>(B/W)                   | Ground      | Ground                              | _                | Ignition switch ON      | 0 V             |     |
|                              |             |                                     |                  | Cooling fan OFF         | 0 V             |     |
| 10<br>(L)                    | Ground      | Cooling fan motor<br>ground         | Output           | Cooling fan LO operated | 5.0 V           |     |
| (-)                          |             | 3                                   |                  | Cooling fan HI operated | 0 V             |     |

Revision: 2011 November

**EXL-131** 

2012 CUBE

J

| Termin           |        | Description                              |                  |  |   | Value   |  |     |
|------------------|--------|--|------------------|--|---|---|--|-----|
| (Wire<br>+       | color) | Signal name                              | Input/<br>Output |  | Condition   | (Approx.)   |  |     |
| 13               | Crownd | Door window doforcor                     | Output           | Ignition Rear window defogger switch OFF |   | Ignition<br>Output switch   |  | 0 V |
| (W)              | Ground | Rear window defogger                     | Output           | ON                                       | Rear window defogger<br>switch ON                           | Battery voltage   |  |     |
| 19<br>(B/W)      | Ground | Ground                                   | _                | Ignition sw                              | vitch ON  | 0 V   |  |     |
| 21               | Ground | Front fog lamp (RH)                      | Output           | Lighting switch                          | Front fog lamp switch<br>OFF                                | 0 V   |  |     |
| (VV)             |        |  |                  | 2ND                                      | Front fog lamp switch ON                                    | Battery voltage   |  |     |
| 22<br>(V)        | Ground | Front fog lamp (LH)                      | Output           | Lighting switch                          | Front fog lamp switch<br>OFF                                | 0 V   |  |     |
| (*)              |        |  |                  | 2ND                                      | Front fog lamp switch ON                                    | Battery voltage   |  |     |
| 24<br>(LG)       | Ground | Oil pressure switch                      | Input            | Ignition<br>switch<br>ON                 | Engine stopped<br>Engine running                            | 0 V<br>Battery voltage  |  |     |
|                  |        |  |                  | Ignition                                 | Front wiper stop position                                   | 0 V   |  |     |
| 25<br>(Y)        | Ground | Front wiper auto stop                    | Input            | switch<br>ON                             | Any position other than<br>front wiper stop position        | Battery voltage   |  |     |
| 26<br>(P)        | Ground | CAN-L                                    | Input/<br>Output |  | _   | _   |  |     |
| 27<br>(L)        | Ground | CAN-H                                    | Input/<br>Output |  | _   | _   |  |     |
| 28 <sup>*1</sup> | Ground | Daytime running light                    | Output           | Daytime ru                               | unning light deactivated                                    | 0 V   |  |     |
| (P)              | Cround | relay-1 control                          | Output           | Daytime ru                               | unning light activated                                      | Battery voltage   |  |     |
| 30<br>(SD)       | Ground | Starter relay control                    | Output           | At engine                                | -   | 0 V   |  |     |
| (SB)             |        | -  | -                | Ignition sw                              |   | Battery voltage   |  |     |
| 31               | Ground | Fuel pump relay control                  | Output           |  | mately 1 second after turn-<br>gnition switch ON<br>running | 0 - 1.5 V   |  |     |
| (W)              |        |  | ·                |  | ately 1 second or more after<br>e ignition switch ON        | Battery voltage   |  |     |
|                  |        |  |                  | Ignition sw                              | vitch ON  | Battery voltage   |  |     |
| 33<br>(O)        | Ground | und Power generation com-<br>mand signal | Output           |  | et on "ACTIVE TEST", "AL-<br>OR DUTY" of "ENGINE"           | (V)<br>6<br>2<br>0<br>4<br>2<br>0<br>4<br>2<br>m<br>5<br>2<br>m<br>5<br>2<br>m<br>5<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 |  |     |
|                  |        |  |                  |  | et on "ACTIVE TEST", "AL-<br>OR DUTY" of "ENGINE"           | (V)<br>6<br>2<br>0<br>4<br>2<br>0<br>4<br>2<br>1.4 V  |  |     |

| Terminal NO.<br>(Wire color) |          | Description                 |                  |                    |   | Value           |   |     |
|------------------------------|----------|-----------------------------|------------------|--------------------|---|-----------------|---|-----|
| (vvire<br>+                  | -        | Signal name                 | Input/<br>Output |                    | Condition   | (Approx.)       |   |     |
| 34                           | Crownd   |                             |                  | The horn i         | s deactivated   | Battery voltage |   |     |
| (R)                          | Ground   | Horn relay control          | Output           | The horn i         | s activated   | 0 V             |   |     |
| 36                           | Oraciand |                             | Quitaut          | Ignition           | Lighting switch OFF   | 0 V             |   |     |
| (Y)                          | Ground   | Parking lamp (LH)           | Output           | switch<br>ON       | Lighting switch 1ST   | Battery voltage |   |     |
| 37                           | 0        |                             | 0 1 1            | Ignition           | Lighting switch OFF   | 0 V             |   |     |
| (V)                          | Ground   | Parking lamp (RH)           | Output           | switch<br>ON       | Lighting switch 1ST   | Battery voltage |   |     |
| 38                           |          | Tail lamp (RH) & illumi-    | 0                | Ignition           | Lighting switch OFF   | 0 V             |   |     |
| (G)                          | Ground   | nations                     | Output           | switch<br>ON       | Lighting switch 1ST   | Battery voltage |   |     |
| 39                           | Cround   | Front win or LU             | 0                | Ignition           | Front wiper switch OFF  | 0 V             |   |     |
| (V)                          | Ground   | Front wiper HI              | Output           | switch<br>ON       | Front wiper switch HI   | Battery voltage |   |     |
| 40                           |          |                             |                  | · ·                | itch OFF<br>a few seconds after turn-<br>a switch OFF)                | Battery voltage |   |     |
| (R)                          | Ground   | ECM relay control           | Output           | (For a fe          | switch ON<br>switch OFF<br>ew seconds after turning ig-<br>vitch OFF) | 0 - 1.5 V       |   |     |
| 41                           |          | Tail lamp (LH) & license    |                  | Ignition           | Lighting switch OFF   | 0 V             |   |     |
| (SB)                         | Ground   | plate lamps                 | Output           | switch<br>ON       | Lighting switch 1ST   | Battery voltage |   |     |
| 40                           |          |                             |                  | ``                 | vitch OFF<br>a few seconds after turn-<br>a switch OFF)               | 0 V             |   |     |
| 43<br>(G)                    | Ground   | ECM relay power sup-<br>ply |                  | (For a fe          | switch ON<br>switch OFF<br>ew seconds after turning ig-<br>vitch OFF) | Battery voltage |   |     |
| 44                           |          |                             |                  |                    |   | ``              | vitch OFF<br>n a few seconds after turn-<br>n switch OFF) | 0 V |
| (P)                          | Ground   | ECM relay power sup-<br>ply | Output           | (For a fe          | switch ON<br>switch OFF<br>ew seconds after turning ig-<br>vitch OFF) | Battery voltage |   |     |
| 45<br>(Y)                    | Ground   | TCM power supply            | Output           | Ignition sw        | vitch OFF   | Battery voltage |   |     |
| 46                           |          |                             |                  | Ignition           | Front wiper switch OFF  | 0 V             |   |     |
| (O)                          | Ground   | Front wiper LO              | Output           | switch<br>ON       | Front wiper switch LO   | Battery voltage |   |     |
|                              |          | Transmission range          |                  | P or N (Igr        | er in any position other than<br>hition switch ON)                    | 0 V             |   |     |
| 47<br>(BR)                   | Ground   | switch <sup>*2</sup>        | Input            | Select leve<br>ON) | er P or N (Ignition switch  | Battery voltage |   |     |
| ()                           |          | Clutch interlock            |                  | Release th         | ne clutch pedal   | 0 V             |   |     |
|                              |          | switch <sup>*3</sup>        |                  | Depress th         | ne clutch pedal   | Battery voltage |   |     |

| Terminal NO.<br>(Wire color)           |         | Description                                 |                  |                     |   | Value  |     |
|--|---------|---|------------------|---------------------|---|--|-----|
| (Wire +                                | -       | Signal name                                 | Input/<br>Output |                     | Condition   | (Approx.)  |     |
|  |         |   |                  | Ignition            | Lighting switch OFF   | 0 V  |     |
| 49<br>(W)                              | Ground  | Headlamp HI (RH)                            | Output           | switch<br>ON        | <ul><li>Lighting switch HI</li><li>Lighting switch PASS</li></ul>     | Battery voltage  |     |
|  |         |   |                  | Daytime ru          | unning light activated <sup>*1</sup>                                  | 7.0 V  |     |
|  |         |   |                  | Ignition            | Lighting switch OFF   | 0 V  |     |
| 50<br>(GR)                             | Ground  | Headlamp HI (LH)                            | Output           | switch<br>ON        | <ul><li>Lighting switch HI</li><li>Lighting switch PASS</li></ul>     | Battery voltage  |     |
|  |         |   |                  | Daytime ru          | unning light activated <sup>*1</sup>                                  | 7.0 V  |     |
| 51                                     |         |   |                  | Ignition            | Lighting switch OFF   | 0 V  |     |
| (R)                                    | Ground  | Headlamp LO (LH)                            | Output           | switch<br>ON        | Lighting switch 2ND   | Battery voltage  |     |
| =0                                     |         | Headlamp LO (RH)                            |                  | Ignition            | Lighting switch OFF   | 0 V  |     |
| 52<br>(P)                              | Ground  | Daytime running light relay-2 <sup>*1</sup> | Output           | switch<br>ON        | Lighting switch 2ND   | Battery voltage  |     |
| 54                                     |         | Throttle control motor                      |                  |                     | · ·   | itch OFF<br>n a few seconds after turn-<br>n switch OFF) | 0 V |
| (GR)                                   | Ground  | relay power supply                          | Output           | (For a fe           | switch ON<br>switch OFF<br>aw seconds after turning ig-<br>vitch OFF) | Battery voltage  |     |
| FF                                     |         |   |                  |                     | ately 1 second or more than<br>ng the ignition switch ON              | 0 V  |     |
| 55<br>(P)                              | Ground  | Fuel pump power sup-<br>ply                 | Output           |                     | mately 1 second after turn-<br>gnition switch ON<br>running           | Battery voltage  |     |
|  |         |   |                  |                     | A/C switch OFF  | 0 V  |     |
| 56<br>(SB)                             | Ground  | A/C relay power supply                      | Output           | Engine<br>running   | A/C switch ON<br>(A/C compressor is oper-<br>ating)                   | Battery voltage  |     |
|  |         |   |                  |                     |   | 0 - 1.0 V  |     |
| 57<br>(G)                              | Ground  | Throttle control motor relay control        | Output           | Ignition sw         | vitch ON $\rightarrow$ OFF  | ↓<br>Battery voltage<br>↓<br>0 V                         |     |
|  |         |   |                  | Ignition sw         | vitch ON  | 0 - 1.0 V  |     |
| 58                                     |         |   |                  | Ignition sw         |   | 0 V  |     |
| (R) <sup>*2</sup><br>(Y) <sup>*3</sup> | Ground  | Ignition relay power supply                 | Output           | Ignition sw         |   | Battery voltage  |     |
| 59                                     |         | Ignition relay power                        | 0.1              | Ignition switch OFF |   | 0 V  |     |
| (Y)                                    | Ground  | supply                                      | Output           | Ignition switch ON  |   | Battery voltage  |     |
| 60                                     | Crowned | Ignition relay power                        | 0                | Ignition switch OFF |   | 0 V  |     |
| (V)                                    | Ground  | supply                                      | Output           | Ignition sw         | vitch ON  | Battery voltage  |     |
| 61                                     | Ground  | Ignition relay power                        |                  | Ignition sw         | vitch OFF   | 0 V  |     |
| (W)                                    | Ground  | supply                                      | Output           | Ignition sw         | vitch ON  | Battery voltage  |     |
| 62                                     | Ground  | Ignition relay power                        | Output           | Ignition sw         | vitch OFF   | 0 V  |     |
| (L)                                    | Ground  | supply                                      | Output           | Ignition sw         | vitch ON  | Battery voltage  |     |

### < ECU DIAGNOSIS INFORMATION >

| Termina                |          | Description                                       |                  |                                       |  | Value                   |                 |
|------------------------|----------|---|------------------|---------------------------------------|--|-------------------------|-----------------|
| (Wire color)<br>+ –    |          | Signal name                                       | Input/<br>Output | Condition                             |  | (Approx.)               |                 |
| 64 <sup>*2</sup>       |          | nd CVT shift selector<br>(Detention switch) Input |                  | Ignition                              | Select lever P                                 | 0 V                     |                 |
| 64 <sup>2</sup><br>(R) | Ground   |   | Input            | Input switch<br>ON                    | Select lever in any posi-<br>tion other than P | Battery voltage         |                 |
|                        |          | Duch hutten impitien                              | Input            | Press the push-button ignition switch |  | 0 V                     | C               |
| 66<br>(L)              | Ground   | Push-button ignition switch                       |                  | Input                                 | Release the switch                             | he push-button ignition | Battery voltage |
| 69                     | Oneveral |   | loput            | Ignition sv                           | vitch OFF or ACC                               | Battery voltage         | [               |
| (Y)                    | Ground   | d Ignition relay monitor Input                    |                  | Ignition switch ON                    |  | 0 V                     |                 |

\*1: With daytime running light system

\*2: CVT models

\*3: M/T models

F

G

Н

J

Κ

Е

Μ

Ν

Ο

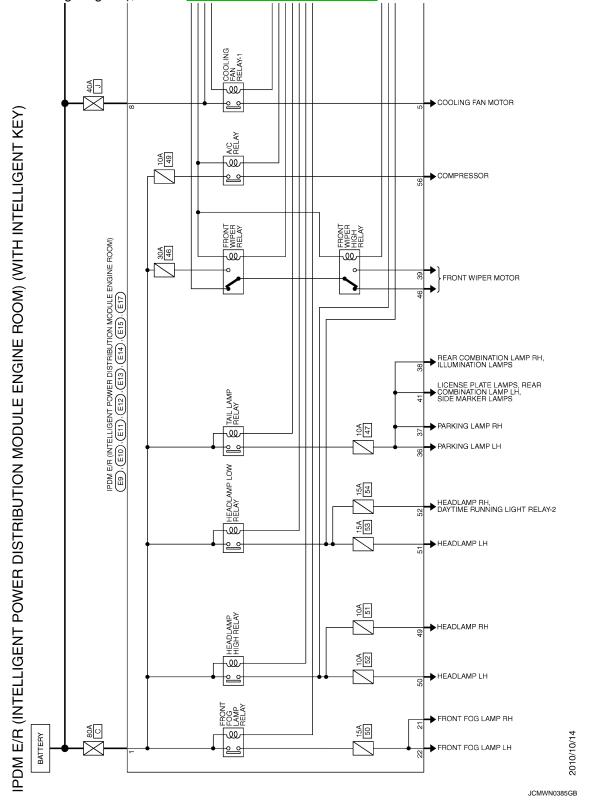
Ρ

EXL

< ECU DIAGNOSIS INFORMATION >

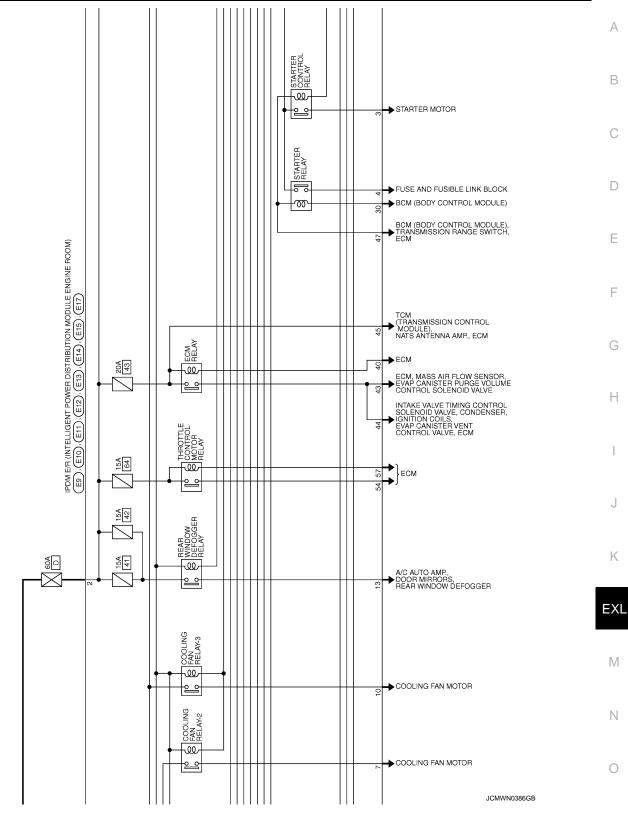
WITH INTELLIGENT KEY : Wiring Diagram — IPDM E/R —

For connector terminal arrangements, harness layouts, and alphabets in a  $\bigcirc$  (option abbreviation; if not described in wiring diagram), refer to <u>GI-12</u>, "<u>Connector Information</u>".



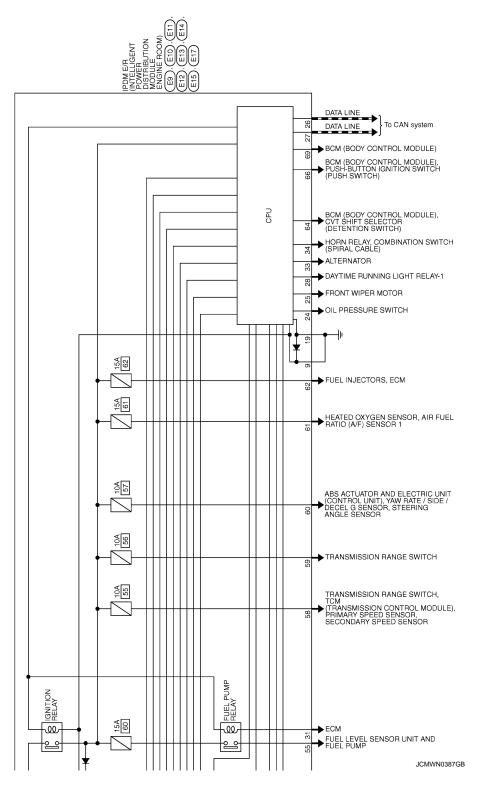
INFOID:000000007946365

#### < ECU DIAGNOSIS INFORMATION >



Ρ

< ECU DIAGNOSIS INFORMATION >



### WITH INTELLIGENT KEY : Fail-Safe

INFOID:000000007946366

#### CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

#### < ECU DIAGNOSIS INFORMATION >

| Control part   | Fail-safe operation   |
|----------------|---|
| Cooling fan    | <ul> <li>The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn ON when the ignition switch is turned ON (Cooling fan HI operation)</li> <li>The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn OFF when the ignition switch is turned OFF</li> </ul> |
| A/C compressor | A/C relay OFF   |
| Alternator     | Outputs the power generation command signal (PWM signal) 0%   |

#### If No CAN Communication Is Available With BCM

| Control part   | Fail-safe operation   |
|--|---|
| Headlamp   | <ul> <li>Turns ON the headlamp low relay when the ignition switch is turned ON</li> <li>Turns OFF the headlamp low relay when the ignition switch is turned OFF</li> <li>Headlamp high relay OFF</li> <li>Daytime running light relay OFF<sup>*</sup></li> </ul>  |
| <ul> <li>Parking lamps</li> <li>Side marker lamps</li> <li>License plate lamps</li> <li>Illuminations</li> <li>Tail lamps</li> </ul> | <ul> <li>Turns ON the tail lamp relay when the ignition switch is turned ON</li> <li>Turns OFF the tail lamp relay when the ignition switch is turned OFF</li> </ul>  |
| Front wiper  | <ul> <li>The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed.</li> <li>The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wipe motor is operating.</li> </ul> |
| Front fog lamps  | Front fog lamp relay OFF  |
| Horn   | Horn OFF  |
| Ignition relay   | The status just before activation of fail-safe is maintained.   |
| Starter motor  | Starter control relay OFF   |

\*: With daytime running light system

#### IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit and excitation coil circuit of the ignition relay inside it.
- Κ • IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the excitation coil circuit.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to EXL alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

| Voltage judgmentIgnition relay contact sideIgnition relay excitation coil<br>sideIPDM E/R judgmentONONIgnition relay ON normalOFFOFFIgnition relay OFF normalONOFFIgnition relay OFF normalONOFFIgnition relay ON stuck |     |                           |  |   |
|---|-----|---------------------------|--|---|
| Ignition relay contact side   |     | IPDM E/R judgment         | Operation  | M |
| ON  | ON  | Ignition relay ON normal  |  |   |
| OFF   | OFF | Ignition relay OFF normal | -  | N |
| ON  | OFF | Ignition relay ON stuck   | <ul> <li>Detects DTC "B2098: IGN RELAY ON"</li> <li>Turns ON the tail lamp relay for 10 minutes</li> </ul> | 0 |
| OFF   | ON  | Ignition relay OFF stuck  | Detects DTC "B2099: IGN RELAY OFF"   |   |

#### FRONT WIPER CONTROL

IPDM E/R detects front wiper stop position by a front wiper stop position signal.

When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop five times.

Ρ

#### < ECU DIAGNOSIS INFORMATION >

| Ignition switch | Front wiper switch | Front wiper stop position signal   |  |
|-----------------|--------------------|--|--|
| ON              | OFF                | The front wiper stop position signal (stop position) cannot be input for 10 seconds. |  |
| UN              | ON                 | The front wiper stop position signal does not change for 10 seconds.                 |  |

#### NOTE:

This operation status can be confirmed on the IPDM E/R "Data Monitor" that displays "BLOCK" for the item "WIP PROT" while the wiper is stopped.

#### STARTER MOTOR PROTECTION FUNCTION

IPDM E/R turns OFF the starter control relay to protect the starter motor when the starter control relay remains active for 90 seconds.

#### WITH INTELLIGENT KEY : DTC Index

#### NOTE:

- The details of time display are as follows.
- CRNT: A malfunction is detected now.
- PAST: A malfunction was detected in the past.
- IGN counter is displayed on FFD (Freeze Frame data).
- The number is 0 when is detected now.
- The number increases like 1  $\rightarrow$  2  $\cdots$  38  $\rightarrow$  39 after returning to the normal condition whenever IGN OFF  $\rightarrow$  ON.
- The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.

|  |           | ×: Applicable |
|--|-----------|---------------|
| CONSULT display  | Fail-safe | Refer to      |
| No DTC is detected.<br>further testing<br>may be required. | _         | _             |
| U1000: CAN COMM CIRCUIT                                    | ×         | PCS-16        |
| B2098: IGN RELAY ON  | ×         | PCS-17        |
| B2099: IGN RELAY OFF                                       | _         | PCS-18        |
| B210B: START CONT RLY ON                                   | _         | <u>SEC-78</u> |
| B210C: START CONT RLY OFF                                  | _         | <u>SEC-79</u> |
| B210D: STARTER RELAY ON                                    | _         | <u>SEC-80</u> |
| B210E: STARTER RELAY OFF                                   | _         | <u>SEC-81</u> |
| B210F: INTRLCK/PNP SW ON                                   | _         | <u>SEC-83</u> |
| B2110: INTRLCK/PNP SW OFF                                  | _         | <u>SEC-85</u> |

### WITHOUT INTELLIGENT KEY

### WITHOUT INTELLIGENT KEY : Reference Value

INFOID:000000007946374

#### VALUES ON THE DIAGNOSIS TOOL

| Monitor Item  |                             | Condition   | Value/Status |  |
|---------------|-----------------------------|---|--------------|--|
| MOTOR FAN REQ | Engine idle speed           | Changes depending on engine<br>coolant temperature, air conditioner<br>operation status, vehicle speed,<br>etc. | 1/2/3/4      |  |
|               |                             | A/C switch OFF  | Off          |  |
| AC COMP REQ   | Engine running              | A/C switch ON<br>(Compressor is operating)  | On           |  |
|               | Lighting switch OFF         |   | Off          |  |
| TAIL&CLR REQ  | Lighting switch 1ST, 2ND, H | Lighting switch 1ST, 2ND, HI or AUTO (Light is illuminated)   |              |  |

Revision: 2011 November

INFOID:000000007946367

### < ECU DIAGNOSIS INFORMATION >

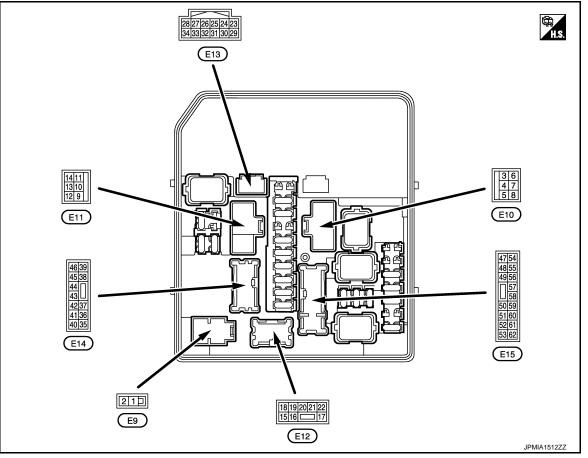
| Monitor Item  | (  | Condition   | Value/Status |
|---|--|---|--------------|
|   | Lighting switch OFF  |   | Off          |
| HL LO REQ   | Lighting switch 2ND, HI or AUTO  | O (Light is illuminated)                                      | On           |
|   | Lighting switch OFF  |   | Off          |
| HL HI REQ   | Lighting switch HI   |   | On           |
| FR FOG REQ  | Lighting switch 2ND or   | Front fog lamp switch OFF                                     | Off          |
|   | AUTO (Light is illuminated)  | Front fog lamp switch ON                                      | On           |
|   |  | Front wiper switch OFF  | Stop         |
| FR WIP REQ  | Ignition switch ON   | Front wiper switch INT  | 1LOW         |
|   |  | Front wiper switch LO   | Low          |
|   |  | Front wiper switch HI   | Hi           |
|   |  | Front wiper stop position                                     | STOP P       |
| WIP AUTO STOP   | Ignition switch ON   | Any position other than front wiper stop position             | ACT P        |
|   |  | Front wiper operates normally                                 | Off          |
| WIP PROT  | Ignition switch ON   | Front wiper stops at fail-safe opera-<br>tion                 | BLOCK        |
| IGN RLY   | Ignition switch OFF or ACC   | Off   |              |
|   | Ignition switch ON   | On  |              |
| INTER/NP SW   | Ignition switch ON   | Selector lever in any position other than P or N (CVT models) | Off          |
|   |  | Selector lever in P or N position<br>(CVT models)             | On           |
| ST RLY -REQ   | Ignition switch OFF or ACC   | Off   |              |
| SI KLI -KEQ   | Ignition switch ON   |   | On           |
| DTRL REQ  | Not operation  |   | Off          |
| <b>NOTE:</b><br>This item is monitored only on<br>the vehicle with the daytime<br>running light system. | Daytime running light system is operated.  |   | On           |
| OIL P SW  | Ignition switch OFF, ACC or eng  | ine running   | Open         |
|   | Ignition switch ON   |   | Close        |
| HOOD SW   | <b>NOTE:</b><br>The item is indicated, but not mo  | onitored.   | Off          |
|   | Not operation  | Off   |              |
| THFT HRN REQ  | <ul> <li>Panic alarm is activated</li> <li>Horn is activated with VEHICLE SECURITY (THEFT WARNING) SYSTEM</li> </ul> |   | On           |
|   | Not operating  |   | Off          |
| HORN CHIRP  | Door locking with key fob (horn  | chirp mode)   | On           |

Ρ

Ο

< ECU DIAGNOSIS INFORMATION >

### TERMINAL LAYOUT



#### PHYSICAL VALUES

| Termin     |                      | Description                         |                  |  | Value           |  |
|------------|----------------------|-------------------------------------|------------------|--|-----------------|--|
| (Wire<br>+ | color)<br>—          | Signal name                         | Input/<br>Output | Condition                                | (Approx.)       |  |
| 1<br>(R)   | Ground               | Battery power supply                | Input            | Ignition switch OFF                      | Battery voltage |  |
| 2<br>(G)   | Ground               | Battery power supply                | Input            | Ignition switch OFF                      | Battery voltage |  |
| 3          | Ground Starter motor |                                     | Output           | Ignition switch ON                       | 0 V             |  |
| (BR)       | Giouna               | Starter motor                       | Output           | At engine cranking                       | Battery voltage |  |
| 5          | Ground               | Cooling fan relay-1<br>power supply | Output           | Cooling fan OFF                          | 0 V             |  |
| (LG)       | Ground               |                                     |                  | Cooling fan operated                     | Battery voltage |  |
| 6          | Ground               | Ignition switch START               | Output           | Any position other ignition switch START | 0 V             |  |
| (SB)       |                      |                                     |                  | Ignition switch START                    | Battery voltage |  |
| _          |                      | Cooling fan relay-2<br>power supply | Output           | Cooling fan OFF                          | 0 V             |  |
| 7<br>(Y)   | Ground               |                                     |                  | Cooling fan LO operated                  | 9.0 V           |  |
| (-)        |                      |                                     |                  | Cooling fan HI operated                  | Battery voltage |  |
| 8<br>(V)   | Ground               | Battery power supply                | Input            | Ignition switch OFF                      | Battery voltage |  |
| 9<br>(B/W) | Ground               | Ground                              | _                | Ignition switch ON                       | 0 V             |  |

#### < ECU DIAGNOSIS INFORMATION >

| Terminal NO.<br>(Wire color) |                             | Description                    |                    |   |  | Value                     |     |   |
|------------------------------|-----------------------------|--------------------------------|--------------------|---|--|---------------------------|-----|---|
| (Wire<br>+                   | color)                      | Signal name                    | Input/<br>Output   |   | Condition  | (Approx.)                 |     |   |
|                              |                             |                                |                    | Cooling fa  | n OFF  | 0 V                       | -   |   |
| 10<br>(L) Ground             | Cooling fan motor<br>ground | Output                         | Cooling fa         | n LO operated   | 5.0 V  | -                         |     |   |
|                              | ground                      |                                | Cooling fa         | n HI operated   | 0 V  | -                         |     |   |
| 13<br>(W) Ground             | Door window deferrer        | Output                         | Ignition<br>switch | Rear window defogger<br>switch OFF                                  | 0 V  | -                         |     |   |
|                              | Ground                      | Rear window defogger           | Output             | ON  | Rear window defogger<br>switch ON                            | Battery voltage           | -   |   |
| 18                           | Ground                      | Ignition switch                | Output             | Ignition switch OFF   |  | 0 V                       | -   |   |
| (Y)                          | Giouna                      | Ignition switch                | Output             | Ignition switch ON  |  | Battery voltage           | -   |   |
| 19<br>(B/W)                  | Ground                      | Ground                         | _                  | Ignition switch ON  |  | 0 V                       | -   |   |
| 21                           | Ground                      | Front fog lamp (RH)            | Output             | Lighting<br>Dutput switch<br>2ND                                    | Front fog lamp switch<br>OFF                                 | 0 V                       | -   |   |
| (W)                          |                             | 5 1 ( )                        | •                  |   | Front fog lamp switch ON                                     | Battery voltage           |     |   |
| 22                           | Ground                      | Front fog lamp (LH)            | Output             | Lighting<br>Output switch<br>2ND                                    | Front fog lamp switch<br>OFF                                 | 0 V                       | -   |   |
| (V)                          |                             |                                | ·                  |   | Front fog lamp switch ON                                     | Battery voltage           |     |   |
| 24                           |                             |                                |                    |   | Ignition   | Engine stopped            | 0 V | - |
| (LG)                         | Ground                      | Oil pressure switch            | Input              | switch<br>ON  | Engine running   | Battery voltage           | _   |   |
| 25                           |                             |                                | Ignit              |   | Ignition   | Front wiper stop position | 0 V |   |
| (Y)                          | Ground                      | Front wiper auto stop          | Input              | switch<br>ON  | Any position other than<br>front wiper stop position         | Battery voltage           |     |   |
| 26<br>(P)                    | Ground                      | CAN-L                          | Input/<br>Output   | _   |  | _                         | _   |   |
| 27<br>(L)                    | Ground                      | CAN-H                          | Input/<br>Output   | _   |  | _                         | -   |   |
| 28 <sup>*1</sup>             | Ground                      | Daytime running light          | Quitout            | Daytime ru  | unning light deactivated                                     | 0 V                       | -   |   |
| (P)                          | Ground                      | relay-1 control                | Output             | Daytime ru  | unning light activated                                       | Battery voltage           | -   |   |
| 31<br>(W)                    | Ground                      | Ground Fuel pump relay control | Output             |   | mately 1 second after turn-<br>ignition switch ON<br>running | 0 - 1.5 V                 |     |   |
| (**)                         |                             |                                |                    | Approximately 1 second or more after turning the ignition switch ON |  | Battery voltage           |     |   |

Ν

0

Ρ

#### Terminal NO. Description Value (Wire color) Condition Input/ (Approx.) Signal name Output + \_ Ignition switch ON Battery voltage 40 % is set on "ACTIVE TEST", "AL-TERNATOR DUTY" of "ENGINE" JPMIA0002GB 33 Power generation com-Ground Output 3.8 V (O) mand signal 80 % is set on "ACTIVE TEST", "AL-TERNATOR DUTY" of "ENGINE" JPMIA0003GB 1.4 V The horn is deactivated Battery voltage 34 Ground Horn relay control Output (R) The horn is activated 0 V Ignition Lighting switch OFF 0 V 36 Ground Parking lamp (LH) Output switch (Y) Lighting switch 1ST Battery voltage ON 0 V Ignition Lighting switch OFF 37 Ground Parking lamp (RH) Output switch (V) Lighting switch 1ST Battery voltage ON Ignition Lighting switch OFF 0 V 38 Tail lamp (RH) & illumi-Ground Output switch (G) nations Lighting switch 1ST Battery voltage ON Ignition 0 V Front wiper switch OFF 39 switch Ground Front wiper HI Output (V) Front wiper switch HI Battery voltage ON Ignition switch OFF (More than a few seconds after turn-Battery voltage ing ignition switch OFF) 40 Ground ECM relay control Output · Ignition switch ON (R) • Ignition switch OFF 0 - 1.5 V (For a few seconds after turning ignition switch OFF) 0 V Ignition Lighting switch OFF 41 Tail lamp (LH) & license Ground Output switch (SB) plate lamps Lighting switch 1ST Battery voltage ON

# **IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)**

< ECU DIAGNOSIS INFORMATION >

Ground

ply

ECM relay power sup-

43

(G)

Ignition switch OFF

Output

•

ing ignition switch OFF)

Ignition switch ON

· Ignition switch OFF

nition switch OFF)

(More than a few seconds after turn-

(For a few seconds after turning ig-

0 V

Battery voltage

### < ECU DIAGNOSIS INFORMATION >

| Terminal NO.        |        | Description                                 |                   |   |   | Value   |   |                 |  |
|---------------------|--------|---|-------------------|---|---|---|---|-----------------|--|
| (Wire color)<br>+ – |        | Signal name                                 |                   |   | Condition   | (Approx.)   |   |                 |  |
| 44                  |        | ECM relay power sup-                        |                   | <b>`</b>  | vitch OFF<br>n a few seconds after turn-<br>n switch OFF)         | 0 V   | _   |                 |  |
| (P) Ground          | ply    | Output                                      | (For a fe         | switch ON<br>switch OFF<br>ew seconds after turning ig-<br>vitch OFF) | Battery voltage   |   |   |                 |  |
| 45<br>(Y)           | Ground | TCM power supply                            | Output            | Ignition sw   | vitch OFF   | Battery voltage                                       |   |                 |  |
| 46                  |        | <b>F</b>                                    | <b>•</b> • •      | Ignition  | Front wiper switch OFF  | 0 V   | •   |                 |  |
| (O)                 | Ground | Front wiper LO                              | Output            | switch<br>ON  | Front wiper switch LO   | Battery voltage                                       |   |                 |  |
|                     |        | Transmission range                          | la a st           |   | er in any position other than nition switch ON)                   | 0 V   | •   |                 |  |
| 47<br>(BR)          | Ground | switch <sup>*2</sup>                        | Input             | Select leve<br>ON)  | er P or N (Ignition switch  | Battery voltage                                       |   |                 |  |
| (210)               |        | Clutch interlock                            |                   | Release th  | ne clutch pedal   | 0 V   | -   |                 |  |
|                     |        | switch <sup>*3</sup>                        | Input             | Depress th  | ne clutch pedal   | Battery voltage                                       | -   |                 |  |
|                     |        | nd Headlamp HI (RH)                         |                   |   | Lighting switch OFF   | 0 V   | •   |                 |  |
| 49<br>(W) Ground    | Ground |   |                   | <ul><li>Lighting switch HI</li><li>Lighting switch PASS</li></ul>     | Battery voltage   |   |   |                 |  |
|                     |        |   |                   | Daytime ru  | unning light activated <sup>*1</sup>                              | 7.0 V   | •   |                 |  |
|                     |        | d Headlamp HI (LH)                          |                   | Ignition  | Lighting switch OFF   | 0 V   | -   |                 |  |
| 50<br>(GR)          | Ground |   | mp HI (LH) Output | Output ON   | <ul><li>Lighting switch HI</li><li>Lighting switch PASS</li></ul> | Battery voltage                                       | •   |                 |  |
|                     |        |   |                   |   | Daytime ru  | unning light activated <sup>*1</sup>                  | 7.0 V   | •               |  |
| 51                  |        | Headlamp LO (LH) Ou                         | Output            | Ignition  | Lighting switch OFF   | 0 V   | -   |                 |  |
| (R)                 | Ground |   |                   | Output  | switch<br>ON  | Lighting switch 2ND                                   | Battery voltage   | •               |  |
| =0                  |        | Headlamp LO (RH)                            |                   | Ignition  | Lighting switch OFF   | 0 V   | -   |                 |  |
| 52<br>(P)           | Ground | Daytime running light relay-2 <sup>*1</sup> | Output            | switch<br>ON  | Lighting switch 2ND   | Battery voltage                                       | -   |                 |  |
| 54                  |        | Throttle control motor                      |                   | •   | vitch OFF<br>n a few seconds after turn-<br>n switch OFF)         | 0 V   | . =   |                 |  |
| 54<br>(GR) Ground   | Ground | relay power supply                          |                   | -   | • Ignitio<br>(For a   | <ul> <li>Ignition</li> <li>(For a feedback</li> </ul> | switch ON<br>switch OFF<br>ew seconds after turning ig-<br>vitch OFF) | Battery voltage |  |
|                     |        |   |                   |   | ately 1 second or more than ng the ignition switch ON             | 0 V   | -   |                 |  |
| 55<br>(P)           | Ground | Fuel pump power sup-<br>ply Output          |                   |   | mately 1 second after turn-<br>gnition switch ON<br>running       | Battery voltage                                       |   |                 |  |
|                     |        |   |                   |   | A/C switch OFF  | 0 V   |   |                 |  |
| 56<br>(SB)          | Ground | A/C relay power supply                      | Output            | Engine<br>running   | A/C switch ON<br>(A/C compressor is oper-<br>ating)               | Battery voltage                                       | -   |                 |  |

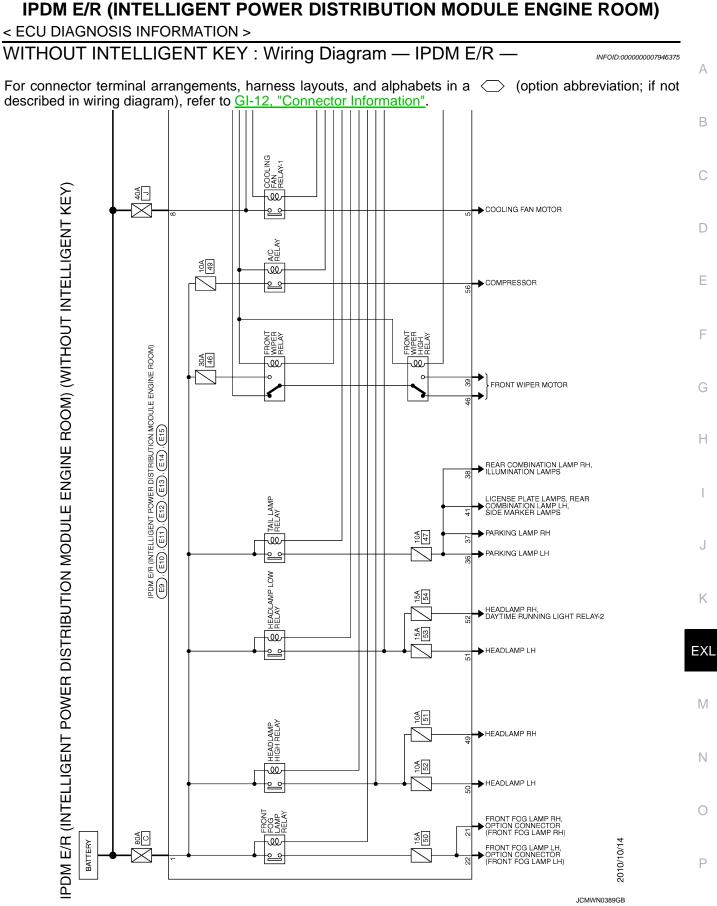
## < ECU DIAGNOSIS INFORMATION >

| Terminal NO.<br>(Wire color)<br>+ –    |        | Description                             |                      |                                      | Value   |                     |     |
|--|--------|---|----------------------|--------------------------------------|---|---------------------|-----|
|  |        | Signal name                             |                      | Condition                            | (Approx.)                                     |                     |     |
| 57<br>(G) Grour                        | Ground | nd Throttle control motor relay control | Output               | Ignition switch $ON \rightarrow OFF$ | 0 - 1.0 V<br>↓<br>Battery voltage<br>↓<br>0 V |                     |     |
|  |        |   |                      | Ignition switch ON                   | 0 - 1.0 V                                     |                     |     |
| 58                                     |        |   |                      |                                      |   | Ignition switch OFF | 0 V |
| (R) <sup>*2</sup><br>(Y) <sup>*3</sup> | Ground | Ignition relay power supply             | Output               | Ignition switch ON                   | Battery voltage                               |                     |     |
| 59                                     | Ground | Ignition relay power                    | Ignition relay power | Output                               | Ignition switch OFF                           | 0 V                 |     |
| (Y)                                    | Ground | supply                                  | Output               | Ignition switch ON                   | Battery voltage                               |                     |     |
| 60                                     | Ground | lgnition relay power Ou supply          | Ignition relay power | Ground Ignition relay power          | Output  | Ignition switch OFF | 0 V |
| (V)                                    | Ground |   | Output               | Ignition switch ON                   | Battery voltage                               |                     |     |
| 61                                     | Ground | Ignition relay power                    | Output               | Ignition switch OFF                  | 0 V   |                     |     |
| (W)                                    | Ground | supply                                  | Output               | Ignition switch ON                   | Battery voltage                               |                     |     |
| 62                                     | Ground | Ignition relay power                    | Output               | Ignition switch OFF                  | 0 V   |                     |     |
| (L)                                    | Giouna | supply                                  | Output               | Ignition switch ON                   | Battery voltage                               |                     |     |

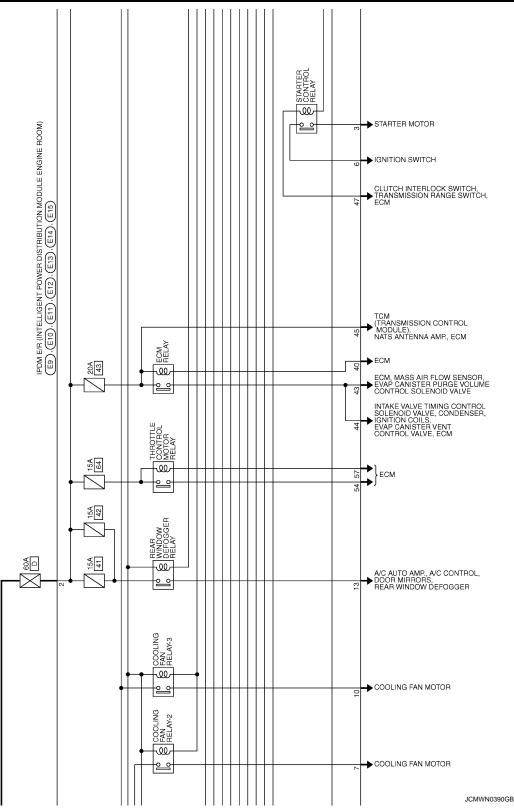
\*1: With daytime running light system

\*2: CVT models

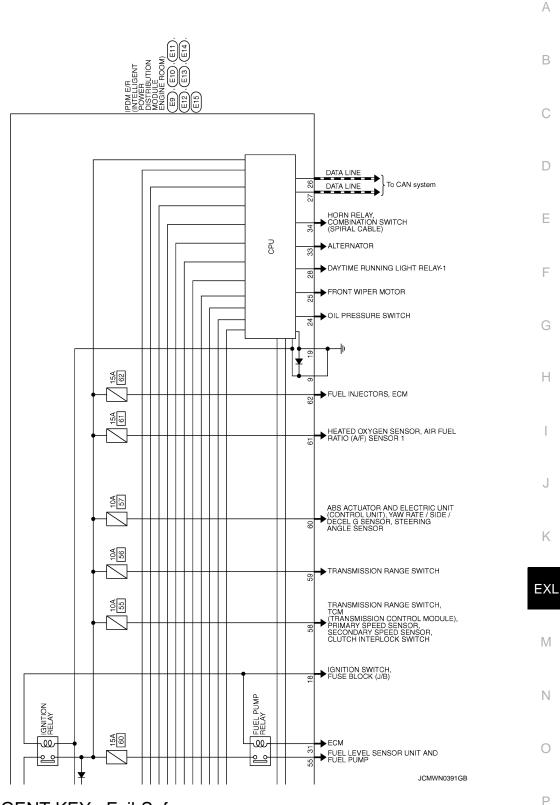
\*3: M/T models



## < ECU DIAGNOSIS INFORMATION >



< ECU DIAGNOSIS INFORMATION >



## WITHOUT INTELLIGENT KEY : Fail-Safe

#### CAN COMMUNICATION CONTROL

When CAN communication with ECM and BCM is impossible, IPDM E/R performs fail-safe control. After CAN communication recovers normally, it also returns to normal control.

If No CAN Communication Is Available With ECM

### < ECU DIAGNOSIS INFORMATION >

| Control part   | Fail-safe operation   |  |
|----------------|---|--|
| Cooling fan    | <ul> <li>The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn ON when the ignition switch is turned ON (Cooling fan HI operation)</li> <li>The cooling fan relay-1, the cooling fan relay-2 and the cooling fan relay-3 turn OFF when the ignition switch is turned OFF</li> </ul> |  |
| A/C compressor | A/C relay OFF   |  |
| Alternator     | Outputs the power generation command signal (PWM signal) 0%   |  |

#### If No CAN Communication Is Available With BCM

| Control part   | Fail-safe operation  |
|--|--|
| Headlamp   | <ul> <li>Turns ON the headlamp low relay when the ignition switch is turned ON</li> <li>Turns OFF the headlamp low relay when the ignition switch is turned OFF</li> <li>Headlamp high relay OFF</li> <li>Daytime running light relay OFF<sup>*</sup></li> </ul>   |
| <ul> <li>Parking lamps</li> <li>Side marker lamps</li> <li>License plate lamps</li> <li>Illuminations</li> <li>Tail lamps</li> </ul> | <ul> <li>Turns ON the tail lamp relay when the ignition switch is turned ON</li> <li>Turns OFF the tail lamp relay when the ignition switch is turned OFF</li> </ul>   |
| Front wiper  | <ul> <li>The status just before activation of fail-safe control is maintained until the ignition switch is turned OFF while the front wiper is operating at LO or HI speed.</li> <li>The wiper is operated at LO speed until the ignition switch is turned OFF if the fail-safe control is activated while the front wiper is set in the INT mode and the front wiper motor is operating.</li> </ul> |
| Front fog lamps  | Front fog lamp relay OFF   |
| Rear window defogger relay   | Rear window defogger relay OFF   |
| Horn   | Horn OFF   |

\*: With daytime running light system

#### IGNITION RELAY MALFUNCTION DETECTION FUNCTION

- IPDM E/R monitors the voltage at the contact circuit of the ignition relay inside and ignition switch status from BCM via CAN communication.
- IPDM E/R judges the ignition relay error if the voltage differs between the contact circuit and the ignition switch status from BCM via CAN communication.
- If the ignition relay cannot turn OFF due to contact seizure, it activates the tail lamp relay for 10 minutes to alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

| Voltage                     | judgment                           |                           | Operation  |  |
|-----------------------------|------------------------------------|---------------------------|--|--|
| Ignition relay contact side | Ignition switch status from<br>BCM | IPDM E/R judgment         |  |  |
| ON                          | ON                                 | Ignition relay ON normal  | _  |  |
| OFF                         | OFF                                | Ignition relay OFF normal | _  |  |
| ON                          | OFF                                | Ignition relay ON stuck   | <ul> <li>Detects DTC "B2098: IGN RELAY ON"</li> <li>Turns ON the tail lamp relay for 10 minutes</li> </ul> |  |
| OFF                         | ON                                 | Ignition relay OFF stuck  | Detects DTC "B2099: IGN RELAY OFF"   |  |

#### FRONT WIPER CONTROL

IPDM E/R detects front wiper stop position by a front wiper stop position signal.

When a front wiper stop position signal is in the conditions listed below, IPDM E/R stops power supply to wiper after repeating a front wiper 10 seconds activation and 20 seconds stop five times.

### < ECU DIAGNOSIS INFORMATION >

| Ignition switch | Front wiper switch | Front wiper stop position signal   | A |
|-----------------|--------------------|--|---|
| ON              | OFF                | The front wiper stop position signal (stop position) cannot be input for 10 seconds. |   |
| ON              | ON                 | The front wiper stop position signal does not change for 10 seconds.                 | В |

#### NOTE:

This operation status can be confirmed on the IPDM E/R "Data Monitor" that displays "BLOCK" for the item C "WIP PROT" while the wiper is stopped.

## WITHOUT INTELLIGENT KEY : DTC Index

#### NOTE:

- The details of time display are as follows.
- CRNT: A malfunction is detected now.
- PAST: A malfunction was detected in the past.
- IGN counter is displayed on FFD (Freeze Frame data).
- The number is 0 when is detected now.
- The number increases like 1  $\rightarrow$  2  $\cdots$  38  $\rightarrow$  39 after returning to the normal condition whenever IGN OFF  $\rightarrow$  FON.
- The number is fixed to 39 until the self-diagnosis results are erased if it is over 39.

| , and the second s |           | ×: Applicable | G |
|--|-----------|---------------|---|
| CONSULT display  | Fail-safe | Refer to      |   |
| No DTC is detected.<br>further testing<br>may be required.   | _         | _             | ŀ |
| U1000: CAN COMM CIRCUIT  | ×         | PCS-16        |   |
| B2098: IGN RELAY ON  | ×         | PCS-17        |   |
| B2099: IGN RELAY OFF   |           | PCS-47        |   |

D

Ε

INFOID:000000007946377

EXL

Μ

Ν

Ρ

< SYMPTOM DIAGNOSIS >

## SYMPTOM DIAGNOSIS EXTERIOR LIGHTING SYSTEM SYMPTOMS WITHOUT DAYTIME RUNNING LIGHT SYSTEM

## WITHOUT DAYTIME RUNNING LIGHT SYSTEM : Symptom Table

#### NOTE:

Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

| Symp   | tom                                 | Possible cause  | Inspection item   |
|--|-------------------------------------|---|---|
| Headlamp (HI) is not<br>turned ON.                   | One side                            | <ul> <li>Fuse</li> <li>Halogen bulb (HI)</li> <li>Harness between IPDM E/R and<br/>the headlamp</li> <li>Harness between headlamp and<br/>the ground</li> <li>IPDM E/R</li> </ul> | Headlamp (HI) circuit<br>Refer to <u>EXL-46</u> .   |
|  | Both sides                          | Symptom diagnosis<br>"BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON"<br>Refer to <u>EXL-158</u> .  |   |
| High beam indicator lamp<br>[Headlamp (HI) is turned |                                     | Combination meter   | <ul> <li>Combination meter<br/>Data monitor "HI-BEAM IND"</li> <li>BCM (HEADLAMP)<br/>Active test "HEADLAMP"</li> </ul> |
| Headlamp (LO) is not<br>turned ON.                   | One side                            | <ul> <li>Fuse</li> <li>Halogen bulb (LO)</li> <li>Harness between IPDM E/R and the headlamp</li> <li>Harness between headlamp and the ground</li> <li>IPDM E/R</li> </ul>         | Headlamp (LO) circuit<br>Refer to <u>EXL-49</u> .   |
|  | Both sides                          | <b>Symptom diagnosis</b><br>"BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON"<br>Refer to <u>EXL-159</u> .   |   |
| Headlamp is not turned                               | When ignition switch is turned ON.  |   |   |
| OFF.   | When ignition switch is turned OFF. | IPDM E/R  | _   |
| Headlamp is not turned O                             | N/OFF with the lighting             | <ul> <li>Combination switch</li> <li>Harness between the combination<br/>switch and BCM</li> <li>BCM</li> </ul>   | Combination switch<br>Refer to <u>BCS-140</u> .   |
| switch AUTO.   |                                     | <ul> <li>Optical sensor</li> <li>Harness between the optical sensor and BCM</li> <li>BCM</li> </ul>   | Optical sensor<br>Refer to <u>EXL-63</u> .  |
| Front fog lamp is not turned ON.                     | One side                            | <ul> <li>Front fog lamp bulb</li> <li>Harness between IPDM E/R and<br/>the front fog lamp</li> <li>Front fog lamp</li> <li>IPDM E/R</li> </ul>                                    | Front fog lamp circuit<br>Refer to <u>EXL-54</u> .  |
|  | Both side                           | Symptom diagnosis   |   |
| Front fog lamp is not turne                          | ed ON.                              | "BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON"<br>Refer to <u>EXL-161</u> .  |   |
| Parking lamp is not turned                           | d ON.                               | <ul> <li>Parking lamp bulb</li> <li>Harness between IPDM E/R and<br/>the parking lamp</li> <li>Front combination lamp assembly</li> <li>IPDM E/R</li> </ul>                       | Parking lamp circuit<br>Refer to <u>EXL-59</u> .  |

#### < SYMPTOM DIAGNOSIS >

| Sym  | iptom   | Possible cause   | Inspection item  |
|--|---|--|--|
| Tail lamp is not turned ON.  |   | <ul> <li>Tail lamp bulb</li> <li>Harness between IPDM E/R and<br/>the rear combination lamp</li> <li>Rear combination lamp assembly</li> </ul>             | Tail lamp circuit<br>Refer to <u>EXL-68</u> .  |
| Rear side marker lamp i  | s not turned ON.  | <ul> <li>Rear side marker lamp bulb</li> <li>Harness between IPDM E/R and<br/>the rear side marker lamp</li> <li>Rear side marker lamp assembly</li> </ul> | Rear side marker lamp circuit<br>Refer to <u>EXL-70</u> .  |
| License plate lamp is no   | ot turned ON.   | <ul> <li>License plate lamp bulb</li> <li>Harness between IPDM E/R and<br/>the license plate lamp</li> <li>License plate lamp assembly</li> </ul>          | License plate lamp circuit<br>Refer to <u>EXL-71</u> .   |
| and license plate lam  | p, rear side marker lamp<br>o are not turned OFF.   | <b>Symptom diagnosis</b><br>"PARKING, LICENSE PLATE, SIDE I<br>NOT TURNED ON"<br>Refer to <u>EXL-160</u> .   | MARKER AND TAIL LAMPS ARE  |
| Tail lamp indicator is not<br>(Parking and tail lamps a  |   | Combination meter  | <ul> <li>Combination meter<br/>Data monitor "LIGHT IND"</li> <li>BCM (HEADLAMP)<br/>Active test "TAIL LAMP"</li> </ul> |
| Turn signal lamp does<br>not blink.  | Indicator lamp is nor-<br>mal.<br>(Applicable side per-<br>forms the high flasher<br>activation.) | <ul> <li>Harness between BCM and each turn signal lamp</li> <li>Turn signal lamp bulb</li> </ul>   | Turn signal circuit<br>Refer to <u>EXL-61</u> .  |
| HOLDINK.   | Indicator lamp is in-<br>cluded.  | <ul> <li>Combination switch</li> <li>Harness between the combination<br/>switch and BCM</li> <li>BCM</li> </ul>  | Combination switch<br>Refer to <u>BCS-140</u> .  |
|  | One side  | Combination meter  | _  |
| Turn signal indicator<br>lamp does not blink.<br>(Turn signal indicator<br>lamp is normal.)  | Both sides<br>(Always)  | <ul> <li>Turn signal indicator lamp signal</li> <li>BCM</li> <li>Combination meter</li> </ul>  | <ul> <li>Combination meter<br/>Data monitor "TURN IND"</li> <li>BCM (FLASHER)<br/>Active test "FLASHER"</li> </ul>     |
|  | Both sides<br>(Only when activating<br>hazard warning lamp<br>with the ignition switch<br>OFF.)   | <ul> <li>Combination meter power supply<br/>and the ground circuit</li> <li>Combination meter</li> </ul>   | Combination meter<br>Power supply and the ground circuit<br>Refer to <u>MWI-39</u> .                                   |
| <ul> <li>Hazard warning lamp does not activate.</li> <li>Hazard warning lamp continues activating.<br/>(Turn signal is normal.)</li> </ul> |   | <ul> <li>Hazard switch</li> <li>Harness between the hazard switch and BCM</li> <li>BCM</li> </ul>  | Hazard switch<br>Refer to <u>EXL-66</u> .  |

## WITH DAYTIME RUNNING LIGHT SYSTEM

## WITH DAYTIME RUNNING LIGHT SYSTEM : Symptom Table

#### NOTE:

Perform the self-diagnosis with CONSULT before the symptom diagnosis. Perform the trouble diagnosis if any DTC is detected.

Revision: 2011 November

INFOID:000000007772624

Ο

Ρ

### < SYMPTOM DIAGNOSIS >

| Symp   | otom                                | Possible cause  | Inspection item   |
|--|-------------------------------------|---|---|
| Headlamp (HI) is not<br>turned ON.                     | One side                            | <ul> <li>Fuse</li> <li>Halogen bulb (HI)</li> <li>Harness between IPDM E/R and the headlamp</li> <li>Harness between the headlamp and the daytime running light relay-1</li> <li>Harness between the daytime running light relay-1 and the ground</li> <li>Harness between the headlamp and the ground</li> <li>Daytime running light relay-1</li> <li>IPDM E/R</li> </ul>  | Headlamp (HI) circuit<br>Refer to <u>EXL-46</u> .   |
|  | Both sides                          | Symptom diagnosis<br>"BOTH SIDE HEADLAMPS (HI) AR<br>Refer to <u>EXL-158</u> .  | E NOT TURNED ON"  |
| High beam indicator lamp<br>[Headlamp (HI) is turned   |                                     | Combination meter   | <ul> <li>Combination meter<br/>Data monitor "HI-BEAM IND"</li> <li>BCM (HEADLAMP)<br/>Active test "HEADLAMP"</li> </ul>   |
| Headlamp (LO) is not<br>turned ON.                     | One side                            | <ul> <li>Fuse</li> <li>Halogen bulb (LO)</li> <li>Harness between IPDM E/R and the headlamp</li> <li>Harness between IPDM E/R and the daytime running light relay-2</li> <li>Harness between IPDM E/R and the headlamp</li> <li>Harness between IPDM E/R and the headlamp</li> <li>Harness between daytime running light relay-2 and the head-lamp</li> <li>Harness between the headlamp and the ground</li> <li>Harness between the headlamp and the daytime running light relay-1</li> <li>Harness between the daytime running light relay-1</li> <li>Daytime running light relay-1</li> <li>Daytime running light relay-2</li> <li>IPDM E/R</li> </ul> | Headlamp (LO) circuit<br>Refer to <u>EXL-49</u> .   |
|  | Both sides                          | Symptom diagnosis   |   |
| Headlamp is not turned                                 | When ignition switch is turned ON.  | "BOTH SIDE HEADLAMPS (LO) AR<br>Refer to <u>EXL-159</u> .   |   |
| OFF.   | When ignition switch is turned OFF. | IPDM E/R  | _   |
| Daytime running light is r<br>[Headlamp (HI) is turned |                                     | <ul> <li>Fuse</li> <li>Harness between IPDM E/R and the daytime running light relay-1</li> <li>Daytime running light relay-1</li> <li>IPDM E/R</li> <li>BCM</li> <li>ECM</li> <li>Combination meter</li> </ul>  | <ul> <li>Daytime running light relay circuit<br/>Refer to <u>EXL-56</u>.</li> <li>BCM (HEADLAMP)<br/>Data monitor "ENGINE STATE"</li> <li>Combination mete<br/>Data monitor "PKB SW"</li> <li>BCM (HEADLAMP)<br/>Active test "DAYTIME RUNNING<br/>LIGHT"</li> </ul> |

### < SYMPTOM DIAGNOSIS >

| Sym  | otom  | Possible cause  | Inspection item  |
|--|---|---|--|
| Headlamp is not turned ON/OFF with the lighting switch AUTO.   |   | <ul> <li>Combination switch</li> <li>Harness between the combination<br/>switch and BCM</li> <li>BCM</li> </ul>   | Combination switch<br>Refer to <u>BCS-78</u> .   |
|  |   | <ul> <li>Optical sensor</li> <li>Harness between the optical sensor and BCM</li> <li>BCM</li> </ul>   | Optical sensor<br>Refer to <u>EXL-63</u> .   |
| Front fog lamp is not<br>urned ON.   | One side  | <ul> <li>Front fog lamp bulb</li> <li>Harness between IPDM E/R and<br/>the front fog lamp</li> <li>Front fog lamp</li> <li>IPDM E/R</li> </ul>              | Front fog lamp circuit<br>Refer to <u>EXL-54</u> .   |
| Front fog lamp is not turr   | Both side   | <b>Symptom diagnosis</b><br>"BOTH SIDE FRONT FOG LAMPS A<br>Refer to <u>EXL-161</u> .   | ARE NOT TURNED ON"   |
| Parking lamp is not turned ON.   |   | <ul> <li>Parking lamp bulb</li> <li>Harness between IPDM E/R and<br/>the parking lamp</li> <li>Front combination lamp assembly</li> <li>IPDM E/R</li> </ul> | Parking lamp circuit<br>Refer to <u>EXL-59</u> .   |
| Tail lamp is not turned O  | N.  | <ul> <li>Tail lamp bulb</li> <li>Harness between IPDM E/R and the rear combination lamp</li> <li>Rear combination lamp assembly</li> </ul>                  | Tail lamp circuit<br>Refer to <u>EXL-68</u> .  |
| Rear side marker lamp is   | s not turned ON.  | <ul> <li>Rear side marker lamp bulb</li> <li>Harness between IPDM E/R and<br/>the rear side marker lamp</li> <li>Rear side marker lamp assembly</li> </ul>  | Rear side marker lamp circuit Refer to $EXL-70$ .  |
| License plate lamp is no   | t turned ON.  | <ul> <li>License plate lamp bulb</li> <li>Harness between IPDM E/R and<br/>the license plate lamp</li> <li>License plate lamp assembly</li> </ul>           | License plate lamp circuit Refer to $EXL-71$ .   |
| <ul> <li>Parking lamp, tail lamp, rear side marker lamp<br/>and license plate lamp are not turned ON.</li> <li>Parking lamp, tail lamp, rear side marker lamp<br/>and license plate lamp are not turned OFF.</li> <li>(Each illumination is turned ON/OFF.)</li> </ul> |   | <b>Symptom diagnosis</b><br>"PARKING, LICENSE PLATE, SIDE I<br>NOT TURNED ON"<br>Refer to <u>EXL-160</u> .  | MARKER AND TAIL LAMPS ARE  |
| Tail lamp indicator is not turned ON.<br>(Parking and tail lamps are turned ON.)   |   | Combination meter   | <ul> <li>Combination meter<br/>Data monitor "LIGHT IND"</li> <li>BCM (HEADLAMP)<br/>Active test "TAIL LAMP"</li> </ul> |
| Turn signal lamp does<br>not blink.  | Indicator lamp is nor-<br>mal.<br>(Applicable side per-<br>forms the high flasher<br>activation.) | <ul> <li>Harness between BCM and each turn signal lamp</li> <li>Turn signal lamp bulb</li> </ul>  | Turn signal circuit<br>Refer to <u>EXL-61</u> .  |
| יוטנ טווות.  | Indicator lamp is in-<br>cluded.  | <ul> <li>Combination switch</li> <li>Harness between the combination switch and BCM</li> <li>BCM</li> </ul>   | Combination switch<br>Refer to <u>BCS-78</u> .   |

#### < SYMPTOM DIAGNOSIS >

| Symp   | otom  | Possible cause   | Inspection item  |
|--|---|--|--|
|  | One side  | Combination meter  | _  |
| Turn signal indicator<br>lamp does not blink.  | Both sides<br>(Always)  | <ul> <li>Turn signal indicator lamp signal</li> <li>BCM</li> <li>Combination meter</li> </ul>            | <ul> <li>Combination meter<br/>Data monitor "TURN IND"</li> <li>BCM (FLASHER)<br/>Active test "FLASHER"</li> </ul> |
| (Turn signal indicator<br>lamp is normal.)   | Both sides<br>(Only when activating<br>hazard warning lamp<br>with the ignition switch<br>OFF.) | <ul> <li>Combination meter power supply<br/>and the ground circuit</li> <li>Combination meter</li> </ul> | Combination meter<br>Power supply and the ground circuit<br>Refer to <u>MWI-39</u> .                               |
| <ul> <li>Hazard warning lamp does not activate.</li> <li>Hazard warning lamp continues activating.<br/>(Turn signal is normal.)</li> </ul> |   | <ul> <li>Hazard switch</li> <li>Harness between the hazard switch and BCM</li> <li>BCM</li> </ul>        | Hazard switch<br>Refer to <u>EXL-66</u> .  |

## NORMAL OPERATING CONDITION

## Description

## AUTO LIGHT SYSTEM

< SYMPTOM DIAGNOSIS >

The headlamp may not be turned ON/OFF immediately after passing dark area or bright area (short tunnel, sky bridge, shadowed area etc.) while using the auto light system. This causes the control difference. This is normal.

EXL

Μ

Ν

Ο

Ρ

А

В

С

D

Ε

F

Н

J

Κ

## BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON

#### < SYMPTOM DIAGNOSIS >

## BOTH SIDE HEADLAMPS (HI) ARE NOT TURNED ON

## Description

Both side headlamps (HI) are not turned ON when setting to the lighting switch HI or PASS.

## **Diagnosis Procedure**

**1.**COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to <u>BCS-78, "Symptom Table"</u>.

Is the combination switch normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK HEADLAMP (HI) REQUEST SIGNAL INPUT

#### **CONSULT DATA MONITOR**

1. Select "HL HI REQ" of IPDM E/R data monitor item.

2. With operating the lighting switch, check the monitor status.

| Monitor item | Condition       |            | Monitor status |
|--------------|-----------------|------------|----------------|
| HL HI REQ    | Lighting switch | HI or PASS | ON             |
|              | (2ND)           | LO         | OFF            |

Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to <u>BCS-81, "Exploded View"</u>.

 $\mathbf{3}$ .HEADLAMP (HI) CIRCUIT INSPECTION

Check the headlamp (HI) circuit. Refer to EXL-46. "Component Function Check".

Is the headlamp (HI) circuit normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace the malfunctioning part.

Revision: 2011 November

INFOID:000000007772626

## BOTH SIDE HEADLAMPS (LO) ARE NOT TURNED ON

< SYMPTOM DIAGNOSIS >

| DUTH SIDE HEADLAIVIPS | (LO) ARE NOT TURNED ON |
|-----------------------|------------------------|

|  |   |                       |                                   |                        | А |
|--|---|-----------------------|-----------------------------------|------------------------|---|
| Description  |   |                       |                                   | INFOID:000000007772628 | Λ |
| Both side head                                     | lamps (LO) are r  | not turned ON         | in any condition.                 |                        | В |
| Diagnosis P  | rocedure  |                       |                                   | INFOID:00000007772629  |   |
| 1.снеск со   | MBINATION SW  | ITCH                  |                                   |                        | С |
| Is the combinat<br>YES >> GC<br>NO >> Re           | bination switch.<br><u>ion switch norma</u><br>) TO 2.<br>pair or replace th<br>ADLAMP (LO) R | al?<br>ne malfunction | • ·                               |                        | D |
| <ol> <li>Select "HL</li> <li>With opera</li> </ol> |   | switch, check         | the monitor status.               |                        | F |
| Monitor item                                       | Cond  | ition                 | Monitor status                    |                        |   |
| HL LO REQ  | Lighting switch   | 2ND                   | ON                                |                        | G |
|  | Lighting Switch   | OFF                   | OFF                               |                        |   |
| NO >> Re   | ) TO 3.   |                       | "Exploded View".                  |                        | H |
|  | . ,   |                       |                                   |                        |   |
|  |   |                       | L-49. "Component Function Check". |                        |   |
| YES >> Re  | <u>o (LO) circuit nor</u><br>place IPDM E/R<br>pair or replace th                             |                       | ing part.                         |                        | J |

EXL

Μ

Ν

Ο

Ρ

Κ

# PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS ARE NOT TURNED ON

< SYMPTOM DIAGNOSIS >

# PARKING, LICENSE PLATE, SIDE MARKER AND TAIL LAMPS ARE NOT TURNED ON

## Description

INFOID:000000007772630

The parking, license plate, tail, rear side marker lamps and each illumination are not turned ON in any condition.

## Diagnosis Procedure

INFOID:000000007772631

## **1**.COMBINATION SWITCH INSPECTION

Check the combination switch. Refer to <u>BCS-78, "Symptom Table"</u>.

Is the combination switch normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning part.

2.CHECK TAIL LAMP RELAY REQUEST SIGNAL INPUT

CONSULT DATA MONITOR

T. Select "TAIL & CLR REQ" of IPDM E/R data monitor item.

2. With operating the lighting switch, check the monitor status.

| Monitor item | Con             | dition | Monitor status |
|--------------|-----------------|--------|----------------|
| TAIL & CLR   | Lighting switch | 1ST    | ON             |
| REQ          |                 | OFF    | OFF            |

Is the item status normal?

YES >> GO TO 3.

NO >> Replace BCM. Refer to <u>BCS-81, "Exploded View"</u>.

**3.** TAIL LAMP CIRCUIT INSPECTION

Check the tail lamp circuit. Refer to EXL-68, "Component Function Check".

Is the tail lamp circuit normal?

YES >> Replace IPDM E/R.

NO >> Repair or replace the malfunctioning part.

## BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

| < SYMPTOM DIAGNOSIS > |  |
|-----------------------|--|
|                       |  |

## BOTH SIDE FRONT FOG LAMPS ARE NOT TURNED ON

| BO I LI 21D       | E FRONT FUG   | LAIVIP            | 5 ARE IN       | JI TURNED U         | N                      | А        |
|-------------------|---|-------------------|----------------|---------------------|------------------------|----------|
| Description       |   |                   |                |                     | INFOID:000000007772632 | $\frown$ |
| The front fog la  | mps are not turned ON                               | l in any co       | ondition.      |                     |                        | В        |
| Diagnosis P       | rocedure  | Ē                 |                |                     | INFOID:000000007772633 | D        |
| 1.CHECK FUS       |   |                   |                |                     |                        | С        |
|                   | following fuse is fusing                            | 1                 |                |                     |                        |          |
| Check that the    |   |                   |                |                     |                        |          |
| Unit              | Location  | Fuse N            | lo. Capacity   | -                   |                        | D        |
| Front fog lamp    | IPDM E/R  | #65               | 15 A           | -                   |                        |          |
| Is the fuse fusir | -   |                   |                | _                   |                        | Е        |
|                   | pair the applicable circ<br>) TO 2.                 | uit. And th       | en replace th  | e fuse.             |                        |          |
| 2.COMBINATI       | ON SWITCH INSPEC                                    | TION              |                |                     |                        | F        |
| Check the com     | bination switch. Refer                              | to <u>BCS-78</u>  | 8, "Symptom 1  | Table".             |                        |          |
| Is the combinat   | ion switch normal?                                  |                   |                |                     |                        | G        |
|                   | ) TO 3.   | functionin        | a port         |                     |                        | 0        |
| •                 | pair or replace the mal ONT FOG LAMP REQ            |                   | • •            |                     |                        |          |
|                   |   | UEST 316          | INAL INPUT     |                     |                        | Η        |
|                   | ATA MONITOR<br>FOG REQ" of IPDM E                   | /R data m         | onitor item    |                     |                        |          |
|                   | ting the front fog lamp                             |                   |                | tor status.         |                        | I        |
|                   |   |                   |                | -                   |                        |          |
| Monitor item      | Condition   |                   | Monitor status | _                   |                        | J        |
| FR FOG REQ        | Front fog lamp switch<br>(With lighting switch 1ST) | ON<br>OFF         | ON<br>OFF      | -                   |                        | 0        |
| Is the item statu | us normal?  |                   |                | -                   |                        | K        |
| YES >> GC         | ) TO 4.   |                   |                |                     |                        |          |
| 4                 | place BCM. Refer to <u>B</u>                        |                   |                | <u>′″</u> .         |                        |          |
|                   | G LAMP CIRCUIT INS                                  |                   |                |                     |                        | EXL      |
|                   | fog lamp circuit. Refer                             | r to <u>EXL-5</u> | 4, "Compone    | nt Function Check". | •                      |          |
|                   | lamp circuit normal?                                |                   |                |                     |                        | M        |
|                   | place IPDM E/R.<br>pair or replace the mal          | functionin        | g part.        |                     |                        |          |
|                   |   |                   |                |                     |                        | Ν        |
|                   |   |                   |                |                     |                        | IN       |
|                   |   |                   |                |                     |                        |          |
|                   |   |                   |                |                     |                        | 0        |
|                   |   |                   |                |                     |                        |          |

Ρ

### < PRECAUTION >

## PRECAUTION PRECAUTIONS

## Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the "SRS AIR BAG" and "SEAT BELT" of this Service Manual.

#### WARNING:

Always observe the following items for preventing accidental activation.

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see "SRS AIR BAG".
- Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

#### PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### WARNING:

Always observe the following items for preventing accidental activation.

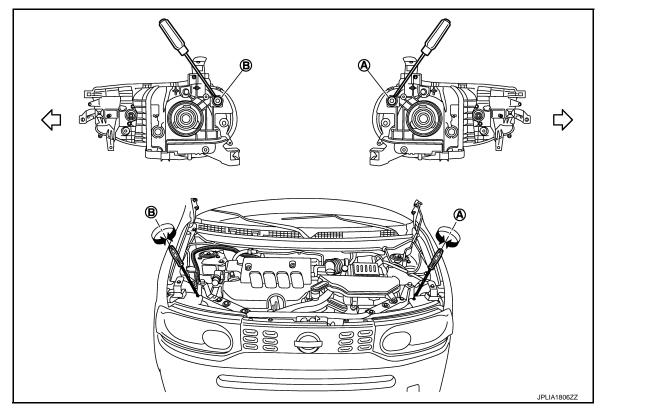
- When working near the Air Bag Diagnosis Sensor Unit or other Air Bag System sensors with the ignition ON or engine running, never use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.
- When using air or electric power tools or hammers, always switch the ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.

## PERIODIC MAINTENANCE HEADLAMP AIMING ADJUSTMENT

#### Description INFOID:000000007772635 В PREPARATION BEFORE ADJUSTING NOTE: • For details, refer to the regulations in your own country. Perform aiming if the vehicle front body has been repaired and/or the headlamp assembly has been replaced. D Before performing aiming adjustment, check the following. Adjust the tire pressure to the specification. • Fill with fuel, engine coolant and each oil. Ε • Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the trunk room.) NOTE: Do not remove the temporary tire, jack and on-vehicle tool. F • Wipe out dirt on the headlamp. **CAUTION:** Never use organic solvent (thinner, gasoline etc.)

• Ride alone on the driver seat.

### AIMING ADJUSTMENT SCREW



- A Headlamp (RH) UP/DOWN adjustment screw
- B. Headlamp (LH) UP/DOWN adjustment screw

C: Vehicle center

А

Н

Κ

EXL

Μ

Ν

Ρ

## HEADLAMP AIMING ADJUSTMENT

#### < PERIODIC MAINTENANCE >

|   | Adjustment screw         | Screw driver rotation | Facing direction |
|---|--------------------------|-----------------------|------------------|
| А | Headlamp (RH) UP/DOWN    | Clockwise             | DOWN             |
| A |                          | Counterclockwise      | UP               |
| в | Headlamp (LH) LID/DO)/(N | Clockwise             | DOWN             |
| В | Headlamp (LH) UP/DOWN    | Counterclockwise      | UP               |

## Aiming Adjustment Procedure

INFOID:000000007772636

- 1. Place the screen.
  - NOTE:
  - Stop the vehicle facing the wall.
  - Place the board on a plain road vertically.
- 2. Face the vehicle with the screen. Maintain 10 m (32.8 ft) between the headlamp center and the screen.
- 3. Start the engine. Turn the headlamp (LO) ON. **NOTE:**

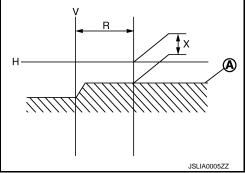
Shut off the headlamp light with the board to prevent from illuminating the adjustment screen. **CAUTION:** 

### Never cover the lens surface with a tape etc. The lens is made of resin.

4. Measure the distance (X) between the horizontal center line of headlamp (H) and the cutoff line (A) within the light axis measurement range (R) from the vertical center line ahead of headlamp (V).

| Light axis measure- | : 350 ± 175 mm (13.78 ± 6.89 |
|---------------------|------------------------------|
| ment range (R)      | in)                          |

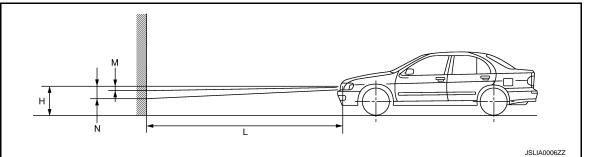
Low beam distribution on the screen



5. Adjust the cutoff line height (X) with the aiming adjustment screw so as to enter in the adjustment range (M–N) according to the horizontal center line of headlamp (H).

|  |                                | unit: mm (in)                 |
|--|--------------------------------|-------------------------------|
| Horizontal center line of headlamp (H) | Highest cutoff line height (M) | Lowest cutoff line height (N) |
| 700 (27.56) or less                    | 4 (0.16)                       | 30 (1.18)                     |
| 701(27.60) - 800 (31.50)               | 4 (0.16)                       | 30 (1.18)                     |
| 801 (31.54) or more                    | 17 (0.67)                      | 44 (1.73)                     |





| : 10 m (32.8 ft) | А |
|------------------|---|
|                  | В |
|                  | С |
|                  |   |

Κ

EXL

Μ

Ν

Ο

Ρ

D

Е

F

G

Н

J

## FRONT FOG LAMP AIMING ADJUSTMENT

## Description

## PREPARATION BEFORE ADJUSTING

#### NOTE:

For details, refer to the regulations in your own country.

Before performing aiming adjustment, check the following.

- Adjust the tire pressure to the specification.
- Fill with fuel, engine coolant and each oil.
- Maintain the unloaded vehicle condition. (Remove luggage from the passenger compartment and the luggage room.)

NOTE:

Do not remove the temporary tire, jack and on-vehicle tool.

• Wipe out dirt on the headlamp.

### Never use organic solvent (thinner, gasoline etc.)

• Ride alone on the driver seat.

#### AIMING ADJUSTMENT SCREW

• Turn the aiming adjusting screw for adjustment.

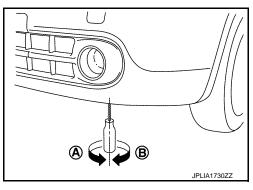
A: UP

B: DOWN

• For the position and direction of the adjusting screw, refer to the figure.

#### NOTE:

A screwdriver or hexagonal wrench [6 mm (0.24 in)] can be used for adjustment.



INFOID:000000007772638

INFOID:000000007772637

## Aiming Adjustment Procedure

1. Place the screen.

#### NOTE:

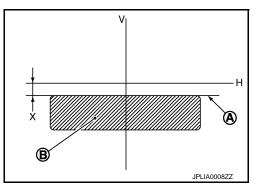
- Stop the vehicle facing the wall.
- Place the board on a plain road vertically.
- 2. Face the vehicle with the screen. Maintain 10 m (32.8 ft) between the front fog lamp center and the screen.
- 3. Start the engine. Illuminate the front fog lamp.

#### CAUTION: Never cover the lens surface with a tape etc. The lens is made of resin. NOTE:

Shut off the headlamp light with the board to prevent from illuminating the adjustment screen.

4. Adjust the cutoff line height (A) with the aiming adjustment screw so that the distance (X) between the horizontal center line of front fog lamp (H) and (A) becomes 200 mm (7.87 in).

Front fog lamp light distribution on the screen



| A<br>B      | : Cutoff line<br>: High illuminance area   | А |
|-------------|--|---|
| H<br>V<br>X | : Horizontal center line of front fog lamp<br>: Vertical center line of front fog lamp<br>: Cutoff line height | В |
|             |  | С |
|             |  | D |
|             |  | Е |
|             |  | F |
|             |  | G |
|             |  | Η |
|             |  | I |

M

Ν

Ο

Ρ

J

Κ

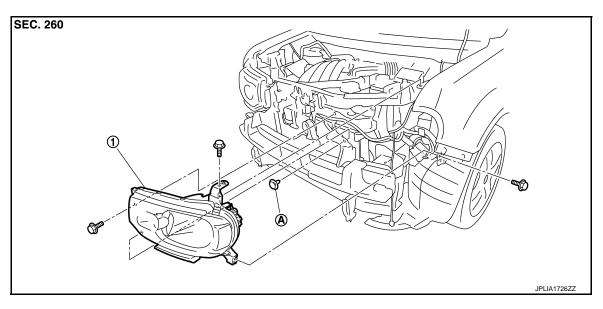
## < REMOVAL AND INSTALLATION >

## REMOVAL AND INSTALLATION FRONT COMBINATION LAMP

## **Exploded View**

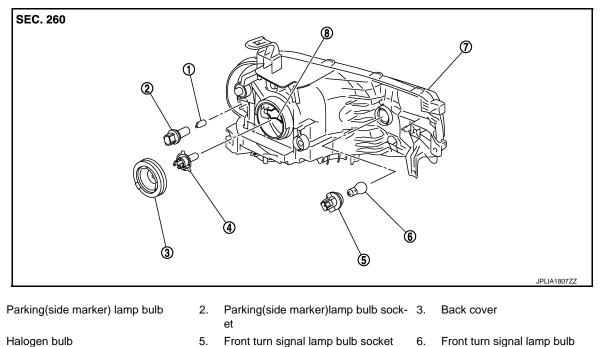
### REMOVAL

INFOID:000000007772639



- 1. Front combination lamp
- A. Air duct clip(only left)

### DISASSEMBLY



7. Headlamp housing assembly

## Removal and Installation

#### REMOVAL

1.

4.

8.

Retaining spring

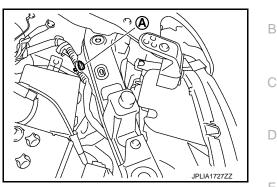
## FRONT COMBINATION LAMP

< REMOVAL AND INSTALLATION >

#### **CAUTION:**

#### Disconnect the battery negative terminal or the fuse.

- 1. Remove front bumper fascia. Refer to <u>EXT-11, "Exploded View"</u>.
- Remove the harness clips (A)\*.
   \*: When replace a left.
- Remove the air duct clip\*.
   \*: When replace a left.
- 4. Remove the headlamp mounting bolts.
- 5. Pull out the headlamp assembly forward the vehicle.
- Disconnect the connector before removing the headlamp assembly.



#### INSTALLATION

Install in the reverse order of removal. **NOTE:** After installation, perform aiming adjustment. Refer to <u>EXL-163</u>, "Description".

#### Replacement

INFOID:000000007772641

Κ

EXL

M

Ν

Ρ

А

- **CAUTION:**
- Disconnect the battery negative terminal or the fuse.
- After installing the bulb, install the resin cap and the bulb socket securely for watertightness.
- Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it.
   Never touch bulb by hand while it is lit or right after being turned off.
- Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

#### HEADLAMP BULB

- 1. Disconnect the headlamp bulb connector.
- 2. Remove the back cover.
- 3. Remove the retaining spring lock. And remove the bulb from the headlamp housing assembly.

#### PARKING(FRONT SIDE MARKER) LAMP BULB

- 1. Remove the fender protector. Refer to <u>EXT-21, "FENDER PROTECTOR : Exploded View"</u>. Keep a service area.
- 2. Rotate the bulb socket counterclockwise and unlock it.
- 3. Remove the bulb from the bulb socket.

#### FRONT TURN SIGNAL LAMP BULB

- 1. Rotate the bulb socket counterclockwise and unlock it.
- 2. Remove the bulb from the bulb socket.

#### Disassembly and Assembly

#### DISASSEMBLY

- 1. Remove the back cover.
- 2. Remove the retaining spring lock. And remove the bulb from the headlamp housing assembly.
- 3. Rotate the parking(front side marker) lamp bulb socket counterclockwise and unlock it.
- 4. Remove the bulb from the parking(front side marker) lamp bulb socket.
- 5. Rotate the front turn signal lamp bulb socket counterclockwise and unlock it.
- 6. Remove the bulb from the front turn signal lamp bulb socket.

#### ASSEMBLY

Assemble in the reverse order of disassembly. CAUTION:

## EXL-169

## **FRONT COMBINATION LAMP**

### < REMOVAL AND INSTALLATION >

After installing the bulb, install the resin cap and the bulb socket securely for watertightness.

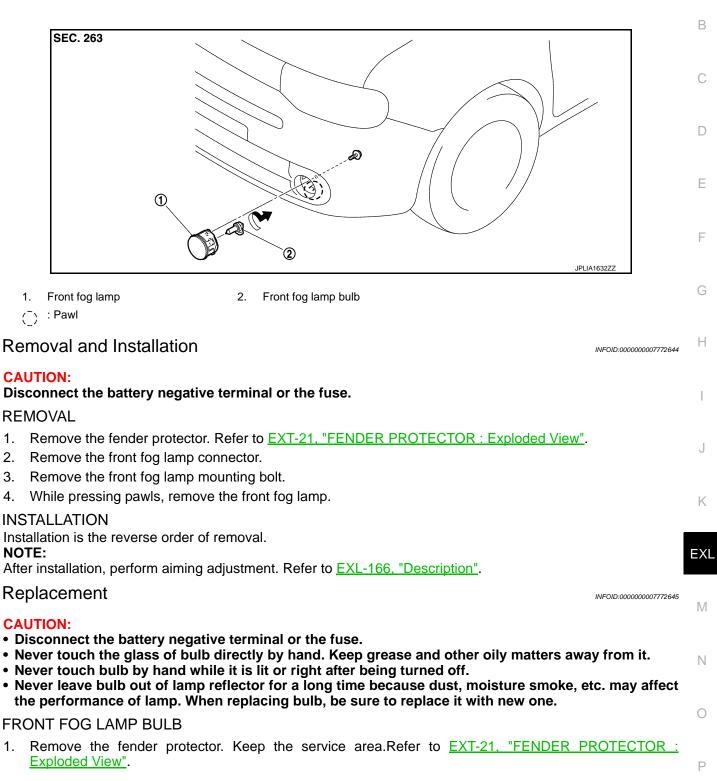
## < REMOVAL AND INSTALLATION >

## FRONT FOG LAMP

## Exploded View

INFOID:000000007772643

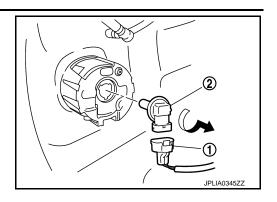
А



## FRONT FOG LAMP

### < REMOVAL AND INSTALLATION >

- 2. Remove the front fog lamp bulb connector (1).
- 3. Rotate the bulb (2) counterclockwise and unlock it.



## **OPTICAL SENSOR**

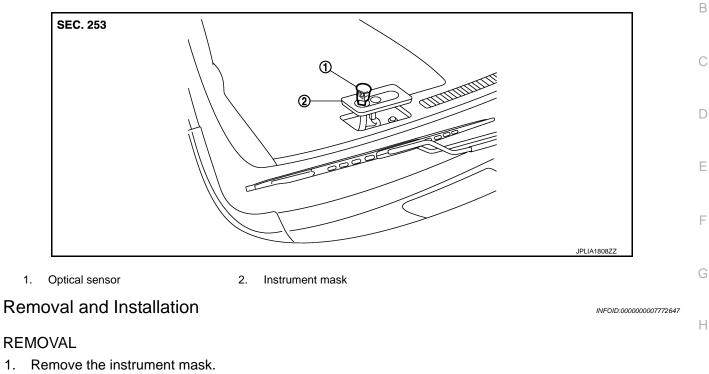
## < REMOVAL AND INSTALLATION >

## **OPTICAL SENSOR**

## Exploded View

INFOID:000000007772646

А



2. Disconnect the connector. Remove the optical sensor.

#### **INSTALLATION**

1.

Install in the reverse order of removal.

EXL

Μ

Ν

Ο

Ρ

J

Κ

## **LIGHTING & TURN SIGNAL SWITCH**

### < REMOVAL AND INSTALLATION >

## LIGHTING & TURN SIGNAL SWITCH

## Exploded View

INFOID:000000007772648

The lighting & turn switch is integrated in the combination switch. Refer to BCS-82, "Exploded View".

## SIDE TURN SIGNAL LAMP

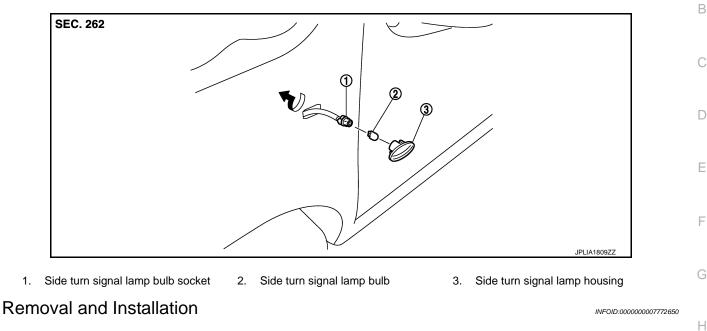
## < REMOVAL AND INSTALLATION >

## SIDE TURN SIGNAL LAMP

## Exploded View

INFOID:000000007772649

А



#### **CAUTION:**

#### Disconnect battery negative terminal or remove the fuse.

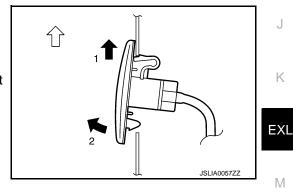
#### REMOVAL

1. Remove the side turn signal lamp in numerical order shown in the figure.

<□ : Installable both direction

fall into the front fender.

 Rotate the bulb socket counterclockwise and unlock it.
 NOTE: Support side turn signal lamp harness with tape so that it won't



#### INSTALLATION

- 1. Rotate the bulb socket clockwise and lock it.
- 2. Fix the pawl-side behind the side turn signal lamp housing first, then push the resin clip-side.

### Replacement

#### **CAUTION:**

- Disconnect battery negative terminal or remove the fuse.
- Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it.
- Never touch bulb by hand while it is lit or right after being turned off.
- Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

#### SIDE TURN SIGNAL LAMP BULB

- 1. Remove the side turn signal lamp.
- 2. Rotate the bulb socket counterclockwise and unlock it. **NOTE:**

## EXL-175

INFOID:00000000777265

Ν

Ρ

## SIDE TURN SIGNAL LAMP

### < REMOVAL AND INSTALLATION >

Support the vehicle-side harness of the side turn signal lamp with tape so that it does not drop inside the front fender.

3. Remove the bulb from the bulb socket.

## **HAZARD SWITCH**

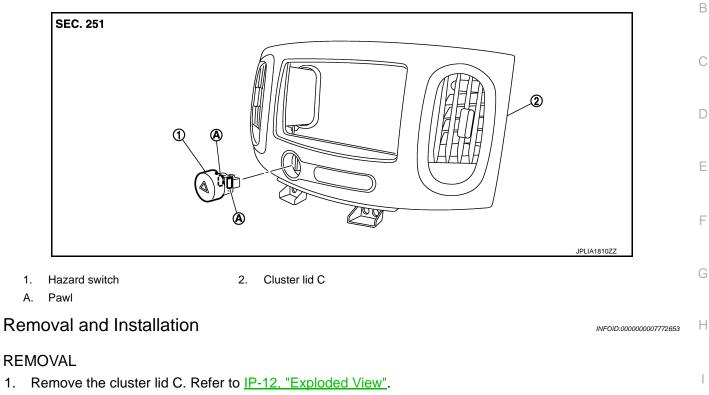
## < REMOVAL AND INSTALLATION >

# HAZARD SWITCH

## Exploded View

INFOID:000000007772652

А



2. While pressing pawls, push the hazard switch. And remove it.

### **INSTALLATION**

1.

Install in the reverse order of removal.

EXL

Μ

Ν

Ο

Ρ

J

Κ

## **REAR COMBINATION LAMP**

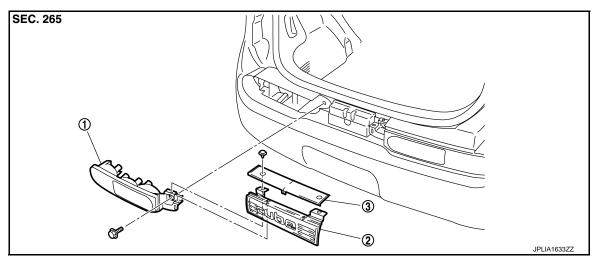
## < REMOVAL AND INSTALLATION >

## REAR COMBINATION LAMP

## **Exploded View**

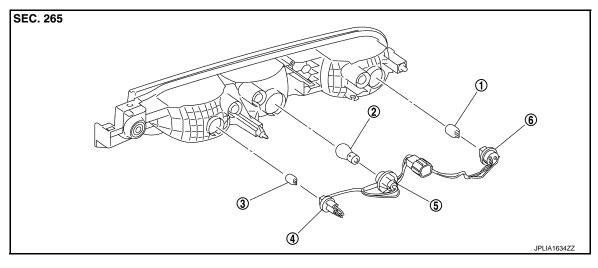
INFOID:000000007772654

## REMOVAL



1. Rear combination lamp 2. Back door finisher 3. Back door finisher cover

## DISASSEMBLY



- 1. Stop/tail lamp bulb
- Rear turn signal lamp bulb
   Rear turn signal lamp bulb socket
- 3. Reverse lamp bulb
- 6. Stop/tail lamp bulb socket

## Removal and Installation

Reverse lamp bulb socket

#### **CAUTION:**

4.

- Disconnect the battery negative terminal or the fuse.
- Wrap the tip of remover tool with a cloth to protect the body from damage.

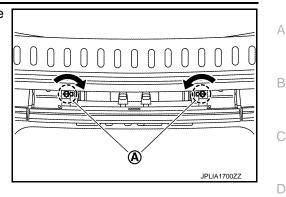
### REMOVAL

1. Remove rear back door finisher cover.

## **REAR COMBINATION LAMP**

### < REMOVAL AND INSTALLATION >

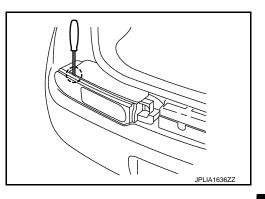
2. Disengage backdoor finisher mounting fastener (A) to remove the back door finisher.



- 3. Remove rear combination lamp mounting bolts.
- 4. Slightly turn the rear combination lamp to leave a clearance.

 Insert an appropriate tool into the clearance between the rear combination lamp and the rear bamper side bracket.
 CAUTION:

Since the rear combination lamp has another clip at the lower center, be careful when removing the outer clip.



IPI IA163577

- 6. Pull rear combination lamp rearward to remove.
- 7. Disconnect rear combination lamp connector.

#### INSTALLATION

Install in the reverse order of removal.

#### NOTE:

The back door finisher mounting fastener remains on the rear combination lamp side after removing the back door finisher. Therefore, be sure to install the mountind fastener on the back door finisher side.

#### Replacement

#### **CAUTION:**

- Disconnect the battery negative terminal or the fuse.
- Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it.
- Never touch bulb by hand while it is lit or right after being turned off.
- Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect
   P
   the performance of lamp. When replacing bulb, be sure to replace it with new one.

#### STOP/TAIL LAMP BULB

Revision: 2011 November

- 1. Remove rear combination lamp assembly.
- 2. Rotate the stop/tail lamp bulb socket counterclockwise, and unlock it.
- 3. Remove bulb from the bulb socket.

INFOID:000000007772656

EXL

Μ

Ν

Κ

Н

## **REAR COMBINATION LAMP**

### < REMOVAL AND INSTALLATION >

### REAR TURN SIGNAL LAMP BULB

- 1. Remove rear combination lamp assembly.
- 2. Rotate the rear turn signal lamp bulb socket counterclockwise, and unlock it.
- 3. Remove bulb from the bulb socket.

#### BACK-UP LAMP BULB

- 1. Remove rear combination lamp assembly.
- 2. Rotate the back-up lamp bulb socket counterclockwise, and unlock it.
- 3. Remove bulb from the bulb socket.

## **REAR SIDE MARKER LAMP**

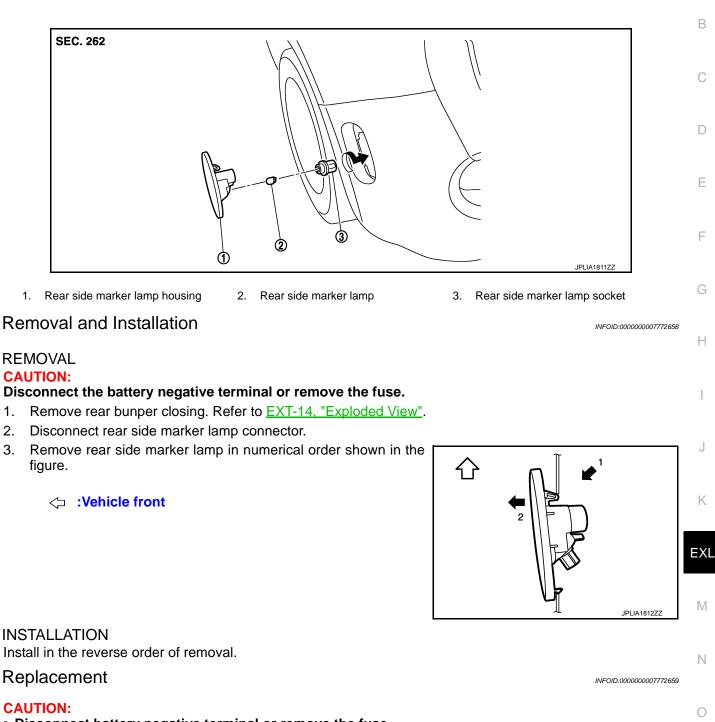
## < REMOVAL AND INSTALLATION >

## REAR SIDE MARKER LAMP

## Exploded View

INFOID:000000007772657

А



- Disconnect battery negative terminal or remove the fuse.
- Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it.
- Never touch bulb by hand while it is lit or right after being turned off.
- Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect
   the performance of lamp. When replacing bulb, be sure to replace it with new one.

#### REAR SIDE MARKER LAMP BULB

- 1. Remove the rear side marker lamp.
- 2. Rotate the bulb socket counterclockwise and unlock it.
- 3. Remove the bulb from the bulb socket.

## EXL-181

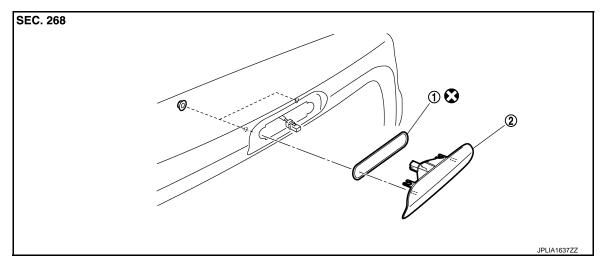
## **HIGH-MOUNTED STOP LAMP**

## < REMOVAL AND INSTALLATION >

## HIGH-MOUNTED STOP LAMP

## Exploded View

INFOID:000000007772660



1. Seal packing2. High-mounted stop lampRefer to GI-4, "Components" for symbols in the figure.

## Removal and Installation

#### **CAUTION:**

#### Disconnect battery negative terminal or remove the fuse.

#### REMOVAL

- 1. Remove the back door finisher upper. Refer to INT-27, "Exploded View".
- 2. Remove the mounting nuts.
- 3. Disconnect the high-mounted stop lamp connector.
- 4. Pull the high-mounted stop lamp toward rear of the vehicle.

#### INSTALLATION

Install in the reverse order of removal.

#### **CAUTION:**

#### Seal packing cannot be reused.

#### Replacement

#### **CAUTION:**

- Disconnect the battery negative terminal or the fuse.
- Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it.
- Never touch bulb by hand while it is lit or right after being turned off.
- Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

### HIGH-MOUNTED STOP LAMP BULB

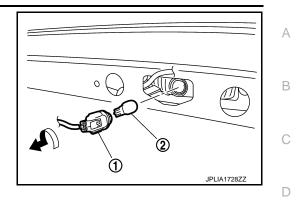
1. Remove the back door finisher upper. Refer to INT-27, "Exploded View".

INFOID:000000007772661

## **HIGH-MOUNTED STOP LAMP**

## < REMOVAL AND INSTALLATION >

- 2. Rotate the bulb socket(1) counterclockwise, and unlock it.
- 3. Remove the bulb from the bulb(2) socket.



Μ

Ν

Ο

Ρ

Е

F

G

Н

J

Κ

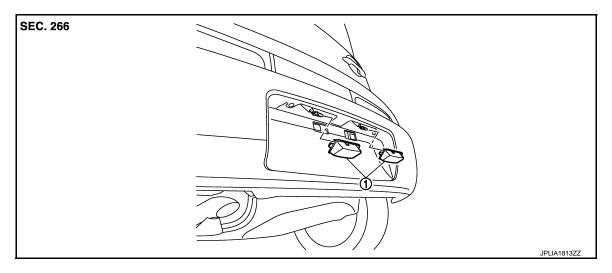
## < REMOVAL AND INSTALLATION >

## LICENSE PLATE LAMP

## **Exploded View**

INFOID:000000007772663

INFOID:000000007772664



1. License plate lamp

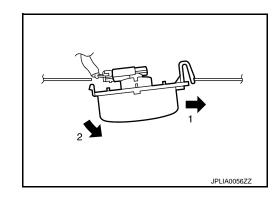
## Removal and Installation

#### **CAUTION:**

#### Disconnect the battery negative terminal or remove the fuse.

#### REMOVAL

- 1. Remove the license plate lamp in numerical order.
- 2. Disconnect the license plate lamp connector.
- 3. Remove the license plate lamp.



#### INSTALLATION

- 1. Connect the license plate lamp connector.
- 2. Fix the pawl side. And then push the resin clip side.

#### Replacement

#### **CAUTION:**

- Disconnect the battery negative terminal or remove the fuse.
- Never touch the glass of bulb directly by hand. Keep grease and other oily matters away from it.
- Never touch bulb by hand while it is lit or right after being turned off.
- Never leave bulb out of lamp reflector for a long time because dust, moisture smoke, etc. may affect the performance of lamp. When replacing bulb, be sure to replace it with new one.

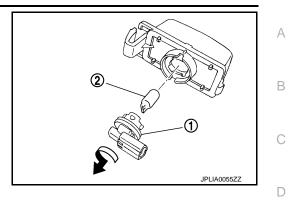
#### LICENSE PLATE LAMP BULB

1. Remove the license plate lamp.

## LICENSE PLATE LAMP

### < REMOVAL AND INSTALLATION >

- 2. Turn the bulb socket (1) counterclockwise and unlock it.
- 3. Remove the bulb (2) from the socket.



Μ

Ν

Ο

Ρ

Е

F

G

Н

J

Κ

## SERVICE DATA AND SPECIFICATIONS (SDS)

## < SERVICE DATA AND SPECIFICATIONS (SDS)

## SERVICE DATA AND SPECIFICATIONS (SDS) SERVICE DATA AND SPECIFICATIONS (SDS)

## **Bulb Specifications**

|                        | Item                            | Туре          | Wattage (W) |
|------------------------|---------------------------------|---------------|-------------|
|                        | Headlamp (HI/LO)                | H4            | 60/55       |
| Front combination lamp | Front turn signal lamp          | PY21W (Amber) | 21          |
|                        | Parking(front side marker) lamp | W5W           | 5           |
| Front fog lamp         |                                 | H8            | 35          |
| Side turn signal lamp  |                                 | WY5W (Amber)  | 5           |
| Rear combination lamp  | Stop lamp/Tail lamp             | W21/5W        | 21/5        |
|                        | Rear turn signal lamp           | PY21W         | 16          |
|                        | Back-up lamp                    | W16W          | 21          |
| License plate lamp     |                                 | W5W           | 5           |
| High-mounted stop lamp |                                 | W16W          | —           |
| Rear side marker lamp  |                                 | W5W           | 5           |