

SECTION

DEF

DEFOGGER

CONTENTS

BASIC INSPECTION	3
DIAGNOSIS AND REPAIR WORKFLOW	3
Work Flow	3
FUNCTION DIAGNOSIS	4
REAR WINDOW DEFOGGER SYSTEM	4
System Diagram	4
System Description	4
Component Parts Location	4
Component Description	5
DIAGNOSIS SYSTEM (BCM)	6
COMMON ITEM	6
COMMON ITEM : CONSULT-III Function (BCM - COMMON ITEM)	6
REAR WINDOW DEFOGGER	6
REAR WINDOW DEFOGGER : CONSULT-III Function (BCM - REAR DEFOGGER)	6
DIAGNOSIS SYSTEM (IPDM E/R)	8
Diagnosis Description	8
CONSULT - III Function (IPDM E/R)	10
COMPONENT DIAGNOSIS	13
REAR WINDOW DEFOGGER SWITCH	13
WITH AUTO A/C	13
WITH AUTO A/C : Description	13
WITH AUTO A/C : Component Function Check	13
WITH AUTO A/C : Diagnosis Procedure	13
WITHOUT AUTO A/C	14
WITHOUT AUTO A/C : Description	14
WITHOUT AUTO A/C : Component Function Check	14
WITHOUT AUTO A/C : Diagnosis Procedure	15
WITHOUT AUTO A/C : Component Inspection	16
REAR WINDOW DEFOGGER POWER SUPPLY AND GROUND CIRCUIT	17
Description	17
Component Function Check	17
Diagnosis Procedure	17
Component Inspection	18
DRIVER SIDE DOOR MIRROR DEFOGGER ...	19
Description	19
Component Function Check	19
Diagnosis Procedure	19
Component Inspection	20
PASSENGER SIDE DOOR MIRROR DEFOGGER	21
Description	21
Component Function Check	21
Diagnosis Procedure	21
Component Inspection	22
REAR WINDOW DEFOGGER ON SIGNAL	23
WITH AUTO A/C	23
WITH AUTO A/C : Description	23
WITH AUTO A/C : Component Function Check	23
WITH AUTO A/C : Diagnosis Procedure	23
WITHOUT AUTO A/C	23
WITHOUT AUTO A/C : Description	23
WITHOUT AUTO A/C : Component Function Check	24
WITHOUT AUTO A/C : Diagnosis Procedure	24
ECU DIAGNOSIS	25
BCM (BODY CONTROL MODULE)	25
Reference Value	25
Wiring Diagram - DEFOGGER CONTROL SYSTEM (LHD MODELS) -	41
Wiring Diagram - DEFOGGER CONTROL SYSTEM (RHD MODELS) -	45
Fail Safe	48

DTC Inspection Priority Chart	49
DTC Index	50
IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)	51
Reference Value	51
Wiring Diagram - DEFOGGER CONTROL SYSTEM (LHD MODELS) -	57
Wiring Diagram - DEFOGGER CONTROL SYSTEM (RHD MODELS) -	61
Fail Safe	64
DTC Index	66

SYMPTOM DIAGNOSIS 67

REAR WINDOW DEFOGGER DOES NOT OPERATE	67
Diagnosis Procedure	67

REAR WINDOW DEFOGGER AND DOOR MIRROR DEFOGGER DO NOT OPERATE.	68
Diagnosis Procedure	68

REAR WINDOW DEFOGGER DOES NOT OPERATE BUT BOTH OF DOOR MIRROR DEFOGGER OPERATE.	69
Diagnosis Procedure	69

DRIVER SIDE DOOR MIRROR DEFOGGER DOES NOT OPERATE.	70
Diagnosis Procedure	70

PASSENGER SIDE DOOR MIRROR DEFOGGER DOES NOT OPERATE.	71
Diagnosis Procedure	71

REAR WINDOW DEFOGGER SWITCH DOES NOT LIGHT, BUT REAR WINDOW DEFOGGER OPERATES	72
Diagnosis Procedure	72

PRECAUTION 73

PRECAUTIONS	73
Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"	73

ON-VEHICLE MAINTENANCE 74

PRE-INSPECTION FOR DIAGNOSTIC	74
Basic Inspection	74

ON-VEHICLE REPAIR 75

FILAMENT	75
Inspection and Repair	75

DIAGNOSIS AND REPAIR WORKFLOW

< BASIC INSPECTION >

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORKFLOW

Work Flow

INFOID:000000000951256

DETAILED FLOW

1.OBTAIN INFORMATION ABOUT SYMPTOM

Interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings the vehicle in.

>> GO TO 2.

2.CHECK DTC

Perform self diagnosis with CONSULT-III

Is any DTC detected?

YES >> Refer to [BCS-61, "DTC Index"](#).

NO >> GO TO 3.

3.REPRODUCE THE MALFUNCTION INFORMATION

Check the malfunction on the vehicle that the customer describes.

Inspect the relation of the symptoms and the condition when the symptoms occur.

>> GO TO 4.

4.PERFORM "BASIC INSPECTION"

Perform the basic inspection.Refer to [DEF-74, "Basic Inspection"](#).

>> GO TO 5.

5.IDENTIFY THE MALFUNCTIONING SYSTEM WITH "SYMPTOM DIAGNOSIS"

Use "Symptom diagnosis" from the symptom inspection result in step 3. Then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 6.

6.IDENTIFY MALFUNCTIONING PARTS WITH "COMPONENT DIAGNOSIS"

Perform the diagnosis with "Component diagnosis" of the applicable system.

>> GO TO 7.

7.REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the specified malfunctioning parts.

>> GO TO 8.

8.FINAL CHECK

Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 3.

Is the malfunctioning part repaired or replaced?

YES >> Trouble diagnosis is completed.

NO >> GO TO 4.

REAR WINDOW DEFOGGER SYSTEM

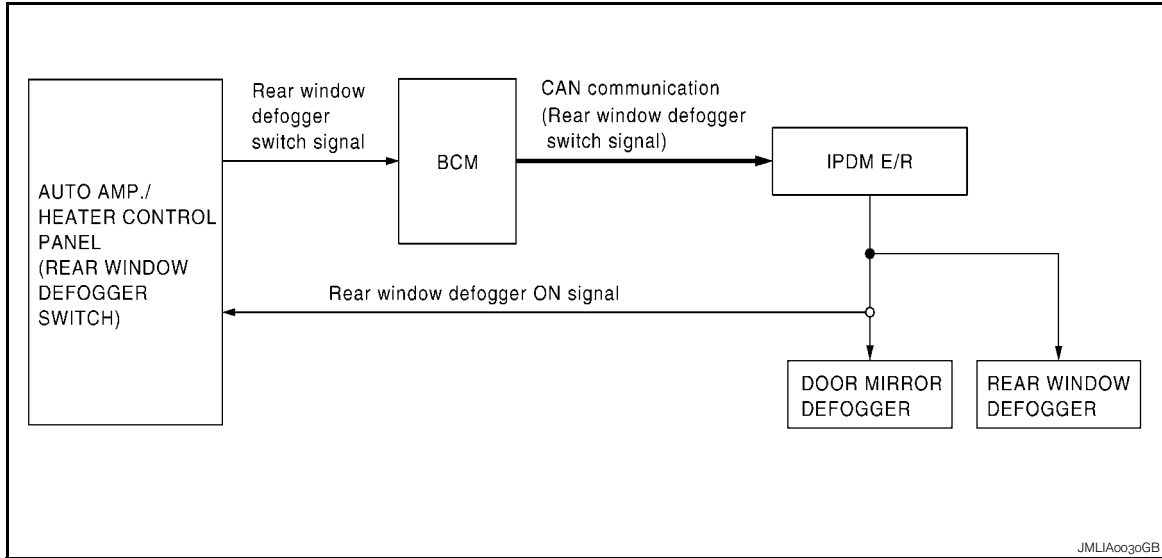
< FUNCTION DIAGNOSIS >

FUNCTION DIAGNOSIS

REAR WINDOW DEFOGGER SYSTEM

System Diagram

INFOID:000000000951258



System Description

INFOID:000000000951259

OPERATION DESCRIPTION

- BCM detects that the rear window defogger switch is turned ON when the ignition switch is ON, and then transmits the rear window defogger switch signal to IPDM E/R via CAN communication for approximately 15 minutes.
- IPDM E/R turns rear window defogger relay ON when it receives the rear window defogger switch signal. Then, it transmits the rear window defogger ON signal to ECM via CAN communication.
- The power is supplied to the rear window defogger and door mirror defogger (with mirror defogger) when the rear window defogger relay is turned ON.

TIMER FUNCTION

- BCM transmits the rear window defogger switch signal to IPDM E/R for approximately 15 minutes when the rear window defogger switch is turned ON with the ignition switch ON. Then, IPDM E/R operates the rear window defogger and door mirror defogger (with mirror defogger).
- The timer is cancelled if the rear window defogger switch is pressed again during timer operation. BCM stops the output of rear window defogger switch signal. The same reaction also occurs during timer operation if the ignition switch is turned OFF.

INPUT/OUTPUT SIGNAL CHART

Switch	Input signal to BCM	BCM function	Acuator
Rear window defogger switch	Defogger switch signal	Rear window defogger & Door mirror defogger* control	Rear window defogger
Ignition switch	Ignition signal		Door mirror defogger *

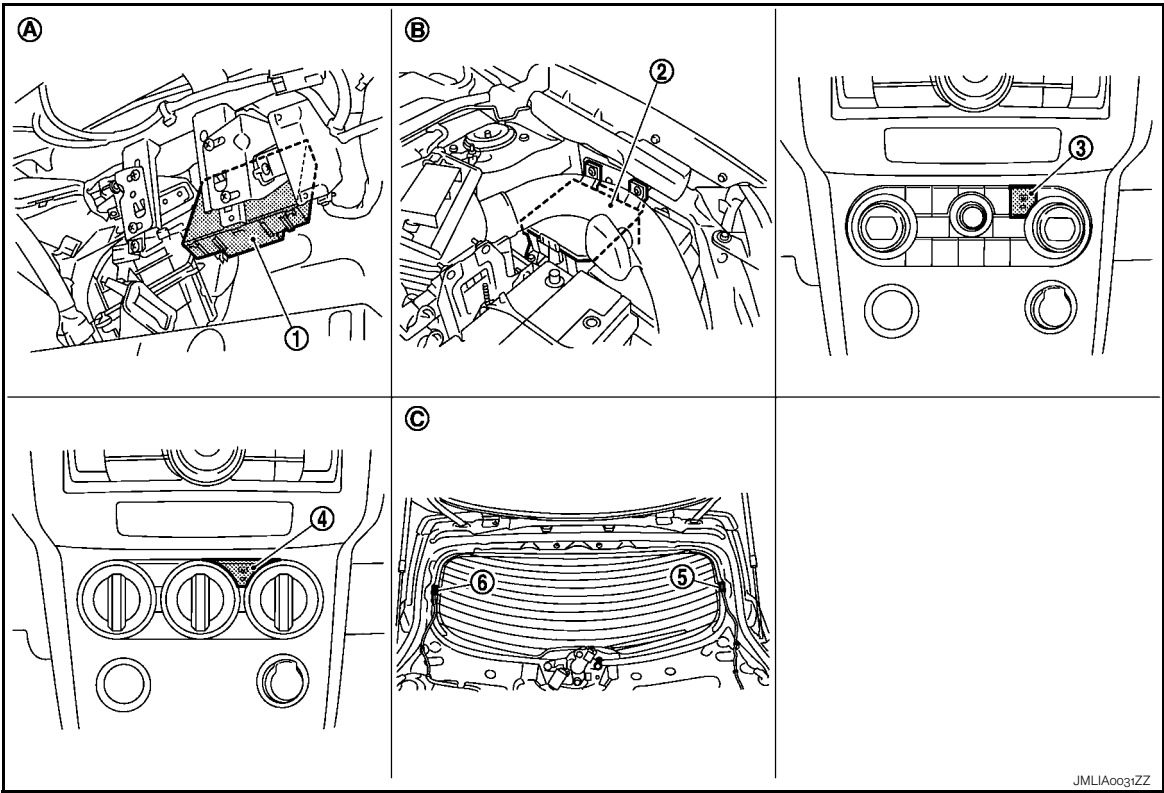
*: With mirror defogger

Component Parts Location

INFOID:000000000951260

REAR WINDOW DEFOGGER SYSTEM

< FUNCTION DIAGNOSIS >



1. BCM M65,M66,M67
2. IPDM E/R E10,E12,E14
3. Rear window defogger switch (built in AUTO AMP. M53)
4. Rear window defogger switch (built in heater control panel M54)
5. Rear window defogger B58
6. Rear window defogger D155
- A. Behind glove box
- B. Engine room dash panel (LH)
- C. Behind back door trim finisher

Component Description

INFOID:0000000000951261

BCM	- Operates the rear window defogger with the operation of rear window defogger switch. - Performs the timer control of rear window defogger.
Rear window defogger relay	Operates the rear window defogger and the door mirror defogger* with the control signal from IPDM E/R.
Auto amp. / Heter control panel (Rear window defogger switch)	- The rear window defogger switch is installed. - Turns the indicator lamp ON when detecting the operation of rear window defogger.
Rear window defogger	Heats the heating wire with the power supply from the rear window defogger relay to prevent the rear window from fogging up.
Door mirror defogger*	Heats the heating wire with the power supply from the rear window defogger relay to prevent the door mirror from fogging up.

*With mirror defogger

DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

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

INFOID:000000001114950

APPLICATION ITEM

CONSULT-III performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
WORK SUPPORT	Changes the setting for each system function.
SELF-DIAG RESULTS	Displays the diagnosis results judged by BCM. Refer to BCS-61, "DTC Index" .
CAN DIAG SUPPORT MNTR	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	The BCM part number is displayed.
CONFIGURATION	- Enables to read and save the vehicle specification. - Enables to write the vehicle specification when replacing BCM.

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
—	BCM	×		
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Remote keyless entry system	MULTI REMOTE ENT	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER		×	×
Air conditioner	AIR CONDITONER		×	
Intelligent Key system	INTELLIGENT KEY		×	
Combination switch	COMB SW		×	
Immobilizer	IMMU		×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Trunk open	TRUNK		×	
Vehicle security system	THEFT ALM	×	×	×
Signal buffer system	SIGNAL BUFFER		×	×
PTC heater system	PTC HEATER		×	×

REAR WINDOW DEFOGGER

REAR WINDOW DEFOGGER : CONSULT-III Function (BCM - REAR DEFOGGER)

INFOID:0000000000951263

Data monitor

DIAGNOSIS SYSTEM (BCM)

< FUNCTION DIAGNOSIS >

Monitor Item	Description
REAR DEF SW	Displays "Press (ON)/other (OFF)" status determined with the rear window defogger switch.
IGN ON SW	Indicates [ON/OFF] condition of ignition switch in ON position.
ACC ON SW	Indicates [ON/OFF] condition of ignition switch in ACC position.

ACTIVE TEST

Test Item	Description
REAR DEFOGGER	Give a drive signal to the rear window defogger relay to activate it.

A

B

C

D

E

F

G

H

I

J

K

DEF

M

N

O

P

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

DIAGNOSIS SYSTEM (IPDM E/R)

Diagnosis Description

INFOID:000000001114954

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
- License plate lamps
- Tail lamps
- Front fog lamps
- Headlamps (LO, HI)
- A/C compressor (magnet clutch)
- Cooling fan (LO, HI)

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 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. Then 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:

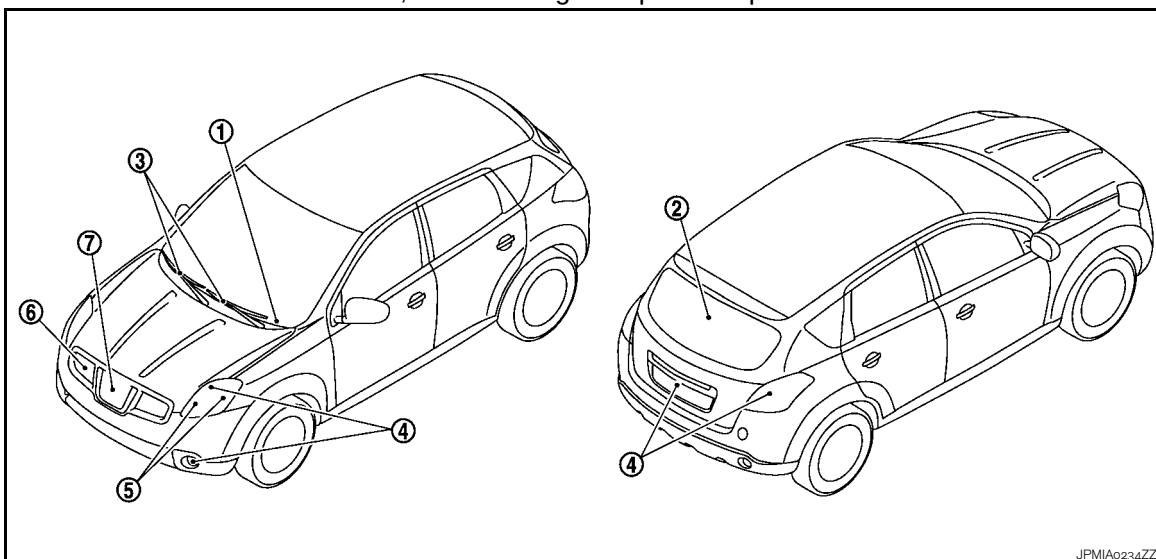
When auto active test mode has to be cancelled halfway through test, turn ignition switch OFF.

CAUTION:

- If auto active test mode cannot be actuated, check door switch system.
- Never start the engine.

Inspection in auto active test mode

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

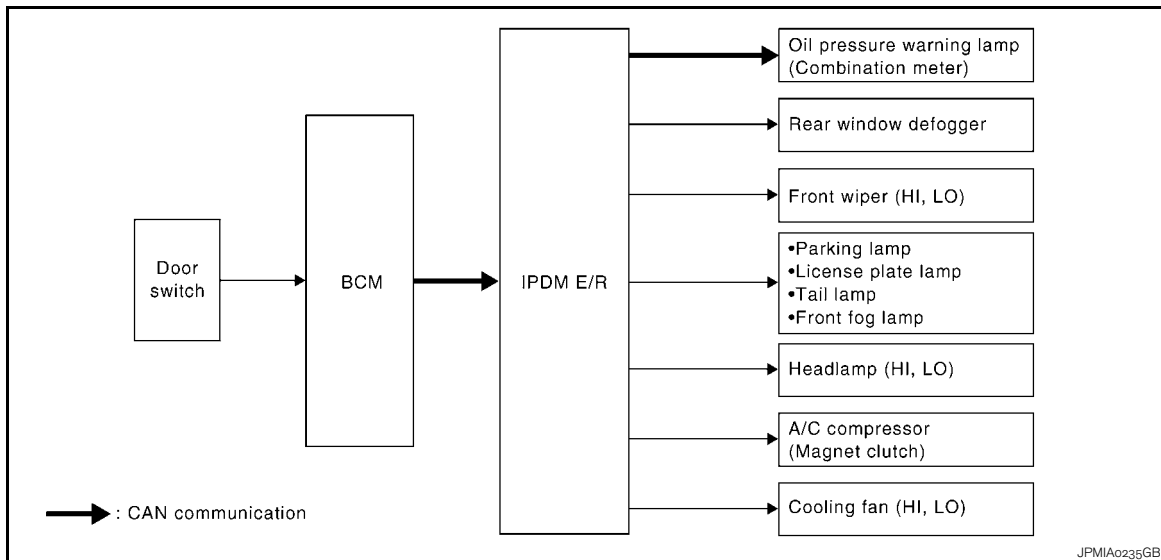


DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Operation sequence	Inspection location	Operation
1	Oil pressure warning lamp	Blinks continuously during operation of auto active test.
2	Rear window defogger	10 seconds
3	Front wiper	LO for 5 seconds → HI for 5 seconds
4	• Parking lamps • License plate lamps • Tail lamps • Front fog lamps	10 seconds
5	Headlamps	LO ↔ HI 5 times
6	A/C compressor (magnet clutch)	ON ↔ OFF 5 times
7	Cooling fan	LO for 5 seconds → HI for 5 seconds

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
Rear window defogger does not operate	Perform auto active test. Does the rear window defogger operate?	YES BCM signal input circuit
		NO • Rear window defogger • Rear window defogger ground circuit • Harness or connector between IPDM E/R and rear window defogger • IPDM E/R
Any of the following components do not operate • Parking lamps • License plate lamps • Tail lamps • Front fog lamps • Headlamp (HI, LO) • Front wiper (HI, LO)	Perform auto active test. Does the applicable system operate?	YES BCM signal input circuit
		NO • Lamp or motor • Lamp or motor ground circuit • Harness or connector between IPDM E/R and applicable system • IPDM E/R

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Symptom	Inspection contents		Possible cause
A/C compressor does not operate	Perform auto active test. Does the magnet clutch operate?	YES	• Communication signal between BCM and auto amp. (with auto A/C) • Communication signal between BCM and heater control panel (without auto A/C, with manual A/C) • BCM • CAN communication signal between BCM and ECM • CAN communication signal between ECM and IPDM E/R
		NO	• Magnet clutch • Harness or connector between IPDM E/R and magnet clutch • IPDM E/R
Oil pressure warning lamp does not operate	Perform auto active test. Does the oil pressure warning lamp blink?	YES	• Harness or connector between IPDM E/R and oil pressure switch • Oil pressure switch • IPDM E/R
		NO	• CAN communication signal between IPDM E/R and BCM • CAN communication signal between BCM and combination meter • Combination meter
Cooling fan does not operate	Perform auto active test. Does the cooling fan operate?	YES	• ECM signal input circuit • CAN communication signal between ECM and IPDM E/R
		NO	• Cooling fan • Cooling fan ground circuit • Harness or connector between IPDM E/R and cooling fan • IPDM E/R • Cooling fan relay-3* • Harness or connector between IPDM E/R and cooling fan relay-3* • Harness or connector between cooling fan and cooling fan relay-3*

NOTE:

*: MR engine and K9K engine models

CONSULT - III Function (IPDM E/R)

INFOID:0000000001114955

APPLICATION ITEM

CONSULT-III 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

Refer to [PCS-30, "DTC Index"](#).

DATA MONITOR

Monitor item

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Monitor Item [Unit]	MAIN SIGNALS	Description
MOTOR FAN REQ [1 - 4]	×	Displays the value of the cooling fan speed signal received from ECM via CAN communication.
AC COMP REQ [Off/On]	×	Displays the status of the A/C compressor request signal received from ECM via CAN communication.
TAIL&CLR REQ [Off/On]	×	Displays the status of the position light request signal received from BCM via CAN communication.
HL LO REQ [Off/On]	×	Displays the status of the low beam request signal received from BCM via CAN communication.
HL HI REQ [Off/On]	×	Displays the status of the high beam request signal received from BCM via CAN communication.
FR FOG REQ [Off/On]	×	Displays the status of the front fog light request signal received from BCM via CAN communication.
HL WASHER REQ [Off/On]		Displays the status of the headlamp washer request signal received from BCM via CAN communication.
FR WIP REQ [Stop/1LOW/Low/Hi]	×	Displays the status of the front wiper request signal received from BCM via CAN communication.
WIP AUTO STOP [STOP P/ACT P]	×	Displays the status of the front wiper auto stop signal judged by IPDM E/R.
WIP PROT [Off/BLOCK]	×	Displays the status of the front wiper fail-safe operation judged by IPDM E/R.
ST RLY REQ [Off/On]		Displays the status of the ignition and starter request signal received from BCM via CAN communication.
IGN RLY [Off/On]	×	Displays the status of the ignition relay judged by IPDM E/R.
RR DEF REQ [Off/On]	×	Displays the status of the rear defogger request signal received from BCM via CAN communication.
OIL P SW [Open/Close]		Displays the status of the oil pressure switch judged by IPDM E/R.
REV SW [Off/On]		Displays the status of the reverse switch judged by IPDM E/R.
HOOD SW [Off/On]		Displays the status of the hood switch judged by IPDM E/R. NOTE: This item is monitored only the vehicle with the Vehicle Security (Theft Warning) system.
THFT HRN REQ [Off/On]		Displays the status of the theft warning horn request signal received from BCM via CAN communication. NOTE: This item is monitored only the vehicle with the Vehicle Security (Theft Warning) system.
HORN CHIRP [Off/On]		NOTE: This item is indicated, but not monitored.
IGN ON SW [Off/On]		Displays the status of the ignition switch judged by IPDM E/R.

ACTIVE TEST

Test item

Test item	Operation	Description
REAR DEFOGGER	Off	OFF
	On	Operates the rear window defogger relay.
FRONT WIPER	Off	OFF
	Lo	Operates the front wiper relay.
	Hi	Operates the front wiper relay and front wiper high relay.

DIAGNOSIS SYSTEM (IPDM E/R)

< FUNCTION DIAGNOSIS >

Test item	Operation	Description
MOTOR FAN	1	OFF
	2	Operates the cooling fan relay (low operation).
	3	Operates the cooling fan relay (high operation).
	4	
HEAD LAMP WASHER	On	Operates the headlamp washer relay for 1 second.
EXTERNAL LAMPS	Off	OFF
	TAIL	Operates the tail lamp relay.
	Lo	Operates the headlamp low relay.
	Hi	Operates the headlamp low relay and ON/OFF the headlamp high relay at 1 second intervals.
	Fog	Operates the front fog lamp relay.
HORN	On	Operates horn relay for 20 ms.

REAR WINDOW DEFOGGER SWITCH

< COMPONENT DIAGNOSIS >

COMPONENT DIAGNOSIS

REAR WINDOW DEFOGGER SWITCH WITH AUTO A/C

WITH AUTO A/C : Description

INFOID:0000000000951265

The rear window defogger is operated by turning the rear window defogger switch ON.

WITH AUTO A/C : Component Function Check

INFOID:0000000000951266

1.CHECK REAR WINDOW DEFOGGER SWITCH OPERATION

Check ("REAR DEF SW", "IGN ON SW") in DATA MONITOR mode with CONSULT-III. Refer to [DEF-6. "REAR WINDOW DEFOGGER : CONSULT-III Function \(BCM - REAR DEFOGGER\)".](#)

When rear defogger switch is turned to ON
REAR DEF SW :ON

OK or NG

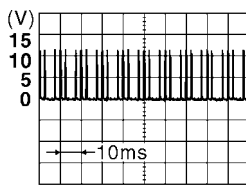
- OK >> Rear window defogger switch is OK.
NG >> Refer to [DEF-13. "WITH AUTO A/C : Diagnosis Procedure".](#)

WITH AUTO A/C : Diagnosis Procedure

INFOID:0000000000951267

1.CHECK REAR WINDOW DEFOGGER SWITCH OPERATION

1. Turn ignition switch ON.
2. Check voltage between BCM connector ground.

Connector	Terminal		Condition	Voltage (V) (Approx.)
	(+)	(-)		
M65	21	Ground	Rear window defogger switch is pressed.	0
			Rear window defogger switch is OFF.	

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Is the inspection result normal?

- YES >> Refer to [GI-39. "Intermittent Incident".](#)
NO >> GO TO 2.

2.CHECK REAR WINDOW DEFOGGER SWITCH CIRCUIT HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect BCM and auto amp. connector.
3. Check continuity between BCM connector and auto amp. connector.

BCM connector	Terminal	Auto amp. connector	Terminal	Continuity
M65	21	M53	23	Yes

4. Check continuity between BCM connector and ground.

BCM connector	Terminal	Ground	Continuity
M65	21		No

Is the inspection result normal?

- YES >> GO TO 3.

REAR WINDOW DEFOGGER SWITCH

< COMPONENT DIAGNOSIS >

NO >> Repair or replace harness between BCM and auto amp.

3.CHECK REAR WINDOW DEFOGGER SWITCH GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect auto amp,connector.
3. Check continuity between auto amp. connector and ground.

Auto amp. connector	Terminal	Ground	Continuity
M53	17		Existed

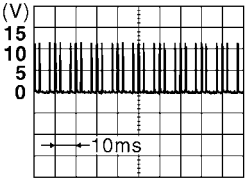
Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness between auto amp.and ground.

4.CHECK BCM OUTPUT SIGNAL

1. Connect BCM connector.
2. Turn ignition switch ON.
3. Check voltage between BCM connector and ground.

Connector	Terminal		Voltage (V) (Approx.)
	(+)	(-)	
M65	21	Ground	 JPMA0154GB

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 6.

5.CHECK IINTERMITTENT INCIDENT

Check intermittent incident.

Refer to [GI-39. "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace auto amp. Refer to [VTL-21. "Removal and Installation"](#).

NO >> Repair or replace the malfunctioning parts.

6.CHECK IINTERMITTENT INCIDENT

Check intermittent incident.

Refer to [GI-39. "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-64. "Exploded View"](#).

NO >> Repair or replace the malfunctioning parts.

WITHOUT AUTO A/C

WITHOUT AUTO A/C : Description

INFOID:000000000978700

The rear window defogger is operated by turning the rear window defogger switch ON.

WITHOUT AUTO A/C : Component Function Check

INFOID:000000000978756

1.CHECK REAR WINDOW DEFOGGER SWITCH OPERATION

Check ("REAR DEF SW", "IGN ON SW") in DATA MONITOR mode with CONSULT-III. Refer to [DEF-6. "REAR WINDOW DEFOGGER : CONSULT-III Function \(BCM - REAR DEFOGGER\)"](#).

REAR WINDOW DEFOGGER SWITCH

< COMPONENT DIAGNOSIS >

When rear defogger switch is turned to ON

REAR DEF SW :ON

OK or NG

OK >> Rear window defogger switch is OK.

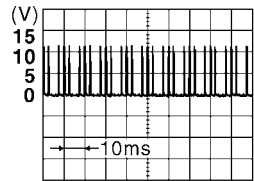
NG >> Refer to [DEF-13, "WITH AUTO A/C : Diagnosis Procedure"](#).

WITHOUT AUTO A/C : Diagnosis Procedure

INFOID:000000000978757

1.CHECK REAR WINDOW DEFOGGER SWITCH OPERATION

1. Turn ignition switch ON.
2. Check voltage between BCM connector ground.

Connector	Terminal (Wire color)		Condition	Voltage (V) (Approx.)
	(+)	(-)		
M65	21	Ground	Rear window defogger switch is pressed.	0
			Rear window defogger switch is OFF.	

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Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> GO TO 2.

2.CHECK REAR WINDOW DEFOGGER SWITCH CIRCUIT HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect BCM and heater control panel connector.
3. Check continuity between BCM connector and heater control panel connector.

BCM connector	Terminal	Heater control panel connector	Terminal	Continuity
M65	21	M54	18	Yes

4. Check continuity between BCM connector and ground

BCM connector	Terminal	Ground	Continuity
M65	21		No

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace harness between BCM and heater control panel.

3.CHECK REAR WINDOW DEFOGGER SWITCH

Check rear window defogger switch.

Refer to [DEF-16, "WITHOUT AUTO A/C : Component Inspection"](#).

Is the inspection result normal?

YES >> GO TO 4.

NO >> Replace heater control panel (rear window defogger switch). Refer to [VTL-72, "Removal and Installation"](#).

4.CHECK REAR WINDOW DEFOGGER SWITCH GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect heater control panel connector.
3. Check continuity between heater control panel connector and ground.

REAR WINDOW DEFOGGER SWITCH

< COMPONENT DIAGNOSIS >

Heater control panel connector	Terminal	Ground	Continuity
M54	20		Existed

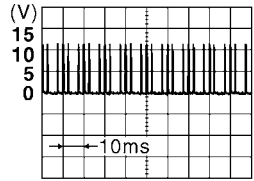
Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace harness between heater control panel and ground.

5.CHECK BCM OUTPUT SIGNAL

1. Connect BCM connector.
2. Turn ignition switch ON.
3. Check voltage between BCM connector and ground.

Connector	Terminal		Voltage (V) (Approx.)
	(+)	(-)	
M65	21	Ground	 JPMA0154GB

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> GO TO 6.

6.CHECK INTERMITTENT INCIDENT

Check intermittent incident.

Refer to [GI-39, "Intermittent Incident"](#).

Is the inspection result normal?

YES >> Replace BCM. Refer to [BCS-64, "Exploded View"](#).

NO >> Repair or replace the malfunctioning parts.

WITHOUT AUTO A/C : Component Inspection

INFOID:000000000997885

1.CHECK HEATER CONTROL PANEL (REAR WINDOW DEFOGGER SWITCH)

Check heter control panel (rear window defogger switch).

Terminal		Condition	Continuity
Heater control panel			
18	20	Rear window defogger switch is pressed	Existed
		Rear window defogger switch: OFF	Not existed

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace heter control panel (rear window defogger switch). Refer to [VTL-72, "Removal and Installation"](#).

REAR WINDOW DEFOGGER POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

REAR WINDOW DEFOGGER POWER SUPPLY AND GROUND CIRCUIT

Description

INFOID:000000000951272

Heats the heating wire with the power supply from the rear window defogger relay to prevent the rear window from fogging up.

Component Function Check

INFOID:000000000951273

1.CHECK REAR WINDOW DEFOGGER

Check that the heating wire of rear window defogger is heated when turning the rear window defogger switch ON.

Is the inspection result normal?

YES >> Rear window defogger is OK.

NO >> Refer to [DEF-17, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000951274

1.CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch ON.
2. Check voltage between rear window defogger connector and ground.

Terminals			Condition of rear window defogger switch	Voltage (V) (Approx.)
(+)		(−)		
Rear window defogger connector	Terminal			
B58	1	Ground	ON	Battery voltage
			OFF	0

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect rear window defogger connector.
3. Check continuity between rear window defogger connector and ground.

Rear window defogger connector	Terminal	Ground	Continuity
D155	2		Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness between rear window defogger and ground.

3.CHECK HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R and rear window defogger connectors.
3. Check continuity between IPDM E/R and rear window defogger connector.

IPDM E/R connector	Terminal	Rear window defogger connector	Terminal	Continuity
E14	49	B58	1	Existed

4. Check continuity between IPDM E/R connector and ground.

IPDM E/R connector	Terminal	Ground	Continuity
E14	49		Not existed

REAR WINDOW DEFOGGER POWER SUPPLY AND GROUND CIRCUIT

< COMPONENT DIAGNOSIS >

Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace harness between IPDM E/R and rear window defogger .

4.CHECK FILAMENT

Check filament.

Refer to [DEF-18, "Component Inspection"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair filament.

5.CHECK IPDM E/R OUTPUT SIGNAL

1. Turn ignition switch ON.

2. Check voltage between IPDM E/R connector and ground.

Terminal		Condition	Voltage (V) (Approx.)
(+)	(-)		
49	Ground	Rear window defogger switch : ON	Battery voltage
		Rear window defogger switch : OFF	0

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Replace IPDM E/R. Refer to [PCS-32, "Removal and Installation"](#).

Component Inspection

INFOID:0000000000951275

1.CHECK FILAMENT

Check the filament for damage or blown.

Refer to [DEF-75, "Inspection and Repair"](#).

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Repair filament.

DRIVER SIDE DOOR MIRROR DEFOGGER

< COMPONENT DIAGNOSIS >

DRIVER SIDE DOOR MIRROR DEFOGGER

Description

INFOID:000000000951276

Heats the heating wire with the power supply from the rear window defogger relay to prevent the door mirror from fogging up.

Component Function Check

INFOID:000000000951277

1.CHECK DRIVER SIDE DOOR MIRROR DEFOGGER

Check that heating wire of driver side door mirror defogger is heated when turning the rear window defogger switch ON.

Is the inspection result normal?

- YES >> Driver side door mirror defogger is OK.
NO >> Refer to [DEF-19. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000951278

1.CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect door mirror (driver side) connector.
3. Turn ignition switch ON.
4. Check voltage between door mirror (driver side) connector and ground.

Terminals			Condition of rear window defogger switch	Voltage (V) (Approx.)
(+)		(-)		
Door mirror (driver side) connector	Terminal			
D3(LHD) D23(RHD)	7	Ground	ON	Battery voltage
			OFF	0

Is the inspection result normal?

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

2.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between door mirror (driver side) connector and ground.

Door mirror (driver side) connector	Terminal	Ground	Continuity
D3(LHD) D23(RHD)	8		Existed

Is the inspection result normal?

- YES >> GO TO 4.
NO >> Repair or replace harness between door mirror (driver side) and ground.

3.CHECK DOOR MIRROR HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between door mirror (driver side) connector and IPDM E/R.

Door mirror (driver side) connector	Terminal	IPDM E/R connector	Terminal	Continuity
D3(LHD) D23(RHD)	7	E14	49	Existed

4. Check continuity between door mirror (driver side) connector and ground.

DRIVER SIDE DOOR MIRROR DEFOGGER

< COMPONENT DIAGNOSIS >

Door mirror (driver side) connector	Terminal	Ground	Continuity
D3(LHD) D23(RHD)	7		Not existed

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace harness between door mirror (driver side) and IPDM E/R.

4. CHECK DRIVER SIDE DOOR MIRROR DEFOGGER

Check driver side door mirror defogger.

Refer to [DEF-20, "Component Inspection"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Replace door mirror (driver side). Refer to [MIR-39, "Removal and Installation"](#).

Component Inspection

INFOID:000000000951279

1. CHECK DRIVER SIDE DOOR MIRROR DEFOGGER

1. Turn ignition switch OFF.
2. Disconnect door mirror (driver side) connector.
3. Check continuity between door mirror terminals.

Door mirror (diver side) connector	Terminal		Continuity
D3(LHD) D23(RHD)	7	8	Existed

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace door mirror (driver side). Refer to [MIR-39, "Removal and Installation"](#).

PASSENGER SIDE DOOR MIRROR DEFOGGER

< COMPONENT DIAGNOSIS >

PASSENGER SIDE DOOR MIRROR DEFOGGER

Description

INFOID:000000000951280

Heats the heating wire with the power supply from the rear window defogger relay to prevent the door mirror from fogging up.

Component Function Check

INFOID:000000000951281

1.CHECK PASSENGER SIDE DOOR MIRROR DEFOGGER

Check that the heating wire of passenger side door mirror defogger is heated when turning the rear window defogger switch ON.

Is the inspection result normal?

YES >> Passenger side door mirror defogger is OK.

NO >> Refer to [DEF-21. "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000000998568

1.CHECK POWER SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect door mirror (passenger side) connector.
3. Turn ignition switch ON.
4. Check voltage between door mirror (passenger side) connector and ground.

Terminals			Condition of rear window defogger switch	Voltage (V) (Approx.)
(+) (+)		(-) (-)		
Door mirror (passenger side) connector	Terminal			
D43(LHD) D63(RHD)	7	Ground	ON	Battery voltage
			OFF	0

Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 3.

2.CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between door mirror (passenger side) connector and ground.

Door mirror (passenger side) connector	Terminal	Ground	Continuity
D43(LHD) D63(RHD)	8		Existed

Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness between door mirror (passenger side) and ground.

3.CHECK DOOR MIRROR HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Check continuity between door mirror (passenger side) connector and IPDM E/R.

Door mirror (passenger side) connector	Terminal	IPDM E/R connector	Terminal	Continuity
D43(LHD) D63(RHD)	7	E14	49	Existed

4. Check continuity between door mirror (passenger side) connector and ground.

PASSENGER SIDE DOOR MIRROR DEFOGGER

< COMPONENT DIAGNOSIS >

Door mirror (passenger side) connector	Terminal	Ground	Continuity
D43(LHD) D63(RHD)	7		Not existed

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace harness between door mirror (passenger side) and IPDM E/R.

4.CHECK PASSENGER SIDE DOOR MIRROR DEFOGGER

Check passenger side door mirror defogger.

Refer to [DEF-20, "Component Inspection"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Replace door mirror (passenger side). Refer to [MIR-39, "Removal and Installation"](#).

Component Inspection

INFOID:000000000951283

1.CHECK PASSENGER DOOR MIRROR DEFOGGER

1. Turn ignition switch OFF.
2. Disconnect door mirror (passenger side) connector.
3. Check continuity between door mirror terminals.

Door mirror (passenger side) connector	Terminal		Continuity
D43(LHD) D63(RHD)	7	8	Existed

Is the inspection result normal?

YES >> INSPECTION END.

NO >> Replace door mirror (passenger side). Refer to [MIR-39, "Removal and Installation"](#).

REAR WINDOW DEFOGGER ON SIGNAL

< COMPONENT DIAGNOSIS >

REAR WINDOW DEFOGGER ON SIGNAL WITH AUTO A/C

WITH AUTO A/C : Description

INFOID:000000001025363

Turns the indicator lamp in the rear window defogger switch ON when operating the rear window defogger.

WITH AUTO A/C : Component Function Check

INFOID:000000001025364

1.CHECK REAR WINDOW DEFOGGER ON SIGNAL

Check that the indicator lamps of rear window defogger switch are illuminated when turning the rear window defogger switch ON.

Is the inspection result normal?

- OK >> Rear window defogger ON signal is OK.
NG >> Refer to [DEF-23, "WITH AUTO A/C : Diagnosis Procedure"](#).

WITH AUTO A/C : Diagnosis Procedure

INFOID:000000001025365

1.CHECK REAR WINDOW DEFOGGER ON SIGNAL

1. Turn ignition switch ON.
2. Check voltage between auto amp. connector ground.

Auto amp. connector	Terminal		Condition	Voltage (V) (Approx.)
	(+)	(-)		
M53	22	Ground	Rear window defogger switch is pressed.	Battery voltage
			Rear window defogger switch is OFF.	0

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R and auto amp. connector.
3. Check continuity between IPDM E/R connector and auto amp. connector.

IPDM E/R connector	Terminal	Auto amp. connector	Terminal	Continuity
E14	49	M53	22	Existed

4. Check continuity between BCM connector and ground.

IPDM E/R connector	Terminal	Ground	Continuity
E14	49		Not existed

Is the inspection result normal?

- YES >> Refer to [GI-39, "Intermittent Incident"](#).
NO >> Repair or replace harness between IPDM E/R and auto amp.

3.CHECK IINTERMITTENT INCIDENT

Check intermittent incident.

Refer to [GI-39, "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace auto amp. Refer to [VTL-21, "Removal and Installation"](#).
NO >> Repair or replace the malfunctioning parts.

WITHOUT AUTO A/C

WITHOUT AUTO A/C : Description

INFOID:000000001025367

REAR WINDOW DEFOGGER ON SIGNAL

< COMPONENT DIAGNOSIS >

Turns the indicator lamp in the rear window defogger switch ON when operating the rear window defogger.

WITHOUT AUTO A/C : Component Function Check

INFOID:000000001025368

1.CHECK REAR WINDOW DEFOGGER ON SIGNAL

Check that the indicator lamps of rear window defogger switch are illuminated when turning the rear window defogger switch ON.

Is the inspection result normal?

- OK >> Rear window defogger ON signal is OK.
NG >> Refer to [DEF-23. "WITH AUTO A/C : Diagnosis Procedure"](#).

WITHOUT AUTO A/C : Diagnosis Procedure

INFOID:000000001025369

1.CHECK REAR WINDOW DEFOGGER ON SIGNAL

1. Turn ignition switch ON.
2. Check voltage between heater control panel connector ground.

Heater control panel connector	Terminal (Wire color)		Condition	Voltage (V) (Approx.)
	(+)	(-)		
M54	19	Ground	Rear window defogger switch is ON.	Battery voltage
			Rear window defogger switch is OFF.	0

Is the inspection result normal?

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

2.CHECK HARNESS CONTINUITY

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R and heater control panel connector.
3. Check continuity between IPDM E/R connector and heater control panel connector.

IPDM E/R connector	Terminal	Heater control panel connector	Terminal	Continuity
E14	49	M54	19	Existed

4. Check continuity between BCM connector and ground

IPDM E/R connector	Terminal	Ground	Continuity
E14	49		Not existed

Is the inspection result normal?

- YES >> Refer to [GI-39. "Intermittent Incident"](#).
NO >> Repair or replace harness between IPDM E/R and heater control panel.

3.CHECK IINTERMITTENT INCIDENT

Check intermittent incident.

Refer to [GI-39. "Intermittent Incident"](#).

Is the inspection result normal?

- YES >> Replace heater control panel. Refer to [VTL-72. "Removal and Installation"](#).
NO >> Repair or replace the malfunctioning parts.

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

ECU DIAGNOSIS

BCM (BODY CONTROL MODULE)

Reference Value

INFOID:0000000001114994

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
ACC ON SW	Ignition switch OFF		OFF
	Ignition switch ACC or ON		ON
AIR COND SW	A/C switch OFF		OFF
	A/C switch ON		ON
AUT LIGHT SYS	Outside of the room is dark		OFF
	Outside of the room is bright		ON
AUTO LIGHT SW	Lighting switch OFF		OFF
	Lighting switch AUTO		ON
BACK DOOR SW	Back door closed		OFF
	Back door opened		ON
BATTERY VOLT NOTE: Diesel engine models only	Ignition switch ON		Approximately the same as power supply voltage
BUCKLE SW	Driver's seat belt unfastened		OFF
	Driver's seat belt fastened		ON
CDL LOCK SW	Door lock/unlock switch does not operate		OFF
	Press door lock/unlock switch to the LOCK side		ON
CDL UNLOCK SW	Door lock/unlock switch does not operate		OFF
	Press door lock/unlock switch to the UNLOCK side		ON
DOOR SW-AS	Passenger door closed		OFF
	Passenger door opened		ON
DOOR SW-DR	Driver door closed		OFF
	Driver door opened		ON
DOOR SW-RL	Rear LH door closed		OFF
	Rear LH door opened		ON
DOOR SW-RR	Rear RH door closed		OFF
	Rear RH door opened		ON
ELEC PWR CUT NOTE: Diesel engine models only	Engine running	Fan switch ON (when engine coolant is cool) NOTE: Depending on the ambient temperature, battery voltage, etc.	OFF
		The current status maintained with the signal from ECM received.	FREEZ
		• Fan switch OFF • Fan switch ON after engine warming UP NOTE: Depending on the engine coolant temperature, ambient temperature, battery voltage, etc.	INHBT

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
ENG COOLNT T NOTE: Diesel engine models only	Engine running	Approximately the same as water temperature gauge reading
ENGINE RPM NOTE: Diesel engine models only	Engine running	Approximately the same as tachometer reading
ENGINE RUN	Engine stopped	OFF
	Engine running	ON
ENGINE STATUS NOTE: Diesel engine models only	Engine stopped	STOP
	While the engine stalls	STALL
	Engine running	RUN
	At engine cranking	CRA
FAN ON SIG	Fan switch OFF	OFF
	Fan switch ON	ON
FR FOG SW	Front fog lamp switch OFF	OFF
	Front fog lamp switch ON	ON
FR WASHER SW	Front washer switch OFF	OFF
	Front washer switch ON	ON
FR WIPER LOW	Front wiper switch OFF	OFF
	Front wiper switch LO	ON
FR WIPER HI	Front wiper switch OFF	OFF
	Front wiper switch HI	ON
FR WIPER INT	Front wiper switch OFF	OFF
	Front wiper switch INT	ON
FR WIPER STOP	Any position other than front wiper stop position	OFF
	Front wiper stop position	ON
HAZARD SW	When hazard switch is not pressed	OFF
	When hazard switch is pressed	ON
HEAD LAMP SW 1	Lighting switch OFF	OFF
	Lighting switch 2ND	ON
HEAD LAMP SW 2	Lighting switch OFF	OFF
	Lighting switch 2ND	ON
HI BEAM SW	Lighting switch OFF	OFF
	Lighting switch HI	ON
HOOD SW	Close the hood NOTE: Vehicles without theft warning system are OFF-fixed	OFF
	Open the hood	ON
H/L WASH SW	NOTE: The item is indicated, but not monitored	OFF
IGN ON SW	Ignition switch OFF or ACC	OFF
	Ignition switch ON	ON
IGN SW CAN	Ignition switch OFF or ACC	OFF
	Ignition switch ON	ON
INT VOLUME	Wiper intermittent dial is in a dial position 1 - 7	1 - 7

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
I-KEY LOCK	LOCK button of Intelligent Key is not pressed	OFF
	LOCK button of Intelligent Key is pressed	ON
I-KEY UNLOCK	UNLOCK button of Intelligent Key is not pressed	OFF
	UNLOCK button of Intelligent Key is pressed	ON
KEY ON SW	Mechanical key is removed from key cylinder	OFF
	Mechanical key is inserted to key cylinder	ON
KEYLESS LOCK	LOCK button of key fob is not pressed	OFF
	LOCK button of key fob is pressed	ON
KEYLESS UNLOCK	UNLOCK button of key fob is not pressed	OFF
	UNLOCK button of key fob is pressed	ON
LIT-SEN FAIL	Light & rain sensor is in normal condition	OK
	Light & rain sensor is with internal error	NOTOK
OIL PRESS SW	- Ignition switch OFF or ACC - Engine running	OFF
	Ignition switch ON	ON
OUT SIDE TEMP NOTE: Diesel engine models	Ignition switch ON	Approximately the same as outside air temperature
PASSING SW	Other than lighting switch PASS	OFF
	Lighting switch PASS	ON
PUSH SW	Return to ignition switch to LOCK position	OFF
	Press ignition switch	ON
REAR DEF SW	Rear window defogger switch OFF	OFF
	Rear window defogger switch ON	ON
RKE LOCK AND UN-LOCK	NOTE: The item is indicated, but not monitored	OFF
		ON
RR FOG SW	Rear fog lamp switch OFF	OFF
	Rear fog lamp switch ON	ON
RR WASHER SW	Rear washer switch OFF	OFF
	Rear washer switch ON	ON
RR WIPER INT	Rear wiper switch OFF	OFF
	Rear wiper switch INT	ON
RR WIPER ON	Rear wiper switch OFF	OFF
	Rear wiper switch ON	ON
RR WIPER STOP	Rear wiper stop position	OFF
	Other than rear wiper stop position	ON
SHOCK SENSOR	Ignition switch ON	NOMAL
	After the reception of air bag deployment signal from air bag diagnosis sensor unit	OFF
	During the reception of air bag deployment signal from air bag diagnosis sensor unit	ON
TAIL LAMP SW	Lighting switch OFF	OFF
	Lighting switch 1ST	ON
TRNK OPNR SW	When back door opener switch is not pressed	OFF
	When back door opener switch is pressed	ON

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BCM (BODY CONTROL MODULE)

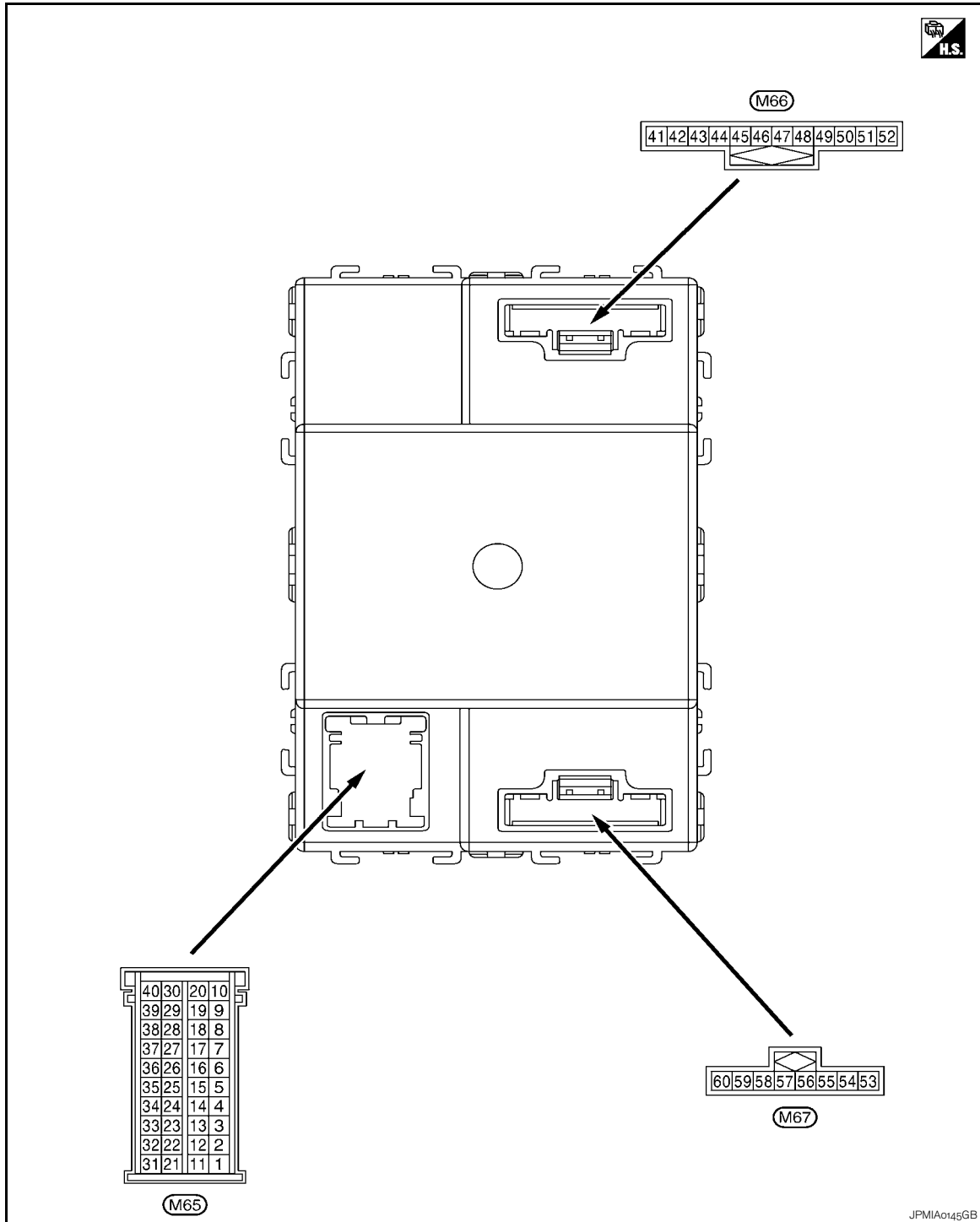
< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
TURN SIGNAL L	Turn signal switch OFF	OFF
	Turn signal switch LH	ON
TURN SIGNAL R	Turn signal switch OFF	OFF
	Turn signal switch RH	ON
UNLOCK WITH DR	NOTE: The item is indicated, but not monitored	OFF
		ON
UNLOCK SHOCK	Other than the following	OFF
	During the unlock operation interlocked with air bag	ON
VEHICLE SPEED	While driving	Equivalent to speedometer reading

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

TERMINAL LAYOUT



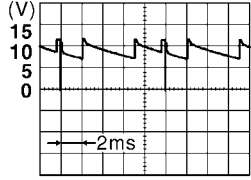
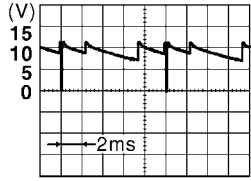
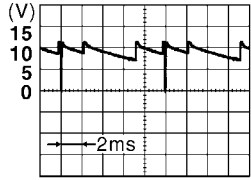
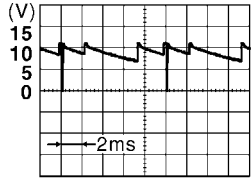
PHYSICAL VALUES

CAUTION:

- Check combination switch system terminal waveform under the loaded condition with lighting switch, turn signal switch and wiper switch OFF is not to be fluctuated by being overloaded.
- Turn wiper intermittent dial position to 4 except when checking waveform or voltage of wiper intermittent dial position. Wiper intermittent dial position can be confirmed on CONSULT -III. Refer to [BCS-26, "COMB SW : CONSULT-III Function \(BCM - COMB SW\)"](#).
- BCM reads the status of the combination switch at 10 ms internal normally. Refer to [BCS-7, "System Description"](#).

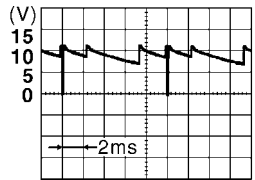
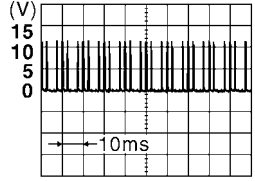
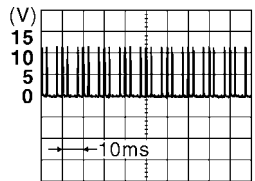
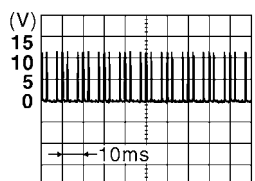
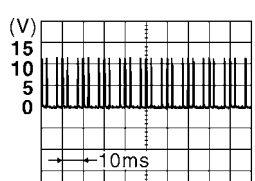
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
1 (P)	Ground	Combination switch OUTPUT 1	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front wiper switch HI (Wiper intermittent dial 4)	 9.1 V
					Rear wiper switch INT (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3 • Wiper intermittent dial 6 • Wiper intermittent dial 7	
2 (Y)	Ground	Combination switch OUTPUT 4	Output	Combination switch (Wiper intermit- tent dial 4)	All switch OFF	0 V
					Lighting switch 2ND	 9.3 V
					Lighting switch PASS	
					Front fog lamp switch ON	
					Turn signal switch LH	
3 (LG)	Ground	Combination switch OUTPUT 3	Output	Combination switch (Wiper intermit- tent dial 4)	All switch OFF	0 V
					Lighting switch AUTO	 9.3 V
					Rear fog lamp switch OFF	
					Front wiper switch MIST	
					Front wiper switch INT	
					Front wiper switch LO	
4 (R)	Ground	Combination switch OUTPUT 2	Output	Combination switch	All switch OFF (Wiper intermittent dial 4)	0 V
					Front washer switch ON (Wiper intermittent dial 4)	 9.1 V
					Rear wiper switch ON (Wiper intermittent dial 4)	
					Rear washer switch ON (Wiper intermittent dial 4)	
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 5 • Wiper intermittent dial 6	

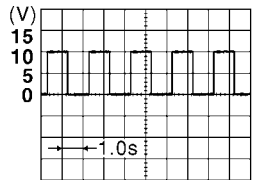
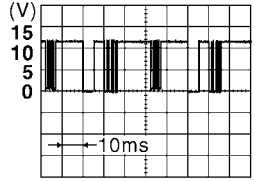
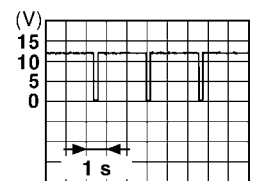
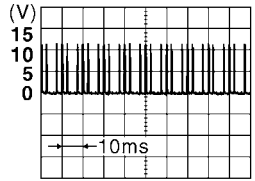
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
5 (W)	Ground	Combination switch OUTPUT 5	Output	Combination switch (Wiper intermit- tent dial 4)	All switch OFF	0 V
					Lighting switch 1ST	 JPMIA0164GB 9.1 V
					Lighting switch 2ND	
					Lighting switch HI	
					Turn signal switch RH	
7 (P)	Ground	Door lock/unlock switch (Lock)	Output	Door lock/un- lock switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed to the lock side	0 V
8 (LG)	Ground	Hazard switch	Output	Hazard switch	Not pressed	 JPMIA0154GB 1.3 V
					Pressed	0 V
9 (BR)	Ground	Door lock/unlock switch (Unlock)	Output	Door lock/un- lock switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed to the unlock side	0 V
12 (P)	Ground	Back door opener switch	Output	Back door opener switch	Not pressed	 JPMIA0154GB 1.2 V
					Pressed	0 V

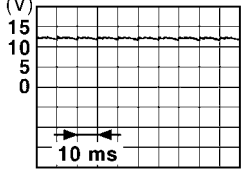
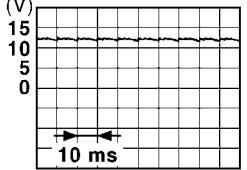
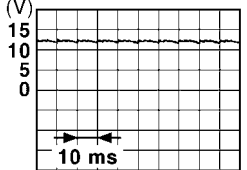
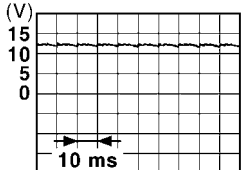
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
13 (R)	Ground	Shock detect sensor	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON		 6.0 V JPMIA0155GB
14 (L/R)	Ground	A/C switch	Output	A/C switch	Not pressed	Battery voltage
					Pressed	0 V
15 (LG/B)	Ground	Fan switch	Output	Fan switch	Not pressed	Battery voltage
					Pressed	0 V
16 (GR)	Ground	Alarm link	Input	—		—
17 (BR)	Ground	Light & rain sensor serial link	Output	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		 8.7 V JPMIA0156GB
18 (SB)	Ground	Security indicator	Output	Security indicator	ON	0 V
					Blinking	 10.3 V JPMIA0014GB
					OFF	Battery voltage
19 (L)	—	CAN-H	Input/ Output	—		—
20 (P)	—	CAN-L	Input/ Output	—		—
21 (SB)	Ground	Rear window defog- ger switch	Output	Rear window defogger switch	Not pressed	 1.1 V JPMIA0154GB
					While pressing	0 V

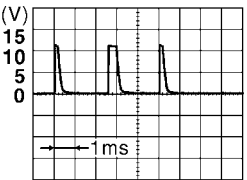
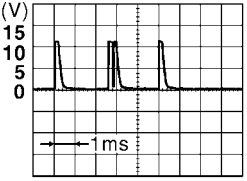
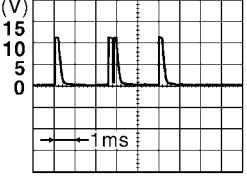
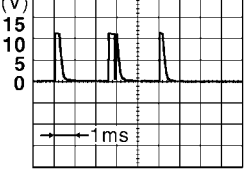
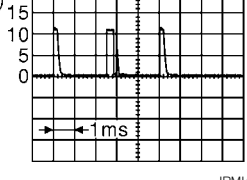
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
24 (GR)	Ground	Door lock status indicator	Output	Door lock status indicator	ON	Battery voltage
					OFF	0 V
25 (GR)	Ground	Rear door switch LH	Input	Rear door switch LH	OFF (When rear door LH closed)	 11.2 V
					ON (When rear door LH opened)	0 V
26 (R)	Ground	Driver door switch	Input	Driver door switch	OFF (When driver door closed)	 11.2 V
					ON (When driver door opened)	0 V
27 (BR)	Ground	Passenger door switch	Input	Passenger door switch	OFF (When passenger door closed)	 11.2 V
					ON (When passenger door opened)	0 V
28 (G)	Ground	Back door switch	Input	Back door switch	OFF (When back door closed)	Battery voltage
					ON (When back door opened)	0 V
29 (LG)	Ground	Rear door switch RH	Input	Rear door switch RH	OFF (When rear door RH closed)	 11.2 V
					ON (When rear door RH opened)	0 V
30 (SB)	Ground	Audio link	Output	—	—	—

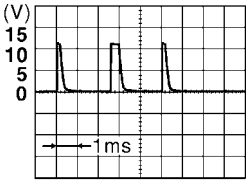
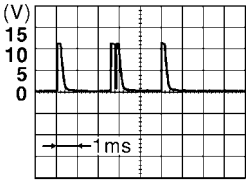
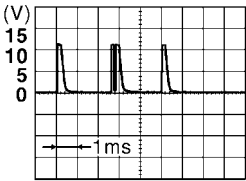
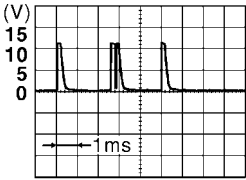
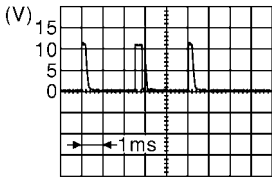
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
31 (BR)	Ground	Combination switch INPUT 5	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)  1.3 V
					Front fog lamp switch ON (Wiper intermittent dial 4)  1.3 V
					Rear fog lamp switch ON (Wiper intermittent dial 4)  1.3 V
					Rear wiper switch ON (Wiper intermittent dial 4)  1.3 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 6 • Wiper intermittent dial 7  1.3 V

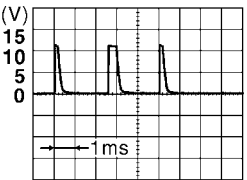
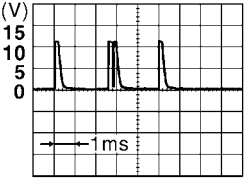
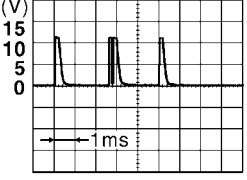
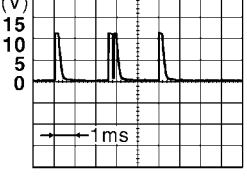
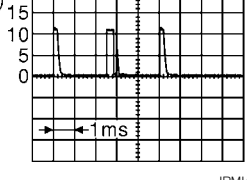
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
32 (G)	Ground	Combination switch INPUT 2	Input	Combination switch (Wiper intermit- tent dial 4)	All switch OFF  1.4 V
					Lighting switch PASS  1.3 V
					Lighting switch 2ND  1.3 V
					Front wiper switch INT  1.3 V
					Front wiper switch HI  1.3 V

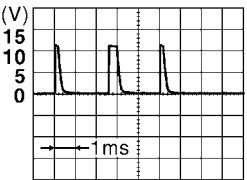
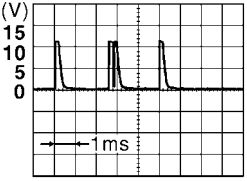
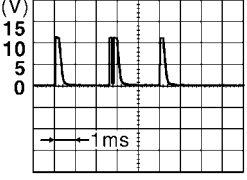
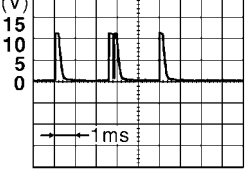
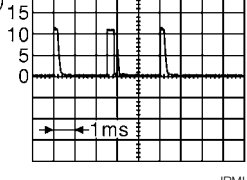
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
33 (V)	Ground	Combination switch INPUT 1	Input	Combination switch (Wiper intermit- tent dial 4)	 JPMIAor165GB 1.4 V
					 JPMIAor167GB 1.3 V
					 JPMIAor166GB 1.3 V
					 JPMIAor168GB 1.3 V
					 JPMIAor196GB 1.3 V

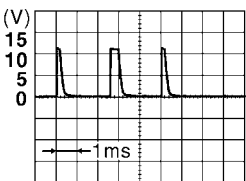
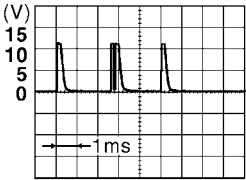
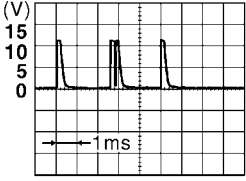
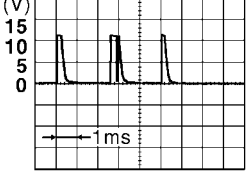
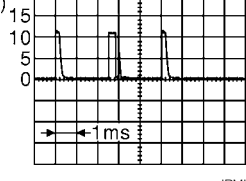
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
34 (GR)	Ground	Combination switch INPUT 4	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)  1.4 V JPMIA0165GB
					Lighting switch AUTO (Wiper intermittent dial 4)  1.3 V JPMIA0167GB
					Lighting switch 1ST (Wiper intermittent dial 4)  1.3 V JPMIA0166GB
					Rear wiper INT (Wiper intermittent dial 4)  1.3 V JPMIA0167GB
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 6  1.3 V JPMIA0196GB

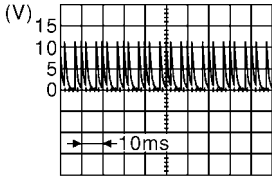
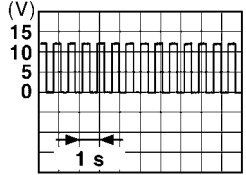
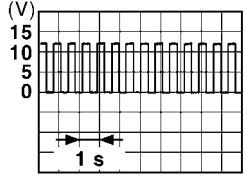
BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
35 (L)	Ground	Combination switch INPUT 3	Input	Combination switch	All switch OFF (Wiper intermittent dial 4)	 JPMIAor165GB 1.4 V
					Lighting switch HI (Wiper intermittent dial 4)	 JPMIAor166GB 1.3 V
					Lighting switch 2ND (Wiper intermittent dial 4)	 JPMIAor167GB 1.3 V
					Rear wiper switch ON	 JPMIAor169GB 1.3 V
					Any of the condition below with all switch OFF • Wiper intermittent dial 1 • Wiper intermittent dial 2 • Wiper intermittent dial 3	 JPMIAor196GB 1.3 V
36 (V)	Ground	Key switch	Output	Insert mechanical key into ignition key cylinder	Battery voltage	
				Remove mechanical key from ignition key cylinder	0 V	
37 (R)	Ground	ACC power supply	Output	Ignition switch OFF	0 V	
				Ignition switch ACC or ON	Battery voltage	
38 (W/L)	Ground	Ignition power supply	Output	Ignition switch OFF or ACC	0 V	
				Ignition switch ON	Battery voltage	

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
39 (P)	Ground	NATS antenna amp.	Input/ Output	Insert mechanical key into ignition key cylinder		Just after Insert mechanical key into ignition key cylinder. Pointer of tester should move
40 (LG)	Ground	NATS antenna amp.	Input/ Output	Insert mechanical key into ignition key cylinder		Just after Insert mechanical key into ignition key cylinder. Pointer of tester should move
41 (V)	Ground	Battery power supply	Input	Ignition switch OFF		Battery voltage
42 (V)	Ground	Interior room lamp power supply	Output	After passing the interior room lamp battery saver operation time		0 V
				Any other time after passing the interior room lamp battery saver operation time		Battery voltage
43 (L)	Ground	Rear wiper motor	Output	Rear wiper switch OFF		0 V
				Rear wiper switch ON		Battery voltage
44 (L/W)	Ground	Rear wiper auto stop	Output	Ignition switch ON	Rear wiper stop position	0 V
					Any position other than rear wiper stop position	 JPMIA0197GB
45 (GR)	Ground	Back door lock actuator	Output	Back door opener switch	Pressed	Battery voltage (300ms)
					Not pressed	0 V
47 (G/Y)	Ground	Turn signal LH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch LH	 PKID0926E 6.5 V
48 (G/B)	Ground	Turn signal RH	Output	Ignition switch ON	Turn signal switch OFF	0 V
					Turn signal switch RH	 PKID0926E 6.5 V
49 (Y)	Ground	Rear fog lamp	Output	Lighting switch 1ST and front fog lamp switch ON	Rear fog lamp switch OFF	0 V
					Rear fog lamp switch ON	Battery voltage
51 (R/W)*1 (R)*2	Ground	Stop lamp switch	Output	Depress the brake pedal		Battery voltage
				Release the brake pedal		0 V

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	—	Signal name	Input/ Output			
52 (R)	Ground	Room lamp timer control	Output	Interior room lamp	OFF	Battery voltage
					ON	0 V
53 (L)	Ground	Power window power supply	Output	Ignition switch	OFF or ACC	0 V
					ON	Battery voltage
54 (O)	Ground	Door unlock (All)	Output	Door lock/unlock switch	Pressed to the unlock side	Battery voltage
					Pressed to the lock side	0 V
55 (B)	Ground	Ground	—	Ignition switch ON		0 V
56 (Y) ^{*1} (SB) ^{*2}	Ground	Door lock (All)	Output	Door lock/unlock switch	Pressed to the unlock side	0 V
					Pressed to the lock side	Battery voltage
57 (Y)	Ground	Battery power supply	Output	Ignition switch OFF		Battery voltage
58 (P)	Ground	Power window power supply	Output	Ignition switch OFF		Battery voltage
59 (BR)	Ground	Super lock	Output	When lock button of key fob or Intelligent Key is not pressed		0 V
				When lock button of key fob or Intelligent Key is pressed		Battery voltage
60 (GR)	Ground	Driver door unlock	Output	Door lock/unlock switch	Pressed to the unlock side	Battery voltage
					Pressed to the lock side	0 V

*1: With Intelligent Key system

*2: Without Intelligent Key system

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Wiring Diagram - DEFOGGER CONTROL SYSTEM (LHD MODELS) -

2006/12/06

JCLWA0404GB

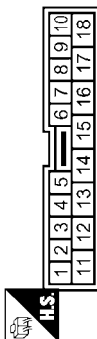


BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

DEFOGGER (LHD MODELS)

Connector No.	B11
Connector Name	WIRE TO WIRE
Connector Type	TK10MW-NS8



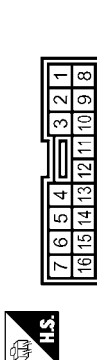
Terminal No.	Color of Wire	Signal Name [Specification]
17	B	-

Connector No.	B58
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



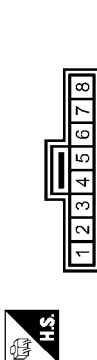
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-

Connector No.	D1
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



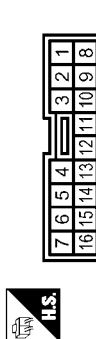
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	D3
Connector Name	DOOR MIRROR (DRIVER SIDE)
Connector Type	TK08MGY



Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D41
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	P	-

Connector No.	D43
Connector Name	DOOR MIRROR (PASSENGER SIDE)
Connector Type	TK08MGY



Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D153
Connector Name	BODY GROUND
Connector Type	-



Terminal No.	Color of Wire	Signal Name [Specification]
1	-	-

Connector No.	D155
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



Terminal No.	Color of Wire	Signal Name [Specification]
2	B	-

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

DEFOGGER (LHD MODELS)

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FE-LC



5	4	3
8	7	6

Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



25	24		23	22	21	
32	31	30	29	28	27	26

Terminal No.	Color of Wire	Signal Name [Specification]
28	L	-
29	P	-

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	YZK 7283-5591-40-F



51	50	49
54	53	52

Terminal No.	Color of Wire	Signal Name [Specification]
49	B	-

Connector No.	E101
Connector Name	WIRE TO WIRE
Connector Type	TK10FW-NS8



10	9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11		

Terminal No.	Color of Wire	Signal Name [Specification]
17	G	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH08MW-NS16-TM4



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	G	-
76	Y	-

Connector No.	IM4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	M18
Connector Name	WIRE TO WIRE
Connector Type	TK16MW



1	2	3	4	5	6	7		
8	9	10	11	12	13	14	15	16

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	M53
Connector Name	AUTO AMP.
Connector Type	TSABUFW



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
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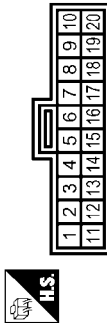
Terminal No.	Color of Wire	Signal Name [Specification]
17	B	GND
22	R	RR/DEF F/B
23	SB	RR/DEF ON

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

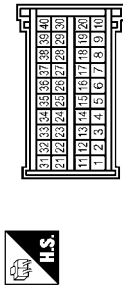
DEFOGGER (LHD MODELS)

Connector No.	M64
Connector Name	HEATER CONTROL PANEL
Connector Type	TK20FGY



Terminal No.	Color of Wire	Signal Name [Specification]
18	SB	RR DEF
19	R	RR DEF F/B
20	B	GND

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AABA0FB



Terminal No.	Color of Wire	Signal Name [Specification]
19	L	CAN-H
20	P	CAN-L
21	SB	REAR DEFOGGER SW
38	W/L	IGN SW

Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC-22S1017



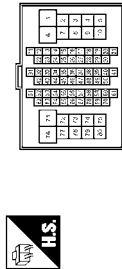
Terminal No.	Color of Wire	Signal Name [Specification]
41	V	BAT(USE)

Connector No.	M67
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC083S0017



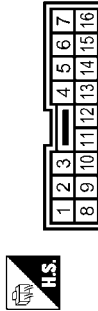
Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GND(POWER)
57	Y	BAT(F/L)

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH00FW-MS15-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	R	-
/6	Y	-

Connector No.	M81
Connector Name	WIRE TO WIRE
Connector Type	TK16MW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

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Wiring Diagram - DEFOGGER CONTROL SYSTEM (RHD MODELS) -

2006/12/06

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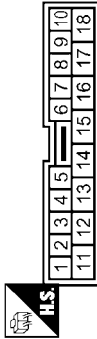


BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

DEFOGGER (RHD MODELS)

Connector No.	B11
Connector Name	WIRE TO WIRE
Connector Type	TK10MW-NS8



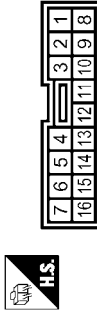
Terminal No.	Color of Wire	Signal Name [Specification]
17	B	-

Connector No.	B58
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



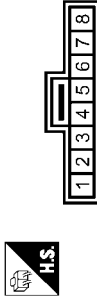
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-

Connector No.	D21
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



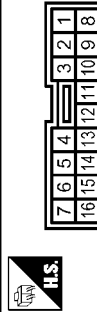
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	P	-

Connector No.	D23
Connector Name	DOOR MIRROR (DRIVER SIDE)
Connector Type	TK08MGY



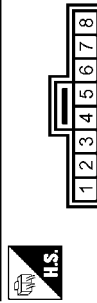
Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D61
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	D63
Connector Name	DOOR MIRROR (PASSENGER SIDE)
Connector Type	TK08MGY



Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D155
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



Terminal No.	Color of Wire	Signal Name [Specification]
2	B	-

Connector No.	E10
Connector Name	IPSWLE R INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M08FB-LC



Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-

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BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

DEFOGGER (RHD MODELS)

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



25	24		23	22	21
32	31	30	29	28	27
					26

Terminal No.	Color of Wire	Signal Name [Specification]
28	L	-
29	P	-

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	YZK 7235-5391-40-F



51	50	49
54	53	52

Terminal No.	Color of Wire	Signal Name [Specification]
49	B	-

Connector No.	E101
Connector Name	WIRE TO WIRE
Connector Type	TK10FW-NS8



10	9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11		

Terminal No.	Color of Wire	Signal Name [Specification]
17	G	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH60MW-NS16-TM4



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	G	-
76	Y	-

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	M20
Connector Name	WIRE TO WIRE
Connector Type	TK16MW



1	2	3	4	5	6	7		
8	9	10	11	12	13	14	15	16

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	M63
Connector Name	AUTO AMP.
Connector Type	SB40FW



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Terminal No.	Color of Wire	Signal Name [Specification]
17	B	GND
22	R	RR/DEF F/B
23	SB	RR/DEF ON

Connector No.	M54
Connector Name	HEATER CONTROL PANEL
Connector Type	TK20FGY



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

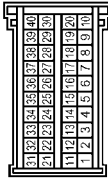
Terminal No.	Color of Wire	Signal Name [Specification]
18	SB	RR DEF
19	R	RR DEF F/B
20	B	GND

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

DEFOGGER (RHD MODELS)

Connector No.	M85
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AA84QFE



Terminal No.	Color of Wire	Signal Name [Specification]
19	L	CAN-H
20	P	CAN-L
21	SB	REAR DEFOGGER SW
38	W/L	IGN SW

Connector No.	M83
Connector Name	WIRE TO WIRE
Connector Type	TK6MW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	M86
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC122S1017



Terminal No.	Color of Wire	Signal Name [Specification]
41	Y	BAT(FUSE)

Connector No.	M87
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PQ33S0017



Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GRND(POWER)
57	Y	BAT(F/L)

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH6QFW-NS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	R	-
76	Y	-

Fail Safe

Fail-safe index

BCM performs fail-safe control when any DTC listed below is detected.

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Display contents of CONSULT	Fail-safe	Cancellation
B2190: NATS ANTENNA AMP	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2191: DIFFERENCE OF KEY	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2192: ID DISCORD BCM-ECM	Fuel cut (ECM)	Erase DTC
B2193: CHAIN OF BCM-ECM	Fuel cut (ECM)	Erase DTC
B2194: DISCORD BCM-I-KEY	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2195: ANTI SCANNING	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC
B2196: DONGLE NG	- Inhibits engine cranking - Inhibits steering lock unlocking (Intelligent Key unit) - Fuel cut (ECM)	Erase DTC

REAR WIPER CONTROL

BCM detects a rear wiper stopping position according to a rear wiper auto stop signal.

When a rear wiper auto stop signal is in the condition listed below, BCM stops power supply to rear wiper after rear wiper is activated for five seconds.

Ignition switch	Rear wiper switch	Auto stop signal
ON	OFF	Rear wiper stop position signal cannot be input 5 seconds.
	ON	The signal does not change for 5 seconds.

NOTE:

The above operation is repeated when operating the rear wiper switch one minute after the stop of the rear wiper caused by Fail-safe.

TURN SIGNAL LAMP CONTROL

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 operating.

NOTE:

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

LIGHT & RAIN SENSOR MALFUNCTION DETECTION FUNCTION

BCM controls the following items when LIGHT & RAIN sensor has a malfunction.

Auto Light Control

Headlamp is turned ON.

Front Wiper Control

The condition just before the activation of Fail-safe is maintained until the front wiper switch is turned OFF.

DTC Inspection Priority Chart

INFOID:000000001114997

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS >

Priority	DTC
1	- U1000: CAN COMM CIRCUIT - U1010: CONTROL UNIT (CAN)
2	- B2190: NATS ANTENNA AMP - B2191: DIFFERENCE OF KEY - B2192: ID DISCORD BCM-ECM - B2193: CHAIN OF BCM-ECM - B2194: DISCORD BCM-I-KEY - B2195: ANTI SCANNING - B2196: DONGLE NG

DTC Index

INFOID:000000001114998

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.
- PAST: Displays when there is a malfunction that is detected in the past and stored.
- 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.

CONSULT display	TIME		Fail-safe	Refer to
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	0	1 - 39	—	BCS-32
U1010: CONTROL UNIT (CAN)	0	1 - 39	—	BCS-33
B2190: NATS ANTENNA AMP	CRNT	PAST	×	- With Intelligent Key system SEC-33 - Without Intelligent Key system SEC-174
B2191: DIFFERENCE OF KEY	CRNT	PAST	×	- With Intelligent Key system SEC-35 - Without Intelligent Key system SEC-176
B2192: ID DISCORD BCM-ECM	CRNT	PAST	×	- With Intelligent Key system SEC-36 - Without Intelligent Key system SEC-177
B2193: CHAIN OF BCM-ECM	CRNT	PAST	×	- With Intelligent Key system SEC-38 - Without Intelligent Key system SEC-178
B2194: DISCORD BCM-I-KEY	CRNT	PAST	×	SEC-39
B2195: ANTI SCANNING	CRNT	PAST	×	- With Intelligent Key system SEC-179 - Without Intelligent Key system SEC-179
B2196: DONGLE NG	CRNT	PAST	×	- With Intelligent Key system SEC-41 - Without Intelligent Key system SEC-180

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

< ECU DIAGNOSIS >

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

Reference Value

INFOID:000000001035893

VALUES ON THE DIAGNOSIS TOOL

Monitor Item	Condition		Value/Status
MOTOR FAN REQ	Engine idle speed	Changes depending on engine coolant temperature, air conditioner operation status, vehicle speed, etc.	1 - 3
AC COMP REQ	Engine running	A/C switch OFF	Off
		A/C switch ON (Compressor is operating)	On
TAIL&CLR REQ	Lighting switch OFF		Off
	Lighting switch 1ST, 2ND or AUTO (Light is illuminated)		On
HL LO REQ	Lighting switch OFF		Off
	Lighting switch 2ND or AUTO (Light is illuminated)		On
HL HI REQ	Lighting switch OFF		Off
	Lighting switch HI (Light is illuminated)		On
FR FOG REQ	Lighting switch 2ND or AUTO (Light is illuminated)	Front fog lamp switch OFF	Off
		Front fog lamp switch ON	On
HL WASHER REQ	Ignition switch ON, and low beam headlamp is ON	Front washer switch OFF	Off
		Front washer switch ON (When headlamp washer is operating)	On
FR WIP REQ	Ignition switch ON	Front wiper switch OFF	STOP
		Front wiper switch INT	1LOW
		Front wiper switch LO	Low
		Front wiper switch HI	Hi
WIP AUTO STOP	Ignition switch ON	Front wiper stop position	STOP P
		Any position other than front wiper stop position	ACT P
WIP PROT	Ignition switch ON	Front wiper operates normally	Off
		Front wiper stops at fail-safe operation	BLOCK
ST RLY REQ NOTE: Vehicle without Intelligent Key system indicates only "ON", and it does not change.	When Intelligent Key is outside the vehicle, and the push switch is pushed		Off
	When Intelligent Key is inside the vehicle, and the push switch is pushed		On
IGN RLY	Ignition switch OFF or ACC		Off
	Ignition switch ON		On
RR DEF REQ	Ignition switch ON	Rear window defogger switch OFF	Off
		Rear window defogger switch ON (Rear window defogger is operating)	On
OIL P SW	Ignition switch OFF, ACC or engine running		Open
	Ignition switch ON		Close

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

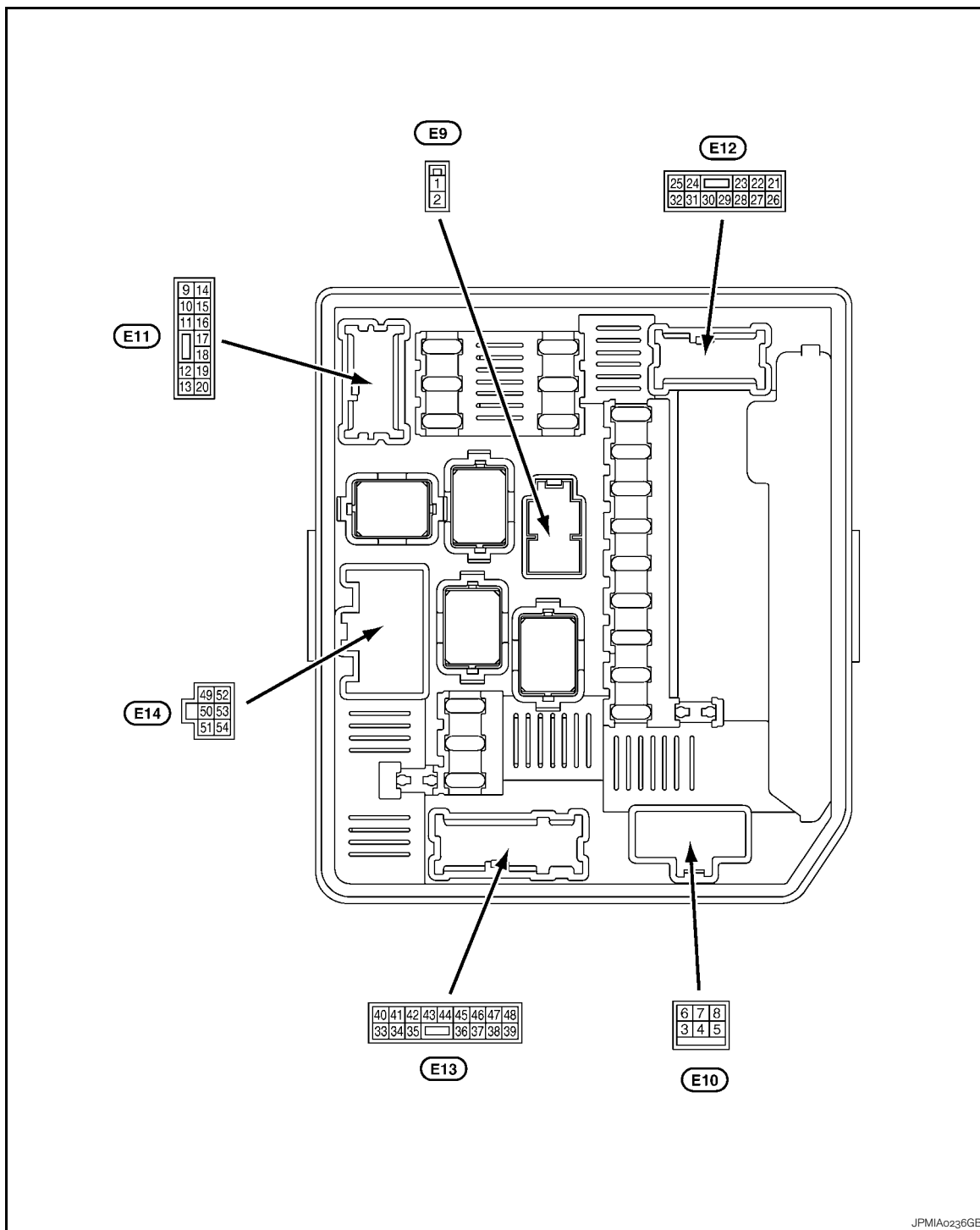
< ECU DIAGNOSIS >

Monitor Item	Condition	Value/Status
REV SW	Except selector lever R position	Off
	Selector lever R position	On
HOOD SW NOTE: This item is monitored only on the vehicle with the Vehicle Security (Theft Warning) system.	Close the hood	Off
	Open the hood	On
THFT HRN REQ NOTE: This item is monitored only on the vehicle with the Vehicle Security (Theft Warning) system.	Not operation	Off
	Horn is activated with Vehicle Security (Theft Warning) system.	On
HORN CHIRP	NOTE: This item is indicated, but not monitored.	Off
IGN ON SW	Ignition switch OFF or ACC	Off
	Ignition switch ON	On

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

< ECU DIAGNOSIS >

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition	Value (Approx.)
+	-	Signal name	Input/ Output		
1 (G)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage
2 (R)	Ground	Battery power supply	Input	Ignition switch OFF	Battery voltage
5 (B)	Ground	Ground	—	Ignition switch ON	0 V

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
6 (B)	Ground	Ground	—	Ignition switch ON		0 V
7 (Y)	Ground	Front wiper LO	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch LO	Battery voltage
8 (Y/R)	Ground	Front wiper HI	Output	Ignition switch ON	Front wiper switch OFF	0 V
					Front wiper switch HI	Battery voltage
9 (G)	Ground	ECM relay power supply	Output	Ignition switch ON		Battery voltage
10*1 (L/R)	Ground	ECM relay power supply	Output	Ignition switch ON		Battery voltage
11*2 (O)	Ground	PTC heater 1 relay control	Output	PTC heater OFF		Battery voltage
				PTC heater ON		0 V
12*2 (G/Y)	Ground	PTC heater 2 relay control	Output	PTC heater OFF		Battery voltage
				PTC heater ON		0 V
14 (R/B)	Ground	Ignition power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
15 (Y/L)*1 (B/R)*2	Ground	ECM relay control	Input	- Engine running - Ignition switch OFF (For a few seconds after turning ignition switch OFF)		0 - 1.0 V*1
						0.6 V*2
				Ignition switch OFF or ACC (More than a few seconds after turning ignition switch OFF)		Battery voltage
16*3 (Y/R)	Ground	Ignition relay power supply	Output	Ignition switch ON		Battery voltage
				Ignition switch OFF or ACC		0 V
19*1 (R/O)	Ground	Ignition relay power supply	Output	Ignition switch ON		Battery voltage
				Ignition switch OFF or ACC		0 V
21*4 (GR)	Ground	Hood switch	Input	Close the hood		Battery voltage
				Open the hood		0 V
22 (Y/G)	Ground	Reverse switch	Input	Ignition switch OFF or ACC		0 V
				Ignition switch ON	- Selector lever "R" (Except M/T models) - M/T control lever "R" (M/T models)	Battery voltage
					- Selector lever in any position other than "R" (Except M/T models) - M/T control lever in any position other than "R" (M/T models)	0 V
23 (Y/B)	Ground	A/C relay power supply	Output	Engine stopped		0 V
				Engine running	A/C switch OFF	0 V
					A/C switch ON (A/C compressor is operating)	Battery voltage
24 (R/Y)	Ground	Headlamp LO (RH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
25*1 (G/L)	Ground	ETC relay control	Input	Ignition switch OFF or ACC		Battery voltage
				Ignition switch ON		0 - 1.0 V
26 (O)	Ground	Front wiper auto stop	Input	Ignition switch ON	Front wiper stop position	0 V
					Any position other than front wiper stop position	Battery voltage
27 (W)	Ground	Oil pressure switch	Input	Engine stopped		0 V
				Engine running		Battery voltage
28 (L)	—	CAN-H	Input/ Output	—		—
29 (P)	—	CAN-L	Input/ Output	—		—
30*4 (L)	Ground	Horn relay control	Output	The horn is not activated		Battery voltage
				The horn is activated		0 V
31 (R)	Ground	Headlamp LO (sensor)	Output	Ignition switch ON	Lighting switch OFF	0 V
					Lighting switch 2ND	Battery voltage
32*1 (R/Y)	Ground	ETC relay power supply	Output	Ignition switch ON		Battery voltage
33*1 (B/O)	Ground	Fuel pump relay control	Input	- Engine running - Ignition switch ON (For 1 second after turning ignition switch ON)		0 - 1.0 V
				Ignition switch ON (More than 1 second after turning ignition switch ON)		Battery voltage
34 (R/B)	Ground	Starter relay power supply	Input	Ignition switch ON (Except M/T models)	Selector lever "P" or "N"	0 V
					Selector lever in any position other than "P" or "N"	Battery voltage
35 (W/L)	Ground	Ignition switch ON	Input	Ignition switch ON (M/T models)		
				Ignition switch OFF or ACC		0 V
36 (W)	Ground	Front fog lamp (RH)	Output	Lighting switch 1ST	Front fog lamp switch ON	Battery voltage
					Front fog lamp switch OFF	0 V
37 (R/W)	Ground	Parking lamp (RH)	Output	Lighting switch 1ST		Battery voltage
				Lighting switch OFF		0 V
38 (R/L)	Ground	Tail, license plate lamps and illuminations	Output	Lighting switch 1ST		Battery voltage
				Lighting switch OFF		0 V
39 (GR)	Ground	Headlamp washer relay control	Output	Ignition switch ON	When headlamp washer is operating	0 V
					When headlamp washer is not operating	Battery voltage
40*1 (BR/Y)*5 (SB)*6	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage
41 (P)	Ground	Ignition relay power supply	Output	Ignition switch OFF or ACC		0 V
				Ignition switch ON		Battery voltage

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

< ECU DIAGNOSIS >

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	-	Signal name	Input/ Output			
42* ¹ (B/Y)	Ground	Fuel pump relay power supply	Output	- Ignition switch OFF or ACC - Approximately 1 second or more after turning the ignition switch ON		0 V
				- Approximately 1 second after turning the ignition switch ON - Engine running		Battery voltage
43 (W/B)	Ground	Front fog lamp (LH)	Output	Lighting switch 1ST	Front fog lamp switch ON	Battery voltage
					Front fog lamp switch OFF	0 V
44 (L)	Ground	Headlamp LO (LH)	Output	Lighting switch OFF		0 V
				Lighting switch 2ND		Battery voltage
45 (L/W)	Ground	Headlamp HI (RH)	Output	- Lighting switch 2ND and HI - lighting switch PASS		Battery voltage
				Lighting switch OFF		0 V
46 (G)	Ground	Headlamp HI (LH)	Output	- Lighting switch 2ND and HI - Lighting switch PASS		Battery voltage
				Lighting switch OFF		0 V
47 (R/L)	Ground	Parking lamp (LH)	Output	Lighting switch 1ST		Battery voltage
				Lighting switch OFF		0 V
48* ⁷ (Y)	Ground	Cooling fan relay-3 control	Output	When cooling fan does HI operation		0 V
				When cooling fan does OFF or LO operation		Battery voltage
49 (B)	Ground	Rear window defogger relay power supply	Output	Ignition switch ON	Rear window defogger switch ON	Battery voltage
					Rear window defogger switch OFF	0 V
50 (B/R)	Ground	Starter relay power supply	Output	When engine is clanking		Battery voltage
				When engine is not clanking		0 V
51 (P)	Ground	Ignition switch START	Input	Ignition switch START		Battery voltage
				Ignition switch OFF, ACC or ON		0 V
52 (W)	Ground	Cooling fan relay-1 power supply	Output	When cooling fan does LO or HI operation		Battery voltage
				When cooling fan does OFF operation		0 V
53 (W/B)	Ground	Battery power supply (Cooling fan relay)	Input	Ignition switch OFF		Battery voltage
54* ⁵ (R)	Ground	Cooling fan relay-2 power supply	Input	When cooling fan does HI operation		Battery voltage
				When cooling fan does OFF or LO operation		0 V

*1: HR engine and MR engine models

*2: K9K engine models

*3: Except M/T models only

*4: With vehicle security (theft warning) system

*5: HR engine models

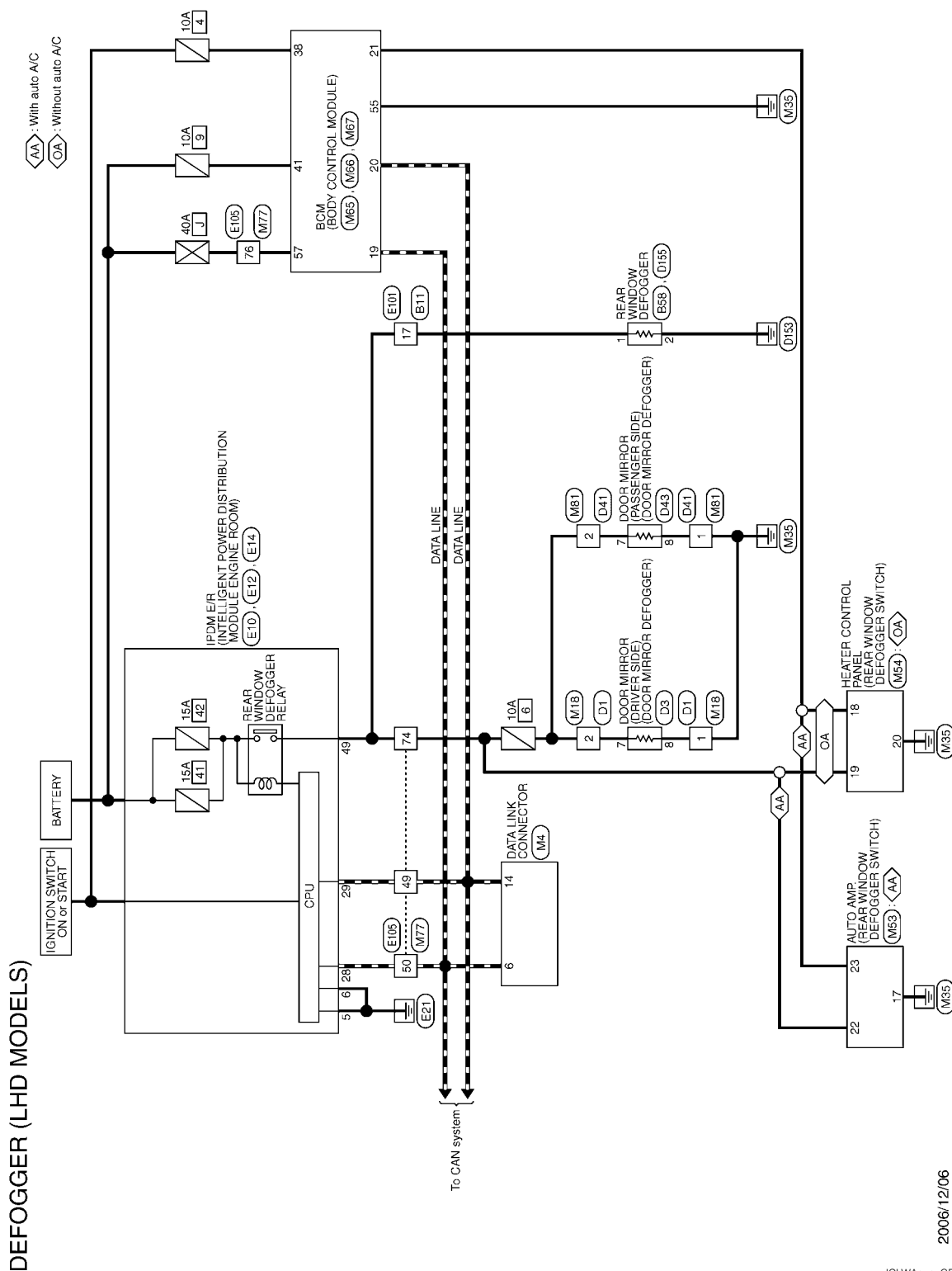
*6: MR engine models

*7: MR engine and K9K engine models

< ECU DIAGNOSIS >

Wiring Diagram - DEFOGGER CONTROL SYSTEM (LHD MODELS) -

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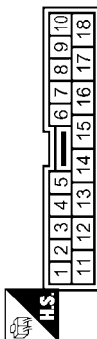


IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

DEFOGGER (LHD MODELS)

Connector No.	B11
Connector Name	WIRE TO WIRE
Connector Type	TK10MW-NS8



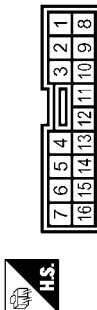
Terminal No.	Color of Wire	Signal Name [Specification]
17	B	-

Connector No.	B58
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



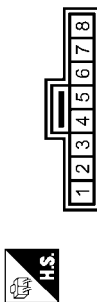
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-

Connector No.	D1
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



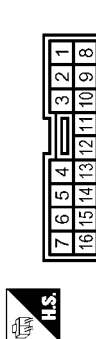
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	D3
Connector Name	DOOR MIRROR (DRIVER SIDE)
Connector Type	TK08MGY



Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D41
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	P	-

Connector No.	D43
Connector Name	DOOR MIRROR (PASSENGER SIDE)
Connector Type	TK08MGY



Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D153
Connector Name	BODY GROUND
Connector Type	-



Terminal No.	Color of Wire	Signal Name [Specification]
1	-	-

Connector No.	D155
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



Terminal No.	Color of Wire	Signal Name [Specification]
2	B	-

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

< ECU DIAGNOSIS >

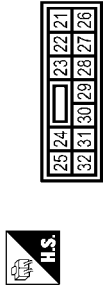
DEFOGGER (LHD MODELS)

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	M06FE-LC



Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



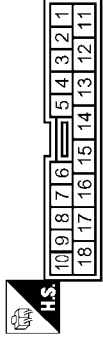
Terminal No.	Color of Wire	Signal Name [Specification]
28	L	-
29	P	-

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	YZK 7283-5591-40-F



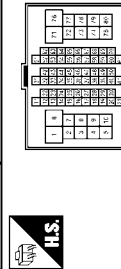
Terminal No.	Color of Wire	Signal Name [Specification]
43	B	-

Connector No.	E101
Connector Name	WIRE TO WIRE
Connector Type	TK10FW-NS8



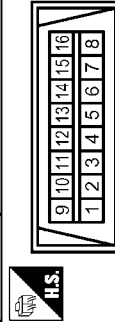
Terminal No.	Color of Wire	Signal Name [Specification]
17	G	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH00MW-NS16-TM4



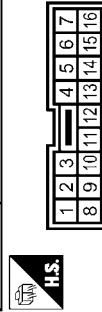
Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	G	-
76	Y	-

Connector No.	IM4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



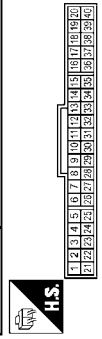
Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	M18
Connector Name	WIRE TO WIRE
Connector Type	TK16MW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	M53
Connector Name	AUTO AMP.
Connector Type	TSABUFW



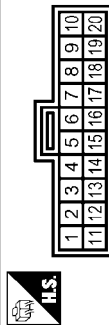
Terminal No.	Color of Wire	Signal Name [Specification]
17	B	GND
22	R	RR/DEF F/B
23	SB	RR/DEF ON

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

< ECU DIAGNOSIS >

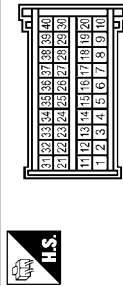
DEFOGGER (LHD MODELS)

Connector No.	M64
Connector Name	HEATER CONTROL PANEL
Connector Type	TK20FGY



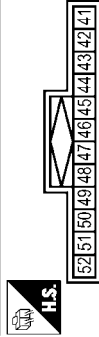
Terminal No.	Color of Wire	Signal Name [Specification]
18	SB	RR DEF
19	R	RR DEF F/B
20	B	GND

Connector No.	M65
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AAB40FB



Terminal No.	Color of Wire	Signal Name [Specification]
19	L	CAN-H
20	P	CAN-L
21	SB	REAR DEFOGGER SW
38	W/L	IGN SW

Connector No.	M66
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC-22S1017



Terminal No.	Color of Wire	Signal Name [Specification]
41	V	BATT(USE)

Connector No.	M67
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC083S0017



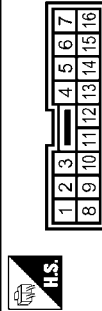
Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GND(POWER)
57	Y	BATT(F/L)

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH00FW-NS15-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	R	-
/6	Y	-

Connector No.	M81
Connector Name	WIRE TO WIRE
Connector Type	TK16MW

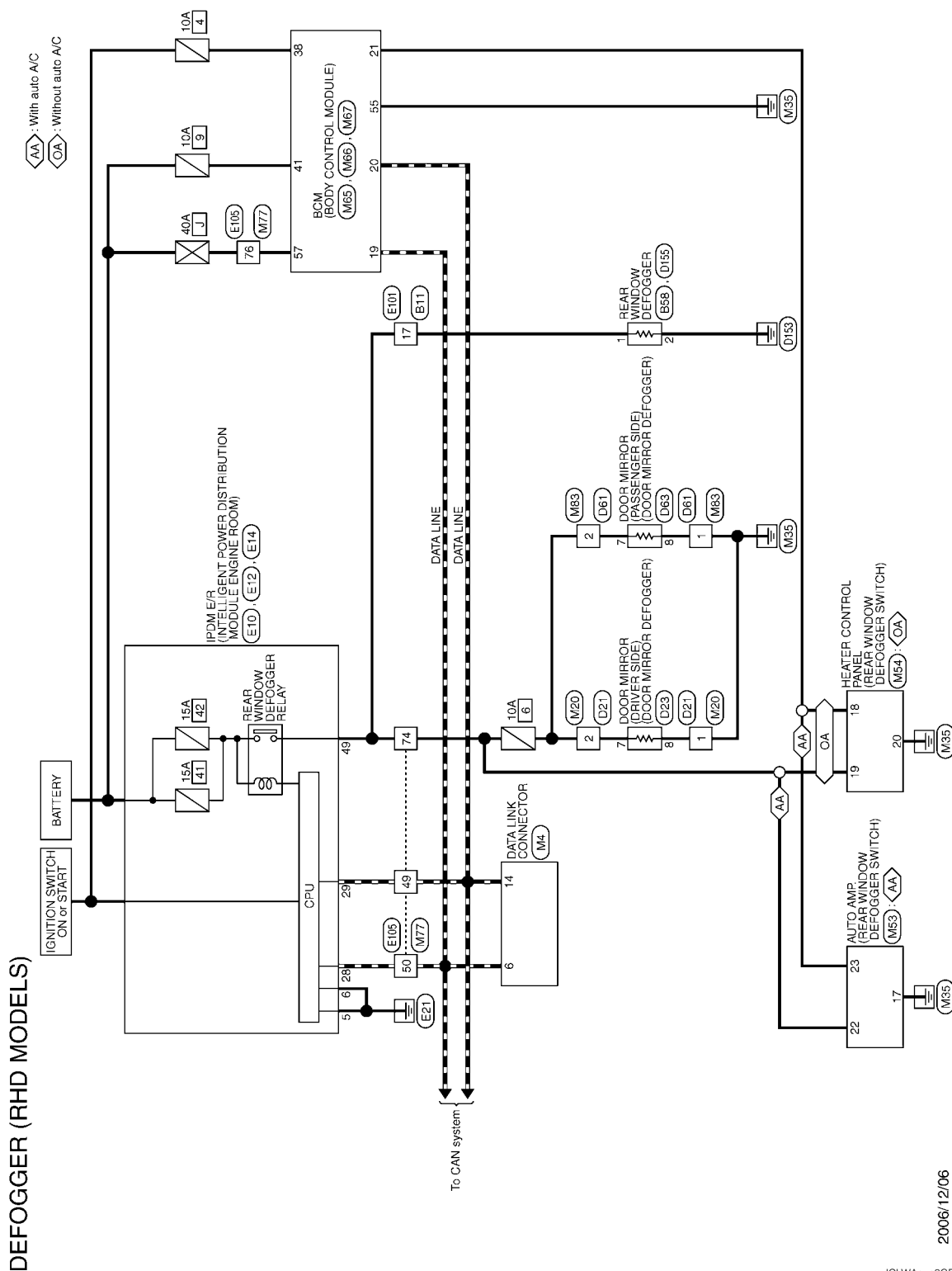


Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

< ECU DIAGNOSIS >

Wiring Diagram - DEFOGGER CONTROL SYSTEM (RHD MODELS) -

INFOID:0000000001125405

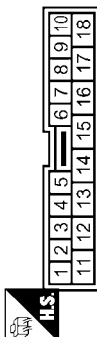


IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)

< ECU DIAGNOSIS >

DEFOGGER (RHD MODELS)

Connector No.	B11
Connector Name	WIRE TO WIRE
Connector Type	TK10MW-NS8



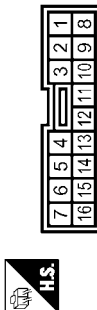
Terminal No.	Color of Wire	Signal Name [Specification]
17	B	-

Connector No.	B58
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



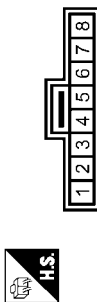
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-

Connector No.	D21
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



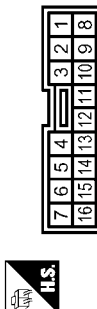
Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	P	-

Connector No.	D23
Connector Name	DOOR MIRROR (DRIVER SIDE)
Connector Type	TK08MGY



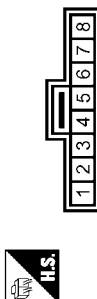
Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D61
Connector Name	WIRE TO WIRE
Connector Type	TK16FW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	D63
Connector Name	DOOR MIRROR (PASSENGER SIDE)
Connector Type	TK08MGY



Terminal No.	Color of Wire	Signal Name [Specification]
7	G	-
8	B	-

Connector No.	D155
Connector Name	REAR WINDOW DEFOGGER
Connector Type	P01FB-A



Terminal No.	Color of Wire	Signal Name [Specification]
2	B	-

Connector No.	E10
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	MDPFB-1C



Terminal No.	Color of Wire	Signal Name [Specification]
5	B	-
6	B	-

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

< ECU DIAGNOSIS >

DEFOGGER (RHD MODELS)

Connector No.	E12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS12FW-CS



25	24		23	22	21
32	31	30	29	28	27
					26

Terminal No.	Color of Wire	Signal Name [Specification]
28	L	-
29	P	-

Connector No.	E14
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	YZK 7235-5391-40-F



51	50	49
54	53	52

Terminal No.	Color of Wire	Signal Name [Specification]
49	B	-

Connector No.	E101
Connector Name	WIRE TO WIRE
Connector Type	TK10FW-NS8



10	9	8	7	6	5	4	3	2	1
18	17	16	15	14	13	12	11		

Terminal No.	Color of Wire	Signal Name [Specification]
17	G	-

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH60MW-NS16-TM4



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	G	-
76	Y	-

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW



9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8

Terminal No.	Color of Wire	Signal Name [Specification]
6	L	-
14	P	-

Connector No.	M20
Connector Name	WIRE TO WIRE
Connector Type	TK16MW



1	2	3	4	5	6	7		
8	9	10	11	12	13	14	15	16

Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	M63
Connector Name	AUTO AMP.
Connector Type	SB40FW



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Terminal No.	Color of Wire	Signal Name [Specification]
17	B	GND
22	R	RR DEF F/B
23	SB	RR DEF ON

Connector No.	M54
Connector Name	HEATER CONTROL PANEL
Connector Type	TK20FGY



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

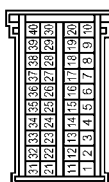
Terminal No.	Color of Wire	Signal Name [Specification]
18	SB	RR DEF
19	R	RR DEF F/B
20	B	GND

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

< ECU DIAGNOSIS >

DEFOGGER (RHD MODELS)

Connector No.	M85
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	AA84QFE



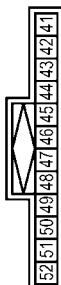
Terminal No.	Color of Wire	Signal Name [Specification]
19	L	CAN-H
20	P	CAN-L
21	SB	REAR DEFOGGER SW
38	W/L	IGN SW

Connector No.	M83
Connector Name	WIRE TO WIRE
Connector Type	TK6MW



Terminal No.	Color of Wire	Signal Name [Specification]
1	B	-
2	G	-

Connector No.	M86
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC122S1017



Terminal No.	Color of Wire	Signal Name [Specification]
41	Y	BAT(FUSE)

Connector No.	M87
Connector Name	BCM (BODY CONTROL MODULE)
Connector Type	FCI 211PC083S0017



Terminal No.	Color of Wire	Signal Name [Specification]
55	B	GRND(POWER)
57	Y	BAT(F/L)

Connector No.	M77
Connector Name	WIRE TO WIRE
Connector Type	TH6QFW-NS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
49	P	-
50	L	-
74	R	-
76	Y	-

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

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

< ECU DIAGNOSIS >

Control part	Fail-safe in operation
Cooling fan	- The cooling fan relay-2*¹ or the cooling fan relay-3*² turns ON when the ignition switch is turned ON - Turns off the fan motor low relay when the ignition switch is turned OFF
A/C compressor	A/C relay OFF

*1: HR engine models

*2: MR engine and K9K engine models

If no CAN communication is available with BCM

Control part	Fail-safe in operation
Headlamp	- The headlamp low relay turns ON when the ignition switch is turned ON - The headlamp low relay turns OFF when the ignition switch is turned OFF - Headlamp high relay OFF
- Parking lamps - License plate lamps - Tail lamps - Illuminations	- The tail lamp relay turns ON when the ignition switch is turned ON - The tail lamp relay turns OFF when the ignition switch is turned OFF
Front wiper	- 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. - The front 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.
Front fog lamps	Front fog lamp relay OFF
Starter motor	Inhibit relay OFF
Rear window defogger	Rear window defogger relay OFF
Headlamp washer	Headlamp washer relay OFF
PTC heater	PTC heater relay OFF

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.
- 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 alert the user to the ignition relay malfunction when the ignition switch is turned OFF.

DTC	Ignition switch	Ignition relay	Tail lamp relay
—	ON	ON	—
—	OFF	OFF	—
B2098: IGN RLY ON	OFF	ON	ON (10 minutes)
B2099: IGN RLY OFF	ON	OFF	—

NOTE:

The tail lamp relay is turned OFF when the ignition switch is turned ON.

Front wiper control

IPDM E/R detects the front wiper stop position with the front wiper auto stop signal.

When the front wiper auto stop signal is in the conditions listed below, IPDM E/R repeats a front wiper 10 seconds operation and 20 seconds stop five times.

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

NOTE:

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

< ECU DIAGNOSIS >

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.

DTC Index

INFOID:0000000001035896

CONSULT display	Fail-safe	Timing ^{NOTE}		Reference page
No DTC is detected. further testing may be required.	—	—	—	—
U1000: CAN COMM CIRCUIT	×	CRNT	PAST	PCS-14
B2098: IGN RELAY ON	×	CRNT	PAST	PCS-15
B2099: IGN RELAY OFF	—	CRNT	PAST	PCS-16
B2100: EEPROM	—	CRNT	PAST	PCS-17

NOTE:

The details of time display are as follows.

- CRNT: The malfunctions that are detected now.
- PAST: The number is indicated when it is normal at present and a malfunction was detected in the past.

REAR WINDOW DEFOGGER DOES NOT OPERATE

< SYMPTOM DIAGNOSIS >

SYMPTOM DIAGNOSIS

REAR WINDOW DEFOGGER DOES NOT OPERATE

Diagnosis Procedure

INFOID:000000000998574

1. IPDM E/R AUTO ACTIVE TEST

Check IPDM E/R active test.

Refer to [PCS-9, "Diagnosis Description"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

2. CHECK REAR WINDOW DEFOGGER SWITCH

Check rear window defogger switch.

With auto A/C. Refer to [DEF-13, "WITH AUTO A/C : Component Function Check"](#).

Without auto A/C. Refer to [DEF-14, "WITHOUT AUTO A/C : Component Function Check"](#)

Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace the malfunctioning parts.

3. CHECK REAR WINDOW DEFOGGER POWER SUPPLY AND GROUND CIRCUIT

Check rear window defogger power supply and ground circuit.

Refer to [DEF-17, "Component Function Check"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace the malfunctioning parts.

A

B

C

D

E

F

G

H

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K

DEF

M

N

O

P

REAR WINDOW DEFOGGER AND DOOR MIRROR DEFOGGER DO NOT OPERATE.

< SYMPTOM DIAGNOSIS >

REAR WINDOW DEFOGGER AND DOOR MIRROR DEFOGGER DO NOT OPERATE.

Diagnosis Procedure

INFOID:000000000951289

1.IPDM E/R AUTO ACTIVE TEST

Check IPDM E/R active test.

Refer to [PCS-9, "Diagnosis Description"](#).

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace the malfunctioning parts.

2.CHECK REAR WINDOW DEFOGGER SWITCH

Check rear window defogger switch.

With auto A/C. Refer to [DEF-13, "WITH AUTO A/C : Component Function Check"](#).

Without auto A/C. Refer to [DEF-14, "WITHOUT AUTO A/C : Component Function Check"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace the malfunctioning parts.

REAR WINDOW DEFOGGER DOES NOT OPERATE BUT BOTH OF DOOR MIRROR DEFOGGER OPERATE.

< SYMPTOM DIAGNOSIS >

REAR WINDOW DEFOGGER DOES NOT OPERATE BUT BOTH OF DOOR MIRROR DEFOGGER OPERATE.

Diagnosis Procedure

INFOID:0000000000951290

1.CHECK REAR WINDOW DEFOGGER POWER SUPPLY AND GROUND CIRCUIT

Check rear window defogger power supply and ground circuit.

Refer to [DEF-17, "Component Function Check"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace the malfunctioning parts.

A
B
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D
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F
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M
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P

DEF

DRIVER SIDE DOOR MIRROR DEFOGGER DOES NOT OPERATE.

< SYMPTOM DIAGNOSIS >

DRIVER SIDE DOOR MIRROR DEFOGGER DOES NOT OPERATE.

Diagnosis Procedure

INFOID:000000000951292

1.CHECK DRIVER SIDE DOOR MIRROR DEFOGGER

Check driver side door mirror defogger.

Refer to [DEF-19, "Component Function Check"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace the malfunctioning parts.

PASSENGER SIDE DOOR MIRROR DEFOGGER DOES NOT OPERATE.

< SYMPTOM DIAGNOSIS >

PASSENGER SIDE DOOR MIRROR DEFOGGER DOES NOT OPERATE.

Diagnosis Procedure

INFOID:000000000951293

1.CHECK PASSENGER SIDE DOOR MIRROR DEFOGGER

Check passenger side door mirror defogger.

Refer to [DEF-21, "Component Function Check"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace the malfunctioning parts.

A

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DEF

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P

REAR WINDOW DEFOGGER SWITCH DOES NOT LIGHT, BUT REAR WINDOW DEFOGGER OPERATES

< SYMPTOM DIAGNOSIS >

REAR WINDOW DEFOGGER SWITCH DOES NOT LIGHT, BUT REAR WINDOW DEFOGGER OPERATES

Diagnosis Procedure

INFOID:000000000951295

1. CHECK REAR WINDOW DEFOGGER ON SIGNAL

Check rear window defogger ON signal.

With auto A/C. Refer to [DEF-23, "WITH AUTO A/C : Component Function Check"](#).

Without auto A/C. Refer to [DEF-24, "WITHOUT AUTO A/C : Component Function Check"](#).

Is the inspection result normal?

YES >> Refer to [GI-39, "Intermittent Incident"](#).

NO >> Repair or replace the malfunctioning parts.

PRECAUTIONS

< PRECAUTION >

PRECAUTION

PRECAUTIONS

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

INFOID:000000000951296

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 and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which 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 the SRS section.
- Do not 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.

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PRE-INSPECTION FOR DIAGNOSTIC

< ON-VEHICLE MAINTENANCE >

ON-VEHICLE MAINTENANCE

PRE-INSPECTION FOR DIAGNOSTIC

Basic Inspection

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BASIC INSPECTION

1.INSPECTION START

1. Check the service history.
2. Check the following parts.
 - Fuse/circuit breaker blown.
 - Poor connection, open or short circuit of harness connector.
 - Battery voltage.

Is the inspection result normal?

- YES >> Inspection end.
NO >> Repair or replace the malfunctioning parts.

FILAMENT

< ON-VEHICLE REPAIR >

ON-VEHICLE REPAIR

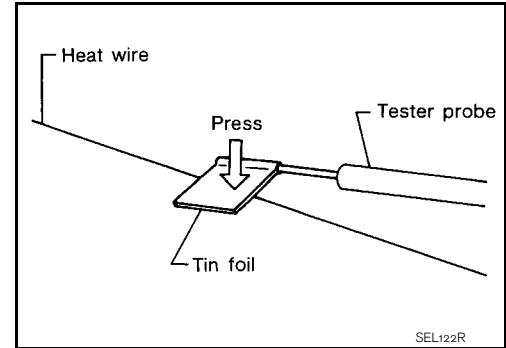
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Inspection and Repair

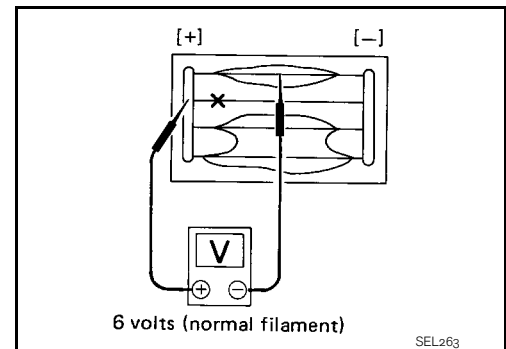
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INSPECTION

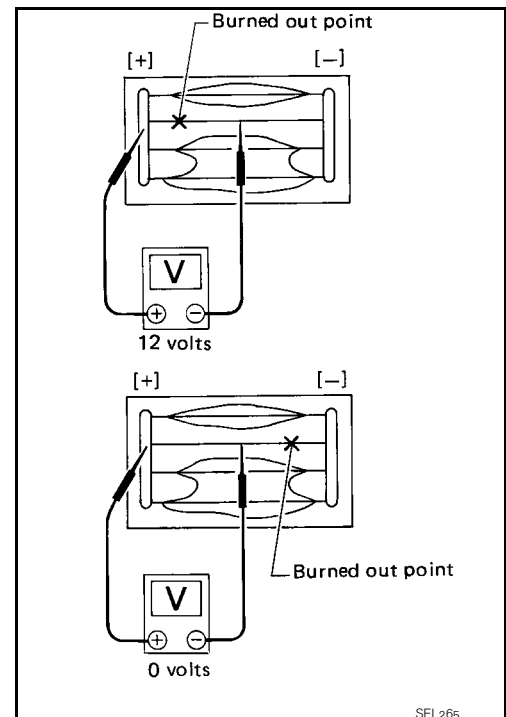
1. When measuring voltage, wrap tin foil around the top of the negative probe. Then press the foil against the wire with your finger.



2. Attach probe circuit tester (in Volt range) to middle portion of each filament.



3. If a filament is burned out, circuit tester registers 0 or battery voltage.
4. To locate burned out point, move probe to left and right along filament. Test needle will swing abruptly when probe passes the point.



REPAIR

REPAIR EQUIPMENT

- Conductive silver composition (Dupont No. 4817 or equivalent)

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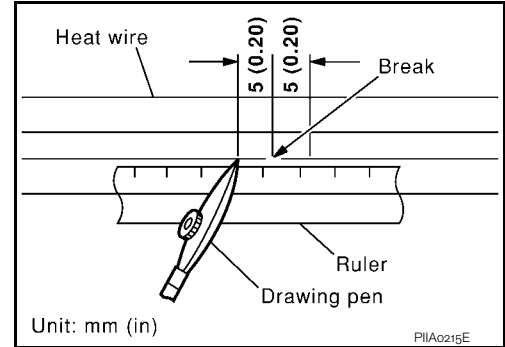
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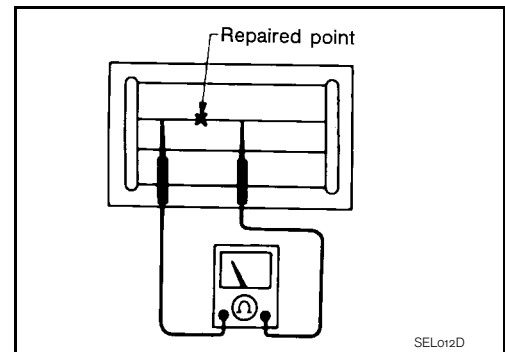
- Ruler 30 cm (11.8 in) long
- Drawing pen
- Heat gun
- Alcohol
- Cloth

REPAIRING PROCEDURE

1. Wipe broken heat wire and its surrounding area clean with a cloth dampened in alcohol.
2. Apply a small amount of conductive silver composition to tip of drawing pen. Shake silver composition container before use.
3. Place ruler on glass along broken line. Deposit conductive silver composition on break with drawing pen. Slightly overlap existing heat wire on both sides [preferably 5 mm (0.20 in)] of the break.



4. After repair has been completed, check repaired wire for continuity. This check should be conducted 10 minutes after silver composition is deposited. Do not touch repaired area while test is being conducted.



5. Apply a constant stream of hot air directly to the repaired area for approximately 20 minutes with a heat gun. A minimum distance of 3 cm (1.2 in) should be kept between repaired area and hot air outlet. If a heat gun is not available, let the repaired area dry for 24 hours.

