

SECTION **PWC**

POWER WINDOW CONTROL SYSTEM

A
B
C
D
E
F
G
H
I
J
L
M
N
O
P

CONTENTS

<p>PRECAUTION 4</p> <p>PRECAUTIONS 4</p> <p style="padding-left: 20px;">Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"4</p> <p style="padding-left: 20px;">Precautions for Removing Battery Terminal4</p> <p>SYSTEM DESCRIPTION 5</p> <p>COMPONENT PARTS 5</p> <p style="padding-left: 20px;">Component Parts Location5</p> <p style="padding-left: 20px;">Component Description6</p> <p>SYSTEM 7</p> <p style="padding-left: 20px;">System Diagram7</p> <p style="padding-left: 20px;">System Description7</p> <p style="padding-left: 20px;">Fail-safe9</p> <p>DIAGNOSIS SYSTEM (BCM)10</p> <p>COMMON ITEM 10</p> <p style="padding-left: 20px;">COMMON ITEM : CONSULT Function (BCM - COMMON ITEM) 10</p> <p>RETAIND PWR 11</p> <p style="padding-left: 20px;">RETAIND PWR : CONSULT Function (BCM - RETAINED PWR) 11</p> <p>ECU DIAGNOSIS INFORMATION 13</p> <p>BCM (BODY CONTROL MODULE) 13</p> <p style="padding-left: 20px;">List of ECU Reference 13</p> <p>POWER WINDOW MAIN SWITCH 14</p> <p style="padding-left: 20px;">Reference Value 14</p> <p style="padding-left: 20px;">Fail-safe 15</p> <p>FRONT POWER WINDOW SWITCH 16</p> <p style="padding-left: 20px;">Reference Value 16</p> <p style="padding-left: 20px;">Fail-safe 17</p>	<p>REAR POWER WINDOW SWITCH 18</p> <p style="padding-left: 20px;">Reference Value 18</p> <p style="padding-left: 20px;">Fail-safe 19</p> <p>WIRING DIAGRAM 20</p> <p>POWER WINDOW SYSTEM 20</p> <p style="padding-left: 20px;">Wiring Diagram 20</p> <p>BASIC INSPECTION 30</p> <p>DIAGNOSIS AND REPAIR WORK FLOW 30</p> <p style="padding-left: 20px;">Work Flow 30</p> <p>ADDITIONAL SERVICE WHEN REMOVING BATTERY NEGATIVE TERMINAL 31</p> <p style="padding-left: 20px;">Description 31</p> <p style="padding-left: 20px;">Work Procedure 31</p> <p>ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT 32</p> <p style="padding-left: 20px;">Description 32</p> <p style="padding-left: 20px;">Work Procedure 32</p> <p>SYSTEM INITIALIZATION 33</p> <p style="padding-left: 20px;">Description 33</p> <p style="padding-left: 20px;">Work Procedure 33</p> <p>CHECK ANTI-PINCH FUNCTION 34</p> <p style="padding-left: 20px;">Description 34</p> <p style="padding-left: 20px;">Work Procedure 34</p> <p>DTC/CIRCUIT DIAGNOSIS 35</p> <p>POWER SUPPLY AND GROUND CIRCUIT 35</p> <p>BCM 35</p> <p style="padding-left: 20px;">BCM : Diagnosis Procedure 35</p> <p>POWER WINDOW MAIN SWITCH 35</p> <p style="padding-left: 20px;">POWER WINDOW MAIN SWITCH : Diagnosis Procedure 35</p>
---	--

PWC

FRONT POWER WINDOW SWITCH (PASSENGER SIDE)	36	FRONT POWER WINDOW SWITCH (PASSENGER SIDE) : Component Function Check	55
FRONT POWER WINDOW SWITCH (PASSENGER SIDE) : Diagnosis Procedure	36	FRONT POWER WINDOW SWITCH (PASSENGER SIDE) : Diagnosis Procedure	55
REAR POWER WINDOW SWITCH	37	REAR POWER WINDOW SWITCH LH	56
REAR POWER WINDOW SWITCH : Diagnosis Procedure	37	REAR POWER WINDOW SWITCH LH : Component Function Check	57
POWER WINDOW MOTOR	39	REAR POWER WINDOW SWITCH LH : Diagnosis Procedure	57
DRIVER SIDE	39	REAR POWER WINDOW SWITCH RH	58
DRIVER SIDE : Component Function Check	39	REAR POWER WINDOW SWITCH RH : Component Function Check	58
DRIVER SIDE : Diagnosis Procedure	39	REAR POWER WINDOW SWITCH RH : Diagnosis Procedure	58
PASSENGER SIDE	39	SYMPTOM DIAGNOSIS	60
PASSENGER SIDE : Component Function Check	40	NONE OF THE POWER WINDOWS CAN BE OPERATED USING ANY SWITCH	60
PASSENGER SIDE : Diagnosis Procedure	40	Diagnosis Procedure	60
REAR LH	40	DRIVER SIDE POWER WINDOW ALONE DOES NOT OPERATE	61
REAR LH : Component Function Check	41	Diagnosis Procedure	61
REAR LH : Diagnosis Procedure	41	FRONT PASSENGER SIDE POWER WINDOW DOES NOT OPERATE	62
REAR RH	41	WHEN BOTH POWER WINDOW MAIN SWITCH AND FRONT POWER WINDOW SWITCH ARE OPERATED	62
REAR RH : Component Function Check	41	WHEN BOTH POWER WINDOW MAIN SWITCH AND FRONT POWER WINDOW SWITCH ARE OPERATED : Diagnosis Procedure	62
REAR RH : Diagnosis Procedure	42	WHEN FRONT POWER WINDOW SWITCH (PASSENGER SIDE) IS OPERATED	62
ENCODER	43	WHEN FRONT POWER WINDOW SWITCH (PASSENGER SIDE) IS OPERATED : Diagnosis Procedure	62
DRIVER SIDE	43	WHEN POWER WINDOW MAIN SWITCH IS OPERATED	62
DRIVER SIDE : Component Function Check	43	WHEN POWER WINDOW MAIN SWITCH IS OPERATED : Diagnosis Procedure	62
DRIVER SIDE : Diagnosis Procedure	43	REAR LH SIDE POWER WINDOW ALONE DOES NOT OPERATE	63
PASSENGER SIDE	45	WHEN BOTH POWER WINDOW MAIN SWITCH AND REAR POWER WINDOW SWITCH LH ARE OPERATED	63
PASSENGER SIDE : Component Function Check	45	WHEN BOTH POWER WINDOW MAIN SWITCH AND REAR POWER WINDOW SWITCH LH ARE OPERATED : Diagnosis Procedure	63
PASSENGER SIDE : Diagnosis Procedure	45	WHEN REAR POWER WINDOW SWITCH LH IS OPERATED	63
REAR LH	47	WHEN REAR POWER WINDOW SWITCH LH IS OPERATED : Diagnosis Procedure	63
REAR LH : Component Function Check	47		
REAR LH : Diagnosis Procedure	47		
REAR RH	49		
REAR RH : Component Function Check	49		
REAR RH : Diagnosis Procedure	49		
DOOR KEY CYLINDER SWITCH	52		
Component Function Check	52		
Diagnosis Procedure	52		
Component Inspection	53		
POWER WINDOW SERIAL LINK	54		
POWER WINDOW MAIN SWITCH	54		
POWER WINDOW MAIN SWITCH : Component Function Check	54		
POWER WINDOW MAIN SWITCH : Diagnosis Procedure	54		
FRONT POWER WINDOW SWITCH (PASSENGER SIDE)	55		

WHEN POWER WINDOW MAIN SWITCH IS OPERATED	63	POWER WINDOW RETAINED POWER OPERATION DOES NOT OPERATE PROPERLY	68	A
WHEN POWER WINDOW MAIN SWITCH IS OPERATED : Diagnosis Procedure	63	Diagnosis Procedure	68	
REAR RH SIDE POWER WINDOW ALONE DOES NOT OPERATE	64	DOOR KEY CYLINDER SWITCH DOES NOT OPERATE POWER WINDOWS	69	B
WHEN BOTH POWER WINDOW MAIN SWITCH AND REAR POWER WINDOW SWITCH RH ARE OPERATED	64	Diagnosis Procedure	69	C
WHEN BOTH POWER WINDOW MAIN SWITCH AND REAR POWER WINDOW SWITCH RH ARE OPERATED : Diagnosis Procedure	64	KEYLESS POWER WINDOW DOWN DOES NOT OPERATE	70	D
WHEN REAR POWER WINDOW SWITCH RH IS OPERATED	64	Description	70	
WHEN REAR POWER WINDOW SWITCH RH IS OPERATED : Diagnosis Procedure	64	Diagnosis Procedure	70	
WHEN POWER WINDOW MAIN SWITCH IS OPERATED	64	POWER WINDOW LOCK SWITCH DOES NOT FUNCTION	71	E
WHEN POWER WINDOW MAIN SWITCH IS OPERATED : Diagnosis Procedure	64	Diagnosis Procedure	71	
AUTO OPERATION DOES NOT OPERATE BUT MANUAL OPERATE NORMALLY	65	POWER WINDOW SWITCH DOES NOT ILLUMINATE	72	F
DRIVER SIDE	65	DRIVER SIDE	72	G
DRIVER SIDE : Diagnosis Procedure	65	DRIVER SIDE : Diagnosis Procedure	72	
PASSENGER SIDE	65	PASSENGER SIDE	72	H
PASSENGER SIDE : Diagnosis Procedure	65	PASSENGER SIDE : Diagnosis Procedure	72	
REAR LH	65	REAR LH	72	I
REAR LH : Diagnosis Procedure	65	REAR LH : Diagnosis Procedure	72	
REAR RH	66	REAR RH	72	J
REAR RH : Diagnosis Procedure	66	REAR RH : Diagnosis Procedure	72	
ANTI-PINCH FUNCTION DOES NOT OPERATE	67	REMOVAL AND INSTALLATION	73	
Diagnosis Procedure	67	FRONT POWER WINDOW SWITCH	73	
		Removal and Installation	73	
		REAR POWER WINDOW SWITCH	74	
		Exploded View	74	
		Removal and Installation	74	

PRECAUTIONS

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PRECAUTION

PRECAUTIONS

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

INFOID:000000011257753

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

WARNING:

Always observe the following items for preventing accidental activation.

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

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

WARNING:

Always observe the following items for preventing accidental activation.

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

Precautions for Removing Battery Terminal

INFOID:000000011257754

- When removing the 12V battery terminal, turn OFF the ignition switch and wait at least 30 seconds.

NOTE:

ECU may be active for several tens of seconds after the ignition switch is turned OFF. If the battery terminal is removed before ECU stops, then a DTC detection error or ECU data corruption may occur.

- For vehicles with the 2-batteries, be sure to connect the main battery and the sub battery before turning ON the ignition switch.

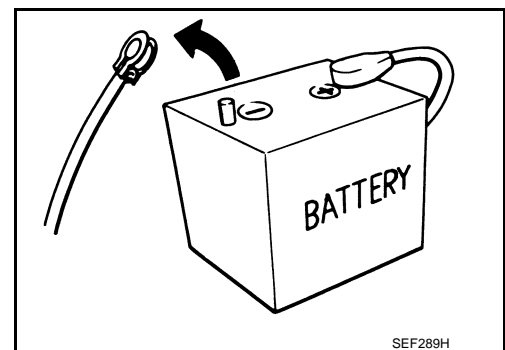
NOTE:

If the ignition switch is turned ON with any one of the terminals of main battery and sub battery disconnected, then DTC may be detected.

- After installing the 12V battery, always check "Self Diagnosis Result" of all ECUs and erase DTC.

NOTE:

The removal of 12V battery may cause a DTC detection error.



COMPONENT PARTS

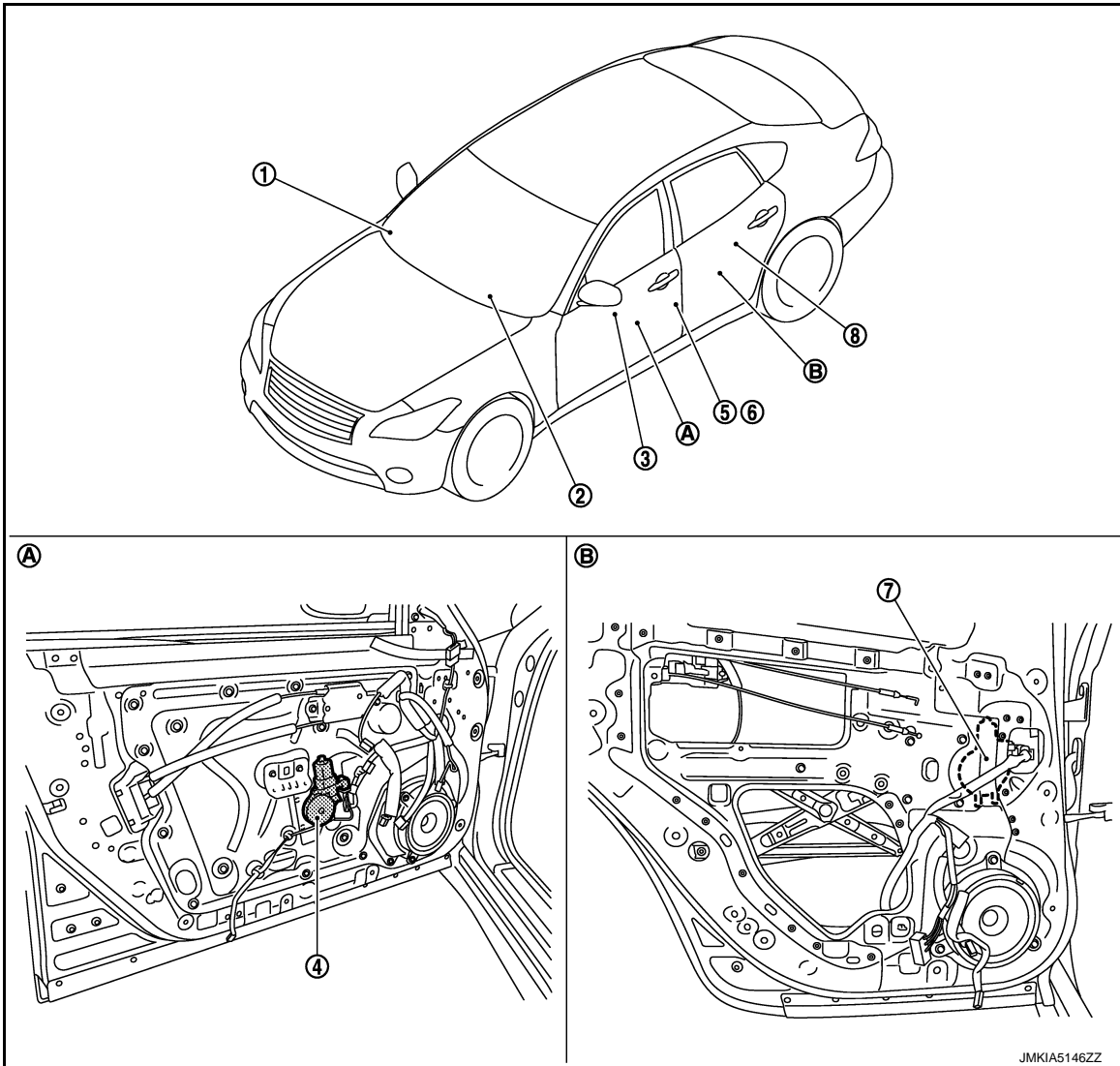
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SYSTEM DESCRIPTION

COMPONENT PARTS

Component Parts Location

INFOID:000000011257755



- | | | |
|--|--|--|
| 1. Remote keyless entry receiver
Refer to DLK-10, "DOOR LOCK SYSTEM : Component Parts Location" | 2. BCM
Refer to BCS-4, "BODY CONTROL SYSTEM : Component Parts Location" | 3. Power window main switch |
| 4. Front power window motor (driver side) | 5. Front door switch (driver side) | 6. Front door lock assembly (driver side) (door key cylinder switch) |
| 7. Rear power window motor LH | 8. Rear power window switch LH | |
| A. View with front door finisher removed | B. View with rear door finisher removed | |

A
B
C
D
E
F
G
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O
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PWC

COMPONENT PARTS

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Component Description

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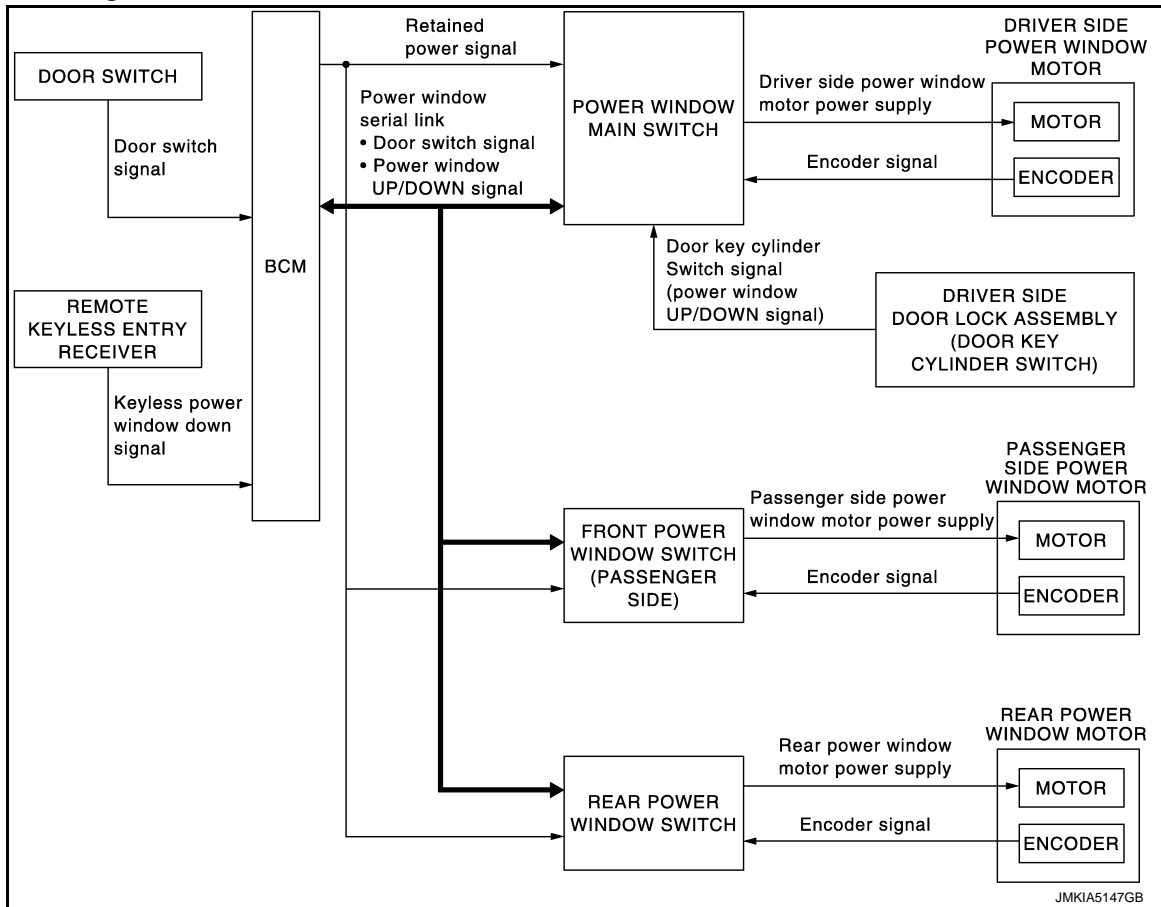
Component	Function
BCM	<ul style="list-style-type: none">• Supplies power supply to power window switch.• Controls retained power.
Power window main switch	<ul style="list-style-type: none">• Directly controls all power window motor of all doors.• Controls anti-pinch operation of power window.
Front power window switch (passenger side)	<ul style="list-style-type: none">• Controls anti-pinch operation of power window.• Controls power window motor of passenger door.
Rear power window switch	<ul style="list-style-type: none">• Controls anti-pinch operation of power window.• Controls power window motor of rear right and left doors.
Power window motor	<ul style="list-style-type: none">• Integrates the ENCODER and WINDOW MOTOR.• Starts operating with signals from each power window switch.• Transmits power window motor rotation as a pulse signal to power window switch.
Remote keyless entry receiver	Receives lock/unlock signal from the intelligent key, and then transmits to BCM.
Front door lock assembly (door key cylinder switch)	Transmits operation condition of door key cylinder switch to power window main switch.
Front door switch (driver side/passenger side)	Front door open/close condition and transmits to BCM.

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SYSTEM

System Diagram



System Description

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POWER WINDOW OPERATION

- Power window system is activated by power window switch operation when ignition switch turns ON, or during the retained power operation after ignition switch turns OFF.
- Power window main switch can open/close door glass.
- Front and rear power window switch can open/close the corresponding door glass.
- Power window lock switch can lock all power windows other than driver seat.
- All power windows open when pressing Intelligent Key unlock button for 3 seconds.
- If door glass receives resistance that is the specified value or more while power window of each seat is in AUTO-UP operation, power window operates in the reverse direction.
- Power window serial link transmits the signals from power window main switch to each power window switch.
- AUTO UP/DOWN operation can be performed when front power window switch turns to AUTO.

POWER WINDOW AUTO-OPERATION

- AUTO UP/DOWN operation can be performed when each power window motor turns to AUTO.
- Encoder continues detecting the movement of power window motor and transmits to power window switch as the encoder pulse signal while power window motor is operating.
- Power window switch reads the changes of encoder signal and stops AUTO operation when door glass is at fully opened/closed position.
- Power window motor is operable in case encoder is malfunctioning.

POWER WINDOW SERIAL LINK

Power window main switch, front power window switch (passenger side), rear power window switch and BCM transmit and receive the signal by power window serial link.

SYSTEM

< SYSTEM DESCRIPTION >

The signal mentioned below is transmitted from BCM to power window main switch, front power window switch (passenger side) and rear power window switch.

- Keyless power window down signal
- Door switch signal

The signal mentioned below is transmitted from power window main switch to front power window switch (passenger side) and rear power window switch.

- Front passenger side door window and rear door window operation signal
- Power window control by door key cylinder switch signal
- Power window lock switch signal
- Retained power operation signal

RETAINED POWER OPERATION

- Retained power operation is an additional power supply function that enables power window system to operate during the 45 seconds even when ignition switch is turned OFF.

Retained power function cancel conditions

- Front door CLOSE (door switch OFF)→OPEN (door switch ON).
- When ignition switch is ON again.
- When timer time passes. (45 seconds)

POWER WINDOW LOCK FUNCTION

Ground circuit inside power window main switch shuts off when power window lock switch is ON. This inhibits power window switch operation except with the power window main switch.

ANTI-PINCH OPERATION

- Anti-pinch foreign lowers door glass 150 mm (5.9 in) when foreign material is pinched in door glass during AUTO-UP operation.
- Encoder continues detecting the movement of power window motor and transmits to power window switch as the encoder pulse signal while power window motor is operating.
- Resistance is applied to the power window motor rotation that changes the frequency of encoder pulse signal if foreign material is trapped in the door glass.
- Power window switch controls to lower the door glass for 150 mm (5.9 in) after it detects encoder pulse signal frequency change.

OPERATION CONDITION

- When all door glass AUTO-UP operation is performed (anti-pinch function does not operate just before the door glass closes and is fully closed)

NOTE:

Depending on environment and driving conditions, if a similar impact or load is applied to the door glass, it may lower.

DOOR KEY CYLINDER SWITCH OPERATION

Hold the door key cylinder to the LOCK or UNLOCK direction for 1.5 seconds or more to OPEN or CLOSE all power windows when ignition switch is OFF. In addition, it stops when key position is moved to NEUTRAL when operating.

OPERATION CONDITION

- Ignition switch OFF.
- Hold door key cylinder to LOCK position for 1.5 seconds or more to perform CLOSE operation of the door glass.
- Hold door key cylinder to UNLOCK position for 1.5 seconds or more to perform OPEN operation of the door glass.

KEYLESS POWER WINDOW DOWN FUNCTION

All power windows open when the unlock button on Intelligent Key is activated and kept pressed for more than 3 seconds with the ignition switch OFF. The windows keep opening if the unlock button is continuously pressed.

The power window opening stops when the following operations are performed.

- When the unlock button is kept pressed more than 15 seconds.
- When the ignition switch is turned ON while the power window opening is operated.
- When the unlock button is released.

While retained power operation activate, keyless power window down function cannot be operated.

Keyless power window down operation mode can be changed by "PW DOWN SET" mode in "WORK SUPPORT". Refer to [DLK-38. "INTELLIGENT KEY : CONSULT Function \(BCM - INTELLIGENT KEY\)".](#)

NOTE:

SYSTEM

< SYSTEM DESCRIPTION >

Use CONSULT to change settings.
MODE 1 (3 sec) / MODE 2 (OFF) / MODE 3 (5 sec)

Fail-safe

INFOID:0000000011257759

FAIL-SAFE CONTROL

Switches to fail-safe control when malfunction is detected in encoder signal that detects up/down speed and direction of door glass. Switches to fail-safe control when a signal that is out of the specified value is detected between the fully closed position and the actual position of the glass.

Malfunction	Malfunction condition
Pulse sensor malfunction	When one pulse signal that is the specified value or more is detected continuously for the specified time or more, while door glass is being operated UP or DOWN.
Both pulse sensors malfunction	When both pulse signals are not detected continuously for the specified time or more, while door glass is being operated UP or DOWN.
Pulse direction malfunction	When a pulse signal indicating that window is moving in the opposite direction against the power window motor is detected for the specified value or more, while door glass is being operated UP or DOWN.
Glass recognition position malfunction 1	When the actual door glass position that is out of specified value is detected compared to the door glass fully closed position memorized in module, while door glass is being operated UP or DOWN.
Glass recognition position malfunction 2	When pulse count that is out of the door glass full stroke value or more is detected, while door glass is being operated UP or DOWN.

If fail-safe control, the system changes to a non-initialized condition and the following function do not operate.

- Auto-up operation
- Anti-pinch function
- Retained power function

When fail-safe control is activated, perform initialization procedure to recover. If a malfunction is detected in power window switch or more, fail-safe control is activated again.

A
B
C
D
E
F
G
H
I
J
L
M
N
O
P

PWC

DIAGNOSIS SYSTEM (BCM)

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DIAGNOSIS SYSTEM (BCM)

COMMON ITEM

COMMON ITEM : CONSULT Function (BCM - COMMON ITEM)

INFOID:000000011504192

APPLICATION ITEM

CONSULT performs the following functions via CAN communication with BCM.

Diagnosis mode	Function Description
Work Support	Changes the setting for each system function.
Self Diagnostic Result	Displays the diagnosis results judged by BCM.
CAN Diag Support Monitor	Monitors the reception status of CAN communication viewed from BCM.
Data Monitor	The BCM input/output signals are displayed.
Active Test	The signals used to activate each device are forcibly supplied from BCM.
Ecu Identification	The BCM part number is displayed.
Configuration	<ul style="list-style-type: none"> Read and save the vehicle specification. 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.

×: Applicable item

System	Sub system selection item	Diagnosis mode		
		Work Support	Data Monitor	Active Test
Door lock	DOOR LOCK	×	×	×
Rear window defogger	REAR DEFOGGER		×	×
Warning chime	BUZZER		×	×
Interior room lamp timer	INT LAMP	×	×	×
Exterior lamp	HEAD LAMP	×	×	×
Wiper and washer	WIPER	×	×	×
Turn signal and hazard warning lamps	FLASHER	×	×	×
—	AIR CONDITONER*		×	×
<ul style="list-style-type: none"> Intelligent Key system Engine start system 	INTELLIGENT KEY	×	×	×
Combination switch	COMB SW		×	
Body control system	BCM	×		
IVIS - NATS	IMMU	×	×	×
Interior room lamp battery saver	BATTERY SAVER	×	×	×
Trunk lid open	TRUNK		×	
Vehicle security system	THEFT ALM	×	×	×
RAP system	RETAINED PWR		×	
Signal buffer system	SIGNAL BUFFER		×	×
—	AIR PRESSURE MONITOR*	×	×	×

*: This item is not used.

FREEZE FRAME DATA (FFD)

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

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

CONSULT screen item	Indication/Unit	Description	
Vehicle Speed	km/h	Vehicle speed of the moment a particular DTC is detected	
Odo/Trip Meter	km	Total mileage (Odometer value) of the moment a particular DTC is detected	
Vehicle Condition	SLEEP>LOCK	Power position status of the moment a particular DTC is detected*	While turning BCM status from low power consumption mode to normal mode (Power supply position is "LOCK"*)
	SLEEP>OFF		While turning BCM status from low power consumption mode to normal mode (Power supply position is "OFF".)
	LOCK>ACC		While turning power supply position from "LOCK" *to "ACC"
	ACC>ON		While turning power supply position from "ACC" to "IGN"
	RUN>ACC		While turning power supply position from "RUN" to "ACC" (Vehicle is stopping and selector lever is except P position.)
	CRANK>RUN		While turning power supply position from "CRANKING" to "RUN" (From cranking up the engine to run it)
	RUN>URGENT		While turning power supply position from "RUN" to "ACC" (Emergency stop operation)
	ACC>OFF		While turning power supply position from "ACC" to "OFF"
	OFF>LOCK		While turning power supply position from "OFF" to "LOCK"*
	OFF>ACC		While turning power supply position from "OFF" to "ACC"
	ON>CRANK		While turning power supply position from "IGN" to "CRANKING"
	OFF>SLEEP		While turning BCM status from normal mode (Power supply position is "OFF".) to low power consumption mode
	LOCK>SLEEP		While turning BCM status from normal mode (Power supply position is "LOCK"*.) to low power consumption mode
	LOCK		Power supply position is "LOCK" (Ignition switch OFF with steering is locked.)*
	OFF		Power supply position is "OFF" (Ignition switch OFF with steering is unlocked.)
	ACC		Power supply position is "ACC" (Ignition switch ACC)
ON	Power supply position is "IGN" (Ignition switch ON with engine stopped)		
ENGINE RUN	Power supply position is "RUN" (Ignition switch ON with engine running)		
CRANKING	Power supply position is "CRANKING" (At engine cranking)		
IGN Counter	0 - 39	The number of times that ignition switch is turned ON after DTC is detected <ul style="list-style-type: none"> • The number is 0 when a malfunction is detected now. • The number increases like 1 → 2 → 3...38 → 39 after returning to the normal condition whenever ignition switch OFF → ON. • The number is fixed to 39 until the self-diagnosis results are erased if it is over 39. 	

NOTE:

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

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

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

RETAINED PWR

RETAINED PWR : CONSULT Function (BCM - RETAINED PWR)

INFOID:0000000011257761

Data monitor

DIAGNOSIS SYSTEM (BCM)

< SYSTEM DESCRIPTION >

Monitor Item	Description
DOOR SW-DR	Indicates [ON/OFF] condition of driver side door switch.
DOOR SW-AS	Indicates [ON/OFF] condition of passenger side door switch.

BCM (BODY CONTROL MODULE)

< ECU DIAGNOSIS INFORMATION >

ECU DIAGNOSIS INFORMATION

BCM (BODY CONTROL MODULE)

List of ECU Reference

INFOID:0000000011257762

ECU	Reference
BCM	BCS-33. "Reference Value"
	BCS-53. "Fail-safe"
	BCS-54. "DTC Inspection Priority Chart"
	BCS-55. "DTC Index"

A
B
C
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E
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G
H
I
J
L
M
N
O
P

PWC

POWER WINDOW MAIN SWITCH

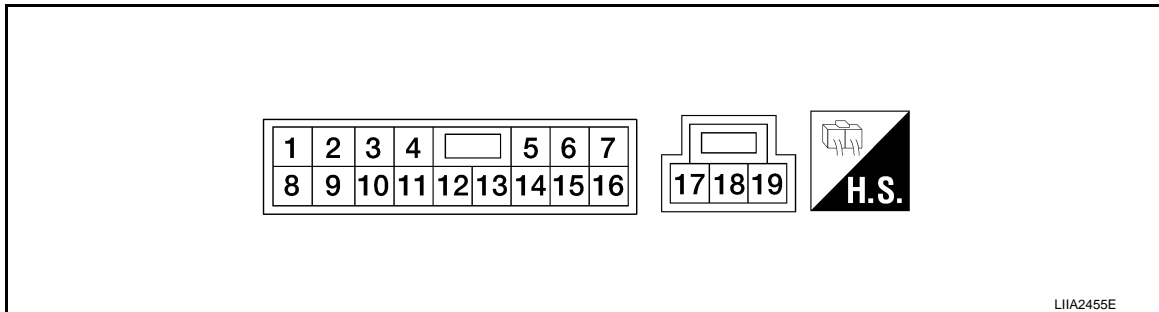
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POWER WINDOW MAIN SWITCH

Reference Value

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TERMINAL LAYOUT



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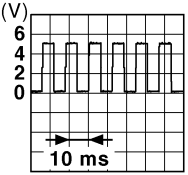
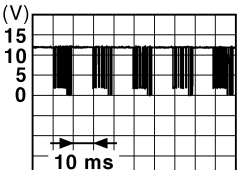
PHYSICAL VALUES

Terminal No. (wire color)		Description		Condition	Voltage [V] (Approx.)
+	-	Signal name	Input/ Output		
3 (B)	Ground	Encoder power supply	Output	When ignition switch ON or power window timer op- erates.	12
4 (Y)	Ground	Battery power supply	Input	—	12
5 (G)	Ground	Front driver side power win- dow motor DOWN signal	Output	When front LH switch in power window main switch is operated DOWN	12
6 (L)	Ground	Front driver side power win- dow motor UP signal	Output	When front LH switch in power window main switch is operated UP	12
7 (B)	Ground	Ground	—	—	0
9 (O)	Ground	Retained power signal	Input	IGN SW ON	12
				Within 45 second after ig- nition switch is turned to OFF	12
				When driver side or pas- senger side door is opened during retained power operation	0
10 (LG)	Ground	Encoder ground	—	—	0
11 (P)	Ground	Encoder pulse signal 1	Input	When power window mo- tor operates.	

JMKIA0070GB

POWER WINDOW MAIN SWITCH

< ECU DIAGNOSIS INFORMATION >

Terminal No. (wire color)		Description		Condition	Voltage [V] (Approx.)
+	-	Signal name	Input/ Output		
12 (LG)	Ground	Encoder pulse signal 2	Input	When power window motor operates.	 <small>JMKIA0070GB</small>
13 (W)	Ground	Power window serial link	Input/ Output	IGN SW ON or power window timer operating.	 <small>JPMIA0013GB</small>
15 (R)	Ground	Door key cylinder switch LOCK signal	Input	Key position (Neutral →Locked)	5 → 0
16 (G)	Ground	Door key cylinder switch UN-LOCK signal	Input	Key position (Neutral →Unlocked)	5 → 0

Fail-safe

INFOID:0000000011504189

FAIL-SAFE CONTROL

Switches to fail-safe control when malfunction is detected in encoder signal that detects up/down speed and direction of door glass. Switches to fail-safe control when a signal that is out of the specified value is detected between the fully closed position and the actual position of the glass.

Malfunction	Malfunction condition
Pulse sensor malfunction	When one pulse signal that is the specified value or more is detected continuously for the specified time or more, while door glass is being operated UP or DOWN.
Both pulse sensors malfunction	When both pulse signals are not detected continuously for the specified time or more, while door glass is being operated UP or DOWN.
Pulse direction malfunction	When a pulse signal indicating that window is moving in the opposite direction against the power window motor is detected for the specified value or more, while door glass is being operated UP or DOWN.
Glass recognition position malfunction 1	When the actual door glass position that is out of specified value is detected compared to the door glass fully closed position memorized in module, while door glass is being operated UP or DOWN.
Glass recognition position malfunction 2	When pulse count that is out of the door glass full stroke value or more is detected, while door glass is being operated UP or DOWN.

If fail-safe control, the system changes to a non-initialized condition and the following function do not operate.

- Auto-up operation
- Anti-pinch function
- Retained power function

When fail-safe control is activated, perform initialization procedure to recover. If a malfunction is detected in power window switch or more, fail-safe control is activated again.

FRONT POWER WINDOW SWITCH

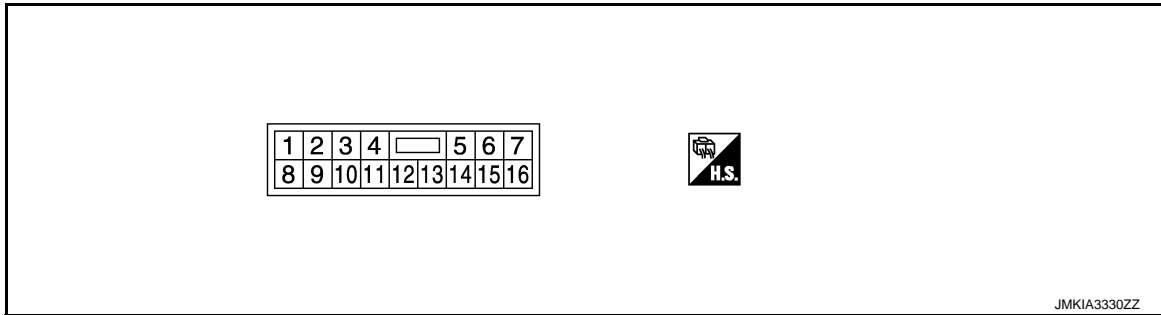
< ECU DIAGNOSIS INFORMATION >

FRONT POWER WINDOW SWITCH

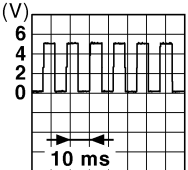
Reference Value

INFOID:000000011257765

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (wire color)		Description		Condition	Voltage [V] (Approx.)
+	-	Signal name	Input/ Output		
3 (LG)	Ground	Encoder ground	—	—	0
4 (B)	Ground	Encoder power supply	Output	When ignition switch ON or power window timer operates	12
8 (L)	Ground	Power window motor UP signal	Output	When power window motor is operated UP	12
9 (G)	Ground	Power window motor DOWN signal	Output	When power window motor is operated DOWN	12
10 (Y)	Ground	Battery power supply	Input	—	12
11 (B)	Ground	Ground	—	—	0
12 (P)	Ground	Encoder pulse signal 1	Input	When power window motor operates	

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