POWER DOOR LOCK CONTROL SYSTEM

PRECAUTION

1. NOTICE FOR INITIALIZATION

When disconnecting the cable from the negative (-) battery terminal, initialize the following system(s) after the cable is reconnected.

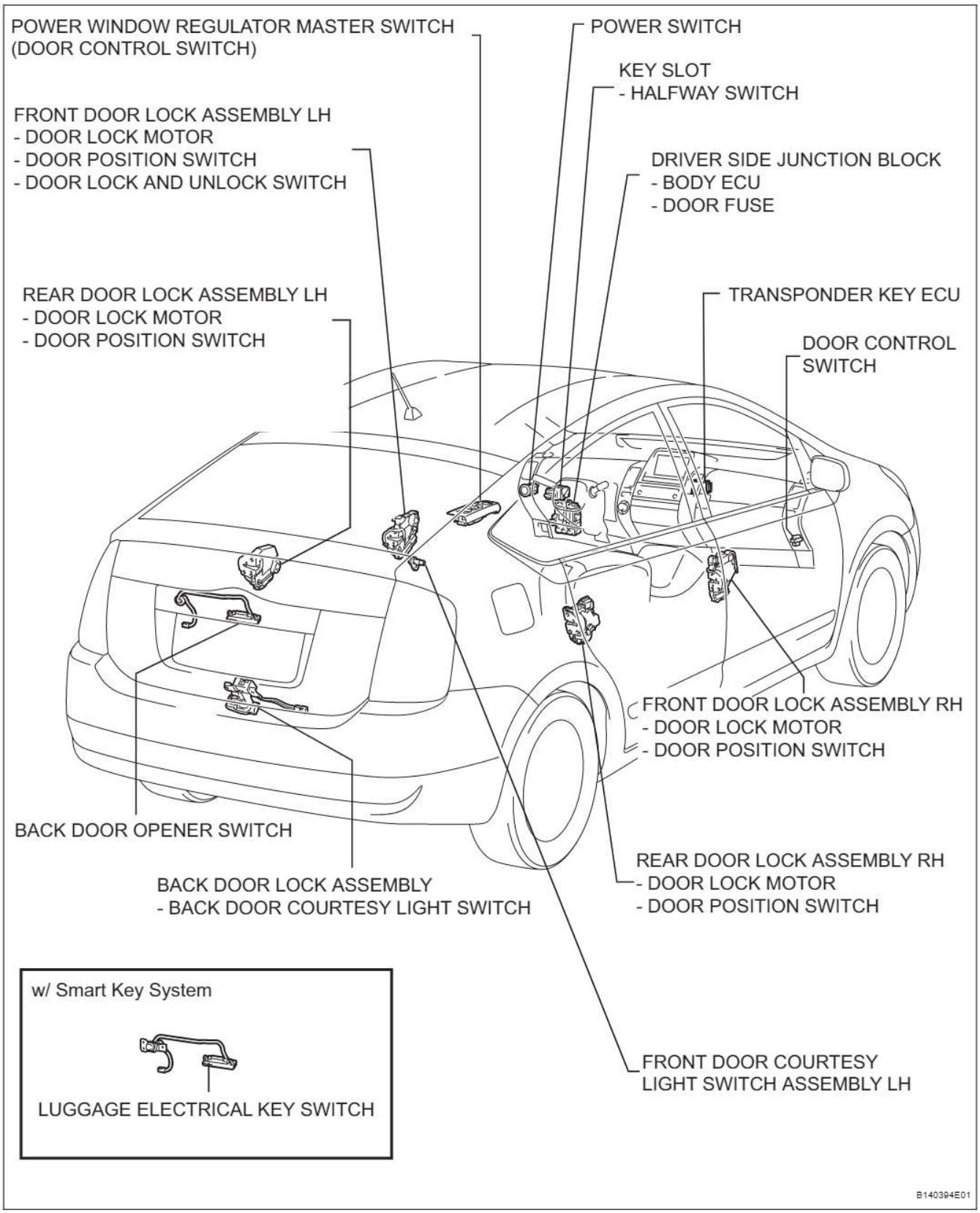
System Name	See procedure
Power Window Control System	IN-32

2. NOTICE FOR HYBRID SYSTEM ACTIVATION

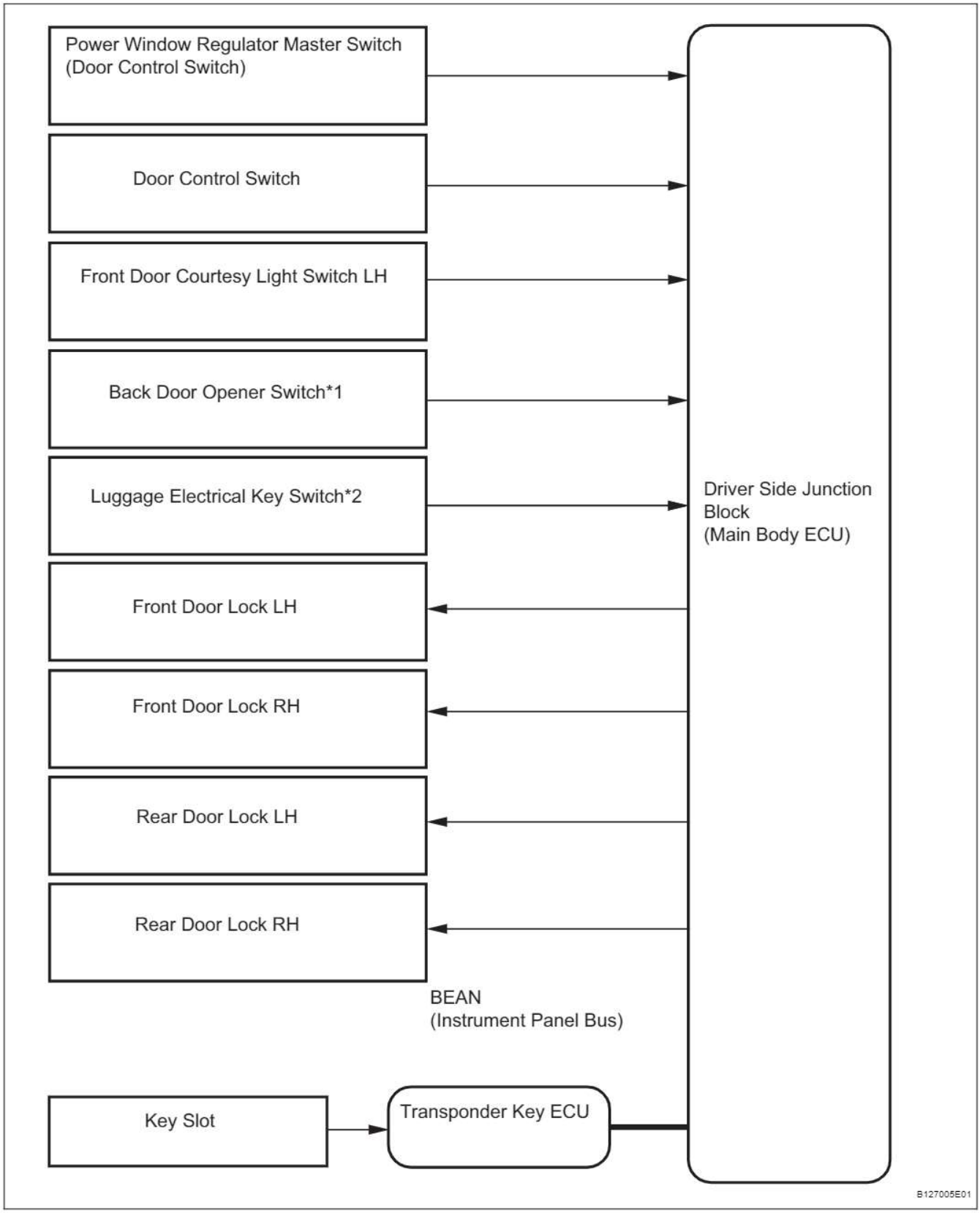
When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.

DL

PARTS LOCATION



SYSTEM DIAGRAM



SYSTEM DESCRIPTION

1. POWER DOOR LOCK CONTROL SYSTEM DESCRIPTION

The power door lock system locks/unlocks all the doors simultaneously.

The master switch (on the driver side door) and the door control switch (on the passenger side door) send lock/unlock request signals to the body ECU. Then, the body ECU sends these requests to the lock motors in each door to lock/unlock all the doors simultaneously.

Operating the driver side door lock using a key sends lock/unlock request signals to the door lock control relay.

The driver side door key-linked lock function has an optional unlock method called the 2-step unlock function.

2. FUNCTION OF MAIN COMPONENT

Components	Function
Master switch	Door control switch on master switch assembly locks/unlocks all doors
Door control switch	Door control switch on passenger side door locks/unlocks all doors
Door courtesy switch	Placed on each door. Detects door status (open or closed) and outputs data to body ECU. Turns on when door is open and turns off when door is closed.
Driver side door lock	• Built-in motor locks/unlocks door • Built-in door control switch (key-linked) detects door key operation's door status (locked or unlocked) and outputs data to body ECU • Built-in position switch detects door status (locked or unlocked) and outputs data to body ECU. This switch turns off when door is locked and turns on when door is unlocked.
Passenger side door lock Rear LH door lock Rear RH door lock	• Built-in motor locks/unlocks door • Built-in position switch detects door status (locked or unlocked) and outputs data to body ECU. This switch turns off when door is locked and turns on when door is unlocked.

3. SYSTEM FUNCTION

This system is controlled by the body ECU. The body ECU outputs signals to each door lock motor. The door lock control system in the PRIUS has the following functions:

Function	Outline
Manual lock and unlock function	Locks/unlocks all doors by door control switch's lock operation (manual operation)
Key-linked lock and unlock function	Linked with door key cylinder. Locks/unlocks all doors when lock/unlock operation is possible.
Key lock-in prevention function	When key is inserted in key slot with driver side door open and door lock operation is performed, all doors will be unlocked.
Manual unlock prohibition function	Performing door lock operation with transmitter, mechanical key or smart lock function* disables unlock operation by door lock control switch
2-step unlock function	Unlock only driver side door by turning door key cylinder once and unlock remaining doors by turning it twice
All doors lock with transmitter	Pressing transmitter's lock switch locks all doors
All doors unlock with transmitter	Pressing transmitter's unlock switch once unlocks driver side door and pressing it again within 3 seconds unlocks remaining doors
Entry unlock function*	User can unlock all doors by keeping smart key in his/her possession and touching outside door handle
Entry lock function*	User can lock all doors by keeping smart key in his/her possession and pressing lock switch on outside door handle

HINT:
*: w/ Smart key system

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the power door lock control system.
- *: Using the intelligent tester.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	CUSTOMER PROBLEM ANALYSIS CHECK AND SYMPTOM CHECK

NEXT

DL

3	INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V
If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

4	INSPECT COMMUNICATION FUNCTION OF LARGE-SCALE MULTIPLEX COMMUNICATION SYSTEM (BEAN)*

(a) Use the intelligent tester to check if the Multiplex Communication System (MPX) is functioning normally.
Result

Result	Proceed to
MPX DTC is not output	A
MPX DTC is output	B

B → **Go to MULTIPLEX COMMUNICATION SYSTEM**

A

5	CHECK FOR DTC*

Result

Result	Proceed to
DTC is not output	A
DTC is output	B

B → **Go to step 7**

A

6	PROBLEM SYMPTOMS TABLE

Result

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B → **Go to step 8**

A

7	OVERALL ANALYSIS AND TROUBLESHOOTING

(a) Operation check (see page DL-6)
(b) Terminals of ECU (see page DL-9)
(c) DATA LIST/ACTIVE TEST (see page DL-15)

DL

NEXT

8	REPAIR OR REPLACE

NEXT

9	CONFIRMATION TEST

NEXT

END

OPERATION CHECK

1. CHECK ELECTRICAL DOOR LOCK OPERATION

(a) Check the basic function.
  (1) For the door control switch (manual operation): 1) pushing the LOCK switch locks all the doors; and 2) pushing the UNLOCK switch unlocks all the doors.
  (2) For the driver side door key cylinder lock function: turning the driver side door key cylinder to the LOCK position locks all the doors.
  (3) For the driver side door key cylinder unlock function: 1) turning the driver side door key cylinder to the UNLOCK position unlocks the driver side door; and 2) turning it to the UNLOCK position again within 3 seconds unlocks the remaining doors (2-step unlock function).

(b) Check the key lock-in prevention function.

NOTICE:

To prevent the key from being locked in the vehicle, the following inspection should be made with the driver side door window open.

  (1) Insert the key into the key slot.
  (2) With the driver side door open, turn the driver side door lock knob to the LOCK position and check that all the doors unlock immediately.
  (3) With the driver side door open, push the LOCK switch on the door control switch (manual operation) and check that all the doors unlock immediately.
  (4) With the driver side door open, turn the driver side door lock knob to the LOCK position, hold it for at least 2 seconds and then close the driver side door. Check that all the doors unlock.

(c) Check the security function.
  (1) Close all the doors and leave the driver side door window open so that the door control switch can be operated from outside the vehicle.
  (2) Pull out the key, open the driver side door and then close and lock the door without using the key. Check that pushing the UNLOCK switch on the door control switch (manual operation) from outside the vehicle does not unlock the doors.
  (3) Pull out the key, close and lock the driver side door by key operation. Check that pushing UNLOCK switch on the door control switch (manual operation) from outside the vehicle does not unlock the doors.

(4) Pull out the key, close the driver side door and lock the door by wireless door lock operation. Check that pushing the UNLOCK switch on the door control switch (manual operation) from outside the vehicle does not unlock the doors.
HINT:
Check that the security function is canceled when any of the following conditions is met:
- The power switch is turned ON (IG).
- The driver side door is unlocked using the key.
- The UNLOCK switch on the door control switch (for manual operation) is pushed after the door lock knob is manually turned to the UNLOCK position.
- The doors are unlocked with wireless or smart unlock operation.

DL

PROBLEM SYMPTOMS TABLE

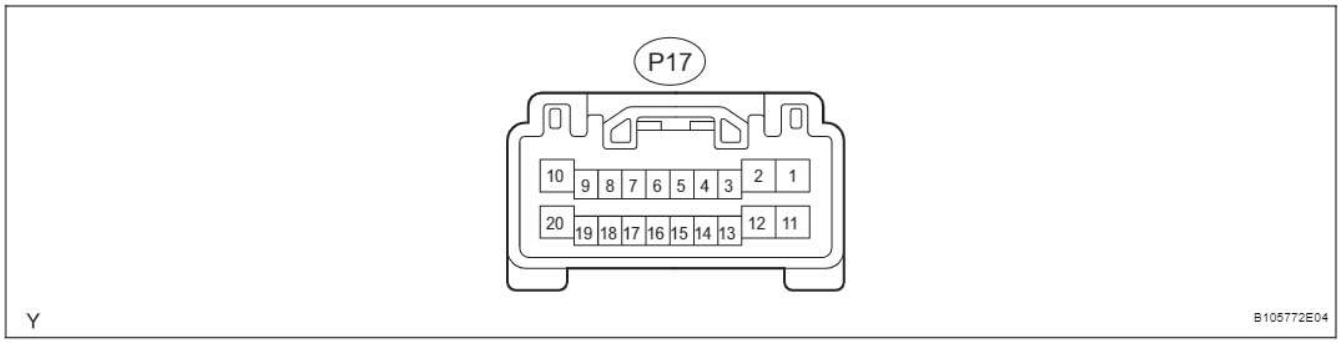
HINT:
Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

Power door lock control system

Symptom	Suspected area	See page
All doors lock / unlock functions do not operate via master switch	1. DOOR fuse	DL-25
	2. DOME fuse	-
	3. Power window regulator master switch	-
	4. Wire harness	-
	5. Driver side junction block (Main body ECU)	-
All door lock / unlock do not operate via door control switch	1. Door control switch	DL-28
	2. Wire harness	-
	3. Driver side junction block (Main body ECU)	-
All door lock / unlock do not operate via driver side door key cylinder	1. Front door lock LH	DL-30
	2. Wire harness	-
	3. Driver side junction block (Main body ECU)	-
Only driver side door lock / unlock functions do not operate	1. Front door lock LH	DL-33
	2. Wire harness	-
	3. Driver side junction block (Main body ECU)	-
Only passenger side door lock / unlock functions do not operate	1. Front door lock RH	DL-37
	2. Wire harness	-
	3. Driver side junction block (Main body ECU)	-
Only rear LH side door lock / unlock functions do not operate	1. Rear door lock LH	DL-40
	2. Wire harness	-
	3. Driver side junction block (Main body ECU)	-
Only rear RH side door lock / unlock functions do not operate	1. Rear door lock RH	DL-43
	2. Wire harness	-
	3. Driver side junction block (Main body ECU)	-
Only back door lock / unlock functions do not operate	1. Back door lock	DL-46
	2. Luggage electrical key switch (w/ Smart key system)	-
	3. Back door opener switch (w/o Smart key system)	-
	4. Wire harness	-
	5. Driver side junction block (Main body ECU)	-
Key lock-in prevention function does not work properly (manual operation and key-linked lock are available)	1. Key slot	DL-52
	2. Front door courtesy light switch LH	-
	3. Wire harness	-
	4. Driver side junction block (Main body ECU)	-
	5. Transponder key ECU	-

TERMINALS OF ECU

1. CHECK POWER WINDOW REGULATOR MASTER SWITCH

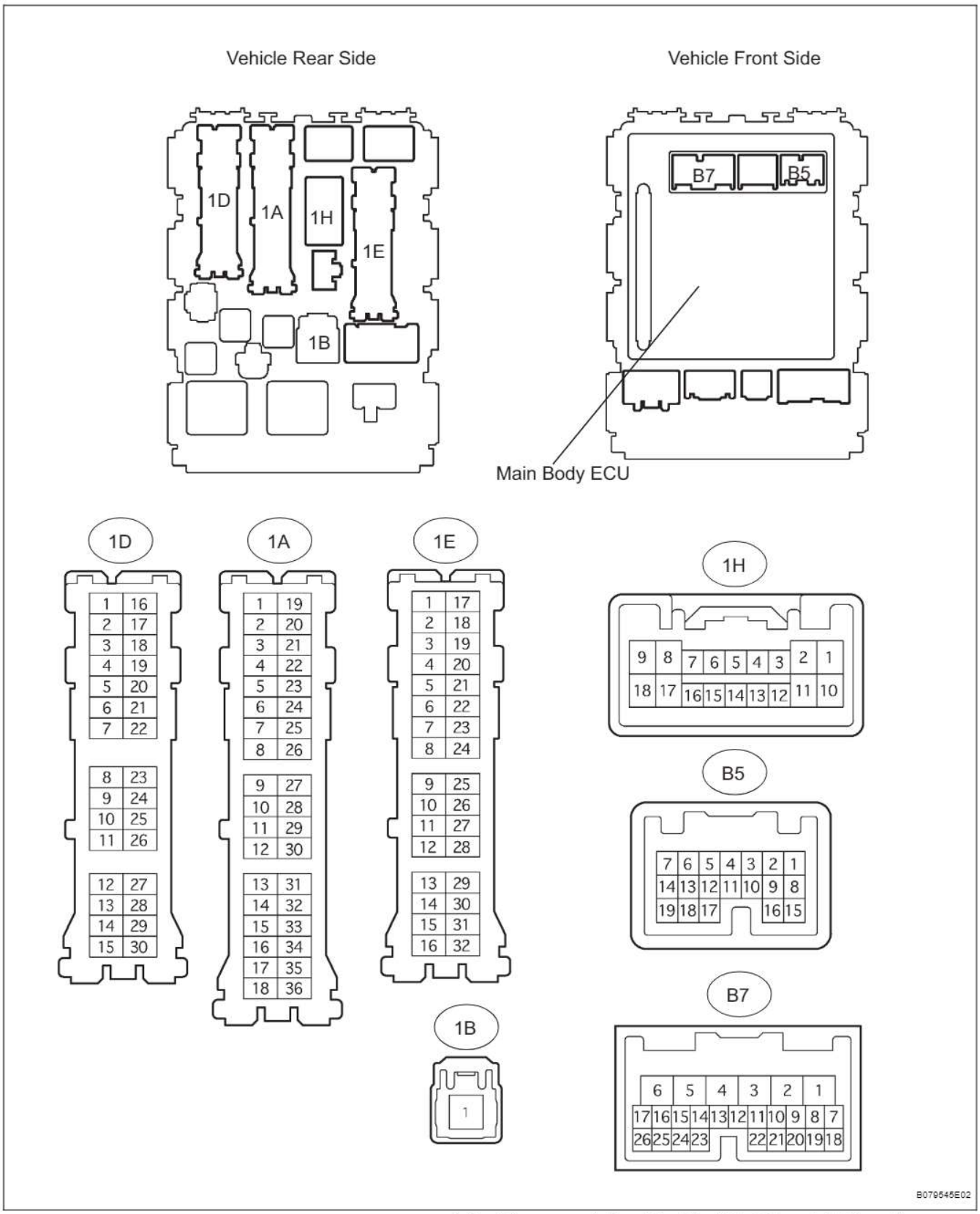


(a) Disconnect the P17 switch connector.
(b) Measure the voltage and resistance of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
BDR (P17-11) - Body ground	V - Body ground	+B (BDR) power supply	Always	10 to 14 V
BW (P17-7) - Body ground	W - Body ground	+B (BW) power supply	Power switch ON (IG)	10 to 14 V
BW (P17-7) - Body ground	W - Body ground	+B (BW) power supply	Power switch OFF	Below 1 V
E (P17-1) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
L (P17-5) - Body ground	LG - Body ground	Door control switch door lock input	Door control switch LOCK	Below 1 Ω
L (P17-5) - Body ground	LG - Body ground	Door control switch door lock input	Door control switch OFF	10 kΩ or higher
UL (P17-8) - Body ground	BR - Body ground	Door control switch door unlock input	Door control switch UNLOCK	Below 1 Ω
UL (P17-8) - Body ground	BR - Body ground	Door control switch door unlock input	Door control switch OFF	10 kΩ or higher

If the result is not as specified, there may be a malfunction on the wire harness side.

2. CHECK DRIVER SIDE JUNCTION BLOCK (MAIN BODY ECU)



(a) Disconnect the 1A, 1B, 1D, 1E and 1H junction block connectors.
(b) Disconnect the B5 and B7 ECU connectors.

(c) Measure the voltage and resistance of the wire harness side connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ALTB (1B-1) - Body ground	W - Body ground	+B (power system, generator system) power supply	Always	10 to 14 V
ECUB (1A-30) - Body ground	R - Body ground	+B (ECUB) power supply	Always	10 to 14 V
GND (1E-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
KSW (1E-26) - Body ground*1 KSW (1E-23) - Body ground*2	Y - Body ground	Key unlock warning switch input	Key inserted	Below 1 Ω
KSW (1E-26) - Body ground*1 KSW (1E-23) - Body ground*2	Y - Body ground	Key unlock warning switch input	No key in key slot	10 kΩ or higher
L1 (1H-4) - Body ground	LG - Body ground	Door control switch (master switch and passenger side switch) lock input	Door control switch (master switch or passenger side switch) LOCK	Below 1 Ω
L1 (1H-4) - Body ground	LG - Body ground	Door control switch (master switch and passenger side switch) lock input	Door control switch (master switch or passenger side switch) OFF	10 kΩ or higher
L1 (1H-13) - Body ground	B - Body ground	Door control switch (master switch and passenger side switch) lock input	Door control switch (master switch or passenger side switch) LOCK	Below 1 Ω
L1 (1H-13) - Body ground	B - Body ground	Door control switch (master switch and passenger side switch) lock input	Door control switch (master switch or passenger side switch) OFF	10 kΩ or higher
UL1 (1H-5) - Body ground	BR - Body ground	Door control switch (master switch and passenger side switch) unlock input	Door control switch (master switch or passenger side switch) UNLOCK	Below 1 Ω
UL1 (1H-5) - Body ground	BR - Body ground	Door control switch (master switch and passenger side switch) unlock input	Door control switch (master switch or passenger side switch) OFF	10 kΩ or higher
UL1 (1H-14) - Body ground	V - Body ground	Door control switch (master switch and passenger side switch) unlock input	Door control switch (master switch or passenger side switch) UNLOCK	Below 1 Ω
UL1 (1H-14) - Body ground	V - Body ground	Door control switch (master switch and passenger side switch) unlock input	Door control switch (master switch or passenger side switch) OFF	10 kΩ or higher
L2 (1H-16) - Body ground L - Body ground	L - Body ground	Driver side door key-linked door lock input	Driver side door key cylinder LOCK	Below 1 Ω
L2 (1H-16) - Body ground L - Body ground	L - Body ground	Driver side door key-linked door lock input	Driver side door key cylinder OFF	10 kΩ or higher
UL3 (B7-9) - Body ground	P - Body ground	Driver side door key-linked door unlock input	Driver side door key cylinder UNLOCK	Below 1 Ω
UL3 (B7-9) - Body ground	P - Body ground	Driver side door key-linked door unlock input	Driver side door key cylinder OFF	10 kΩ or higher
LSWD (B7-25) - Body ground	LG - Body ground	Driver side door lock position switch input	Driver side door LOCK	Below 1 Ω
LSWD (B7-25) - Body ground	LG - Body ground	Driver side door lock position switch input	Driver side door UNLOCK	10 kΩ or higher

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
LSWP (B7-10) - Body ground	Y - Body ground	Passenger side door lock position switch input	Passenger side door LOCK	Below 1 Ω
LSWP (B7-10) - Body ground	Y - Body ground	Passenger side door lock position switch input	Passenger side door UNLOCK	10 kΩ or higher
LSWR (B5-10) - Body ground	O - Body ground	Rear doors lock position switch input	Rear doors LOCK	Below 1 Ω
LSWR (B5-10) - Body ground	O - Body ground	Rear doors lock position switch input	Rear doors UNLOCK	10 kΩ or higher
DCTY (1D-21) - Body ground	V - Body ground	Driver side courtesy switch input	Driver side door open	Below 1 Ω
DCTY (1D-21) - Body ground	V - Body ground	Driver side courtesy switch input	Driver side door closed	10 kΩ or higher
PCTY (1D-24) - Body ground	BR - Body ground	Passenger side courtesy switch input	Passenger side door open	Below 1 Ω
PCTY (1D-24) - Body ground	BR - Body ground	Passenger side courtesy switch input	Passenger side door closed	10 kΩ or higher
RCTY (1D-5) - Body ground	R - Body ground	Rear LH courtesy switch input	Rear LH door open	Below 1 Ω
RCTY (1D-5) - Body ground	R - Body ground	Rear LH courtesy switch input	Rear LH door closed	10 kΩ or higher
RCTY (1D-20) - Body ground	R - Body ground	Rear RH courtesy switch input	Rear RH door open	Below 1 Ω
RCTY (1D-20) - Body ground	R - Body ground	Rear RH courtesy switch input	Rear RH door closed	10 kΩ or higher
BCTY (1D-7) - Body ground	R - Body ground	Back door courtesy switch input	Back door open	Below 1 Ω
BCTY (1D-7) - Body ground	R - Body ground	Back door courtesy switch input	Back door closed	10 kΩ or higher
BDSU (B7-12) - Body ground	P - Body ground	Back door opener switch input	Back door opener switch ON	Below 1 Ω
BDSU (B7-12) - Body ground	P - Body ground	Back door opener switch input	Back door opener switch OFF	10 kΩ or higher

HINT:
*1: w/ Smart key system
*2: w/o Smart key system
If the result is not as specified, there may be a malfunction on the wire harness side.

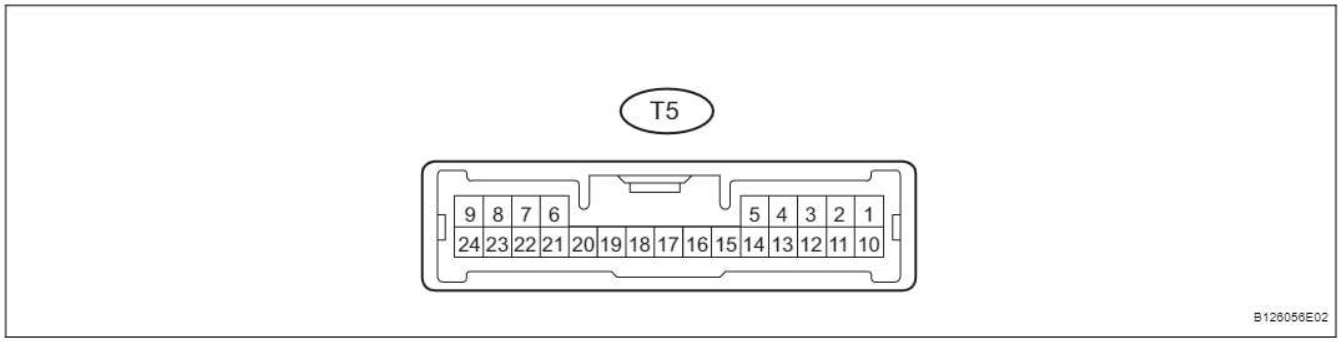
(d) Reconnect the 1A, 1B, 1D, 1E and 1H junction block connectors.
(e) Reconnect the B5 and B7 ECU connectors.
(f) Measure the voltage of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ACT+ (1H-8) - Body ground	Y - Body ground	Door lock motor LOCK drive output (driver side door)	Door control switch (master switch or passenger side switch) or driver side door key cylinder OFF → LOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT+ (1D-3) - Body ground	Y - Body ground	Door lock motor LOCK drive output (passenger side door)	Door control switch (master switch or passenger side switch) or driver side door key cylinder OFF → LOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ACT+ (1H-17) - Body ground	Y - Body ground	Door lock motor LOCK drive output (rear LH and rear RH side door)	Door control switch (master switch or passenger side switch) or driver side door key cylinder OFF → LOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACTD (B7-5)) - Body ground	G - Body ground	Door lock motor UNLOCK drive output (driver side door)	Door control switch (master switch or passenger side switch) or driver side door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT- (1H-9) - Body ground	G - Body ground	Door lock motor UNLOCK drive output (passenger side door)	Door control switch (master switch or passenger side switch) or driver side door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
ACT- (1D-4) - Body ground	G - Body ground	Door lock motor UNLOCK drive output (rear LH side door)	Door control switch (master switch or passenger side switch) or driver side door key cylinder OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V
BACT (B7-1) - Body ground	Y - Body ground	Back door lock motor OPEN drive output	Transmitter switch (back door) OFF → UNLOCK → OFF	Below 1 V → 10 to 14 V → Below 1 V

If the result is not as specified, the junction block may have a malfunction.

3. CHECK TRANSPONDER KEY ECU



(a) Disconnect the T5 ECU connector.
(b) Measure the voltage and resistance of the wire harness side connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CPUB (T5-3) - Body ground	L - Body ground	+B (CPUB) power supply	Always	10 to 14 V
GND (T5-22) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
IG (T5-4) - Body ground	O - Body ground	IG power supply	Power switch ON (IG)	10 to 14 V

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
IG (T5-4) - Body ground	O - Body ground	IG power supply	Power switch OFF	Below 1 V
ACC (T5-12) - Body ground	P - Body ground	ACC power supply	Power switch ON (ACC)	10 to 14 V
ACC (T5-12) - Body ground	P - Body ground	ACC power supply	Power switch OFF	Below 1 V
CUWS (T5-5) - Body ground	B - Body ground	Halfway switch input	Key inserted	Below 1 Ω
CUWS (T5-5) - Body ground	B - Body ground	Halfway switch input	No key in key slot	10 kΩ or higher

If the result is not as specified, there may be a malfunction on the wire harness side.

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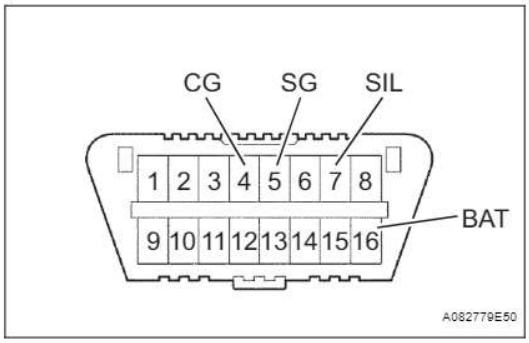
DIAGNOSIS SYSTEM

1. DESCRIPTION

The main body ECU controls the functions of the power door lock control system on the vehicle. Data of the power door lock control system and Diagnostic Trouble Code (DTCs) can be read in the Data Link Connector 3 (DLC3) of the vehicle.
When the system seems to be malfunctioning, use the intelligent tester (with CAN VIM) to check for a malfunction and perform repairs.

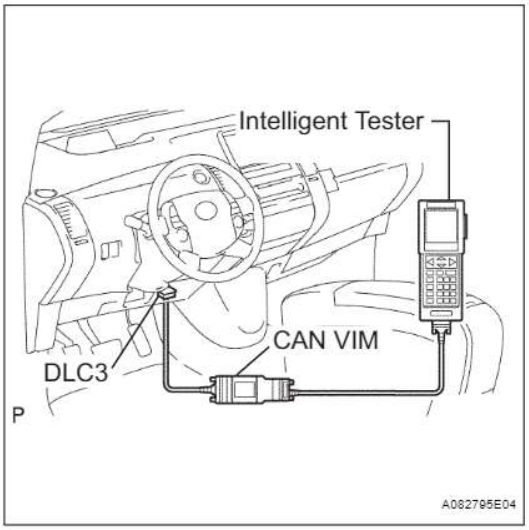
2. CHECK DLC3

The vehicle's ECU uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with ISO 15031-03 and matches the ISO 15765-4 format.



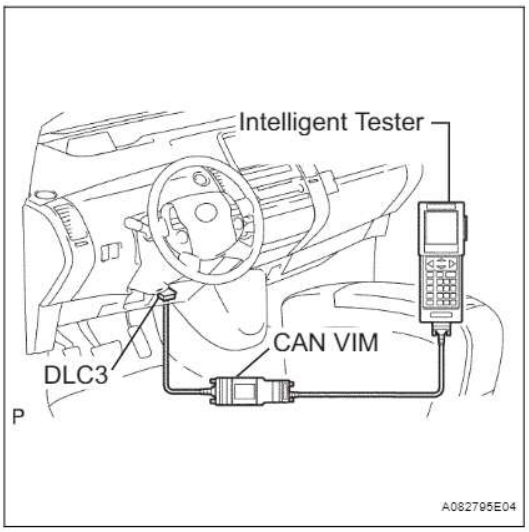
Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground Chassis ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground Signal ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Power switch is OFF*	54 to 67 Ω
CANH (6) - Battery positive	HIGH-level CAN bus line	Power switch is OFF*	1 MΩ or higher
CANH (6) - CG (4)	HIGH-level CAN bus line	Power switch is OFF*	3 MΩ or higher
CANL (14) - Battery position	LOW-level CAN bus line	Power switch is OFF*	1 MΩ or higher
CANL (14) - CG (4)	LOW-level CAN bus line	Power switch is OFF*	3 MΩ or higher

NOTICE:
***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the power switch, any other switches or the doors.**
If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.



HINT:
Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the power switch ON (IG) and attempt to use the tester. If the display indicates that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem may be in the tester itself. Consult the Service Department listed in the tester's instruction



DL

DTC CHECK / CLEAR

1. CHECK DTC

(a) Connect the intelligent tester to the Controller Area Network Vehicle Interface Module (CAN VIM). Then connect the CAN VIM to the DLC3.
(b) Turn the power switch ON (IG).
(c) Read DTCs by following the prompts on the tester screen.
HINT:
Refer to the intelligent tester operator's manual for further details.

2. CLEAR DTC

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG).
(c) Erase the DTCs following the prompts on the tester screen.
HINT:
Refer to the intelligent tester operator's manual for further details.

DATA LIST / ACTIVE TEST

1. REAR DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts.

Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Read the DATA LIST according to the display on the tester.

Main body ECU

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
TRNK/B DOR OPEN	Back door open judgment / PROHIBT or PERMIT	PROHIBT: Back door opening is impossible PERMIT: Back door opening is possible	-
D DOR CTY SW	Driver side door courtesy switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-
P LOCK POS SW	Passenger side door lock position switch signal / ON or OFF	ON: Passenger side door lock is in unlock position OFF: Passenger side door lock is in lock position	-
Rr DOR CTY SW	Rear door courtesy switch signal / ON or OFF	ON: Either right or left rear door is open OFF: Both right and left rear doors are closed	-
Rr LOCK POS SW	Rear door lock position switch signal / ON or OFF	ON: Rear door lock is in unlock position OFF: Rear door lock is in lock position	-
B DOR OPEN SW	Back door opener switch signal / ON or OFF	ON: Back door opener switch is pushed OFF: Back door opener switch is not pushed	-
D LOCK POS SW	Driver side door lock position switch signal / ON or OFF	ON: Driver side door lock is in unlock position OFF: Driver side door lock is in lock position	-
D/L SW-LOCK	Door control switch lock signal / ON or OFF	ON: Door control switch is in lock position OFF: Door control switch is not in lock position	-
D/L SW-UNLOCK	Door control switch unlock signal / ON or OFF	ON: Door control switch is in unlock position OFF: Door control switch is not in unlock position	-
DOR KEY SW-LOCK	Driver door lock/unlock switch lock signal (key-linked lock switch) / ON or OFF	ON: Driver side door key cylinder is turned to lock position OFF: Driver side door key cylinder is not turned to lock position	-
D DOR KEY SW-UN	Driver door lock/unlock switch unlock signal (key-linked unlock switch) / ON or OFF	ON: Driver side door key cylinder is turned to unlock position OFF: Driver side door key cylinder is not turned to unlock position	-

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relay, VSV actuator and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.
(b) Turn the power switch ON (IG).
(c) Perform the ACTIVE TEST according to the display on the tester.

Main body ECU

Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor for all doors LOCK / UNLOCK	All doors are closed

DIAGNOSTIC TROUBLE CODE CHART

HINT:
If a malfunction code is displayed during the DTC check, check the circuit listed for that code in the table below and proceed to the page given for that circuit.

Power door lock control system

DTC No.	Detection Item	Trouble Area	See page
B1241	Body ECU Switch Circuit Diagnosis	- Power window regulator master switch (door control switch) - Door control switch - Driver side junction block (Main body ECU) - Wire harness	DL-18

DL

DTC	B1241	Body ECU Switch Circuit Diagnosis

DESCRIPTION

DTC B1241 output when: 1) the door control switches of the master switch or the door control switch on the passenger side door are pressed, or 2) when the door lock and unlock switch (door key-linked switch) built into the front door lock LH is used. DTC B1241 disappears when the switches are not pressed or used.

A malfunction is occurring when:

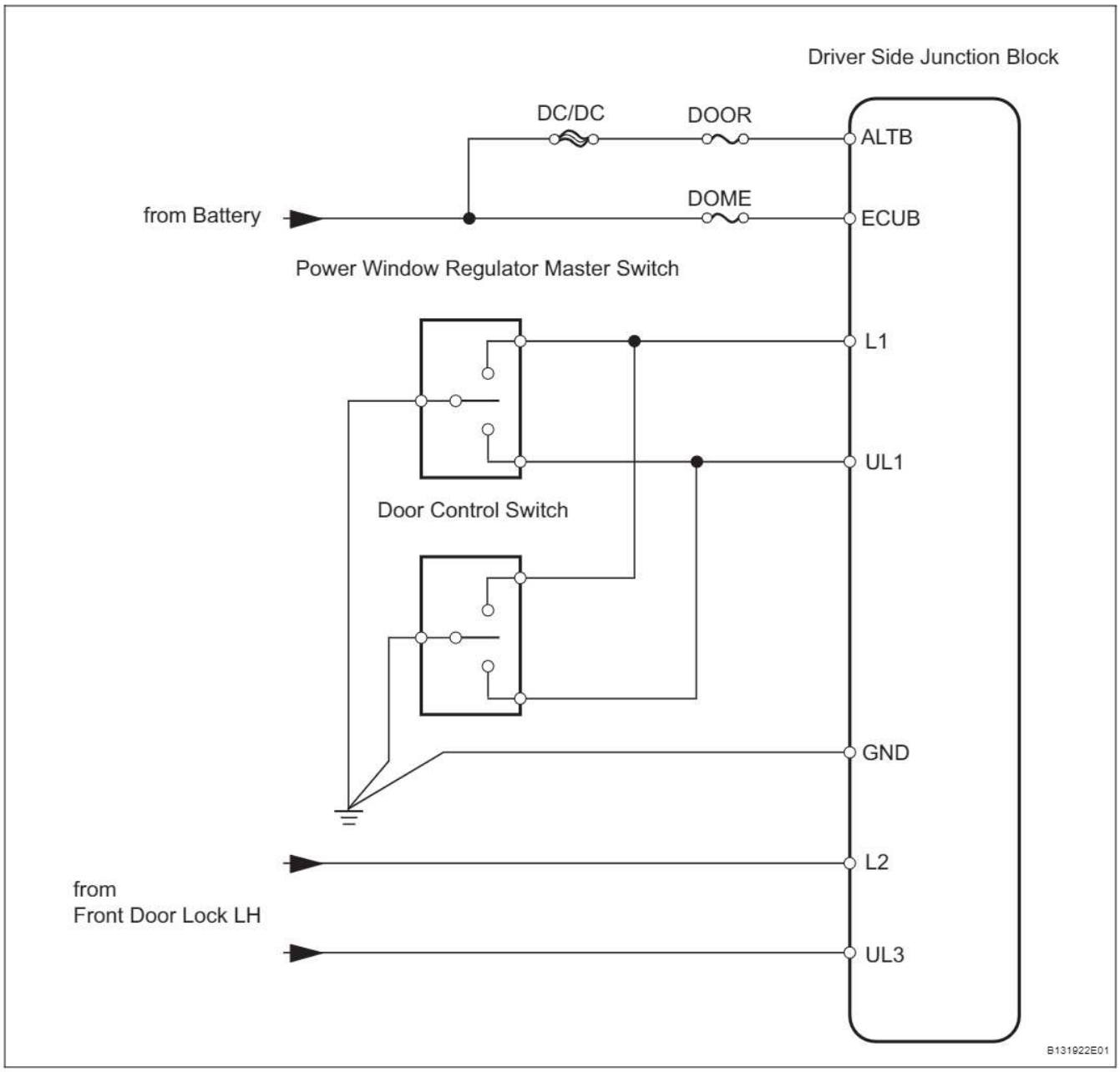
- The DTC is output when a switch is not operated. The switch may be stuck ON.
- The switch is not output when a switch is being operated. The switch's contact may be faulty.

Switch Operation (ON)	Switch Operation (OFF)	Switch Condition
DTC is output	DTC is not output	Normal
DTC is output	DTC is output	Stuck ON malfunction
DTC is not output	DTC is not output	Contact is faulty malfunction

DTC No.	DTC Detection Condition	Trouble Area
B1241	• Door control switch on master switch is in lock/unlock position (ON) or stuck • Door control switch on passenger door is in lock/unlock position (ON) or stuck • Door lock and unlock switch (door key-linked switch) is in lock/unlock position (ON) or stuck	• Power window regulator master switch assembly • Door control switch • Door lock assembly • Driver side junction block (Main body ECU) • Wire harness

DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT FUSE (DOOR)

(a) Remove the DOOR fuse from the driver side junction block.
(b) Measure the resistance of the fuse.
Standard resistance:
Below 1 Ω

NG	REPLACE FUSE

OK

2	READ VALUE OF INTELLIGENT TESTER (DOOR CONTROL SWITCH)

(a) Check the DATA LIST for proper functioning of the door control switch.

Main body ECU

Item	Measurement Item/Display (Range)	Normal Condition	Diagnostic Note
D/L SW-LOCK	Door control switch lock signal / ON or OFF	ON: Door control switch is in LOCK position OFF: Door control switch is not in LOCK position	-
D/L SW-UNLOCK	Door control switch unlock signal / ON or OFF	ON: Door control switch is in UNLOCK position OFF: Door control switch is not in UNLOCK position	-

DL

OK:
ON (door is locked/unlocked) appears on the screen.

NG → **Go to step 4**

OK

3	CHECK DOOR LOCK / UNLOCK FUNCTION (OPERATE VIA DRIVER SIDE DOOR KEY CYLINDER)

(a) Refer to "all doors lock / unlock functions do not operate via driver side door key cylinder" (see page DL-30).

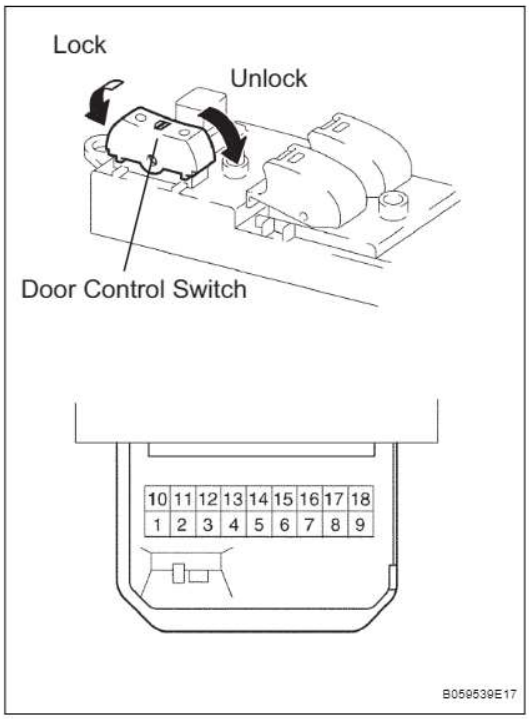
OK:
Normal operation

OK → **Go to step 6**

NG

REPLACE FRONT DOOR LOCK ASSEMBLY LH

4 INSPECT POWER WINDOW REGULATOR MASTER SWITCH (DOOR CONTROL SWITCH)



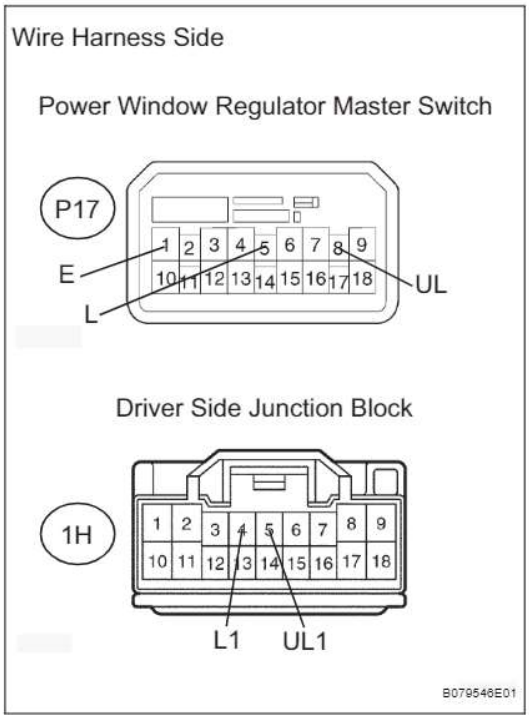
(a) Measure the resistance of the switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 5	Lock	Below 1 Ω
1 - 8	Unlock	
1 - 5	OFF	10 kΩ or higher
1 - 8		

NG → **REPLACE POWER WINDOW REGULATOR MASTER SWITCH**

OK

5 CHECK WIRE HARNESS (SWITCH - ECU AND BODY GROUND)



(a) Disconnect the P17 switch connector.
(b) Disconnect the 1H junction block connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
P17-5 (L) - 1H-4 (L1)	Below 1 Ω
P17-8 (UL) - 1H-5 (UL1)	
P17-1 (E) - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

6	CHECK DOOR CONTROL SWITCH

(a) Press the lock switch on the passenger side door control switch and check that all the doors lock. Press the unlock switch on the passenger side door control switch and check that all the doors unlock.

OK:

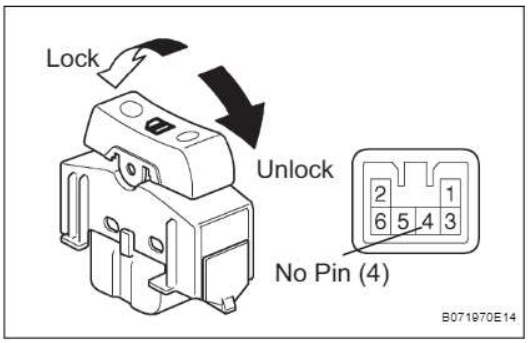
All doors lock/unlock when lock/unlock switches are pressed.

OK → Go to step 9

NG

7	INSPECT DOOR CONTROL SWITCH

DL



(a) Measure the resistance of the switch.

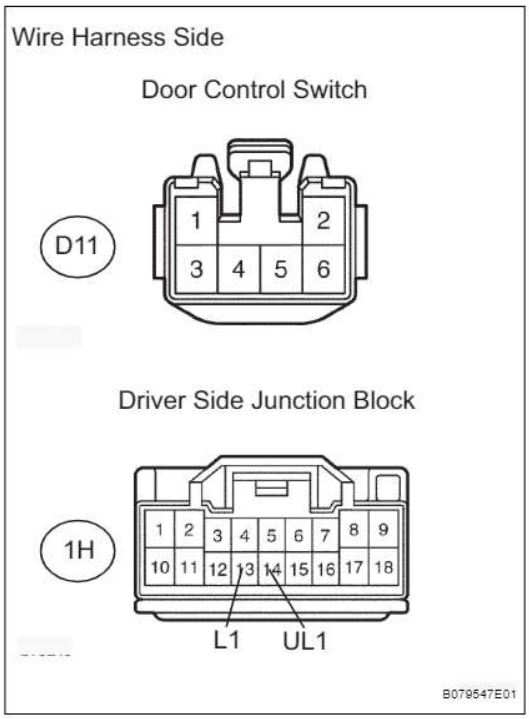
Standard resistance

Tester Connection	Switch Condition	Specified Condition
3 - 6	Lock	Below 1 Ω
3 - 5	Unlock	
3 - 6	OFF	10 kΩ or higher
3 - 5		

NG → REPLACE DOOR CONTROL SWITCH

OK

8	CHECK WIRE HARNESS (SWITCH - ECU AND BODY GROUND)



(a) Disconnect the D11 switch connector.
(b) Disconnect the 1H junction block connector.
(c) Measure the resistance of the wire harness side connectors.

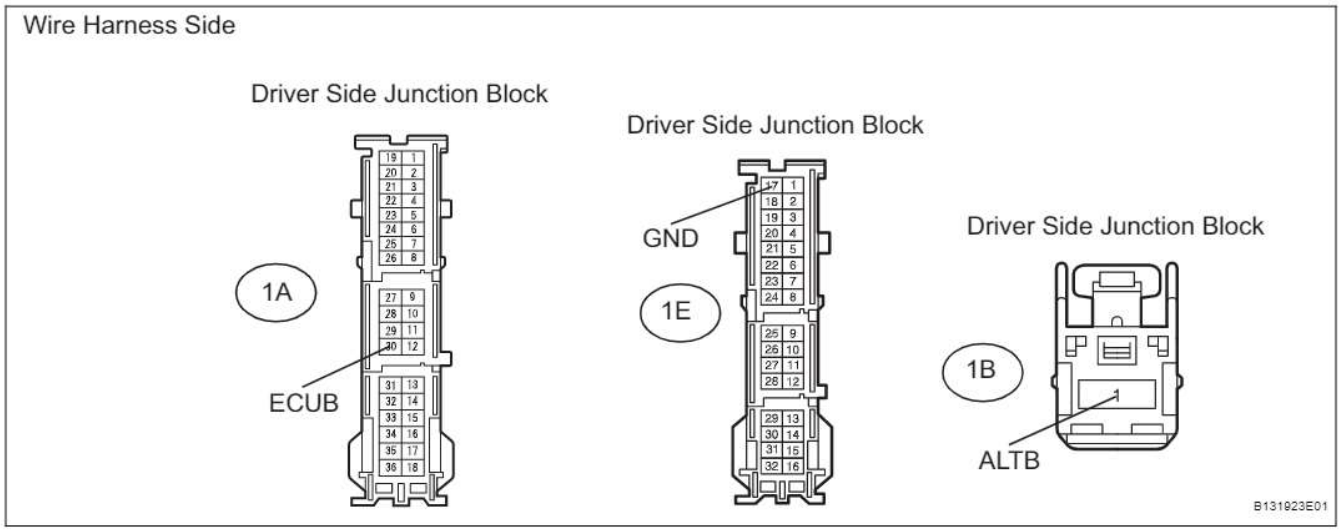
Standard resistance

Tester Connection	Specified Condition
D11-6 - 1H-13 (L1)	Below 1 Ω
D11-5 - 1H-14 (UL1)	
D11-3 - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

9	CHECK WIRE HARNESS (DRIVER SIDE JUNCTION LOCK - BATTERY AND BODY GROUND)



(a) Disconnect the 1A, 1B and 1E junction block connectors.
(b) Measure the voltage of the wire harness side connector.

Standard voltage

Tester Connection	Specified Condition
1A-30 (ECUB) - Body ground	10 to 14 V
1B-1 (ALTB) - Body ground	

(c) Measure the resistance of the wire harness side connector.
Standard resistance

Tester Connection	Specified Condition
1E-17 (GND) - Body ground	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE DRIVER SIDE JUNCTION BLOCK

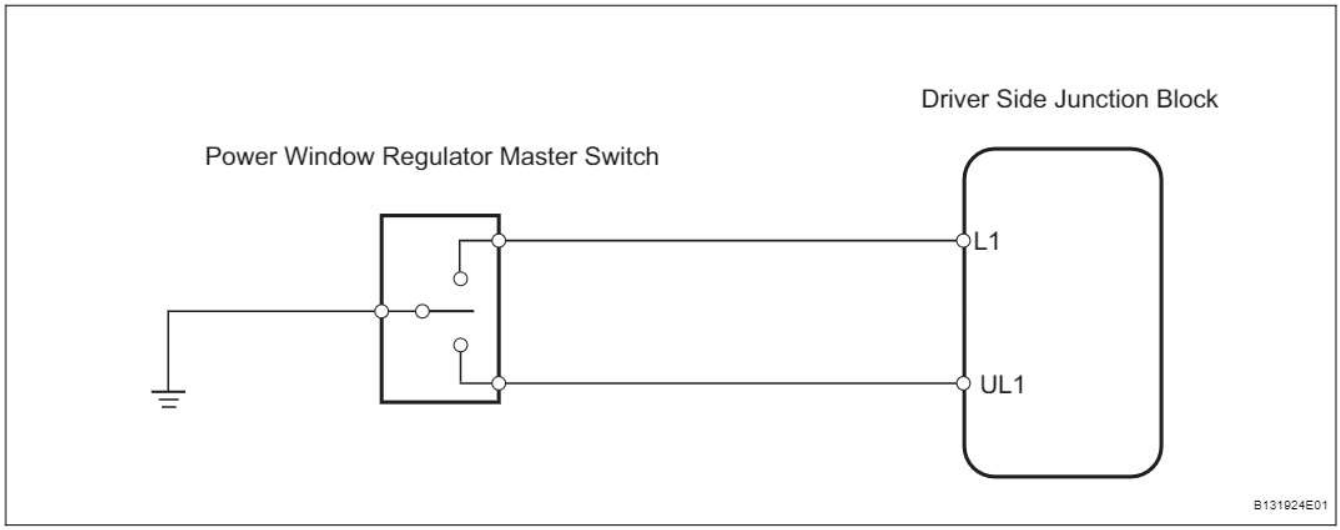
DL

All Doors LOCK / UNLOCK Functions do not Operate Via Master Switch

DESCRIPTION

The body ECU in the driver side junction block receives switch signals from the power window regulator master switch and activates the door lock motors on each door according to the signal.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER (DOOR CONTROL SWITCH)

(a) Check the DATA LIST for proper functioning of the door control switch.

Main body ECU

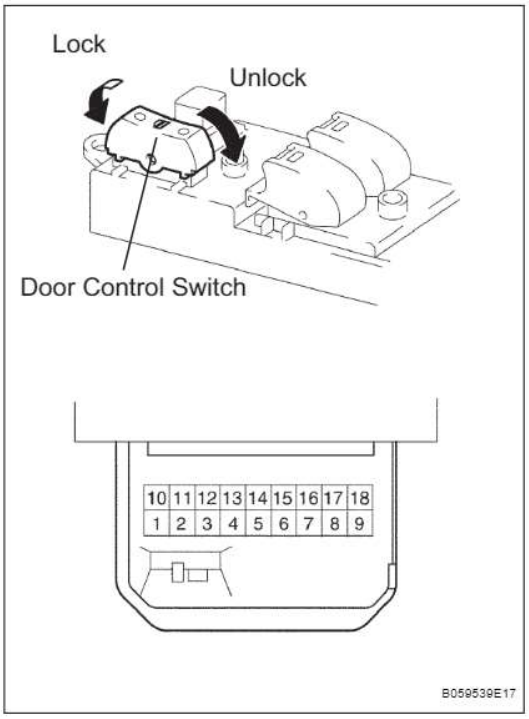
Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D/L SW-LOCK	Door control switch lock signal/ON or OFF	ON: Door control switch is in LOCK position OFF: Door control switch is not in LOCK position	-
SW-UNLOCK	Door control switch unlock signal / ON or OFF	ON: Door control switch is in UNLOCK position OFF: Door control switch is not in UNLOCK position	-

OK:
ON (door is locked/unlocked) appears on the screen.

OK → **REPLACE DRIVER SIDE JUNCTION BLOCK**

NG

2	INSPECT POWER WINDOW REGULATOR MASTER SWITCH ASSEMBLY (DOOR CONTROL SWITCH)



(a) Measure the resistance of the door control switch.
Standard resistance

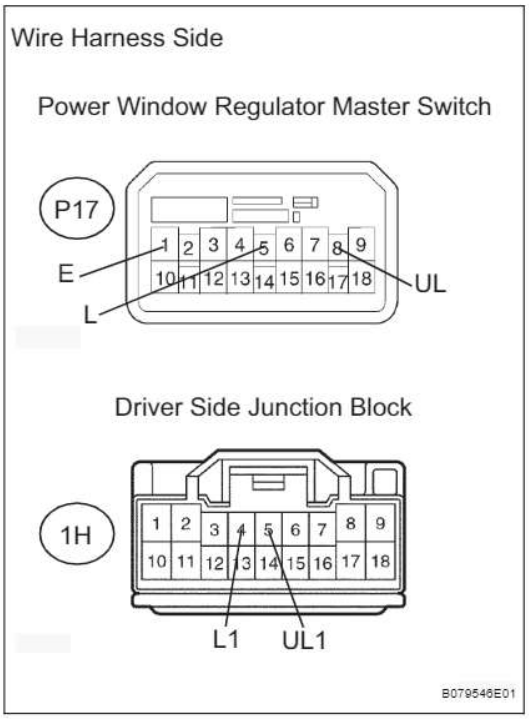
Tester Connection	Switch Condition	Specified Condition
1 - 5	Lock	Below 1 Ω
1 - 8	Unlock	
1 - 5	OFF	10 kΩ or higher
1 - 8		

NG → **REPLACE POWER WINDOW REGULATOR MASTER SWITCH**

DL

OK

3	CHECK WIRE HARNESS (MASTER SWITCH - DRIVER SIDE JUNCTION BLOCK AND BODY GROUND)



(a) Disconnect the P17 switch connector.
(b) Disconnect the 1H junction block connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
17-5 (L) - 1H-4 (L1)	Below 1 Ω
P17-8 (UL) - 1H-5 (UL1)	
P17-1 (E) - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

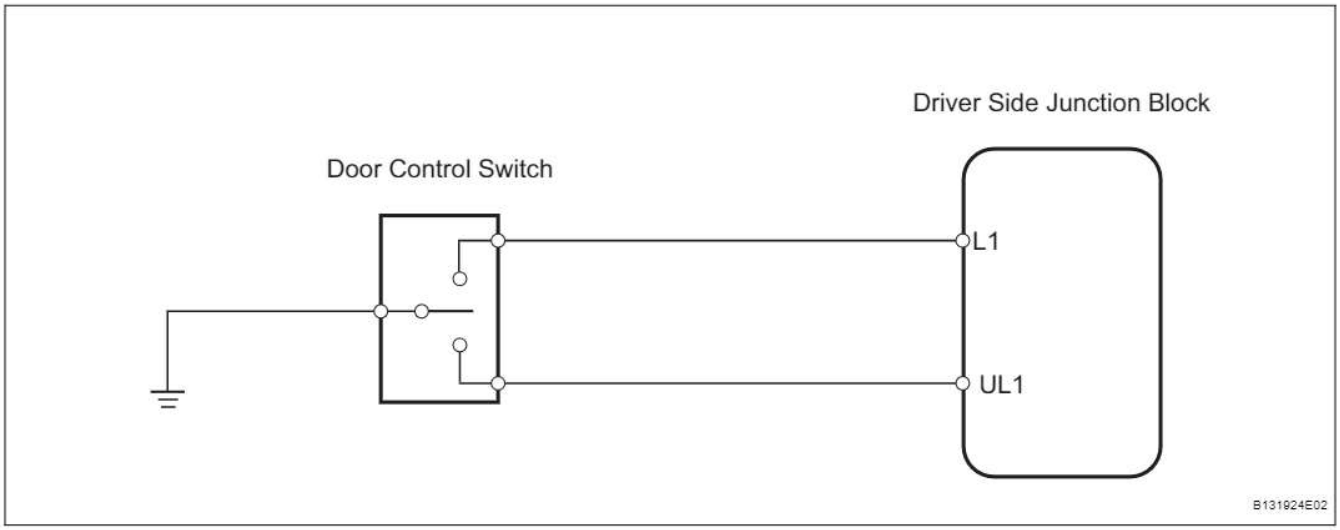
REPLACE DRIVER SIDE JUNCTION BLOCK

All Doors LOCK / UNLOCK Functions do not Operate Via Door Control Switch

DESCRIPTION

The main body ECU in the driver side junction block receives switch signals from the door control switch and activates the door lock motors on each door according to the signals.

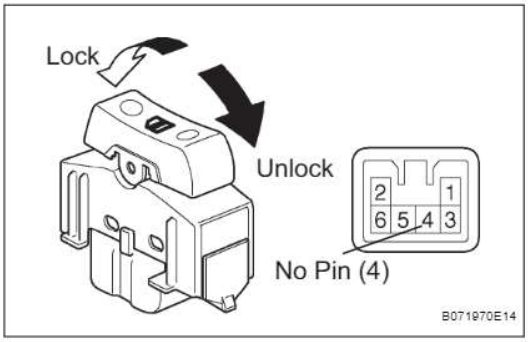
WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	INSPECT DOOR CONTROL SWITCH



(a) Measure the resistance of the switch.

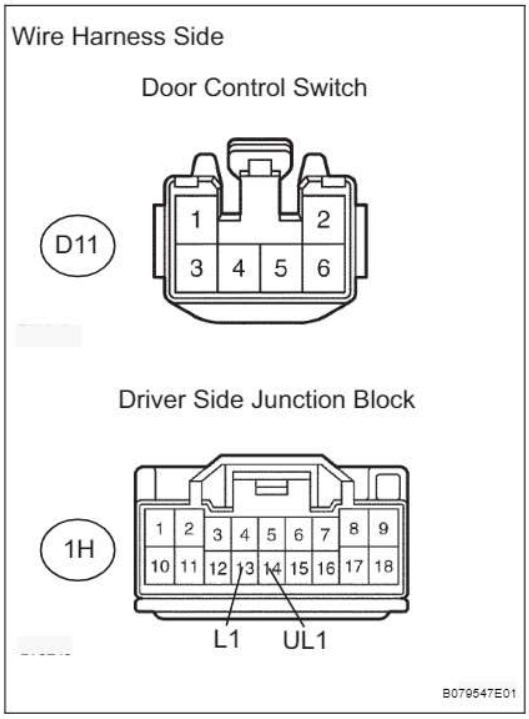
Standard resistance

Tester Connection	Switch Condition	Specified Condition
3 - 6	Lock	Below 1 Ω
3 - 5	Unlock	
3 - 6	OFF	10 kΩ or higher
3 - 5		

NG → REPLACE DOOR CONTROL SWITCH

OK

2	CHECK WIRE HARNESS (SWITCH - DRIVER SIDE JUNCTION BLOCK AND BODY GROUND)



(a) Disconnect the D11 switch connector.
(b) Disconnect the 1H junction block connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D11-5 - 1H-14 (UL1)	Below 1 Ω
D11-6 - 1H-12 (L1)	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE DRIVER SIDE JUNCTION BLOCK

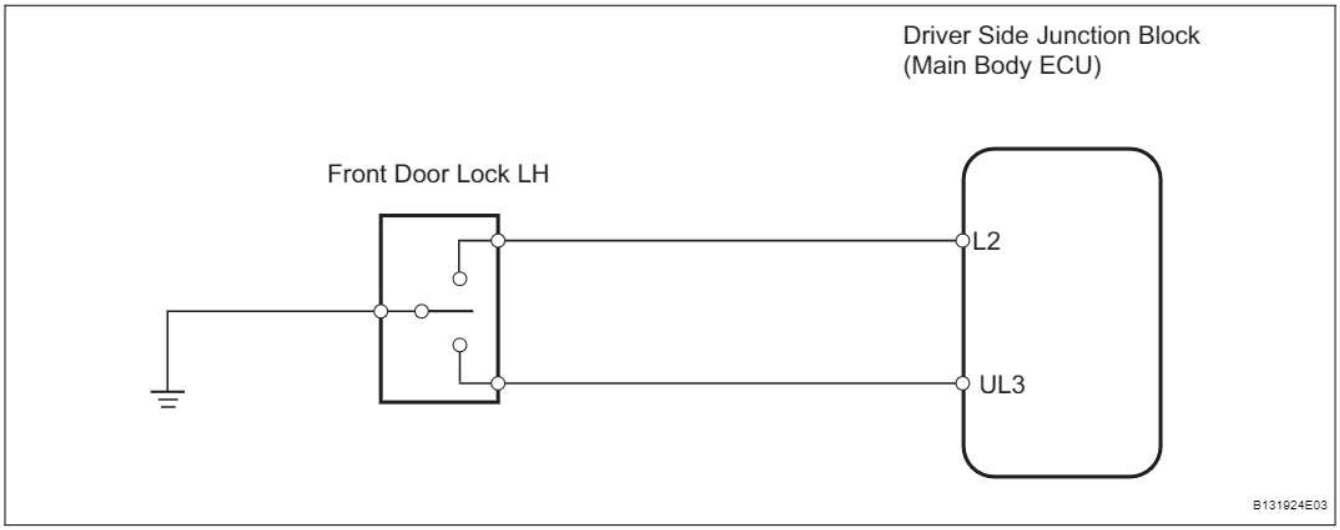
DL

All Doors LOCK / UNLOCK Functions do not Operate Via Driver Side Door Key Cylinder

DESCRIPTION

The main body ECU in the driver side junction block receives switch signals from the door key-linked door lock / unlock switch and activates the door lock according to the signals.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER (DOOR LOCK AND UNLOCK SWITCH)

(a) Check the DATA LIST for proper functioning of the door lock and unlock switch.

Main body ECU

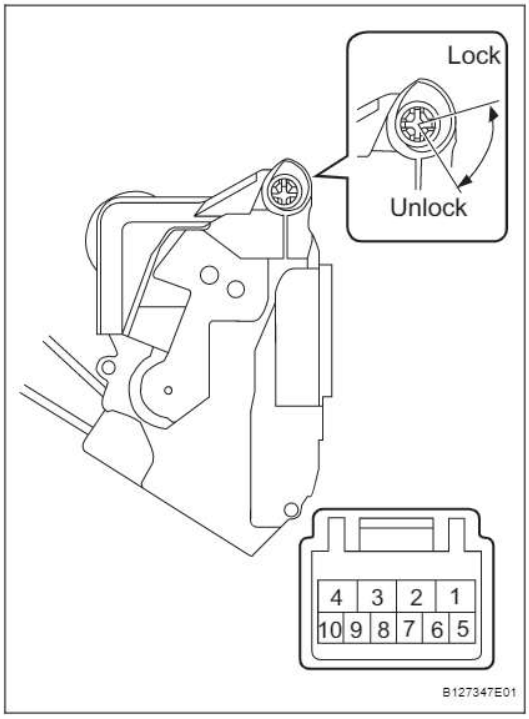
Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
DOR KEY SW-LOCK	Driver door lock/unlock switch lock signal (key-linked lock switch) / ON or OFF	ON: Driver side door key cylinder is turned to LOCK position OFF: Driver side door key cylinder is not turned to LOCK position	-
DOR KEY SW-UN	Driver door lock/unlock switch lock signal (key-linked unlock switch) / ON or OFF	ON: Driver side door key cylinder is turned to UNLOCK position OFF: Driver side door key cylinder is not turned to UNLOCK position	-

OK:
ON (door is locked/unlocked) appears on the screen.

OK	PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

NG

2 INSPECT FRONT DOOR LOCK ASSEMBLY LH (DOOR LOCK AND UNLOCK SWITCH)



(a) Measure the resistance of the door lock and unlock switch.

Standard resistance

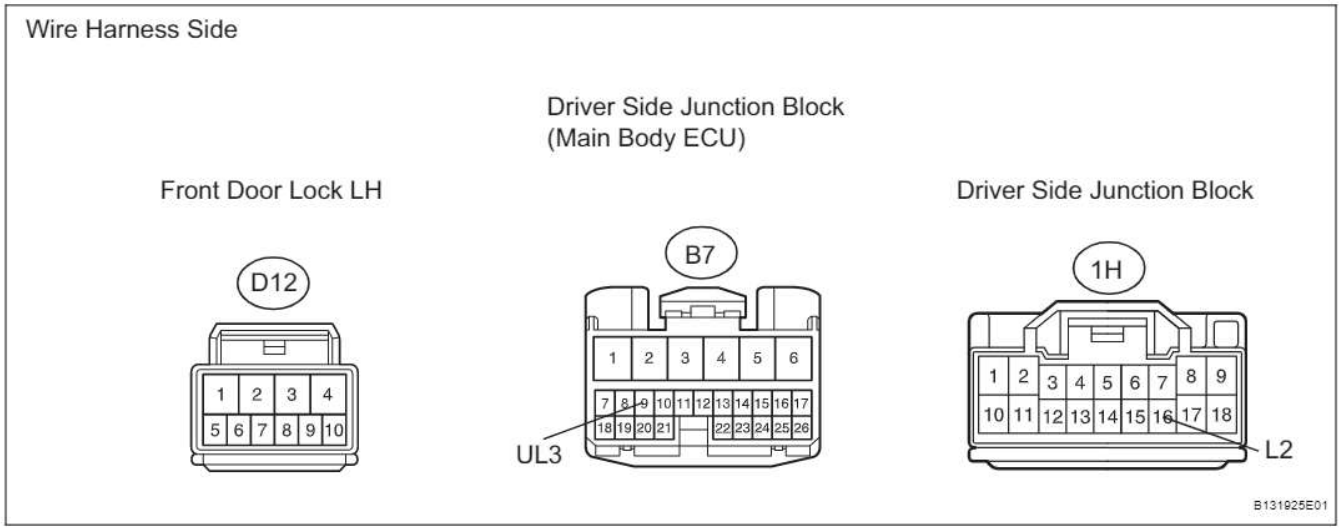
Tester Connection	Condition	Specified Condition
7 - 9	Lock	Below 1 Ω
7 - 10	Unlock	
7 - 9	OFF	10 kΩ or higher
7 - 10		

NG → **REPLACE FRONT DOOR LOCK ASSEMBLY LH**

DL

OK

3 CHECK WIRE HARNESS (MOTOR - JUNCTION BLOCK, ECU AND BODY GROUND)



(a) Disconnect the D12 lock connector.
(b) Disconnect the B7 ECU connector.
(c) Disconnect the 1H junction block connector.
(d) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D12-9 - 1H-16 (L2)	Below 1 Ω
D12-10 - B7-9 (UL3)	
D12-7 - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

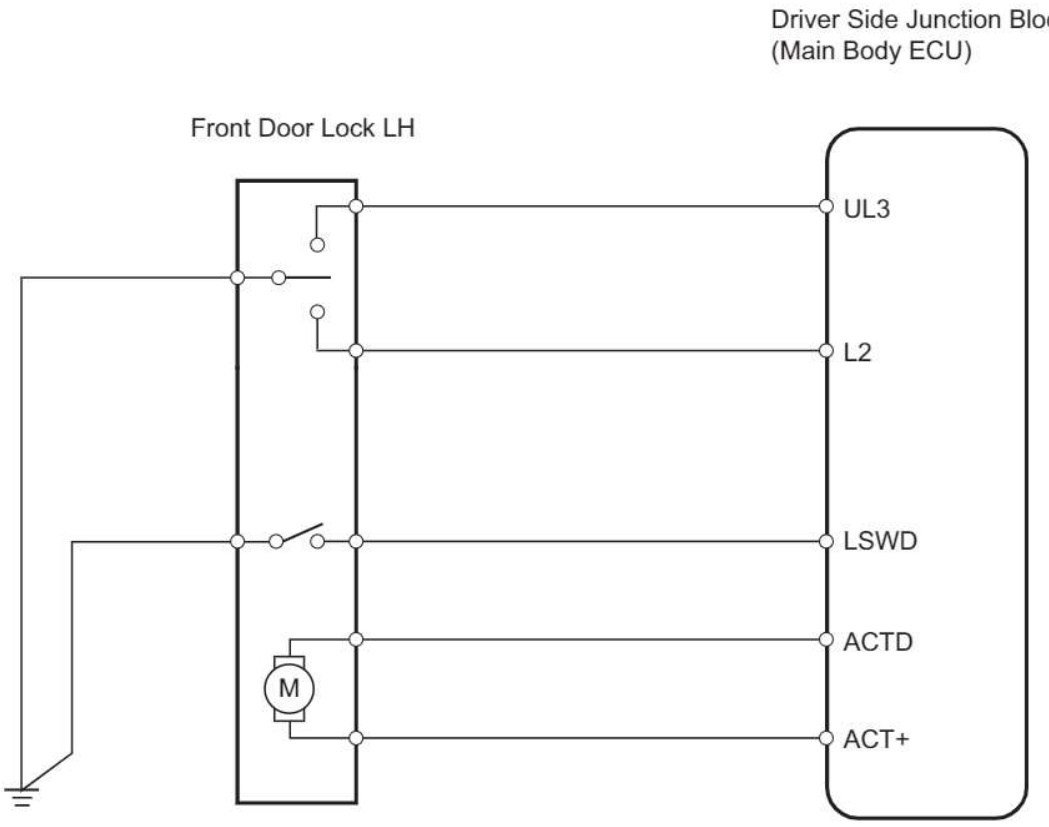
DL

Only Driver Door LOCK / UNLOCK Functions do not Operate

DESCRIPTION

The main body ECU in the driver side junction block receives lock / unlock switch signals and activates the door lock motor according to the signals.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (DOOR LOCK MOTOR)

(a) Select the ACTIVE TEST, use the intelligent tester (with CAN VIM) to generate a control command, and then check that the door lock motor operates.

Main body ECU

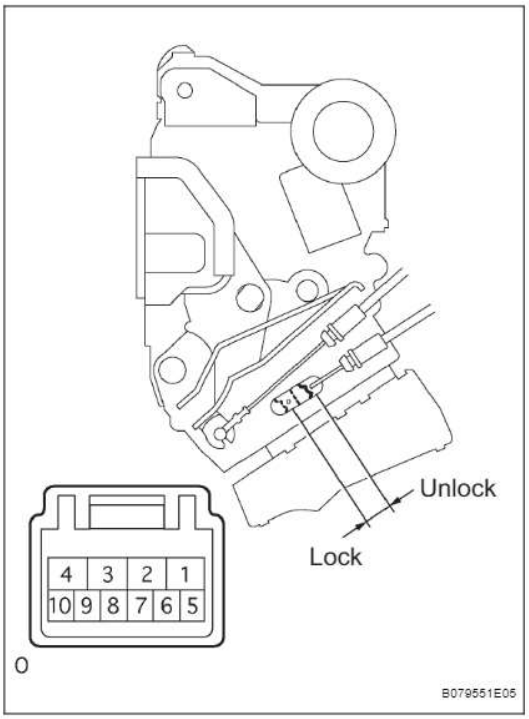
Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor for all doors LOCK / UNLOCK	All doors are closed

OK:
Doors can lock/unlock.

OK → **REPLACE DRIVER SIDE JUNCTION BLOCK**

NG

2	INSPECT FRONT DOOR LOCK LH (DOOR LOCK AND UNLOCK SWITCH AND POSITION SWITCH)



(a) Measure the resistance of the door lock and unlock switch and position switch.

Standard resistance

Door lock and unlock switch

Tester Connection	Switch Condition	Specified Condition
7 - 9	Lock	Below 1 Ω
7 - 10	Unlock	
7 - 9	OFF	10 kΩ or higher
7 - 10		

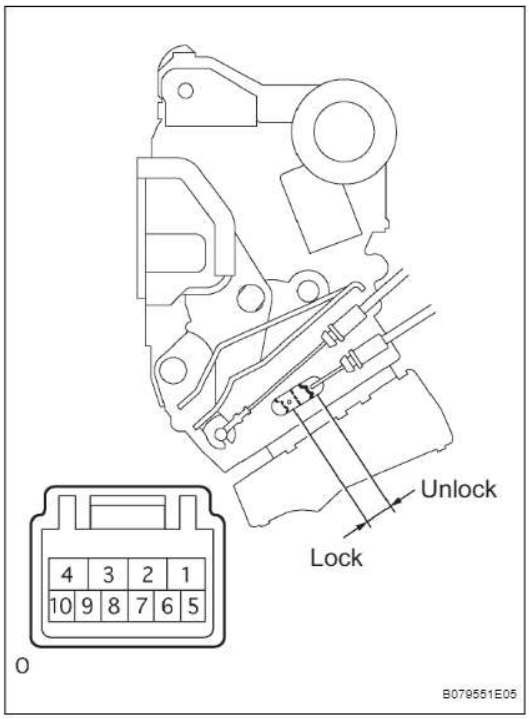
Position switch

Tester Connection	Switch Condition	Specified Condition
7 - 8	Lock	Below 1 Ω
	Unlock	10 kΩ or higher

NG → **REPLACE FRONT DOOR LOCK LH**

OK

3	INSPECT FRONT DOOR LOCK LH (DOOR LOCK MOTOR)



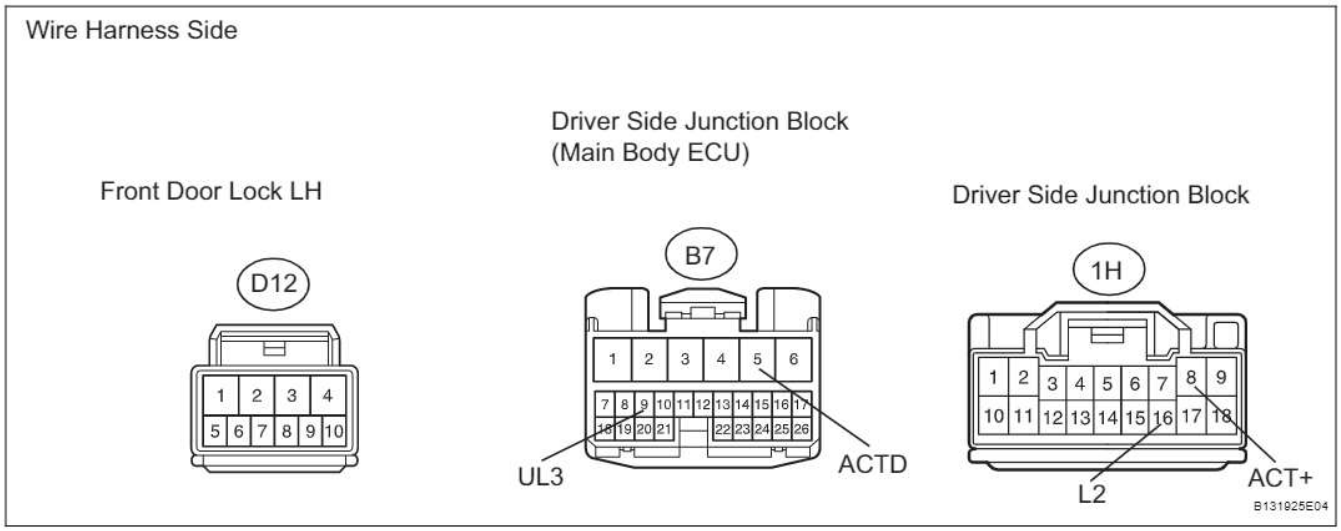
(a) Apply battery voltage to the door lock and check operation of the door lock motor.
OK

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

NG → REPLACE FRONT DOOR LOCK LH

OK

4	CHECK WIRE HARNESS (MOTOR - DRIVER SIDE JUNCTION BLOCK, ECU AND BODY GROUND)



(a) Disconnect the D12 lock connector.
(b) Disconnect the B7 ECU connector.
(c) Disconnect the 1H junction block connector.
(d) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D12-4 - 1H-8 (ACT+)	Below 1 Ω
D12-1 - B7-5 (ACTD)	
D12-8 - B7-25 (LSWD)	
D12-9 - 1H-16 (L2)	
D12-10 - B7-9 (UL3)	
D12-7 - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE DRIVER SIDE JUNCTION BLOCK

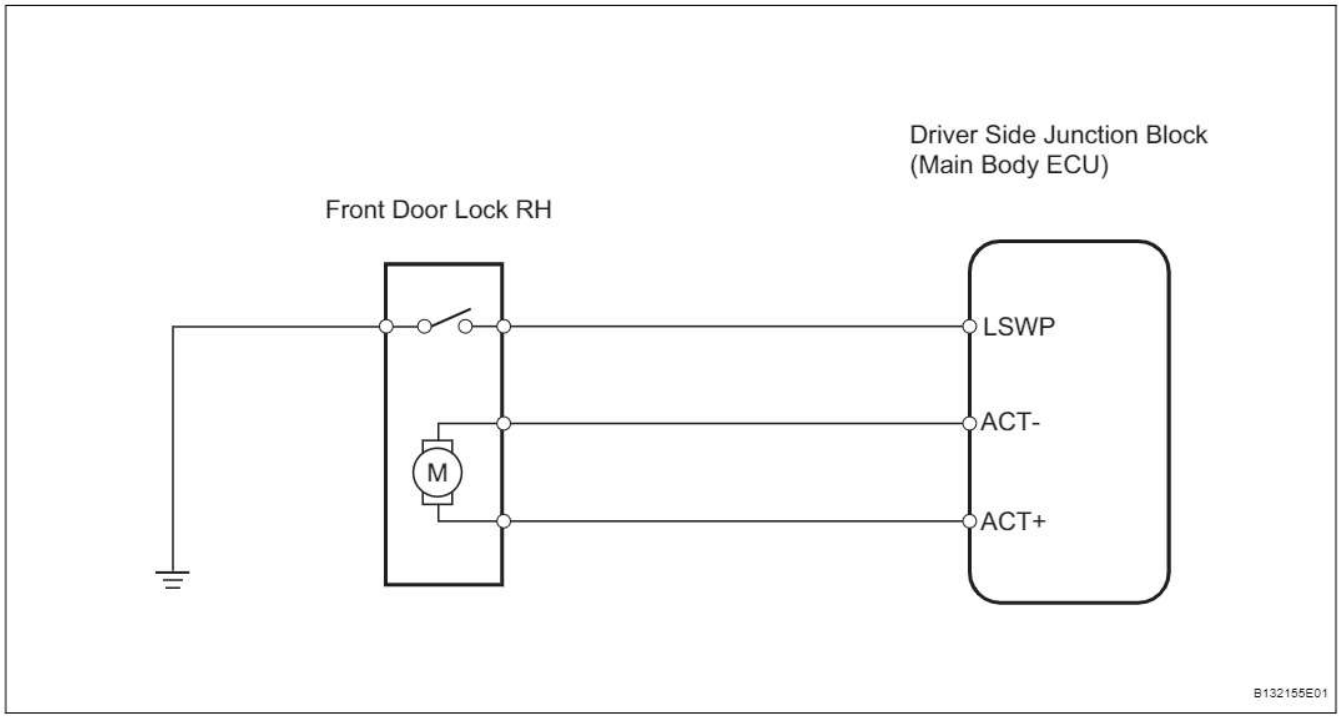
DL

Only Passenger Door LOCK / UNLOCK Functions do not Operate

DESCRIPTION

The main body ECU in the driver side junction block receives lock / unlock switch signals and activates the door lock motor according to the signals.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (DOOR LOCK MOTOR)

(a) Select the ACTIVE TEST, use the intelligent tester (with CAN VIM) to generate a control command, and then check that the power door lock operates.

Main body ECU

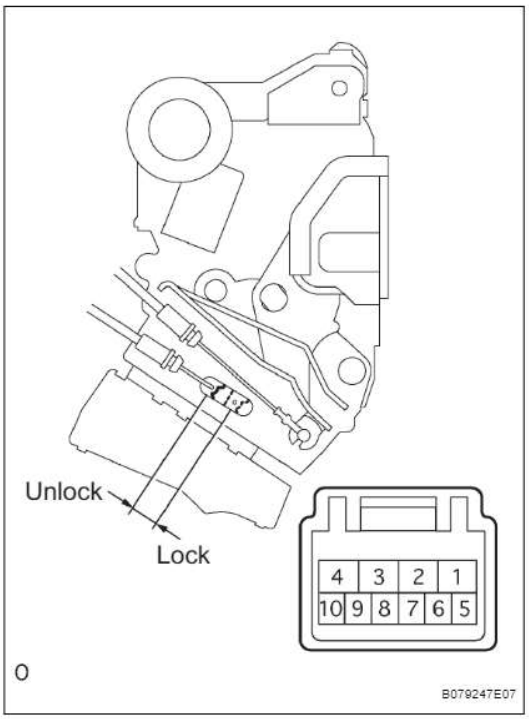
Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor for all doors LOCK / UNLOCK	All doors are closed

OK:
Doors can lock/unlock.

OK → REPLACE DRIVER SIDE JUNCTION BLOCK

NG

2 INSPECT FRONT DOOR LOCK RH (POSITION SWITCH)



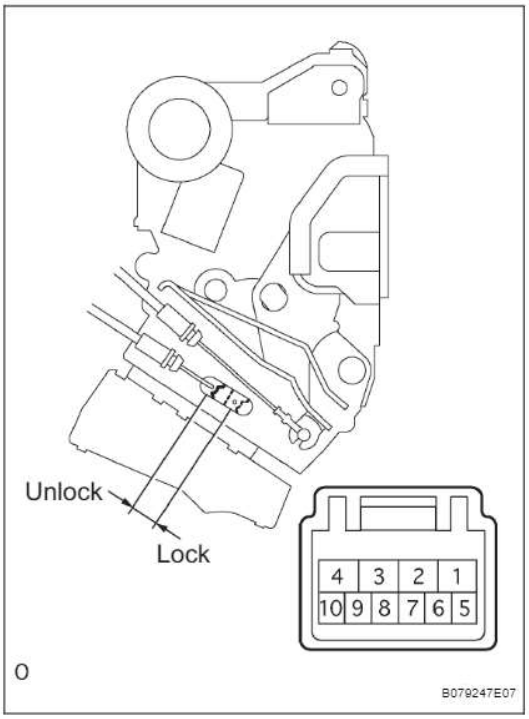
(a) Measure the resistance of the position switch.
Standard resistance

Tester Connection	Condition	Specified Condition
7 - 8	Lock	Below 1 Ω
	Unlock	10 kΩ or higher

NG → **REPLACE FRONT DOOR LOCK RH**

OK

3 INSPECT FRONT DOOR LOCK RH (DOOR LOCK MOTOR)



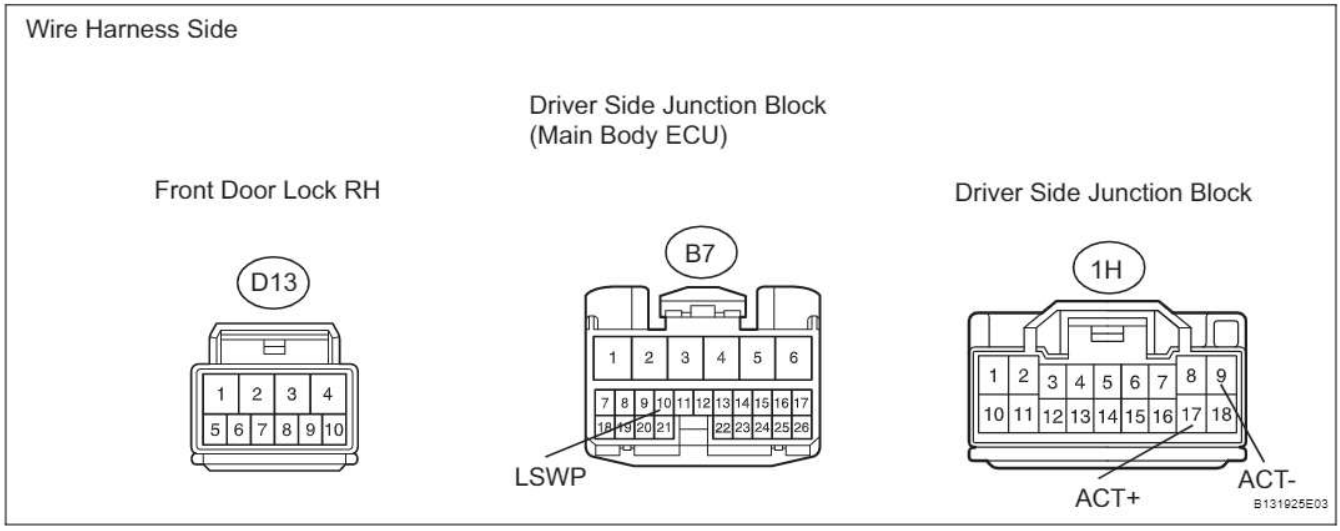
(a) Apply battery voltage to the door lock and check operation of the door lock motor.
OK

Tester Connection	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

NG → **REPLACE FRONT DOOR LOCK RH**

OK

4	CHECK WIRE HARNESS (MOTOR - DRIVER SIDE JUNCTION BLOCK, ECU AND BODY GROUND)



(a) Disconnect the D13 lock connector.
(b) Disconnect the B7 ECU connector.
(c) Disconnect the 1H junction block connector.
(d) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D13-4 - 1H-17 (ACT+)	Below 1 Ω
D13-1 - 1H-9 (ACT-)	
D13-7 - B7-10(LSWP)	
D13-8 - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE DRIVER SIDE JUNCTION BLOCK

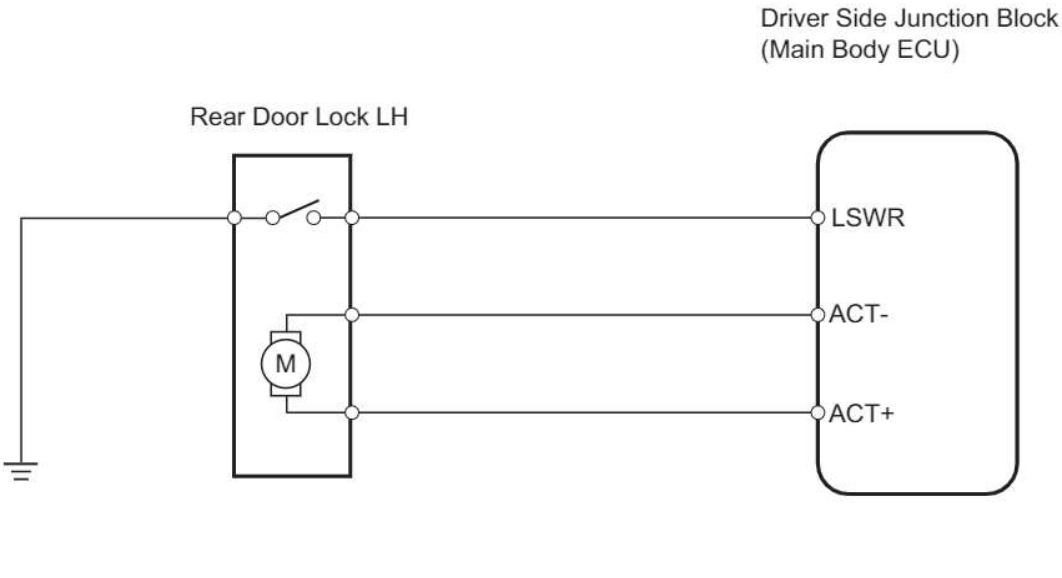
Only Rear Door LH LOCK / UNLOCK Functions do not Operate

DESCRIPTION

The main body ECU in the driver side junction block receives lock / unlock switch signals and activates the door lock motor according to the signals.

WIRING DIAGRAM

INSPECTION PROCEDURE



1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (DOOR LOCK MOTOR)

(a) Select the ACTIVE TEST, use the intelligent tester (with CAN VIM) to generate a control command, and then check that the power door lock operates.

Main body ECU

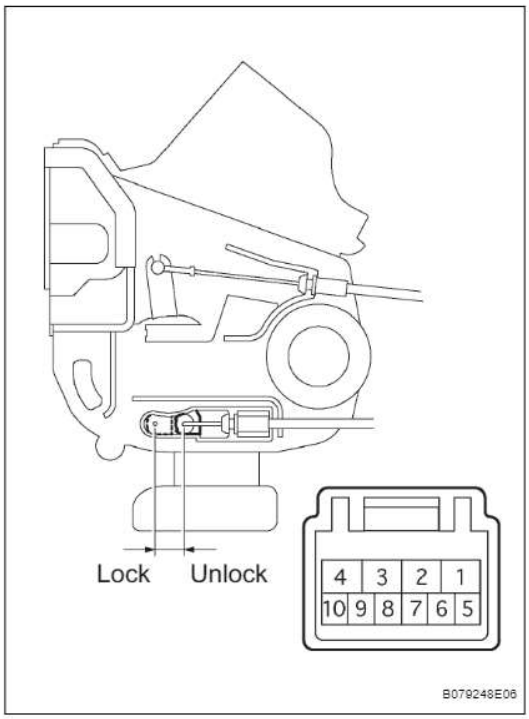
Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor for all doors LOCK / UNLOCK	All doors are closed

OK:
Doors can lock / unlock.

NG → REPLACE DRIVER SIDE JUNCTION BLOCK

OK

2 INSPECT REAR DOOR LOCK LH (POSITION SWITCH)



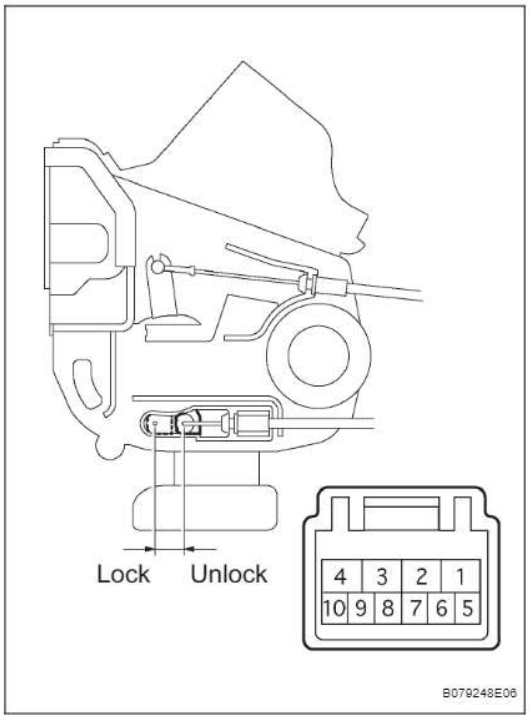
(a) Measure the resistance of the position switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
6 - 9	Lock	Below 1 Ω
	Unlock	10 kΩ or higher

NG → REPLACE REAR DOOR LOCK LH

OK

3 INSPECT REAR DOOR LOCK LH (DOOR LOCK MOTOR)



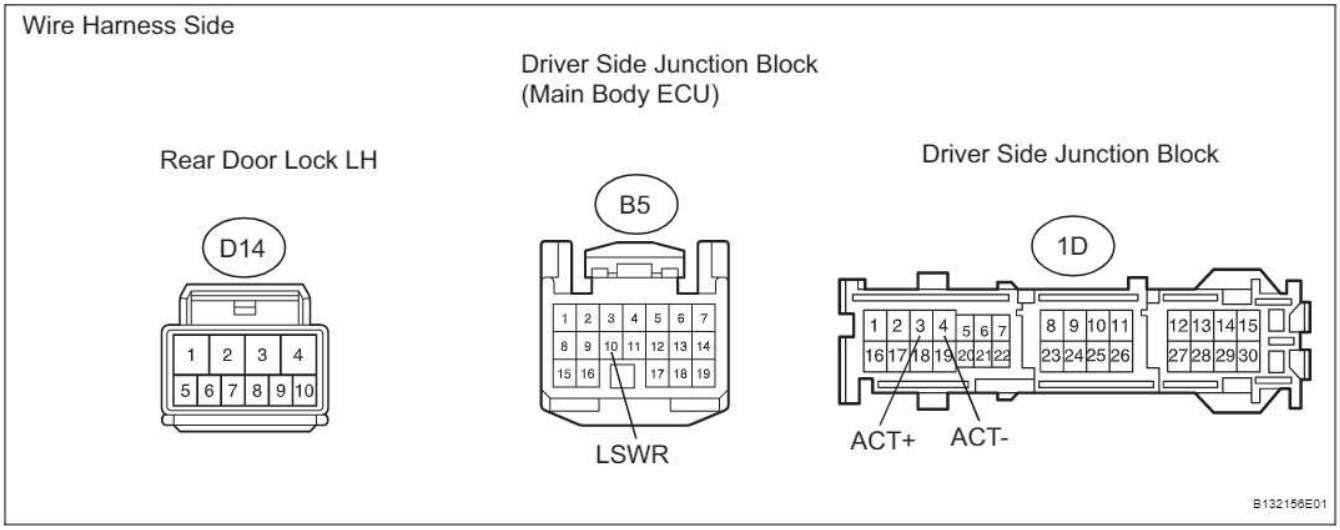
(a) Apply battery voltage to the door lock and check operation of the door lock motor.
OK

Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

NG → REPLACE REAR DOOR LOCK LH

OK

4	CHECK WIRE HARNESS (MOTOR - DRIVE SIDE JUNCTION BLOCK, ECU AND BODY GROUND)



(a) Disconnect the D14 lock connector.
(b) Disconnect the B5 ECU connector.
(c) Disconnect the 1D junction block connector.
(d) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D14-4 - 1D-3 (ACT+)	Below 1 Ω
D14-1 - 1D-4 (ACT-)	
D14-6 - B5-10 (LSWR)	
D14-9 - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

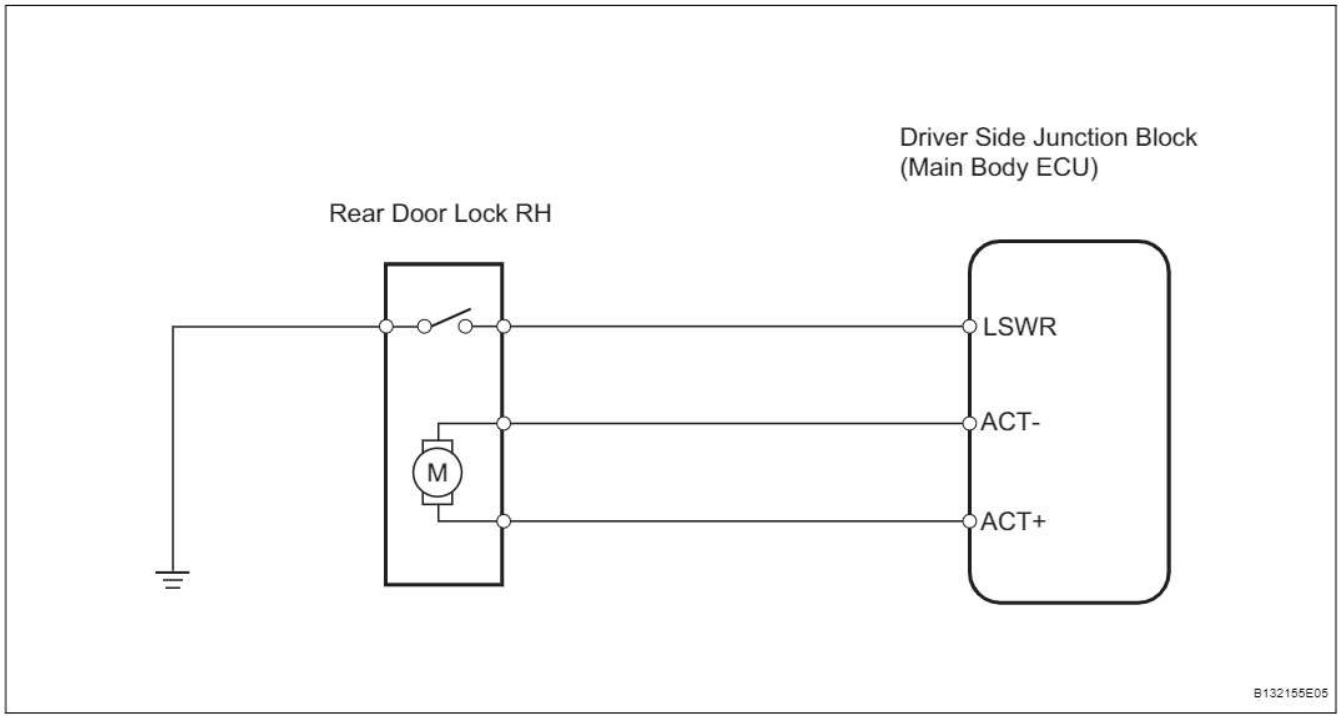
REPLACE DRIVER SIDE JUNCTION BLOCK

Only Rear Door RH LOCK / UNLOCK Functions do not Operate

DESCRIPTION

The main body ECU in the driver side junction block receives lock / unlock switch signals and activates the door lock motor according to the signals.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (DOOR LOCK MOTOR)

(a) Select the ACTIVE TEST, use the intelligent tester (with CAN VIM) to generate a control command, and then check that the power door lock operates.

Main body ECU

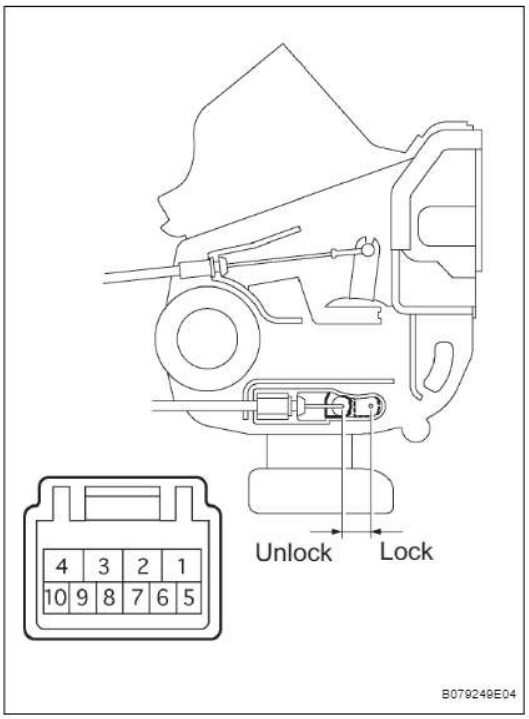
Item	Test Details	Diagnostic Note
DOOR LOCK	Operate door lock motor for all doors LOCK / UNLOCK	All doors are closed

OK:
Doors can lock / unlock.

NG → REPLACE DRIVER SIDE JUNCTION BLOCK

OK

2 INSPECT REAR DOOR LOCK RH (POSITION SWITCH)



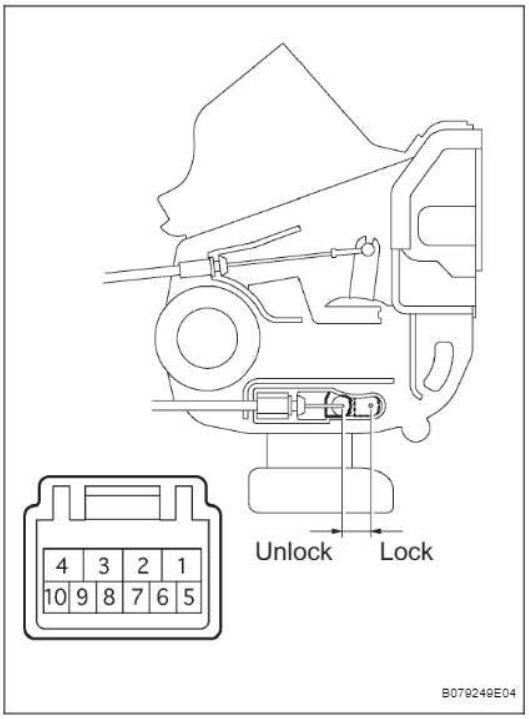
(a) Measure the resistance of the position switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
6 - 9	Lock	Below 1 Ω
	Unlock	10 kΩ or higher

NG → REPLACE REAR DOOR LOCK RH

OK

3 INSPECT REAR DOOR LOCK RH



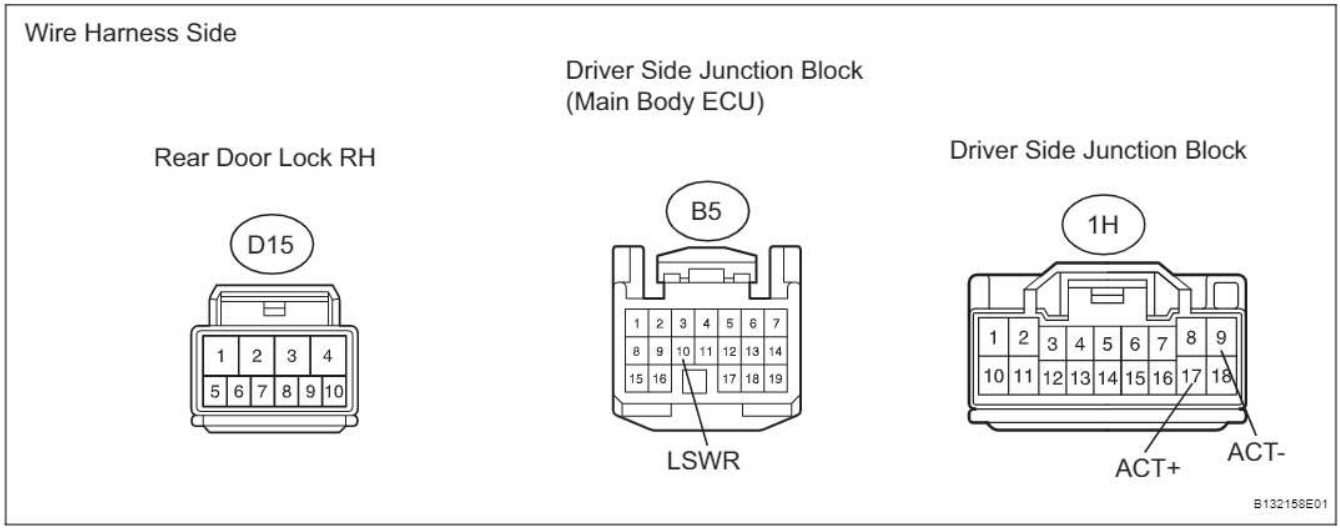
(a) Apply battery voltage to the door lock and check operation of the door lock motor.
OK

Tester Connection	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 1	Lock
Battery positive (+) → Terminal 1 Battery negative (-) → Terminal 4	Unlock

NG → REPLACE REAR DOOR LOCK RH

OK

4	CHECK WIRE HARNESS (MOTOR - DRIVE SIDE JUNCTION BLOCK, ECU AND BODY GROUND)



(a) Disconnect the D15 lock connector.
(b) Disconnect the B5 ECU connector.
(c) Disconnect the 1H junction block connector.
(d) Measure the resistance of the wire harness side connectors

Standard resistance

Tester Connection	Specified Condition
D15-4 - 1H-17 (ACT+)	Below 1 Ω
D15-1 - 1H-9 (ACT-)	
D15-6 - B5-10 (LSWR	
D15-9 - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE DRIVER SIDE JUNCTION BLOCK

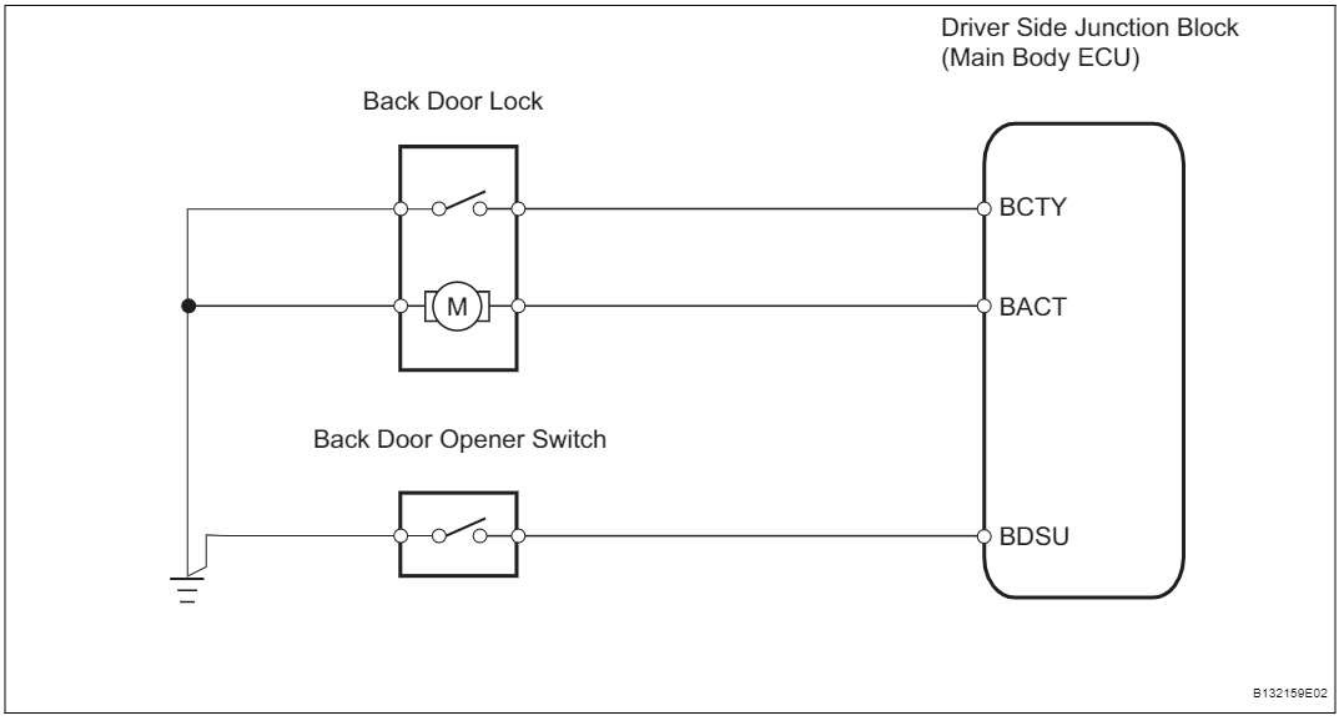
DL

Only Back Door LOCK / UNLOCK Functions do not Operate

DESCRIPTION

The driver side junction block (main body ECU) receives switch signals from the power window regulator master switch and activates the luggage compartment door lock motor according to the signals.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER (BACK DOOR OPENER SWITCH AND BACK DOOR)

(a) Check the DATA LIST for proper functioning of back door opener switch.

Main body ECU

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
B DOR OPEN SW	Back door opener switch signal / ON or OFF	OK: Back door opener switch is pushed OFF: Back door opener switch is not pushed	-

OK:

ON (Back door opener switch is pushed) appears on the screen.

(b) Check the DATA LIST for proper functioning of the back door open judgment.

Main body ECU

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
TRNK/B DOR OPEN	Back door open judgment / PROHIBT or PERMIT	PROHIBT: Back door opening is impossible PERMIT: Back door opening is possible	-

OK:

PERMIT (Back door can be opened) appears on the screen.

Result

Result	Proceed to
NG (back door opener switch)	A
NG (back door)	B
OK	C

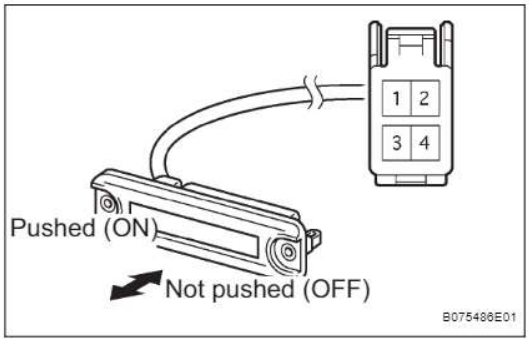
B → Go to step 4

C → Go to step 5

DL

A

2 INSPECT BACK DOOR LOCK



(a) Remove the back door opener switch.
(b) Measure the resistance of the switch.

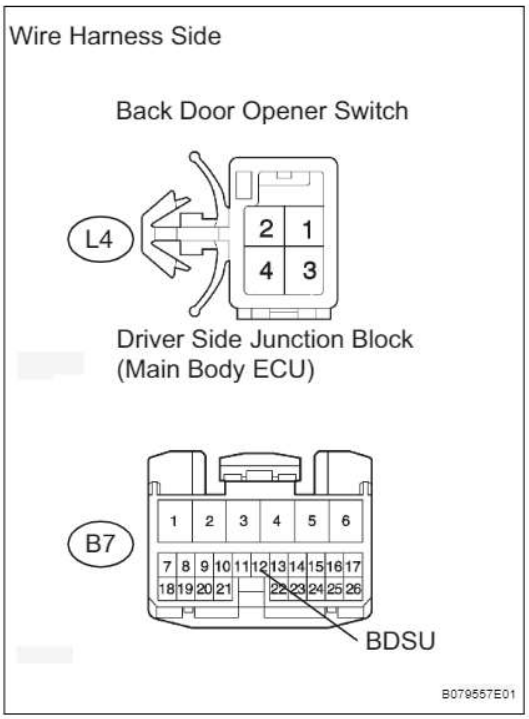
Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	Pushed (ON)	Below 1 Ω
	Not pushed (OFF)	10 kΩ or higher

NG → REPLACE BACK DOOR OPENER SWITCH

OK

3	CHECK WIRE HARNESS (SWITCH - ECU AND BODY GROUND)



(a) Disconnect the L4 switch connector.
(b) Disconnect the B7 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

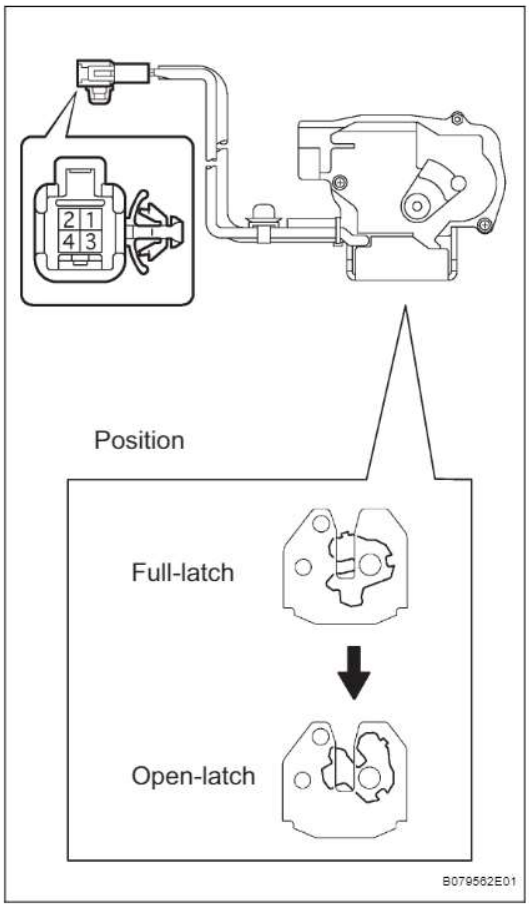
Tester Connection	Specified Condition
L4-2 - B7-12 (BDSU)	Below 1 Ω
L4-1 - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

DL

4	INSPECT BACK DOOR LOCK (DOOR LOCK MOTOR)



(a) Check operation of the back door lock.
(1) Using a screwdriver, move the latch to the full-latch position.
(2) Apply battery voltage to the door lock and check operation the latch.
OK

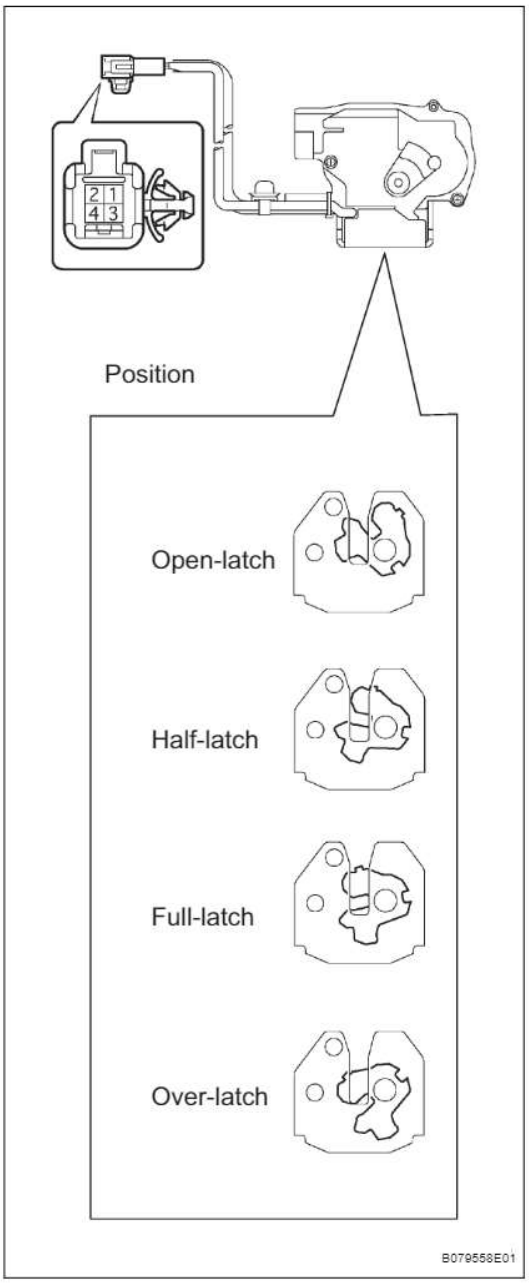
Measurement Condition	Specified Condition
Battery positive (+) → Terminal 4 Battery negative (-) → Terminal 3	Latch turns to open-latch position

NG → **REPLACE BACK DOOR LOCK**

OK

DL

5 INSPECT BACK DOOR LOCK (COURTESY SWITCH)



(a) Measure the resistance of the switch.
Standard resistance

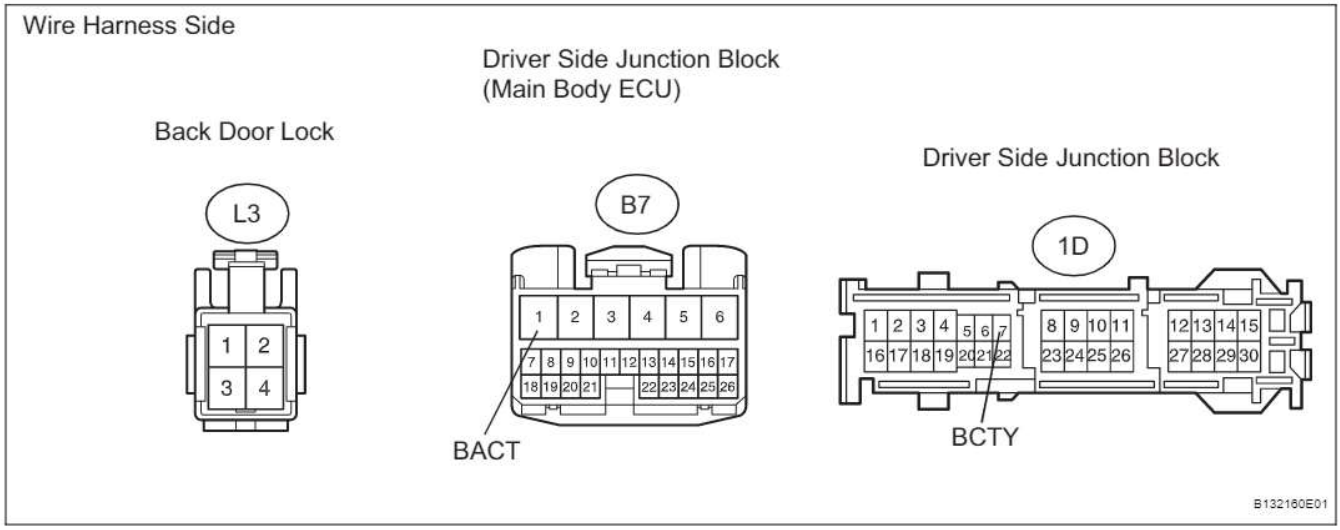
Tester Connection	Switch Condition	Specified Condition
1 - 2	Open-latch	Below 1 Ω
	Half-latch	
	Full-latch	10 kΩ or higher
	Over-latch	

NG → **REPLACE BACK DOOR LOCK**

OK

DL

6	CHECK WIRE HARNESS (MOTOR - DRIVE SIDE JUNCTION BLOCK, ECU AND BODY GROUND)



(a) Disconnect the L3 lock connector.
(b) Disconnect the B7 ECU connector.
(c) Disconnect the 1D junction block connector.
(d) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
L3-2 - 1D-7 (BCTY)	Below 1 Ω
L3-4 - B7-1 (BACT)	
L3-1 - Body ground	
L3-3 - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE DRIVER SIDE JUNCTION BLOCK

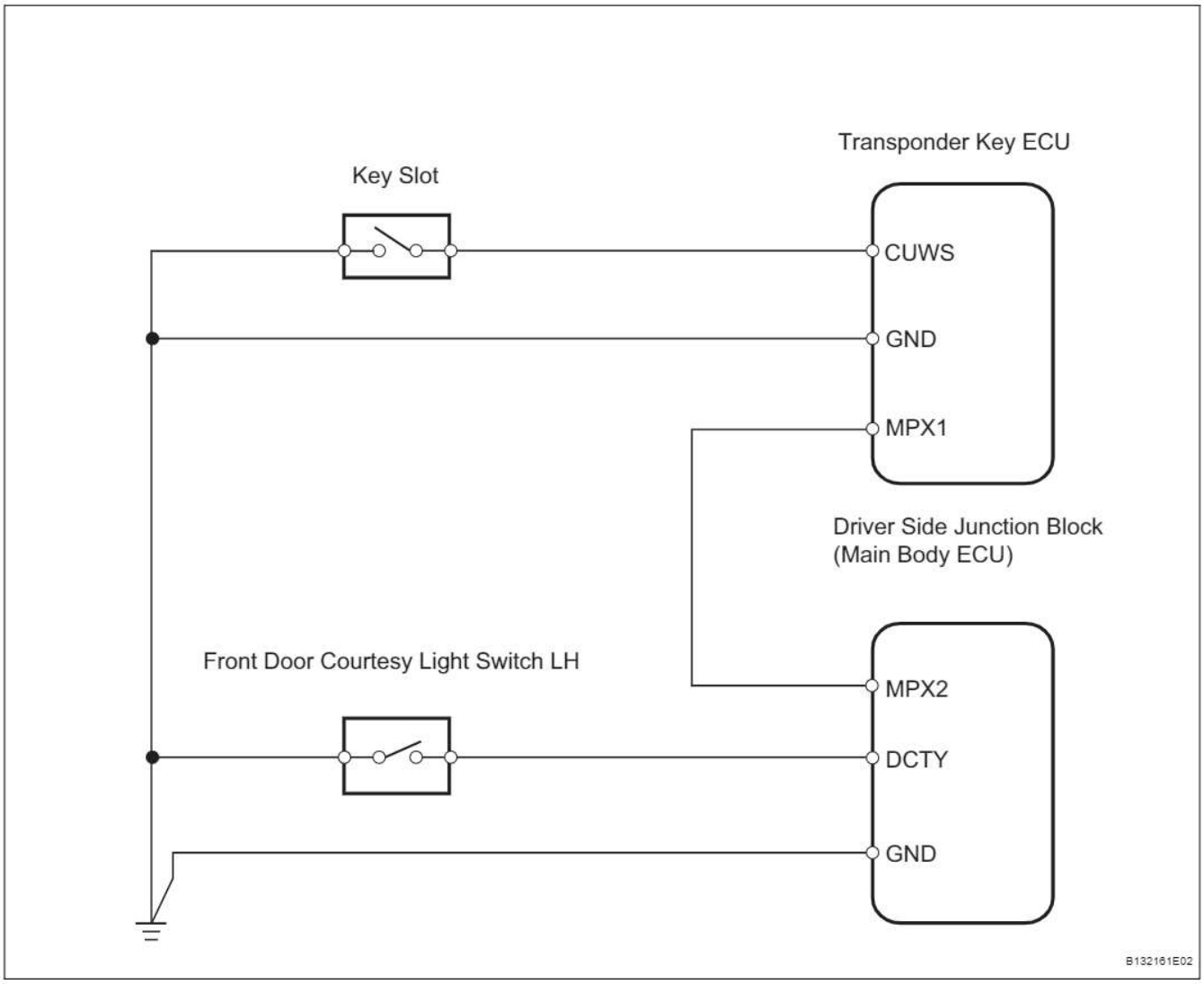
DL

Key Lock-in Prevention Function does not Work Properly (Manual Operation and Operation Interlocked with Key are Active)

DESCRIPTION

To prevent the key from being locked in the vehicle, the door control relay prevents doors from being locked by monitoring 2 switches: 1) the unlock warning switch, which turns ON when the key is inserted into the key slot; and 2) the driver side courtesy light switch, which turns ON when the driver side door is opened.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER (FRONT DOOR COURTESY LIGHT SWITCH LH)

(a) Check the DATA LIST for proper function of the driver side door courtesy switch.

Main body ECU

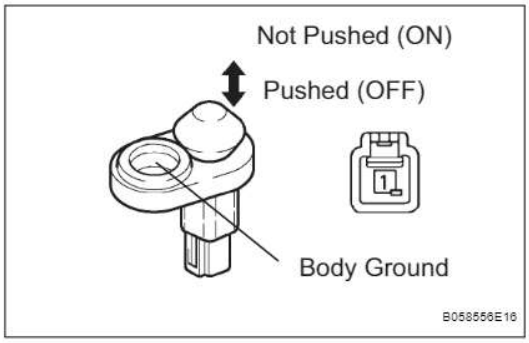
Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-

OK:
ON (driver side door is open) appears on the screen.

OK → Go to step 4

NG

2 INSPECT FRONT DOOR COURTESY LIGHT SWITCH LH



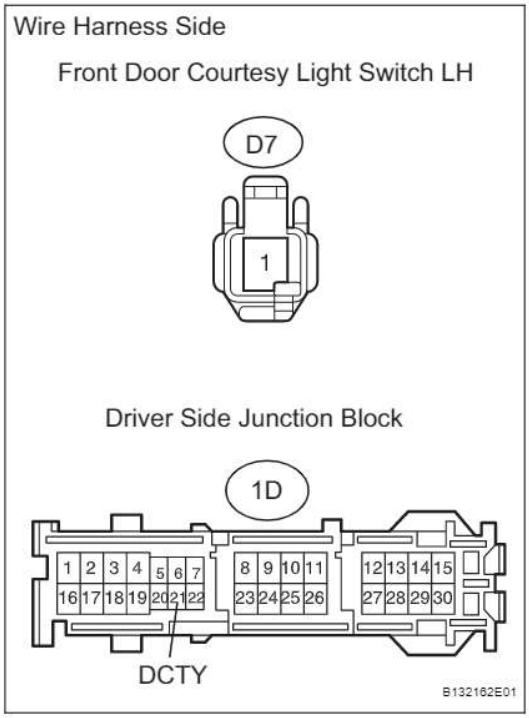
(a) Remove the front door courtesy light switch.
(b) Measure the resistance of the switch
Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - Body ground	Not pushed (ON)	Below 1 Ω
	Pushed (OFF)	10 kΩ or higher

NG → **REPLACE FRONT DOOR COURTESY LIGHT SWITCH LH**

OK

3 CHECK WIRE HARNESS (SWITCH - DRIVER SIDE JUNCTION BLOCK AND BODY GROUND)



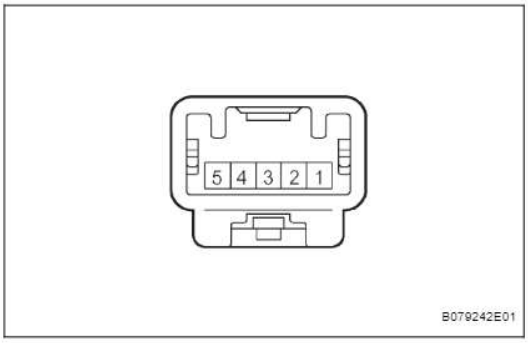
(a) Disconnect the D7 switch connector.
(b) Disconnect the 1D junction block connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
D7-1 - 1D-21 (DCTY)	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

4 INSPECT KEY SLOT



(a) Measure the resistance of the key slot.
Standard resistance

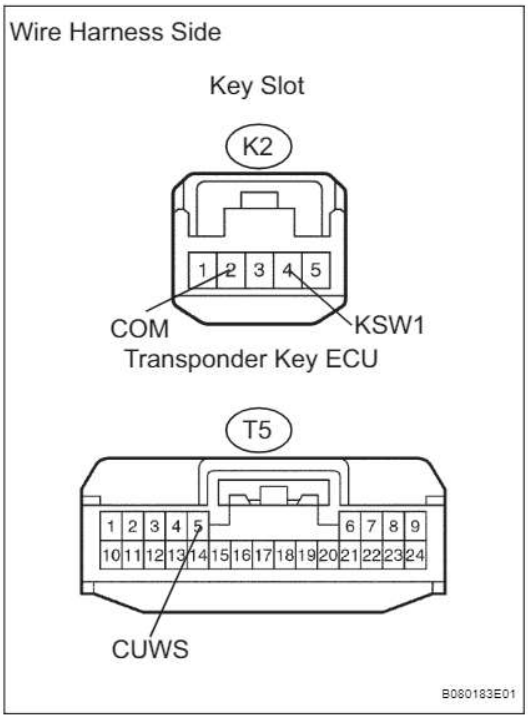
Tester Connection	Condition	Specified Condition
2 - 4	Key in key slot	Below 1 Ω
	No key in key slot	10 kΩ or higher

NG → **REPLACE KEY SLOT**

OK

DL

5 CHECK WIRE HARNESS (SLOT - ECU)



(a) Disconnect the K2 key slot connector.
(b) Disconnect the T5 ECU connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
K2-4 (KSW1) - T5-5 (CUWS)	Below 1 Ω
K2-2 (COM) - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE TRANSPONDER KEY ECU ASSEMBLY

WIRELESS DOOR LOCK CONTROL SYSTEM (w/ Smart Key System)

PRECAUTION

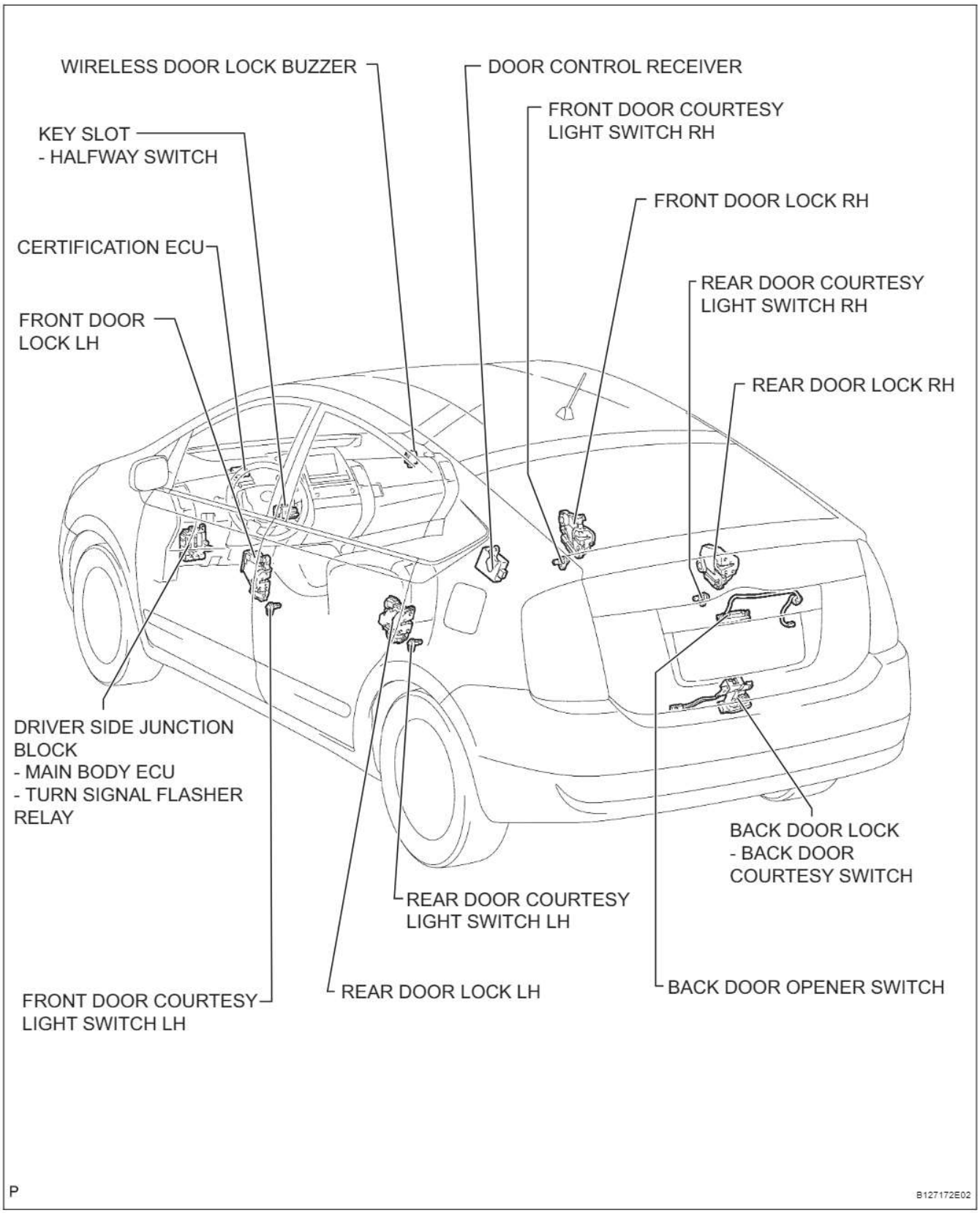
NOTICE:
For initialization:
When disconnecting the cable from the negative (-) battery terminal, initialize the following system after the cable is reconnected.

System Name	See procedure
Power Window Control System	IN-32

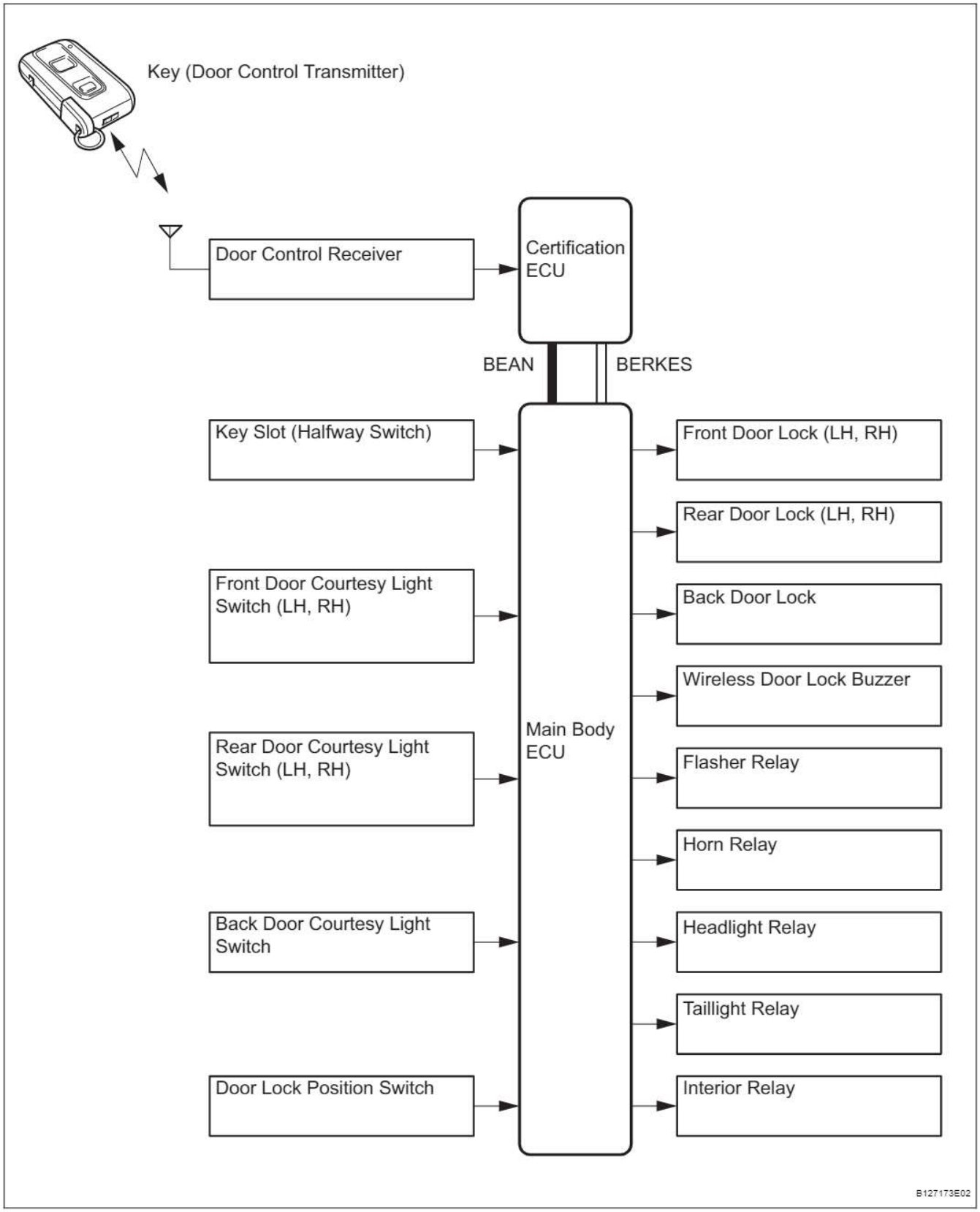
For hybrid system activation:
When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.

DL

PARTS LOCATION



SYSTEM DIAGRAM



DL

SYSTEM DESCRIPTION

1. WIRELESS DOOR LOCK CONTROL SYSTEM DESCRIPTION

(a) This system locks and unlocks the vehicle's doors remotely. The wireless door lock control system has the following features:

- The door control receiver performs the code identification process and the main body ECU operates the door lock control. A serial data link is provided for communication between the door control receiver and main body ECU.
- A key-integrated type transmitter is used and it contains the following 3 switches: the LOCK switch, UNLOCK switch and PANIC switch.
- An LED is mounted on the transmitter to show if the battery is depleted.

2. FUNCTION OF MAIN COMPONENTS

DL

Components	Functions
Door control transmitter	• Contains LOCK, UNLOCK and PANIC switches • Transmits faint electric wave (recognition codes and function codes) to door control receiver • Illumination indicator light (LED) during transmission
Door control receiver	Receives faint electric waves (recognition code and function codes) and outputs them as code data to main body ECU
Key slot (halfway switch)	Detects if key slot has key or not
Front door courtesy light switch Rear door courtesy light switch Back door courtesy light switch	Turns on when door is open and turns off when door is closed. Outputs door status (open or closed) to main body ECU.
Door lock position switch	Transmits door lock positions of each door to main body ECU

3. SYSTEM FUNCTION

(a) Door lock/unlock function:
With no key in the key slot (halfway switch is off) and all courtesy light switches off, pressing the door control transmitter's LOCK/UNLOCK switch causes the transmitter to output electric waves which are input to the door control receiver. The door control receiver converts these waves into code data in its internal high frequency circuit, and outputs the code data to the main body ECU. The door control receiver and certification ECU evaluate the code data (recognition codes and function codes) and output the evaluation results to the main body ECU. Upon receiving a door lock/unlock request signal, the main body ECU outputs a door lock/unlock control signal to each door lock. Each door lock then locks/unlocks its respective door and turns on/off its door lock position switch according to the signal.

(b) Answer-back function:
The main body ECU receives the door unlock detection switch's on/off signals and uses these signals to confirm if door control operation has completed. The main body ECU then outputs the hazard warning light's output control signal to flash the hazard warning light as an answer-back and wireless door lock buzzer signals to cause the wireless door buzzer to sound as an answer-back.

(c) Panic function:
When the door control transmitter's PANIC switch is pressed, the door control receiver and certification ECU evaluate the code data (recognition codes and function codes) from the door control transmitter in the same way as when the LOCK/UNLOCK switch is pressed. Upon receiving a theft deterrent alarm control signal from the certification ECU, the main body ECU actuates a built-in relay to causer the security horn to sound, as well as transmit several kinds of warning signals (hazard warning light control signal, vehicle horn warning control signal, headlight warning signal and taillight warning signal) in order to output a theft deterrent alarm.

(d) The wireless door lock control system has the following functions.

Function	Outline
All door unlock function	Pressing LOCK switch locks all doors
All door unlock function (for 2 step unlock operation)	Pressing UNLOCK switch once will unlock driver side door. Pressing UNLOCK switch again within 3 seconds will unlock remaining doors.
Answer-back function	• Hazard warning lights flash once when doors are locked, and flash twice when doors are unlock to inform that operation has been completed • Wireless door lock buzzer sounds once when doors are locked and sounds twice when doors are unlocked to inform that operation has been completed
Panic function	Holding down PANIC switch sets off theft deterrent alarm, which consists of sounding horn, and flashing headlights, taillights and hazard warning lights
Automatic lock function	If no doors are opened within 30 seconds after they are unlocked by wireless door lock remote control, all doors will lock again automatically
Repeat function	If door is not locked in response to locking operation of transmitter, main body ECU will output lock signal after 1 second
Illuminated entry function	With all doors locked, pressing door unlock switch causes room light to illuminate simultaneously with unlocking operation
Security function	Sends signal as rolling code
Transmitter recognition code registration function	Enables 4 modes for registering (writing and storing) transmitter recognition codes in EEPROM, which is built into main body ECU
Self-diagnosis	If system has malfunction, main body ECU sets DTC in its memory

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the wireless door lock control system.
- *: Use the intelligent tester.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding

NEXT

3	INSPECT COMMUNICATION FUNCTION OF LARGE-SCALE MULTIPLEX COMMUNICATION SYSTEM (BEAN)*

(a) Using the intelligent tester, check if the Multiplex Communication System (MPX) is functioning normally (see page MP-16).

Result:

Result	Proceed to
MPX DTC is not output	A
MPX DTC is output	B

B → **Go to MULTIPLEX COMMUNICATION SYSTEM**

A

4	CHECK FOR DTC*

(a) Check for DTCs (see page DL-107) and note any codes that are output.
(b) Delete the DTC.
(c) Recheck for DTCs. Try to prompt the DTC by simulating the original activity that the DTC suggests.

Result:

Result	Proceed to
DTC does not reoccur	A
DTC reoccurs	B

B → **Go to step 7**

A

5	PROBLEM SYMPTOMS TABLE

Result:

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B → Go to step 7

A

6	OVERALL ANALYSIS AND TROUBLESHOOTING*

(a) Operation check (see page DL-61)
(b) DATA LIST / ACTIVE TEST (see page DL-70)
(c) Terminals of ECU (see page DL-66)
(d) Inspection (see page DL-217)

NEXT

7	ADJUST, REPAIR OR REPLACE

NEXT

8	CONFIRMATION TEST

NEXT

END

OPERATION CHECK

1. NOTES WHEN CHECKING

(a) Wireless door LOCK/UNLOCK function:
This function operates only when the following 4 conditions are met.
- No key is inserted into the key slot.
- All the doors are closed.
- The power door lock control system is functioning normally.
- Key is not within the key detection area.

HINT:
The UNLOCK function operates even when one of the doors is open.

(b) Panic function:
This wireless control function operates only when the following condition is met.
- The power switch must be OFF.

HINT:
The key can be inserted. However the power switch must be OFF.

(c) The wireless transmitter operating range differs depending on the situation.
- The operating range differs depending on the user, the way the transmitter is held and the location.
- In certain areas, the operating range will be reduced due to the vehicle body shape and the influence of the surrounding environment.
- Since the transmitter uses faint electric waves, the operating range might be shortened if noise or strong electric waves occur in the area where the transmitter is used. Or, the transmitter may not function.
- When the battery weakens, the operating range is reduced or the transmitter may not function.

HINT:
If the transmitter has been left in a place that is exposed to direct sunlight, such as on the instrument panel, the battery may weaken or other problem may occur.

2. WIRELESS DOOR LOCK CONTROL FUNCTIONS

HINT:
- The switches described below transmit signals and are built into the door control transmitter.
- The operating range must be taken into account while checks are being made.

(a) Make sure the vehicle is in a condition where the wireless door lock control function can be operated (see above).

(b) Check basic functions:
- Check that the transmitter's LED illuminates 3 times when each switch is pressed 3 times.

HINT:
If the LED does not illuminate when the switch has been pressed 3 times or more, the battery may be depleted.

- Check that all doors (including the back door) lock when the LOCK switch is pressed.
- Check that only the driver side door unlocks when the UNLOCK switch is pressed once, and that the remaining doors unlock when the UNLOCK switch is pressed again within 3 seconds.

(c) Check the chattering prevention function:
- Check that pressing a switch will result in the switch's operation occurring only once; and when the switch is held down, the operation is not repeated continuously. Also, make sure that when the switch is pressed at intervals of approximately 1 second, the switch's operation activates once for every press of the switch.

(d) Check the automatic locking function:
- Check that if all of the doors are unlocked with the UNLOCK switch and none of the doors are opened or locked within approximately 30 seconds, the door automatically relocks.
- Check that if all of the doors are unlocked with the UNLOCK switch and a door is opened or locked within approximately 30 seconds, the automatic locking function does not operate.

(e) Check the switch operation fail-safe function:
- Check that the doors cannot be locked by a transmitter switch while the key is in the key slot. However, this does not apply when the system is in recognition code registration mode.

(f) Check the operation stop function when a door is open or not completely closed:
- Check that if a door is open or not completely closed, the doors cannot be locked by the LOCK switch.

(g) Check the repeat function:
- Check that if the LOCK switch is pressed while the movement of the driver side door control knob (in the unlocked state) is restricted, the repeat function attempts to lock all of the doors again 2 seconds later.

(h) Check the answer-back function:
- When the LOCK switch is pressed, confirm the simultaneous occurrence of all the hazard warning lights flashing once, the buzzer sounding once and all the doors locking.
- When the UNLOCK switch is pressed, confirm the simultaneous occurrence of all the hazard warning lights flashing twice, the buzzer sounding twice and the driver side door unlocking.

DL

- When UNLOCK switch is pressed again within 3 seconds, conform the simultaneous occurrence of all the hazard warning lights flashing twice, the buzzer sounding twice and all the doors unlocking.

(i) Check the illuminated entry function:
- When all the doors are locked, pressing the UNLOCK switch causes the room light (when the light switch is in the DOOR position) to illuminate simultaneously with the unlock operation.
- Check that the room light turns off in approximately 15 seconds if doors have not been opened.

(j) Check the panic function:
(1) Check that if PANIC switch is held down for 0.8 seconds or more, the theft deterrent alarm function sounds the horn and flashes the headlights and taillights for 60 seconds. And, with the theft alarm function active, check if pressing any switch on the transmitter causes the horn to stop sounding and the headlights and taillights to stop flashing.

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH INTELLIGENT TESTER (REFERENCE)

HINT:

The following items can be customized.

NOTICE:

- **When the customer requests a change in a function, first make sure that the functions can be customized.**
- **Be sure to record the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is set to the default setting.**

Wireless door lock control system:

Display (Items)	Default	Contents	Setting
OPEN DOOR WARN (Door ajar warning function	ON	If door is not completely closed and transmitter LOCK switch is pressed, this function sounds buzzer for 10 seconds	ON / OFF
WIRLS BUZZ OPER (Buzzer answer-back for wireless door lock operation)	ON	Function that makes wireless buzzer sound for answer-back when transmitter LOCK/UNLOCK switch is pressed	ON / OFF
ALARM FUNCTION (Panic function)	ON	Function that operates theft deterrent alarm when transmitter PANIC switch transmitter is held 0.8 seconds.	ON / OFF
UNLOCK/2OPER (Wireless unlock operated twice)	ON	Function that unlocks driver side door when UNLOCK switch on transmitter is pressed once, and unlocks all doors when pressed twice. If set to OFF, pressing UNLOCK switch once unlocks all doors.	ON / OFF
AUTO LOCK DELAY (Auto lock time)	30s	This function controls amount of time from unlocking doors to automatic re-locking function	30s / 60s
HAZARD ANS BACK (Hazard answer-back for wireless door lock operation)	ON	When LOCK switch on transmitter is pressed, this function illuminates all hazard warning lights once. When UNLOCK switch is pressed, all hazard warning lights illuminate twice	ON / OFF

PROBLEM SYMPTOMS TABLE

HINT:

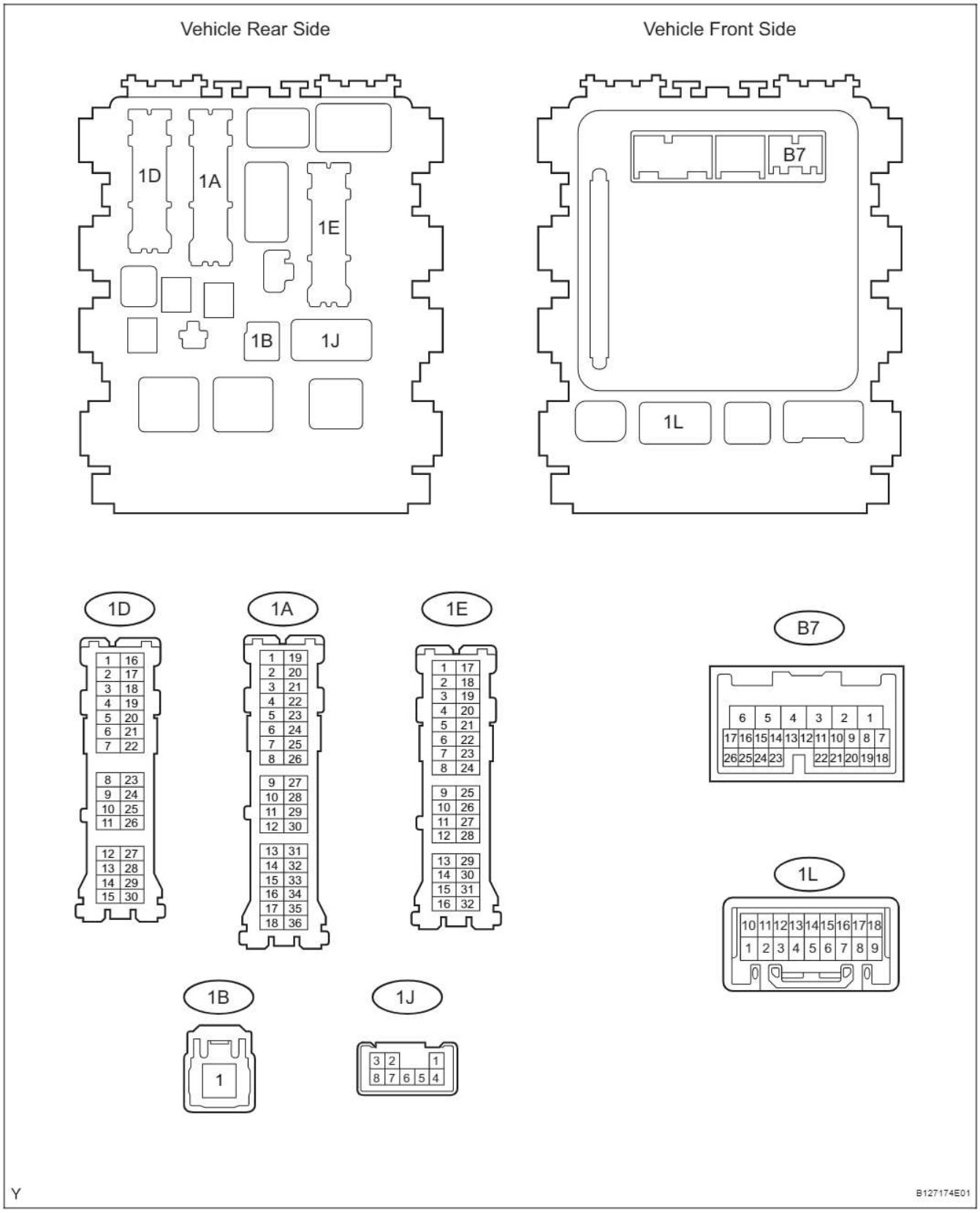
- Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Wireless door lock control system:

Symptom	Suspected area	See page
Only wireless control function is inoperative	1. Transmitter battery	DL-79
	2. Door control transmitter	DL-79
	3. Door control receiver	DL-79
	4. Key slot	DL-79
	5. Wire harness	DL-79
	6. Driver side junction block (main body ECU)	DL-79
	7. Certification ECU	DL-79
	8. Lighting system	DL-79
No answer-back	1. Wireless door lock buzzer	DL-76
	2. Lighting system	DL-76
	3. Wire harness	DL-76
	4. Driver side junction block (main body ECU)	DL-76

TERMINALS OF ECU

1. CHECK DRIVER SIDE JUNCTION BLOCK (MAIN BODY ECU)



(a) Disconnect the 1A, 1B, 1D, 1E and 1J junction block connectors.
(b) Measure the resistance and voltage of the wire harness side connectors.

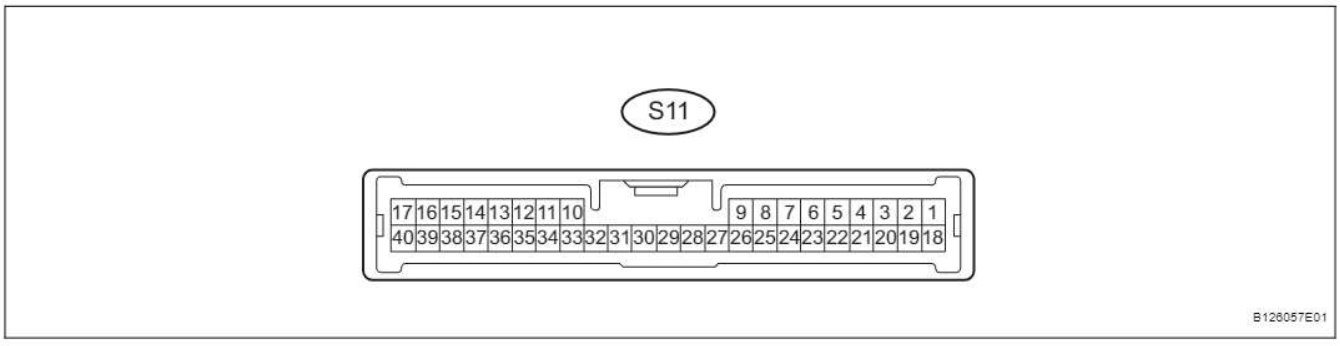
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (1E-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
SIG (1B-1) - Body ground	W - Body ground	Ignition power supply	Power switch OFF	Below 1 V
			Power switch ON (IG)	10 to 14 V
ACC (1J-5) - Body ground	G - Body ground	Ignition power supply	Power switch OFF	Below 1 V
			Power switch ON (ACC)	10 to 14 V
ECUB (1A-30) - Body ground	R - Body ground	+B (ECUB) power supply	Always	10 to 14 V
KSW (1E-23) - Body ground	Y - Body ground	Key unlock warning switch input	No key in key slot	10 kΩ or higher
			Key inserted	Below 1 Ω
KSW (1E-26) - Body ground			No key in key slot	10 kΩ or higher
			Key inserted	Below 1 Ω
DCTY (1D-21) - Body ground	V - Body ground	Driver side door courtesy switch input	Driver side door closed	10 kΩ or higher
			Driver side door open	Below 1 Ω
PCTY (1D-24) - Body ground	BR - Body ground	Passenger side door courtesy switch input	Passenger side door closed	10 kΩ or higher
			Passenger side door open	Below 1 Ω
BCTY (1D-7) - Body ground	R- Body ground	Back door courtesy switch input	Back door closed	10 kΩ or higher
			Back door open	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the 1A, 1B, 1D, 1E and 1J junction block connectors.
(d) Measure the voltage of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
HAZ (1L-17) - Body ground	Y - Body ground	Hazard warning light drive	Answer-back OFF	Below 1 V
			Answer-back ON	Pulse generation
RDA (B7-23) - Body ground	L- Body ground	Door control receiver input	Transmitter switch OFF (power switch OFF and all door closed)	Below 1 V
			Transmitter switch ON (power switch OFF and all door closed)	Pulse generation

If the result is not as specified, the junction block (ECU) have a malfunction.

2. CHECK CERTIFICATION ECU



(a) Disconnect the S11 ECU connector.

(b) Measure the resistance and voltage of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
E (S11-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
+B1 (S11-1) - E (S11-17)	R - W-B	Battery power supply	Always	10 to 14 V
IG (S11-18) - E (S11-17)	B - W-B	Ignition power supply	Power switch OFF	Below 1 V
			Power switch ON (IG)	10 to 14 V

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the S11 ECU connector.

(d) Measure the voltage of the connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
RSSI (S11-11) - E (S11-17)	V - W-B	Door control receiver output signal	Transmitter switch OFF (power switch OFF and all doors closed)	5 to 0 V
			Transmitter switch ON (power switch OFF and all doors closed)	Below 1 V
RDA (S11-10) - E (S11-17)	GR - W-B	Door control receiver input signal	Transmitter switch OFF (power switch OFF and all doors closed)	Below 1 V
			Transmitter switch ON (power switch OFF and all doors closed)	Alternating between 6 to 7 V and below 1 V
CLG1 (S11-13) - E (S11-17)	P - W-B	Driver door oscillator sensor signal	Power switch OFF (all doors open with key from outside vehicle)	Pulse generation
			Power switch ON (IG) (all doors open with key from outside vehicle)	No pulse
SEL1 (S11-23) - E (S11-17)	Y - W-B	Driver door oscillator sensor signal	Key placed at least 3 m (9.84 ft.) from driver door	10 to 14 V
			Place key close to front door outside handle RH	Below 1 V

If the result is not as specified, the ECU may have a malfunction.

DL

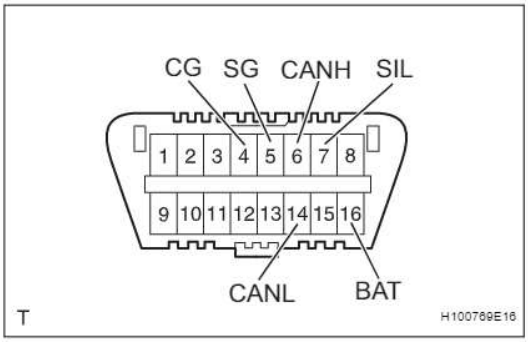
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Wireless door lock control system data and the Diagnosis Trouble Codes (DTCs) can be read through the Data Link Connector 3 (DLC3). When the system seems to be malfunctioning, use the intelligent tester to check for malfunctions and perform repairs.

2. CHECK DLC3

(a) The vehicle uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



DL

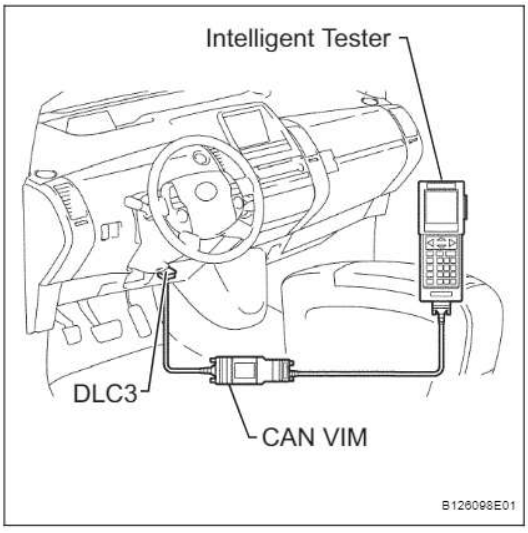
Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground		
BAT (16) - Body ground	Battery positive		11 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Power switch OFF	54 to 69 Ω
CANH (6) - Battery positive			1 kΩ or higher
CANH (6) - CG (4)			1 kΩ or higher
CANL (14) - Battery positive	LOW-level CAN bus line		1 MΩ or higher
CANL (14) - CG (4)			1 MΩ or higher

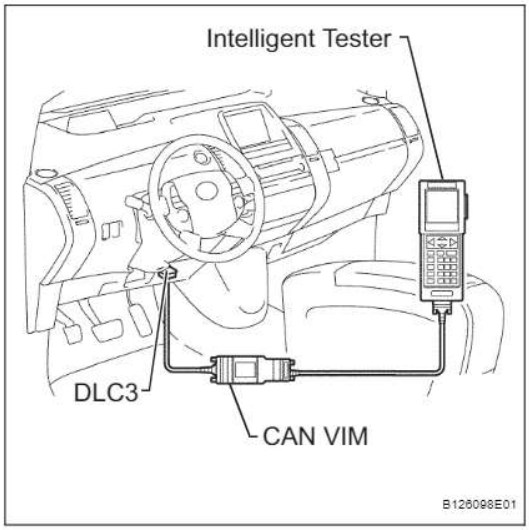
If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the power switch ON (IG) and attempt to use the tester. If the screen displays the message UNABLE TO CONNECT TO VEHICLE, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem is probably in the tester itself. Consult the Service Department listed in the tester's instruction manual.





DTC CHECK / CLEAR

1. **CHECK DTC**
   (a) Connect the intelligent tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
   (b) Turn the power switch ON (IG).
   (c) Read the DTCs by following the directions on the tester screen.
2. **CLEAR DTC**
   (a) Connect the intelligent tester (with CAN VIM) to the DLC3.
   (b) Turn the power switch ON (IG).
   (c) Erase the DTCs by following the directions on the tester screen.

DL

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Read the DATA LIST.

Main body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-
P DOR CTY SW	Passenger side door courtesy switch signal / ON or OFF	ON: Passenger side door is open OFF: Passenger side door is closed	-
Rr DOR CTY SW	Rear door courtesy switch signal / ON or OFF	ON: Either right or left door is open OFF: Both right and left doors are closed	-
D LOCK POS SW	Driver side door lock position switch signal / ON or OFF	ON: Driver side door lock is in unlock position OFF: Driver side door lock is in lock position	-
P LOCK POS SW	Passenger side door lock position switch signal / ON or OFF	ON: Passenger side door lock is in unlock position OFF: Passenger side door lock is in lock position	-
Rr LOCK POS SW	Rear door lock position switch signal / ON or OFF	ON: Rear door lock is in unlock position OFF: Rear door lock is in lock position	-
REGIST ID CODE	Number of registered ID / Min. 0, Max. 4	Number of registered ID codes	-

Transponder key ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Halfway switch signal / ON or OFF	ON: Key is in key slot. OFF: No key is in key slot.	-

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relay, VSV, actuator, and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Perform the ACTIVE TEST according to the display on the tester.

Main body ECU:

Item	Test Details	Diagnostic Note
HAZARD	Turns turn signal flasher relay ON / OFF	-
TRUNK/BDOR OPEN	Operate back door motor ON / OFF	-
DOOR LOCK	Operate door lock motor for all doors OFF / LOCK / UNLOCK	All doors are closed

DIAGNOSTIC TROUBLE CODE CHART

Wireless door lock control system:

DTC No.	Detection Item	Trouble Area	See page
B1242	Wireless Door Lock Tuner Circuit Malfunction	- Wire Harness - Door control receiver - Certification ECU - Driver side junction block (main body ECU)	DL-72

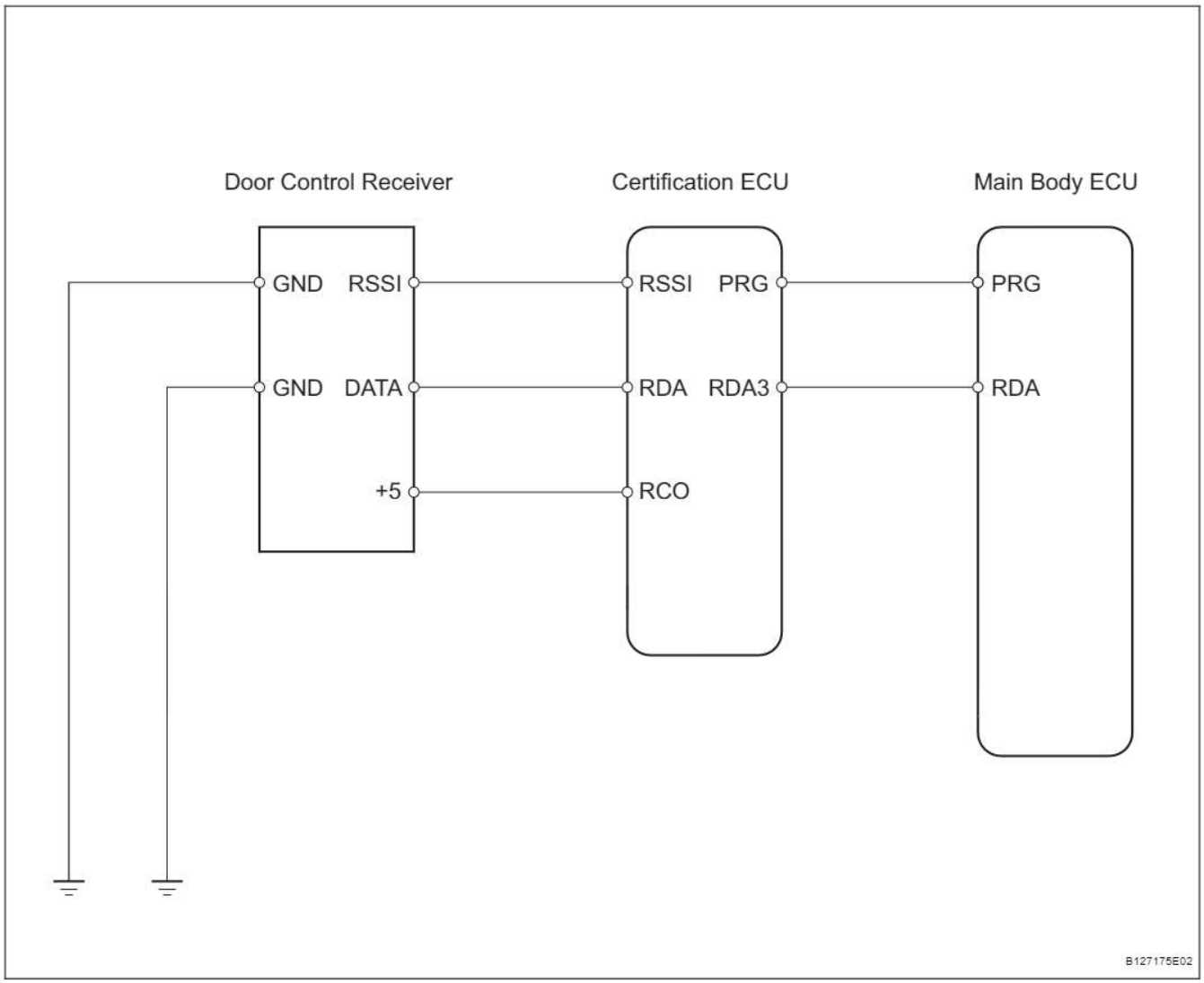
DTC	B1242	Wireless Door Lock Tuner Circuit Malfunction

DESCRIPTION

This DTC is detected when a RDA signal is not input to the door control receiver through the certification ECU within 1 second after the main body ECU outputs a PRG signal.

DTC No.	DTC Detection Condition	Trouble Area
B1242	Within 1 second after PRG signal is output from body ECU during self-diagnostic mode, corresponding RDA signal is not input.	• Door control receiver • Wire harness • Certification ECU • Driver side junction block (main body ECU)

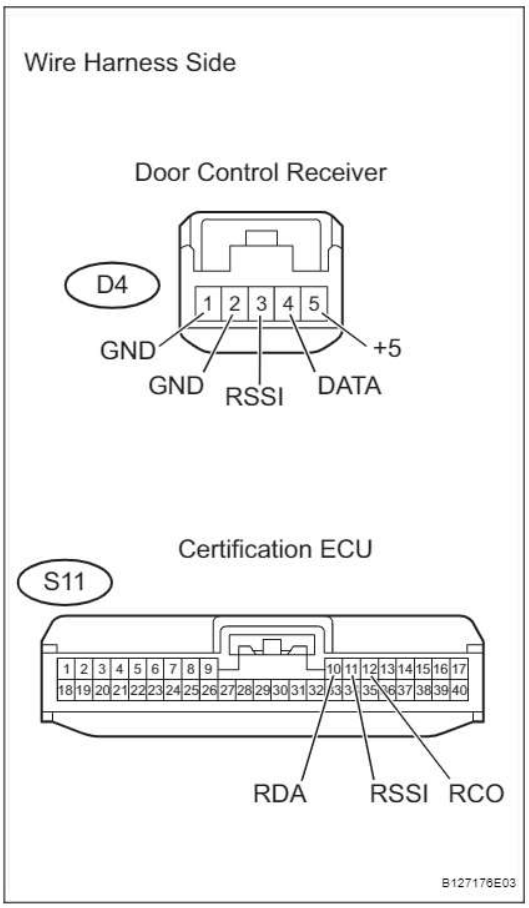
WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	CHECK WIRE HARNESS (DOOR CONTROL RECEIVER - CERTIFICATION ECU AND BODY GROUND)



(a) Disconnect the D4 receiver connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

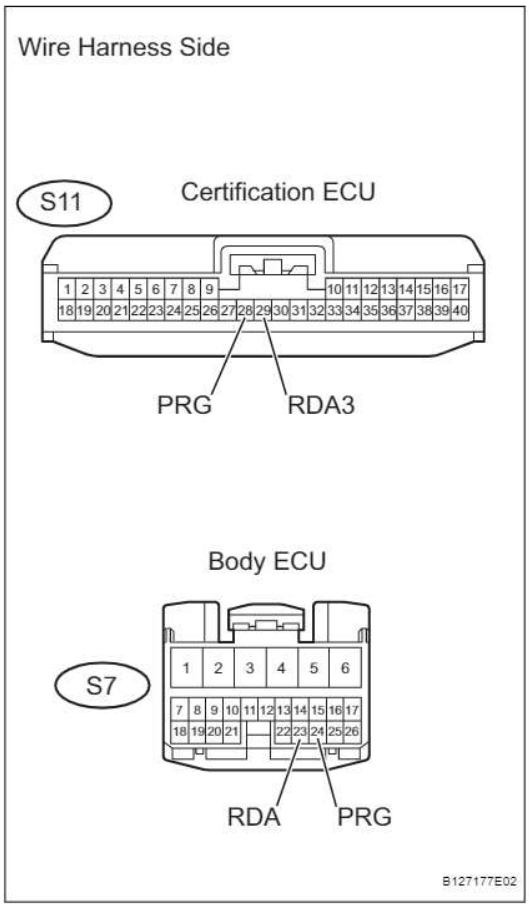
Standard resistance

Tester Connection	Specified Condition
D4-4 (DATA) - S11-10 (RDA)	Below 1 Ω
D4-3 (RSSI) - S11-11 (RSSI)	
D4-5 (+5) - S11-12 (RCO)	
D4-2 (GND) - Body ground	
D4-1 (GND) - Body ground	
D4-4 (DATA) or S11-10 (RDA) - Body ground	10 kΩ or higher
D4-3 (RSSI) or S11-11 (RSSI) - Body ground	
D4-5 (+5) or S11-12 (RCO) - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

2 CHECK WIRE HARNESS (CERTIFICATION ECU - MAIN BODY ECU AND BODY GROUND)



(a) Disconnect the S11 and B7 ECU connectors.
(b) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S11-29 (RDA3) - B7-23 (RDA)	Below 1 Ω
S11-28 (PRG) - B7-24 (PRG)	
S11-29 (RDA3) or B7-23 (RDA) - Body ground	10 kΩ or higher
S11-28 (PRG) or B7-24 (PRG) - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

3 CHECK DOOR CONTROL RECEIVER (OPERATION)

(a) Temporarily replace the door control receiver with a new or normally functioning one.
(b) Check that no DTC is output.

OK:
DTC is not output.

OK → **END (DOOR CONTROL RECEIVER IS DEFECTIVE)**

NG

4 CHECK CERTIFICATION ECU (OPERATION)

(a) Temporarily replace the certification ECU with a new or normally functioning one.
(b) Check that no DTC is output.

OK:
DTC is not output.

NG → REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

OK

END (CERTIFICATION ECU IS DEFECTIVE)

No Answer-back

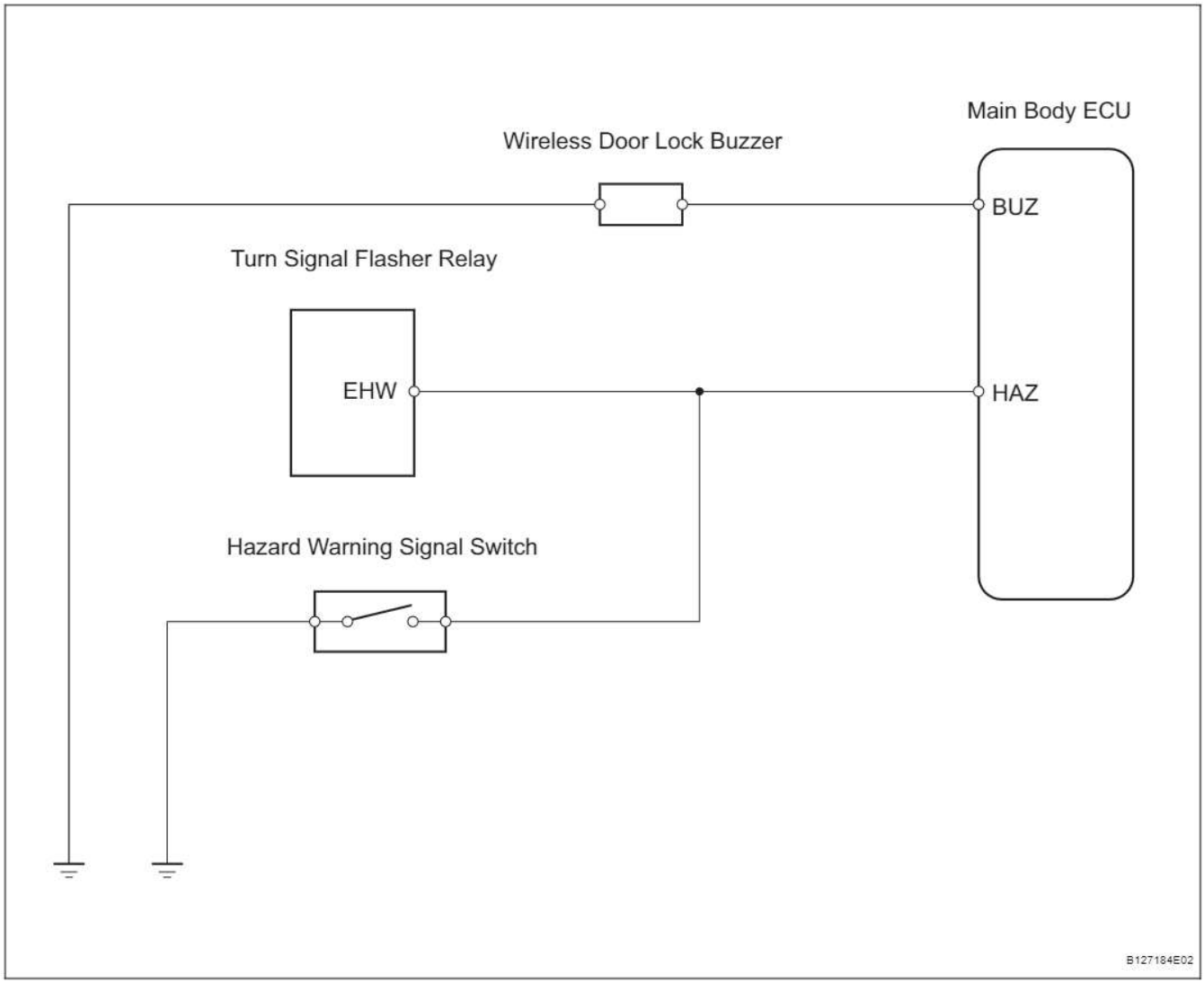
DESCRIPTION

In some cases, wireless door lock control functions are normal but the hazard warning lights and / or wireless door lock buzzer answer-back function(s) is not. In such cases, the main body ECU's hazard warning lights and wireless door lock buzzer signal outputs may be malfunctioning.

NOTICE:

Troubleshooting should be started after confirming that the answer-back function has been switched ON.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK WIRELESS DOOR LOCK CONTROL FUNCTION

(a) Check the wireless door lock control function by operating the transmitter switch.

Result:

Result	Proceed to
Wireless door lock functions are normal but hazard warning lights answer-back does not occur	A
Wireless door lock functions are normal but wireless door lock buzzer answer-back does not occur	B
Doors cannot be locked and unlocked with transmitter	C

B → Go to step 4

C → GO TO PROBLEM SYMPTOMS TABLE

DL

A

2	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (TURN SIGNAL FLASHER RELAY)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the hazard warning lights flash.

Main body ECU:

Item	Test Details	Diagnostic Note
HAZARD	Turn signal flasher relay ON / OFF	-

OK:
Turn signal flasher relay turns ON / OFF.

OK → REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

NG

3	CHECK HAZARD WARNING LIGHT

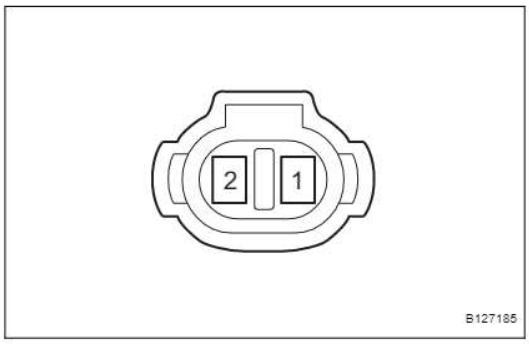
(a) Check that the hazard warning lights flash continuously when the hazard warning signal switch is pressed.
OK:
Hazard warning lights flash continuously.

NG → GO TO LIGHTING SYSTEM

OK

REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

4	INSPECT WIRELESS DOOR LOCK BUZZER



(a) Measure the resistance between terminals 1 and 2 of the buzzer.

Standard resistance:

Approximately 1 kΩ

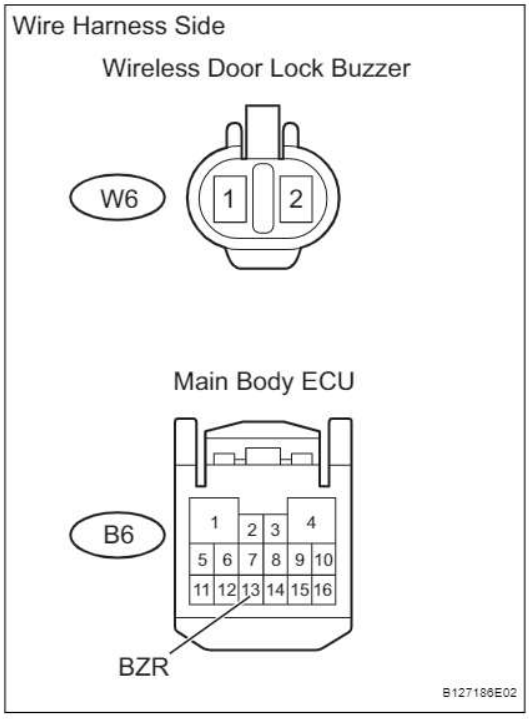
NOTICE:

- **The buzzer circuit is built into the main body ECU, not into the buzzer itself.**
- **When battery voltage is directly applied to the buzzer, the buzzer does not sound.**

NG → **REPLACE WIRELESS DOOR LOCK BUZZER**

OK

5	CHECK WIRE HARNESS (WIRELESS DOOR LOCK BUZZER - MAIN BODY ECU AND BODY GROUND)



(a) Disconnect the W6 buzzer connector.
(b) Disconnect the B6 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
W6-1 - B6-13 (BUZ)	Below 1 Ω
W6-2 - Body ground	
W6-1 - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

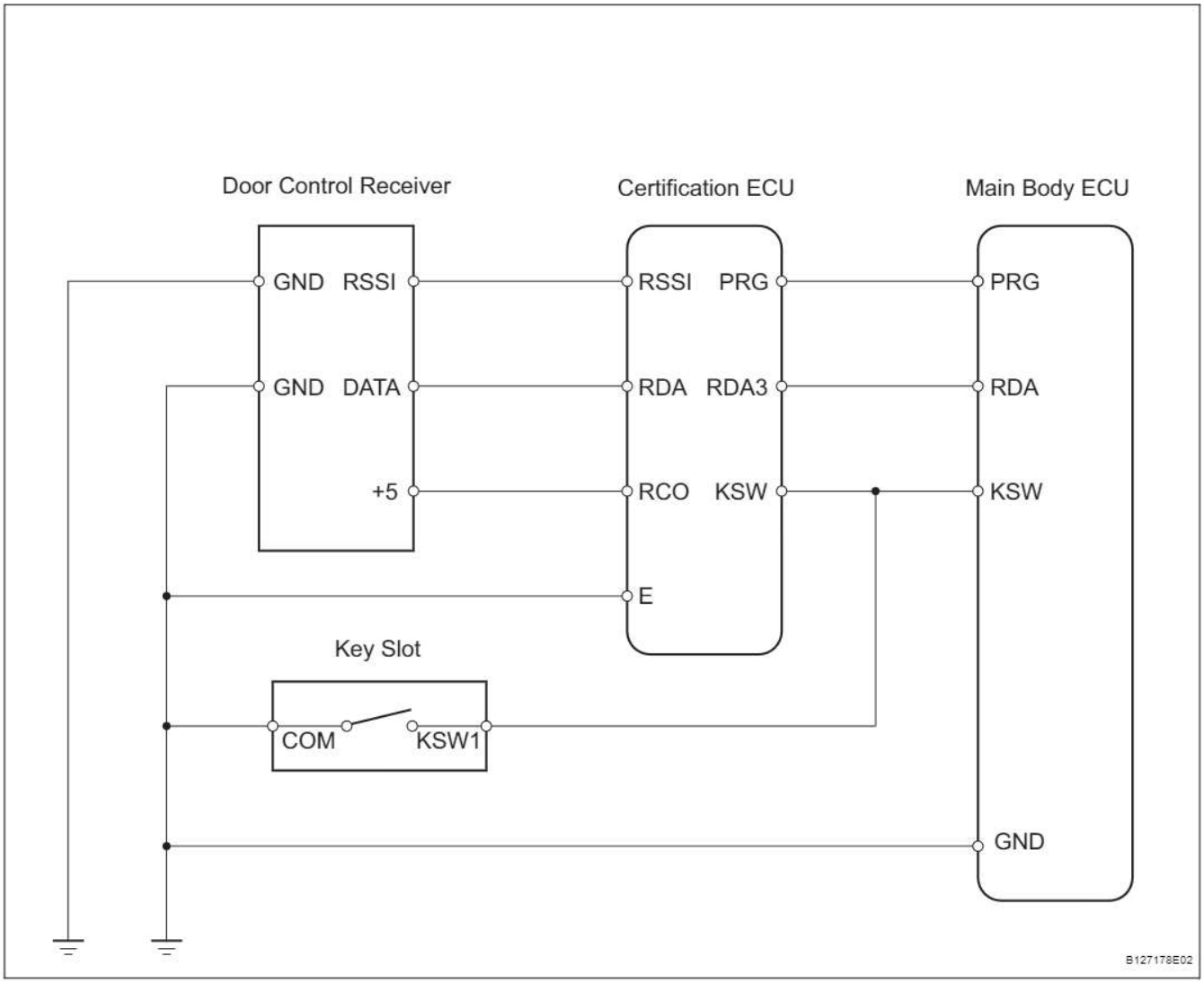
REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

Only Wireless Door Lock Control Function does not Operate

DESCRIPTION

The door control receiver receives signals from the transmitter and sends these signals to the main body ECU through the certification ECU. The main body ECU then controls all doors by sending LOCK/ UNLOCK signals to each door lock.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK WIRELESS DOOR LOCK CONTROL FUNCTIONS

(a) Refer to operation check (see page DL-61).

OK → NORMAL

NG

2	CHECK THAT TRANSMITTER LED LIGHTS UP

(a) Check that the transmitter's LED illuminates 3 times when the switch is pressed 3 times.
OK:
Transmitter's LED illuminates 3 times when switch is pressed 3 times.

NG → **Go to step 4**

OK ↓

3	CHECK WIRELESS DOOR LOCK CONTROL FUNCTIONS (STANDARD OPERATION)

(a) Check standard UNLOCK/LOCK switch operation.
NOTICE:
Standardized test procedure:
Press the transmitter switch for 1 second, directing the transmitter to the driver side door outside handle from a distance of 1 m (3.28 ft.). The transmitter should be pointed directly at the handle, i.e. at a 90° angle to the vehicle body.
OK:
Doors can be locked and unlocked with transmitter switches.

NG → **Go to step 5**

OK ↓

REPLACE DOOR CONTROL TRANSMITTER

4	CHECK TRANSMITTER BATTERY (OPERATION)

(a) Temporarily replace the transmitter battery with a new or normally functioning one (see page DL-215).
(b) Check that the doors can be locked and unlocked by using the transmitter LOCK/UNLOCK switch.
OK:
Doors can be locked and unlocked with transmitter.

NG → **REPLACE DOOR CONTROL TRANSMITTER**

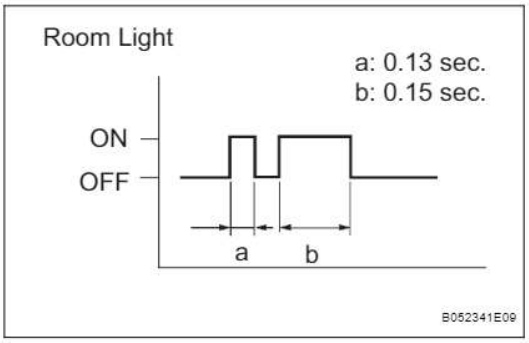
OK ↓

END (TRANSMITTER BATTERY IS DEFECTIVE)

5	SWITCH TO SELF-DIAGNOSTIC MODE

(a) Switch to self-diagnostic mode using the intelligent tester.
  (1) Connect the intelligent tester (with CAN VIM) to the DLC3.
  (2) Turn the power switch ON (IG) and push the intelligent tester main switch ON.
  HINT:
  Please refer to the intelligent tester operator's manual for further details.

(b) Switch to self-diagnostic mode by operating the key.
  (1) Put the vehicle under the vehicle's initial condition (see page DL-61), insert the key into the key slot and remove it.
  (2) Within 5 seconds of removing the key (step above), insert the key into the key slot. Then turn the power switch ON (IG) and OFF.
  (3) Within 30 seconds of switching the power switch OFF again (step above), perform the following 9 times:
  Turn the power switch ON (IG) and OFF*.
  NOTICE:
  If the change to self-diagnostic mode has failed, the system will return to normal mode.
  HINT:
  - Turning the power switch ON (IG) after step* has been completed will end self-diagnostic mode.
  - Do not lock or unlock doors during self-diagnostic mode.



(c) Check that the system has switched to self-diagnostic mode by checking the flashes of the room light (dome light or key slot light). Compare the flash patterns of the room light to the timing chart on the illustration.
OK:
Flash patterns of room light should be the same as that shown in timing chart on illustration.

NG → **Go to step 9**

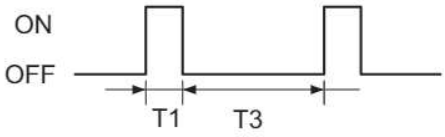
OK

6	CHECK BY SELF-DIAGNOSTIC MODE

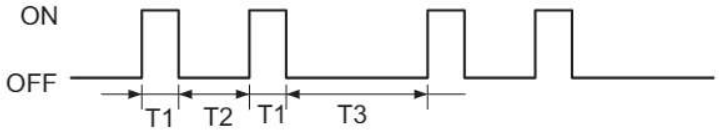
(a) Inspect the diagnosis outputs when the door control transmitter switch is held down. The diagnosis outputs can be checked by the flash patterns of the room light.

Flash Pattern of Room Light

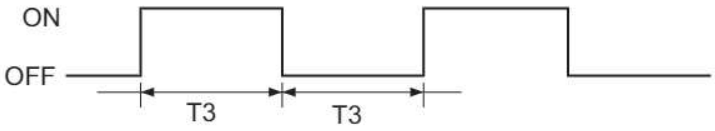
Normal Wave of LOCK Switch



Normal Wave of UNLOCK Switch



Normal Wave of PANIC Switch



Unmatched Recognition Code



Wave is being received

No Diagnosis Output

T1: 0.13 sec.
T2: 0.25 sec.
T3: 0.5 sec.

B127179E02

Result:

Result	Proceed to
Unmatched recognition code is output	A
Normal waves (patterns of room light) for LOCK, UNLOCK and PANIC switches are output	B

Result	Proceed to
No diagnosis outputs are present	C

B → REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

C → Go to step 8

A

7 REGISTER RECOGNITION CODE

(a) Check that the system can switch to rewrite mode or add mode and that a recognition code can be registered (see page DL-142).

OK:

System can switch to rewrite mode or add mode and recognition code can be registered.

NG → Go to step 15

OK

END

8 CHECK DOOR CONTROL RECEIVER (RESPONSE)

(a) Temporarily replace the door control receiver with a new or normally functioning one.

(b) Check that an unmatching recognition code is output when the door lock control transmitter switch is held down.

OK:

Unmatching recognition code is output.

NG → Go to step 13

OK

REPLACE DOOR CONTROL TRANSMITTER

9 CONFIRM INPUT METHOD OF SELF-DIAGNOSTIC MODE

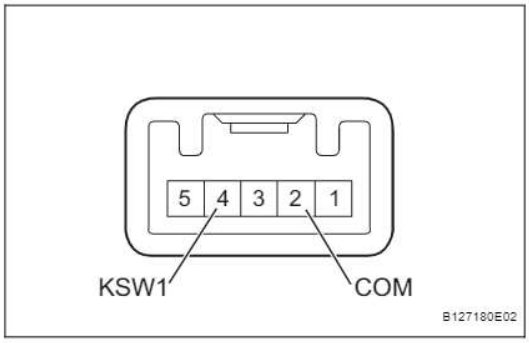
Result:

Result	Proceed to
Method for changing system self-diagnostic mode works	A
Method for changing system self-diagnostic mode does not work	B

B → Go to step 5

A

10 INSPECT KEY SLOT



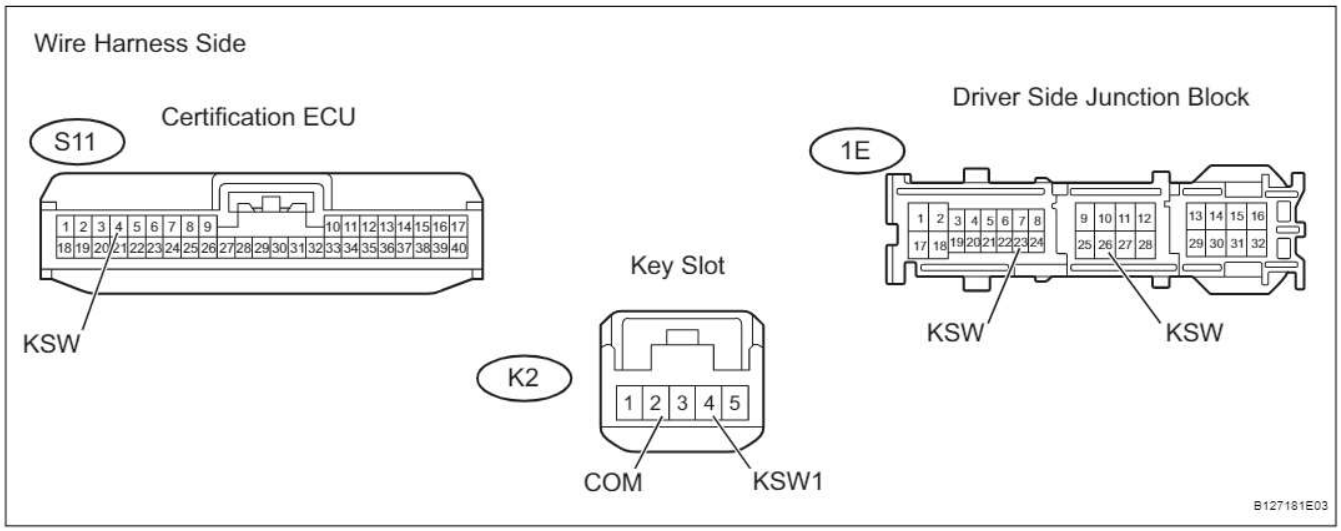
(a) Measure the resistance of the halfway switch.
Standard resistance

Tester Connection	Condition	Specified Condition
2 - 4	No key is in key slot	10 kΩ or higher
	Key is in key slot	Below 1 Ω

NG → **REPLACE KEY SLOT**

OK

11 CHECK WIRE HARNESS (CERTIFICATION ECU - DRIVER SIDE JUNCTION BLOCK AND KEY SLOT)



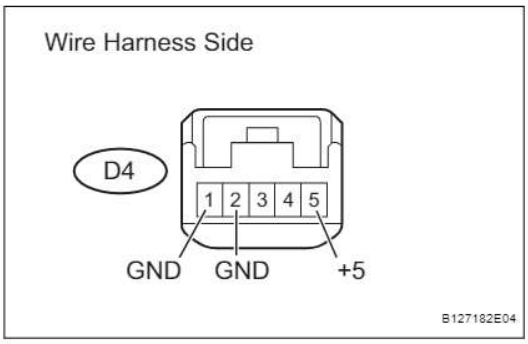
(a) Disconnect the S11 and B7 ECU connectors.
(b) Disconnect the K2 slot connector.
(c) Disconnect the 1E junction block connector.
(d) Measure the resistance of wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
S11-4 (KSW) - 1E-23 (KSW)	Below 1 Ω
K2-4 (KSW1) - 1E-26 (KSW)	
K2-2 (COM) - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

12 CHECK WIRE HARNESS (DOOR CONTROL RECEIVER - BATTERY AND BODY GROUND)



(a) Disconnect the D4 receiver connector.
(b) Measure the voltage and resistance of the wire harness side connector.

Standard voltage

Tester Connection	Specified Condition
D4-5 (+5) - Body ground	10 to 14 V

Standard resistance

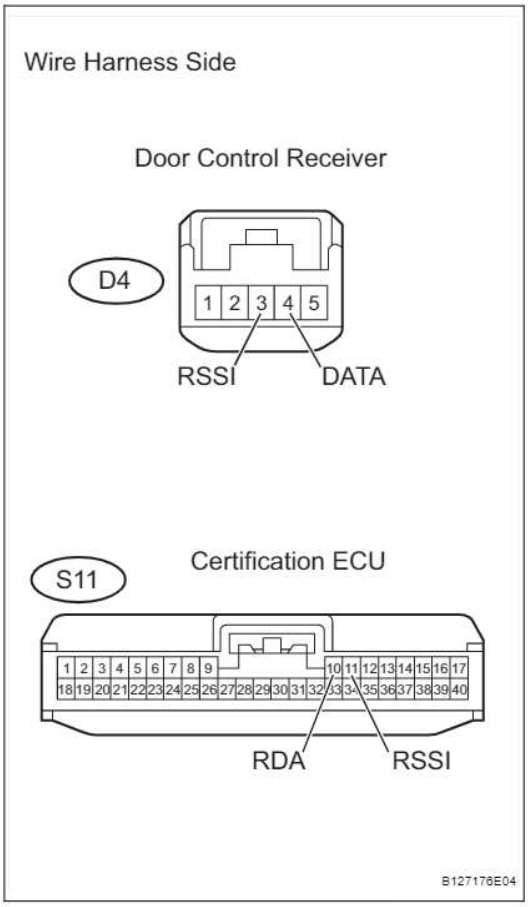
Tester Connection	Specified Condition
D4-1 (GND) - Body ground	Below 1 Ω
D4-2 (GND) - Body ground	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

DL

OK

13 CHECK WIRE HARNESS (DOOR CONTROL RECEIVER - CERTIFICATION ECU)



(a) Disconnect the D4 receiver connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

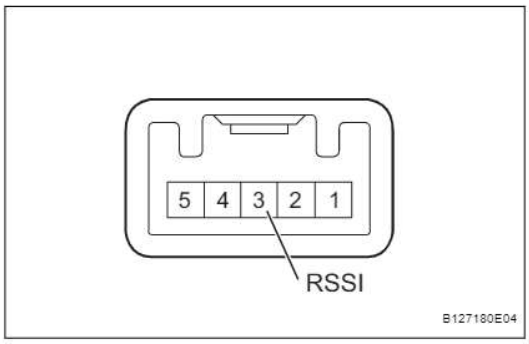
Standard resistance

Tester Connection	Specified Condition
D4-4 (DATA) - S11-10 (RDA)	Below 1 Ω
D4-3 (RSSI) - S11-11 (RSSI)	
D4-4 (DATA) - S11-10 (RDA) - Body ground	10 kΩ or higher
D4-3 (RSSI) - S11-11 (RSSI) - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

14 CHECK DOOR CONTROL RECEIVER (OUTPUT)



(a) Reconnect the D4 receiver connector.
(b) Measure the voltage of the connector.
Standard voltage

Tester Connection	Condition	Specified Condition
D4-3 (RSSI) - Body ground	Transmitter switch OFF (power switch OFF and all doors closed)	Below 1 V
D4-3 (RSSI) - Body ground	Transmitter switch ON (power switch OFF and all doors closed)	Alternating between 6 to 7 V and below 1 V

OK → Go to step 16

NG

15 CHECK DOOR CONTROL TRANSMITTER (OPERATION)

(a) Temporarily replace the door control transmitter with a new or normally functioning one.
(b) Check that the doors can be locked and unlocked by using the transmitter LOCK/UNLOCK switch.
OK:
Doors can be locked and unlocked with transmitter.

NG → REPLACE DOOR CONTROL RECEIVER

OK

END (DOOR CONTROL TRANSMITTER IS DEFECTIVE)

16 CHECK CERTIFICATION ECU (OPERATION)

(a) Temporarily replace the certification ECU with a new or normally functioning one.
(b) Check that the door can be locked and unlocked by using the transmitter LOCK/UNLOCK switch.
OK:
Doors can be locked and unlocked with transmitter.

NG → REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

OK

END (CERTIFICATION ECU IS DEFECTIVE)

WIRELESS DOOR LOCK CONTROL SYSTEM (w/o Smart Key System)

PRECAUTION

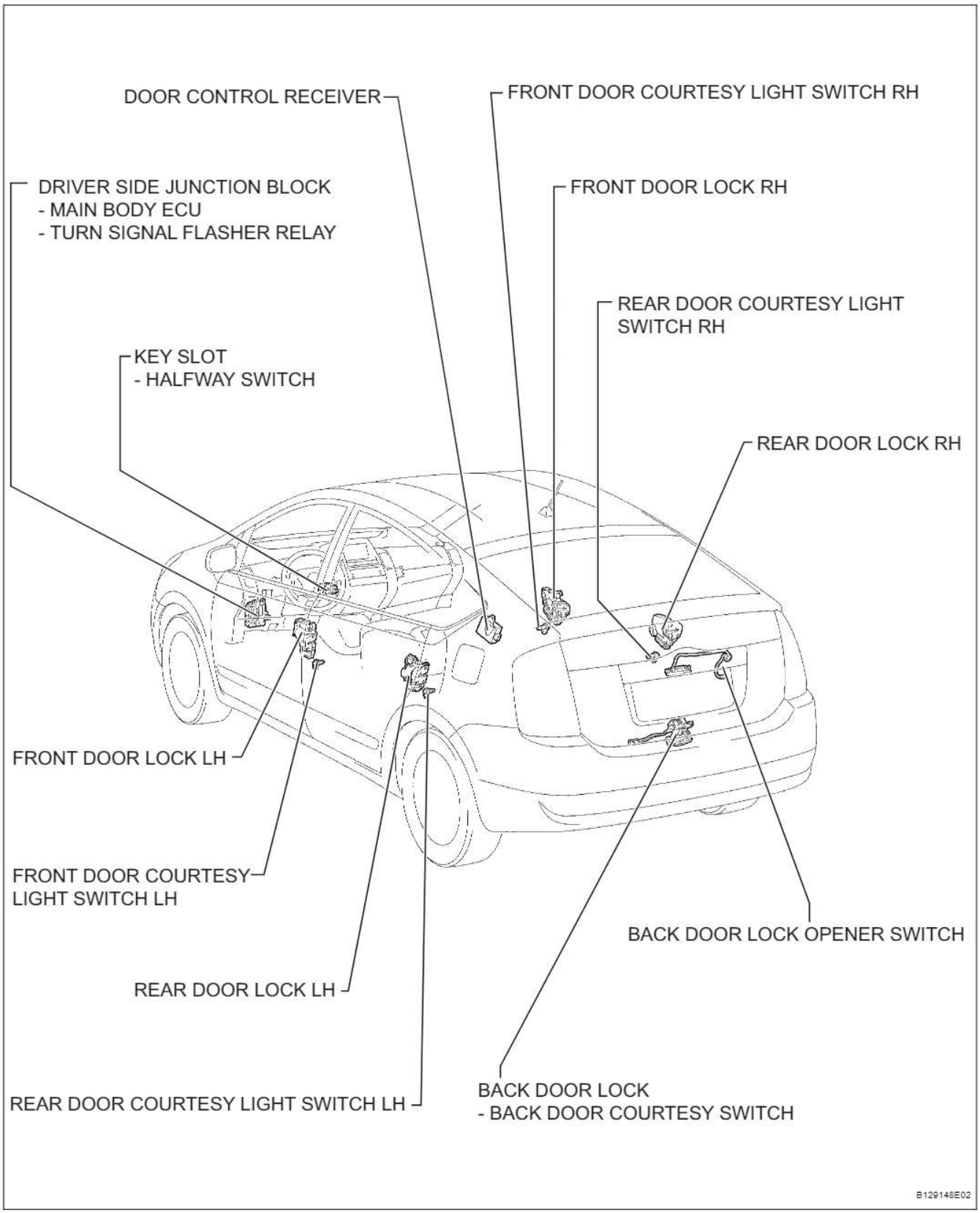
NOTICE:
For initialization:
When disconnecting the cable from the negative (-) battery terminal, initialize the following system after the cable is reconnected.

System Name	See procedure
Power Window Control System	IN-32

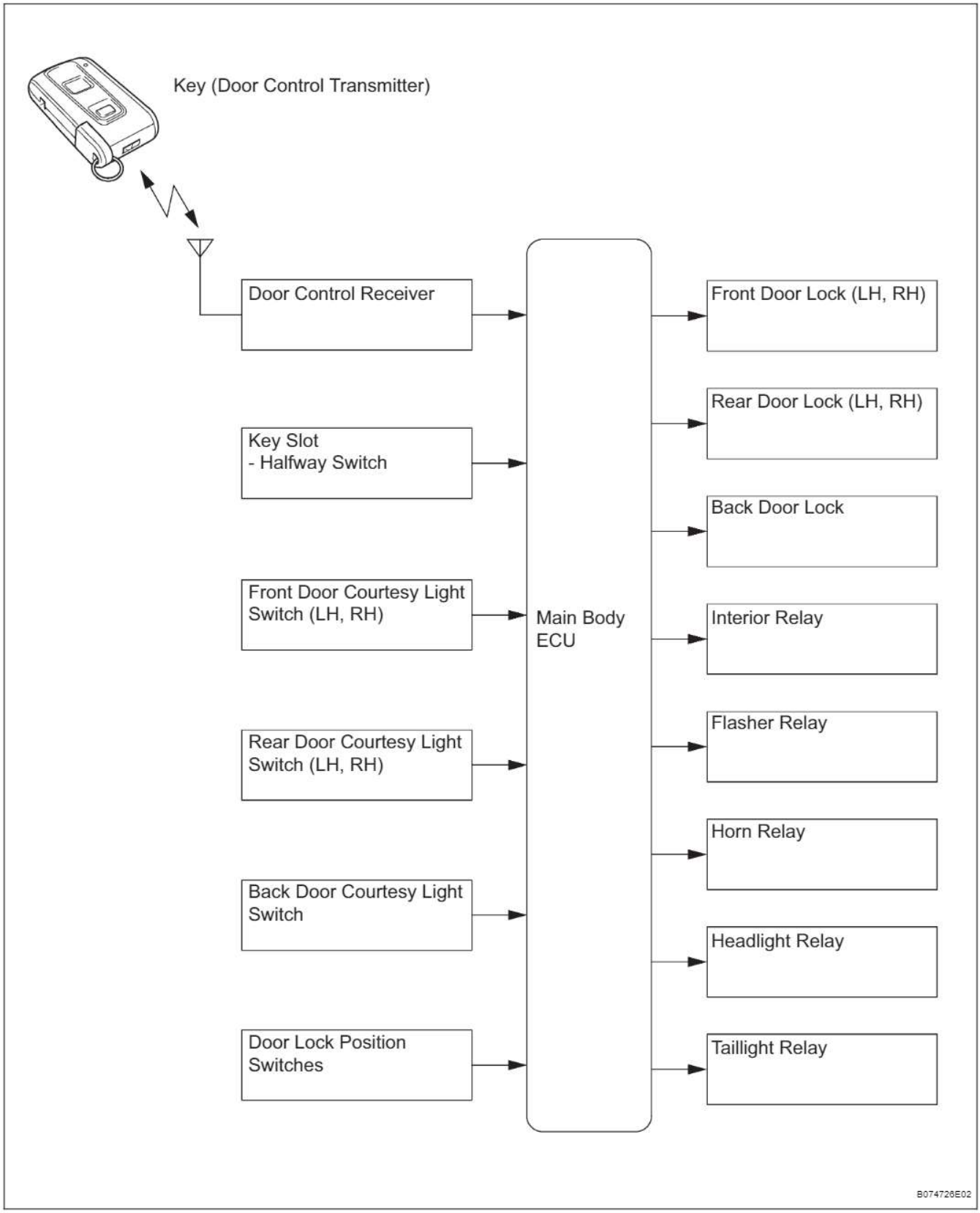
For hybrid system activation:
When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.

DL

PARTS LOCATION



SYSTEM DIAGRAM



SYSTEM DESCRIPTION

1. WIRELESS DOOR LOCK CONTROL SYSTEM DESCRIPTION

(a) This system is locks and unlocks the vehicle's doors remotely. The wireless door lock control system has the following features:

- The door control receiver performs the code identification process and the main body ECU operates the door lock control. A serial data link is provided for communication between the door control receiver and main body ECU.
- A key-integrated type transmitter is used and it contains the following 3 switches: the door lock switch, door unlock switch and panic switch.
- An LED is mounted on the transmitter to show if the battery is depleted.

2. FUNCTION OF MAIN COMPONENTS

DL

Components	Functions
Door control transmitter	• Contains LOCK, UNLOCK and PANIC switches • Transmits faint electric waves (recognition codes and function codes) to door control receiver • Illuminates indicator light (LED) during transmission
Door control receiver	Receives faint electric waves (recognition codes and function codes) and outputs them as code data to main body ECU
Key slot (halfway switch)	Detects if key slot has key or not
Front door courtesy light switch Rear door courtesy light switch Back door courtesy light switch	Turn on when door is open and turns off when door is closed. Outputs door status (open or closed) to main body ECU
Door lock position switch	Transmits door lock positions of each door to main body ECU

3. SYSTEM FUNCTION

(a) Door lock/unlock function:
With no key in the key slot (halfway switch is off) and all door courtesy light switches off, pressing the door control transmitter's LOCK/UNLOCK switch causes transmitter to output faint electric waves which are input to the door control receiver. The door control receiver converts these waves into code data in its internal high frequency circuit and outputs the code data (recognition codes and function codes) to the main body ECU. Upon receiving a door lock/unlock request signal, the main body ECU outputs a door lock/unlock control signal to each door lock. Each door lock then locks/unlocks its respective door and turns on/off its door lock position switch according to the signal.

(b) Answer-back function:
The main body ECU receives the door unlock detection switch's on/off signals and uses these signals to confirm if door control operation has completed. The main body ECU then outputs the hazard warning lights's output control signals to flash the hazard warning light as an answer-back.

(c) Panic function:
When the door control transmitter's PANIC switch is pressed, the door control receiver receives the code data (recognition codes and function codes) from the door control transmitter in the same way as when the LOCK/UNLOCK switch is pressed. Upon receiving a theft deterrent alarm control signal, the main body ECU actuates a built-in relay to cause the security horn to sound, as well as transmit several kinds of warning signals (hazard warning light control signal, vehicle horn warning control signal, headlight warning signal and taillight warning signal) in order to output a theft deterrent alarm.

(d) The wireless door lock control system has the following functions.

Function	Outline
All door unlock function	Pressing LOCK switch locks all doors.
All door unlock function (for 2 step unlock operation)	Pressing UNLOCK switch once will unlock driver side door. Pressing UNLOCK switch again within 3 seconds will unlock remaining doors.
Answer-back function	Hazard warning lights flash once when doors are locked, and flash twice when doors are unlocked to inform that operation has been completed
Panic function	Holding down PANIC switch sets off theft deterrent alarm, which consists of sounding horn, and flashing headlights, taillights and hazard warning lights
Automatic lock function	If no doors are opened within 30 seconds after they are unlocked by wireless door lock remote control, all doors will lock again automatically
Repeat function	If door is not locked in response to locking operation of transmitter, main body ECU will output lock signal after 1 second
Illuminated entry function	With all doors locked, pressing UNLOCK switch causes room light to illuminate simultaneously with unlocking again
Security function	Sends signal as rolling code
Transmitter recognition code registration function	Enables 3 modes for registering (writing and storing) transmitter recognition codes in EEPROM, which is built into main body ECU
Self-diagnosis	If system has malfunction, main body ECU sets DTC in its memory

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the wireless door lock control system.
- *: Use the intelligent tester.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding

NEXT

3	INSPECT COMMUNICATION FUNCTION OF LARGE-SCALE MULTIPLEX COMMUNICATION SYSTEM (BEAN)*

(a) Using the intelligent tester, check if the Multiplex Communication System (MPX) is functioning normally (see page MP-16).

Result:

Result	Proceed to
MPX DTC is not output	A
MPX DTC is output	B

B → **Go to MULTIPLEX COMMUNICATION SYSTEM**

A

4	CHECK FOR DTC*

(a) Check for DTCs and note any codes that are output.
(b) Delete the DTC.
(c) Recheck for DTCs. Try to prompt the DTC by simulating the original activity that the DTC suggests.

Result:

Result	Proceed to
DTC does not reoccur	A
DTC reoccurs	B

B → **Go to step 7**

A

5	PROBLEM SYMPTOMS TABLE

Result:

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B → Go to step 7

A

6	OVERALL ANALYSIS AND TROUBLESHOOTING*

(a) Operation check (see page DL-93)
(b) DATA LIST / ACTIVE TEST (see page DL-107)
(c) Terminals of ECU (see page DL-104)
(d) Inspection (see page DL-217)

NEXT

7	ADJUST, REPAIR OR REPLACE

NEXT

8	CONFIRMATION TEST

NEXT

END

OPERATION CHECK

1. NOTES WHEN CHECKING

(a) Wireless door LOCK/UNLOCK function:
This function operates only when the following 4 conditions are met.
- No key is inserted into the key slot.
- All the doors are closed.
- The power door lock control system is functioning normally.

HINT:
The UNLOCK function operates even when one of the doors is open.

(b) Panic function:
This wireless control function operates only when the following condition is met.
- The power switch must be OFF.

HINT:
The key can be inserted. However the power switch must be OFF.

(c) The wireless transmitter operating range differs depending on the situation.
- The operating range differs depending on the user, the way the transmitter is held and the location.
- In certain areas, the operating range will be reduced due to the vehicle body shape and the influence of the surrounding environment.
- Since the transmitter uses faint electric waves, the operating range might be shortened if noise or strong electric waves occur in the area where the transmitter is used. Or, the transmitter may not function.
- When the battery weakens, the operating range is reduced or the transmitter may not function.

HINT:
If the transmitter has been left in a place that is exposed to direct sunlight, such as on the instrument panel, the battery may weaken or other problem may occur.

2. WIRELESS DOOR LOCK CONTROL FUNCTIONS

HINT:
- The switches described below transmit signals and are built into the door control transmitter.
- The operating range must be taken into account while checks are being made.

(a) Make sure the vehicle is in a condition where the wireless door lock control function can be operated (see above).

(b) Check basic functions:
- Check that the transmitter's LED illuminates 3 times when each switch is pressed 3 times.

HINT:
If the LED does not illuminate when the switch has been pressed 3 times or more, the battery may be depleted.

- Check that all doors (including the back door) lock when the LOCK switch is pressed.
- Check that only the driver side door unlocks when the UNLOCK switch is pressed once, and that the remaining doors unlock when the UNLOCK switch is pressed again within 3 seconds.

(c) Check the chattering prevention function:
- Check that pressing a switch will result in the switch's operation occurring only once; and when the switch is held down, the operation is not repeated continuously. Also, make sure that when the switch is pressed at intervals of approximately 1 second, the switch's operation activates once for every press of the switch.

(d) Check the automatic locking function:
- Check that if all of the doors are unlocked with the UNLOCK switch and none of the doors are opened or locked within approximately 30 seconds, the door automatically relocks.
- Check that if all of the doors are unlocked with the UNLOCK switch and a door is opened or locked within approximately 30 seconds, the automatic locking function does not operate.

(e) Check the switch operation fail-safe function:
- Check that the doors cannot be locked by a transmitter switch while the key is in the key slot. However, this does not apply when the system is in recognition code registration mode.

(f) Check the operation stop function when a door is open or not completely closed:
- Check that if a door is open or not completely closed, the doors cannot be locked by the LOCK switch.

(g) Check the repeat function:
- Check that if the LOCK switch is pressed while the movement of the driver side door control knob (in the unlocked state) is restricted, the repeat function attempts to lock all of the doors again 2 seconds later.

(h) Check the answer-back function:
- When the LOCK switch is pressed, confirm the simultaneous occurrence of all the hazard warning lights flashing once, the buzzer sounding once and all the doors locking.
- When the UNLOCK switch is pressed, confirm the simultaneous occurrence of all the hazard warning lights flashing twice and the driver side door unlocking.

- When UNLOCK switch is pressed again within 3 seconds, conform the simultaneous occurrence of all the hazard warning lights flashing twice and all the doors unlocking.

(i) Check the illuminated entry function:
- When all the doors are locked, pressing the UNLOCK switch causes the room light (when the light switch is in the DOOR position) to illuminate simultaneously with the unlock operation.
- Check that the room light turns off in approximately 15 seconds if doors have not been opened.

(j) Check the panic function:
(1) Check that if PANIC switch is held down for 0.8 seconds or more, the theft deterrent alarm function sounds the horn and flashes the headlights and taillights for 60 seconds. And, with the theft alarm function active, check if pressing any switch on the transmitter causes the horn to stop sounding and the headlights and taillights to stop flashing.

REGISTRATION

1. DESCRIPTION OF CODE REGISTRATION

HINT:

- Recognition code registration is necessary when replacing the door control transmitter and/or the door control receiver.
- Add mode is used to register new recognition codes while retaining codes already registered. This mode is used when a new transmitter is added. If the number of registered codes exceeds 4, the previously registered codes will be erased in order, starting from the first registered code.
- Rewrite mode is used to erased all the previously registered recognition codes in order to register new recognition codes. This mode is used when the transmitter or the door control receiver is exchanged for a new one.
- Confirmation mode is used to confirm how many recognition codes have already been registered before registering any additional recognition codes.
- Prohibition mode is used to erase all the registered codes and disables the wireless door lock function. This mode is used when the transmitter is lost.
- All of the following registration procedures must be performed in order and in a continuous sequence.

DL

2. REGISTER RECOGNITION CODE (USING INTELLIGENT TESTER)

HINT:

For detailed procedures, please refer to the prompts on the tester screen. The number of currently registered codes can be checked out on the first screen of the WIRELESS REGIST.

(a) Turn the power switch ON (IG).

(b) Select the menu on the intelligent tester.

HINT:

After the following operations, proceed to the succeeding operations according to the prompts on the tester screen.

(1) Select "PRIUS" from the menu.
(2) Select "W/O SMART KEY".
(3) Select "BODY".
(4) Select "WIRELESS REGIST".

(c) Press both LOCK and UNLOCK switches between 1 to 1.5 seconds.

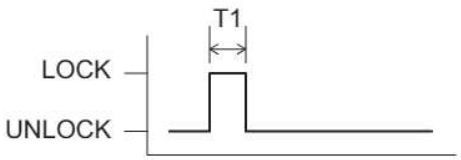
(d) Press either switch for more than 1 second within 3 seconds.

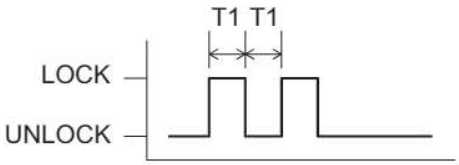
(e) Check the response to the registration completion.

Response to registration completion:

Body ECU automatically performs power door LOCK-UNLOCK operation to show whether registration has been completed correctly or not.

LOCK-UNLOCK Occurs Once	LOCK-UNLOCK Occurs Twice
Registration of recognition code has been completed.	Registration of recognition code has failed.





T1: Approx. 1 second

B111915E07

HINT:

- If the LOCK-UNLOCK operation is occurs twice, the registration of recognition code has failed. Perform the registration procedures again from beginning.
- If registering another transmitter, repeat the procedures after the tester operation. All 4 recognition codes can be registered consecutively.

(f) Perform the either of following to complete the registration of recognition codes:

- Use the intelligent tester to send completion command.
- Disconnect the intelligent tester.

3. REGISTER RECOGNITION CODE (USING SWITCH OPERATION)

(a) The following the conditions should be met.

- No key in the key slot.
- The driver side door is opened (the other doors are closed).
- The driver side door is unlocked.

(b) Insert and remove the key into / from the key slot twice (Insert → Remove → Insert → Remove) within 5 seconds.

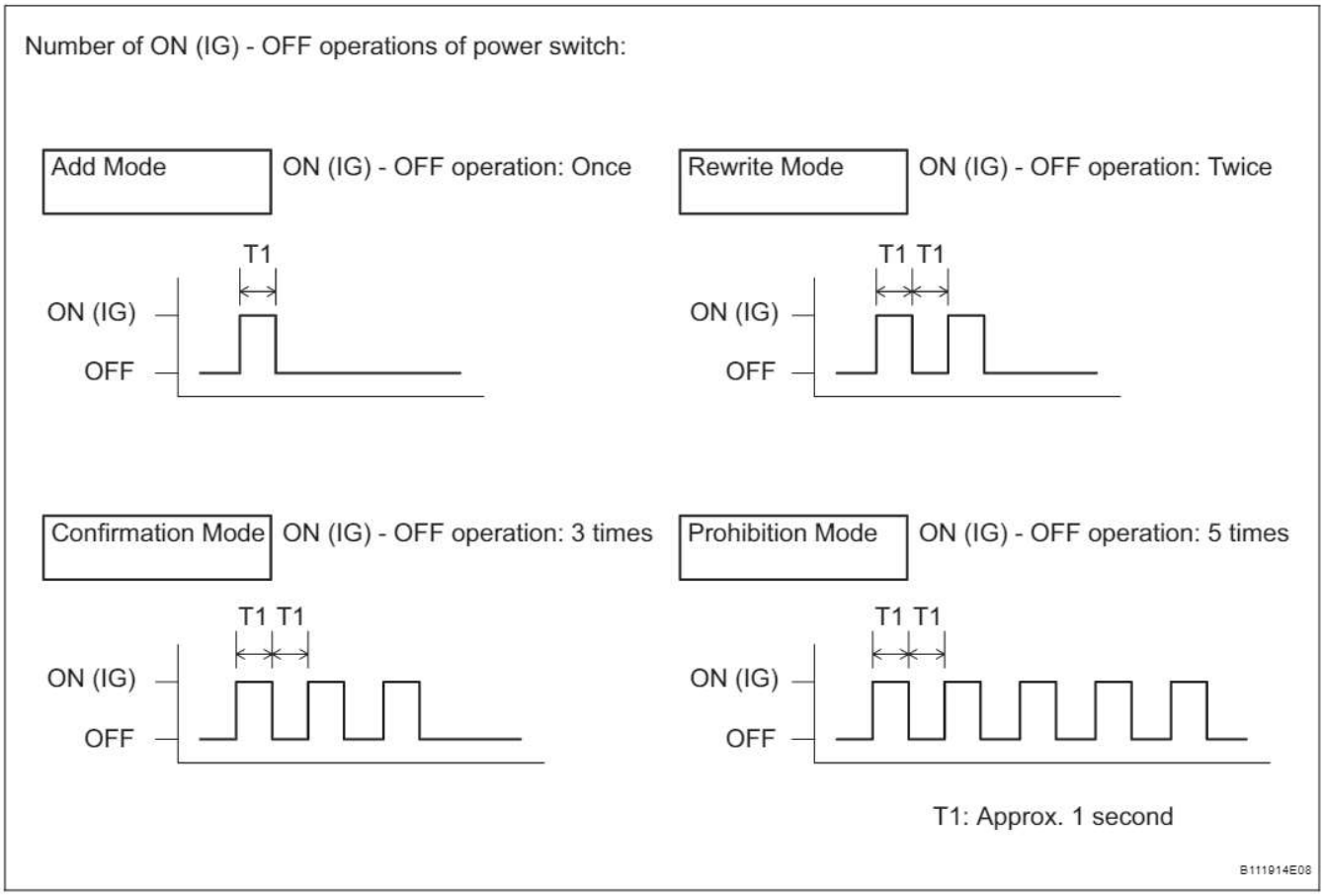
HINT:

The procedure should end with the key removed.

(c) Perform the following operations within 40 seconds.
(1) Close and open the driver side door twice (Close → Open → Close → Open).
HINT:
The procedure should end with the door opened.
(2) Insert and remove the key into / from the key slot twice (Insert → Remove → Insert → Remove).
HINT:
The procedure should end with the key removed.
(3) Close and open the driver side door twice (Close → Open → Close → Open).
HINT:
The procedure should end with the door opened.
(4) Insert and remove the key into / from the key slot twice (Insert → Remove → Insert → Remove).
HINT:
The procedure should end with the key removed.
(5) Insert the key into the key slot and close the all doors.

(d) Perform the following operations within 40 seconds.

(1) Turn the power switch from ON (IG) to OFF at approximately 1 second intervals, operate the power switch according to the number of times shown below.



HINT:

If the number of power switch ON (IG) - OFF operations is 0, 4, 6 or more, there will be no response (the power door lock and unlock operation) to show which mode has been selected.

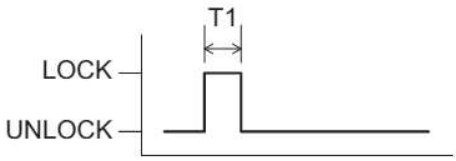
(2) Remove the key from the key slot.

(e) Check the response of the selected mode within 5 seconds.

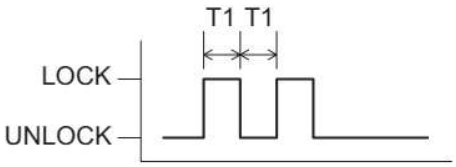
Response to selected mode (power door lock operation):

Body ECU automatically performs power door LOCK-UNLOCK operations to indicate which mode has been selected.

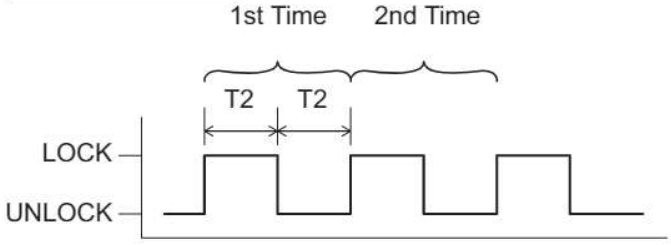
Add Mode: LOCK-UNLOCK operation: Once



Rewrite Mode: LOCK-UNLOCK operation: Twice

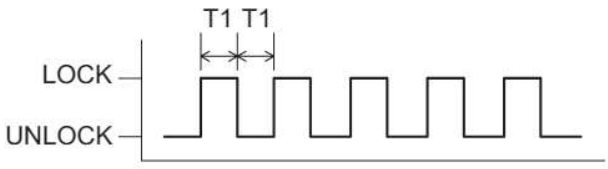


Confirmation Mode: LOCK-UNLOCK operation: The number of registered codes (1 to 5 times)



T1: Approx. 1 second
T2: Approx. 2 seconds

Prohibition Mode: LOCK-UNLOCK operation: 5 times



B111913E05

NOTICE:
After the system has been set to the prohibition mode, enter the confirmation mode and check that the number of registered keys is 0.
HINT:

- In the confirmation mode, LOCK-UNLOCK operation will occur once for each recognition code that has been registered. For example, if 2 recognition codes have been registered, LOCK-UNLOCK operation will occur twice.
- In the confirmation mode, if no recognition codes have been registered, LOCK-UNLOCK operation will occur 5 times.
- If confirmation mode or prohibition mode is selected, the operation ends after the response to the selected mode completes.

(f) Within 40 seconds of completing the confirmation mode operation, press the LOCK and UNLOCK switches on the transmitter simultaneously.
(g) After completing the step above, press a single switch (LOCK or UNLOCK) within 5 seconds.
(h) After completing the step above, check the response to the registration completion within 3 seconds.

DL

Response to registration completion:

Body ECU automatically performs power door LOCK-UNLOCK operation to show whether registration has been completed correctly or not.

LOCK-UNLOCK Occurs Once	LOCK-UNLOCK Occurs Twice
Registration of recognition code has been completed.	Registration of recognition code has failed.



T1: Approx. 1 second

B111915E08

HINT:

- If the LOCK-UNLOCK operation occurs twice, the registration of recognition code has failed. Perform registration procedures again from the beginning.

- If registering another transmitter, repeat the procedures after the response to the selected mode confirmation. All 4 recognition codes can be registered consecutively.

(i) Perform either of the following to complete the registration of recognition codes:
- Open the door.
- Insert the key into the key slot.

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH INTELLIGENT TESTER (REFERENCE)

HINT:

The following items can be customized.

NOTICE:

- **When the customer requests a change in a function, first make sure that the functions can be customized.**
- **Be sure to record the current settings before customizing.**
- **When troubleshooting a function, first make sure that the function is set to the default setting.**

Wireless door lock control system:

Display (Items)	Default	Contents	Setting
OPEN DOOR WARN (Door ajar warning function	ON	If door is not completely closed and transmitter LOCK switch is pressed, this function sounds buzzer for 10 seconds	ON / OFF
ALARM FUNCTION (Panic function)	ON	Function that operates theft deterrent alarm when transmitter PANIC switch is held 0.8 seconds.	ON / OFF
UNLOCK/2OPER (Wireless unlock operated twice)	ON	Function that unlocks driver side door when UNLOCK switch on transmitter is pressed once, and unlocks all doors when pressed twice. If set to OFF, pressing UNLOCK switch once unlocks all doors.	ON / OFF
AUTO LOCK DELAY (Auto lock time)	30s	This function controls amount of time from unlocking doors to automatic re-locking function	30s / 60s
HAZARD ANS BACK (Hazard answer-back for wireless door lock operation)	ON	When LOCK switch on transmitter is pressed, this function illuminates all hazard warning lights once. When UNLOCK switch is pressed, all hazard warning lights illuminate twice	ON / OFF

PROBLEM SYMPTOMS TABLE

HINT:

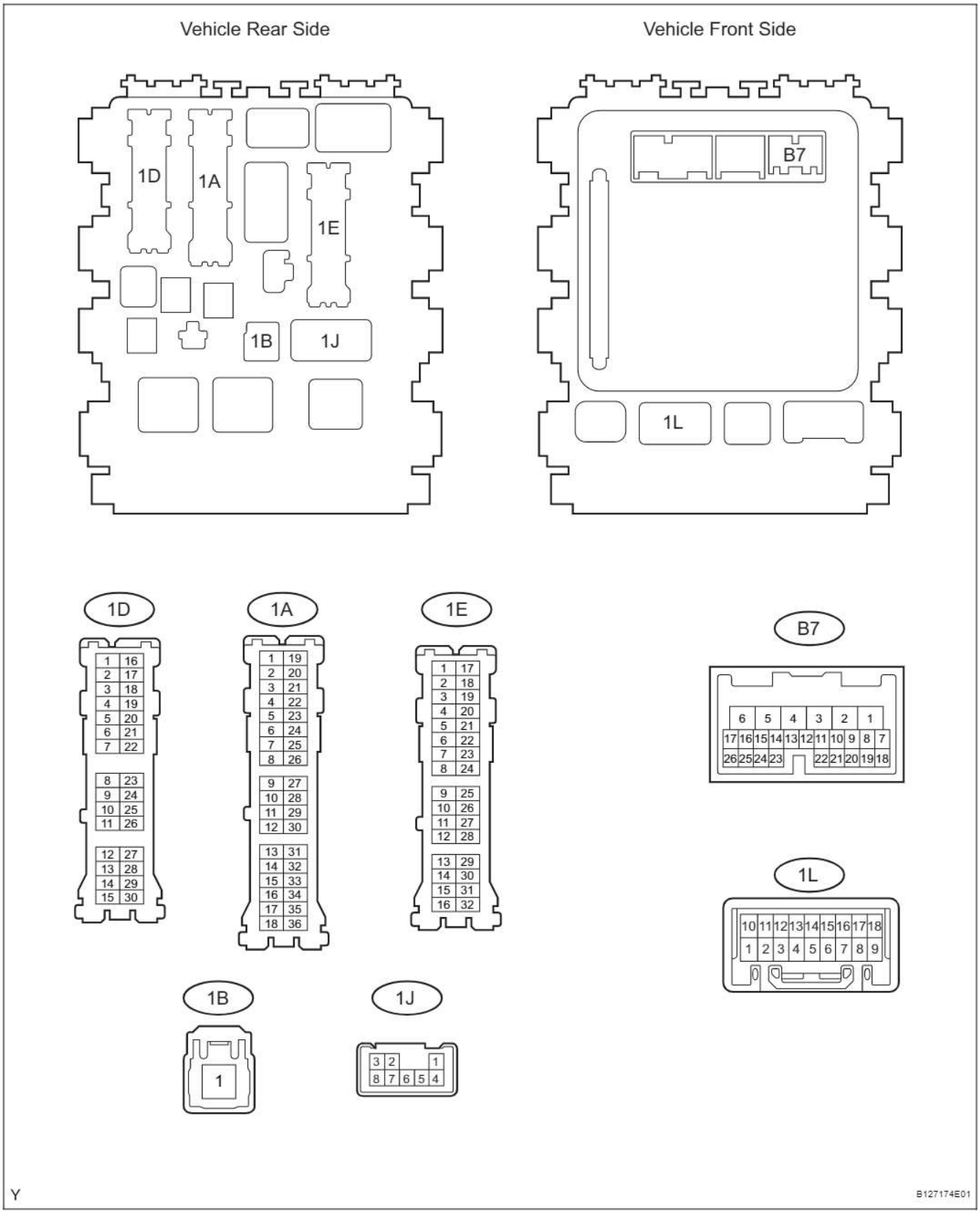
- Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Wireless door lock control system:

Symptom	Suspected area	See page
Only wireless control function is inoperative	1. Transmitter battery	DL-111
	2. Door control transmitter	DL-111
	3. Door control receiver	DL-111
	4. Key slot	DL-111
	5. Wire harness	DL-111
	6. Driver side junction block (main body ECU)	DL-111
	7. Lighting system	DL-111
No answer-back	1. Lighting system	DL-119
	2. Wire harness	DL-119
	3. Driver side junction block (main body ECU)	DL-119

TERMINALS OF ECU

1. CHECK DRIVER SIDE JUNCTION BLOCK (MAIN BODY ECU)



(a) Disconnect the 1A, 1B, 1D, 1E and 1J junction block connectors.
(b) Measure the resistance and voltage of the wire harness side connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
GND (1E-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
SIG (1B-1) - Body ground	W - Body ground	Ignition power supply	Power switch OFF	Below 1 V
			Power switch ON (IG)	10 to 14 V
ACC (1J-5) - Body ground	G - Body ground	Ignition power supply	Power switch OFF	Below 1 V
			Power switch ON (ACC)	10 to 14 V
ECUB (1A-30) - Body ground	R - Body ground	+B (ECUB) power supply	Always	10 to 14 V
KSW (1E-23) - Body ground	Y - Body ground	Key unlock warning switch input	No key in key slot	10 kΩ or higher
			Key inserted	Below 1 Ω
KSW (1E-26) - Body ground			No key in key slot	10 kΩ or higher
			Key inserted	Below 1 Ω
DCTY (1D-21) - Body ground	V - Body ground	Driver side door courtesy switch input	Driver side door closed	10 kΩ or higher
			Driver side door open	Below 1 Ω
PCTY (1D-24) - Body ground	BR - Body ground	Passenger side door courtesy switch input	Passenger side door closed	10 kΩ or higher
			Passenger side door open	Below 1 Ω
BCTY (1D-7) - Body ground	R- Body ground	Back door courtesy switch input	Back door closed	10 kΩ or higher
			Back door open	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the 1A, 1B, 1D, 1E and 1J junction block connectors.
(d) Measure the voltage of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
HAZ (1L-17) - Body ground	Y - Body ground	Hazard warning light drive	Answer-back OFF	Below 1 V
			Answer-back ON	Pulse generation
RDA (B7-23) - Body ground	L- Body ground	Door control receiver input	Transmitter switch OFF (power switch OFF and all door closed)	Below 1 V
			Transmitter switch ON (power switch OFF and all door closed)	Pulse generation

If the result is not as specified, the junction block (ECU) have a malfunction.

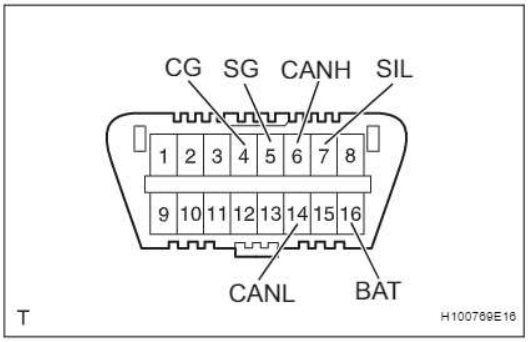
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) Wireless door lock control system data and the Diagnosis Trouble Codes (DTCs) can be read through the Data Link Connector 3 (DLC3). When the system seems to be malfunctioning, use the intelligent tester to check for malfunctions and perform repairs.

2. CHECK DLC3

(a) The vehicle uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



DL

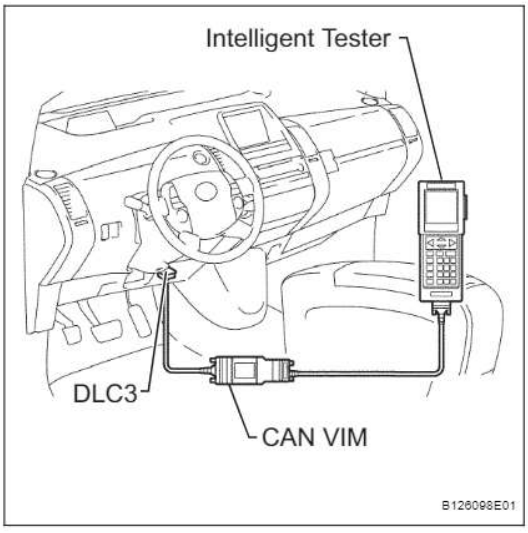
Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground		
BAT (16) - Body ground	Battery positive		11 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Power switch OFF	54 to 69 Ω
CANH (6) - Battery positive			1 kΩ or higher
CANH (6) - CG (4)			1 kΩ or higher
CANL (14) - Battery positive	LOW-level CAN bus line		1 MΩ or higher
CANL (14) - CG (4)			1 MΩ or higher

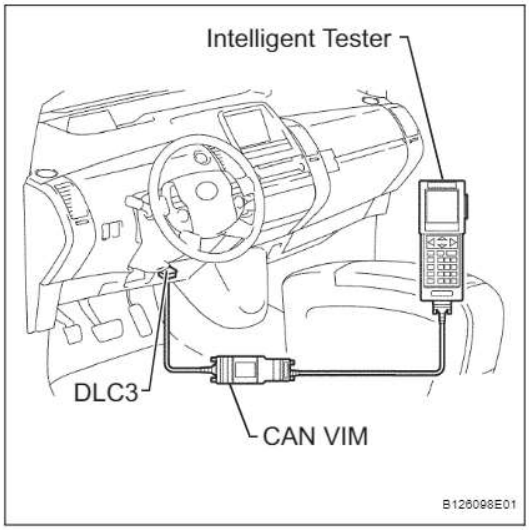
If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the power switch ON (IG) and attempt to use the tester. If the screen displays the message UNABLE TO CONNECT TO VEHICLE, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem is probably in the tester itself. Consult the Service Department listed in the tester's instruction manual.





DTC CHECK / CLEAR

1. **CHECK DTC**
   (a) Connect the intelligent tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
   (b) Turn the power switch ON (IG).
   (c) Read the DTCs by following the directions on the tester screen.
2. **CLEAR DTC**
   (a) Connect the intelligent tester (with CAN VIM) to the DLC3.
   (b) Turn the power switch ON (IG).
   (c) Erase the DTCs by following the directions on the tester screen.

DL

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Read the DATA LIST.

Main body ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-
P DOR CTY SW	Passenger side door courtesy switch signal / ON or OFF	ON: Passenger side door is open OFF: Passenger side door is closed	-
Rr DOR CTY SW	Rear door courtesy switch signal / ON or OFF	ON: Either right or left door is open OFF: Both right and left doors are closed	-
D LOCK POS SW	Driver side door lock position switch signal / ON or OFF	ON: Driver side door lock is in unlock position OFF: Driver side door lock is in lock position	-
P LOCK POS SW	Passenger side door lock position switch signal / ON or OFF	ON: Passenger side door lock is in unlock position OFF: Passenger side door lock is in lock position	-
Rr LOCK POS SW	Rear door lock position switch signal / ON or OFF	ON: Rear door lock is in unlock position OFF: Rear door lock is in lock position	-
REGIST ID CODE	Number of registered ID / Min. 0, Max. 4	Number of registered ID codes	-

Transponder key ECU:

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Halfway switch signal / ON or OFF	ON: Key is in key slot. OFF: No key is in key slot.	-

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relay, VSV, actuator, and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG).

(c) Perform the ACTIVE TEST according to the display on the tester.

Main body ECU:

Item	Tester Details	Diagnostic Note
HAZARD	Turns turn signal flasher relay ON / OFF	-
TRUNK/BDOR OPEN	Operate back door motor ON / OFF	-
DOOR LOCK	Operate door lock motor for all doors OFF / LOCK / UNLOCK	All doors are closed

DIAGNOSTIC TROUBLE CODE CHART

Wireless door lock control system:

DTC No.	Detection Item	Trouble Area	See page
B1242	Wireless Door Lock Tuner Circuit Malfunction	- Door control receiver - Wire harness - Driver side junction block (main body ECU)	DL-109

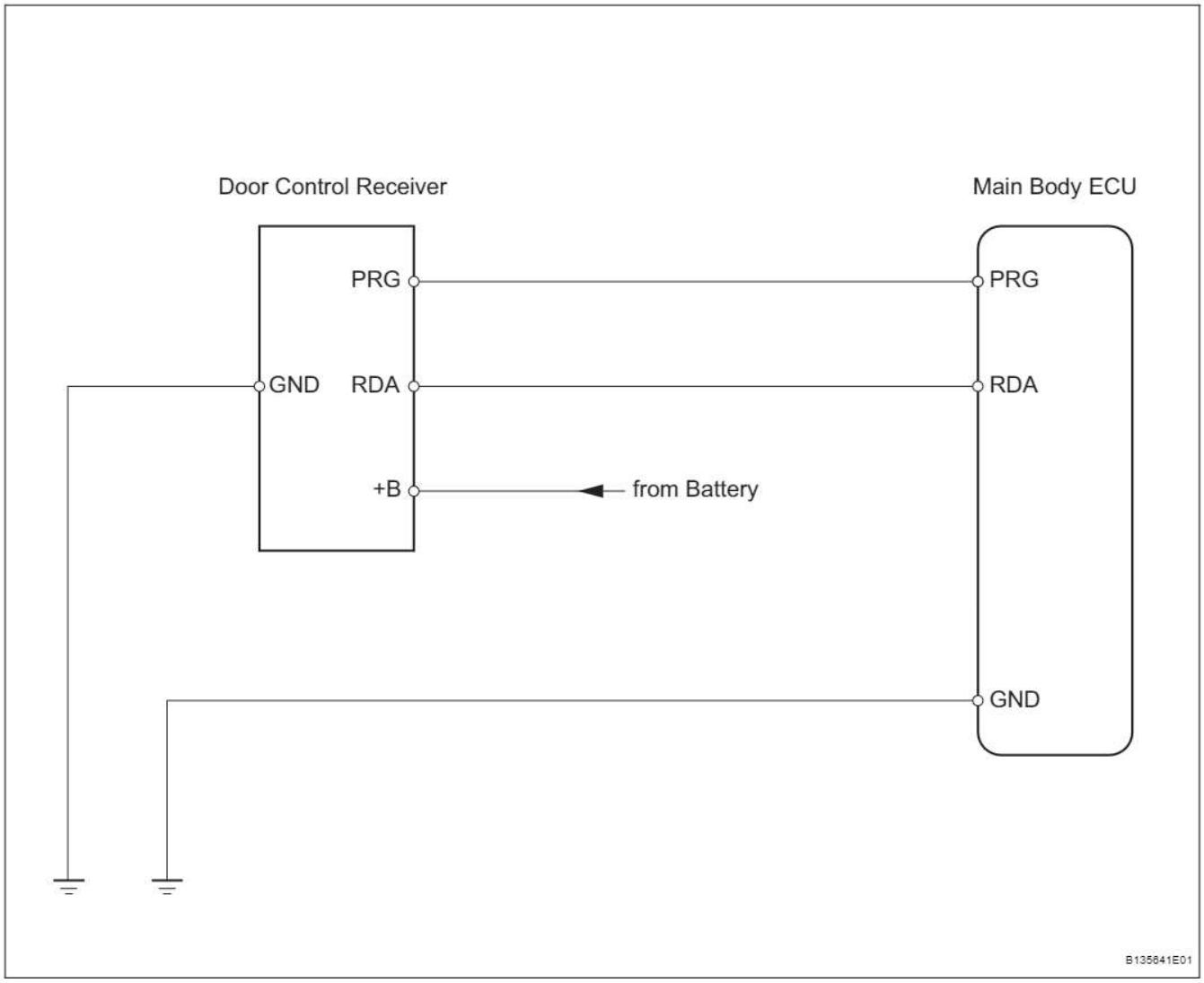
DTC	B1242	Wireless Door Lock Tuner Circuit Malfunction

DESCRIPTION

This DTC is detected when a RDA signal is not input to the door control receiver within 1 second after the main body ECU outputs PRG signal.

DTC No.	DTC Detection Condition	Trouble Area
B1242	Within 1 second after PRG signal is output from body ECU during self-diagnostic mode, corresponding RDA signal is not output.	• Door control receiver • Wire harness • Driver side junction block (main body ECU)

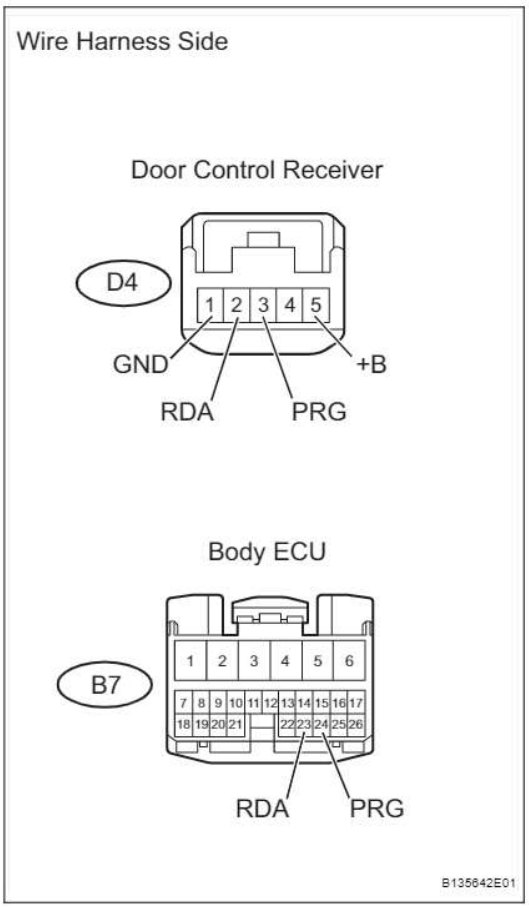
WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	CHECK WIRE HARNESS (DOOR CONTROL RECEIVER - MAIN BODY ECU AND BODY GROUND)



(a) Disconnect the D4 receiver connector.
(b) Disconnect the B7 ECU connector.
(c) Measure the resistance and voltage of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D4-2 (RDA) - B7-23 (RDA)	Below 1 Ω
D4-3 (PRG) - B7-24 (PRG)	
D4-1 (GND) - Body ground	
D4-2 (RDA) or B7-23 (RDA) - Body ground	10 kΩ or higher
D4-3 (PRG) or B7-24 (PRG) - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

2	CHECK DOOR CONTROL RECEIVER (OPERATION)

(a) Temporarily replace the door control receiver with a new or normally functioning one.
(b) Check that no DTC is output.

OK:

DTC is not output.

NG → REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

OK

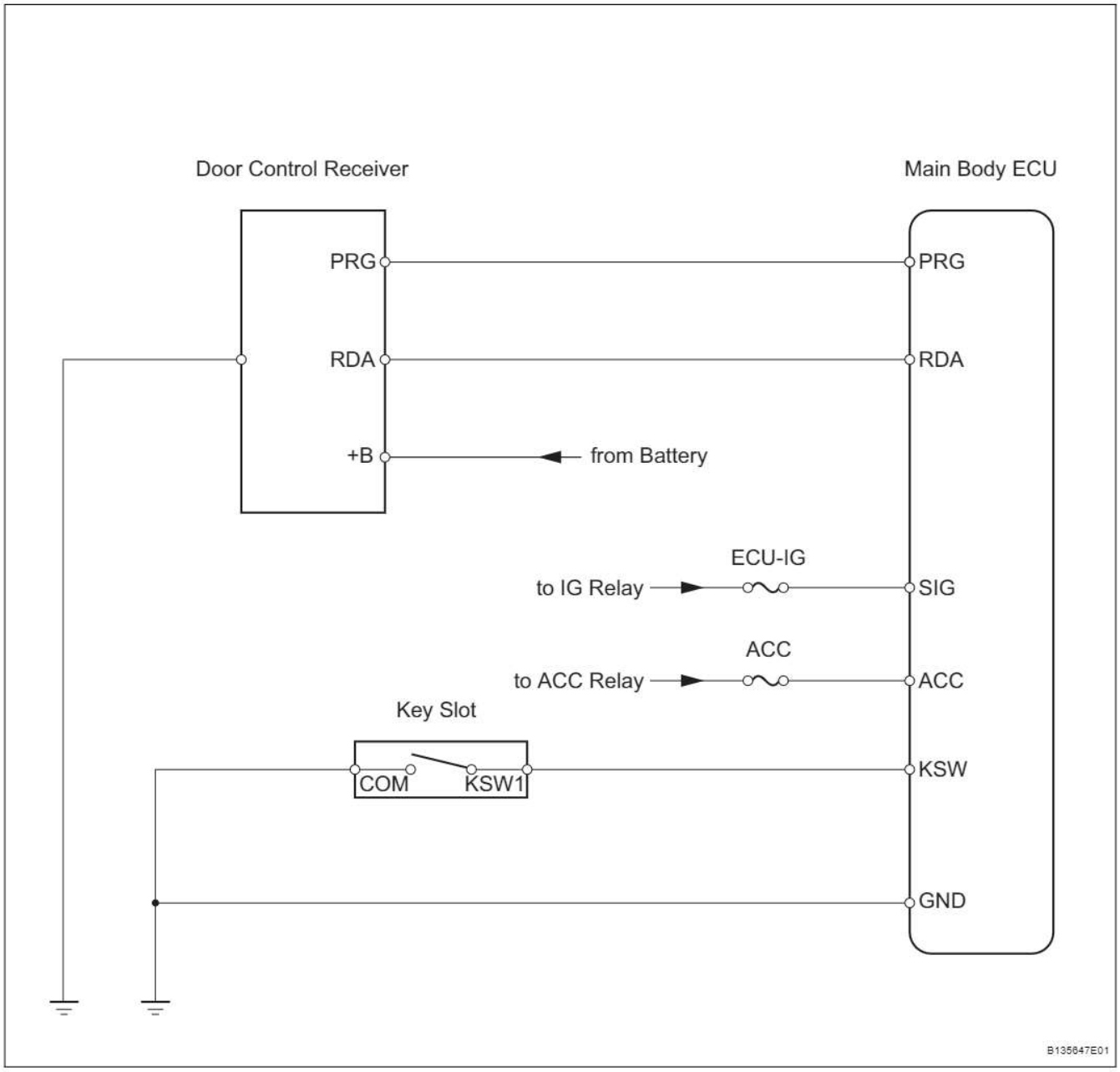
END (DOOR CONTROL RECEIVER IS DEFECTIVE)

Only Wireless Control Function is Inoperative

DESCRIPTION

The door control receiver receives signals from the transmitter and sends these signals to the main body ECU. The main body ECU then controls all doors by sending lock/unlock signals to each door lock.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK WIRELESS DOOR LOCK CONTROL FUNCTION

(a) Check the wireless door lock control functions (see page DL-93).

OK:

Each function of wireless door lock control system operates normally using transmitter switches.

OK → NORMAL

NG

2	CHECK THAT TRANSMITTER LED LIGHT UP

(a) Check that the transmitter's LED illuminates 3 times when the switch is pressed 3 times.

OK:

Transmitter's LED illuminates 3 times when switch is pressed 3 times.

NG → Go to step 4

OK

DL

3	CHECK WIRELESS DOOR LOCK CONTROL FUNCTION (STANDARD OPERATION)

(a) Check standard UNLOCK/LOCK switch operation.

NOTICE:

Standardized test procedures:

Press the transmitter switch for 1 second, directing the transmitter to the driver side door outside handle from a distance of 1 m (3.28 ft.). The transmitter should be pointed directly at the handle, i.e. a 90° angle to vehicle body.

OK:

Doors can be locked and unlocked with transmitter.

NG → Go to step 5

OK

REPLACE DOOR CONTROL TRANSMITTER

4	CHECK TRANSMITTER BATTERY (OPERATION)

(a) Temporarily replace the transmitter battery with a new or normally functioning one.

(b) Check that the doors can be locked and unlocked by using the transmitter LOCK/UNLOCK switch.

OK:

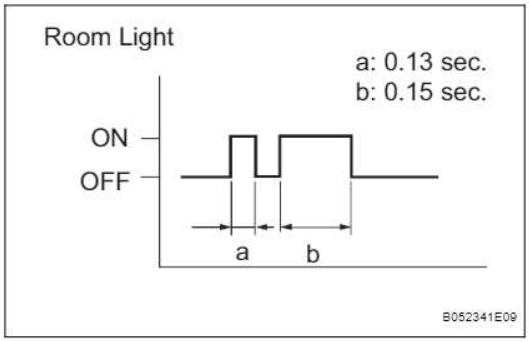
Doors can be locked and unlocked with transmitter switch.

NG → REPLACE DOOR CONTROL TRANSMITTER

OK

END (TRANSMITTER BATTERY IS DEFECTIVE)

5 SWITCH TO SELF-DIAGNOSTIC MODE



(a) Switch to self diagnostic mode using the intelligent tester.
  (1) Connect the intelligent tester (with CAN VIM) to the DLC3.
  (2) Turn the power switch ON (IG) and push the intelligent tester main switch ON.
  HINT:
  Please refer to the intelligent tester operator's manual for further details.

(b) Switch to self diagnostic mode by operating the key.
  (1) Put the vehicle under the vehicle's initial condition (see page DL-93), insert the key into the key slot and remove it.
  (2) Within 5 seconds of removing the key (above step), insert the key into the key slot. Then turn the power switch ON (IG) and OFF.
  (3) Within 30 seconds of switching the power switch OFF (step above), perform the following 9 times: . Turn the power switch ON (IG) and OFF*
  NOTICE:
  If the change to self diagnostic mode has failed, the system will return to normal mode.
  HINT:
  - Turning the power switch ON (IG) after step * has been completed will end self-diagnostic mode.
  - Do not lock or unlock doors during the self-diagnostic mode.

(c) Check that the system has switched to self diagnostic mode by checking the flashes of the room light (dome light or key slot light). Compare the flash patterns of the room light to the timing chart on the illustration.
  OK:
  Flash pattern of room light should be the same as that shown in timing chart on illustration.

NG → **Go to step 9**

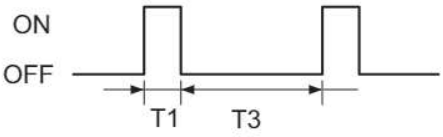
OK

6 CHECK BY SELF-DIAGNOSTIC MODE

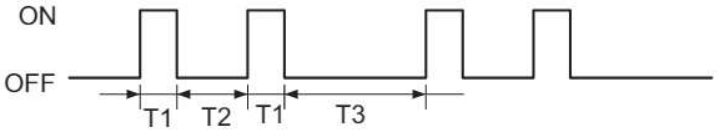
(a) Inspect the diagnosis outputs when the door control transmitter switch is held down. The diagnosis outputs can be checked by flash patterns of the room light.

Flash Pattern of Room Light

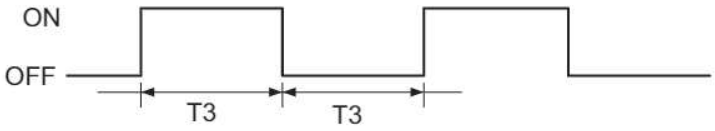
Normal Wave of LOCK Switch



Normal Wave of UNLOCK Switch



Normal Wave of PANIC Switch



Unmatched Recognition Code



Wave is being received

No Diagnosis Output



T1: 0.13 sec.
T2: 0.25 sec.
T3: 0.5 sec.

B127179E02

Result:

Result	Proceed to
Unmatched recognition code is output	A
Normal waves (patterns of room light) for LOCK, UNLOCK and PANIC switches are output	B

Result	Proceed to
No diagnosis outputs are present	C

B → REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

C → Go to step 8

A

7 REGISTER RECOGNITION CODE

(a) Check that the system can switch to rewrite mode or add mode and recognition code can be registered.
OK:
System can switch to rewrite mode or add mode and recognition code can be registered.

NG → Go to step 15

OK

END

8 CHECK DOOR CONTROL RECEIVER (RESPONSE)

(a) Temporarily replace the door control receiver with a new or normally functioning one.
(b) Check that an unmatching recognition code is output when the door lock control transmitter switch is held down.
OK:
Unmatching recognition code is output.

NG → Go to step 12

OK

REPLACE DOOR CONTROL TRANSMITTER

9 CONFIRM INPUT METHOD OF SELF-DIAGNOSTIC MODE

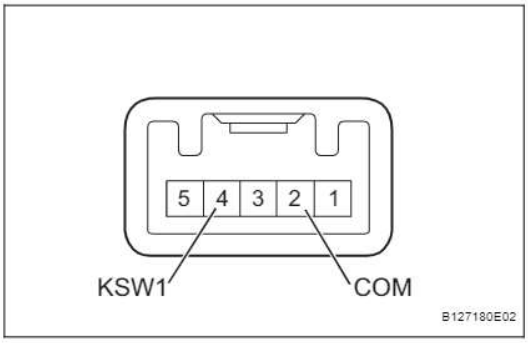
Result:

Result	Proceed to
Method for changing system self diagnostic mode works	A
Method for changing system self diagnostic mode does not work	B

B → Go to step 5

A

10 INSPECT KEY SLOT



(a) Measure the resistance of the halfway switch.
Standard resistance

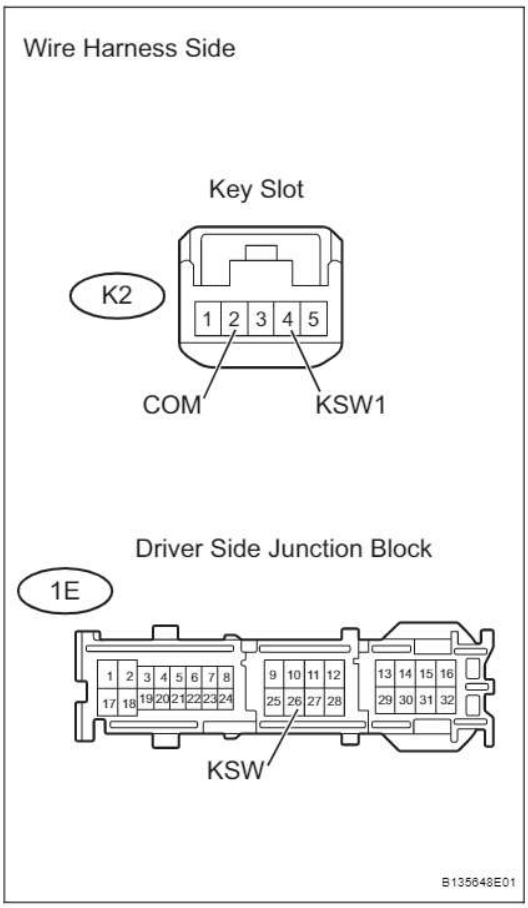
Tester Connection	Condition	Specified Condition
2 - 4	No key is in key slot	10 kΩ or higher
	Key is in key slot	Below 1 Ω

NG → **REPLACE KEY SLOT**

OK

DL

11 CHECK WIRE HARNESS (KEY SLOT - DRIVER SIDE JUNCTION BLOCK AND BODY GROUND)



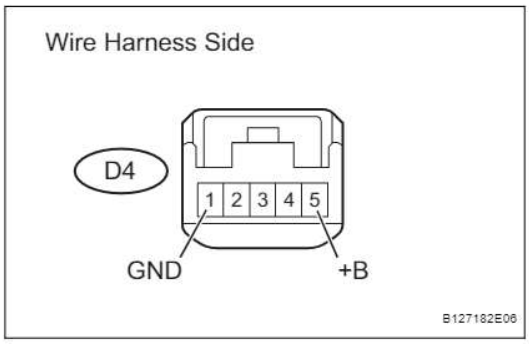
(a) Disconnect the K2 slot connector.
(b) Disconnect the 1E junction block connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
K2-4 (KSW1) - 1E-26 (KSW)	Below 1 Ω
K2-2 (COM) - Body ground	

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

12 CHECK WIRE HARNESS (DOOR CONTROL RECEIVER - BATTERY AND BODY GROUND)



(a) Disconnect the D4 receiver connector.
(b) Measure the resistance and voltage of the wire harness side connector.

Standard resistance

Tester Connection	Specified Condition
D4-1 (GND) - Body ground	Below 1 Ω

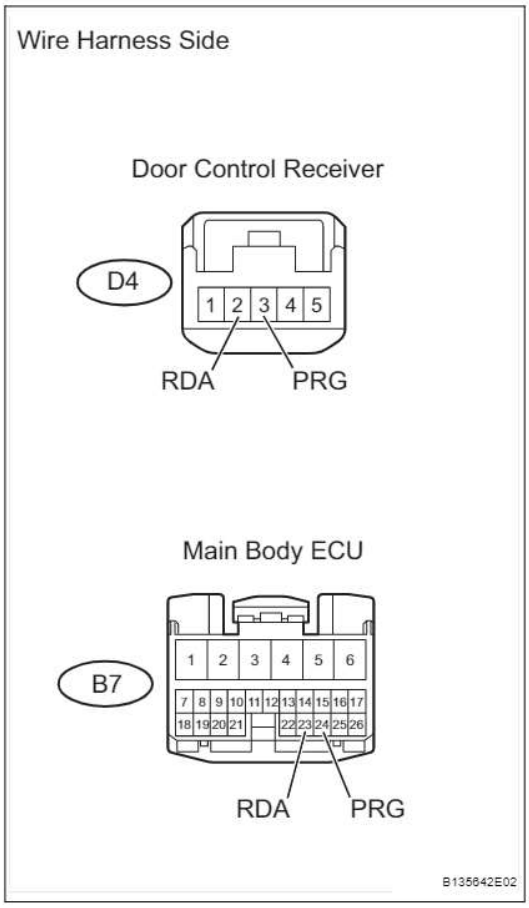
Standard voltage

Tester Connection	Specified Condition
D4-5 (+B) - Body ground	10 to 14 V

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

13 CHECK WIRE HARNESS (DOOR CONTROL RECEIVER - MAIN BODY ECU)



(a) Disconnect the D4 receiver connector.
(b) Disconnect the B7 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

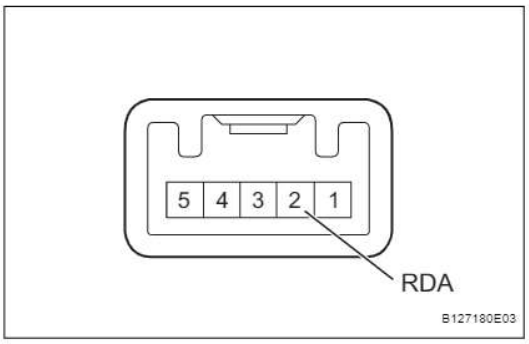
Standard resistance

Tester Connection	Specified Condition
D4-2 (RDA) - B7-23 (RDA)	Below 1 Ω
D4-3 (PRG) - B7-24 (PRG)	
D4-2 (RDA) or B7-23 (RDA) - Body ground	10 kΩ or higher
D4-3 (PRG) or B7-24 (PRG) - Body ground	

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

14 CHECK DOOR CONTROL RECEIVER (OUTPUT)



(a) Reconnect the D4 receiver connector.
(b) Measure the voltage of the connector.
Standard voltage

Tester Connection	Condition	Specified Condition
D4-2 (RDA) - Body ground	Transmitter switch OFF (power switch OFF and all doors closed)	Below 1 V
	Transmitter switch ON (power switch OFF and all doors closed)	Alternating between 6 to 7 V and below 1 V

OK → **REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

NG

DL

15 CHECK DOOR CONTROL TRANSMITTER (OPERATION)

(a) Temporarily replace the door control receiver with a new or normally functioning one.
(b) Check that the doors can be locked and unlocked by using the transmitter LOCK/UNLOCK switch.
OK:
Doors can be locked and unlocked with transmitter.

NG → **REPLACE DOOR CONTROL RECEIVER**

OK

END (DOOR CONTROL TRANSMITTER IS DEFECTIVE)

No Answer-Back

DESCRIPTION

In some cases, wireless door lock control functions are normal but hazard warning light answer-back is not. In such case, the multiplex network body ECU's hazard warning light signal outputs may be malfunctioning.

NOTICE:

Troubleshooting should be started after confirming that the answer-back function has been switched ON.

INSPECTION PROCEDURE

1 CHECK WIRELESS DOOR LOCK CONTROL FUNCTION

(a) Check the wireless door lock control functions by operating the transmitter switch.

Result:

Result	Proceed to
Wireless door lock control functions are normal but hazard warning light answer-back does not occur	A
Doors cannot be locked and unlocked with transmitter	B

B → **GO TO PROBLEM SYMPTOMS TABLE**

A

2 PERFORM ACTIVE TEST BY INTELLIGENT TESTER (TURN SIGNAL FLASHER RELAY)

(a) Select ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the hazard waning light flash.

Main body ECU:

Item	Test Detail	Diagnostic Note
HAZARD	Turn signal flasher relay ON / OFF	-

OK:

Turn signal flasher relay turns ON / OFF.

OK → **REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)**

NG

3 CHECK HAZARD WARNING LIGHT

(a) Check that the hazard warning lights flash continuously when the hazard warning signal switch is pressed.

OK:

Hazard warning lights flash continuously.

NG → **GO TO LIGHTING SYSTEM**

OK

REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (MAIN BODY ECU)

SMART KEY SYSTEM

PRECAUTION

1. NOTICE FOR INITIALIZATION

When disconnecting the cable from the negative (-) battery terminal, initialize the following system(s) after the cable is reconnected.

System Name	See procedure
Power Window Control System	IN-32

2. NOTICE FOR HYBRID SYSTEM ACTIVATION

When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.

3. SMART KEY SYSTEM OPERATION PRECAUTIONS

(a) General entry functions:

(1) Functions and operating ranges:

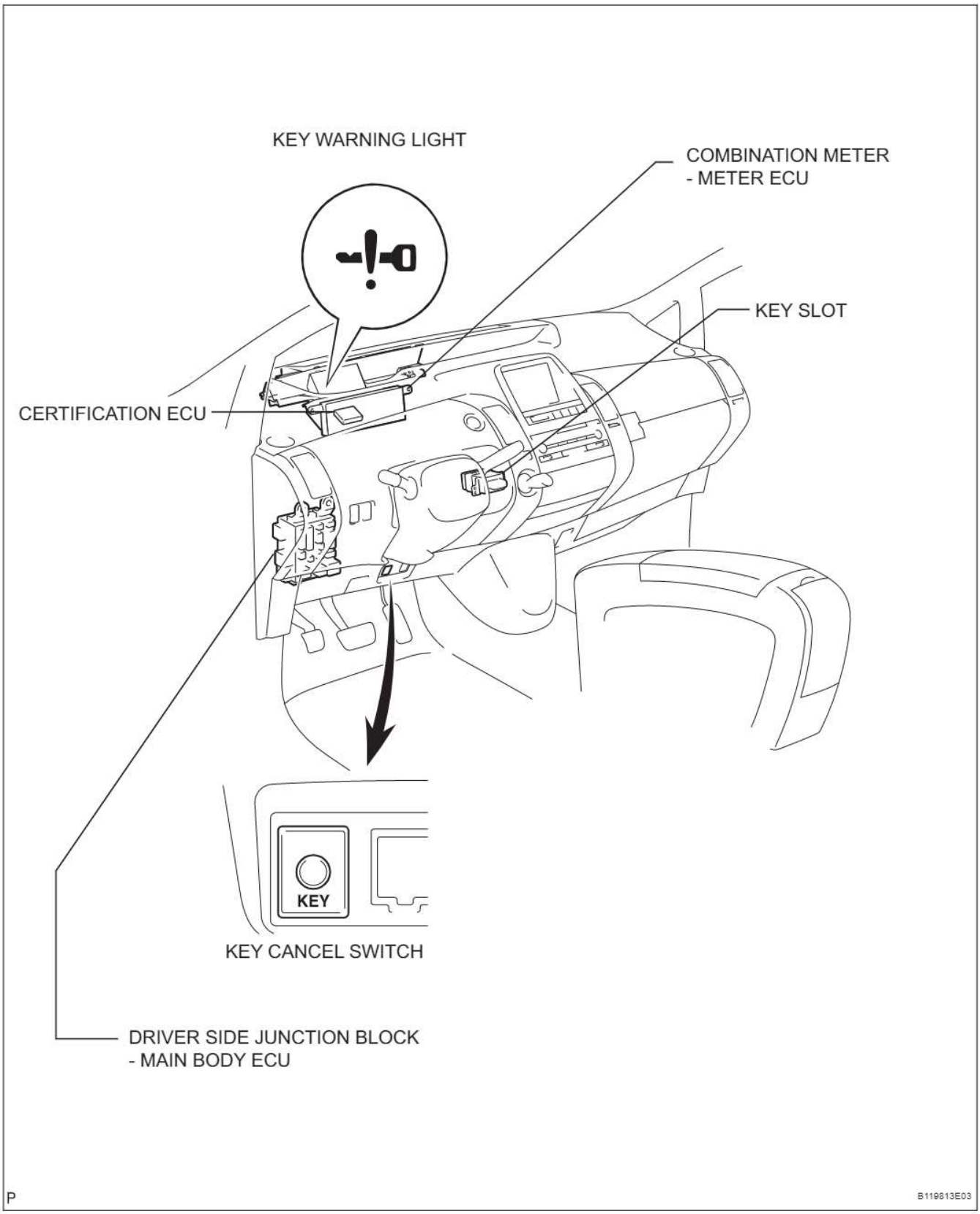
The functions will not operate if the key is not within the detection areas described below. Furthermore, the functions may not operate or their operating range may decrease if the battery is depleted or strong radio waves or noise are present. There are also areas in which the functions may not operate properly due to the shape of the vehicle body.

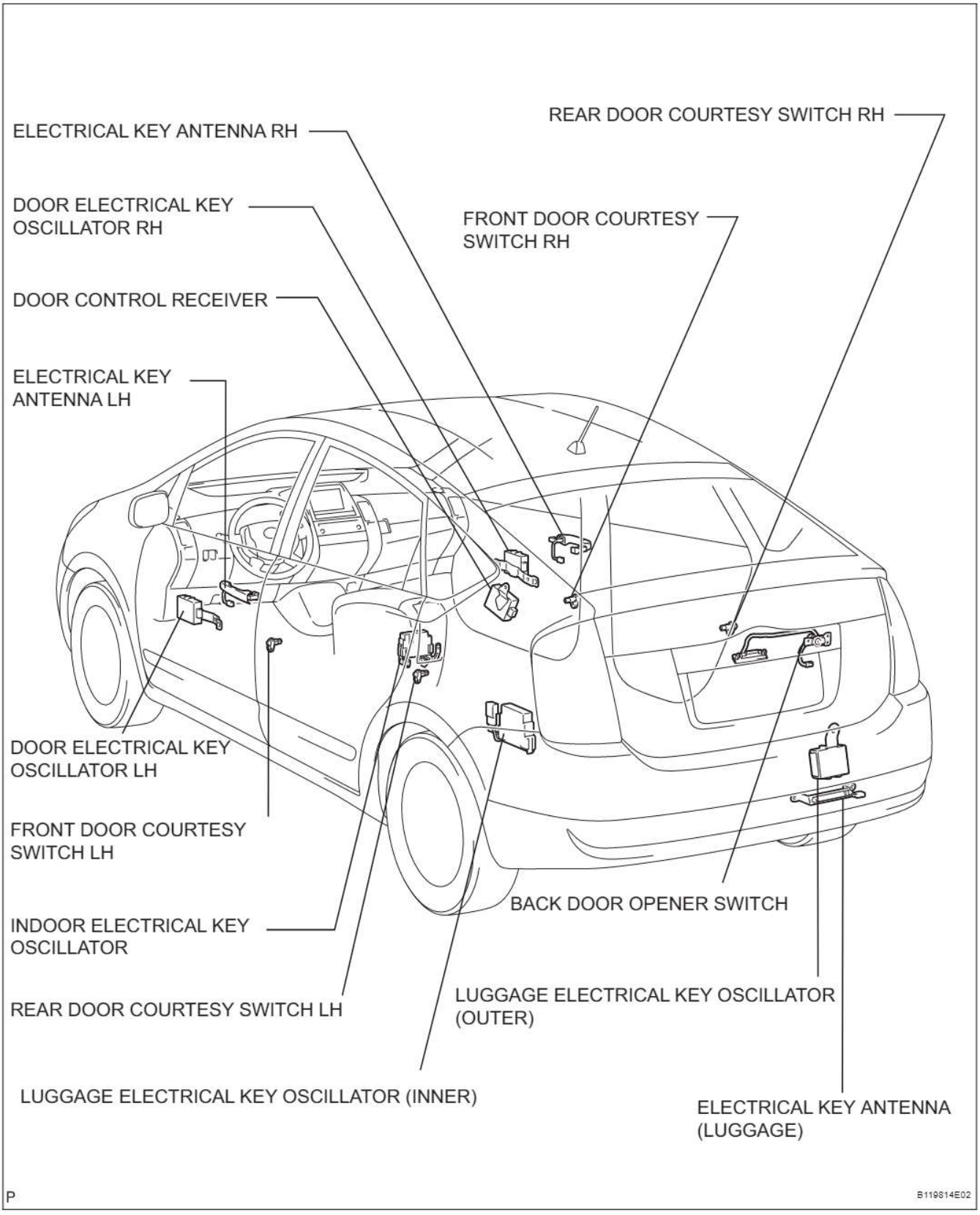
- Entry lock and entry unlock:
  Applicable within approximately 0.7 to 1.0 m (2.3 to 3.3 ft.) radius of each front outside door handle. However, this function may not operate if the key is near the windows or outside door handles.
- Entry ignition:
  Applicable within vehicle interior. This function may not operate if the key is placed on the instrument panel, on the rear package tray, in the glove box, or on the floor. If the key is placed outside of the vehicle near a window, this function may not operate.
- Entry back door unlock:
  Applicable within approximately 0.7 to 1.0 m (2.3 to 3.3 ft.) radius of the back door opening switch. However, this function may not operate if the key is placed near the center of the rear bumper.

(2) The smart key system uses very faint radio waves:
The entry functions and wireless door lock control functions may not operate properly (unable to operate the entry lock, unlock, ignition and back door unlock functions, or a false alarm is issued) in the situations described below. If so, use the mechanical key to lock or unlock the driver's door and insert the key into the key slot to start the engine.
- A facility that generates strong radio waves is nearby, such as a TV tower, electronic power plant or broadcasting station.
- The user is carrying a wireless communication device, such as a wireless transmitter or portable telephone, along with the key.
- The key is covered with a metal object or is placed near a metal object.
- A radio wave type wireless door lock control is being used in the vicinity.
- The key is near electrical appliances.

(b) Smart key system inoperative conditions:
The entry function will not operate under the conditions listed below.
- The key cancel switch provided below the driver's side instrument panel is turned ON.
- The key is inserted into the key slot.
- The key battery is depleted (the indicator light does not flash when the switches on the key are pressed).

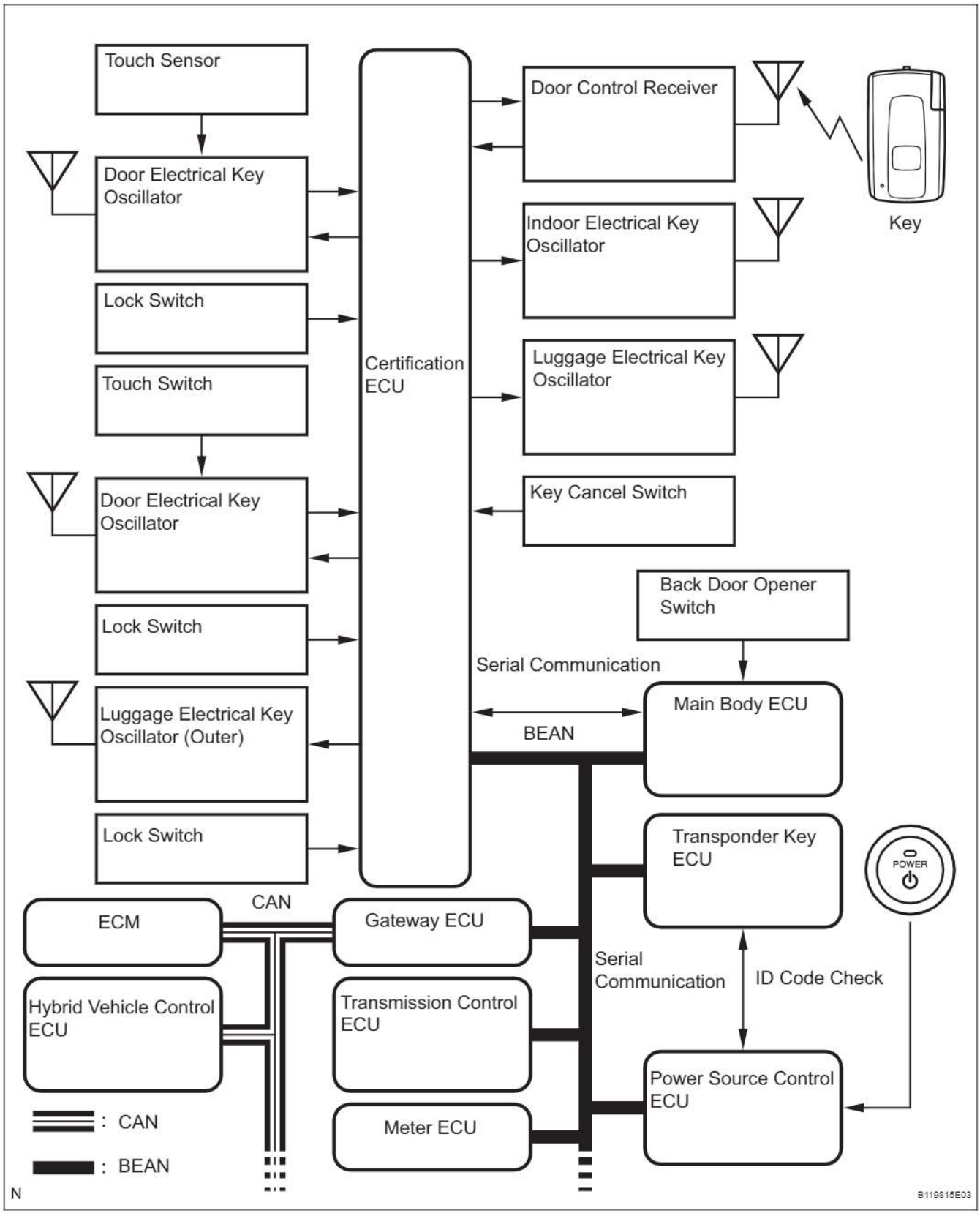
PARTS LOCATION

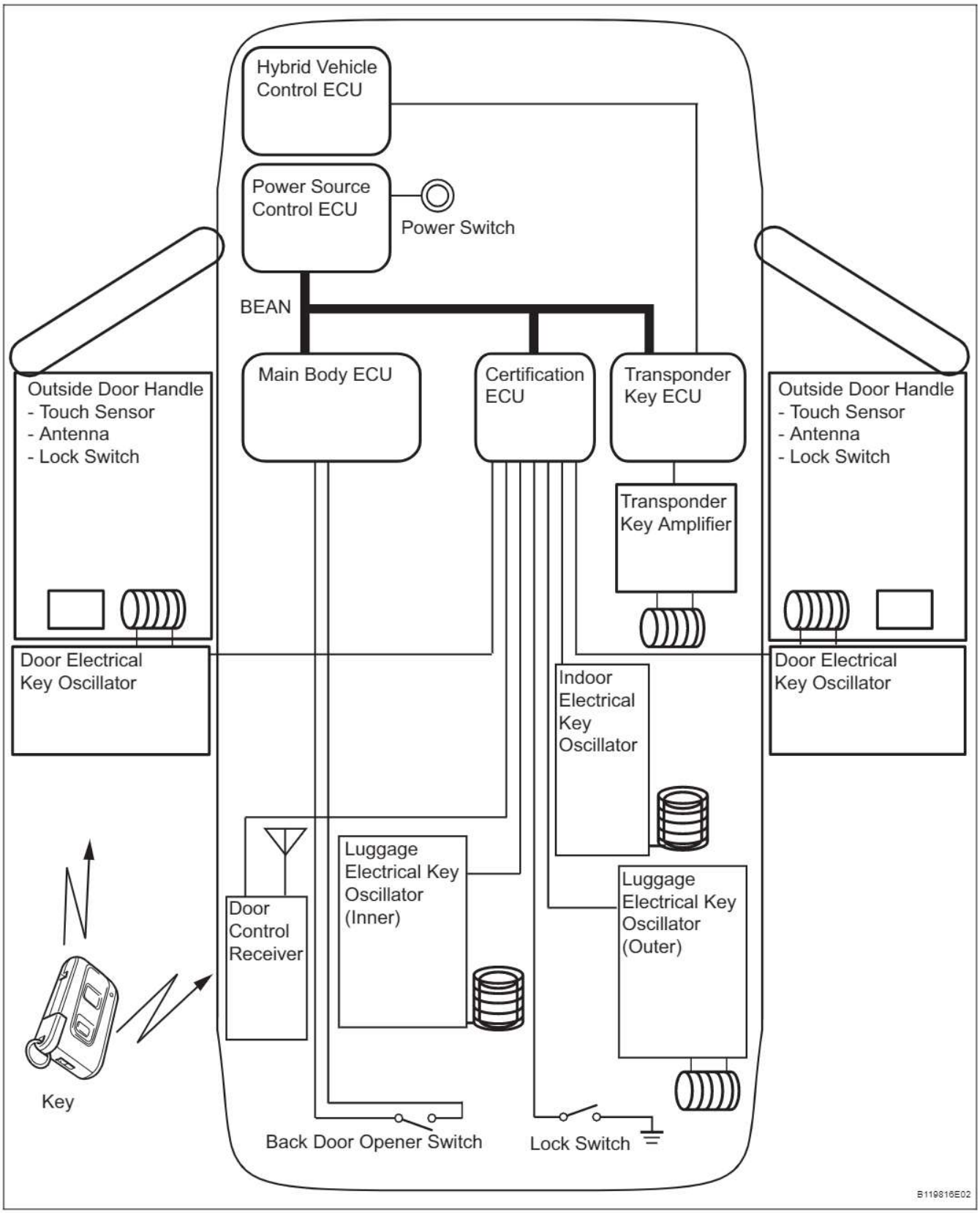



ELECTRICAL KEY ANTENNA RH
REAR DOOR COURTESY SWITCH RH
DOOR ELECTRICAL KEY OSCILLATOR RH
FRONT DOOR COURTESY SWITCH RH
DOOR CONTROL RECEIVER
ELECTRICAL KEY ANTENNA LH
DOOR ELECTRICAL KEY OSCILLATOR LH
FRONT DOOR COURTESY SWITCH LH
BACK DOOR OPENER SWITCH
INDOOR ELECTRICAL KEY OSCILLATOR
REAR DOOR COURTESY SWITCH LH
LUGGAGE ELECTRICAL KEY OSCILLATOR (OUTER)
LUGGAGE ELECTRICAL KEY OSCILLATOR (INNER)
ELECTRICAL KEY ANTENNA (LUGGAGE)
P
B119814E02

SYSTEM DIAGRAM

1. OVERVIEW OF PARTS LAYOUT





Sender	Receiver	Signal	Line
Hybrid Vehicle Control ECU	Certification ECU	Shift position signal	BEAN

Sender	Receiver	Signal	Line
Main Body ECU	Certification ECU	• Driver door key-linked lock/ unlock signal (entry lock/ unlock control) • DTC erasure signal • Door lock position signal (D, P, rear doors) (entry lock/ unlock control) • Electric back door status signal (entry back door control) • Courtesy switch signal (D, P, rear doors) (entry lock/unlock, warning control) • Vehicle specification signal (entry control change) • IG switch signal (entire entry control) • ACC switch signal (entry warning control) • Halfway switch signal (entry ignition control) • Back door switch signal (entry back door control) • All door courtesy switch signals (entry lock/unlock, warning control)	BEAN
Transponder Key ECU	Certification ECU	• Entry control ON signal (entry ignition control) • Steering lock release activation signal (entry ignition control)	BEAN
Power Source Control ECU	Certification ECU	• Immobiliser ID verification request signal (entry ignition control) • Key slot status (w/ or w/o key) signal (entry ignition control) • Key code verification signal (wireless control)	BEAN
Certification ECU	Transponder Key ECU	• Entry control ON signal (entry ignition control) • Steering lock release activation signal (entry ignition control)	BEAN

SYSTEM DESCRIPTION

1. SMART KEY SYSTEM DESCRIPTION

- In addition to the mechanical key function and the wireless door lock control function, this system provides the key with a bi-directional communication function. This function enables the certification ECU to recognize the presence of the key within several detection areas. The system can lock or unlock the doors, or start the hybrid system without key operation as long as the key is in the user's possession.
- This system consists of a certification ECU, power source control ECU, transponder key ECU, multiplex network body ECU, key, 5 oscillators, 5 antennas, 2 touch sensors, 3 trigger switches and a door control receiver. The certification ECU controls the system.
- The smart key system (for door lock) operates in conjunction with the smart key system (for starting), the immobiliser system and the wireless door lock control system.

2. FUNCTION OF MAIN COMPONENTS

Components	Function
Key	Receives signals from oscillators and returns ID code to door control receiver
Door Electrical Key Oscillator (driver and front passenger doors)	Intermittently transmits key detection signals within detection area around each door upon receiving transmission request signal from certification ECU
Indoor Electrical Key Oscillator	Transmits key detection signals within detection area in vehicle interior upon receiving transmission request signal from certification ECU
Luggage Compartment Electrical Key Oscillator (inner)	Transmits key detection signals within detection area in luggage room upon receiving transmission request signal from certification ECU
Luggage Compartment Electrical Key Oscillator (outer)	Transmits key detection signals within detection area around luggage compartment door upon receiving transmission request signal from certification ECU
Electrical Key Antenna (luggage)	Transmits luggage electrical key oscillator signal
Outside Door Handle (driver and front passenger doors) (touch sensor)	Transmits door unlock request signal to certification ECU when inside of outside door handle is touched
Outside Door Handle (driver and front passenger doors) (antenna)	Transmits door electrical key oscillator signal
Outside Door Handle (driver and front passenger doors) (lock switch)	Transmits door unlock request signal to certification ECU
Back Door Opening Switch	Transmits back door open request signal to certification ECU via main body ECU
Door Control Receiver	Receives ID code from key and transmits it to certification ECU
Power Switch	Changes vehicle's power modes between 4 stages (OFF, ON (ACC), ON (IG), and ON (READY)) in accordance with shift position, state of stop light switch and check results of key
Key Cancel Switch	Turns smart key system ON / OFF
Stop Light Switch	Outputs state of brake pedal to power source control ECU
Combination Meter (key warning light)	Certification ECU illuminates key warning light when these conditions occur: Key is moved out of vehicle while engine is in operation or key is left in vehicle, and door lock is operated
Combination Meter (buzzer)	Certification ECU sounds buzzer when these conditions occur: Key is moved out of vehicle while engine is in operation or key is left in vehicle, and door lock is operated

Components	Function
Wireless Door Lock Buzzer	Certification ECU sounds wireless door lock buzzer when these conditions from occurring: Key is moved out of vehicle while engine is in operation or key is left in vehicle, and door lock is operated
Certification ECU	Identifies and check ID codes from door control receiver, then transmits signals to ECU's if ID codes match. Upon receiving signals from switches, certification ECU transmits intermittent transmission request signals to door electrical key oscillators and transmission request signals to other oscillators in accordance with conditions.
Power Source Control ECU	Main control of smart key system (for starting). Receives results of ID code check of key provided by certification ECU via transponder key ECU. When check results show that ID code is legitimate, power source control ECU authorizes transition of power modes through operation of power switch.
Transponder Key ECU	Main control of engine immobiliser system. Transmits results of ID code check of key provided by certification ECU to power source control ECU. Transmits hybrid system start authorization signal to hybrid vehicle control ECU.
Transmission Control ECU	Actuates parking lock actuator upon receiving power switch OFF signal from power source control ECU. Transmits state of parking lock operation (whether shift position is P or other position) to power source control ECU.
Hybrid Vehicle Control ECU	Starts hybrid system upon receiving system start signal from power source control ECU (ON (READY)). Receives hybrid system start authorization signal from transponder key ECU.
Main Body ECU	Transmits body control system signals (courtesy switch, door key lock/unlock switch, door lock position switch, halfway switch signals, etc.) to certification ECU via BEAN. Receives door lock/unlock request signal from certification ECU via dedicated serial communication line (with local protocol), which is used between main body ECU, certification ECU and door control receiver.

3. SYSTEM FUNCTION

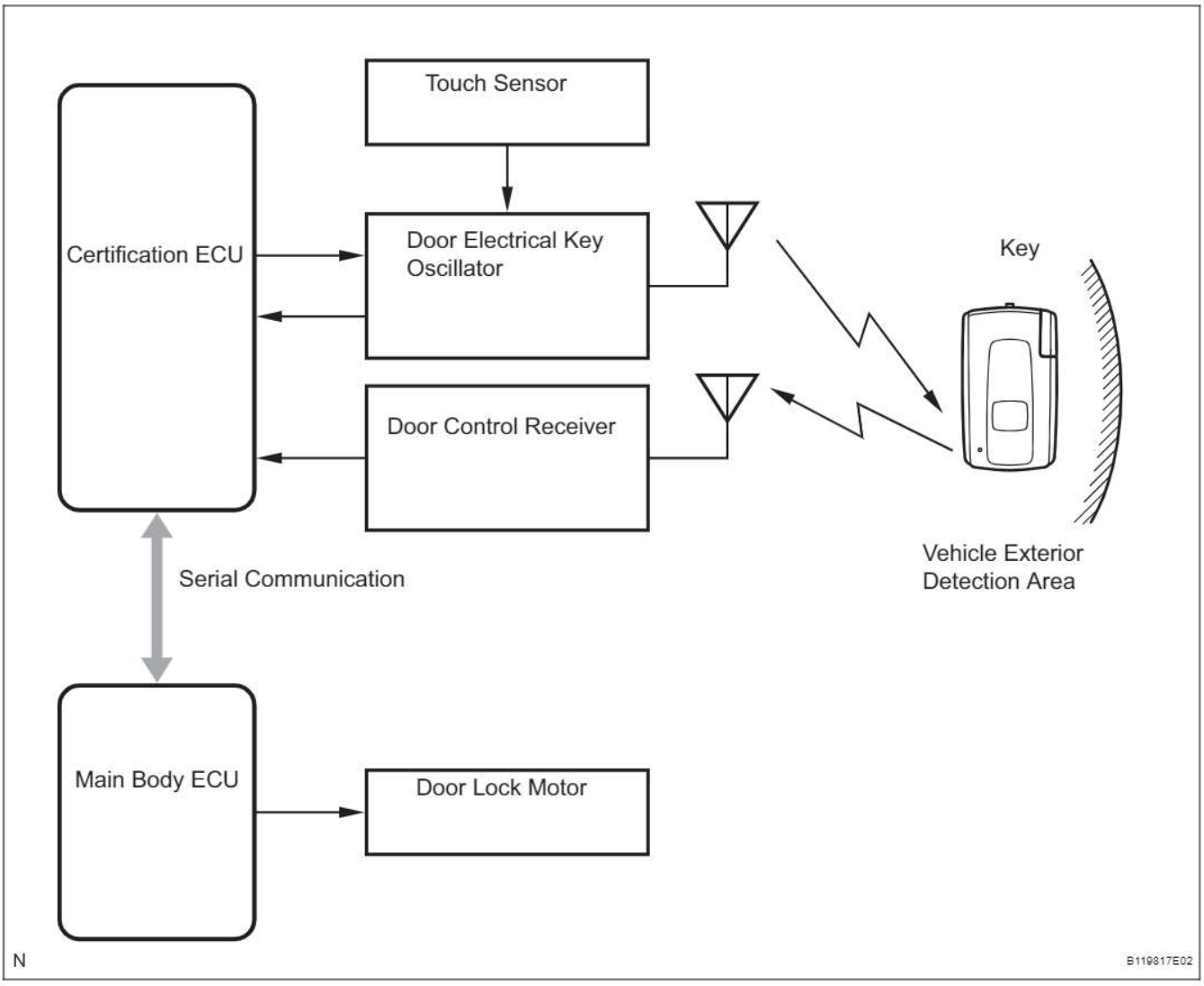
(a) Entry unlock

- For the system to be able to detect the location of the key, the vehicle doors must be locked. The door oscillators transmit key detection signals at prescribed intervals in order to form vehicle exterior detection areas (0.7 to 1.0 m (2.3 to 3.3 ft.)).
- When the key is brought into a detection area, the system automatically checks the key's ID code. When this is completed, the door that has detected the key enters the unlock standby condition in accordance with the prescribed unlock mode. In this condition, if the touch sensor on the outside door handle is touched, all doors unlock.

Mode	Unlock Standby Door	Door to be Unlocked
One Door Unlock*	Driver	Driver Door Only
One Door Unlock*	Front Passenger	All Doors
One Door Unlock*	Back Door	Back Door Only
All Door Unlock	Driver	All Doors
All Door Unlock	Front Passenger	All Doors

Mode	Unlock Standby Door	Door to be Unlocked
All Door Unlock	Back Door	All Doors
Driver's Door Unlock	Driver	Driver Door Only
Driver's Door Unlock	Front Passenger	All Doors
Driver's Door Unlock	Back Door	All Doors

HINT:
*: This is the default setting. The entry unlock mode can be changed by pressing the LOCK and PANIC switches on the key for approximately 5 seconds. For details, see CUSTOMIZE PARAMETERS (see page DL-144).

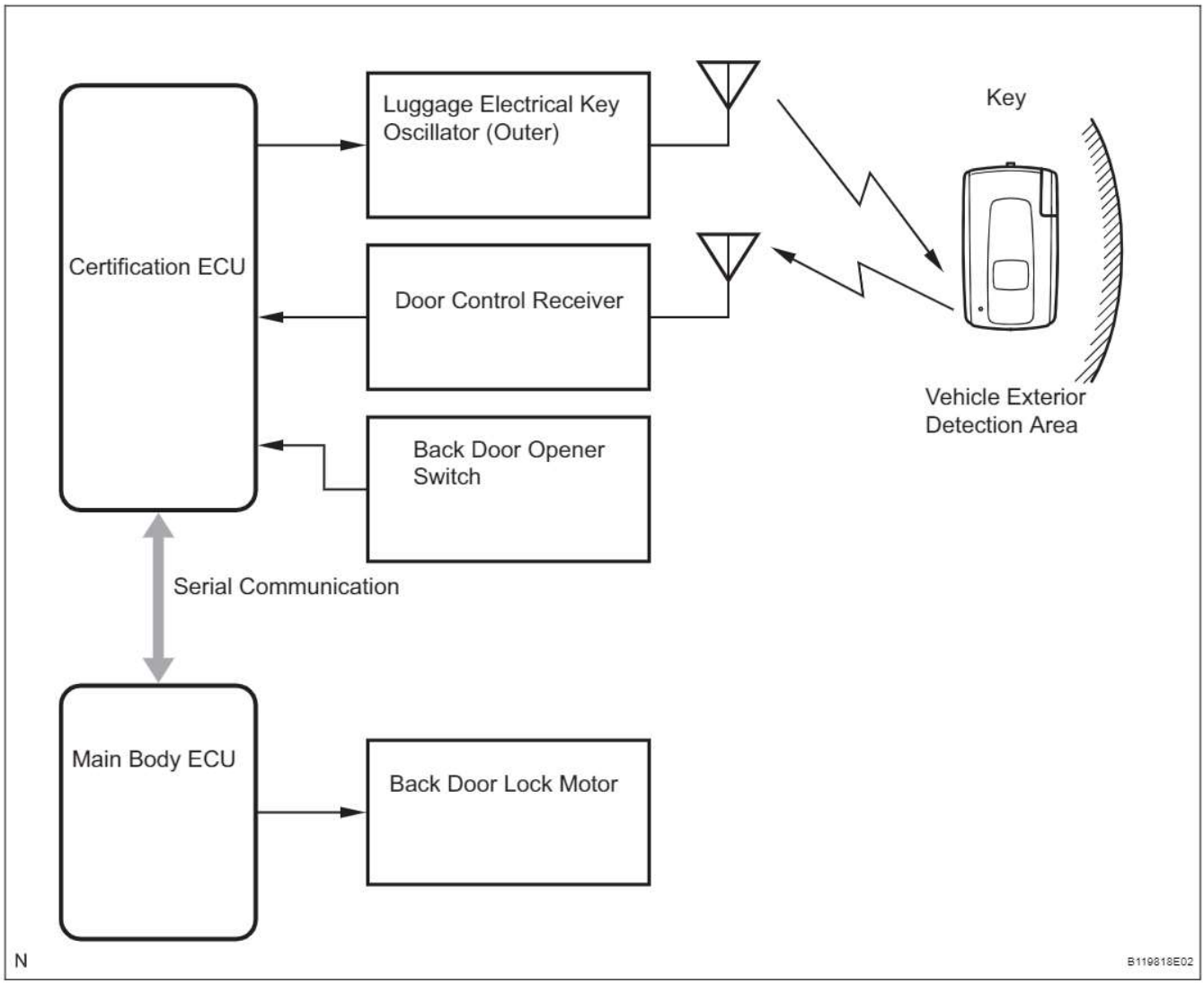


(b) Back door entry unlock

- With all doors locked, if the back door opener switch is pressed with the key in the user's possession, the luggage electrical key oscillator (outer) outputs a key detection signal and the certification ECU checks the ID code. After the check is completed, the certification ECU unlocks* the back door via the main body ECU. At this time, if the user continues to press the back door opener switch, the back door lock latch will be released.

HINT:

*: If entry unlock is set to individual door unlock mode, only the back door will be unlocked. If set to all door unlock mode or driver's door unlock mode (default setting), all doors will be unlocked.



HINT:

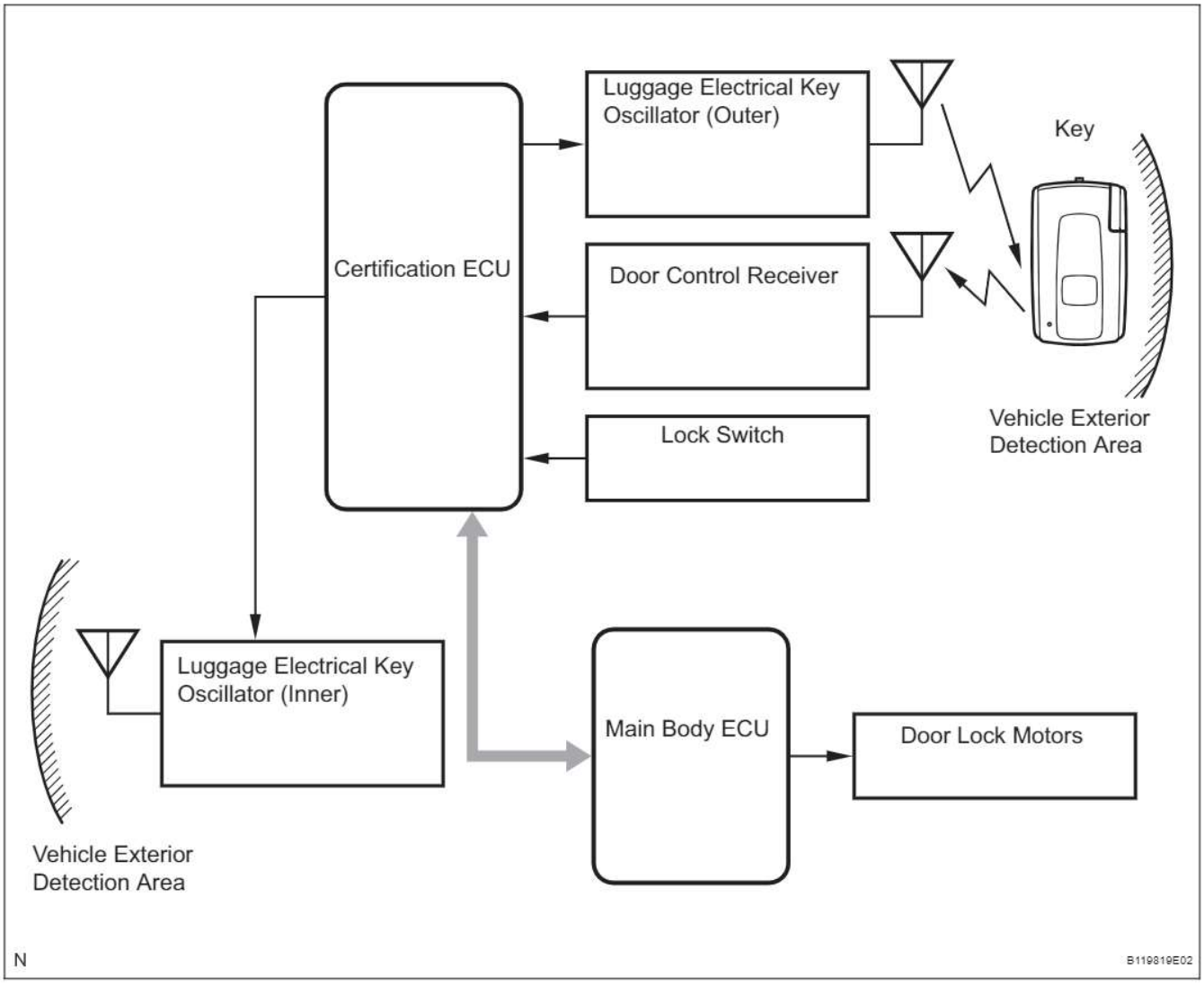
Handling precaution for back door entry unlock:
Back door entry unlock function may not operate if the key is placed near the center of the rear bumper.

(c) Entry lock

- When the key is located outside the vehicle and all doors are closed, if the user presses the lock switch on the outside door handle or the lock switch on the back door, the certification ECU will actuate all oscillators and start checking for the ID code of a key.
- At this time, if an oscillator outside the vehicle (driver's/front passenger's door electrical key oscillator or luggage electrical key oscillator (outer)) determines that the key ID code is legitimate, the certification ECU determines that the key has been taken outside the vehicle and locks all doors via the main body ECU.
- An entry unlock operation will not be authorized for approximately 3 seconds* after the doors have been locked.

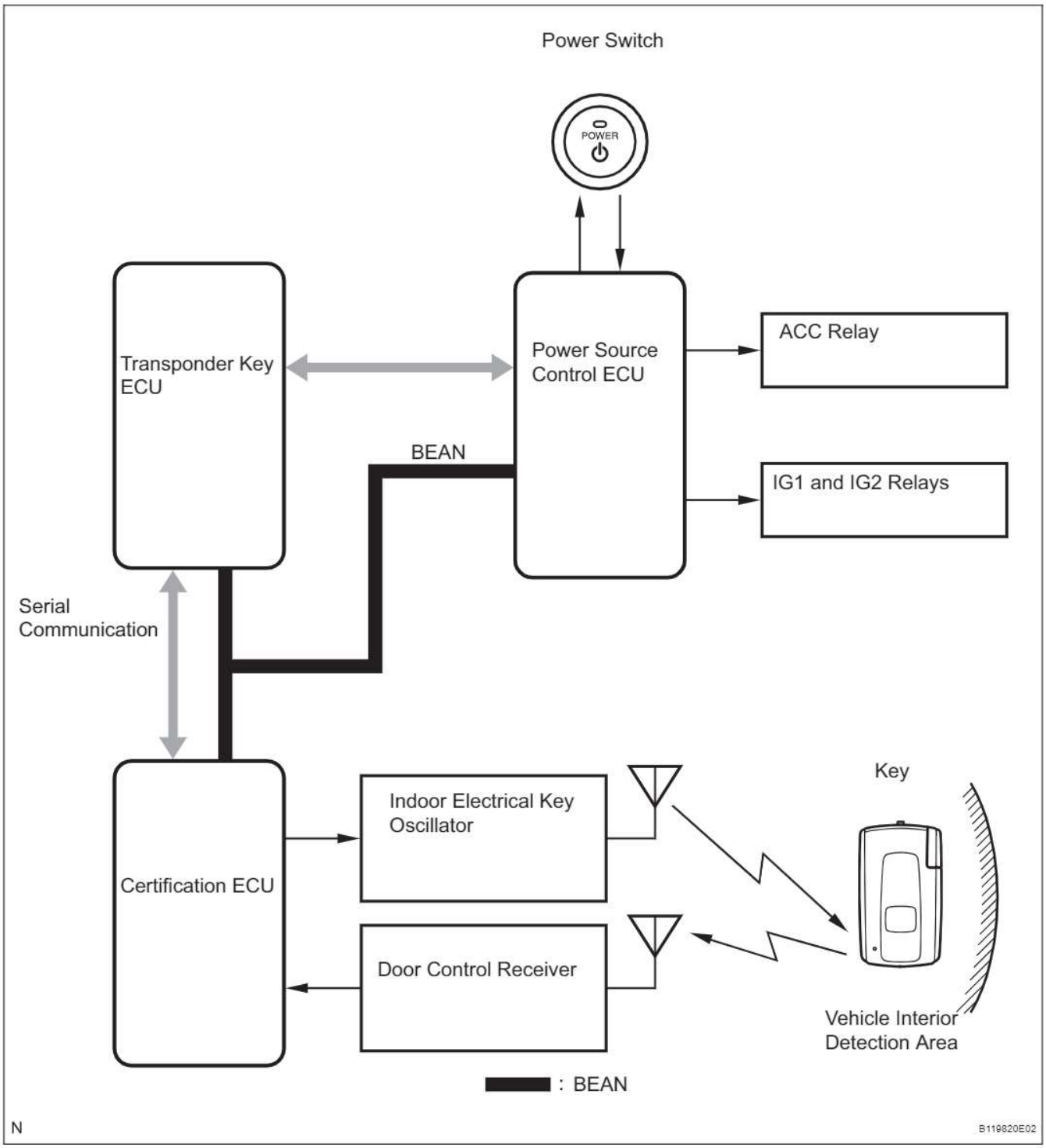
HINT:

*: The setting of this duration can be changed using the customize function. For details, see CUSTOMIZE PARAMETERS (see page DL-144).



(d) Entry ignition
OFF → ON (ACC) → ON (IG)

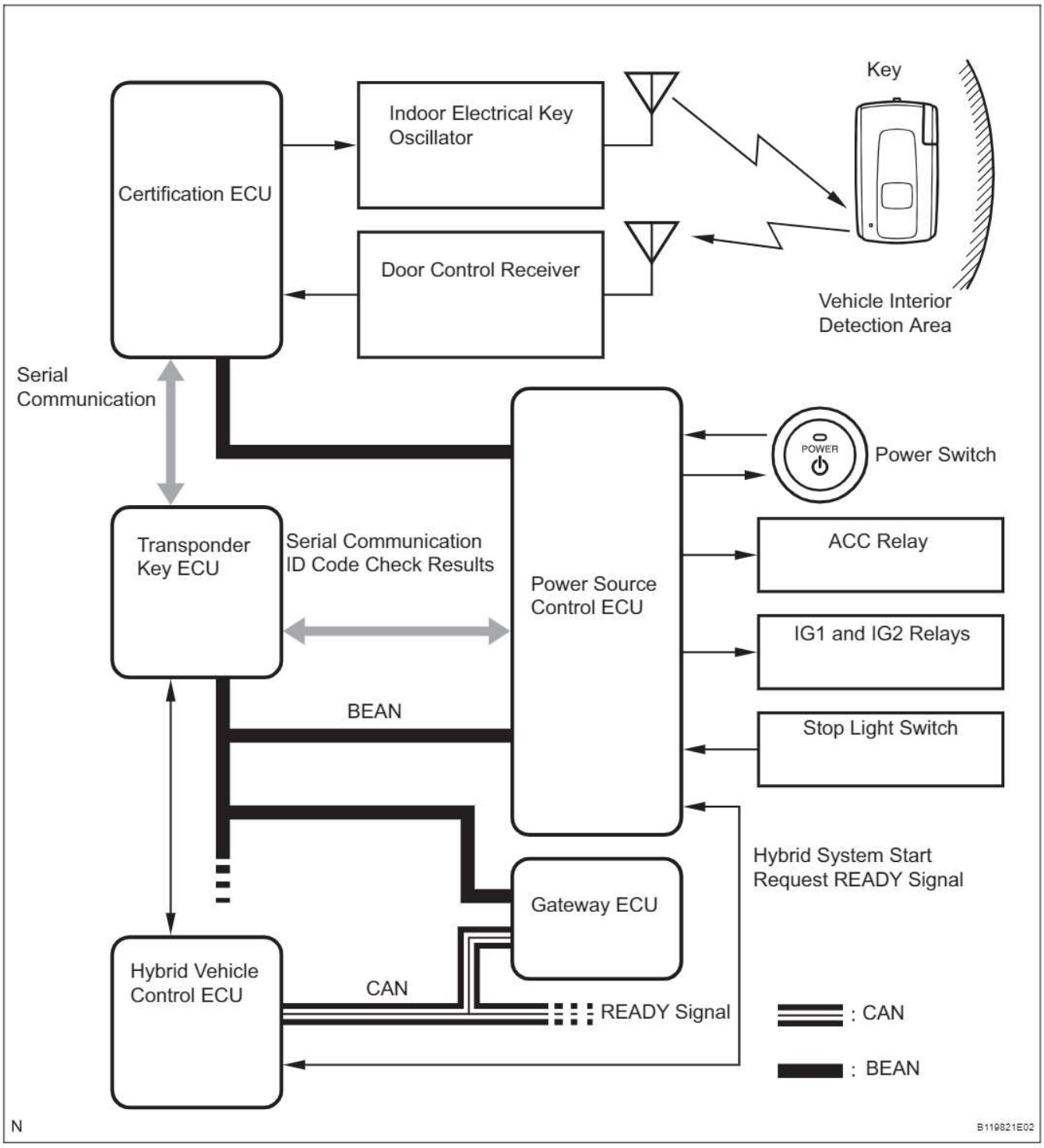
- If the driver presses the power switch once without depressing the brake pedal, the indoor electrical key oscillator, in accordance with the request signal received from the certification ECU, forms a key detection area inside the vehicle by emitting key detection signals. Accordingly, the key sends an ID code signal to the certification ECU via the door control receiver. The certification ECU checks the ID code of the key and transmits the check results to the transponder key ECU.
- The transponder key ECU transmits the check results to the power source control ECU. If the check results show that the ID code is legitimate, the power source control ECU will turn on the ACC relay and start the ACC power supply. At this time, the power source control ECU illuminates a green indicator light on the power switch in order to inform the driver of the ON (ACC) status.
- After the transition to the ON (ACC) status, if the driver presses the power switch again, the power source control ECU will turn on the IG1 and IG2 relays and start the IG power supply. At this time, the power source control ECU illuminates an amber indicator light on the power switch in order to inform the driver of the ON (IG) status.



OFF → ON (READY)

If the driver presses the power switch once while depressing the brake pedal, the indoor electrical key oscillator, in accordance with the request signal received from the certification ECU, forms a key detection area inside the vehicle by emitting key detection signals. Accordingly, the key sends an ID code signal to the certification ECU via the door control receiver.

The certification ECU checks the ID code of the key and transmits the check results to the transponder key ECU.
The transponder key ECU transmits the check results to the power source control ECU. If the check results reveal that the ID code is legitimate, the power source control ECU will turn on the ACC, IG1 and IG2 relays and start the ACC and IG power supply.
At this time, the power source control ECU illuminates an amber indicator light on the power switch in order to inform the driver of the ON (IG) status.
After the indicator light has illuminated, the power source control ECU transmits a hybrid system start request signal to the hybrid vehicle control ECU.
Upon receiving this signal, the hybrid vehicle control ECU verifies the check results of the key ID code provided by the transponder key ECU.
If the check results reveal that the ID code is legitimate, the hybrid vehicle control ECU starts the hybrid system.
At this time, the power source control ECU will turn off the indicator light on the power switch in order to inform the driver of the ON (READY) status.



(e) Warning function

- General

The smart key system is equipped with a warning function to prevent problems resulting from errors in key usage. The smart key system works without any requirements other than having the key in the user's possession. The user, as a result, may become unaware of the presence or location of the key and make errors (listed below) that could lead to serious problems.

EXAMPLES:

- The driver is unaware that the key has been taken out of the vehicle by a passenger.
- The driver exits the vehicle with the hybrid system running.
- The driver exits the vehicle with the shift position not on P.

If the above situations occur, the hybrid system may be unable to be started after it has been turned off, the vehicle may be stolen, or other problems may result. Warning function descriptions for several key usage errors are below.

(1) Warning against the driver taking the key outside the vehicle with the shift position on P:

Possible results without warning	Vehicle theft or inability to restart hybrid system
Detection conditions	If all conditions listed below are met and key ID code check result by room oscillator fails, warning will be issued: • Shift position is P • Power switch is not OFF • Driver side door is opened and closed
Warning (Key warning light)	Illuminates upon detection and turns OFF if power switch is turned OFF or key ID code check result by indoor electrical key oscillator passes.
Warning (buzzer (combination meter))	Sounds once upon detection. Sounds again if vehicle driven in this state.
Warning (wireless door lock buzzer)	Sounds 3 times upon detection and stops if power switch is turned OFF or key ID code check result by indoor electrical key oscillator passes

(2) Warning against the driver taking the key outside the vehicle while the shift position is not on P:

Possible results without warning	Vehicle theft or inability to restart hybrid system
Detection conditions	If all conditions listed below are met and key ID code check result by indoor electrical key oscillator fails, warning will be issued: • Shift position is not P • Power switch is ON (ACC), ON (IG) or ON (READY) • Driver side door is opened and closed
Warning (Key warning light)	• Illuminates upon detection and turns OFF if power switch is turned OFF or key ID code check result by indoor electrical key oscillator passes • Warning message is displayed on multi-display
Warning (buzzer (combination meter))	Sounds continuously upon detection and stops if power switch is turned OFF, shift position is changed to P, or key ID code check result by indoor electrical key oscillator passes
Warning (wireless door lock buzzer)	Sounds continuously upon detection and stops if power switch is turned OFF, shift position is changed to P, or key ID code check result by indoor electrical key oscillator passes

(3) Warning against a passenger taking the key outside the vehicle:

Possible results without warning	Inability to restart hybrid system
Detection conditions	If all conditions listed below are met and key ID code check result by indoor electrical key oscillator fails, warning will be issued: • Power switch is not OFF • Door other than driver side door is opened and closed
Warning (Key warning light)	Illuminates upon detection and turns OFF if power switch is turned OFF or key ID code check result by indoor electrical key oscillator passes
Warning (buzzer (combination meter))	Sounds once upon detection. Sounds again if vehicle is driven in this state.

Warning (wireless door lock buzzer)	Sounds 3 times upon detection and stops if power switch is turned OFF or key ID code check result by indoor electrical key oscillator passes.

(4) Warning against operating the entry lock with the hybrid system operating:

Possible results without warning	Vehicle theft or inability to restart hybrid system
Detection conditions	If all conditions listed below are met, key ID code check result by indoor electrical key oscillator fails, and key ID code check by door electrical key oscillator passes, warning will be issued: • Shift position is P • Power switch is not OFF • All doors are closed • Lock switch on outside door handle is ON
Warning (Key warning light)	Illuminates upon detection and turns OFF if power switch is turned OFF or key ID code check result by indoor electrical key oscillator passes
Warning (buzzer (combination meter))	-
Warning (wireless door lock buzzer)	Sounds for 2 seconds

DL

(5) Warning against operating the door lock while the key remains in the vehicle:

Possible results without warning	Vehicle theft
Detection conditions	If all conditions listed below are met and key ID code check result by indoor electrical key oscillator passes, warning will be issued: • Power switch is OFF • All doors are closed • Lock switch on outside door handle is ON
Warning (Key warning light)	-
Warning (buzzer (combination meter))	-
Warning (wireless door lock buzzer)	Sounds for 2 seconds

(6) Warning against low battery of the key:

Possible results without warning	Entry control is suddenly disabled
Detection conditions	If condition listed below is met, and certification ECU receives code indicating voltage drop of key battery while indoor electrical key oscillator checks key ID code: The power switch has been turned OFF after 20 or more minutes have elapsed after hybrid system has been started.
Warning (Key warning light)	-
Warning (buzzer (combination meter))	Sounds once upon detection
Warning (wireless door lock buzzer)	-

(7) Warning against operating the entry ignition outside the detection area of the indoor electrical key oscillator:

Possible results without warning	User is confused
Detection conditions	If condition listed below is met and key ID code check result by indoor electrical key oscillator fails, warning will be issued: Power switch is pushed
Warning (Key warning light)	Illuminates for 5 seconds upon detection
Warning (buzzer (combination meter))	Sounds once upon detection
Warning (wireless door lock buzzer)	-

(8) Warning against operating the door lock while any of the doors is open:

Possible results without warning	Vehicle theft

Detection conditions	If all conditions listed below are met, warning will be issued: • Power switch is OFF • Any door is open • Lock switch on outside door handle is ON
Warning (Key warning light)	-
Warning (buzzer (combination meter))	-
Warning (wireless door lock buzzer)	Sounds for 10 seconds and stops when 10 seconds have passed or if any door is closed

(f) Entry unlock mode selector function

- When the power switch is OFF, and the key's LOCK switch and PANIC switch remain pressed for approximately 5 seconds, the entry unlock mode can be changed between the following: individual door unlock, driver's door unlock, all doors unlock and individual door unlock.
- The wireless door lock buzzer informs the user of the entry unlock mode. Refer to the chart below.

DL

Unlock Mode	Wireless Door Lock Buzzer	Buzzer (in Combination Meter)
One Door		Sounds once
All Doors		Sounds once
Driver's Door (Default Setting)		Sounds once

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NOTICE:

- **This function only changes the unlocking modes of the smart key system. It does not affect the wireless door lock control system.**
- **When changing modes, be sure to push the LOCK switch and PANIC switch firmly, or the panic alarm may activate.**

(g) Power saving function

- When the doors are locked, the door electrical key oscillators emit signals to the outside of the vehicle at default intervals. To avoid depleting the auxiliary battery, the system has a power saving function whereby: 1) after 5 days without a response from the key, the system extends door electrical key oscillator signal intervals; and 2) after 14 days without a response from the key, the system deactivates the smart key system.
- When the doors are locked and the key is located within the vehicle exterior detection area, the key and door electrical key oscillators are maintaining communication and using power. To avoid depleting the key battery and auxiliary battery, if the key is located within the vehicle exterior detection area for longer than 10 minutes, the system deactivates the smart key system.

Refer to the chart below for information on how to reinstate the smart key system.

DL

Condition	Control	Reinstatement Condition
Vehicle remains parked for a long time. No response from key for more than 5 days	Extends signal transmission interval	• Wireless door lock control signal (lock or unlock) is input and ID code matches • Lock switch signal is input • Door is locked or unlocked in unison with movement of mechanical key
Vehicle remains parked for a long time. No response from key for more than 14 days	Automatically deactivates smart key system	• Wireless door lock control signal (lock or unlock) is input and ID code matches • Lock switch signal is input • Door is locked or unlocked in unison with movement of mechanical key
Vehicle remains parked for a long time. Key is located in vehicle exterior detection area for longer than 10 minutes	Automatically deactivates smart key system	• Wireless door lock control signal (lock or unlock) is input and ID code matches • Lock switch signal is input • Door is locked or unlocked in unison with movement of mechanical key

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the smart key system.

*: Use the intelligent tester.

1	VEHICLE BROUGHT TO WORKSHOP

NEXT

2	INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

3	CHECK COMMUNICATION FUNCTION OF MULTIPLEX COMMUNICATION SYSTEM (BEAN)*

(a) Use the intelligent tester to check if the multiplex communication system (MPX) is functioning normally.

Result

Result	Proceed to
MPX DTC is not output	A
MPX DTC is output	B

B → **Go to MULTIPLEX COMMUNICATION SYSTEM**

A

4	PROBLEM SYMPTOMS TABLE

(a) Refer to the problem symptoms table (see page DL-145).

Result:

Result	Proceed to
Fault is not listed in problem symptoms table	A
Fault is listed in problem symptoms table	B

B → **Go to step 6**

A

5	OVERALL ANALYSIS AND TROUBLESHOOTING*

(a) On-vehicle inspection (see page DL-155)
(b) DATA LIST/ACTIVE TEST (see page DL-153)
(c) Terminals of ECU (see page DL-146)

NEXT

6	REPAIR OR REPLACE

NEXT

END

DL

REGISTRATION

1. DESCRIPTION OF REGISTRATION: PROCEDURE 1

HINT:

- Entry codes (wireless key codes) are the same as recognition codes for the wireless transmitter. Registering an entry key code enables both the smart key system and the wireless door lock control system to be operated.
- Code registration is necessary when the certification ECU or key is replaced.

(a) Select a mode from the following:

- New registration mode:
  New registration mode is used when the certification ECU is replaced with a new ECU.
- Add mode:
  Add mode is used when a new key is added.
- Communication mode:
  Communication mode is used to confirm the number of codes currently registered. Use the first screen of the key registration option.
- Erasure mode:
  Erasure mode is used to erase all the key codes except for the code for the master key that is used during erasure mode. Use this mode when a key is lost.

(b) Perform code registration and code erasure according to the flowcharts (see PROCEDURE 2 and 3).

HINT:

- A total of 5 keys can be registered.
- When registering a transmitter, do not have any other transmitters close to the transmitter being registered. The certification ECU may be unable to recognize which transmitter is sending signals.

2. REGISTRATION OF NEW AND ADDITIONAL ENTRY KEY CODE: PROCEDURE 2

(a) Register an entry key code using the intelligent tester.

System state	State switching condition	Go to
1. Start	-	-
2. Vehicle should be in the following condition	New registration mode. 1. Master key is in key slot 2. Power switch is ON (IG)	3. Intelligent tester operation
	Add mode. Power switch is ON (IG)	
3. Intelligent tester operation	1. Select PRIUS from menu. 2. Select SMART KEY SYSTEM. 3. Select ID UTILITY. 4. Select SMART CODE REG. HINT: Perform operation according to prompts on tester screen and make sure that operation is finished without errors.	4. Check if it is new registration or additional registration

System state	State switching condition	Go to
4. Check if it is new registration or additional registration	New registration mode (when certification ECU is new).	6. Key (transmitter) switch operation
	Add mode (when master key is already registered).	5. Master key (transmitter) switch operation
5. Master key (transmitter) switch operation	Press any one of the transmitter's switches. HINT: This operation should be performed with already registered master key.	6. Key (transmitter) switch operation
6. Key (transmitter) switch operation (Within 30 seconds)	HINT: • Perform this operation with key that will be newly registered. If no keys have been registered, register master key first in new registration mode. • When key code is registered, interactive communication is performed between key and certification ECU through indoor electrical key oscillator. Electrical key oscillator's reception is best in front seat area. • Interactive communication between the key and the ECU may take several seconds. The amount of time from switch operation to response is approximately 2 seconds. • In new registration mode, turn power switch OFF and then remove master key from key slot. 1. Press the LOCK and UNLOCK switches on transmitter simultaneously. 2. Within 3 seconds of the previous step, press any one of the switches. Wireless door lock buzzer sounds when registration is completed without errors.	7. Register other key codes or finish the registration
7. Register other key codes or finish the registration	Register other key codes. Continue registration. HINT: Select the next step on the tester screen.	5. Master key (transmitter) switch operation
	Finish the registration.	End

HINT:

- A brief outline of procedures for key code registration is shown above. For more detailed information, please refer to the intelligent tester screen's instructions.
- The number of currently registered codes can be checked on the first screen of the key code registration option.

3. ERASURE OF ENTRY KEY CODE: PROCEDURE 3

(a) Erase an entry key code using the intelligent tester.

System state	State switching condition	Go to
1. Start	-	-
2. Vehicle should be in the following condition	Power switch is ON (IG)	3. Intelligent tester operation
3. Intelligent tester operation	1. Select PRIUS from menu. 2. Select SMART KEY SYSTEM. 3. Select ID UTILITY. 4. Select SMART CODE ERS.	4. Master key (transmitter) switch operation
4. Master key (transmitter) switch operation	This operation should be performed with already registered master key. Press any one of transmitter's switches.	5. Intelligent tester operation

System state	State switching condition	Go to
5. Intelligent tester operation	After above switch operation, operating tester according to tester screen instructions erases codes except codes of master key used in previous step.	End

HINT:
A brief outline of procedures for key code erasure is shown above. For more detailed information, please refer to the intelligent tester screen's instructions.

CUSTOMIZE PARAMETERS

HINT:
The items in the table on the next page can be customized.
NOTICE:

- **When the customer request a change in a function, first make sure that the function(s) can be customized.**
- **Be sure to record the current setting before customizing.**
- **When troubleshooting a function, first make sure that the function is not set to OFF.**

Smart key system

Display (Item)	Default	Contents	Setting
SMART WARN 1 (Warns if key is taken from D-door with P position)	ON	Function that warns driver that key is taken out from driver's door when shift position is P and power switch is not OFF	ON / OFF
SMART WARN 2 (Warns if key is taken from D-door without P position)	ON	Function that warns driver that key is taken out from driver's door when shift position is not P and power switch is not OFF	ON / OFF
SMART WARN 3 (Warns if key is taken out by other passengers)	ON	Function that warns driver that key is taken out from front passenger's door by passenger when power switch is not OFF	ON / OFF
SMART BUZ NUM (Sets number of warning buzzer sounds)	3 TIMES	Function that sets number of warning buzzer sounds when key is taken out of vehicle	OFF / 3TIMES / 5TIMES / 7TIMES
SMART WARN 4 (Warning time for locking door when engine is idling)	2s	Function that sets warning time for locking doors while engine is idling	OFF / 1s / 2s
SMART WARN 5 (Warning when key is left in vehicle)	2s	Function that sets warning time for locking doors while key is inside vehicle	OFF / 1s/ 2s
SMART WARN 6 (Warning if starting engine when key is out of detection range)	ON	Function that warns driver that entry ignition control is being attempted to be activated while key is out of detection range	ON / OFF
KEY LOW-BATT WRN (Warning when key battery becomes weak)	ON	Function that warns driver that key's battery power is low	ON / OFF
SMART UNLOCK (Entry door unlock mode)	EACH	Function that makes entry unlock operation available.	ALL / EACH / D-door
TRANSMIT INTVAL (Transmission interval)	0.3s	Function that sets entry signal transmission intervals when vehicle is stopped and key is outside vehicle	0.15s / 0.3s / 0.45s / 0.6s
PARK WAIT TIME (Waiting time to permit door opening of door after locking)	3.0s	Function that sets waiting time to permit opening door after door is locked with entry lock function	0.5s / 1.5s / 2.5s / 5s
SMART BACK DOOR (Back door opening operation when vehicle is locked)	LONG	Function that enables back door to open when key is inside luggage room	LONG / TWICE / OFF

PROBLEM SYMPTOMS TABLE

HINT:
Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

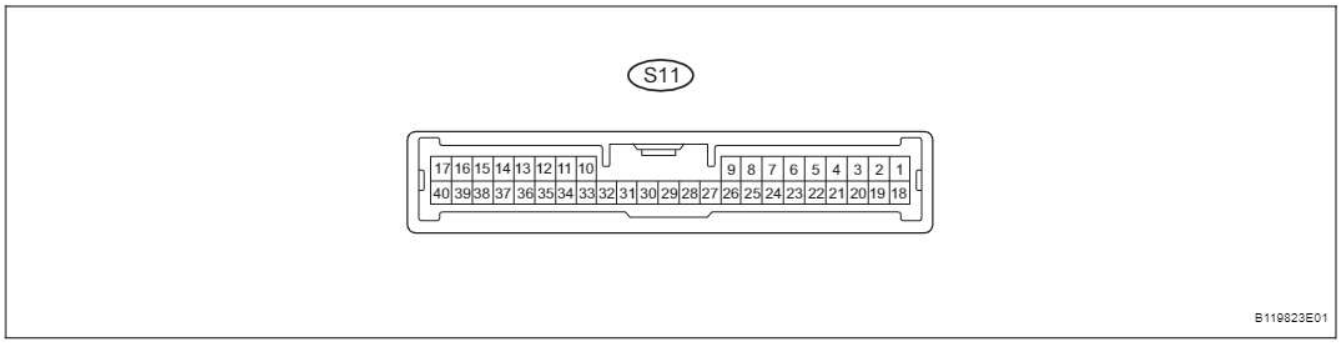
Smart key system

Symptom	Suspected area	See page
Entry Functions do not Operate at All	1. Wireless door lock control system	DL-187
	2. Key cancel switch	DL-187
	3. Certification ECU	DL-187
	4. Wire harness	DL-187
Key Cancel Switch does not Operate	1. Wireless door lock control system	DL-159
	2. Key cancel switch	DL-159
	3. Certification ECU	DL-159
	4. Wire harness	DL-159
Key Warning Light does not Come ON	1. Certification ECU	DL-185
	2. Combination meter	DL-185
	3. Wire harness	DL-185
Driver Side Door Entry Unlock Function does not Operate	1. Power door lock control system	DL-162
	2. Door electrical key oscillator LH	DL-162
	3. Outside door handle front LH	DL-162
	4. Certification ECU	DL-162
	5. Wire harness	DL-162
Front Passenger Side Door Entry Unlock Function does not Operate	1. Power door lock control system	DL-167
	2. Door electrical key oscillator RH	DL-167
	3. Outside door handle front RH	DL-167
	4. Certification ECU	DL-167
	5. Wire harness	DL-167
Driver Side Door Entry Lock and Unlock Functions do not Operate	1. Power door lock control system	DL-172
	2. Door electrical key oscillator LH	DL-172
	3. Certification ECU	DL-172
	4. Wire harness	DL-172
Front Passenger Side Door Entry Lock and Unlock functions do not Operate	1. Power door lock control system	DL-174
	2. Door electrical key oscillator RH	DL-174
	3. Certification ECU	DL-174
	4. Wire Harness	DL-174
Driver Side Door Entry Lock Function does not Operate	1. Power door lock control system	DL-176
	2. Outside door handle front LH	DL-176
	3. Certification ECU	DL-176
	4. Wire harness	DL-176
Entry Lock Function does not Operate Front Passenger Side Door	1. Power door lock control system	DL-179
	2. Outside door handle front RH	DL-179
	3. Certification ECU	DL-179
	4. Wire harness	DL-179
Vehicle is not Ready to Start when Driver Has Key	1. Indoor electrical key oscillator	DL-189
	2. Certification ECU	DL-189
	3. Key (transmitter)	DL-189
	4. Wire harness	DL-189

Symptom	Suspected area	See page
Back Door Entry Unlock Function does not Operate	1. Luggage electrical key oscillator (outer)	DL-193
	2. Back door opener switch	DL-193
	3. Luggage antenna	DL-193
	4. Certification ECU	DL-193
	5. Wire harness	DL-193
Key Luggage Compartment Lock-in Prevention Function does not Operate	1. Luggage electrical key oscillator (inner)	DL-182
	2. Certification ECU	DL-182
	3. Wire harness	DL-182

TERMINALS OF ECU

1. CHECK CERTIFICATION ECU



(a) Disconnect the S11 ECU connector.
(b) Measure the resistance and voltage of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
+B1 (S11-1) - Body ground	R - Body ground	+B power supply	Always	10 to 14 V
IG (S11-18) - Body ground	B - Body ground	Ignition power supply	Power switch OFF	Below 1 V
IG (S11-18) - Body ground	B - Body ground	Ignition power supply	Power switch ON (IG)	10 to 14 V
E (S11-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
TSW1 (S11-5) - Body ground	B - Body ground	Outside door handle LH lock switch signal	Lock switch OFF	10 kΩ or higher
TSW1 (S11-5) - Body ground	B - Body ground	Outside door handle LH lock switch signal	Lock switch ON	Below 1 Ω
TSW2 (S11-6) - Body ground	R - Body ground	Outside door handle RH lock switch signal	Lock switch OFF	10 kΩ or higher
TSW2 (S11-6) - Body ground	R - Body ground	Outside door handle RH lock switch signal	Lock switch ON	Below 1 Ω
TSW6 (S11-8) - Body ground	B - Body ground	Back door lock switch signal	Back door lock switch OFF	10 kΩ or higher
TSW6 (S11-8) - Body ground	B - Body ground	Back door lock switch signal	Back door lock switch ON	Below 1 Ω
CNSL (S11-25) - Body ground	W-B - Body ground	Key cancel switch signal	Key cancel switch OFF	10 kΩ or higher
CNSL (S11-25) - Body ground	W-B - Body ground	Key cancel switch signal	Key cancel switch ON	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.
(c) Reconnect the S11 ECU connector.
(d) Measure the voltage of the connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CLG1 (S11-13) - E (S11-17)	P - W-B	Driver door electrical key oscillator sensor signal	All doors closed, all doors locked and power switch OFF	Alternating between 5 V and below 1 V
CLG1 (S11-13) - E (S11-17)	P - W-B	Driver door electrical key oscillator sensor signal	Door unlocked or door open	Below 1 V
CLG2 (S11-14) - E (S11-17)	R - W-B	Front passenger door electrical key oscillator sensor signal	All doors closed, all doors locked and power switch OFF	Alternating between 5 V and below 1 V
CLG2 (S11-14) - E (S11-17	R - W-B	Front passenger door electrical key oscillator sensor signal	Door unlocked or door open	Below 1 V

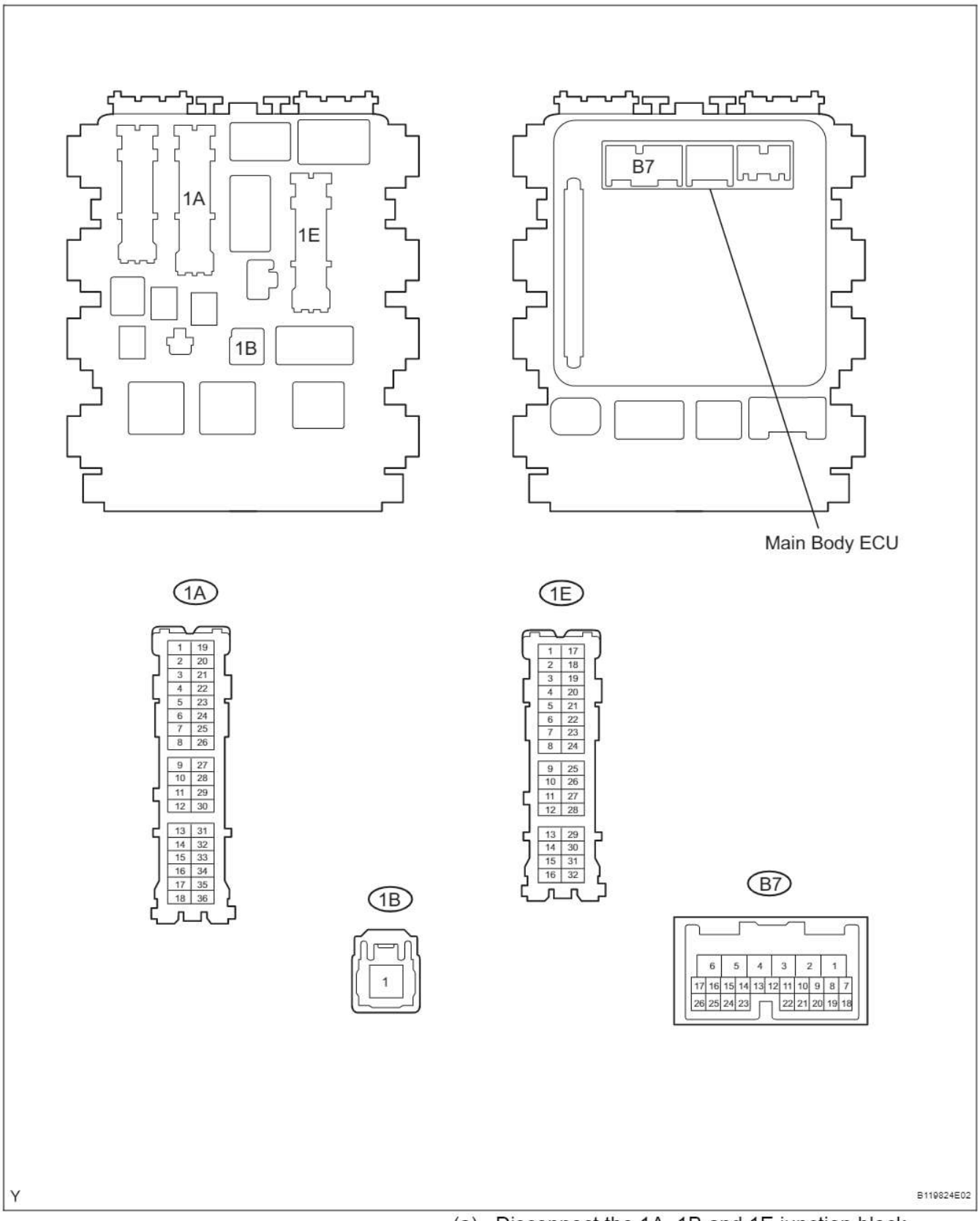
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CLG5 (S11-36) - E (S11-17)	G - W-B	Indoor electrical key oscillator sensor signal	30 seconds after driver side door opened and closed, power switch OFF	Alternating between 5 V and below 1 V
CLG5 (S11-36) - E (S11-17)	G - W-B	Indoor electrical key oscillator sensor signal	Within 30 seconds after driver side door opened and closed, power switch ON (IG)	Below 1 V
CLG7 (S11-38) - E (S11-17)	BR - W-B	Luggage electrical key oscillator inner sensor signal	Back door opener switch OFF	Alternating between 5 V and below 1 V
CLG7 (S11-38) - E (S11-17)	BR - W-B	Luggage electrical key oscillator inner sensor signal	Back door opener switch ON	Below 1 V
CLG8 (S11-39) - E (S11-17)	O - W-B	Luggage electrical key oscillator outer sensor signal	Back door opener switch OFF	Alternating between 5 V and below 1 V
CLG8 (S11-39) - E (S11-17)	O - W-B	Luggage electrical key oscillator outer sensor signal	Back door opener switch ON	Below 1 V
SEL1 (S11-23) - E (S11-17)	Y - W-B	Touch sensor activation control signal	Key at least 3 m (9.8 ft.) away from closed and locked door	10 to 14 V
SEL1 (S11-23) - E (S11-17)	Y - W-B	Touch sensor activation control signal	Key is near closed and locked door	Below 1 V
SEL2 (S11-24) - E (S11-17)	B - W-B	Touch sensor activation control signal	Key at least 3 m (9.8 ft.) away from closed and locked door	10 to 14 V
SEL2 (S11-24) - E (S11-17)	B - W-B	Touch sensor activation control signal	Key is near closed and locked door	Below 1 V
SEN1 (S11-21) - E (S11-17)	R - W-B	Touch sensor detection signal	Outside door handle LH touched	10 to 14 V
SEN1 (S11-21) - E (S11-17)	R - W-B	Touch sensor detection signal	Outside door handle LH not touched	Below 1 V
SEN2 (S11-22) - E (S11-17)	W - W-B	Touch sensor detection signal	Outside door handle RH touched	10 to 14 V
SEN2 (S11-22) - E (S11-17)	W - W-B	Touch sensor detection signal	Outside door handle RH not touched	Below 1 V
RDA3 (S11-29) - E (S11-17)	L - W-B	Door control receiver input signal	With power switch OFF, no key and all doors closed	Below 1 V
RDA3 (S11-29) - E (S11-17)	L - W-B	Door control receiver input signal	With power switch OFF, all doors closed and key is moved (outside of vehicle exterior detection area → inside of detection area)	Approx. 6 to 7 V
PRG (S11-28) - E (S11-17)	B - W-B	Door control receiver output signal	With power switch OFF, no key and all doors closed	Below 1 V
PRG (S11-28) - E (S11-17)	B - W-B	Door control receiver output signal	With power switch OFF, all doors closed and key is moved (outside of vehicle exterior detection area → inside of detection area)	Approx. 6 to 7 V
RCO (S11-12) - E (S11-17)	L - W-B	Power source	With power switch OFF, no key and doors closed	0 to 5 V
RCO (S11-12) - E (S11-17)	L - W-B	Power source	With power switch OFF, all doors closed and key is moved (outside of vehicle exterior detection area → inside of detection area)	5 V
RSSI (S11-11) - E (S11-17)	V - W-B	Door control receiver output signal	With power switch OFF, no key and all doors closed	0 to 5 V

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
RSSI (S11-11) - E (S11-17)	V - W-B	Door control receiver output signal	With power switch OFF, all doors closed and key is moved (outside of vehicle exterior detection area → inside of detection area)	Below 1 V
RDA (S11-10) - E (S11-17)	GR - W-B	Door control receiver input signal	With power switch OFF, no key and all doors closed	Below 1 V
RDA (S11-10) - E (S11-17)	GR - W-B	Door control receiver input signal	With power switch OFF, all doors closed and key is moved (outside of vehicle exterior detection area → inside of detection area)	Approx. 6 to 7 V
KSW (S11-4) - E (S11-17)	Y - W-B	Halfway switch input signal	No key in key slot	10 to 14 V
KSW (S11-4) - E (S11-17	Y - W-B	Halfway switch input signal	Key inserted	Below 1 V

If the result is not as specified, the ECU may have a malfunction.

DL

2. CHECK DRIVER SIDE JUNCTION BLOCK (MAIN BODY ECU)



(a) Disconnect the 1A, 1B and 1E junction block connectors.

(b) Measure the voltage and resistance of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ECUB (1A-30) - Body ground	R - Body ground	+B (ECUB) power supply	Always	10 to 14 V
ALTB (1B-1) - Body ground	W - Body ground	+B (power system, generator system) power supply	Always	10 to 14 V
GND (1E-17) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

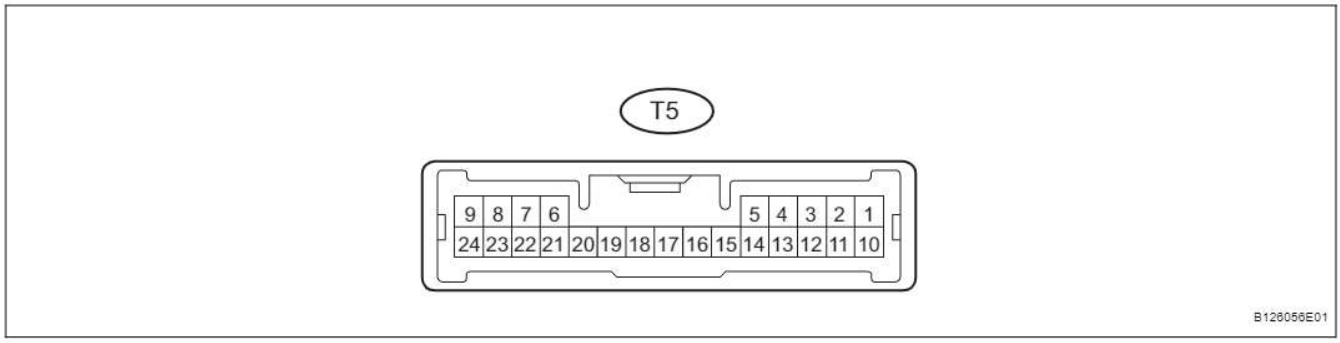
(c) Reconnect the 1A, 1B and 1E junction block connectors.

(d) Measure the voltage of the connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
PRG (B7-24) - GND (1E-17)	B - W-B	Door control receiver output signal	With power switch OFF, no key and all doors closed	0 to 5 V
PRG (B7-24) - GND (1E-17)	B - W-B	Door control receiver output signal	With power switch OFF, all doors closed and key is moved (outside of vehicle exterior detection area → inside of detection area)	Below 1 V
RDA (B7-23) - GND (1E-17)	L - W-B	Door control receiver input signal	With power switch OFF, no key and all doors closed	Below 1 V
RDA (B7-23) - GND (1E-17)	L - W-B	Door control receiver input signal	With power switch OFF, all doors closed and key is moved (outside of vehicle exterior detection area → inside of detection area)	Approx. 6 to 7 V

If the result is not as specified, the body ECU may have a malfunction.

3. CHECK TRANSPONDER KEY ECU



(a) Disconnect the T5 ECU connector.

(b) Measure the resistance and voltage of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CPUB (T5-3) - GND (T5-22)	L - W-B	Battery	Always	10 to 14 V
IG (T5-4) - GND (T5-22)	O - W-B	Power switch (IG)	Power switch OFF	Below 1 V
IG (T5-4) - GND (T5-22)	O - W-B	Power switch (IG)	Power switch ON (IG)	10 to 14 V
CUWS (T5-5) - GND (T5-22)	B - W-B	Halfway switch	No key in key slot	10 kΩ or higher

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CUWS (T5-5) - GND (T5-22)	B - W-B	Halfway switch	Key inserted	Below 1 Ω
AGND (T5-7) - GND (T5-22)	P - W-B	Ground	Always	Below 1 Ω
GND (T5-22) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the T5 ECU connector.

(d) Measure the voltage of the connector.

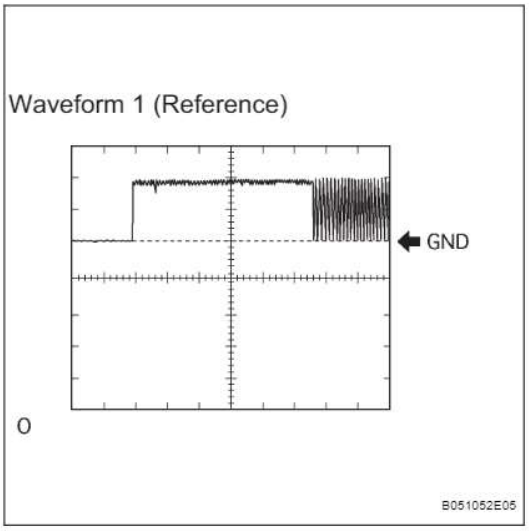
Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CUWS (T5-5) -GND (T5-22)	B - W-B	Halfway switch	No key in key slot	10 to 14 V
CUWS (T5-5) -GND (T5-22)	B - W-B	Halfway switch	Key inserted	Below 1 V
VC5 (T5-20) - GND (T5-22)	Y - W-B	Power source	No key in key slot	Below 1 V
VC5 (T5-20) - GND (T5-22)	Y - W-B	Power source	Key inserted	4.6 to 5.4 V
CODE (T5-21) - AGND (T5-7)	L - P	Transponder key amplifier communication signal	No key in key slot → Key inserted	Pulse generation (see waveform 1)
TXCT (T5-6) - AGND (T5-7)	LG - P	Transponder key amplifier communication signal	No key in key slot → Key inserted	Pulse generation (see waveform 2)
HEV0 (T5-19) - GND (T5-22)	W - W-B	Hybrid vehicle control ECU output signal	No key in key slot → Key inserted	Pulse generation (see waveform 3)
HEV1 (T5-18) - GND (T5-22)	R - W-B	Hybrid vehicle control ECU input signal	Always	Pulse generation (see waveform 4)

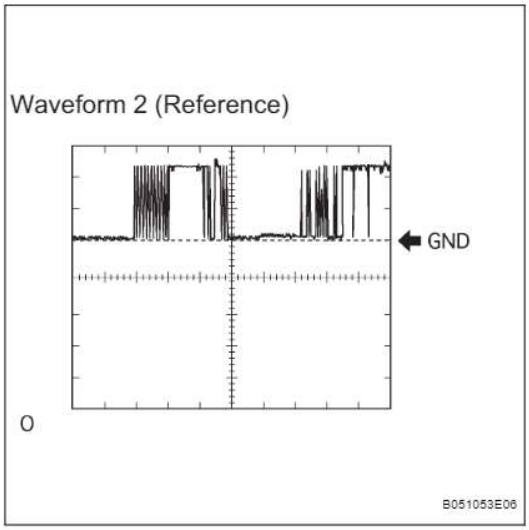
If the result is not as specified, the ECU may have a malfunction.

(e) Inspect using an oscilloscope.

Waveform 1 (Reference)

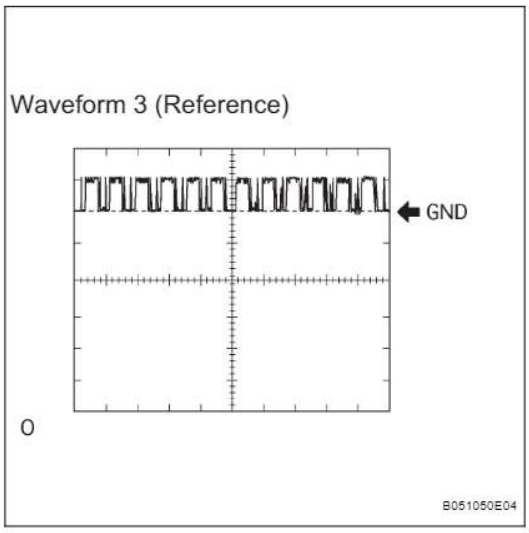
Item	Content
Symbols (Terminal No.)	TXCT (T5-6) - GND (T5-22)
Tool Setting	2.0 V/DIV., 10 msec./DIV.
Condition	Key inserted





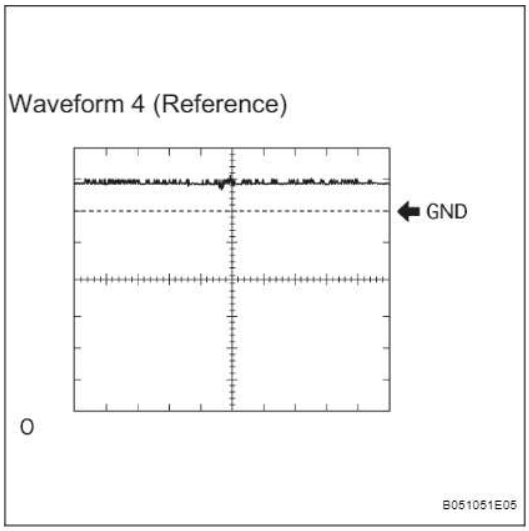
(f) Inspect using an oscilloscope.
Waveform 2 (Reference)

Item	Content
Symbols (Terminal No.)	CODE (T5-21) - GND (T5-22)
Tool Setting	2.0 V/DIV., 10 msec./DIV.
Condition	Key inserted



(g) Inspect using an oscilloscope.
Waveform 3 (Reference)

Item	Content
Symbols (Terminal No.)	HEV0 (T5-19) - GND (T5-22)
Tool Setting	10 V/DIV., 100 msec./DIV.
Condition	Power switch ON (IG)



(h) Inspect using an oscilloscope.
Waveform 4 (Reference)

Item	Content
Symbols (Terminal No.)	HEV1 (T5-18) - GND (T5-22)
Tool Setting	10 V/DIV., 100 msec./DIV.
Condition	Always

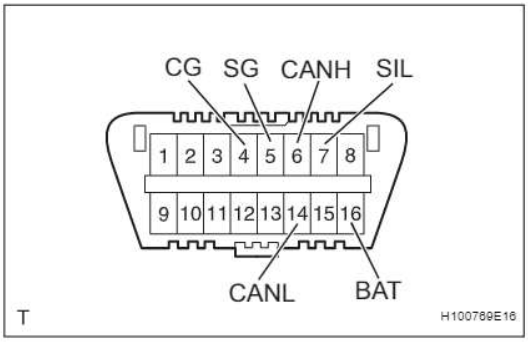
DIAGNOSIS SYSTEM

1. DESCRIPTION

(a) The certification ECU controls the function of the smart key system on the vehicle. Data of the smart key system and Diagnostic Trouble Codes (DTCs) can be read in the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the intelligent tester to check for a malfunction and perform repairs.

2. CHECK DLC3

(a) The vehicle uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



DL

Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	10 to 14 V
CANH (6) - CANL (14)	HIGH-level CAN bus line	Power switch OFF*	54 to 69 Ω
CANH (6) - CG (4)	HIGH-level CAN bus line	Power switch OFF*	1 kΩ or more
CANL (14) - CG (4)	HIGH-level CAN bus line	Power switch OFF*	1 kΩ or more
CANH (6) - BAT (16)	LOW-level CAN bus line	Power switch OFF*	1 MΩ or more
CANL (14) - BAT (16)	LOW-level CAN bus line	Power switch OFF*	1 MΩ or more

NOTICE:

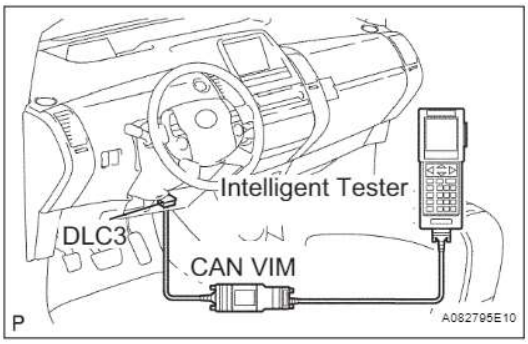
***: Before measuring the resistance, leave the vehicle as is for at least 1 minute and do not operate the power switch, any other switches or the doors.**

If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the power switch ON (IG) and attempt to use the tester. If the display informs that a communication error has occurred, there is a problem either with the vehicle or with the tester.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 of the original vehicle.
- If communication is still impossible when the tester is connected to another vehicle, the problem is probably in the tester itself. Consult the Service Department listed in the tester's instruction manual.



DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, sensor, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.

(c) Read the DATA LIST according to the display on the tester.

Certification ECU

Item	Measurement Item/Range (Display)	Normal Condition	Diagnostic Note
D TOUCH SENSOR	D-door touch sensor/ ON or OFF	ON: Sensor is being touched OFF: Sensor is not being touched	
P TOUCH SENSOR	P-door touch sensor/ ON or OFF	ON: Sensor is being touched OFF: Sensor is not being touched	
D TRIGGER SW	D-door trigger switch/ ON or OFF	ON: Lock switch is being pushed OFF: Lock switch is not being pushed	
P TRIGGER SW	P-door trigger switch/ ON or OFF	ON: Lock switch is being pushed OFF: Lock switch is not being pushed	
TR/B-DOOR LOCK	Trunk/Back-door lock switch/ ON or OFF	ON: Back door lock switch is being pushed OFF: Back door lock switch is not being pushed	
SMART CANCEL SW	Key cancel switch/ ON or OFF	ON: Key cancel switch is ON OFF: Key cancel switch is OFF	
KEY UNLK WRN SW	Key unlock warning switch/ ON or OFF	ON: Key is in key slot OFF: No key is in key slot	
IG SW	Power switch/ ON or OFF	ON: Power switch is ON (IG) OFF: Power switch is OFF	

2. PERFORM ACTIVE TEST

HINT:

Performing the intelligent tester's ACTIVE TEST allows relay, VSV, actuator and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time. The DATA LIST can be displayed during the ACTIVE TEST.

(a) Connect the intelligent tester (with CAN VIM) to the DLC3.

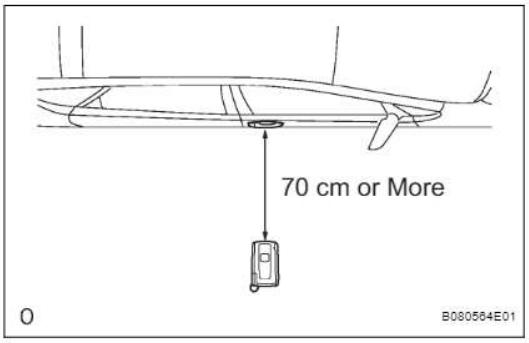
(b) Turn the power switch ON (IG) and press the intelligent tester main switch ON.

(c) Perform the ACTIVE TEST according to the display on the tester.

Certification ECU

Item	Test Details	Diagnostic Note
D TRANSMITTER	Driver side transmitter ON / OFF	
P TRANSMITTER	Front passenger side transmitter ON / OFF	

Item	Test Details	Diagnostic Note
FR TRANSMITTER	Indoor electrical key oscillator (front) ON / OFF	
IN BDR TRNSMTTR	Back door inner transmitter ON / OFF	
BDOOR TRNSMTTR	Back door outer transmitter ON / OFF	
D SELECT SIG	Driver side select ON / OFF	
P SELECT SIG	Front passenger side select ON / OFF	



DL

ON-VEHICLE INSPECTION

1. SMART KEY SYSTEM OPERATION INSPECTION

(a) Check entry door unlock function.

(1) Use the wireless lock operation to lock doors. With the key in your possession, touch a door's outside handle (touch sensor) and check that the door unlocks.

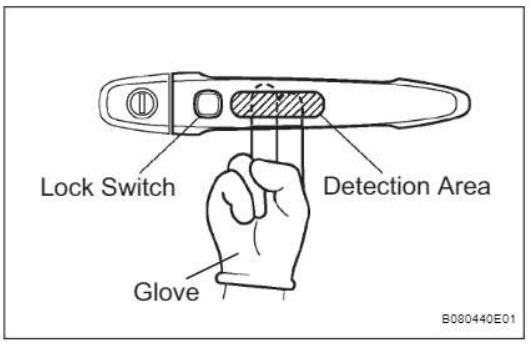
(b) Check the entry door unlock operation's detection area.

(1) Step 1: Hold the key at the same height as the door's outside handle (approximately 0.8 m (2.6 ft.)).

(2) Step 2: Pay attention to the direction of the key in the illustration on the left. Check that when the key is brought within 0.7 to 1.0 m (2.3 to 3.3 ft.) of the vehicle, the system enters unlock standby mode.
HINT:
Unlock standby mode is signified by the key's red LED illuminating.

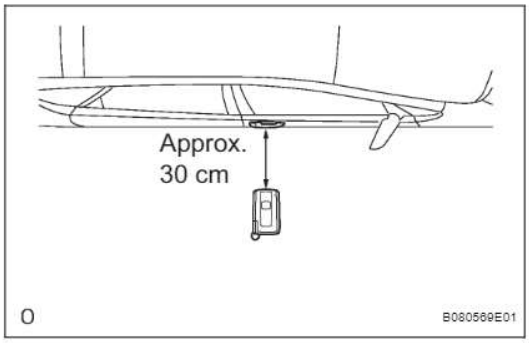
(3) Step 3: Once the system enters unlock standby mode, touch the outside handle's sensor within 3 seconds. Check that the door unlocks.
NOTICE:
The key cannot communicate with the system within a 0.2 m (0.6 ft.) radius of each outside handle.

(4) Step 4: Repeat step 2 and step 3 for the remaining doors.



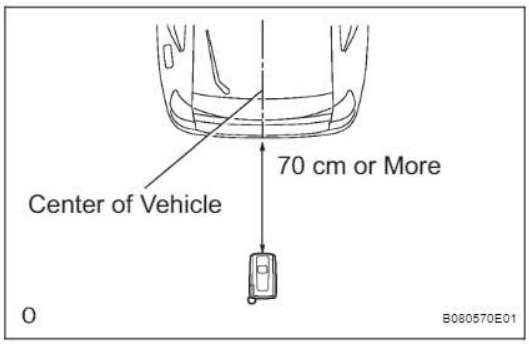
(5) Step 5: Inspect the door electrical key oscillator's response sensitivity. Wear protective gloves, set the system to unlock standby mode, and check that touching the inner side of the outside handle (the highlighted area in the illustration) with two fingers causes the door to unlock.
NOTICE:
When touching the highlighted area, tapping too quickly or having extended contact may not trigger the sensor. In such a case, the door will not unlock.

(6) Step 6: Repeat step 5 for the remaining doors.



(c) Check entry door lock function.
(1) Step 1: Close all of the vehicle's doors. With the key in your possession outside of the vehicle, check that pressing the lock switch locks front doors.
(2) Step 2: Inspect the entry door lock operation's detection area and the indoor electrical key oscillator for wave leaks. Hold the key at a height of 1 m (3.3 ft.) above the lower edge of the window frame). Pay attention to the direction and position of the key in the illustration on the left. Check that when the key is approximately 0.3 m (0.9 ft.) from the vehicle and the lock switch is pressed, the front doors lock and the warning buzzer (for when the key is forgotten) does not sound. If the warning buzzer sounds, the indoor electrical key oscillator may have a wave leak.
HINT:
Due to the key being unable to communicate with the system within a 0.2 m (0.6 ft.) distance from the outside handle, do not press the lock switch with the same hand that is holding the key. The doors will not lock.
(3) Step 3: Repeat step 1 and step 2 for the remaining doors.

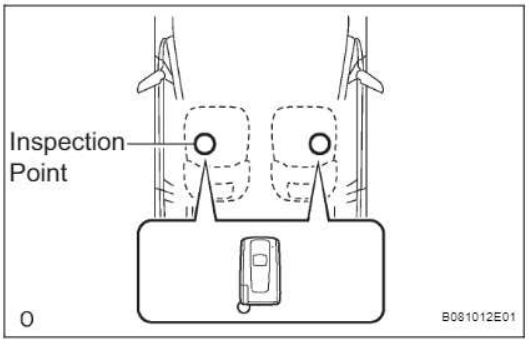
(d) Check entry back door open function.
(1) Close the back door. With the key in your possession, check that pressing the back door opener switch opens the back door.

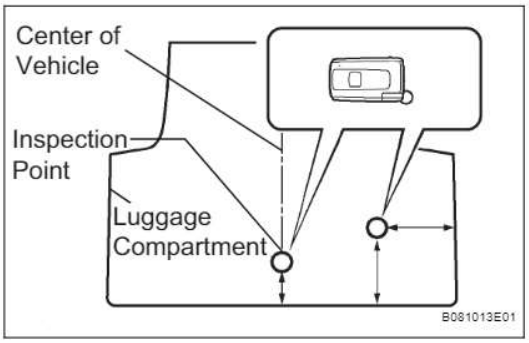


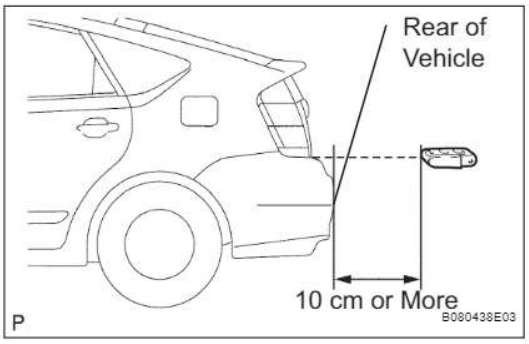
(2) Inspect the entry back door open operation's detection area. Hold the key at the same height as the back door opener switch (approximately 0.8 m (2.6 ft.)) and aligned with the center of the rear of the vehicle. Pay attention to the direction of the key in the illustration on the left. Check that when the key is brought within 0.7 to 1.0 m (2.3 to 3.3 ft.) of the vehicle, pressing the back door opener switch opens the back door.

(e) Check entry ignition function.
(1) With the key in your possession, check that pressing the power switch will release the steering wheel lock. Then, check that depressing the brake pedal while pressing the power switch starts the hybrid control system.
HINT:
The engine can be started only when the key warning light is illuminated.

DL







(2) With the key in your possession and the vehicle stopped, check that pressing the power switch stops the hybrid control system.
HINT:
The shift position must be P to be able to turn the power switch from ON (ACC) to OFF.

(3) Inspect the entry ignition operation's detection area. Pay attention to the direction of the key in the illustration on the left. When the key is in either of the two locations in the illustration, check that the engine can start.
NOTICE:
The engine cannot be started when the key is on the instrument panel or package tray, or in the glove box.

(f) Check key lock-in prevention function.

(1) Place the key in the trunk. Check that: 1) closing the back door triggers the key's wireless buzzer (which lasts approximately 10 seconds), and 2) pressing the back door opener switch opens the back door.

(2) Inspect the key lock-in prevention's detection area. Pay attention to the direction of the key in the illustration on the left. When the key is in either of the two locations in the illustration, check that: 1) closing the back door sounds the key's wireless buzzer, and 2) pressing the back door opener switch opens the back door.
NOTICE:
If the key in inside a metal briefcase, metal box or any other metal storage item, the key will not be able to be detected by the system.

(3) Inspect the key lock-in prevention's detection area and the trunk interior's door control receiver for wave leaks. Hold the key at the same height as the lower edge of the back door and aligned with the center of the rear of the vehicle. Pay attention to the direction and position of the key in the illustration on the left. Check that when the key is over 0.1 m (0.3 ft.) from the vehicle's rear bumper, the key's wireless buzzer does not sound.
HINT:
If the warning buzzer sounds, the trunk interior's wireless door lock receiver may have a wave leak.

(g) Check key cancel function.

(1) While the power switch is ON (IG), check that the entry back door opener switch is the only switch in the smart key system that can be operated.

(2) While the key cancel switch (smart key system cancel switch) is ON, check that all switches in the smart key system cannot be operated.

(h) Check key warning light function.

Condition	Indicator
Power switch is in ON (IG) mode and vehicle interior check is OK.	Illuminated
Power switch is in OFF mode and one of the doors is open.	Blinking
Power switch is in ON (ACC) / ON (IG) mode and all doors are locked.	Off

HINT:
In cases where an illuminated condition and a blinking condition are both satisfied, the indicator is illuminated.

(i) Check answer-back function (hazard warning light flashing and buzzer sounding).

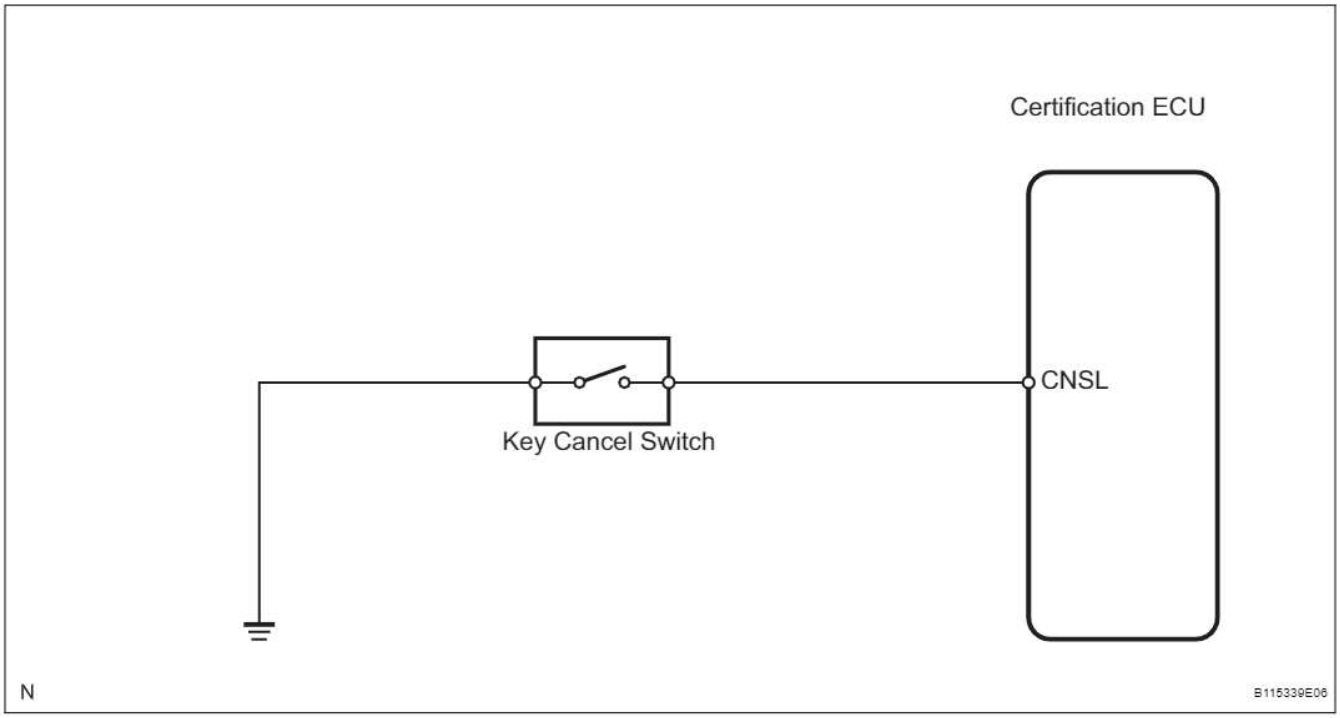
Smart Operation	Hazard Warning Light	Buzzer
Entry Door Lock	Flashes once	Sounds once
Entry Door Unlock	Flashes twice	Sounds twice
Entry Back Door Open	Does not flash	Sounds once

Key Cancel Switch does not Operate

DESCRIPTION

When the key cancel switch is ON, all entry functions will stop operating. If the key cancel switch is not turned ON but all entry functions stop operating, one of the following is malfunctioning: 1) key cancel switch, 2) certification ECU, or 3) wire harness.

WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	CHECK WIRELESS DOOR LOCK OPERATION

(a) Check that the wireless door lock function operates normally.

OK:

Wireless door lock function operates normally.

NG → **GO TO WIRELESS DOOR LOCK CONTROL SYSTEM (w/ SMART KEY SYSTEM)**

OK

2	READ VALUE OF INTELLIGENT TESTER (KEY CANCEL SWITCH)

(a) Check the DATA LIST for proper functioning of the certification ECU.

Certification ECU

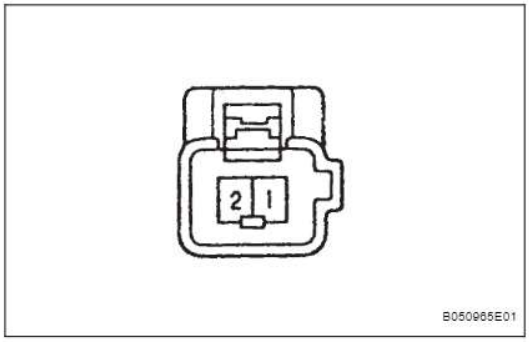
Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
SMART CANCEL SW	Key cancel switch / ON or OFF	ON: Key cancel switch is ON OFF: Key cancel switch is OFF	-

OK:
OFF (key cancel switch is OFF) appears on the screen.

OK → REPLACE CERTIFICATION ECU

NG

3	INSPECT KEY CANCEL SWITCH



(a) Measure the resistance of the switch.
Standard resistance

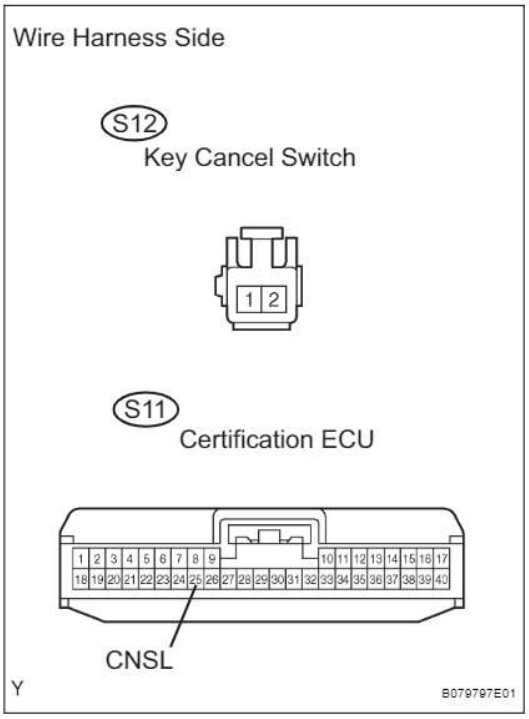
Tester Connection	Switch Condition	Specified Condition
1 - 2	Not pushed (OFF)	10 kΩ or higher
1 - 2	Pushed (ON)	Below 1 Ω

NG → REPLACE KEY CANCEL SWITCH

OK

DL

4	CHECK WIRE HARNESS (KEY CANCEL SWITCH - CERTIFICATION ECU AND BODY GROUND)



(a) Disconnect S12 switch connector.
(b) Disconnect S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S12-1 - S11-25 (CNSL)	Below 1 Ω
S12-2 - Body ground	Below 1 Ω
S12-1 or S11-25 (CNSL) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

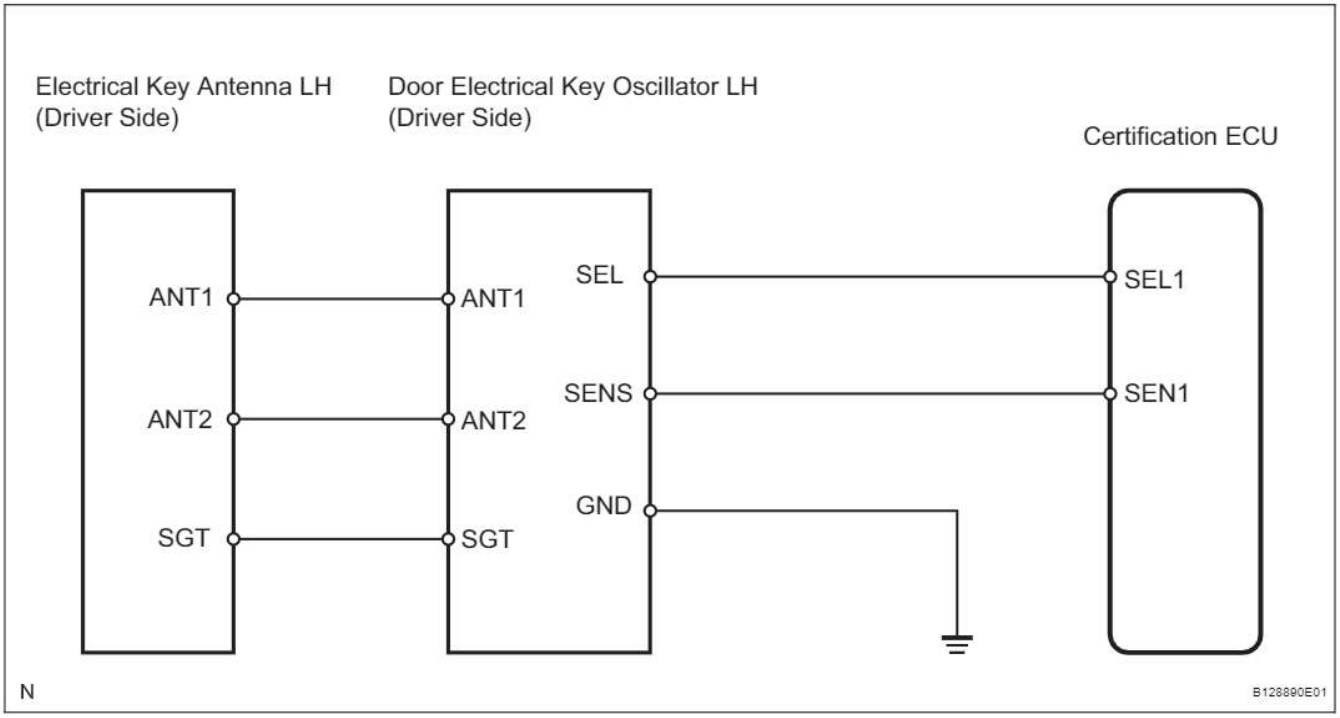
REPLACE CERTIFICATION ECU

Driver Side Door Entry Unlock Function does not Operate

DESCRIPTION

When an ID code from the door electrical key oscillator LH matches an ID code from the key, the certification ECU outputs a SEL1 signal (Lo when output) to the door electrical key oscillator LH, activates the touch sensor inside the outside door handle, and enters unlock standby condition. When the touch sensor is touched, the electrical key oscillator LH sends a SENS signal (Lo when output) to the certification ECU and the certification ECU sends an unlock signal to the driver door lock.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK MANUAL DOOR UNLOCK OPERATION

(a) Check that the manual door unlock function operates normally.

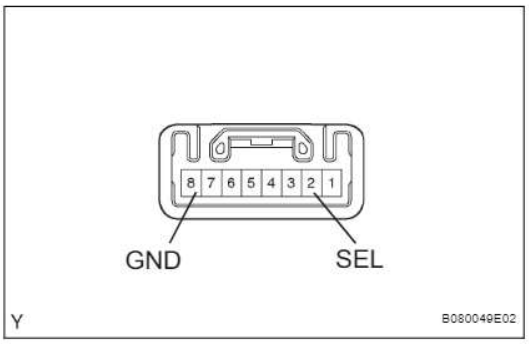
OK:

Manual door unlock function operates normally.

NG → **GO TO POWER DOOR LOCK CONTROL SYSTEM**

OK

2 CHECK DOOR ELECTRICAL KEY OSCILLATOR LH (SEL VOLTAGE)



(a) Measure the voltage between the terminals of the connector when the key is operated.

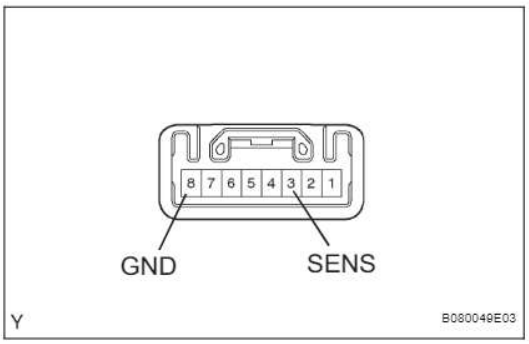
Standard voltage

Tester Connection	Condition	Specified Condition
D16-2 (SEL) - D16-8 (GND)	Key at least 5 m (16.4 ft.) away from door	10 to 14 V
	Key within 0.7 m (2.3 ft.) from door	Below 1 V

NG → Go to step 7

OK

3 CHECK DOOR ELECTRICAL KEY OSCILLATOR LH (SENS VOLTAGE)



(a) Measure the voltage between the terminals of the connector when the outside door handle is touched.

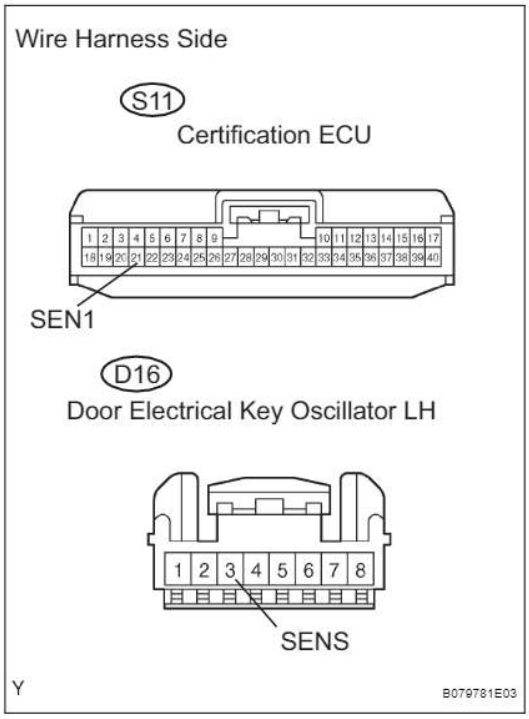
Standard voltage

Tester Connection	Condition	Specified Condition
D16-3 (SENS) - D16-8 (GND)	Outside door handle not touched	10 to 14 V
	Outside door handle touched	Below 1 V

OK → Go to step 5

NG

4	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR LH - CERTIFICATION ECU)



(a) Disconnect the D16 oscillator connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D16-3 (SENS) - S11-21 (SEN1)	Below 1 Ω
D16-3 (SENS) or S11-21 (SEN1) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

5	CHECK OPERATION OF DOOR ELECTRICAL KEY OSCILLATOR LH

(a) After replacing the door electrical key oscillator on the driver's side with a new one, check that the entry unlock function operates normally.

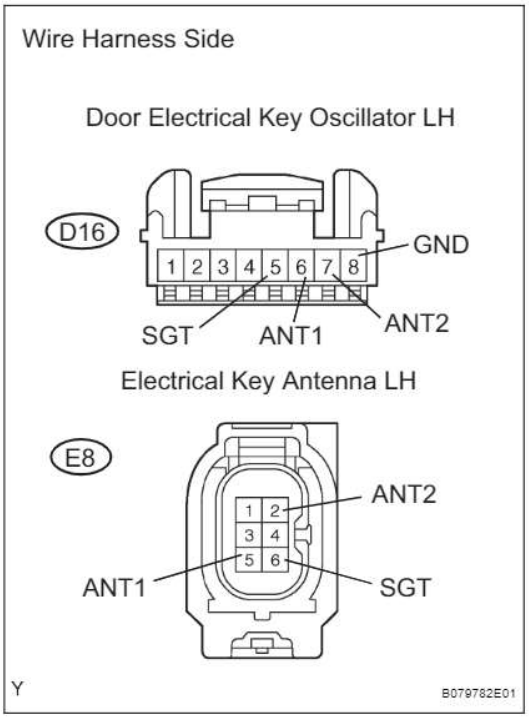
OK:

Entry unlock function operates normally.

OK → REPLACE DOOR ELECTRICAL KEY OSCILLATOR LH

NG

6	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR LH - ELECTRICAL KEY ANTENNA)



(a) Disconnect the D16 oscillator connector.
(b) Disconnect the E8 antenna connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

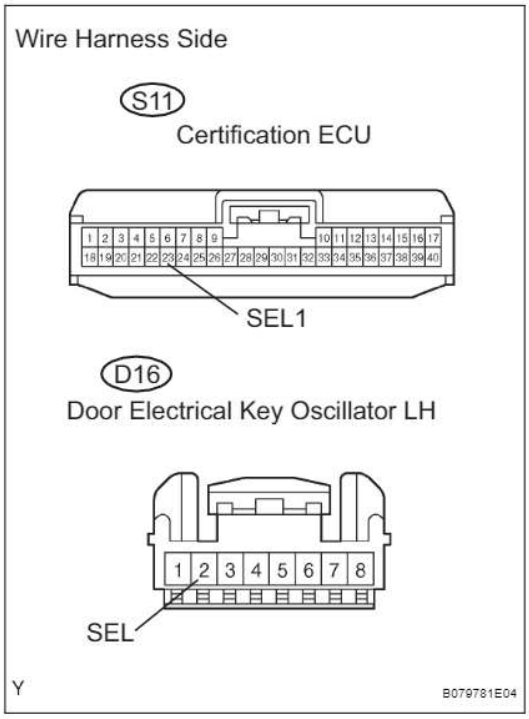
Tester Connection	Specified Condition
D16-6 (ANT1) - E8-5 (ANT1)	Below 1 Ω
D16-7 (ANT2) - E8-2 (ANT2)	Below 1 Ω
D16-5 (SGT) - E8-6 (SGT)	Below 1 Ω
D16-8 (GND) - Body ground	Below 1 Ω
D16-6 (ANT1) or E8-5 (ANT1) - Body ground	10 kΩ or higher
D16-7 (ANT2) or E8-2 (ANT2) - Body ground	10 kΩ or higher
D16-5 (SGT) or E8-6 (SGT) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE ELECTRICAL KEY ANTENNA LH

7	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR LH - CERTIFICATION ECU)



(a) Disconnect the D16 oscillator connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D16-2 (SEL) - S11-23 (SEL1)	Below 1 Ω
D16-2 (SEL) or S11-23 (SEL1) - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK →

REPLACE CERTIFICATION ECU

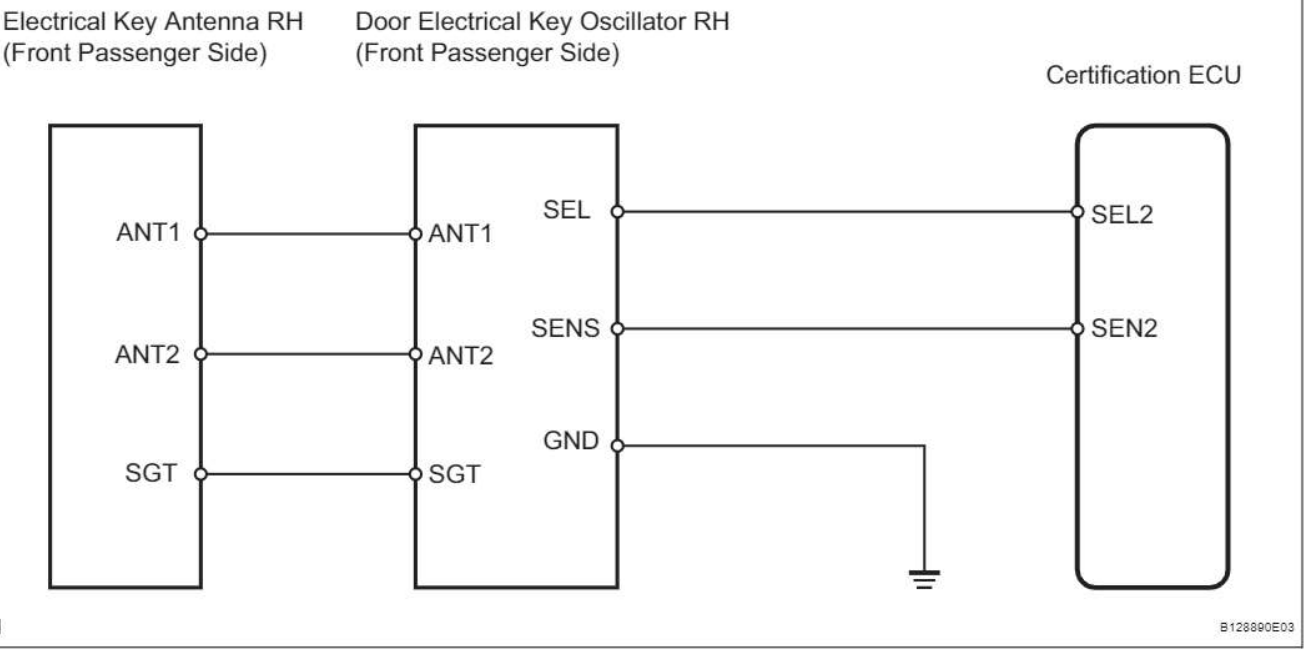
DL

Front Passenger Side Door Entry Unlock Function does not Operate

DESCRIPTION

When an ID code from the door electrical key oscillator RH matches an ID code from the key, the certification ECU outputs a SEL2 signal (Lo when output) to the door electrical key oscillator RH, activates the touch sensor inside the outside door handle, and enters unlock standby condition. When the touch sensor is touched, the door electrical key oscillator sends a SENS signal (Lo when output) to the certification ECU and the certification ECU sends an unlock signal to each door lock.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK MANUAL DOOR UNLOCK OPERATION

(a) Check that the manual door lock and unlock function operates normally.

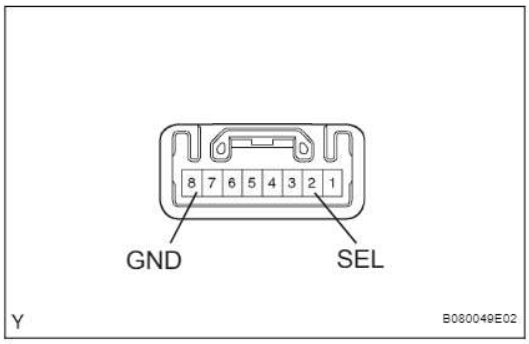
OK:

Manual door lock and unlock function operates normally.

NG → **GO TO POWER DOOR LOCK CONTROL SYSTEM**

OK

2 CHECK DOOR ELECTRICAL KEY OSCILLATOR RH (SEL VOLTAGE)



(a) Measure the voltage between the terminals of the connector when the key is operated.

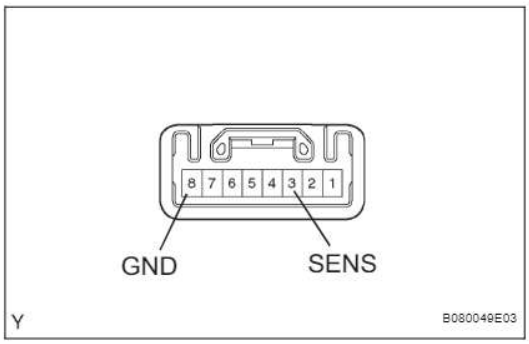
Standard voltage

Tester Connection	Condition	Specified Condition
D17-2 (SEL) - D17-8 (GND)	Key at least 5 m (16.4 ft.) away from door	10 to 14 V
	Key within 0.7 m (2.3 ft.) from door	Below 1 V

NG → Go to step 7

OK

3 CHECK DOOR ELECTRICAL KEY OSCILLATOR RH (SENS VOLTAGE)



(a) Measure the voltage between the terminals of the connector when the outside door handle is touched.

Standard voltage

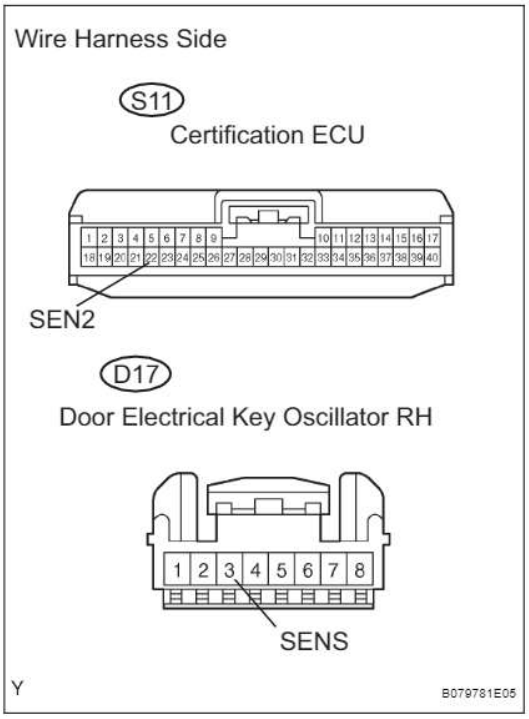
Tester Connection	Condition	Specified Condition
D17-3 (SENS) - D17-8 (GND)	Outside door handle not touched	10 to 14 V
	Outside door handle touched	Below 1 V

OK → Go to step 5

NG

DL

4	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR RH - CERTIFICATION ECU)



(a) Disconnect the D17 oscillator connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D17-3 (SENS) - S11-22 (SEN2)	Below 1 Ω
D17-3 (SENS) or S11-22 (SEN2) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

5	CHECK OPERATION OF DOOR ELECTRICAL KEY OSCILLATOR RH

(a) After replacing the door electrical key oscillator on the front passenger's side with a new one, check that the entry unlock function operates normally.

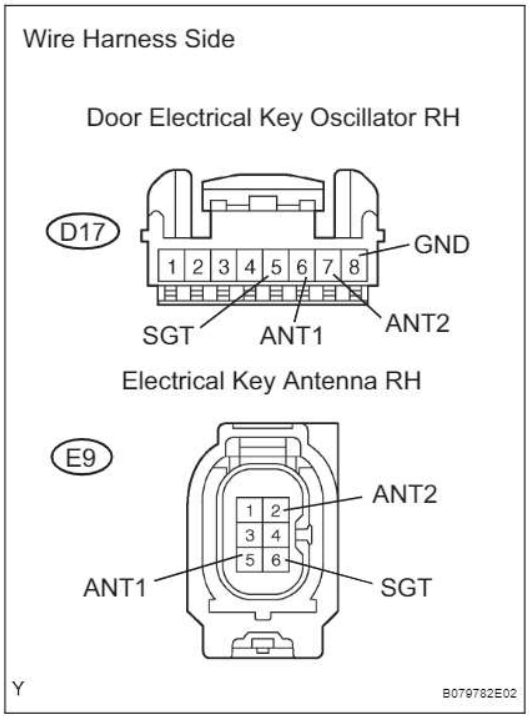
OK:

Entry unlock function operates normally.

OK → REPLACE DOOR ELECTRICAL KEY OSCILLATOR RH

NG

6	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR RH - ELECTRICAL KEY ANTENNA)



(a) Disconnect the D17 oscillator connector.
(b) Disconnect the E9 antenna connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D17-6 (ANT1) - E9-5 (ANT1)	Below 1 Ω
D17-7 (ANT2) - E9-2 (ANT2)	Below 1 Ω
D17-5 (SGT) - E9-6 (SGT)	Below 1 Ω
D17-8 (GND) - Body ground	Below 1 Ω
D17-6 (ANT1) or E9-5 (ANT1) - Body ground	10 kΩ or higher
D17-7 (ANT2) or E9-2 (ANT2) - Body ground	10 kΩ or higher
D17-5 (SGT) or E9-6 (SGT) - Body ground	10 kΩ or higher

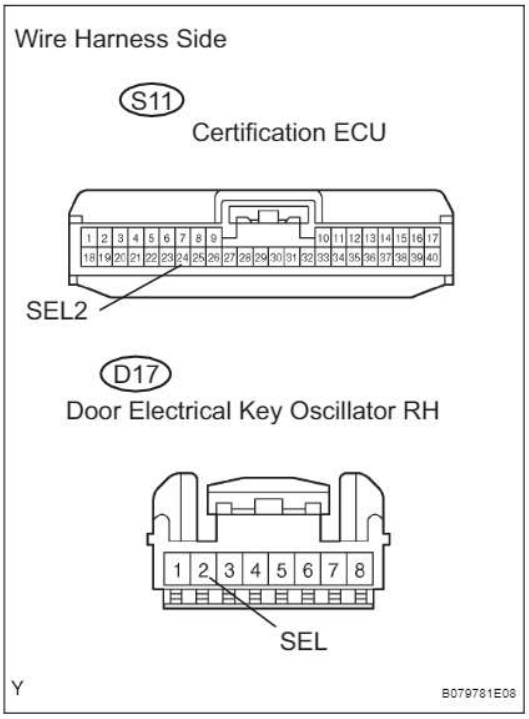
NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE ELECTRICAL KEY ANTENNA RH

DL

7	CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR RH - CERTIFICATION ECU)



(a) Disconnect the D17 oscillator connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
D17-2 (SEL) - S11-24 (SEL2)	Below 1 Ω
D17-2 (SEL) or S11-24 (SEL2) - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK → **REPLACE CERTIFICATION ECU**

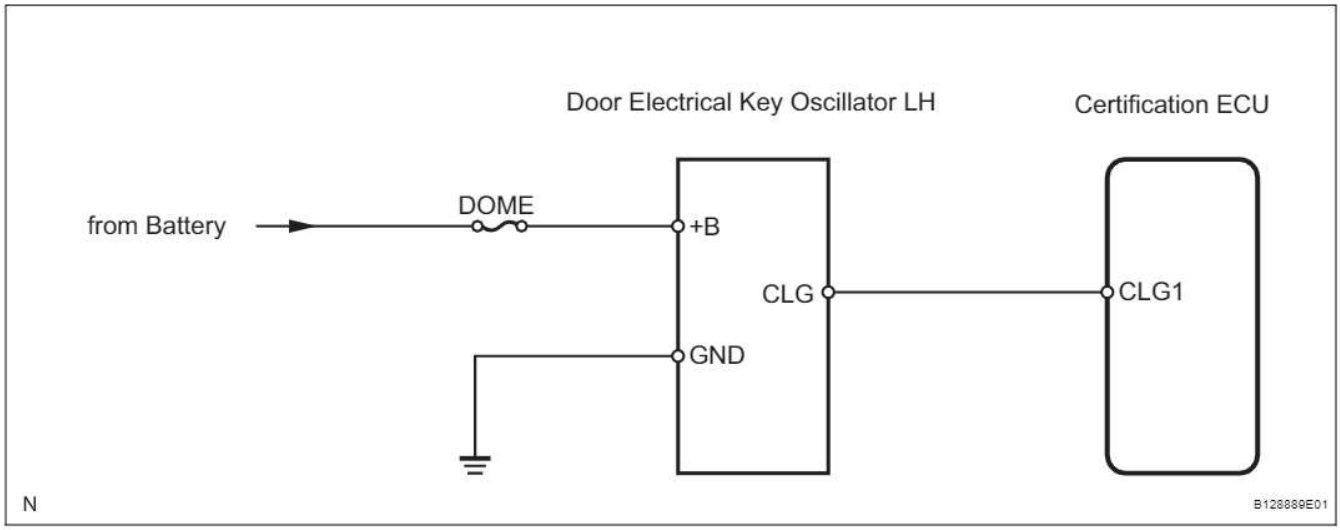
DL

Driver Side Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

Both the entry lock and unlock functions do not operate when: 1) nothing is output from the door electrical key oscillator LH, 2) the smart key system is disabled through customization, or 3) the entire power door lock control system is malfunctioning.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK MANUAL DOOR LOCK AND UNLOCK OPERATION

(a) Check that the manual door lock and unlock function operates normally.

OK:

Manual door lock and unlock function operates normally

NG → **GO TO POWER DOOR LOCK CONTROL SYSTEM**

OK

2	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (DOOR ELECTRICAL KEY OSCILLATOR LH)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the oscillator operates.

Certification ECU

Item	Test Details	Diagnostic Note
D TRANSMITTER	Driver side transmitter ON / OFF	-

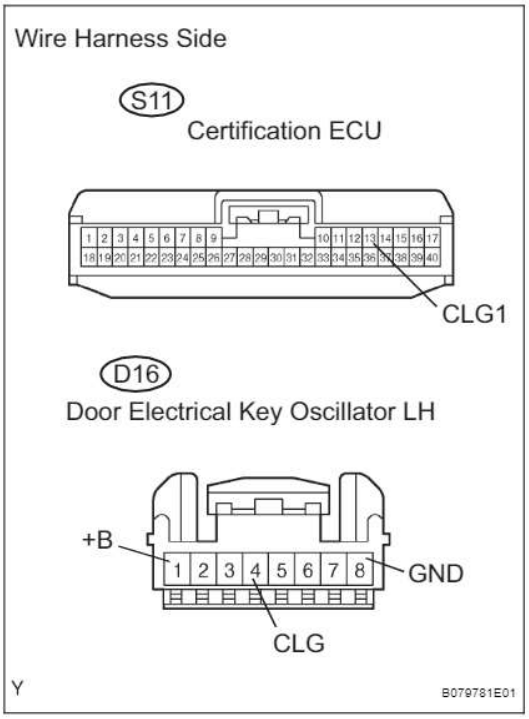
OK:

When key is brought close to door oscillator that is ON, indicator on key illuminates.

OK → REPLACE CERTIFICATION ECU

NG

3 CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR LH - CERTIFICATION ECU, BATTERY AND BODY GROUND)



(a) Disconnect the D16 oscillator connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
D16-4 (CLG) - S11-13 (CLG1)	Below 1 Ω
D16-4 (CLG) or S11-13 (CLG1) - Body ground	10 kΩ or higher
D16-8 (GND) - Body ground	Below 1 Ω

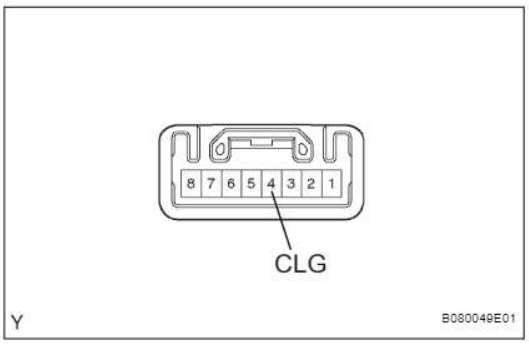
(d) Measure the voltage of the wire harness side connector.
Standard voltage

Tester Connection	Specified Condition
D16-1 (+B) - Body ground	10 to 14 V

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

4 CHECK DOOR ELECTRICAL KEY OSCILLATOR LH (CLG VOLTAGE)



(a) Measure the voltage between the terminals of the connector when the power switch is operated.
Standard voltage

Tester Connection	Condition	Specified Condition
D16-4 (CLG) - Body ground	Power switch OFF	Alternating between 5 V and below 1 V
	Power switch ON (IG)	Below 1 V

NG → REPLACE DOOR ELECTRICAL KEY OSCILLATOR LH

OK

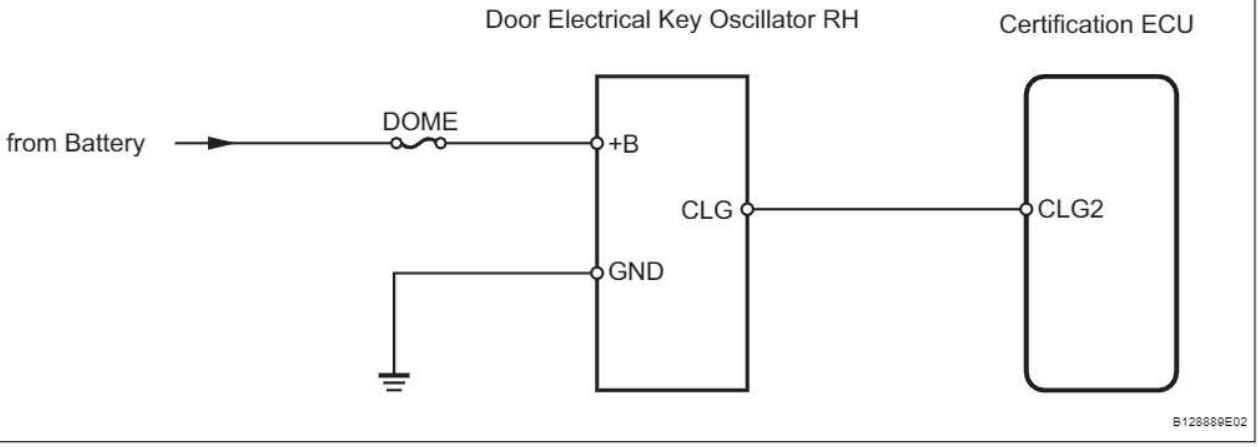
REPLACE CERTIFICATION ECU

Front Passenger Side Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

Both the entry lock and unlock functions do not operate when: 1) nothing is output from the door electrical key oscillator RH, 2) the smart key system is disabled through customization, or 3) the entire power door lock control system is malfunctioning.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK MANUAL DOOR LOCK AND UNLOCK OPERATION

(a) Check that the manual door lock and unlock function operates normally.

OK:

Manual door lock and unlock function operates normally.

NG → **GO TO POWER DOOR LOCK CONTROL SYSTEM**

OK

2	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (DOOR ELECTRICAL KEY OSCILLATOR RH)

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the oscillator operates.

Certification ECU

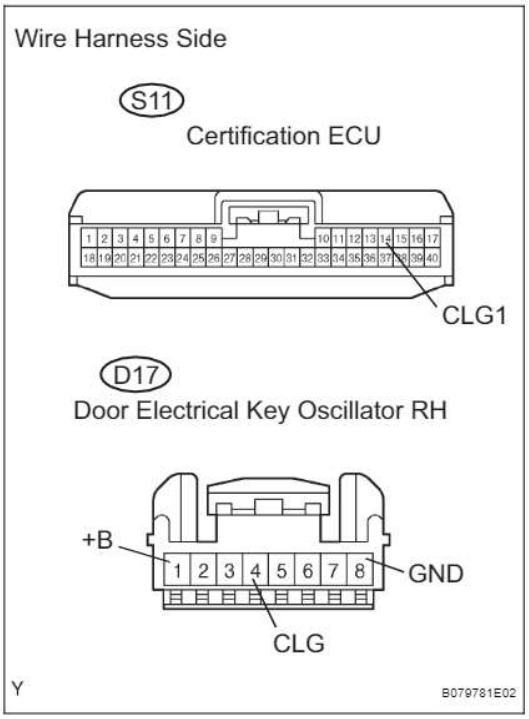
Item	Test Details	Diagnostic Notes
P TRANSMITTER	Front passenger side transmitter ON / OFF	-

OK:
When key is brought close to door oscillator that is ON, indicator on key illuminates.

OK → **REPLACE CERTIFICATION ECU**

NG

3 CHECK WIRE HARNESS (DOOR ELECTRICAL KEY OSCILLATOR RH - CERTIFICATION ECU, BATTERY AND BODY GROUND)



(a) Disconnect the D17 oscillator connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
D17-4 (CLG) - S11-14 (CLG2)	Below 1 Ω
D17-4 (CLG) or S11-14 (CLG2) - Body ground	10 kΩ or higher
D17-8 (GND) - Body ground	Below 1 Ω

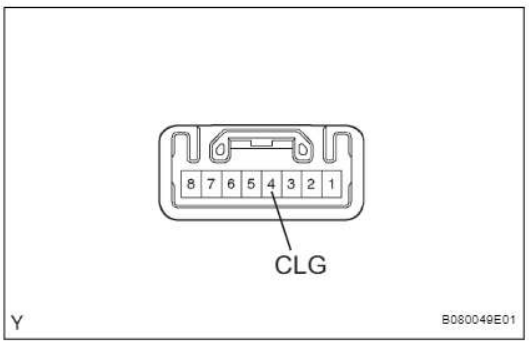
(d) Measure the voltage of the wire harness side connector.
Standard voltage

Tester Connection	Specified Condition
D17-1 (+B) - Body ground	10 to 14 V

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

4 CHECK DOOR ELECTRICAL KEY OSCILLATOR RH (CLG VOLTAGE)



(a) Measure the voltage between the terminals of the connector when the power switch is operated.
Standard voltage

Tester Connection	Condition	Specified Condition
D17-4 (CLG) - Body ground	Power switch OFF	Alternating between 5 V and below 1 V
	Power switch ON (IG)	Below 1 V

NG → **REPLACE DOOR ELECTRICAL KEY OSCILLATOR RH**

OK

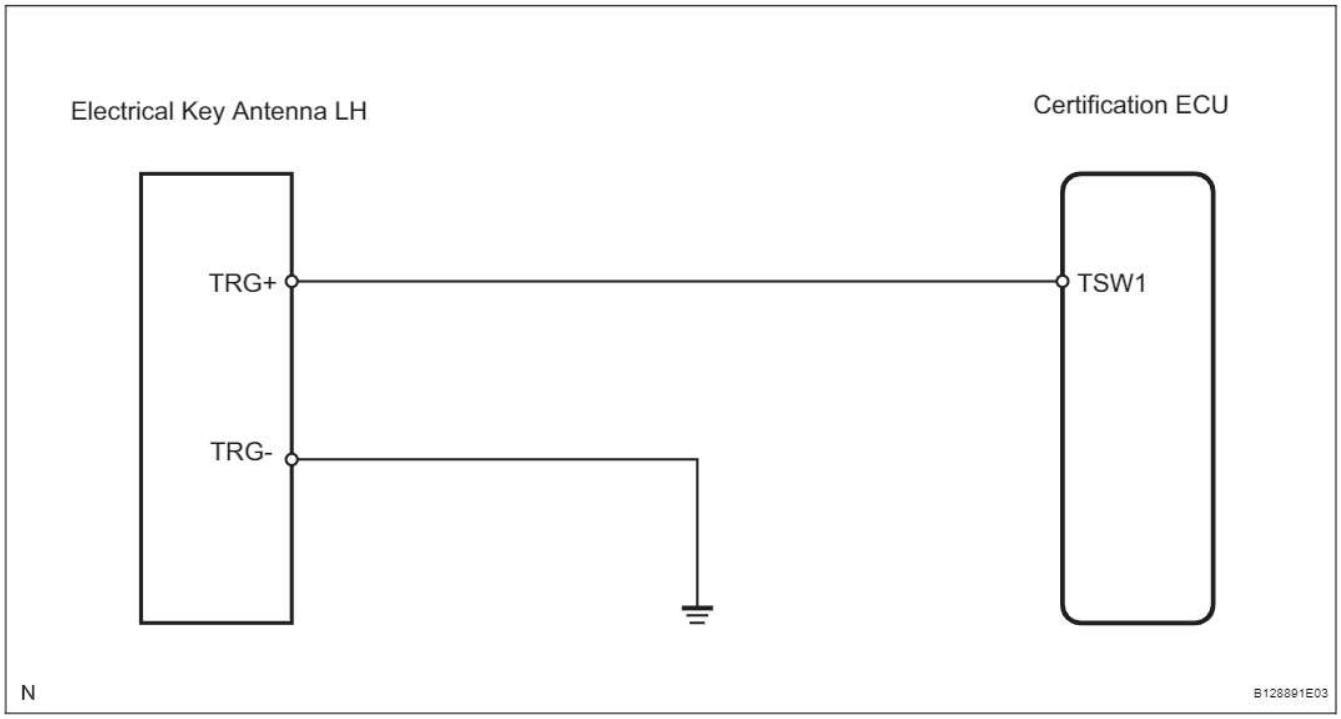
REPLACE CERTIFICATION ECU

Driver Side Door Entry Lock Function does not Operate

DESCRIPTION

When the touch sensor inside the outside door handle LH is touched, the certification ECU sends a request signal to the door electrical key oscillator LH. The key receives this request and transmits its ID code. Upon receiving the ID code, the certification ECU determines that the key is outside the vehicle and sends a lock signal to the driver door lock through the instrument panel junction block (multiplex network body ECU).

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK MANUAL DOOR LOCK OPERATION

(a) Check that the manual door lock function operates normally.

OK:

Manual door lock function operates normally.

NG → **GO TO POWER DOOR LOCK CONTROL SYSTEM**

OK

2	READ VALUE OF INTELLIGENT TESTER (LOCK SWITCH)

(a) Check the DATA LIST for proper functioning of the certification ECU.

Certification ECU

Item	Measure Item / Range (Display)	Normal Condition	Diagnostic Note
D TRIGGER SW	D-door trigger switch / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-

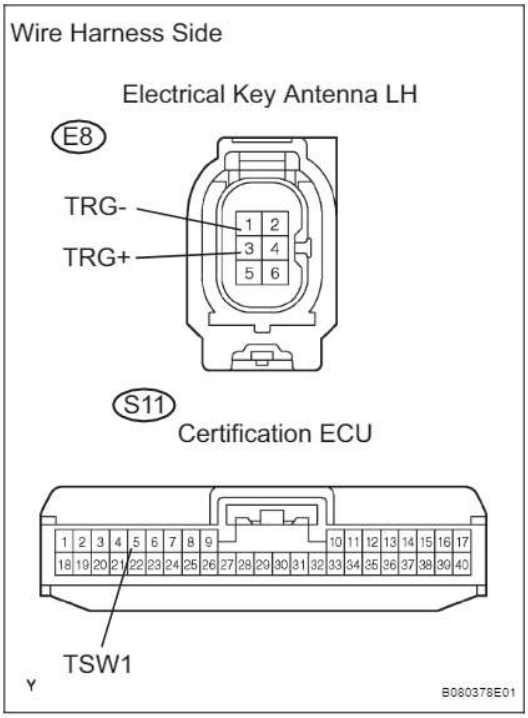
OK:
ON (lock switch is pushed) appears on the screen.

OK → REPLACE CERTIFICATION ECU

NG

DL

3	CHECK WIRE HARNESS (ELECTRICAL KEY ANTENNA LH - CERTIFICATION ECU AND BODY GROUND)



(a) Disconnect E8 antenna connector.
(b) Disconnect S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

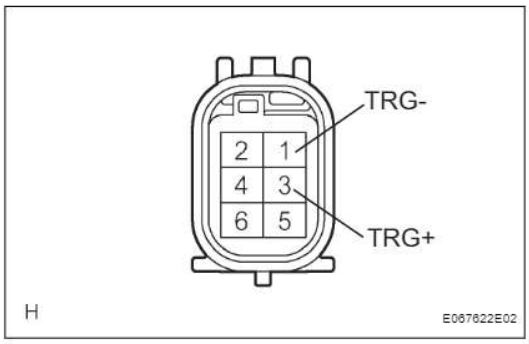
Standard resistance

Tester Connection	Specified Condition
E8-3 (TRG+) - S11-5 (TSW1)	Below 1 Ω
E8-1 (TRG-) - Body ground	Below 1 Ω
E8-3 (TRG+) or S11-5 (TSW1) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

4 INSPECT ELECTRICAL KEY ANTENNA LH



(a) Measure the resistance of the outside door handle.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 (TRG-) - 3 (TRG+)	Switch pushed	Below 1 Ω
1 (TRG-) - 3 (TRG+)	Switch not pushed	10 kΩ or higher

NG → **REPLACE ELECTRICAL KEY ANTENNA LH**

OK

REPLACE CERTIFICATION ECU

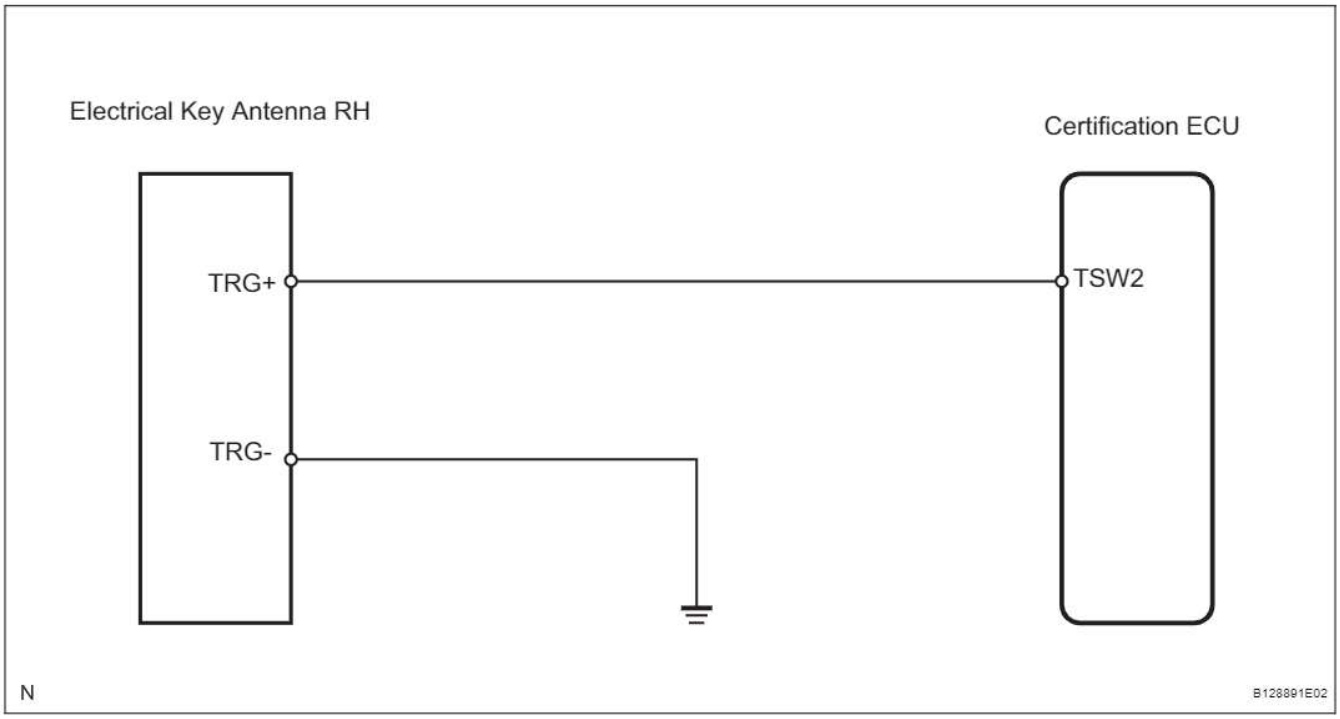
DL

Front Passenger Side Door Entry Lock Function does not Operate

DESCRIPTION

When the touch sensor inside the outside door handle RH is touched, the certification ECU sends a request signal to the door electrical key oscillator. The key receives this request and transmits its ID code. Upon receiving the ID code, the certification ECU determines that the key is outside the vehicle and sends a lock signal to the passenger door lock through the instrument panel junction block (multiplex network body ECU).

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK MANUAL DOOR LOCK OPERATION

(a) Check that the manual door lock function operates normally.

OK:

Manual door lock function operates normally.

NG → **GO TO POWER DOOR LOCK CONTROL SYSTEM**

OK

2	READ VALUE OF INTELLIGENT TESTER (LOCK SWITCH)

(a) Check the DATA LIST for proper functioning of the certification ECU.

Certification ECU

Item Normal	Condition	Diagnostic	Note
P TRIGGER SW	P-door trigger switch / ON or OFF	ON: Lock switch is pushed OFF: Lock switch is not pushed	-

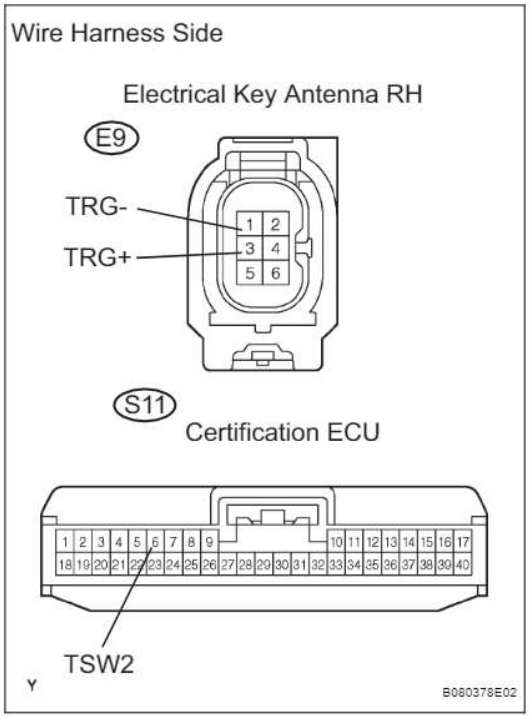
OK:

ON (lock switch is pushed) appears on the screen.

OK → **REPLACE CERTIFICATION ECU**

NG

3	CHECK WIRE HARNESS (ELECTRICAL KEY ANTENNA RH - CERTIFICATION ECU AND BODY GROUND)



(a) Disconnect the E9 antenna connector.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.

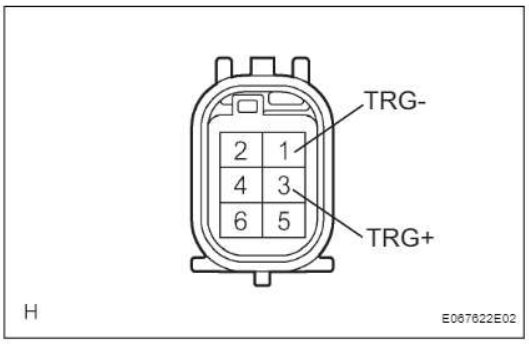
Standard resistance

Tester Connection	Specified Condition
E9-3 (TRG+) - S11-6 (TSW2)	Below 1 Ω
E9-1 (TRG-) - Body ground	Below 1 Ω
E9-3 (TRG+) or S11-6 (TSW2) - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

4 INSPECT ELECTRICAL KEY ANTENNA RH



(a) Measure the resistance of the outside door handle.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 (TRG-) - 3 (TRG+)	Switch pushed	Below 1 Ω
1 (TRG-) - 3 (TRG+)	Switch not pushed	10 kΩ or higher

NG → **REPLACE ELECTRICAL KEY ANTENNA RH**

OK

REPLACE CERTIFICATION ECU

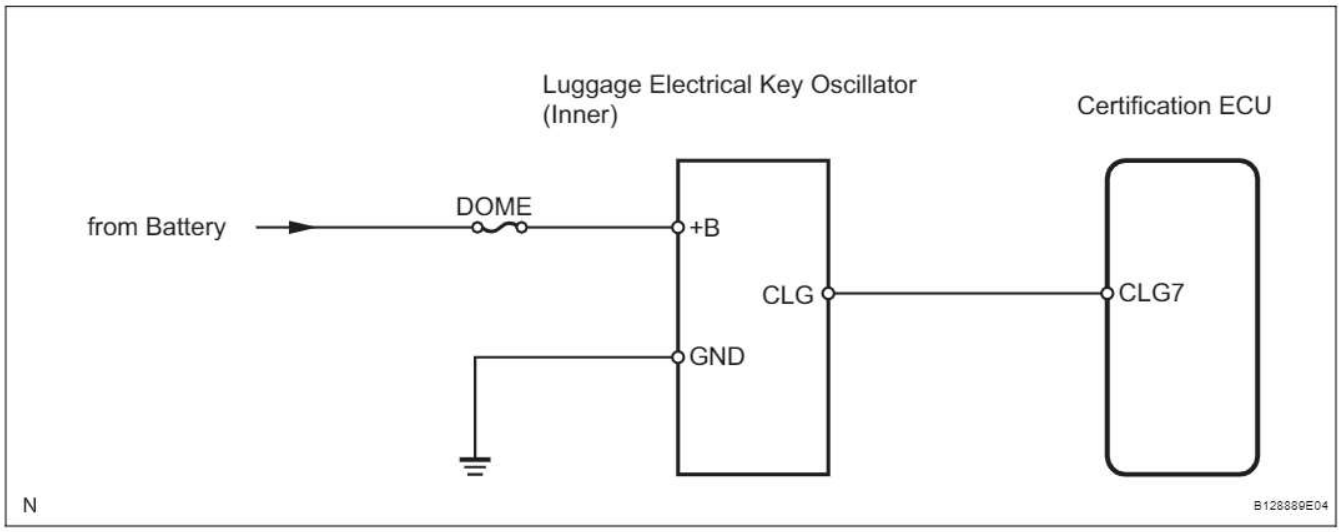
DL

Key Luggage Compartment Lock-in Prevention Function does not Operate

DESCRIPTION

With the key inside the luggage compartment, press the back door opener switch. The certification ECU uses the back door oscillators (outer and inner) to output a request signal. The back door outer oscillator cannot verify an ID code in this situation. The key receives the request and transmits its ID code to the antenna. The ID code is then sent to the certification ECU through the back door inner oscillator in order to be confirmed by the certification ECU. If the ID code is verified, the certification ECU sends a back door open signal to the driver side junction block (main body ECU) using the multiplex communication line and stops outputting request signals. The back door then can be opened.

WIRING DIAGRAM



INSPECTION PROCEDURE

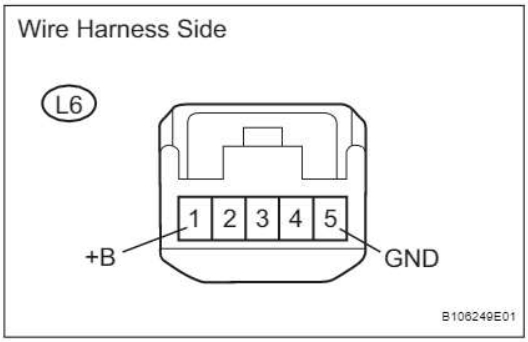
1	CHECK BACK DOOR ENTRY UNLOCK FUNCTION OPERATES

(a) Check that the back door entry unlock function operates normally.
OK:
Back door entry unlock function operates normally.

NG → GO TO PROBLEM SYMPTOMS TABLE

OK

2	CHECK WIRE HARNESS (LUGGAGE ELECTRICAL KEY OSCILLATOR (INNER) - BATTERY AND BODY GROUND)



(a) Disconnect the L6 connector.
(b) Measure the voltage of the wire harness side connector.
Standard voltage

Tester Connection	Specified Condition
L6-1 (+B) - Body ground	10 to 14 V

(c) Measure the resistance of the wire harness side connector.
Standard resistance

Tester Connection	Specified Condition
L6-5 (GND) - Body ground	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

DL

OK

3	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (LUGGAGE ELECTRICAL KEY OSCILLATOR (INNER))

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the oscillator (inner) operates.

Certification ECU

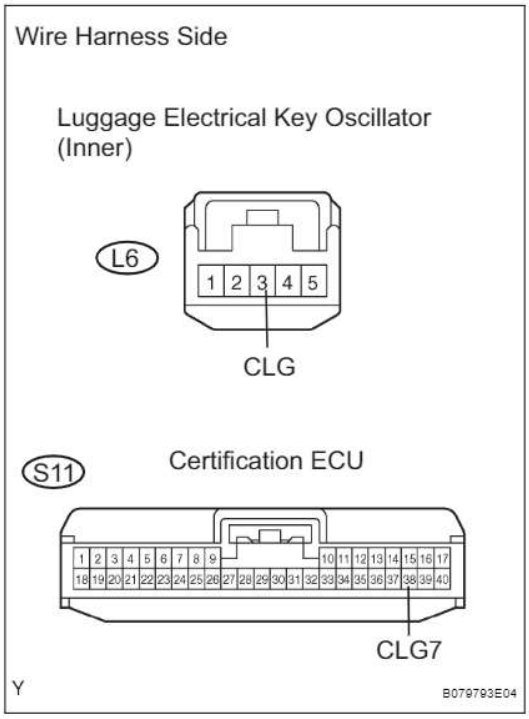
Item	Test Details	Diagnostic Note
IN BDR TRNSMITTR	Back door inner transmitter ON / OFF	-

OK:
ON (key is in luggage room) appears on the screen.

NG → **REPLACE LUGGAGE ELECTRICAL KEY OSCILLATOR (INNER)**

OK

4	CHECK WIRE HARNESS (CERTIFICATION ECU - LUGGAGE ELECTRICAL KEY OSCILLATOR (INNER))



(a) Disconnect the S11 ECU connector.
(b) Disconnect the L6 oscillator connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S11-38 (CLG7) - L6-3 (CLG)	Below 1 Ω
S11-38 (CLG7) or L6-3 (CLG) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK →

REPLACE CERTIFICATION ECU

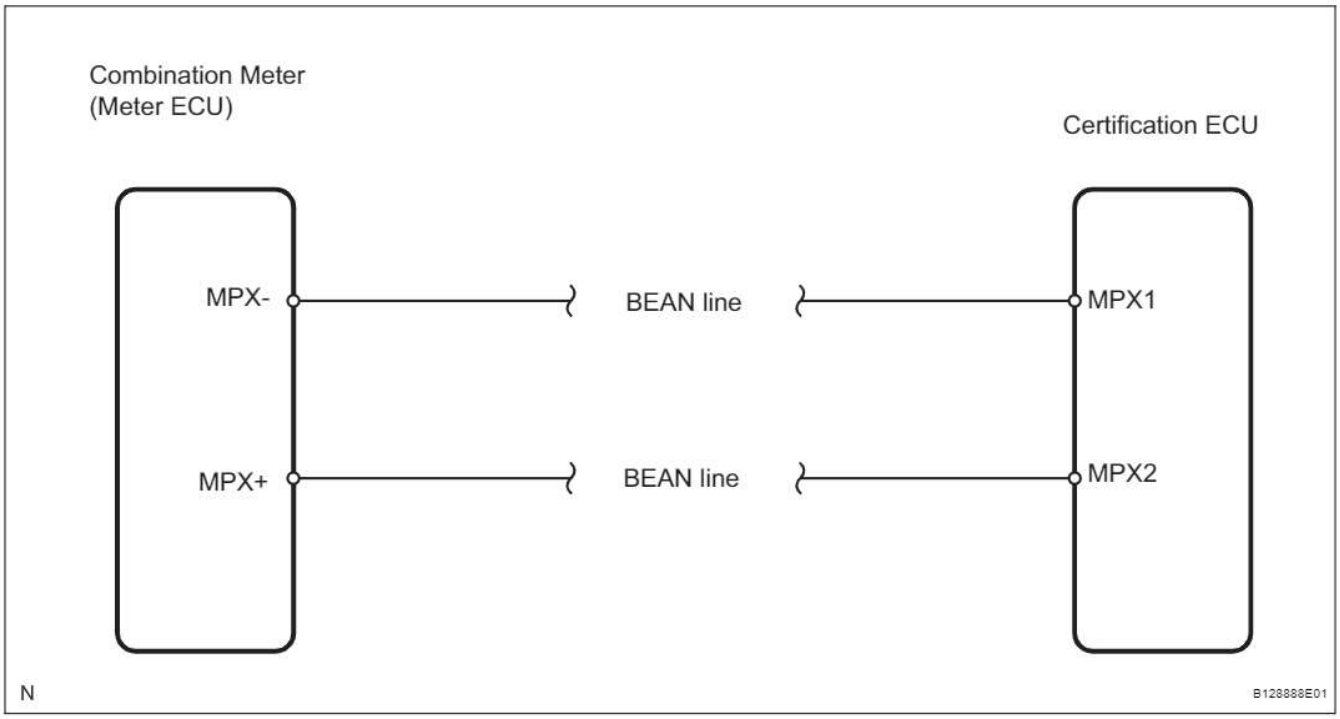
DL

Key Warning Light does not Come ON

DESCRIPTION

The certification ECU and combination meter communicate through the multiplex communication line (BEAN line). When the combination meter's key warning light does not illuminate / flash as specified (see page DL-155), one of the following is malfunctioning: 1) multiplex communication system, 2) certification ECU, or 3) combination meter.

WIRING DIAGRAM



DL

INSPECTION PROCEDURE

1	CHECK MULTIPLEX COMMUNICATION SYSTEM

(a) Check that the multiplex communication system operates normally.

OK:

Multiplex communication system operates normally.

NG → **GO TO MULTIPLEX COMMUNICATION SYSTEM**

OK

2	CHECK OPERATION OF COMBINATION METER

(a) After replacing the combination meter with a new one, check that the key warning light operates normally.

OK:
Key warning light operates normally

NG → REPLACE CERTIFICATION ECU

OK

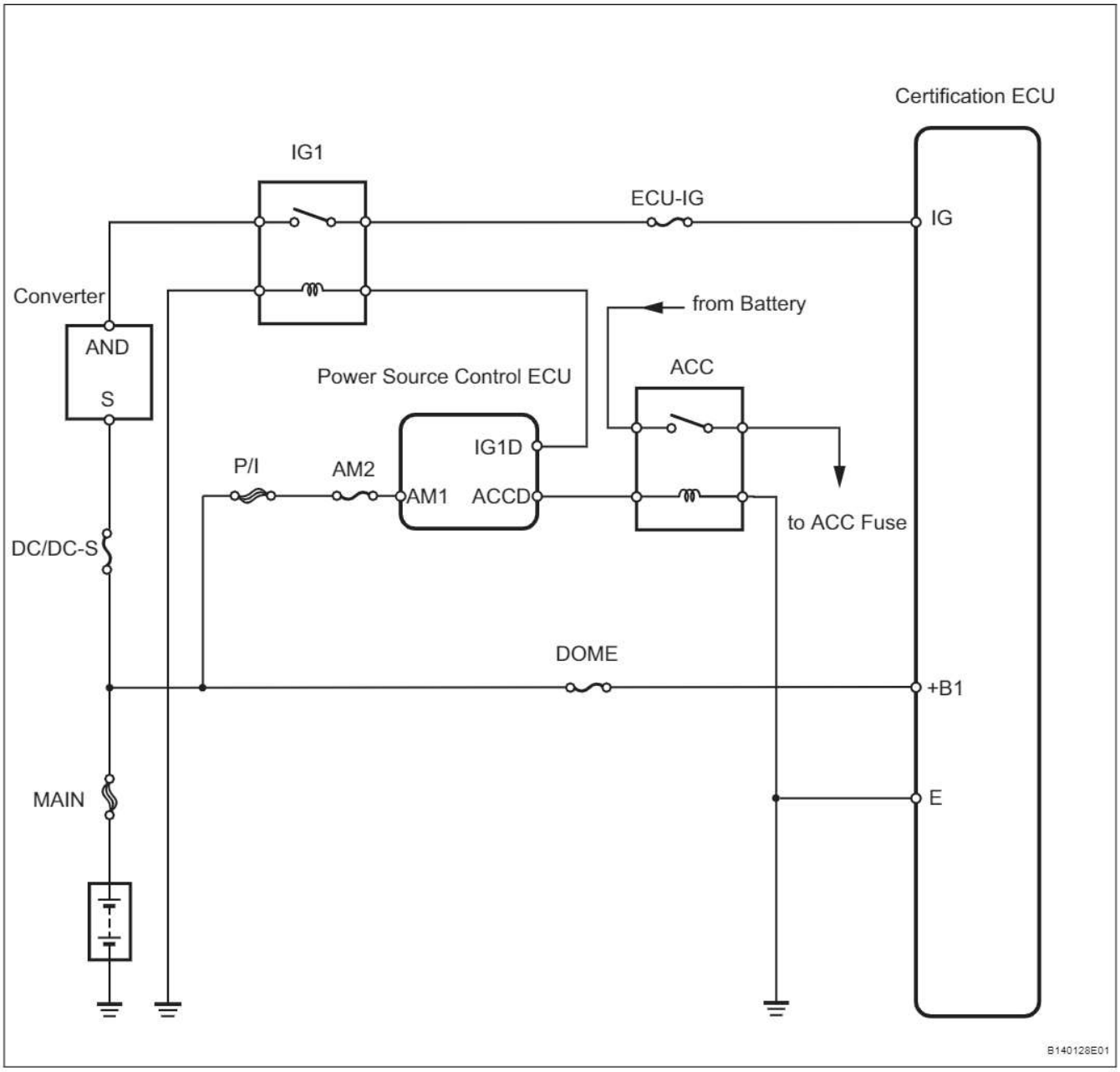
END

Entry Functions do not Operate at All

DESCRIPTION

When the entry functions do not operate at all, it is possible that the certification ECU is malfunctioning or that the wire harness leading to the certification ECU is short-circuited.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT FUSE (DOME)

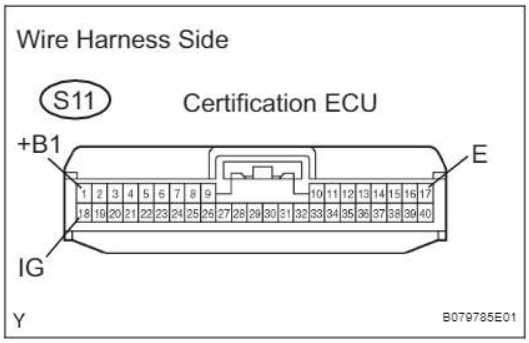
(a) Remove the DOME fuse from the engine room junction block and relay block.

(b) Measure the resistance of the fuses.
Standard resistance:
Below 1 Ω

NG → **REPLACE FUSE**

OK

2 CHECK WIRE HARNESS (CERTIFICATION ECU- BATTERY AND BODY GROUND)



(a) Disconnect the S11 ECU connector.
(b) Measure the voltage of the wire harness side connector.
Standard voltage

Tester Connection	Condition	Specified Condition
S11-18 (IG) - Body ground	Power switch OFF	Below 1 V
	Power switch ON (IG)	10 to 14 V
S11-1 (+B1) - Body ground	Always	10 to 14 V

(c) Measure the resistance of the wire harness side connector.
Standard resistance

Tester Connection	Specified Condition
S11-17 (E) - Body ground	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE CERTIFICATION ECU

DL

Vehicle is not Ready to Start when Driver Has Key

DESCRIPTION

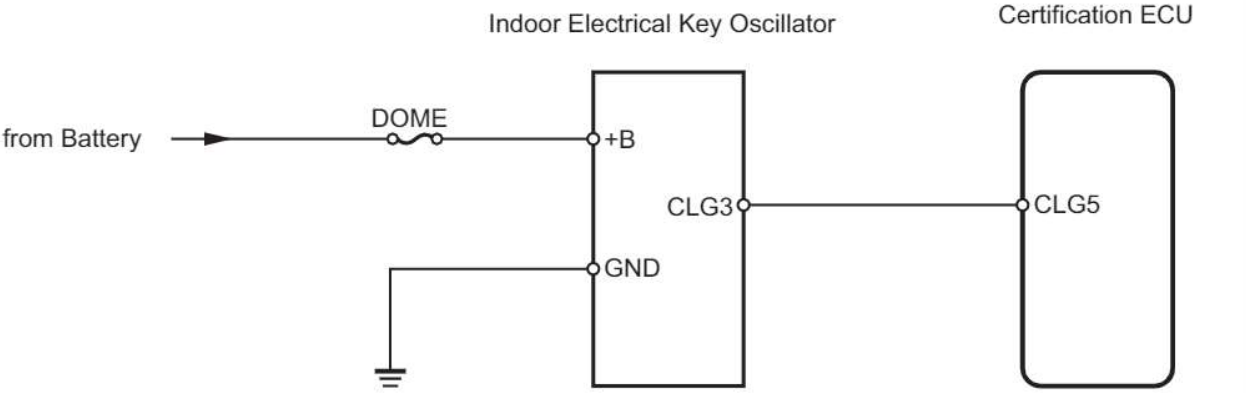
If the entry ignition function does not operate, insert the key into the key slot and check if the hybrid control system starts. If the hybrid control system starts (the transponder key ECU outputs a start permission to the hybrid control system and the hybrid control system starts), it can be assumed that only the entry ignition system is malfunctioning.

The certification ECU uses the indoor electrical key oscillator to send a request signal to the key when: 1) the driver's door is opened and closed, or 2) the power switch is changed from ON (ACC) to OFF or OFF to ON. Then, the key transmits its ID code to the door control receiver. The ID code, which is then sent to the certification ECU, is verified by the certification ECU and the verification result is sent to the transponder key ECU.

The transponder key ECU and the certification ECU communicate encryption codes to each other using the multiplex communication line. When the return code from the certification ECU matches the ID code in memory, the transponder key ECU sends a hybrid control system start permission signal to the hybrid control ECU. Pressing the power switch while depressing the brake pedal then starts the hybrid control system. With the vehicle stopped, pressing the power switch again stops the hybrid control system.

DL

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK ENTRY DOOR LOCK AND UN LOCK OPERATION

(a) Check that the entry lock and unlock functions operate normally.

OK:

Entry lock and unlock functions operate normally

NG → **GO TO PROBLEM SYMPTOMS TABLE**

OK

2	READ VALUE OF INTELLIGENT TESTER (HALFWAY SWITCH)

(a) Check the DATA LIST for proper functioning of the halfway switch.

Certification ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Key unlock warning switch / ON or OFF	OK: Key is in key slot OFF: No key is in key slot	-

OK:
ON (key is in key slot) appears on screen.

NG → **GO TO SMART KEY SYSTEM (for starting)**

OK

3	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (INDOOR ELECTRICAL KEY OSCILLATOR)

DL

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the oscillator operates.

Certification ECU

Item	Tester Details	Diagnostic Note
FR TRANSMITTER	Indoor electrical key oscillator (front) ON / OFF	-

OK:
When key is brought close to indoor electrical key oscillator, oscillator is turned ON and indicator on key illuminates.

OK → **REPLACE CERTIFICATION ECU**

NG

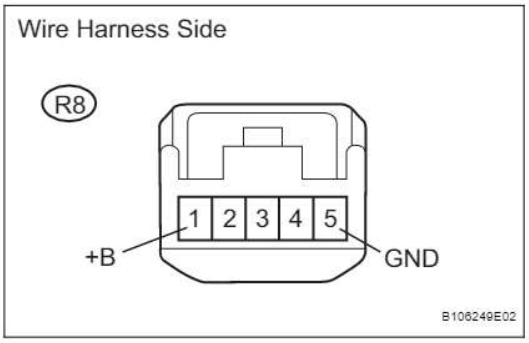
4	INSPECT FUSE (MPX-B, D/C CUT)

(a) Remove the MPX-B and D/C CUT fuses from the engine room relay block.
(b) Measure the resistance of the fuses.
Standard resistance:
Below 1 Ω

NG → **REPLACE FUSE**

OK

5	CHECK WIRE HARNESS (INDOOR ELECTRICAL KEY OSCILLATOR - BATTERY AND BODY GROUND)



(a) Disconnect the R8 oscillator connector.
(b) Measure the voltage of the wire harness side connector.
Standard voltage

Tester Connection	Specified Condition
R8-1 (+B) - Body ground	10 to 14 V

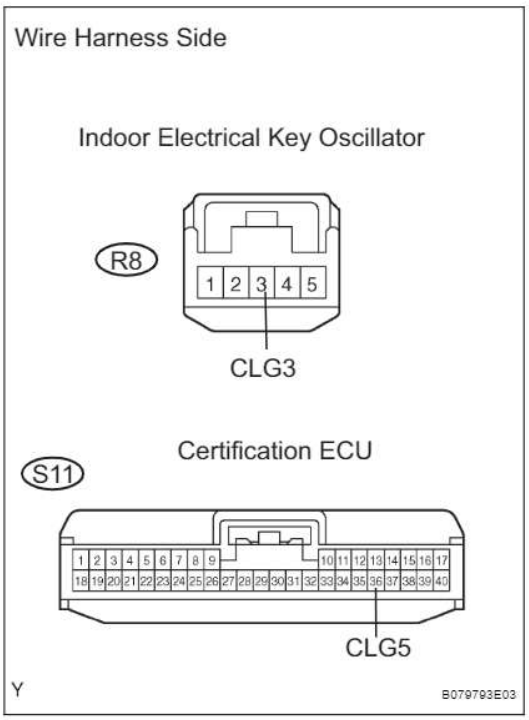
(c) Measure the resistance of the wire harness side connector.
Standard resistance

Tester Connection	Specified Condition
R8-5 (GND) - Body ground	Below 1 Ω

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

6	CHECK WIRE HARNESS (INDOOR ELECTRICAL KEY OSCILLATOR - CERTIFICATION ECU)



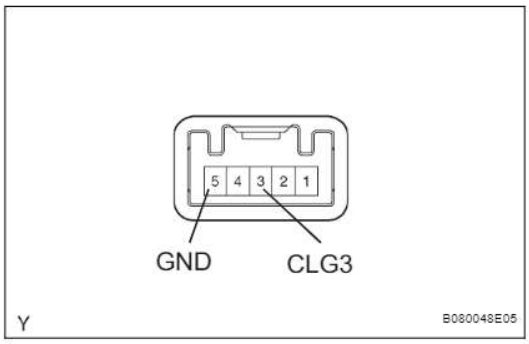
(a) Disconnect the R8 oscillator connectors.
(b) Disconnect the S11 ECU connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
R8-3 (CLG3) - S11-36 (CLG5)	Below 1 Ω
R8-3 (CLG3) or S11-36 (CLG5) - Body ground	10 kΩ or higher

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

7	CHECK INDOOR ELECTRICAL KEY OSCILLATOR (CLG3 VOLTAGE)



(a) Measure the voltage of the oscillator connector.
Standard voltage

Tester Connection	Condition	Specified Condition
R8-3 (CLG3) - R8-5 (GND)	During Active Test	Alternating between 5 V and below 1 V

NG → REPLACE INDOOR ELECTRICAL KEY OSCILLATOR

OK

REPLACE CERTIFICATION ECU

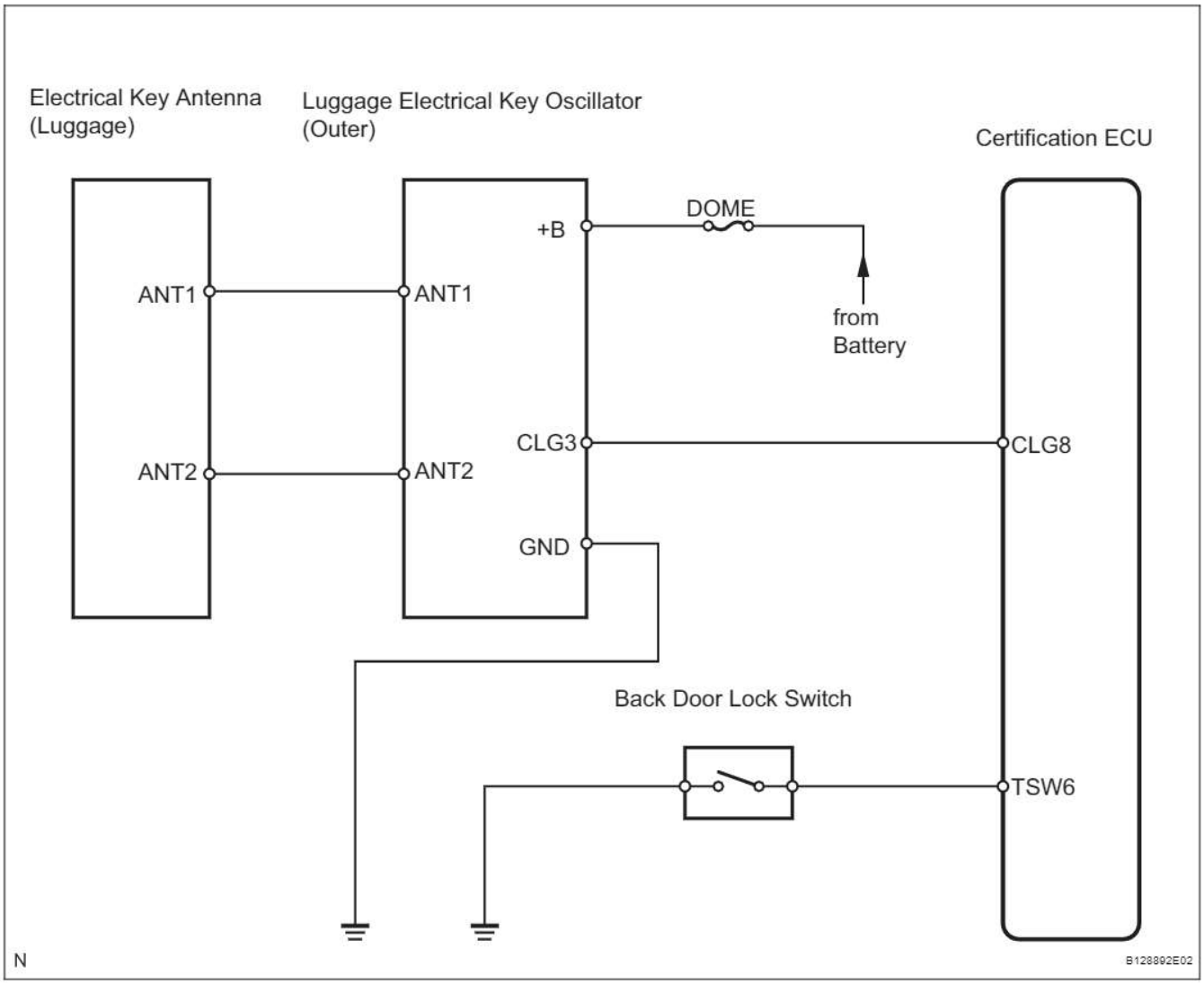
DL

Back Door Entry Unlock Function does not Operate

DESCRIPTION

When the back door opener switch is turned ON, the certification ECU uses the back door oscillator (outer) and antenna to output a request signal to the outside of the vehicle for a distance of approximately 1.0 m (3.3 ft.) from the back door. A key near the back door detects this request and transmits its ID code. The door control receiver receives the ID code and sends this ID code to the certification ECU. The certification ECU checks if the ID code is valid. If the ID code is verified, the certification ECU sends a back door open signal to the driver side junction block (main body ECU) using the multiplex communication line and stops outputting request signals. The driver side junction block (main body ECU) then unlocks the back door.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK ENTRY LOCK AND UNLOCK OPERATION

(a) Check that the entry lock and unlock functions operate normally.

OK:

Entry lock and unlock functions operate normally.

NG → **GO TO PROBLEM SYMPTOMS TABLE**

OK ↓

2	READ VALUE OF INTELLIGENT TESTER (BACK DOOR LOCK SWITCH)

(a) Check the DATA LIST for proper functioning of the back door lock switch.

Certification ECU

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
TR / B-DOOR LOCK	Trunk / Back-door lock switch / ON or OFF	ON: Back door lock switch is pushed OFF: Back door lock switch is not pushed	-

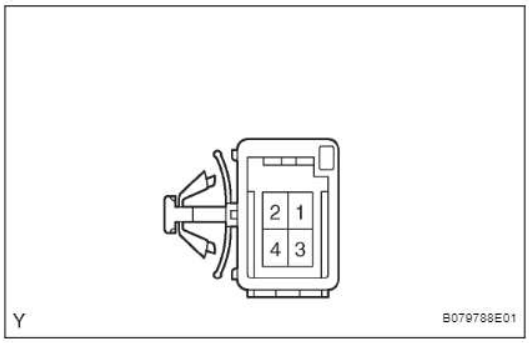
OK:

ON (back door lock switch is pushed) appears on the screen.

OK → **Go to step 5**

NG ↓

3	INSPECT BACK DOOR OPENER SWITCH



(a) Disconnect the L4 switch connector.

(b) Measure the resistance of the switch.

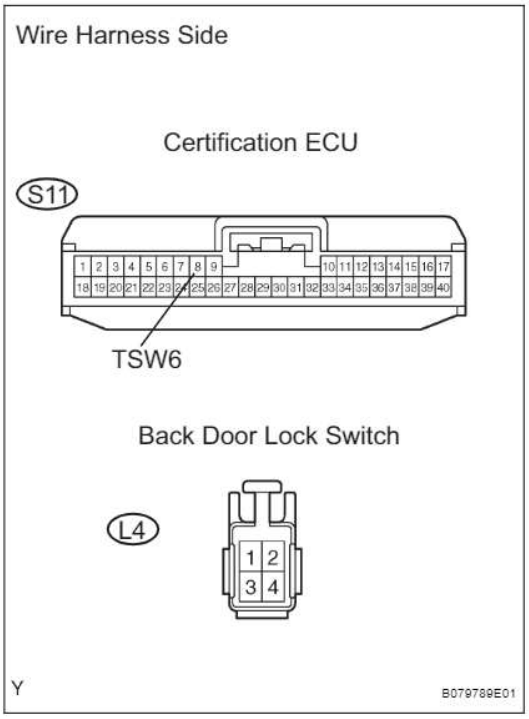
Standard resistance

Tester Connection	Condition	Specified Condition
1 - 2	Not pushed (OFF)	10 kΩ or higher
1 - 2	Pushed (ON)	Below 1 Ω

NG → **REPLACE BACK DOOR LOCK**

OK ↓

4	CHECK WIRE HARNESS (CERTIFICATION ECU - BACK DOOR LOCK SWITCH AND BODY GROUND)



(a) Disconnect the S11 ECU connector.
(b) Disconnect the L4 switch connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

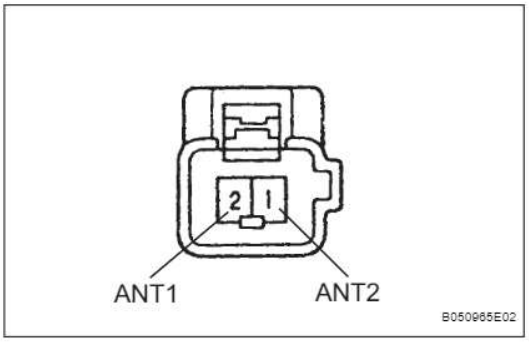
Tester Connection	Specified Condition
S11-8 (TSW6) - L4-3	Below 1 Ω
L4-4 - Body ground	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE CERTIFICATION ECU

5	INSPECT ELECTRICAL KEY ANTENNA (LUGGAGE)



(a) Measure the resistance of antenna.

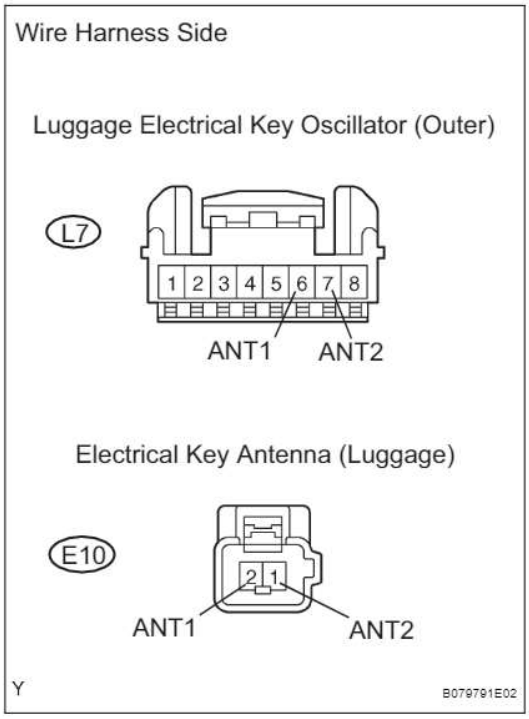
Standard resistance

Tester Connection	Condition	Specified Condition
1 (ANT2) - 2 (ANT1)	Back door lock switch pushed	Below 1 Ω
	Back door lock switch not pushed	10 kΩ or higher

NG → **REPLACE ELECTRICAL KEY ANTENNA (LUGGAGE)**

OK

6 **CHECK WIRE HARNESS (LUGGAGE ELECTRICAL KEY OSCILLATOR (OUTER) - ELECTRICAL KEY ANTENNA (LUGGAGE))**



(a) Disconnect the L7 oscillator connector.
(b) Disconnect the E10 antenna connector.
(c) Measure the resistance of the wire harness side connectors.

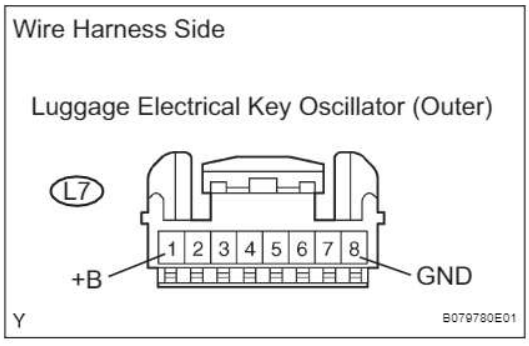
Standard resistance

Tester Connection	Specified Condition
L7-6 (ANT1) - E10-2 (ANT1)	Below 1 Ω
L7-7 (ANT2) - E10-1 (ANT2)	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

7 **CHECK WIRE HARNESS (LUGGAGE ELECTRICAL KEY OSCILLATOR (OUTER) - BODY GROUND)**



(a) Disconnect the L7 oscillator connector.
(b) Measure the voltage of the wire harness side connector.

Standard voltage

Tester Connection	Specified Condition
L7-1 (+B) - Body ground	10 to 14 V

(c) Measure the resistance of the wire harness side connector.

Standard resistance

Tester Connection	Specified Condition
L7-8 (GND) - Body ground	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

8	PERFORM ACTIVE TEST BY INTELLIGENT TESTER (LUGGAGE ELECTRICAL KEY OSCILLATOR (OUTER))

(a) Select the ACTIVE TEST, use the intelligent tester to generate a control command, and then check that the oscillator (outer) operates.

Certification ECU

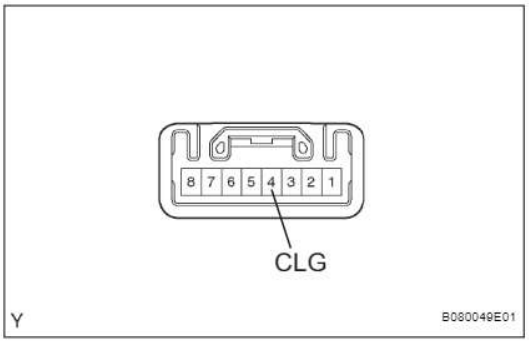
Item	Test Details	Diagnostic Note
BDOOR TRNSMTTR	Back door outer transmitter ON / OFF	-

OK:
When key is brought close to luggage compartment door, oscillator (outer) is turned ON and indicator on key illuminates.

OK → REPLACE CERTIFICATION ECU

NG

9	CHECK LUGGAGE ELECTRICAL KEY OSCILLATOR (OUTER) (CLG VOLTAGE)



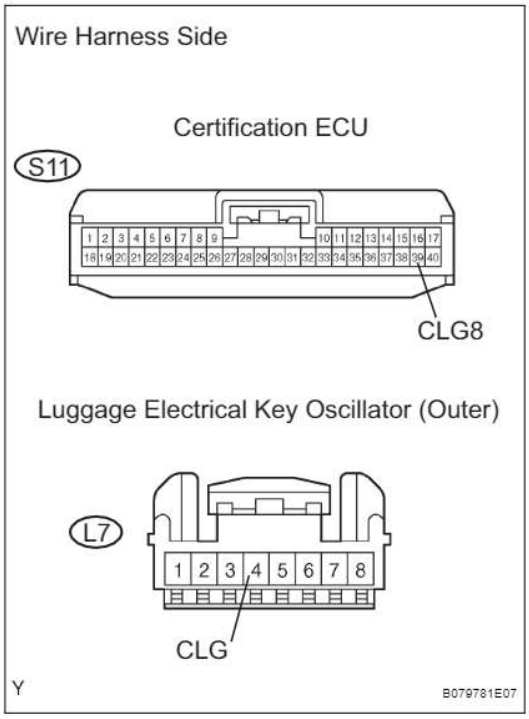
(a) Remove the oscillator but do not disconnect its connector.
(b) Measure the voltage of the connector.
Standard voltage

Tester Connection	Condition	Specified Condition
L7-4 (CLG) - Body ground	Back door lock switch OFF	Below 1 V
	Back door lock switch ON	Alternating between 5 V and below 1 V

NG → REPLACE LUGGAGE ELECTRICAL KEY OSCILLATOR (OUTER)

OK

10	CHECK WIRE HARNESS (CERTIFICATION ECU- LUGGAGE ELECTRICAL KEY OSCILLATOR (OUTER))



(a) Disconnect the S11 ECU connector.
(b) Disconnect the L7 oscillator connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S11-39 (CLG8) - L7-4 (CLG)	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE CERTIFICATION ECU

DL

KEY REMINDER WARNING SYSTEM

PRECAUTION

NOTICE FOR INITIALIZATION:

When disconnecting the negative (-) battery terminal, initialize the following system(s) after the terminal is reconnected.

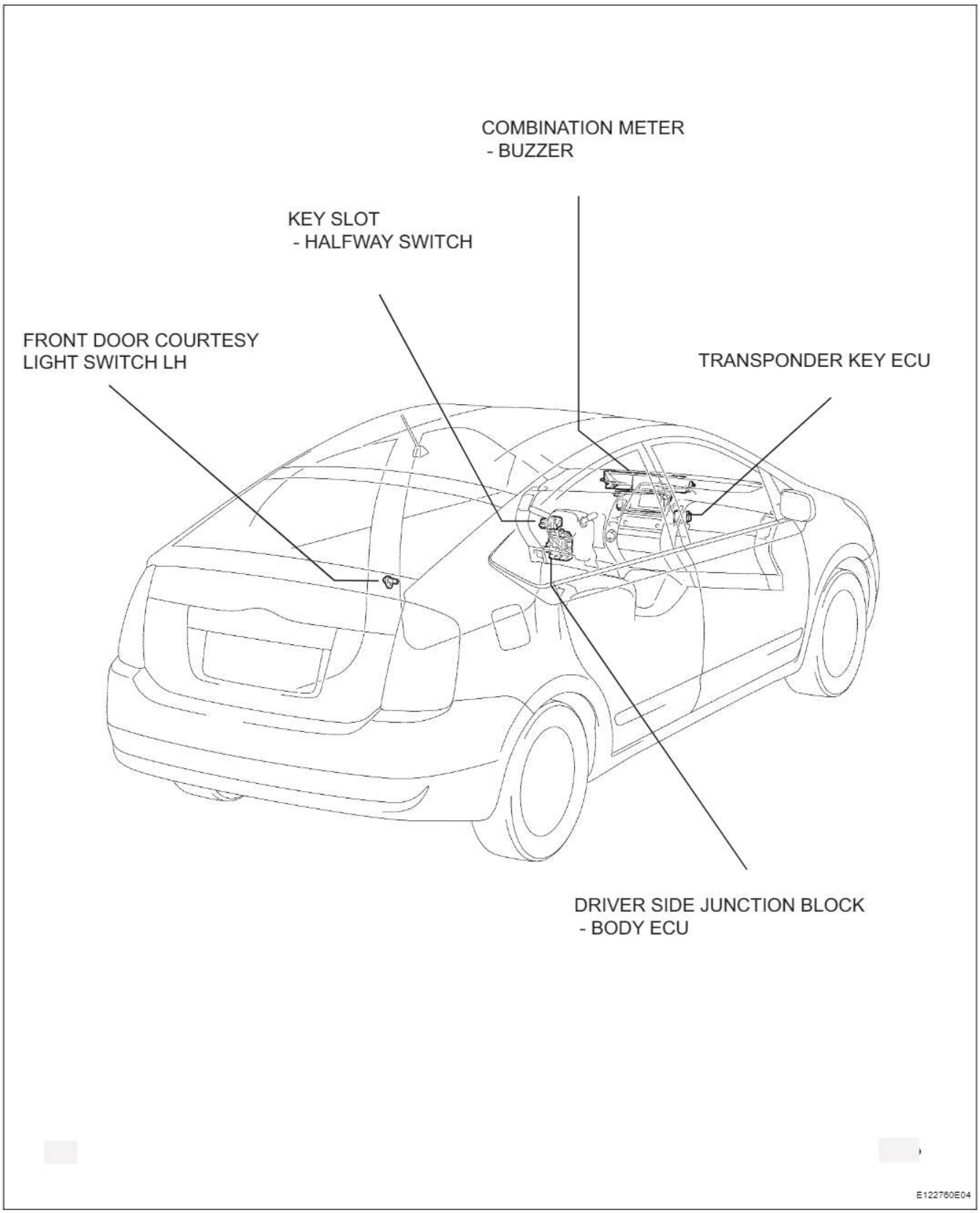
System Name	See procedure
Power Window Control System	IN-32

NOTICES FOR HYBRID SYSTEM ACTIVATION:

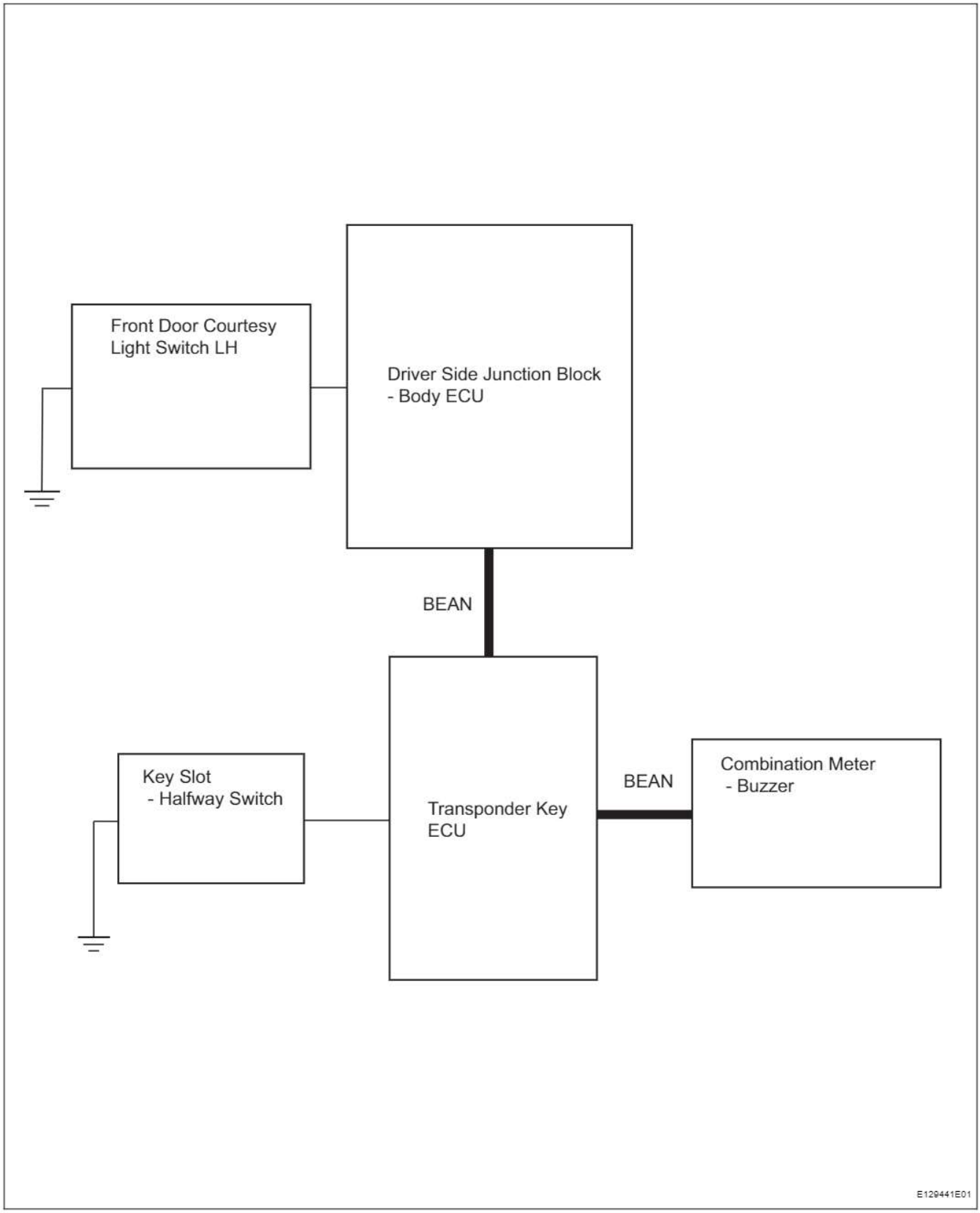
When the warning light is illuminated or the battery has been disconnected and reconnected, pressing the power switch may not start the system on the first try. If so, press the power switch again.

DL

PARTS LOCATION



SYSTEM DIAGRAM



SYSTEM DESCRIPTION

1. KEY REMINDER WARNING SYSTEM DESCRIPTION

(a) The key reminder warning system sounds the combination meter buzzer as a warning when the following occur simultaneously: 1) the power switch is set to OFF or ON (ACC), 2) the key is inserted into the key slot, and 3) the driver side door is opened.

2. FUNCTION OF COMPONENT

Components	Function
Front door courtesy light switch LH	Detects if driver side door is open or closed and outputs data to multiplex network body ECU.
Key slot (Halfway switch)	Detects if key is / is not in key slot and outputs data to transponder key ECU.
Combination meter	Receives buzzer request signal from transponder key ECU (after transponder key ECU receives halfway switch signal and front door courtesy light switch LH signal). Then combination meter actuates driver circuit to sound built-in multi-buzzer intermittently.

DL

3. FUNCTION OF DESCRIPTION

(a) The key slot transmits a halfway switch status signal to the transponder key ECU. The front door courtesy light switch LH transmits a driver side door courtesy switch status signal to the multiplex network body ECU. With the power switch OFF or ON (ACC), 2 conditions are required to activate the key reminder warning system: 1) the transponder key ECU receives a signal indicating that the key is in the key slot, and 2) the transponder key ECU receives a driver side door open signal via the multiplex network body ECU. If both conditions are satisfied, a buzzer request signal is transmitted from the transponder key ECU to the combination meter assembly via the BEAN. The combination meter assembly then actuates the driver circuit to sound a built-in multi-buzzer intermittently.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use this procedure to troubleshoot the key reminder warning system.
- *: Use the intelligent tester.

1 VEHICLE BROUGHT TO WORKSHOP

NEXT

2 INSPECT BATTERY VOLTAGE

Standard voltage:
11 to 14 V

If the voltage is below 11 V, recharge or replace the battery before proceeding.

NEXT

3 PROBLEM SYMPTOMS TABLE

Result

Result	proceed to
DTC is not output	A
DTC is output	B

B → **Go to step 5**

A

4 OVERALL ANALYSIS AND TROUBLESHOOTING*

(a) Operation check (see page DL-203).
(b) Terminals of ECU (see page DL-205).
(c) DATA LIST / ACTIVE TEST (see page DL-207).

NEXT

5 ADJUST, REPAIR OR REPLACE

NEXT

6	CONFIRMATION TEST

NEXT

END

OPERATION CHECK

1. CHECK FUNCTION

(a) Check the key reminder warning buzzer sound function.
  (1) Close the driver side door, insert the key into the key slot and turn the power switch OFF.
  (2) Open the driver side door. Check that the key reminder warning buzzer sounds intermittently.

(b) Check that the key reminder warning buzzer stops.
  (1) While the buzzer is sounding, perform one of the following operations:
    - Close the driver side door (front door courtesy light switch LH is turned OFF).
    - Turn the power switch ON (IG).
    - Pull out the key from the key slot.
  (2) Check that the key reminder warning buzzer stops sounding.

PROBLEM SYMPTOMS TABLE

HINT:
Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.

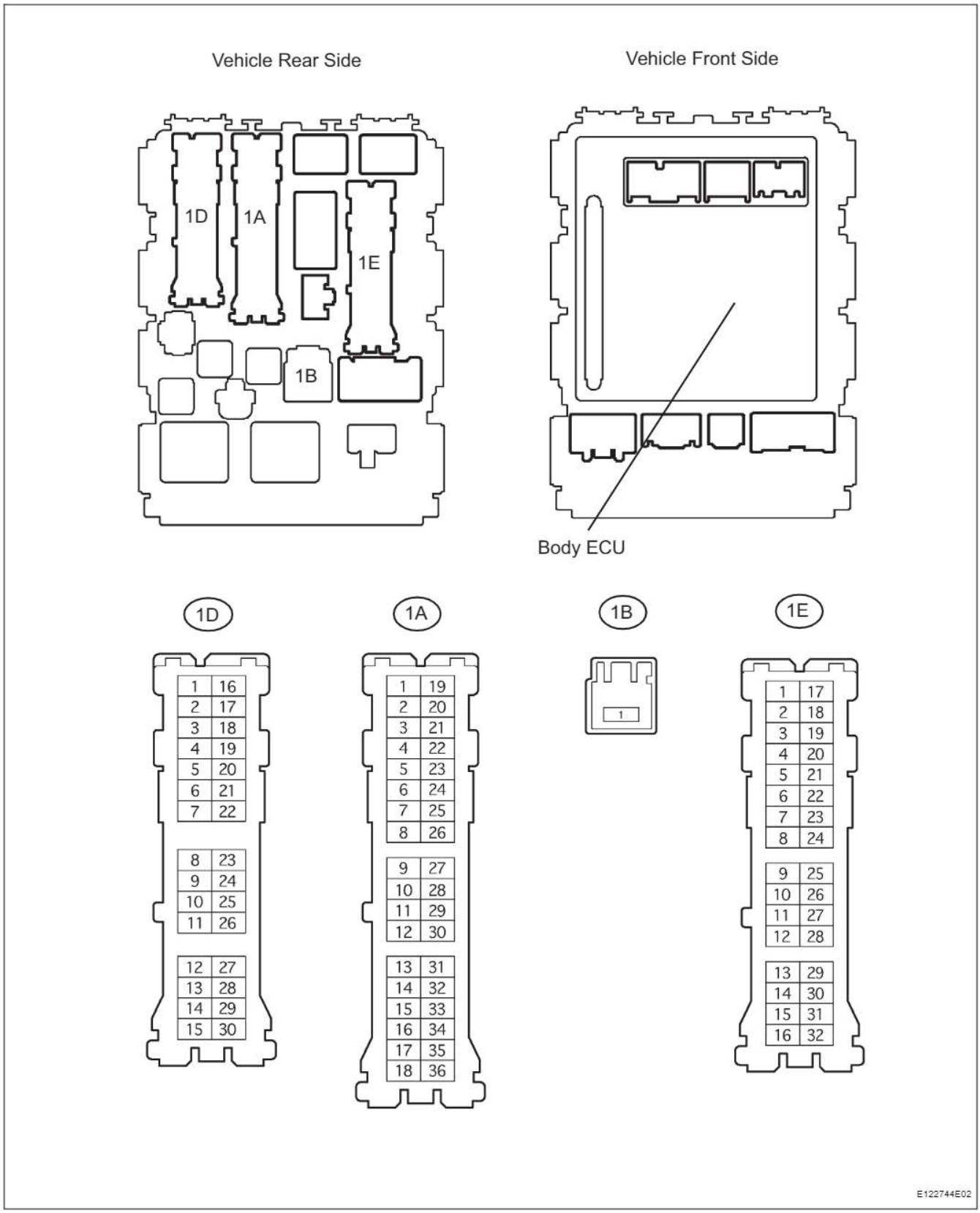
Key reminder warning system

Symptom	Suspected area	See page
Key reminder buzzer does not sound	1. Front door courtesy light switch circuit (driver side)	DL-209
	2. Combination meter	DL-209
	3. Power source circuit	DL-209
	4. Key slot	DL-209
	5. Wire harness	DL-209
	6. Transponder key ECU	DL-209

DL

TERMINALS OF ECU

1. CHECK DRIVER SIDE JUNCTION BLOCK



(a) Disconnect the 1A, 1B, 1D and 1E junction block connectors.

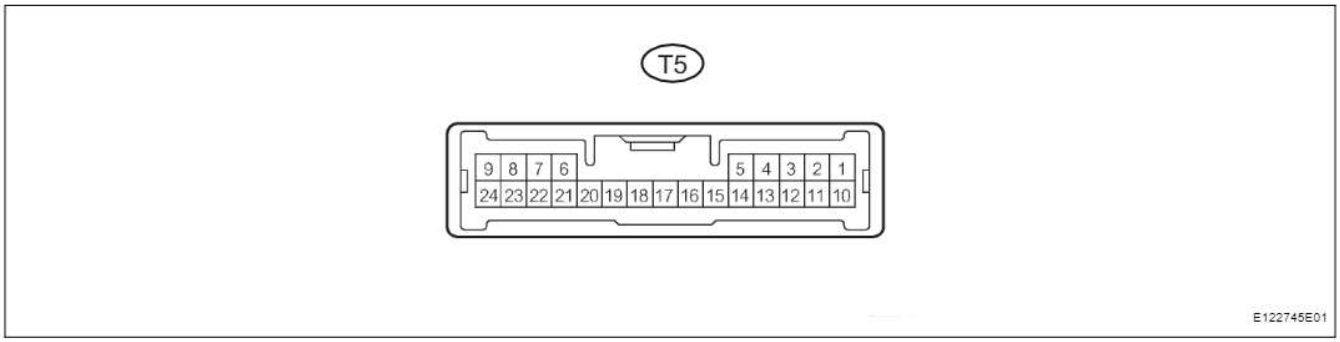
(b) Measure the resistance and voltage of the wire harness side connectors.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
ECUB (1A-30) - Body ground	R - Body ground	+B power supply	Always	10 to 14 V
SIG (1B-1) - Body ground	W - Body ground	Ignition power supply	Power switch OFF	10 kΩ or higher
			Power switch ON (IG)	Below 1 Ω
GND (1E-17) - Body ground	W - B Body ground	Ground	Ground	Below 1 kΩ
KSW (1E-26) - Body ground	Y - Body ground	Halfway switch input	No key in key slot	10 kΩ or higher
			Key in key slot	Below 1 Ω
DTCY (1D-21) - Body ground	V - Body ground	Door courtesy switch input	Driver side door CLOSED	10 kΩ or higher
			Driver side door OPEN	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

2. CHECK TRANSPONDER KEY ECU

DL



(a) Disconnect the T5 ECU connector.
(b) Measure the voltage and resistance of the wire harness side connector.

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
CPUB (T5-3) - Body ground	L - Body ground	IG power supply	Always	10 to 14 V
ACC (T5-12) -Body ground	P - Body ground	ACC power supply	Power switch OFF	10 to 14 V
			Power switch ON (ACC)	0 V
GND (T5-22) - Body ground	W-B -Body ground	Ground	Always	Below 1 Ω
CUWS (T5-5) - Body ground	B - Body ground	Halfway switch input	No key in key slot	10 kΩ or higher
			Key in key slot	Below 1 Ω

If the result is not as specified, there may be a malfunction on the wire harness side.

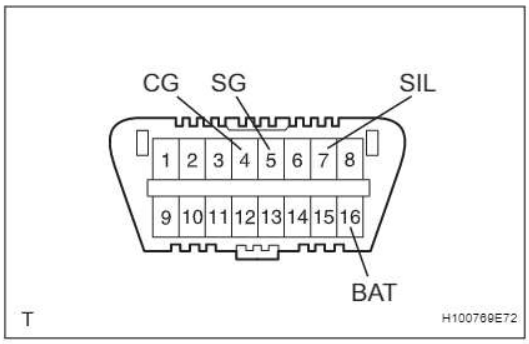
DIAGNOSIS SYSTEM

1. DESCRIPTION

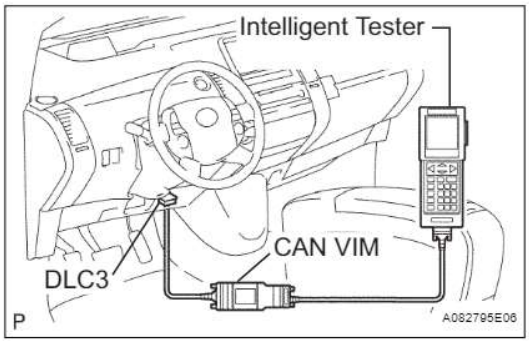
Key reminder warning system data can be read in the Data Link Connector 3 (DLC3) of the vehicle. When the system seems to be malfunctioning, use the intelligent tester to check for malfunctions and perform repairs.

2. CHECK DLC3

The vehicle's ECU uses the ISO 15765-4 communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 15765-4 format.



Symbols (Terminal No.)	Terminal Description	Condition	Specified Condition
SIL (7) - SG (5)	Bus "+" line	During transmission	Pulse generation
CG (4) - Body ground	Chassis ground	Always	Below 1 Ω
SG (5) - Body ground	Signal ground	Always	Below 1 Ω
BAT (16) - Body ground	Battery positive	Always	11 to 14 V



If the result is not as specified, the DLC3 may have a malfunction. Repair or replace the harness and connector.

HINT:

- Connect the cable of the intelligent tester (with CAN VIM) to the DLC3, turn the power switch ON (IG) and attempt to use the tester.
- If the screen displays the message UNABLE TO CONNECT TO VEHICLE, there is a problem either with the vehicle or with the tester.
- If communication is normal when the intelligent tester is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when the tester is connected to another vehicle, the problem is probably in the tester itself. Consult the Service Department listed in the tester's instruction manual.

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the intelligent tester's DATA LIST allows switch, actuator and other item values to be read without removing any parts. Reading the DATA LIST early in troubleshooting is one way to save time.

(a) Connect the intelligent tester (with CAN VIN) to the DCL3.

(b) Turn the power switch ON (IG).

(c) Read the DATA LIST according to the display on the tester.

Transponder key ECU

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Halfway switch signal/ON or OFF	ON: Key is in key slot. OFF: No key is in key slot.	-

DL

Body ECU

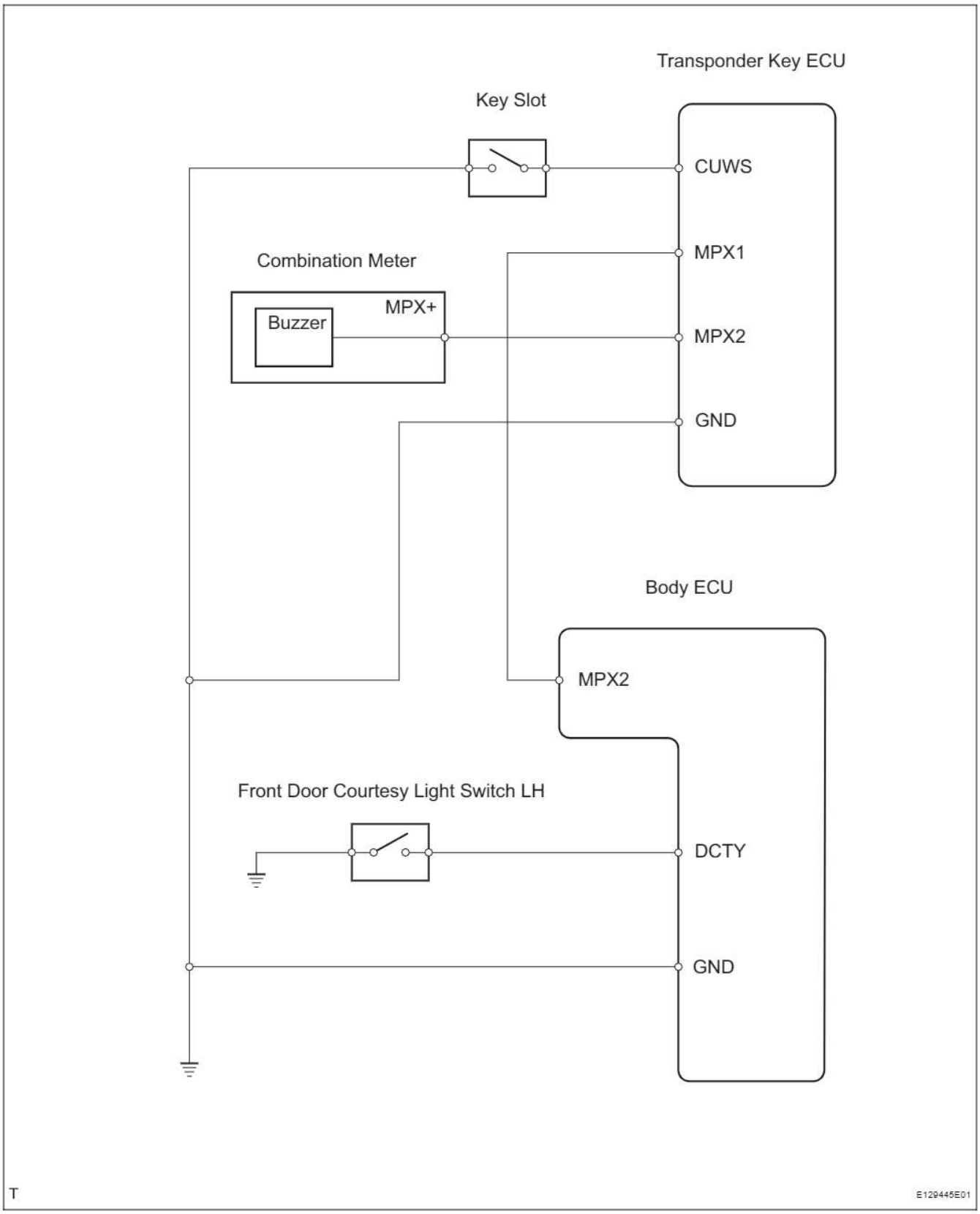
Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy switch signal / ON or OFF	ON: Driver side door is open. OFF: Driver side door is closed.	-

Key Reminder Buzzer does not Sound

DESCRIPTION

With the power switch OFF or ON (ACC), the combination meter sounds the buzzer when it receives a buzzer request signal from the transponder key ECU using the BEAN. The transponder key ECU outputs this signal when it receives: 1) a halfway switch signal (set when the key is in the key slot); and 2) a driver side door courtesy switch signal from the multiplex network body ECU (set when the driver side door is open).

WIRING DIAGRAM



INSPECTION PROCEDURE

1	READ VALUE OF INTELLIGENT TESTER (DRIVER SIDE DOOR COURTESY LIGHT SWITCH)

(a) Check the DATA LIST for proper functioning of the driver side door courtesy switch.

Body ECU

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
D DOR CTY SW	Driver side door courtesy switch signal / ON or OFF	ON: Driver side door is open OFF: Driver side door is closed	-

OK:
Tester display changes correctly according to open / closed condition of door.

NG → **Go to step 4**

OK

DL

2	READ VALUE OF INTELLIGENT TESTER (HALFWAY SWITCH)

(a) Check the DATA LIST for proper functioning of the key slot.

Transponder key ECU

Item	Measurement Item / Display (Range)	Normal Condition	Diagnostic Note
KEY UNLK WRN SW	Halfway switch signal / ON or OFF	ON: Key is in key slot OFF: No key is in key slot	-

OK:
ON (key is in key slot) appears on the screen.

NG → **Go to step 6**

OK

3	CHECK COMBINATION METER

(a) Check the warning buzzer built into the combination meter (see page ME-11).

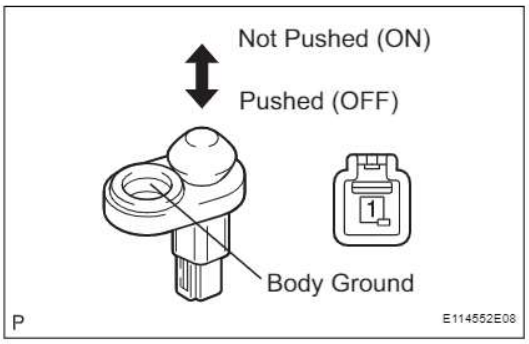
OK:
Warning buzzer sounds.

NG → **REPLACE COMBINATION METER ASSEMBLY**

OK

REPLACE DRIVER SIDE JUNCTION BLOCK (BODY ECU)

4 INSPECT FRONT DOOR COURTESY LIGHT SWITCH LH



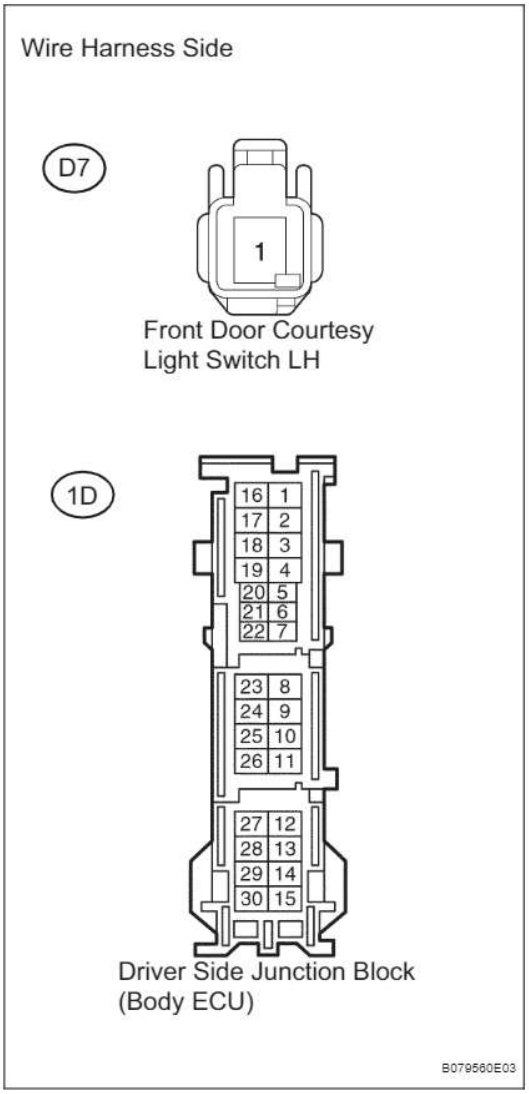
(a) Remove the courtesy light switch.
(b) Measure the resistance of the switch.
Standard resistance

Tester Condition	Switch Condition	Switch Condition
1 - Body ground	Not pushed	Below 1 Ω
1 - Body ground	Pushed	10 kΩ or higher

NG → **REPLACE FRONT DOOR COURTESY LIGHT SWITCH LH**

OK

5 CHECK WIRE HARNESS (COURTESY LIGHT SWITCH - BODY ECU)



(a) Disconnect the D7 switch connector.
(b) Disconnect the 1D junction block connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
D7-1 - 1D-21 (DCTY)	Below 1 Ω

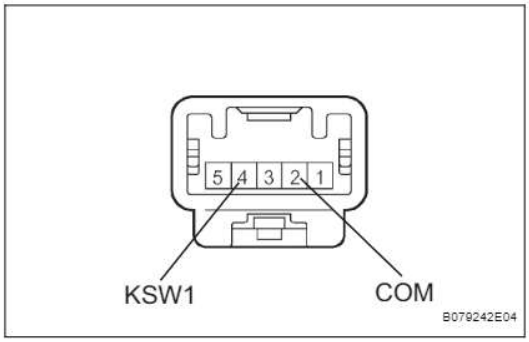
NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

DL

OK

REPLACE DRIVER SIDE JUNCTION BLOCK (BODY ECU)

6 INSPECT KEY SLOT



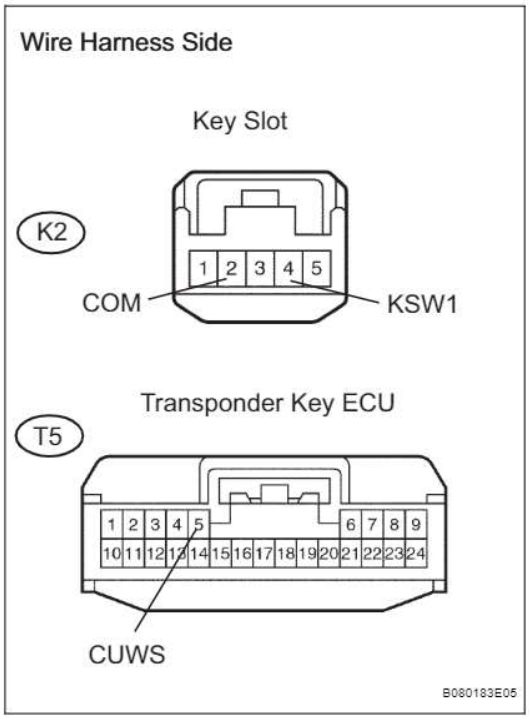
(a) Remove the key slot.
(b) Measure the resistance of the switch.
Standard resistance

Tester Condition	Condition	Specified Condition
2 (COM) - 4 (KSW1)	Key in key slot	Below 1 Ω
	No key in key slot	10 kΩ or higher

NG → **REPLACE KEY SLOT**

OK

7 CHECK WIRE HARNESS (KEY SLOT - INSTRUMENT TRANSPONDER KEY ECU)



(a) Disconnect the K2 key slot connector.
(b) Disconnect the T5 ECU connector.
(c) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
K2-4 (KSW1) - T5-5 (CUWS)	Below 1 Ω
K2-2 (COM) - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

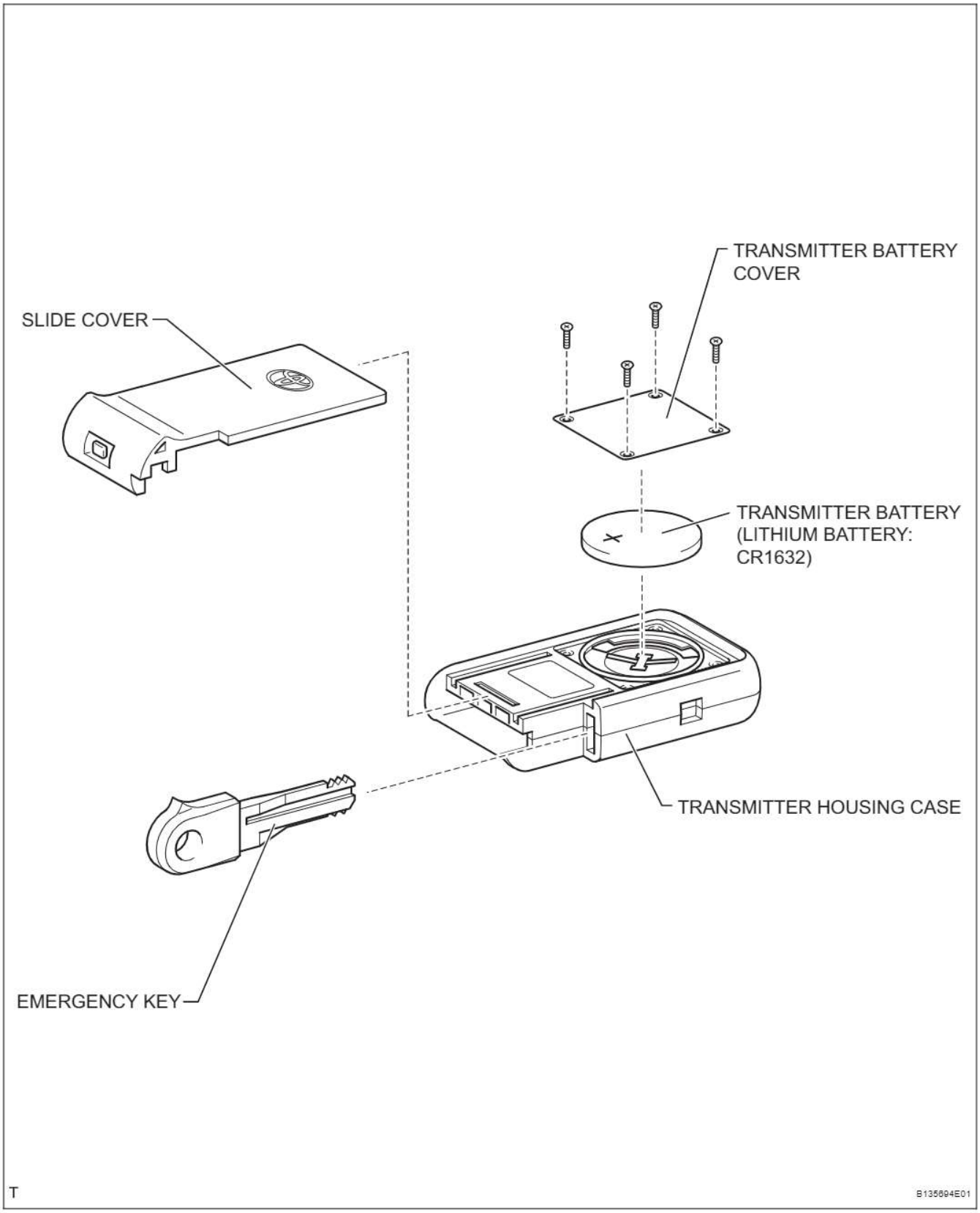
OK

REPLACE TRANSPONDER KEY ECU

DL

TRANSMITTER BATTERY

COMPONENTS

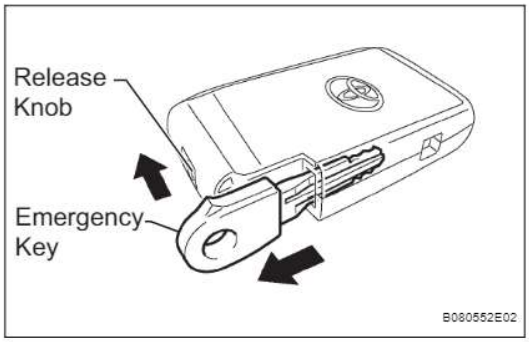


REMOVAL

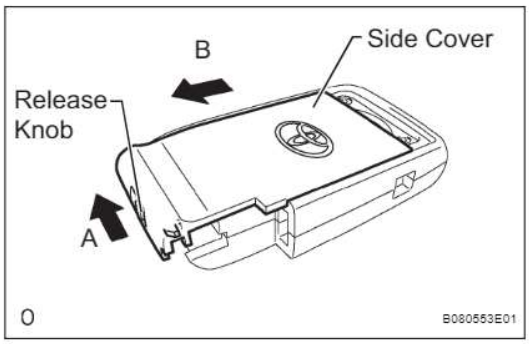
1. REMOVE TRANSMITTER BATTERY

NOTICE:

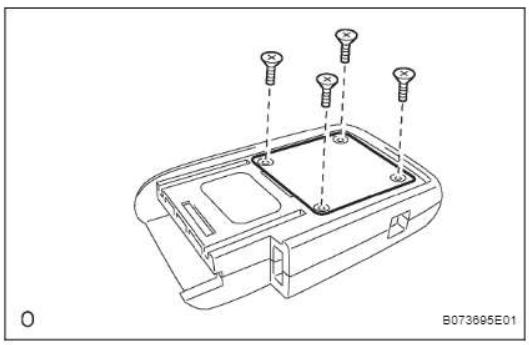
Take extra care when handing these precision electronic components.



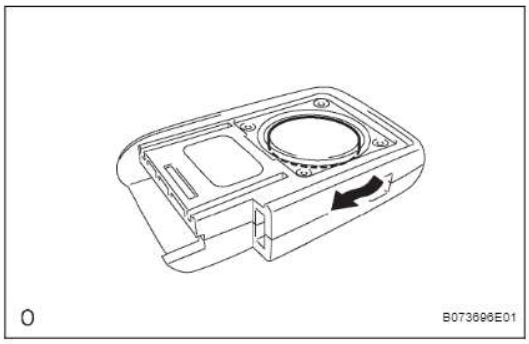
(a) Push and hold the release knob in the direction indicated by the arrow in the illustration. Take the emergency key out of the case.



(b) Push and hold the release knob in the direction indicated by the arrow labeled A. Push out the side cover in the direction indicated by the arrow labeled B and remove the side cover.



(c) Remove the 4 screws and cover, as shown in the illustration.



(d) Remove the transmitter's battery (lithium battery: CR1632) from the transmitter, as shown in the illustration.

NOTICE:

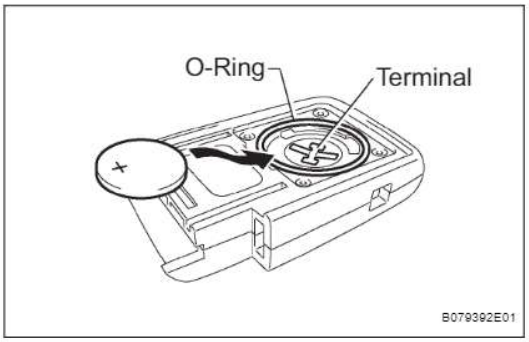
- **Do not push the terminals with your finger.**
- **Do not forcibly pry up the battery. The terminals may become damaged.**
- **Do not touch the battery with wet hands. Water may cause rust.**
- **Do not touch or move any components inside the transmitter, as it may cease to work.**

INSTALLATION

1. INSTALL TRANSMITTER BATTERY

NOTICE:

Take care when handing these precision electronic components.



(a) Install a new battery (lithium battery: CR1632) with the positive (+) side up, as shown in the illustration.

NOTICE:

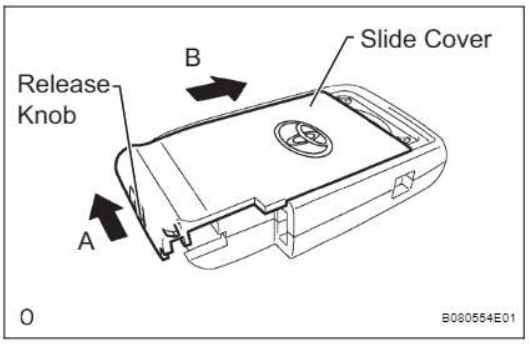
- **Be sure that the positive (+) side and the negative (-) side of the transmitter battery are matched up correctly.**
- **Be careful not to bend the transmitter battery electrode during insertion.**
- **Keep the transmitter case interior free of dust and oil.**

(b) Check that the O-ring is not distorted or slipped off, and install the cover.

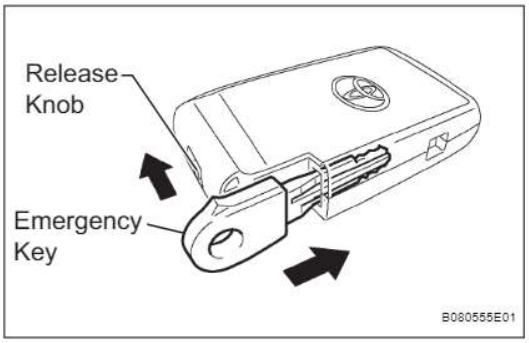
(c) Install the 4 screws.

NOTICE:

Incomplete installation of the cover will cause defective contact between the battery and terminal.



(d) Push and hold the release knob in the direction indicated by the arrow labeled A. Push in the slide cover in the direction indicated by the arrow labeled B and install the slide cover.



(e) Push and hold the release knob in the direction indicated by the arrow. Insert the emergency key into the case.

HINT:

After installation, press any of the transmitter's switches. Check that the LED illuminates.

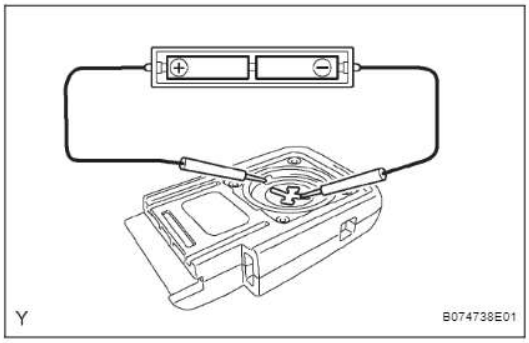
DOOR CONTROL TRANSMITTER

INSPECTION

1. INSPECT DOOR CONTROL TRANSMITTER

(a) Inspect operation of the transmitter.

(1) Remove the battery (lithium battery: CR1632) from the transmitter (see page DL-215).



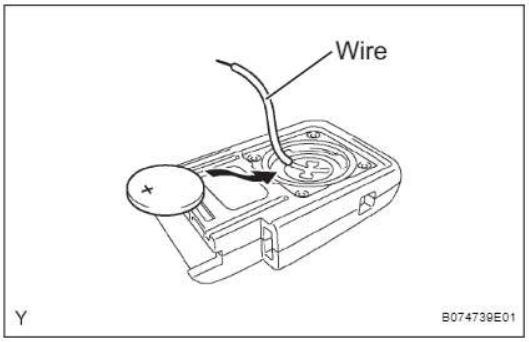
(2) Install a new or non-depleted battery.
HINT:
When a new or non-depleted transmitter battery is not available, connect 2 new 1.5 V batteries in series. Then connect leads to the batteries and use the leads to apply voltage of 3 V to the transmitter, as shown in the illumination.

(3) From outside the vehicle, approximately 1 m (3.28 ft.) from the driver the outside door handle, test the transmitter by pointing transmitter at the vehicle and pressing a transmitter switch.
OK:
Door lock can be operated via transmitter.
HINT:
- The operating range differs depending on the user, the way the transmitter is held and the location.
- Since the transmitter uses faint electric waves, the operating range might be shortened if noise or strong electric waves occur in the area where the transmitter is used. Or, the transmitter may not function.

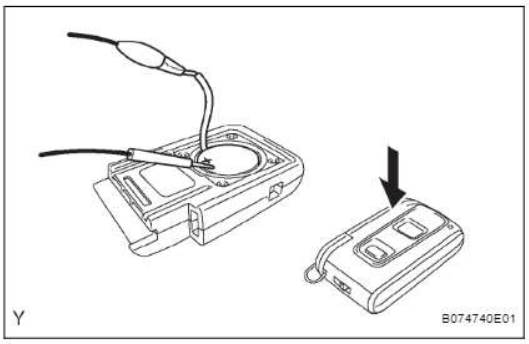
(b) Install the battery (see page DL-216).

(c) Inspect the battery capacity.
HINT:
- When checking the amount of energy left in the battery, the battery must be checked while it is installed in the transmitter (a resistance of 1.2 kΩ is applied to the battery). When the battery energy is checked by itself (uninstalled), the voltage reading will be more than 2.5 V until the energy is depleted.
- If the transmitter is malfunctioning, the voltage reading of the energy left in the battery may be inaccurate.

(1) Remove the battery from the transmitter.



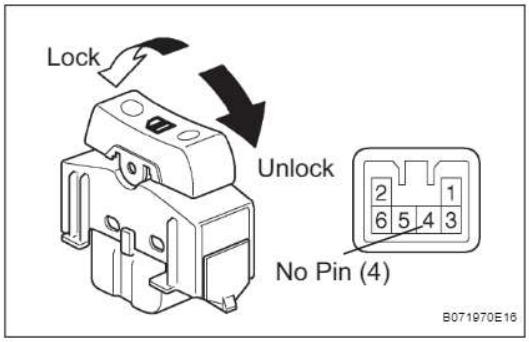
(2) Connect a wire to the negative (-) terminal of the transmitter and install the battery.



(3) Connect the tester's positive (+) lead to the battery's positive (+) terminal and the negative (-) lead to the wire.
(4) Press one of the transmitter switches for approximately 1 second.
(5) Press the transmitter switch again and check the voltage.
Standard voltage:
2.2 V or higher
HINT:
- When the temperature of the battery is low, the inspection cannot be made correctly. When the outcome of the test is less than 2.2 V, conduct the test again after leaving the battery in a place with a temperature 18°C (64°F) for more than 30 minutes.
- Read the voltage immediately after the switch is pressed. When 0.8 seconds have pressed after the switch is pressed, the automatic power-off function starts and resistance applied to the battery will cease. The voltage of the battery will be 2.5 V or more.
- Press the switch at least 3 times before reading the voltage. If the battery has just been returned to 18°C (64°F), the voltage may be unusually high for the first or second voltage reading.

(6) Disconnect the lead.
(7) Set the battery in the transmitter.

DL



DOOR CONTROL SWITCH

INSPECTION

1. INSPECT DOOR CONTROL SWITCH

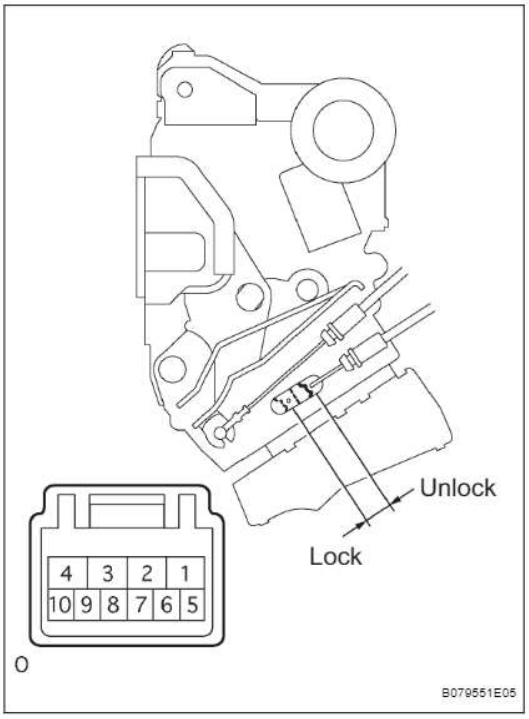
(a) Measure the resistance of the switch.

Standard resistance

Tester Connection	Switch Condition	Specified Condition
3 - 6	Lock	Below 1 Ω
3 - 5	Unlock	
3 - 6	OFF	10 kΩ or higher
3 - 5		

If the result is not as specified, replace the switch.

DL



FRONT DOOR LOCK

INSPECTION

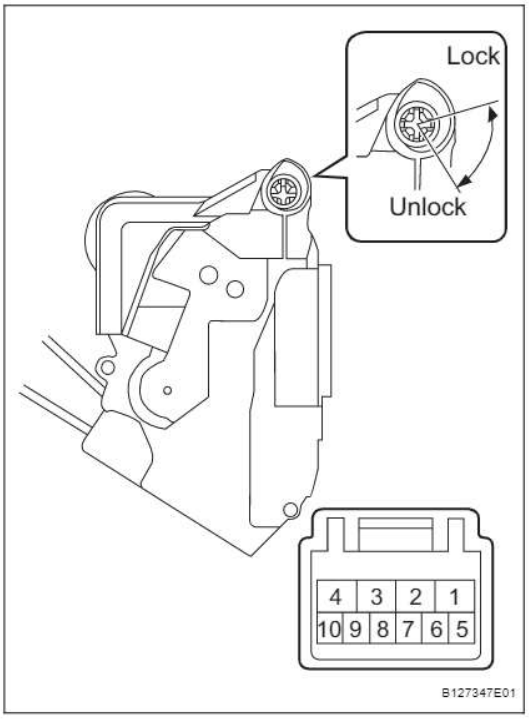
1. INSPECT FRONT DOOR LOCK LH

(a) Apply battery voltage to the door lock and check operation of the door lock motor.

OK

Measurement Condition	Specified Condition
Battery positive (+) →Terminal 4 Battery negative (-) →Terminal 1	Lock
Battery positive (+) →Terminal 1 Battery negative (-) →Terminal 4	Unlock

If the result is not as specified, replace the door lock assembly.



(b) Measure the resistance of the door lock and unlock switch and position switch.

Standard resistance

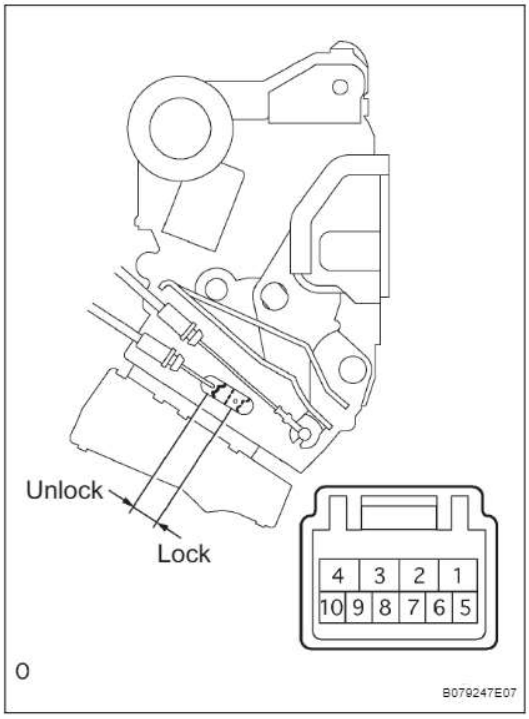
Door lock and unlock switch

Tester Connection	Switch Condition	Specified Condition
7 - 9	Lock	Below 1 Ω
7 - 10	Unlock	
7 - 9	OFF	10 kΩ or higher
7 - 10		

Position switch

Tester Connection	Switch Condition	Specified Condition
7 - 8	Lock	Below 1 Ω
7 - 8	Unlock	10 kΩ or higher

If the result is not as specified, replace the door lock assembly.

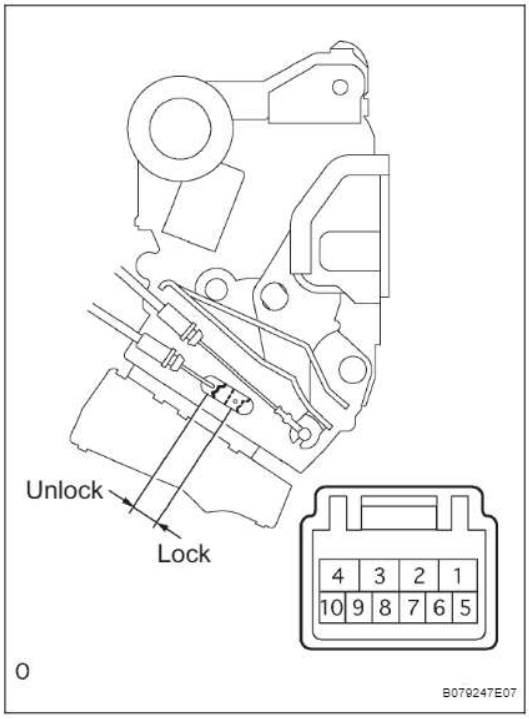


2. INSPECT FRONT DOOR LOCK RH

(a) Apply battery voltage to the door lock and check operation of the door lock motor.
OK

Measurement Condition	Specified Condition
Battery positive (+) →Terminal 4 Battery negative (-) →Terminal 1	Lock
Battery positive (+) →Terminal 1 Battery negative (-) →Terminal 4	Unlock

If the result is not as specified, replace the door lock assembly.

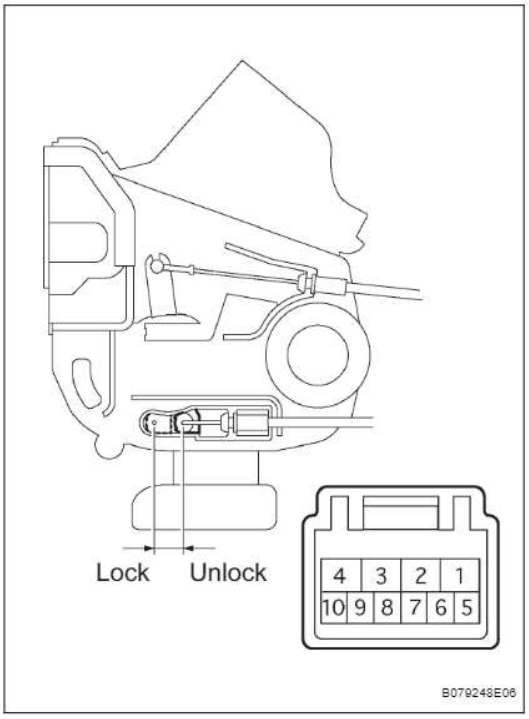


(b) Measure the resistance of the position switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
7 - 8	Lock	Below 1 Ω
	Unlock	10 kΩ or higher

If the result is not as specified, replace the door lock assembly.

DL



REAR DOOR LOCK

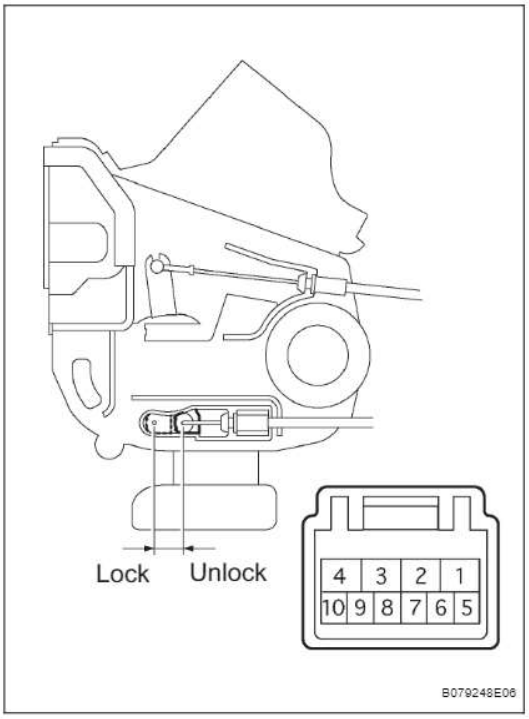
INSPECTION

1. INSPECT REAR DOOR LOCK LH

(a) Apply battery voltage to the door lock and check operation of the door lock motor.
OK

Measurement Condition	Specified Condition
Battery positive (+) →Terminal 4 Battery negative (-) →Terminal 1	Lock
Battery positive (+) →Terminal 1 Battery negative (-) →Terminal 4	Unlock

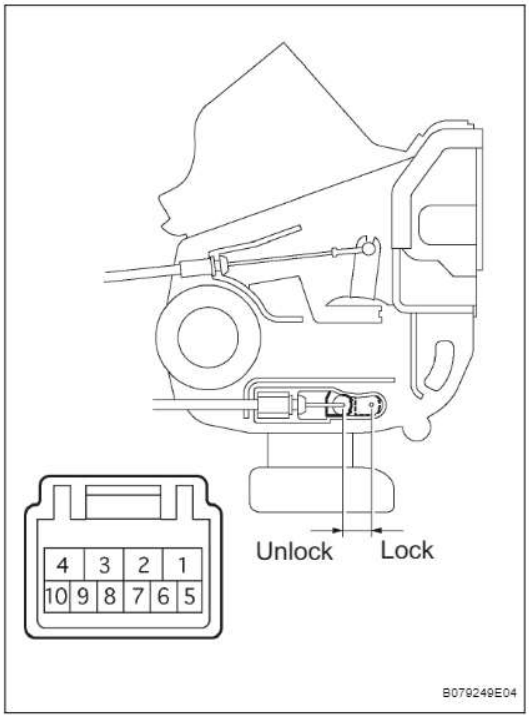
If the result is not as specified, replace the door lock assembly.



(b) Measure the resistance of the position switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
6 - 9	Lock	Below 1 Ω
	Unlock	10 kΩ or higher

If the result is not as specified, replace the door lock assembly.

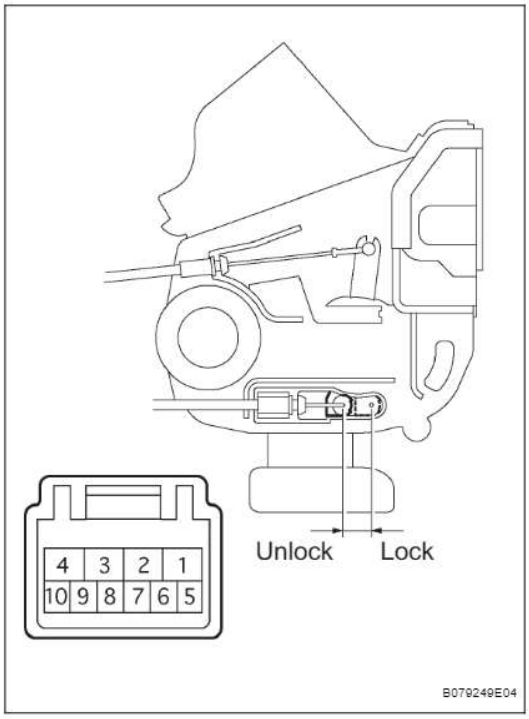


2. INSPECT REAR DOOR LOCK RH

(a) Apply battery voltage to the door lock and check operation of the door lock motor.
OK

Measurement Condition	Specified Condition
Battery positive (+) →Terminal 4 Battery negative (-) →Terminal 1	Lock
Battery positive (+) →Terminal 1 Battery negative (-) →Terminal 4	Unlock

If the result is not as specified, replace the door lock assembly.

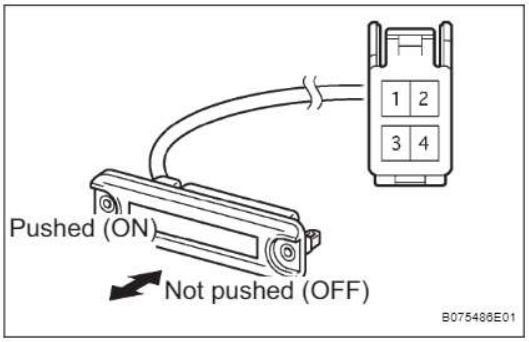


(b) Measure the resistance of the position switch.
Standard resistance

Tester Connection	Switch Condition	Specified Condition
6 - 9	Lock	Below 1 Ω
	Unlock	10 kΩ or higher

If the result is not as specified, replace the door lock assembly.

DL



BACK DOOR LOCK

INSPECTION

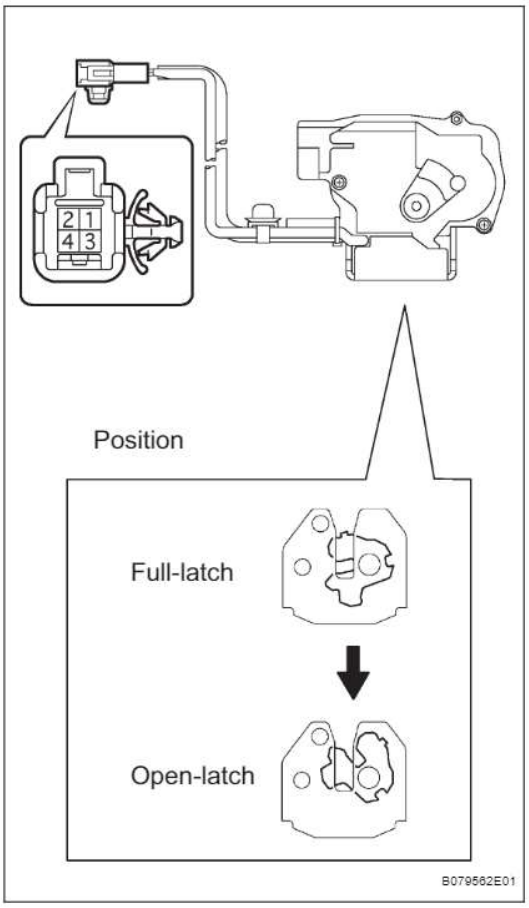
1. INSPECT BACK DOOR OPENER SWITCH

(a) Measure the resistance of the switch

Standard resistance

Tester Connection	Switch Connection	Specified Condition
1 - 2	Pushed (ON)	Below 1 Ω
	Not pushed (OFF)	10 kΩ or higher

If the result is not as specified, replace the switch.



2. INSPECT BACK DOOR LOCK

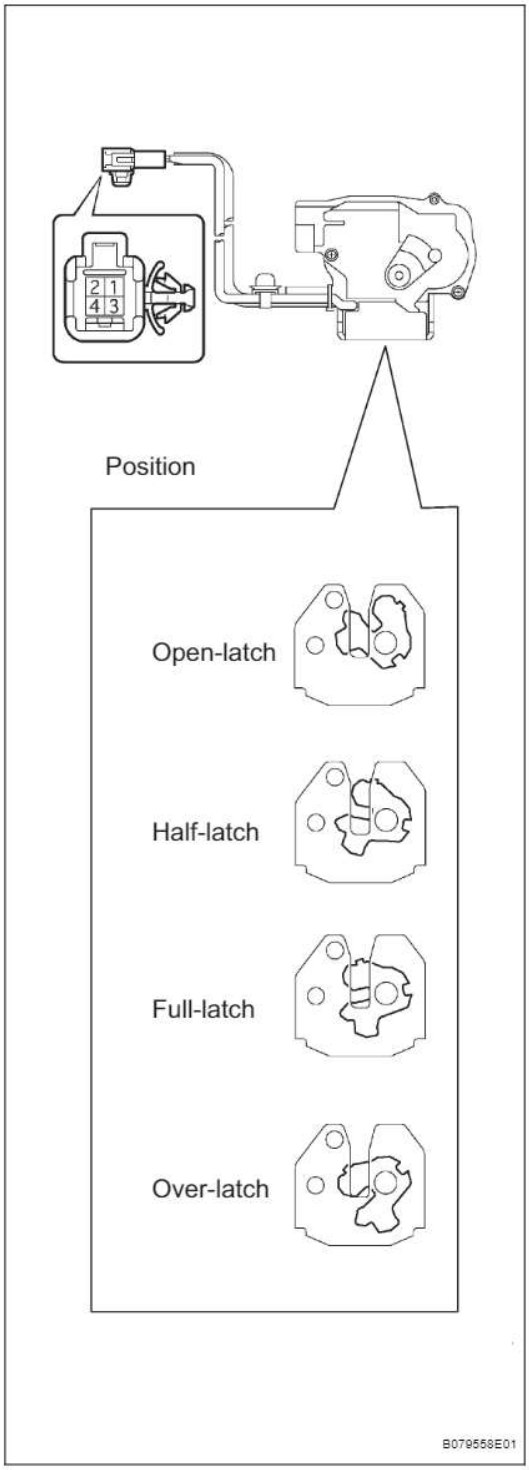
(a) Apply battery voltage to the door lock and check operation the latch.

Standard resistance

Measurement Condition	Specified Condition
Battery positive (+) →Terminal 4 Battery negative (-) →Terminal 3	Latch turns to open-latch position

If the result is not as specified, replace the motor.

DL



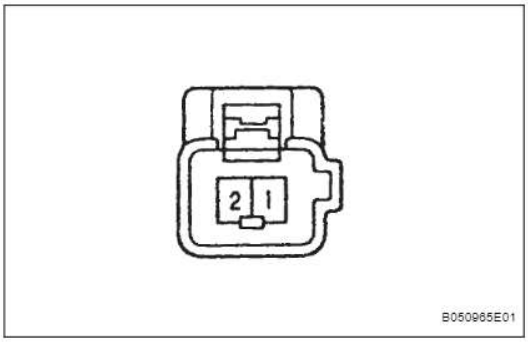
(b) Measure the resistance of the switch.

Standard resistance

Tester Connection	Switch Connection	Specified Condition
1 - 2	Open-latch	Below 1 Ω
	Half-latch	
	Full-latch	10 kΩ or higher
	Over-latch	

If the result is not as specified, replace the door lock assembly.

DL



KEY CANCEL SWITCH

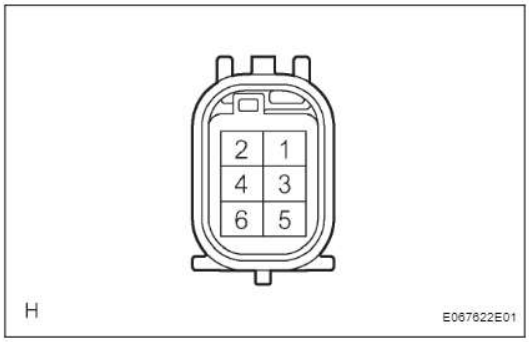
INSPECTION

1. **INSPECT KEY CANCEL SWITCH ASSEMBLY**
   (a) Measure the resistance of the switch.
   Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	Not pushed (OFF)	10 kΩ or higher
1 - 2	Pushed (ON)	Below 1 Ω

If the result is not as specified, replace the switch.

DL



ELECTRICAL KEY ANTENNA

INSPECTION

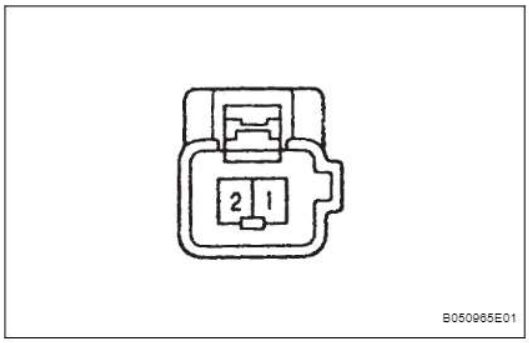
1. INSPECT ELECTRICAL KEY ANTENNA

(a) Measure the resistance of the outside door handle.

Standard resistance

Tester Connection	Switch Condition	Specified Condition
1 - 3	Switch pushed	Below 1 Ω
1 - 3	Switch not pushed	10 kΩ or higher

If the result is not as specified, replace the outside door handle.



2. INSPECT ELECTRICAL KEY ANTENNA (LUGGAGE)

(a) Measure the resistance of the antenna.

Standard resistance

Tester Connection	Condition	Specified Condition
1 - 2	Back door lock switch touched	Below 1 Ω

If the result is not as specified, replace the electrical key antenna (luggage).

DL