

ACCESSORIES & EQUIPMENT

Smart Key System (For Entry Function) (Diagnostic Codes & Symptom Tests) - Sienna

SMART KEY SYSTEM (FOR ENTRY FUNCTION)

DTC B27A1: OPEN IN DRIVER SIDE ELECTRICAL ANTENNA CIRCUIT

DESCRIPTION

The certification ECU (smart key ECU assembly) generates a request signal and sends it to the electrical key oscillator built into the front door outside handle assembly (for driver side) at 0.25-second intervals. To detect a key near the driver door, the front door outside handle assembly (for driver side) creates a detection area with a radius of approximately 1.0 m (3.28 ft.) from the driver door at 0.25-second intervals.

DTC B27A1 is detected by the certification ECU (smart key ECU assembly) if an open circuit is detected between the certification ECU (smart key ECU assembly) and front door outside handle assembly (for driver side) terminals (between CLG1 and ANT1, or CG1B and ANT2).

DTC No.	DTC Detection Condition	Trouble Area
B27A1	Open circuit detected between the certification ECU (smart key ECU assembly) and front door outside handle assembly (for driver side) terminals (between CLG1 and ANT1, or CG1B and ANT2).	• Front door outside handle assembly (for driver side) • Certification ECU (smart key ECU assembly) • Wire harness or connector

WIRING DIAGRAM

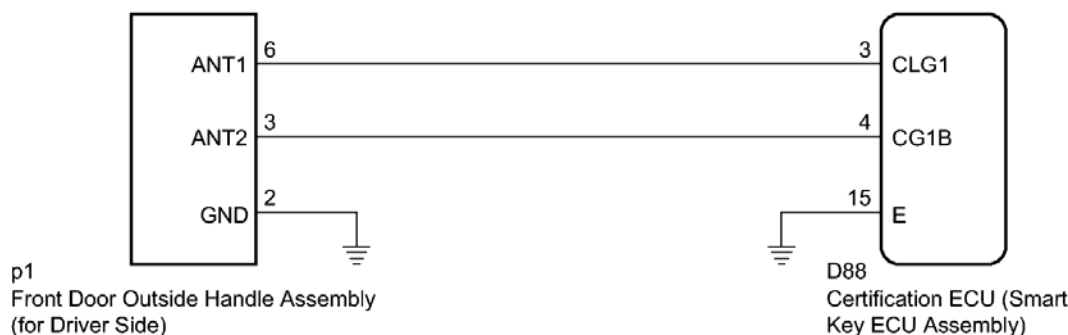


Fig. 1: LH Front Door Outside Handle Circuit Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

PROCEDURE

1. CHECK CONNECTOR (CONNECTION CONDITION)

- a. Turn the engine switch off.
- b. Check that the connectors are properly connected to the certification ECU (smart key ECU assembly) and the front door outside handle assembly (for driver side).

OK

Connectors are properly connected.

NG --> CONNECT CONNECTORS PROPERLY

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - FRONT DOOR OUTSIDE HANDLE)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the front door outside handle assembly (for driver side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-3 (CLG1) - p1-6 (ANT1)	Always	Below 1 ohms
D88-4 (CG1B) - p1-3 (ANT2)	Always	Below 1 ohms
D88-3 (CLG1) - Body ground	Always	10 kohms or higher
D88-4		

(CG1B) - Body ground	Always	10 kohms or higher
p1-6 (ANT1) - Body ground	Always	10 kohms or higher
p1-3 (ANT2) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (FRONT DOOR OUTSIDE HANDLE - BODY GROUND)
 - a. Measure the resistance according to the value(s) in the table below.

*a

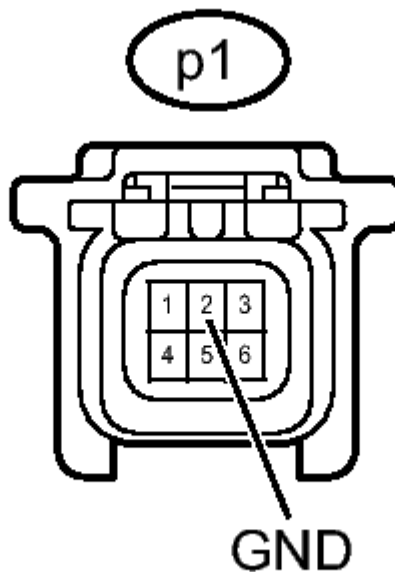


Fig. 2: Checking Harness And Connector (Front Door Outside Handle - Body Ground)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester	Condition	Specified
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Connection		Condition
p1-2 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Front Door Outside Handle Assembly (for Driver Side))
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NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. **INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (INDOOR ELECTRICAL KEY OSCILLATOR SIGNAL OUTPUT)**
 - a. Reconnect the certification ECU (smart key ECU assembly) connector.

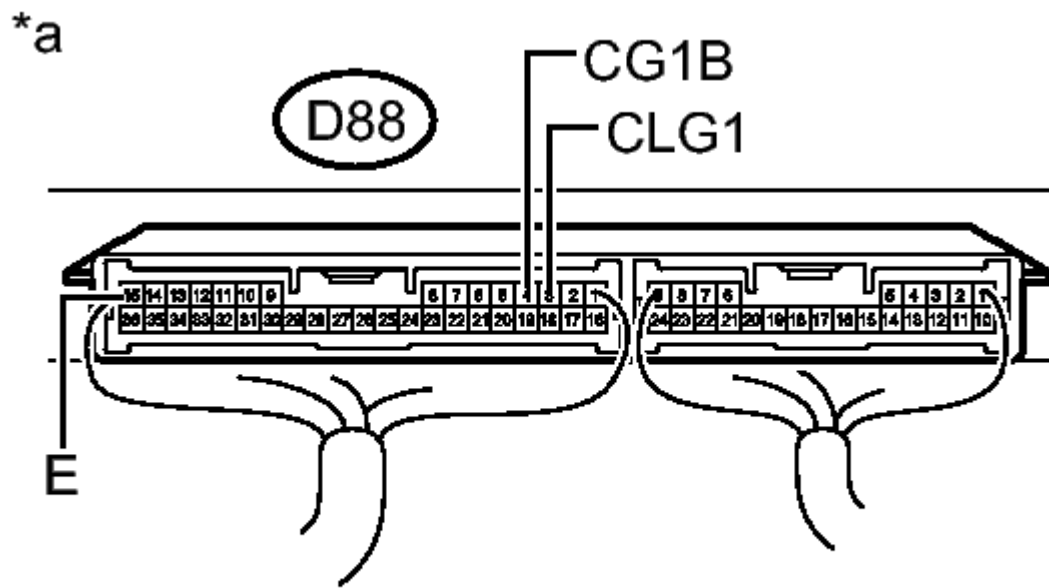


Fig. 3: Inspecting Certification ECU (Smart Key ECU Assembly) (Indoor Electrical Key Oscillator Signal Output)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance and check for pulses according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-15 (E) - Body ground	Always	Below 1 ohms

OK

Tester Connection	Condition	Specified Condition
D88-3 (CLG1) - D88-15 (E)	- Engine switch off - All doors closed - Key not in cabin	No pulse generation

D88-3 (CLG1) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation
D88-4 (CG1B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
D88-4 (CG1B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation

TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification
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ECU (Smart Key ECU Assembly))

NG --> See step 7

OK: Go to next step

5. REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side)

- a. Replace the front door outside handle assembly (for driver side). Refer to **DISASSEMBLY** .

NEXT: Go to next step

6. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Recheck for DTCs.

OK

DTC B27A1 is not output.

NG --> See step 7

OK --> END (FRONT DOOR OUTSIDE HANDLE ASSEMBLY WAS DEFECTIVE)

7. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL

DTC B27A2: OPEN IN FRONT PASSENGER SIDE ELECTRICAL ANTENNA CIRCUIT

DESCRIPTION

The certification ECU (smart key ECU assembly) generates a request signal and sends it to the door electrical key oscillator built into the front door outside handle assembly (for front passenger side) at 0.25-second intervals. To detect a key near the front passenger door, the front door outside handle assembly (for front passenger side) creates a detection area with a radius of approximately 1.0 m (3.28 ft.) from the front passenger door at 0.25-second intervals.

DTC B27A2 is detected by the certification ECU (smart key ECU assembly) if an open circuit is detected between the certification ECU (smart key ECU assembly) and front door outside handle assembly (for front passenger side) terminals (between CLG2 and ANT1, or CG2B and ANT2).

DTC No.	DTC Detection Condition	Trouble Area
B27A2	Open circuit detected between the certification ECU (smart key ECU assembly) and front door outside handle assembly (for	- Front door outside handle assembly (for front passenger side) - Certification ECU (smart key ECU

front passenger side) terminals (between CLG2 and ANT1, or CG2B and ANT2).

assembly)

- Wire harness or connector

WIRING DIAGRAM

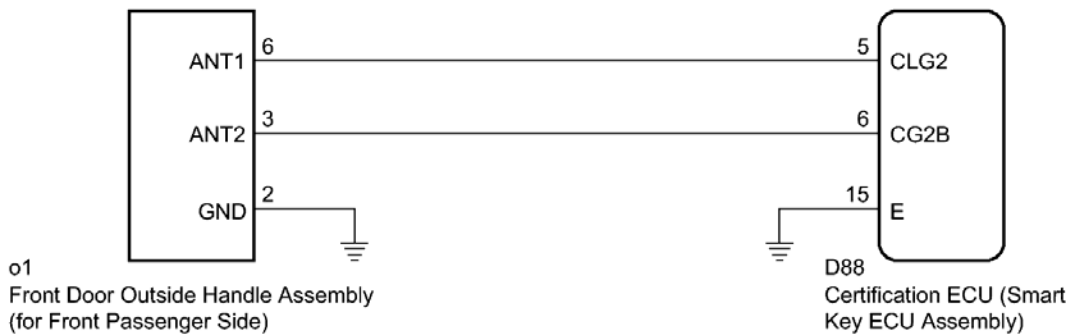


Fig. 4: RH Front Door Outside Handle Circuit Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

PROCEDURE

1. CHECK CONNECTOR CONNECTION CONDITION

- Turn the engine switch off.
- Check that the connectors are properly connected to the certification ECU (smart key ECU assembly) and the front door outside handle assembly (for front passenger side).

OK

Connectors are properly connected.

NG --> CONNECT CONNECTORS PROPERLY

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - FRONT DOOR OUTSIDE

HANDLE)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the front door outside handle assembly (for front passenger side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-5 (CLG2) - o1-6 (ANT1)	Always	Below 1 ohms
D88-6 (CG2B) - o1-3 (ANT2)	Always	Below 1 ohms
D88-5 (CLG2) - Body ground	Always	10 kohms or higher
D88-6 (CG2B) - Body ground	Always	10 kohms or higher
o1-6 (ANT1) - Body ground	Always	10 kohms or higher
o1-3 (ANT2) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (FRONT DOOR OUTSIDE HANDLE - BODY GROUND)

- a. Measure the resistance according to the value(s) in the table below.

*a

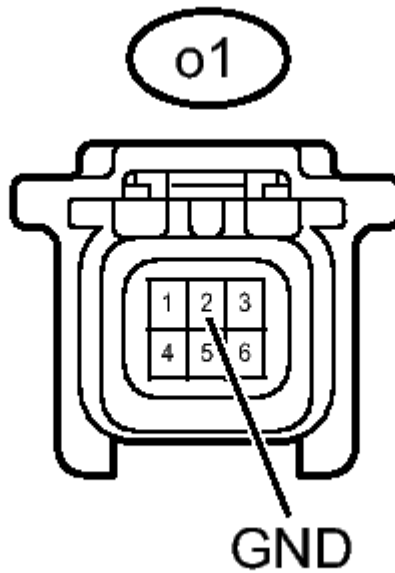


Fig. 5: Checking Harness And Connector (Front Door Outside Handle - Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
o1-2 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Front Door Outside Handle Assembly (for Front Passenger Side))
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NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (DOOR ELECTRICAL KEY OSCILLATOR SIGNAL OUTPUT)
- a. Reconnect the certification ECU (smart key ECU assembly) connector.

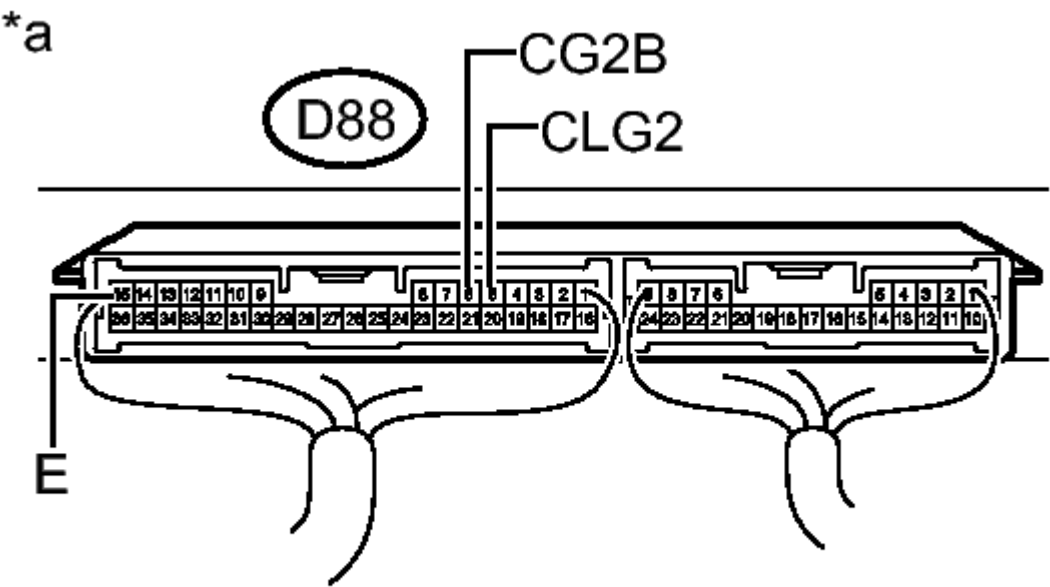


Fig. 6: Inspecting Certification ECU (Smart Key ECU Assembly) (Door Electrical Key Oscillator Signal Output)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance and check for pulses according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-15 (E) - Body ground	Always	Below 1 ohms

OK

Tester Connection	Condition	Specified Condition

D88-5 (CLG2) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
D88-5 (CLG2) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation
D88-6 (CG2B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
D88-6 (CG2B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • All doors locked by	Pulse generation

	wireless lock function	
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TEXT IN ILLUSTRATION

	Component with harness connected
*a	(Certification ECU (Smart Key ECU Assembly))

NG --> See step 7

OK: Go to next step

5. REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Front Passenger Side)

- Replace the front door outside handle assembly (for front passenger side). Refer to **DISASSEMBLY**.

NEXT: Go to next step

6. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR**.
- Recheck for DTCs.

OK

DTC B27A2 is not output.

NG --> See step 7

OK --> END (FRONT DOOR OUTSIDE HANDLE ASSEMBLY WAS DEFECTIVE)

7. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to **REMOVAL**

DTC B27A5: OPEN IN FRONT FLOOR ELECTRICAL KEY OSCILLATOR CIRCUIT

DESCRIPTION

The certification ECU (smart key ECU assembly) generates a request signal and sends it to the indoor electrical key oscillator (for front floor). To detect the key inside the cabin, the indoor electrical key oscillator (for front floor) creates a detection area in the cabin.

DTC B27A5 is detected by the certification ECU (smart key ECU assembly) when an open circuit occurs

between the certification ECU (smart key ECU assembly) and indoor electrical key oscillator (for front floor) terminals (between CLG5 and CLG3, or CG5B and CLGB).

DTC No.	DTC Detection Condition	Trouble Area
B27A5	Open circuit detected between the certification ECU (smart key ECU assembly) and indoor electrical key oscillator (for front floor) terminals (between CLG5 and CLG3, or CG5B and CLGB).	- Indoor electrical key oscillator (for front floor) - Certification ECU (smart key ECU assembly) - Wire harness or connector

WIRING DIAGRAM

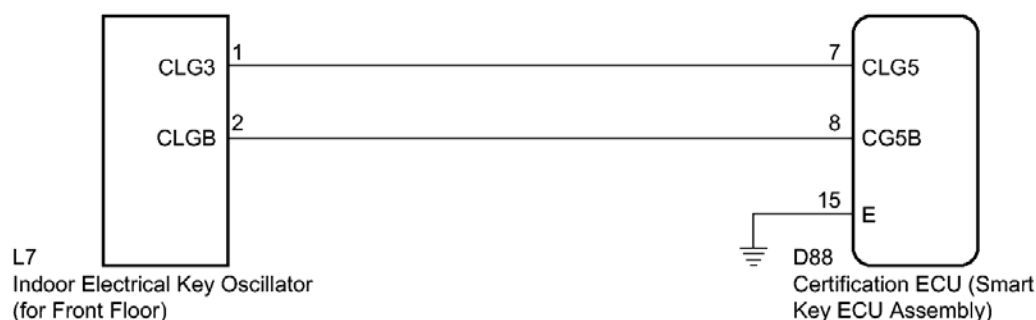


Fig. 7: Indoor Electrical Key Oscillator (Front Floor) Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

PROCEDURE

1. CHECK CONNECTOR CONNECTION CONDITION

- Turn the engine switch off.
- Check that the connectors are properly connected to the certification ECU (smart key ECU assembly) and the indoor electrical key oscillator (for front floor).

OK

Connectors are properly connected.

NG --> CONNECT CONNECTORS PROPERLY

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - INDOOR ELECTRICAL KEY OSCILLATOR)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the indoor electrical key oscillator (for front floor) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-7 (CLG5) - L7-1 (CLG3)	Always	Below 1 ohms
D88-8 (CG5B) - L7-2 (CLGB)	Always	Below 1 ohms
D88-7 (CLG5) - Body ground	Always	10 kohms or higher
D88-8 (CG5B) - Body ground	Always	10 kohms or higher
L7-1 (CLG3) - Body ground	Always	10 kohms or higher
L7-2 (CLGB) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (INDOOR ELECTRICAL

KEY OSCILLATOR SIGNAL OUTPUT)

- a. Reconnect the certification ECU (smart key ECU assembly) connector.

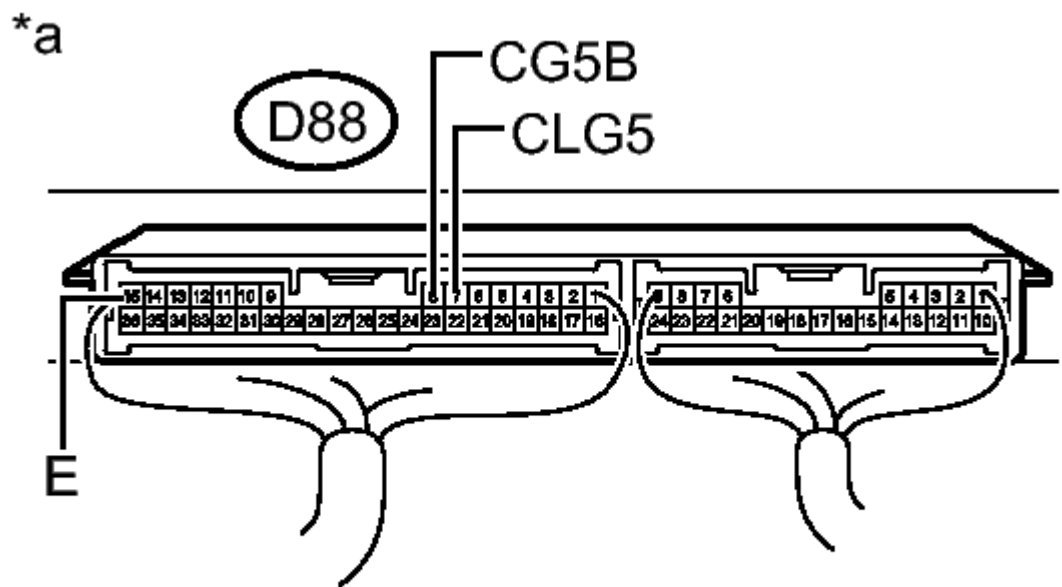


Fig. 8: Inspecting Certification ECU (Smart Key ECU Assembly) (Indoor Electrical Key Oscillator Signal Output)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance and check for pulses according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-15 (E) - Body ground	Always	Below 1 ohms

OK

Tester Connection	Condition	Specified Condition
	• Engine switch off • All doors	

D88-7 (CLG5) - D88-15 (E)	closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-7 (CLG5) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
D88-8 (CG5B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
	• Engine switch	

D88-8 (CG5B) - D88-15 (E)	off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
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TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))
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NG --> See step 6

OK: Go to next step

4. REPLACE INDOOR ELECTRICAL KEY OSCILLATOR (for Front Floor)

- Replace the indoor electrical key oscillator (for front floor). Refer to REMOVAL .

NEXT: Go to next step

5. CHECK DTC OUTPUT

- Clear the DTCs. Refer to DTC CHECK / CLEAR .
- Recheck for DTCs.

OK

DTC B27A5 is not output.

NG --> See step 6

OK --> END (INDOOR ELECTRICAL KEY OSCILLATOR WAS DEFECTIVE)

6. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL

DTC B27A6: OPEN IN REAR FLOOR ELECTRICAL KEY OSCILLATOR CIRCUIT

DESCRIPTION

The certification ECU (smart key ECU assembly) generates a request signal and sends it to the indoor electrical key oscillator (for center floor). To detect the key inside the cabin, the indoor electrical key oscillator (for center floor) creates a detection area in the cabin.

DTC B27A6 is detected by the certification ECU (smart key ECU assembly) when an open circuit occurs between the certification ECU (smart key ECU assembly) and indoor electrical key oscillator (for center floor) terminals (between CLG6 and CLG4, or CG6B and CLGB).

DTC No.	DTC Detection Condition	Trouble Area
B27A6	Open circuit detected between the certification ECU (smart key ECU assembly) and indoor electrical key oscillator (for center floor) terminals (between CLG6 and CLG4, or CG6B and CLGB).	- Indoor electrical key oscillator (for center floor) - Certification ECU (smart key ECU assembly) - Wire harness or connector

WIRING DIAGRAM

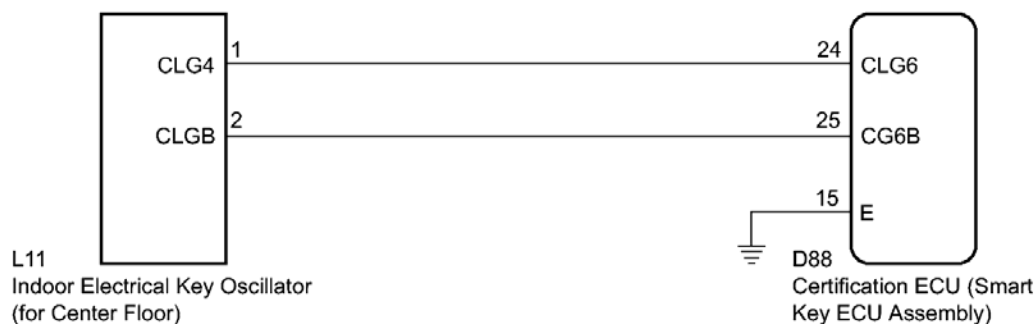


Fig. 9: Indoor Electrical Key Oscillator (For Center Floor) - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

PROCEDURE

1. CHECK CONNECTOR CONNECTION CONDITION

- a. Turn the engine switch off.
- b. Check that the connectors are properly connected to the certification ECU (smart key ECU assembly) and the indoor electrical key oscillator (for center floor).

OK

Connectors are properly connected.

NG --> CONNECT CONNECTORS PROPERLY

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - INDOOR ELECTRICAL KEY OSCILLATOR)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the indoor electrical key oscillator (for center floor) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-24 (CLG6) - L11-1 (CLG4)	Always	Below 1 ohms
D88-25 (CG6B) - L11-2 (CLGB)	Always	Below 1 ohms
D88-24 (CLG6) - Body ground	Always	10 kohms or higher
D88-25 (CG6B) - Body ground	Always	10 kohms or higher
L11-1 (CLG4) - Body ground	Always	10 kohms or higher

L11-2 (CLGB) - Body ground	Always	10 kohms or higher
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NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (INDOOR ELECTRICAL KEY OSCILLATOR SIGNAL OUTPUT)

- a. Reconnect the certification ECU (smart key ECU assembly) connector.

*a

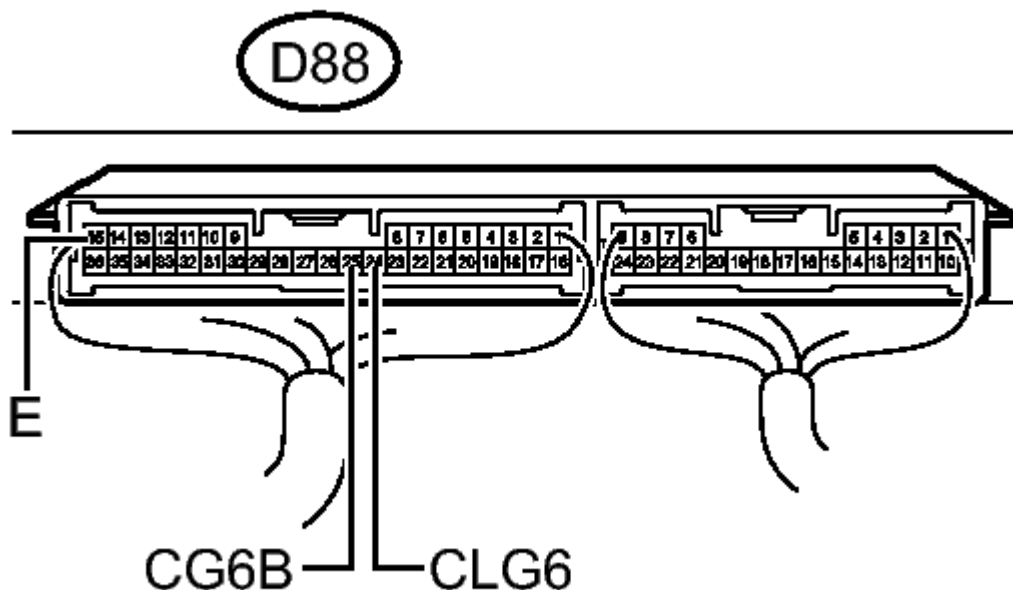


Fig. 10: Inspecting Certification ECU (Smart Key ECU Assembly) (Indoor Electrical Key Oscillator Signal Output)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance and check for pulses according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-15 (E) - Body ground	Always	Below 1 ohms

OK

Tester Connection	Condition	Specified Condition
D88-24 (CLG6) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-24 (CLG6) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
D88-25 (CG6B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door	No pulse generation

	outside handle assembly (lock sensor) not touched	
D88-25 (CG6B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation

TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))
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NG --> See step 6

OK: Go to next step

4. REPLACE INDOOR ELECTRICAL KEY OSCILLATOR (for Center Floor)

- Replace the indoor electrical key oscillator (for center floor). Refer to **REMOVAL** .

NEXT: Go to next step

5. CHECK DTC OUTPUT

- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Recheck for DTCs.

OK

DTC B27A6 is not output.

NG --> See step 6

OK --> END (INDOOR ELECTRICAL KEY OSCILLATOR WAS DEFECTIVE)

6. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL

DTC B27A7: OPEN IN INSIDE LUGGAGE COMPARTMENT ELECTRICAL KEY OSCILLATOR CIRCUIT

DESCRIPTION

The certification ECU (smart key ECU assembly) generates a request signal and sends it to the indoor electrical key oscillator (for rear floor). To detect the key inside the cabin, the indoor electrical key oscillator (for rear floor) creates a detection area in the cabin.

DTC B27A7 is detected by the certification ECU (smart key ECU assembly) when an open circuit occurs between the certification ECU (smart key ECU assembly) and indoor electrical key oscillator (for rear floor) terminals (between CLG7 and CLG6, or CG7B and CLGB).

DTC No.	DTC Detection Condition	Trouble Area
B27A7	Open circuit detected between the certification ECU (smart key ECU assembly) and indoor electrical key oscillator (for rear floor) terminals (between CLG7 and CLG6, or CG7B and CLGB).	- Indoor electrical key oscillator (for rear floor) - Certification ECU (smart key ECU assembly) - Wire harness or connector

WIRING DIAGRAM

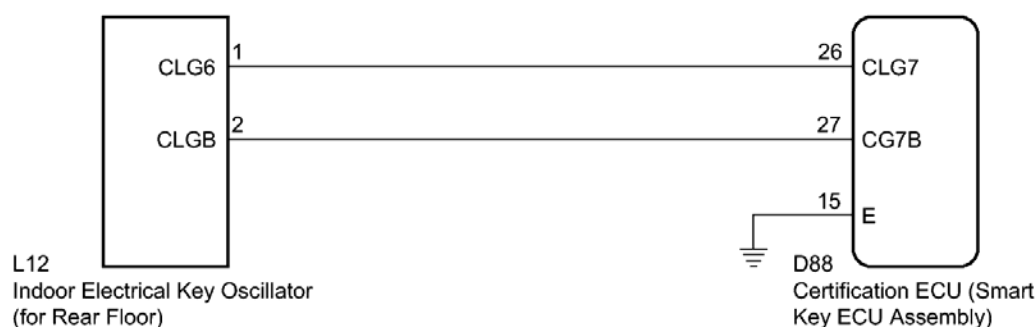


Fig. 11: Indoor Electrical Key Oscillator (For Rear Floor) - Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

PROCEDURE

1. CHECK CONNECTOR CONNECTION CONDITION

- Turn the engine switch off.
- Check that the connectors are properly connected to the certification ECU (smart key ECU assembly) and the indoor electrical key oscillator (for rear floor).

OK

Connectors are properly connected.

NG --> **CONNECT CONNECTORS PROPERLY**

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - INDOOR ELECTRICAL KEY OSCILLATOR)

- Disconnect the certification ECU (smart key ECU assembly) connector.
- Disconnect the indoor electrical key oscillator (for rear floor) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-26 (CLG7) - L12-1 (CLG6)	Always	Below 1 ohms
D88-27 (CG7B) - L12-2 (CLGB)	Always	Below 1 ohms
D88-26		

(CLG7) - Body ground	Always	10 kohms or higher
D88-27 (CG7B) - Body ground	Always	10 kohms or higher
L12-1 (CLG6) - Body ground	Always	10 kohms or higher
L12-2 (CLGB) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. **INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (INDOOR ELECTRICAL KEY OSCILLATOR SIGNAL OUTPUT)**
 - a. Reconnect the certification ECU (smart key ECU assembly) connector.

***a**

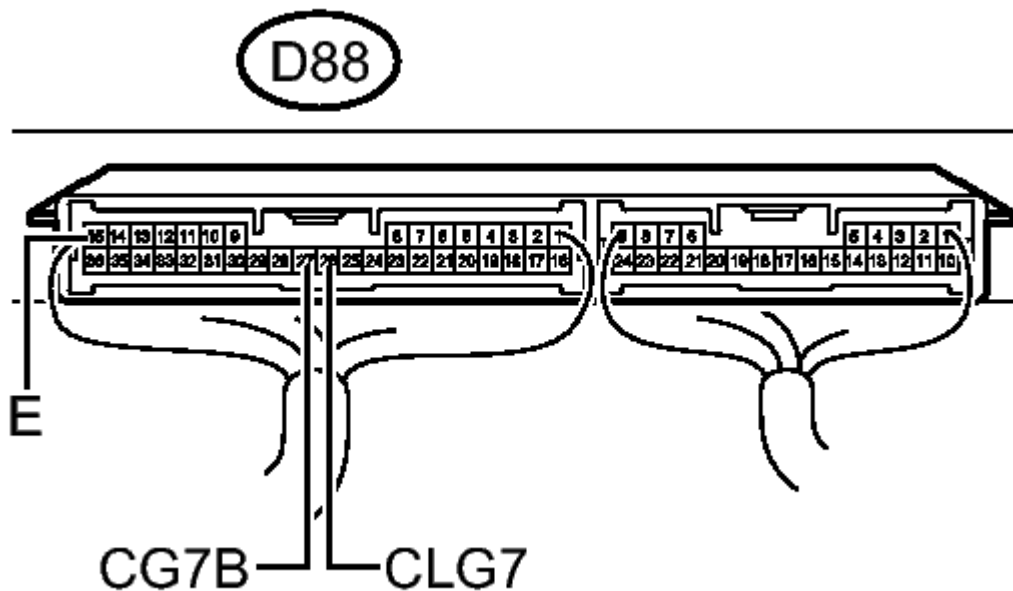


Fig. 12: Inspecting Certification ECU (Smart Key ECU Assembly) (Indoor Electrical Key Oscillator Signal Output)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance and check for pulses according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-15 (E) - Body ground	Always	Below 1 ohms

OK

Tester Connection	Condition	Specified Condition
D88-26 (CLG7) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-26 (CLG7) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor)	Pulse generation

	touched	
D88-27 (CG7B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-27 (CG7B) - D88-15 (E)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation

TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))
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NG --> See step 6

OK: Go to next step

4. REPLACE INDOOR ELECTRICAL KEY OSCILLATOR (for Rear Floor)

- a. Replace the indoor electrical key oscillator (for rear floor). Refer to **REMOVAL** .

NEXT: Go to next step

5. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Recheck for DTCs.

OK

DTC B27A7 is not output.

NG --> See step 6

OK --> END (INDOOR ELECTRICAL KEY OSCILLATOR WAS DEFECTIVE)

6. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL

DTC B27A8: OPEN IN OUTSIDE LUGGAGE COMPARTMENT ELECTRICAL KEY ANTENNA CIRCUIT

DESCRIPTION

The certification ECU (smart key ECU assembly) generates a request signal and sends it to the outside electrical key oscillator (for rear side). To detect the key near the driver door, the outside electrical key oscillator (for rear side) creates a detection area towards the area approximately 1.0 m (3.28 ft.) from the back door.

DTC B27A8 is detected by the certification ECU (smart key ECU assembly) when an open circuit occurs between the certification ECU (smart key ECU assembly) and outside electrical key oscillator (for rear side) terminals (between CLG8 and CLG5, or CG8B and CLGB).

DTC No.	DTC Detection Condition	Trouble Area
B27A8	Open circuit detected between the certification ECU (smart key ECU assembly) and outside electrical key oscillator (for rear side) terminals (between CLG8 and CLG5, or CG8B and CLGB).	• Outside electrical key oscillator (for rear side) • Certification ECU (smart key ECU assembly) • Wire harness or connector

WIRING DIAGRAM

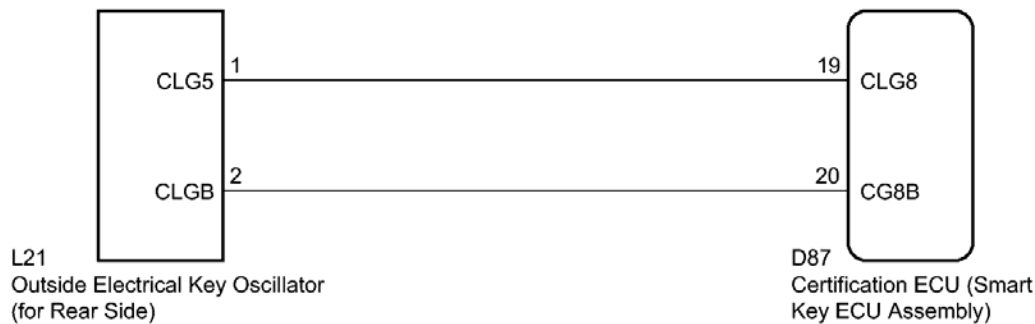


Fig. 13: Outside Electrical Key Oscillator (For Rear Side) - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

PROCEDURE

1. CHECK CONNECTOR CONNECTION CONDITION

- a. Turn the engine switch off.
- b. Check that the connectors are properly connected to the certification ECU (smart key ECU assembly) and the outside electrical key oscillator (for rear side).

OK

Connectors are properly connected.

NG --> CONNECT CONNECTORS PROPERLY

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - OUTSIDE ELECTRICAL KEY OSCILLATOR)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the outside electrical key oscillator (for rear side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D87-19 (CLG8) - L21-1 (CLG5)	Always	Below 1 ohms
D87-20 (CG8B) - L21-2 (CLGB)	Always	Below 1 ohms
D87-19 (CLG8) - Body ground	Always	10 kohms or higher
D87-20 (CG8B) - Body ground	Always	10 kohms or higher
L21-1 (CLG5) - Body ground	Always	10 kohms or higher
L21-2 (CLGB) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT OUTSIDE ELECTRICAL KEY OSCILLATOR

- a. Measure the resistance according to the value(s) in the table below.

*a

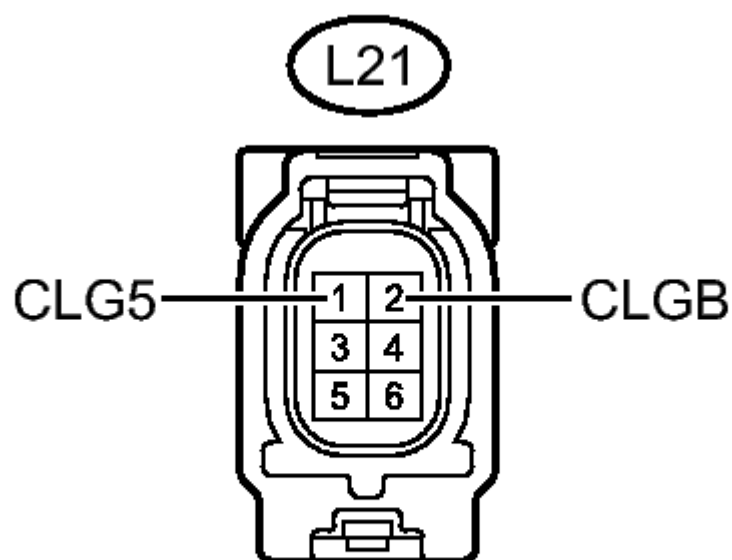


Fig. 14: Inspecting Outside Electrical Key Oscillator
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
L21-1 (CLG5) - L21-2 (CLGB)	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Outside Electrical Key Oscillator (for Rear Side))
----	--

NG --> See step 6

OK: Go to next step

4. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)

- a. Replace the certification ECU (smart key ECU assembly). Refer to **REMOVAL** .

NEXT: Go to next step

5. CHECK DTC OUTPUT

- a. Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- b. Recheck for DTCs.

OK

DTC B27A8 is not output.

NG --> See step 6

OK --> END (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) WAS DEFECTIVE)

6. REPLACE OUTSIDE ELECTRICAL KEY OSCILLATOR. Refer to REMOVAL

SYMPTOM TESTS

Entry Answer-back Buzzer does not Sound

DESCRIPTION

The smart key system uses the wireless door lock buzzer to perform various vehicle exterior warnings. When the conditions for each warning are met, the certification ECU (smart key ECU assembly) sends a buzzer request signal to the main body ECU via CAN communication. The wireless door lock assembly sounds the buzzer according to the signal from the main body ECU.

INSPECTION PROCEDURE

NOTE: **The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.**

PROCEDURE

1. READ VALUE USING TECHSTREAM (ANSWER-BACK BUZZER FUNCTION)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Main Body / Data List.

- e. Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Wireless Buzzer Resp	Answer-back buzzer operation / ON or OFF	Customization status displayed	-

Result

Result	Proceed to
Customize setting is ON.	A
Customize setting is OFF.	B

B --> See step 5

A: Go to next step

2. PERFORM ACTIVE TEST USING TECHSTREAM

- Enter the following menus: Body Electrical / Main Body / Active Test.
- Perform the Active Test according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Test Part	Control Range	Diagnostic Note
Wireless Buzzer	Turns the wireless door lock buzzer	ON/OFF	-

OK

Wireless door lock buzzer sounds.

NG --> See step 3

OK --> See step 4

3. **GO TO WIRELESS DOOR LOCK CONTROL SYSTEM (Proceed to No Answer-Back). Refer to No Answer-Back**
4. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
5. **PERFORM CUSTOMIZE SETTING (Proceed to Customize Parameters). Refer to CUSTOMIZE PARAMETERS**

All Door Entry Lock/Unlock Functions and Wireless Functions do not Operate

DESCRIPTION

When the entry door lock and unlock functions and wireless door lock and unlock functions do not operate, radio wave interference, or a malfunction in the key or signal circuit between the door control receiver assembly and certification ECU (smart key ECU assembly) is suspected. The signal circuit is shared by the entry function and wireless door lock function.

WIRING DIAGRAM

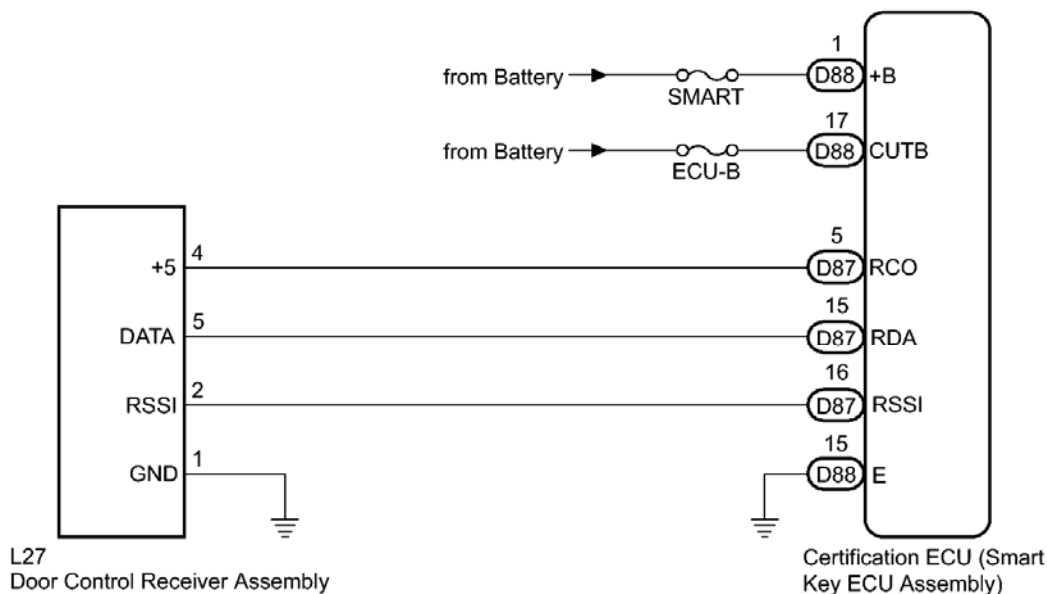


Fig. 15: Door Control Receiver Assembly - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system.

Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

- Before performing the inspection, check that DTC B1242 (wireless door lock control) is not output. Refer to DTC B1242: Wireless Door Lock Tuner Circuit Malfunction .
- Confirm that another key is not in the cabin.
- Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- a. When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to OPERATION CHECK .

OK

Door locks operate normally.

NG --> See step 15

OK: Go to next step

2. CHECK ELECTRICAL KEY TRANSMITTER

- a. Check if another registered key is available.

Result

Result	Proceed to
Another registered key is not available.	A
Another registered key is available.	B

B --> See step 4

A: Go to next step

3. REGISTER ELECTRICAL KEY TRANSMITTER

- a. Register a new key. Refer to **REGISTRATION** .

NEXT: Go to next step

4. CHECK ELECTRICAL KEY TRANSMITTER (OPERATION)

- a. Using the key registered in the previous step or another registered key, check that the entry function operates normally. Refer to **OPERATION CHECK** .

OK

Entry function operates normally.

NG --> See step 7

OK: Go to next step

5. CHECK ELECTRICAL KEY TRANSMITTER (LED)

- a. Check that the transmitter LED illuminates each time when the switch is pushed 3 times.

Result

Result	Proceed to
Transmitter LED does not illuminate at all when switch is pushed 3 times.	A
Transmitter LED illuminates each time when switch is pushed 3 times.	B
Transmitter LED does not illuminate the second or third	C

time. | |

HINT:

If the transmitter LED does not illuminate the second or third time, replace the transmitter battery because it is depleted.

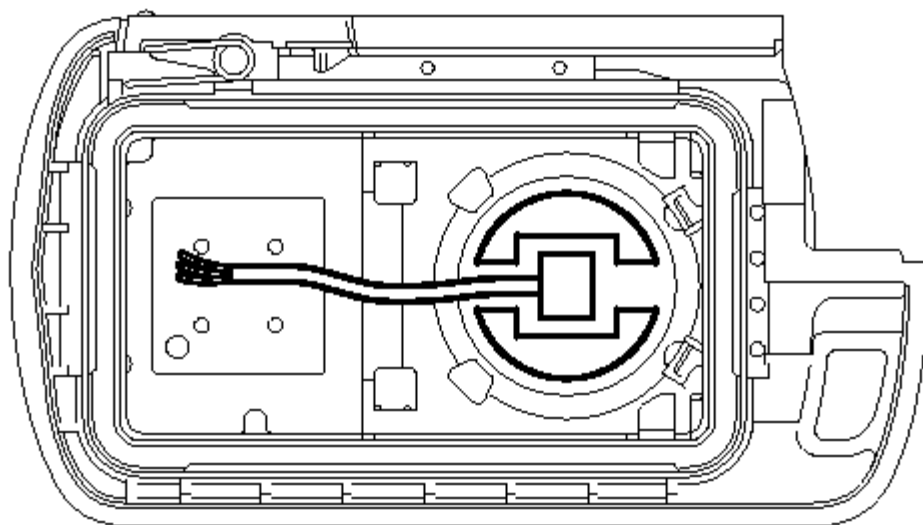
B --> REPLACE ELECTRICAL KEY TRANSMITTER

C --> See step 17

A: Go to next step

6. INSPECT TRANSMITTER BATTERY (VOLTAGE)

- a. Remove the battery from the key that does not operate. Attach a lead wire (0.6 mm (0.0236 in.) or less in diameter including wire sheath) with tape or equivalent to the negative (-) terminal. Refer to **REPLACEMENT** .



P

Fig. 16: View Of Transmitter Lead Wire

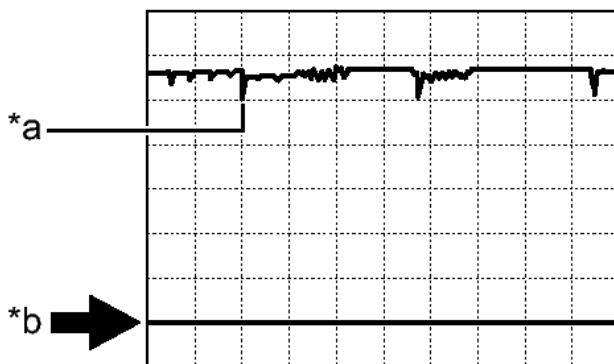
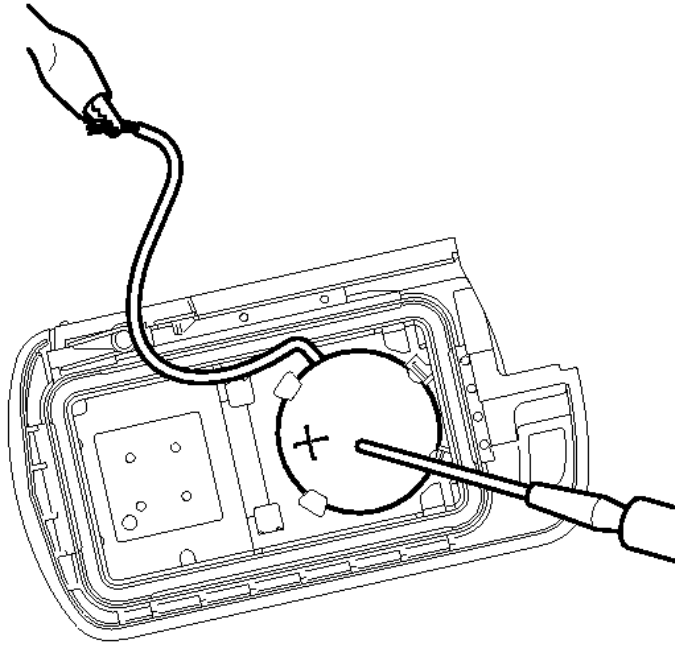
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: Do not wrap the wire around the terminal, wedge it between the terminals, or solder it. A terminal may be deformed or damaged, and the battery will not be able to be installed correctly.

- b. Carefully pull the lead wire out from the position shown in the illustration and install the previously

removed transmitter battery.

- c. Using an oscilloscope, check the transmitter battery voltage waveform.



P

Fig. 17: Checking Transmitter Battery Voltage Waveform
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

When measuring the battery voltage, while operating the lock switch of a door outside handle assembly, bring the key within the entry operating range to perform the measurement. For the entry operating range, refer to System Description. Refer to **SYSTEM DESCRIPTION** .

Standard Voltage

Item	Content
Tester Connection	Battery positive (+) - Battery negative (-)
Tool Setting	0.5 V/DIV., 100 ms/DIV.
Condition	Engine switch off, all doors closed and lock switch pushed
Specified Condition	2.2 to 3.2 V (Refer to <u>Fig. 17</u>)

TEXT IN ILLUSTRATION

*a	Measurement Position
----	----------------------

NG --> See step 17

OK --> REPLACE ELECTRICAL KEY TRANSMITTER

7. CHECK WAVE ENVIRONMENT

- a. Bring the key near the door control receiver, and check the wireless function.

HINT:

- When the key is brought near the door control receiver, the possibility of wave interference decreases, and it can be determined if wave interference is causing the problem symptom.
- If the inspection result indicates that the problem only occurs in certain locations or times of day, the possibility of wave interference is high. Also, added vehicle components may cause wave interference. If installed, remove them and perform the operation check.

OK

Wireless function operates normally.

NG --> See step 8

OK --> AFFECTED BY WAVE INTERFERENCE

8. CHECK POWER SOURCE

- Check if functions other than the entry function operate when the engine switch is off.

Result

Result	Proceed to
Other functions do not operate.	A
Other functions operate.	B

HINT:

Perform this check with using functions that do not require the engine switch to be on (ACC or IG) in order to operate.

B --> See step 18

A: Go to next step

9. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - BATTERY AND BODY GROUND)

- Disconnect the certification ECU (smart key ECU assembly) connector.

*a

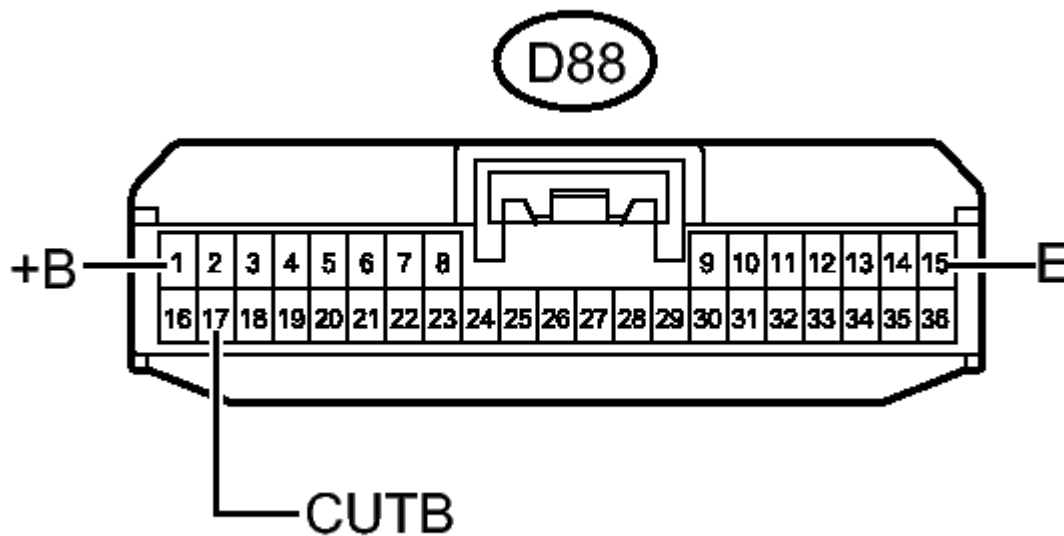


Fig. 18: Checking Harness And Connector (Certification ECU - Battery And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the voltage and resistance according to the value(s) in the table below.

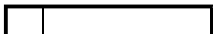
Standard Voltage

Tester Connection	Condition	Specified Condition
D88-1 (+B) - Body ground	Always	11 to 14 V
D88-17 (CUTB) - Body ground	Always	11 to 14 V

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-15 (E) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION



	Front view of wire harness connector
*a	(to Certification ECU (Smart Key ECU Assembly))

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

10. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - DOOR CONTROL RECEIVER)

- a. Disconnect the door control receiver assembly connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D87-5 (RCO) - L27-4 (+5)	Always	Below 1 ohms
D87-15 (RDA) - L27-5 (DATA)	Always	Below 1 ohms
D87-16 (RSSI) - L27-2 (RSSI)	Always	Below 1 ohms
D87-5 (RCO) - Body ground	Always	10 kohms or higher
D87-15 (RDA) - Body ground	Always	10 kohms or higher
D87-16 (RSSI) - Body ground	Always	10 kohms or higher

L27-4 (+5) - Body ground	Always	10 kohms or higher
L27-5 (DATA) - Body ground	Always	10 kohms or higher
L27-2 (RSSI) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

11. **CHECK HARNESS AND CONNECTOR (DOOR CONTROL RECEIVER - BODY GROUND)**

- a. Measure the resistance according to the value(s) in the table below.

*a

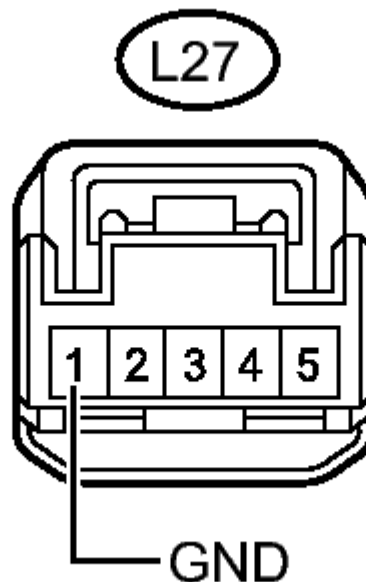


Fig. 19: Checking Harness And Connector (Door Control Receiver - Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition

L27-1 (GND) - Body ground	Always	Below 1 ohms
------------------------------------	--------	-----------------

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Door Control Receiver Assembly)
----	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

12. INSPECT DOOR CONTROL RECEIVER ASSEMBLY (POWER SOURCE)

- Reconnect the certification ECU (smart key ECU assembly) connector.
- Reconnect the door control receiver assembly connector.

*a

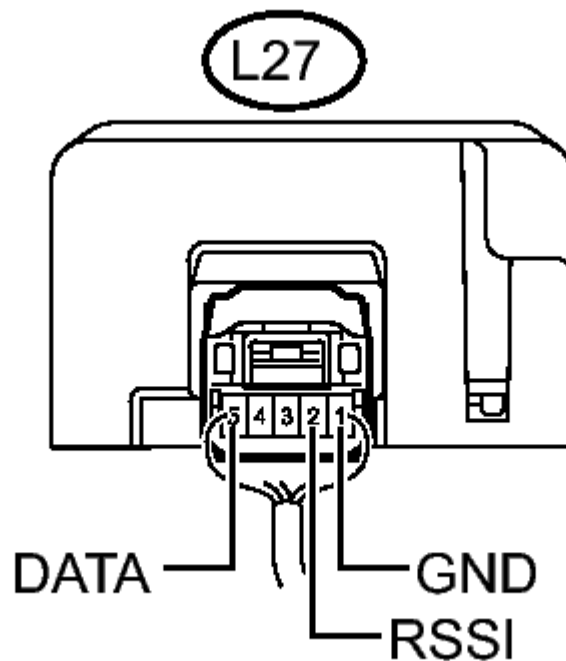


Fig. 20: Inspecting Door Control Receiver Assembly (Power Source)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
L27-2 (RSSI) - L27-1 (GND)	• Engine switch off • All doors locked • Lock or unlock switch on key not pushed	11 to 14 V
L27-2 (RSSI) - L27-1 (GND)	• Engine switch off • All doors locked • Lock or unlock switch on key pushed	Below 2 V
L27-5 (DATA) - L27-1 (GND)	Engine switch off	Pulse between 11 to 14 V occurs regularly

TEXT IN ILLUSTRATION

*a	Component with harness connected (Door Control Receiver)
----	--

Assembly)

NG --> See step 16

OK: Go to next step

13. INSPECT DOOR CONTROL RECEIVER ASSEMBLY (DOOR CONTROL RECEIVER SIGNAL OUTPUT)

- a. Measure the voltage according to the value(s) in the table below.

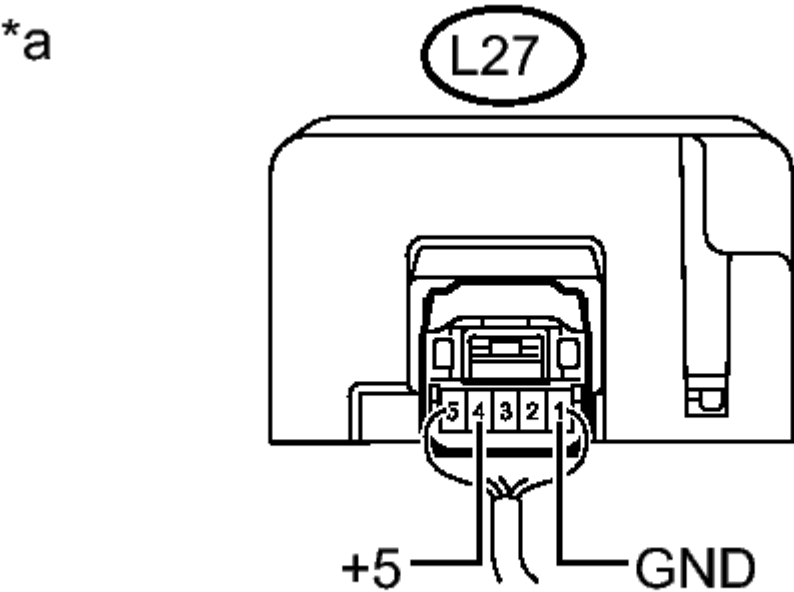


Fig. 21: Inspecting Door Control Receiver Assembly (Door Control Receiver Signal Output)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

Tester Connection	Condition	Specified Condition
L27-4 (+5) - L27-1 (GND)	- Engine switch off - Lock or unlock switch on key not	Below 1 V

	pushed	
L27-4 (+5) - L27-1 (GND)	• Engine switch off • Lock or unlock switch on key pushed	4.5 to 5.5 V

TEXT IN ILLUSTRATION

*a	Component with harness connected (Door Control Receiver Assembly)
----	---

NG --> See step 14

OK --> See step 16

14. **REPLACE DOOR CONTROL RECEIVER ASSEMBLY. Refer to REMOVAL**
15. **GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE**
16. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
17. **REPLACE TRANSMITTER BATTERY. Refer to REPLACEMENT**
18. **GO TO SMART KEY SYSTEM (for Start Function) (Proceed to How to Proceed with Troubleshooting). Refer to HOW TO PROCEED WITH TROUBLESHOOTING**

All Door Entry Lock/Unlock Functions do not Operate, but Wireless Functions Operate

DESCRIPTION

When the wireless door lock and unlock functions operate, the communication circuit between the door lock receiver assembly and certification ECU (smart key ECU assembly) is normal. When the entry lock and unlock functions do not operate, radio wave interference, a customized entry cancel function, or a communication error between the key and vehicle in the smart communication circuit, is suspected.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication

system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to OPERATION CHECK .

OK

Door locks operate normally.

NG --> See step 13

OK: Go to next step

2. READ VALUE USING TECHSTREAM (ENTRY CANCEL FUNCTION)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Smart Key / Data List.
- Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Auto Entry Cancel SW	Entry function cancel / ON or OFF	Mode status displayed	-

Result

Result	Proceed to
Entry function cancel is off.	A

Entry function cancel is on.	B
---------------------------------------	---

B --> See step 8

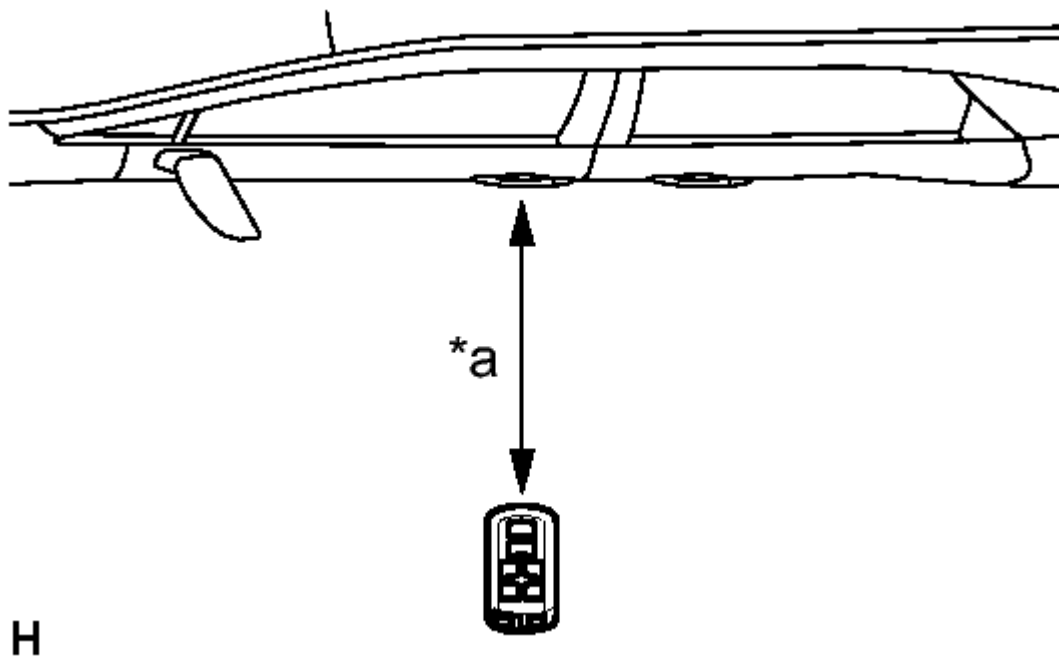
A: Go to next step

3. CHECK WAVE ENVIRONMENT

- a. Move the key as described below and perform the operation inspection.

HINT:

- When the key is brought near the door outside handle assembly or outside electrical key oscillator, the possibility of wave interference decreases, and it can be determined if wave interference is causing the problem symptom.
 - The transmitting waves of the wireless functions and entry functions are the same, but the wave logic is different. Therefore, it is possible that only the wireless functions or only the entry functions are affected by wave interference.
- b. Bring the key near the driver door outside handle assembly, and perform a front driver door entry lock and unlock operation check.



H

Fig. 22: Checking Front Driver Door Entry Lock And Unlock Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Approximately
*a	0.3 m (0.984 ft.)

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the door outside handle assembly, communication is not possible.

- c. Bring the key near the front passenger door outside handle assembly, and perform a front passenger door entry lock and unlock operation check.

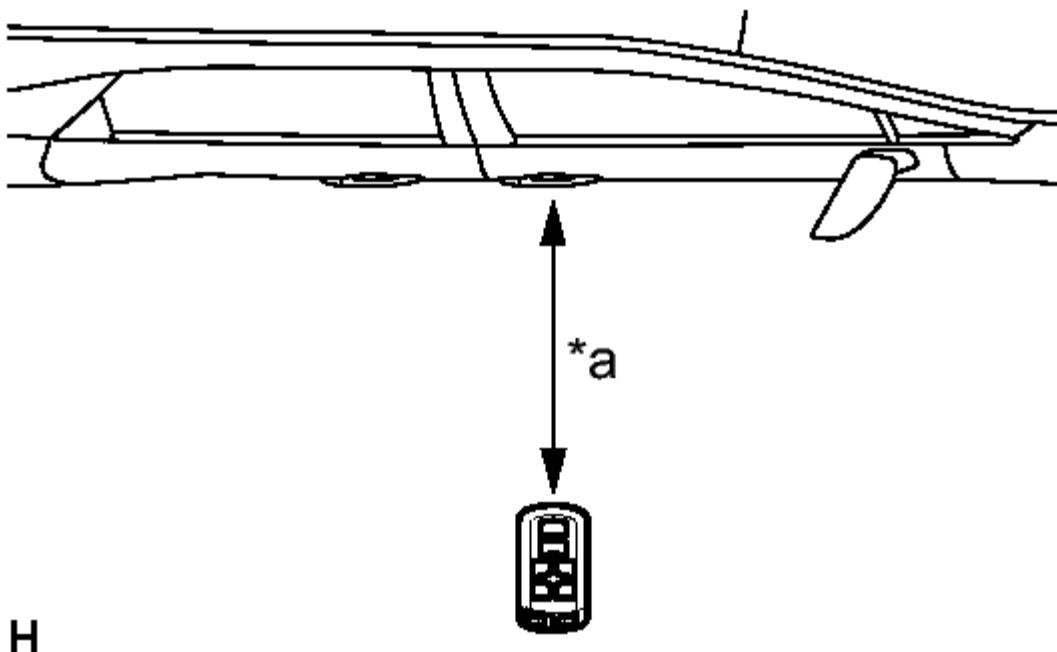


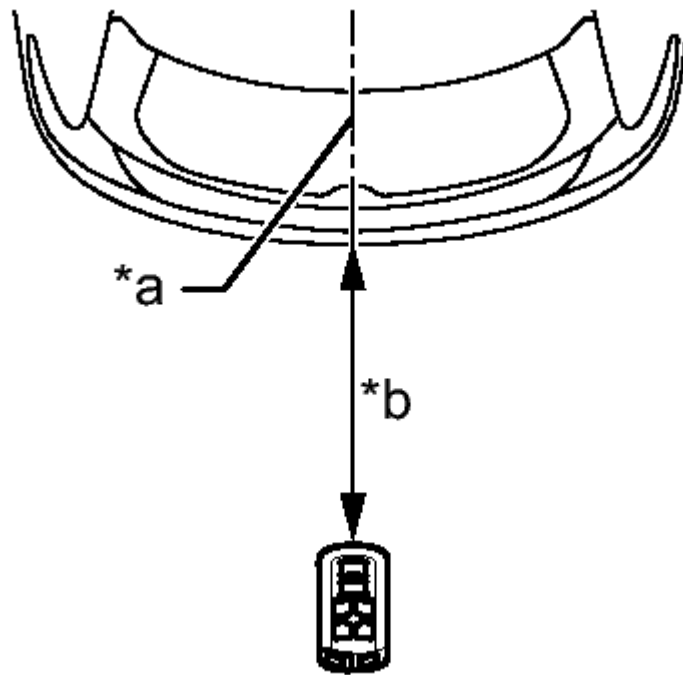
Fig. 23: Checking Front Passenger Door Entry Lock And Unlock Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Approximately
*a	0.3 m (0.984 ft.)

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the door outside handle assembly, communication is not possible.

- d. Bring the key near the outside electrical key oscillator (for rear side), and perform an entry back door open function check.



H

Fig. 24: Checking Entry Back Door Open And Entry Lock Functions
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	Approximately 0.3 m (0.984 ft.)

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the rear bumper, communication is not possible.

HINT:

If the inspection result indicates that the problem only occurs in certain locations or times of day, the possibility of wave interference is high. Also, added vehicle components may cause wave interference. If installed, remove them and perform the operation check.

Result

Result	Proceed to
Entry function does not operate	A

for all doors.	
Entry function operates for all doors.	B
Entry function operates for an individual door.	C

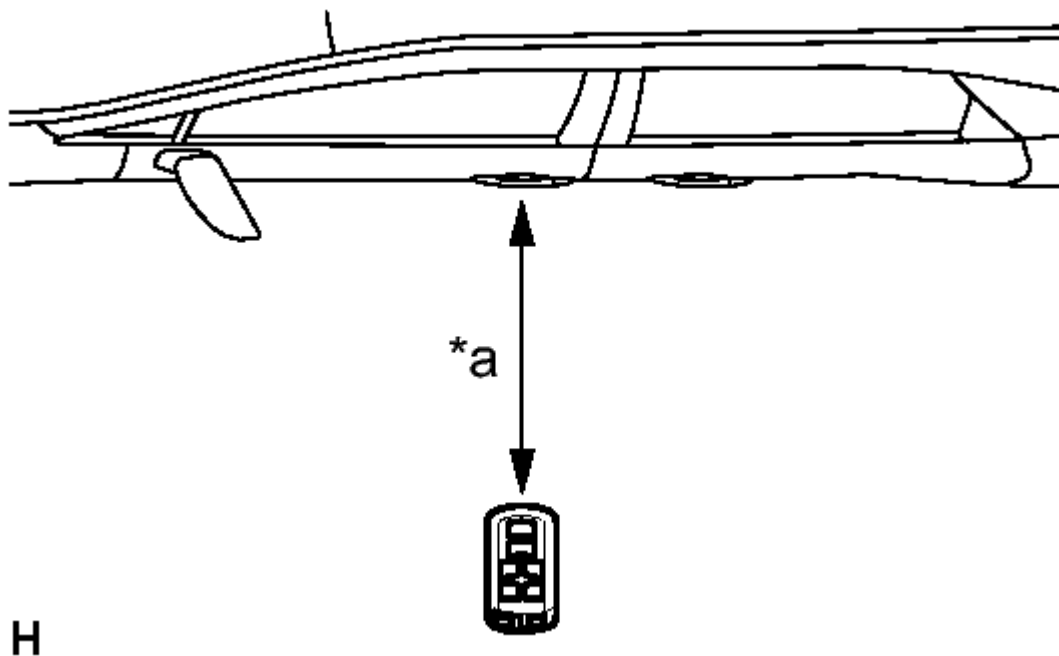
B --> AFFECTED BY WAVE INTERFERENCE

C --> See step 11

A: Go to next step

4. PERFORM KEY DIAGNOSTIC MODE INSPECTION

- a. Diagnostic mode inspection (door electrical key oscillator (for driver side))



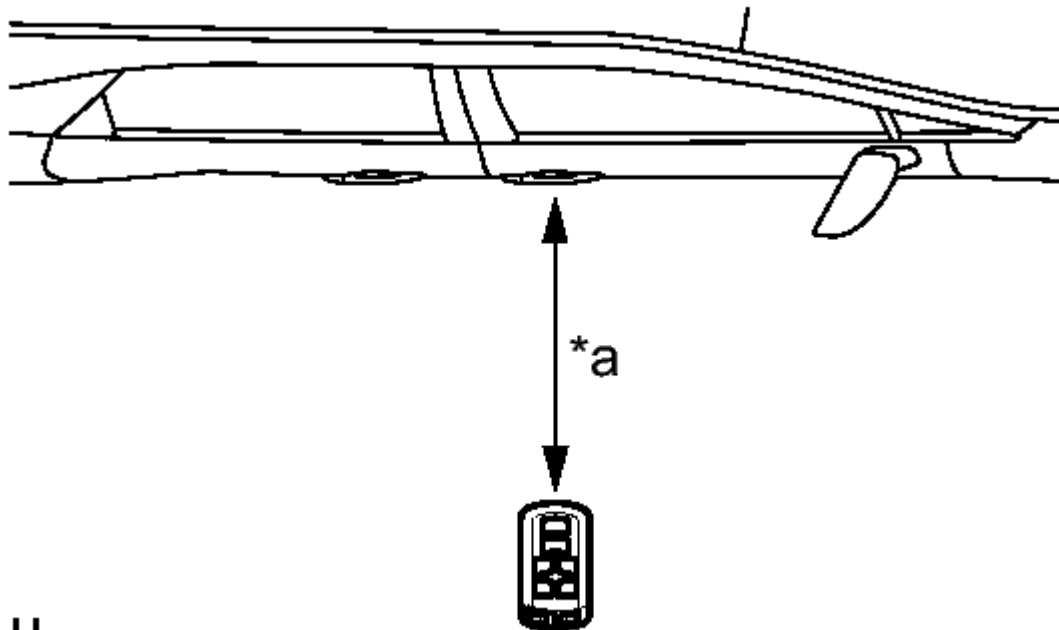
H

Fig. 25: Checking Front Driver Door Entry Lock And Unlock Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	0.7
	to
	1.0
	m
	(2.30
	to
	3.28
	ft.)

1. Connect the Techstream to the DLC3.
 2. Turn the engine switch on (IG).
 3. Turn the Techstream on.
 4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Driver Side.
 5. When the key is in the position shown in the illustration, check that the wireless door lock buzzer sounds.
- b. Diagnostic mode inspection (door electrical key oscillator (for front passenger side))



H

Fig. 26: Checking Front Passenger Door Entry Lock And Unlock Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	0.7
	to
	1.0
	m

*a	(2.30 to 3.28 ft.)
----	-----------------------------

1. Connect the Techstream to the DLC3.
 2. Turn the engine switch on (IG).
 3. Turn the Techstream on.
 4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Passenger Side.
 5. When the key is in the position shown in the illustration, check that the wireless door lock buzzer sounds.
- c. Diagnostic mode inspection (indoor electrical key oscillator (for front floor))

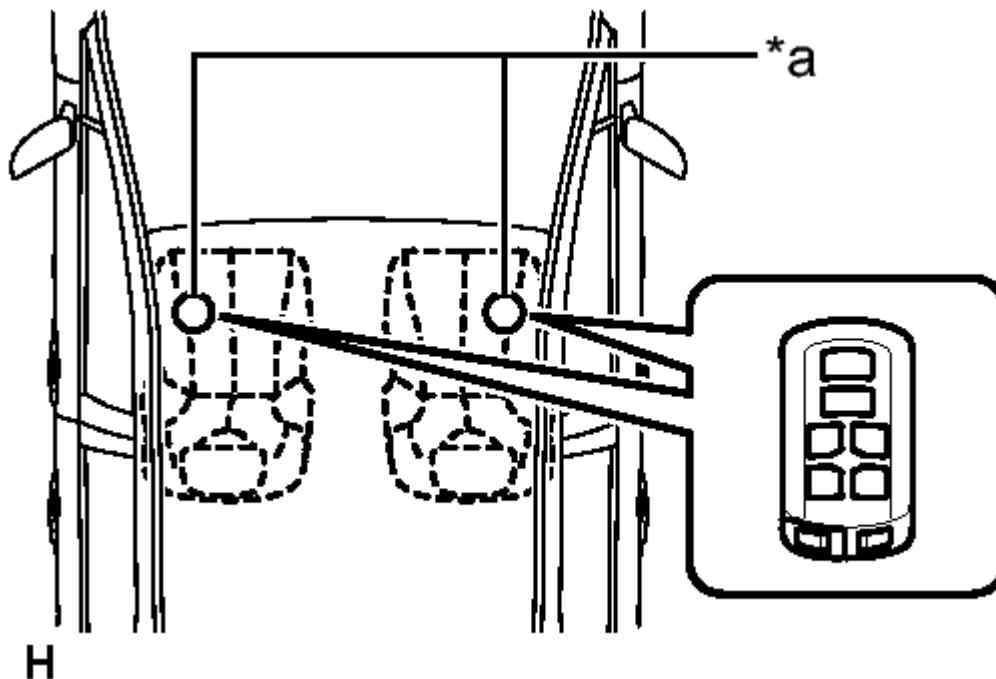


Fig. 27: Checking Indoor Electrical Key Oscillator (For Front Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

1. Connect the Techstream to the DLC3.
2. Turn the engine switch on (IG).
3. Turn the Techstream on.
4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check /

Overhead + Front Room.

5. When the key is in the position shown in the illustration, check that the wireless door lock buzzer sounds.
- d. Diagnostic mode inspection (indoor electrical key oscillator (for center floor))

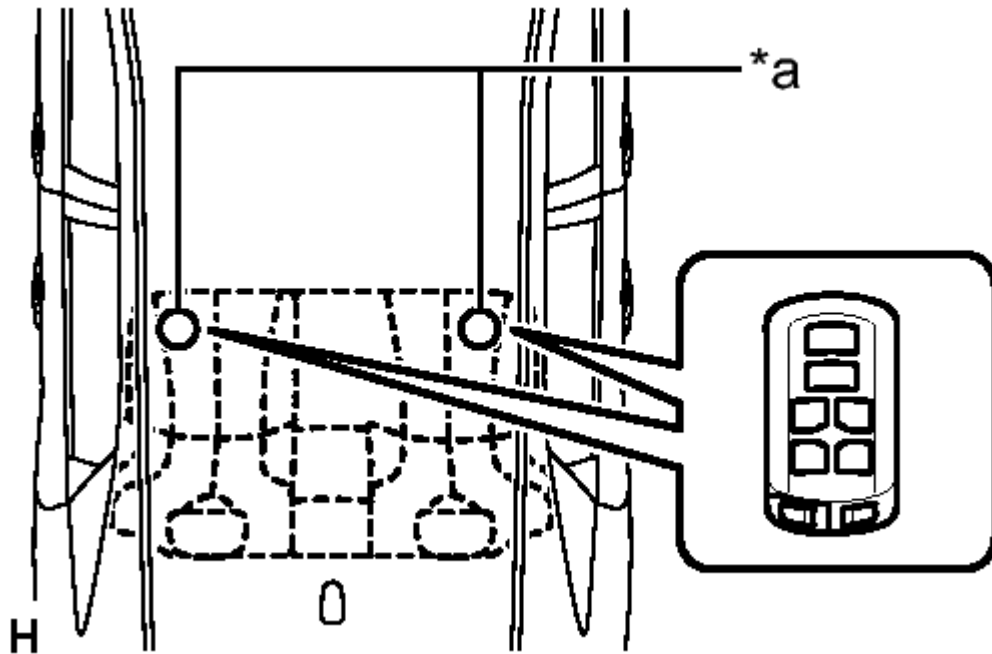


Fig. 28: Checking Indoor Electrical Key Oscillator (For Center Floor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

1. Connect the Techstream to the DLC3.
 2. Turn the engine switch on (IG).
 3. Turn the Techstream on.
 4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Rear Room.
 5. When the key is in the position shown in the illustration, check that the wireless door lock buzzer sounds.
- e. Diagnostic mode inspection (indoor electrical key oscillator (for rear floor))

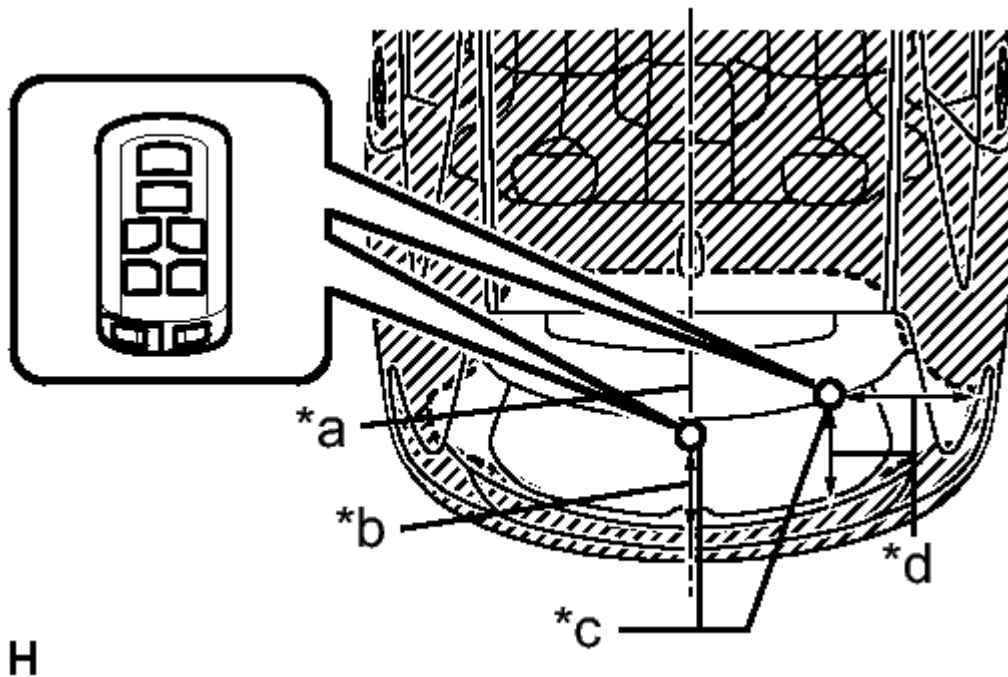
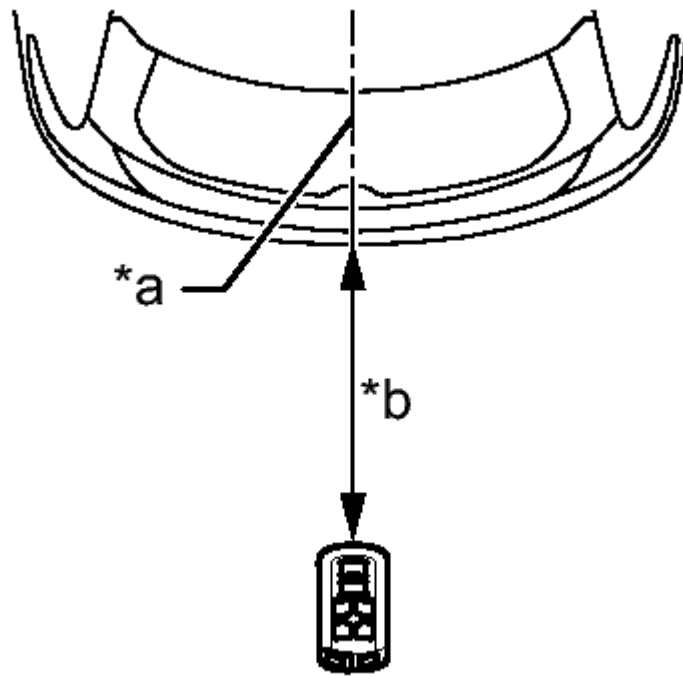


Fig. 29: Checking Indoor Electrical Key Oscillator (For Rear Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.1 m (0.328 ft.)
*c	Inspection Point
*d	0.2 m (0.656 ft.)

1. Connect the Techstream to the DLC3.
2. Turn the engine switch on (IG).
3. Turn the Techstream on.
4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Back Door (inside).
5. When the key is held at the same height as the rear bumper upper surface and aligned with the center of the rear of the vehicle, check that the wireless door lock buzzer sounds.
- f. Diagnostic mode inspection (outside electrical key oscillator (for rear side))



H

Fig. 30: Checking Entry Back Door Open And Entry Lock Functions
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.7 to 1.0 m (2.30 to 3.28 ft.)

1. Connect the Techstream to the DLC3.
2. Turn the engine switch on (IG).
3. Turn the Techstream on.
4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Back Door (outside).
5. When the key is in the position shown in the illustration, check that the wireless door lock buzzer sounds.

Result

Result	Proceed to
Wireless door lock	

buzzer does not sound for all electrical key oscillators.	A
Wireless door lock buzzer does not sound only for either door electrical key oscillator.	B
Wireless door lock buzzer does not sound only for one indoor electrical key oscillator.	C
Wireless door lock buzzer does not sound only for outside electrical key oscillator (for rear side).	D
Wireless door lock buzzer sounds for all electrical key oscillators.	E

B --> See step 9

C --> See step 10

D --> See step 11

E --> See step 12

A: Go to next step

5. CHECK ELECTRICAL KEY TRANSMITTER

- a. Check if another registered key is available.

Result

Result	Proceed to
Another registered key is not available.	A
Another registered key is available.	B

B --> See step 7

A: Go to next step

6. REGISTER ELECTRICAL KEY TRANSMITTER

- a. Register a new key. Refer to **REGISTRATION** .

NEXT: Go to next step

7. CHECK ELECTRICAL KEY TRANSMITTER (OPERATION)

- a. Using the key registered in the previous step or another registered key, check that the entry function operates normally. Refer to **OPERATION CHECK** .

OK

Entry function operates normally.

NG --> See step 12

OK --> REPLACE ELECTRICAL KEY TRANSMITTER (REPLACE MALFUNCTIONING

KEY)

8. **PERFORM CANCELLATION OF ENTRY KEY CANCEL FUNCTION.** Refer to CUSTOMIZE PARAMETERS
9. **GO TO OTHER PROBLEM** (Proceed to Problem Symptoms Table for Each Door). Refer to PROBLEM SYMPTOMS TABLE
10. **GO TO OTHER PROBLEM** (Proceed to Room Oscillator does not Recognize Key). Refer to Room Oscillator does not Recognize Key
11. **GO TO OTHER PROBLEM** (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE
12. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY).** Refer to REMOVAL
13. **GO TO POWER DOOR LOCK CONTROL SYSTEM** (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE

Driver Side Door Entry Unlock Function does not Operate

DESCRIPTION

If the driver door entry lock function operates normally, but its entry unlock function does not, this means that the request code from the driver door is being output normally. In this case, a malfunction in the touch sensor circuit (from the certification ECU (smart key ECU assembly) to the front door outside handle assembly (touch sensor)) is suspected.

WIRING DIAGRAM

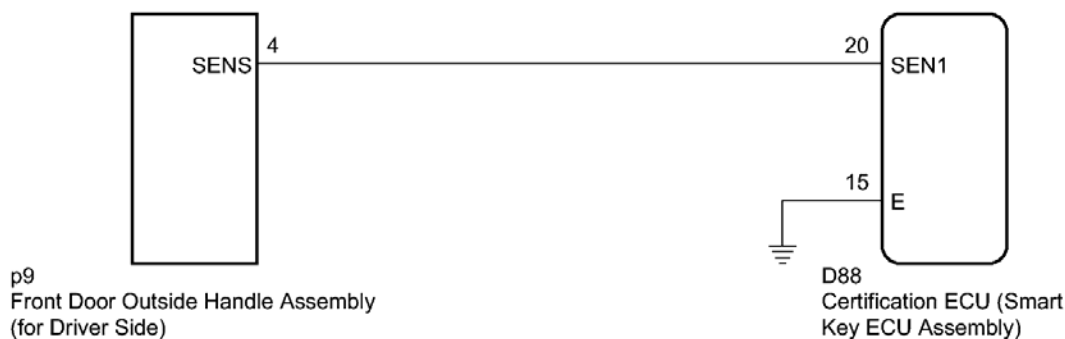


Fig. 31: Driver Side Door Handle Assembly Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH

TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to **OPERATION CHECK** .

OK

Door locks operate normally.

NG --> See step 6

OK: Go to next step

2. READ VALUE USING TECHSTREAM (DOOR LOCK POSITION SWITCH)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FL Door Lock Pos	Front LH side door lock position switch signal / UNLOCK or LOCK	UNLOCK: Front LH side door unlocked LOCK: Front LH side door locked	-

OK

On the Techstream screen, the display changes between UNLOCK and LOCK as shown in the chart above.

NG --> See step 7

OK: Go to next step

3. READ VALUE USING TECHSTREAM (DOOR OUTSIDE HANDLE)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D-Door Touch Sensor	Status of touch sensor (for driver side) / ON or OFF	ON: Touch sensor touched OFF: Touch sensor not touched	-

OK

On the Techstream screen, the display changes between ON and OFF as shown in the chart above.

NG --> See step 4

OK --> See step 8

4. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - FRONT DOOR OUTSIDE HANDLE)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the front door outside handle assembly (for driver side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-20 (SEN1) - p1-4 (SENS)	Always	Below 1 ohms
D88-20		

(SEN1) - Body ground	Always	10 kohms or higher
p1-4 (SENS) - Body ground	Always	10 kohms or higher

NG --> **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK: Go to next step

5. INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (TOUCH SENSOR SIGNAL INPUT)

- a. Reconnect the certification ECU (smart key ECU assembly) connector.
- b. Reconnect the front door outside handle assembly (for driver side) connector.

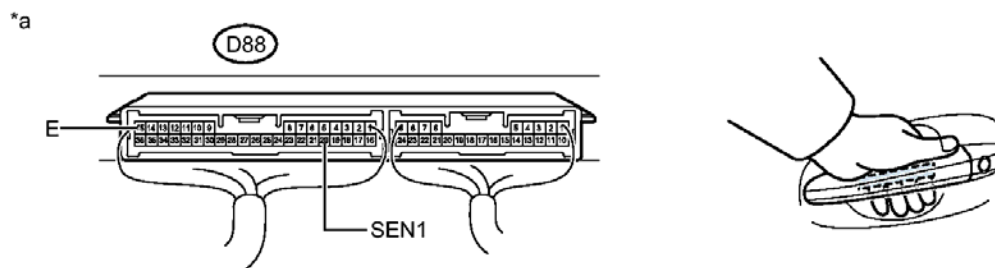


Fig. 32: Inspecting Certification ECU (Smart Key ECU Assembly) (Touch Sensor Signal Input)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Measure the voltage and check for pulses according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
D88-20 (SEN1) - D88-15 (E)	• Engine switch off • All doors closed • Key not in detection area	Pulse generation

	• Touch sensor (for driver side) not touched	
D88-20 (SEN1) - D88-15 (E)	• Engine switch off • All doors closed • Key not in detection area • Touch sensor (for driver side) touched	Below 2 V

TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))
----	---

NG --> See step 9

OK --> See step 8

6. **GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE**
7. **GO TO LIGHTING SYSTEM (Proceed to Door Unlock Detection Switch Circuit). Refer to Door Unlock Detection Switch Circuit**
8. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
9. **REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side). Refer to DISASSEMBLY**

Front Passenger Side Door Entry Unlock Function does not Operate

DESCRIPTION

If the front passenger door entry lock function operates normally, but its entry unlock function does not, this means that the request code from the front passenger door is being output normally. In this case, a malfunction in the touch sensor circuit (from the certification ECU (smart key ECU assembly) to the front door outside handle assembly (touch sensor)) is suspected.

WIRING DIAGRAM

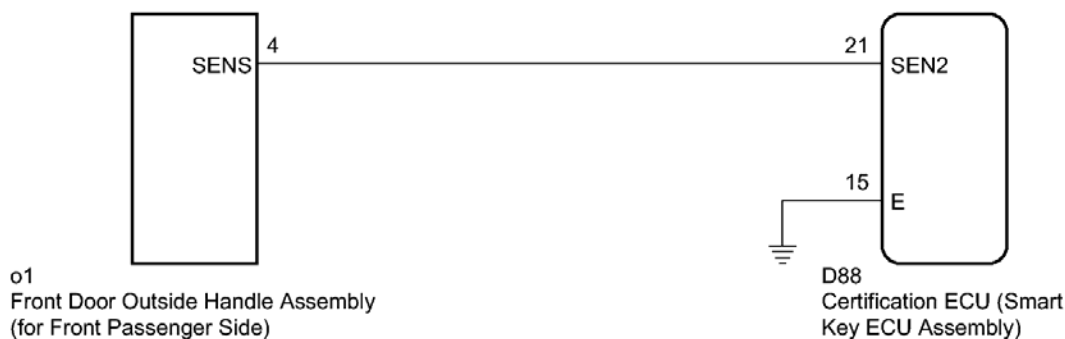


Fig. 33: Passenger Side Door Outside Handle Assembly Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- a. When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to **OPERATION CHECK** .

OK

Door locks operate normally.

NG --> See step 6

OK: Go to next step

2. READ VALUE USING TECHSTREAM (DOOR LOCK POSITION SWITCH)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FR Door Lock Pos	Front RH side door lock position switch signal/UNLOCK or LOCK	UNLOCK: Front RH side door unlocked LOCK: Front RH side door locked	-

OK

On the Techstream screen, the display changes between UNLOCK and LOCK as shown in the chart above.

NG --> See step 7

OK: Go to next step

3. READ VALUE USING TECHSTREAM (DOOR OUTSIDE HANDLE)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Smart Key / Data List.
- Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
P-Door Touch	Status of touch sensor (for front	ON: Touch sensor touched	-

Sensor	passenger side) / ON or OFF	OFF: Touch sensor not touched	
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OK

On the Techstream screen, the display changes between ON and OFF as shown in the chart above.

NG --> **See step 4**

OK --> **See step 8**

4. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - FRONT DOOR OUTSIDE HANDLE)

- Disconnect the certification ECU (smart key ECU assembly) connector.
- Disconnect the front door outside handle assembly (for front passenger side) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-21 (SEN2) - o1-4 (SENS)	Always	Below 1 ohms
D88-21 (SEN2) - Body ground	Always	10 kohms or higher
o1-4 (SENS) - Body ground	Always	10 kohms or higher

NG --> **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK: **Go to next step**

5. INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (TOUCH SENSOR SIGNAL INPUT)

- Reconnect the certification ECU (smart key ECU assembly) connector.
- Reconnect the front door outside handle assembly (for front passenger side) connector.

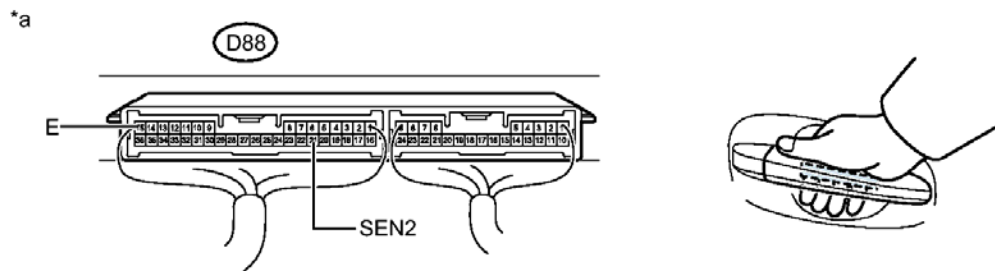


Fig. 34: Inspecting Certification ECU (Smart Key ECU Assembly) (Touch Sensor Signal Input)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
D88-21 (SEN2) - D88-15 (E)	- Engine switch off - All doors closed - Key not in detection area - Touch sensor (for front passenger side) not touched	Pulse generation
D88-21 (SEN2) - D88-15 (E)	- Engine switch off - All doors closed - Key not in detection area - Touch sensor (for front	Below 2 V

	passenger side) touched	
--	-------------------------------	--

TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))
----	---

NG --> See step 9

OK --> See step 8

6. **GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE**
7. **GO TO LIGHTING SYSTEM (Proceed to Door Unlock Detection Switch). Refer to Door Unlock Detection Switch Circuit**
8. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
9. **REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Front Passenger Side). Refer to DISASSEMBLY**

Driver Side Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

When the entry lock and unlock functions do not operate only for the driver door, an error in output request codes from the driver door or malfunction in the front door outside handle assembly is suspected. If the entry functions for the other doors operate normally, then the communication circuit between the key and door control receiver assembly is functioning normally. In this case, radio wave interference or a malfunction in the request code sending circuit (from the certification ECU (smart key ECU assembly) to the front door outside handle assembly (for driver side)) is suspected.

WIRING DIAGRAM

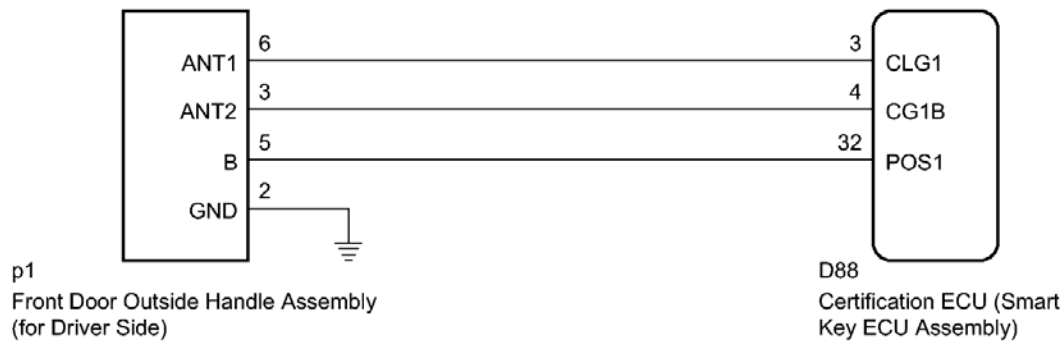


Fig. 35: Driver Side Door Outside Handle Assembly Circuit Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to OPERATION CHECK .

OK

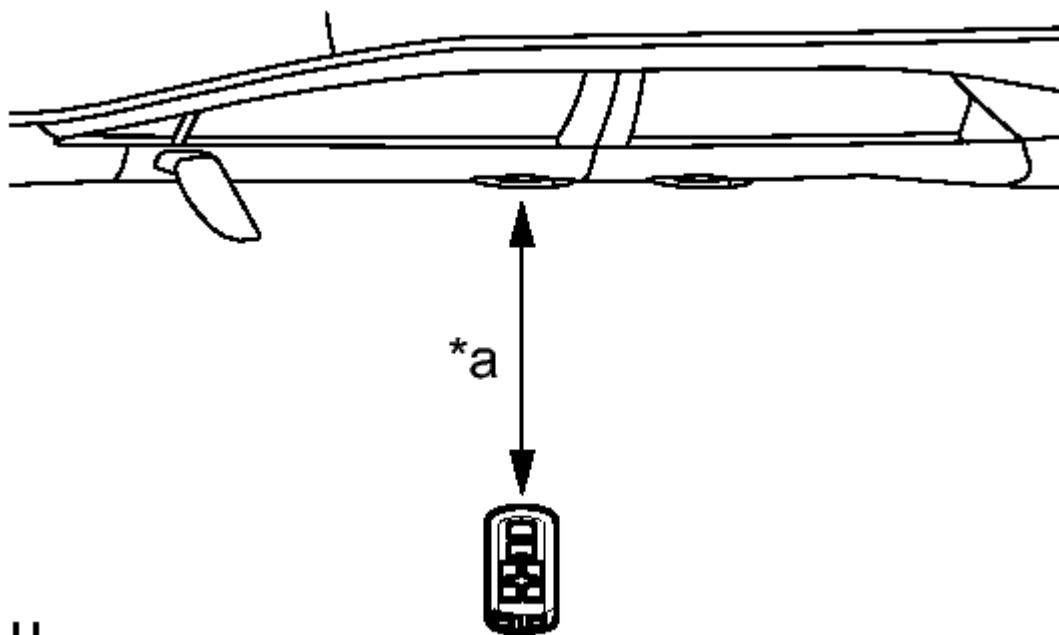
Door locks operate normally.

NG --> See step 8

OK: Go to next step

2. CHECK WAVE ENVIRONMENT

- Bring the key near the front door outside handle assembly (for driver side), and perform a driver door entry lock and unlock operation check.



H

Fig. 36: Checking Front Driver Door Entry Lock And Unlock Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Approximately
*a	0.3 m (0.984 ft.)

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the door outside handle assembly, communication is not possible.

HINT:

- When the key is brought near the front door outside handle assembly (for driver side), the possibility of wave interference decreases, and it can be determined if wave interference is causing the problem symptom.
- If the operation is normal, the possibility of wave interference is high. Also, added vehicle components may cause wave interference. If installed, remove them and perform the operation check.

OK

Entry functions operate normally.

NG --> See step 3

OK --> AFFECTED BY WAVE INTERFERENCE

3. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - FRONT DOOR OUTSIDE HANDLE)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the front door outside handle assembly (for driver side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-3 (CLG1) - p1-6 (ANT1)	Always	Below 1 ohms
D88-4 (CG1B) - p1-3 (ANT2)	Always	Below 1 ohms
D88-32 (POS1) - p1-5 (B)	Always	Below 1 ohms
D88-3 (CLG1) - Body ground	Always	10 kohms or higher
D88-4 (CG1B) - Body ground	Always	10 kohms or higher
D88-32 (POS1) - Body ground	Always	10 kohms or higher
p1-6 (ANT1) - Body ground	Always	10 kohms or higher
p1-3 (ANT2) - Body ground	Always	10 kohms or higher
p1-5 (B) - Body	Always	10 kohms or higher

ground		
--------	--	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (FRONT DOOR OUTSIDE HANDLE - BODY GROUND)
- a. Measure the resistance according to the value(s) in the table below.

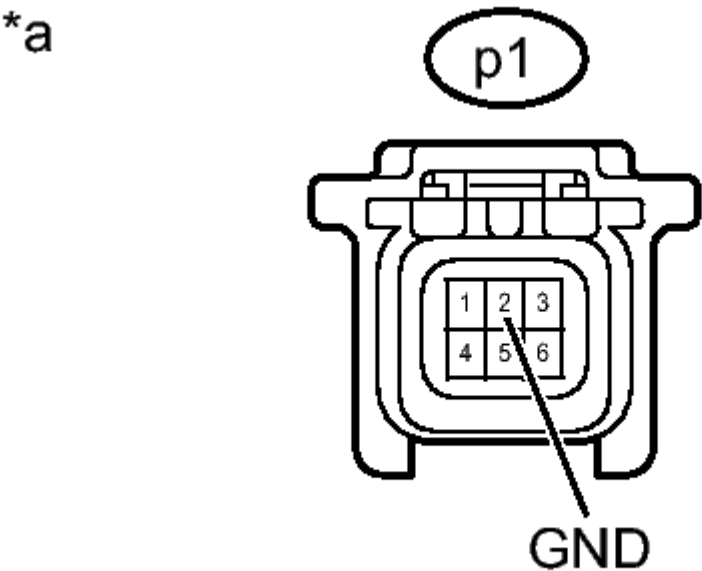


Fig. 37: Checking Harness And Connector (Front Door Outside Handle - Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
p1-2 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

Front view of wire

	harness connector (to Front Door Outside Handle Assembly (for Driver Side))
--	--

*a

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. INSPECT FRONT DOOR OUTSIDE HANDLE ASSEMBLY (DOOR OSCILLATOR, LOCK/UNLOCK SENSOR SIGNAL INPUT)
 - a. Reconnect the certification ECU (smart key ECU assembly) connector.
 - b. Measure the voltage and check for pulses according to the value(s) in the table below.

*a

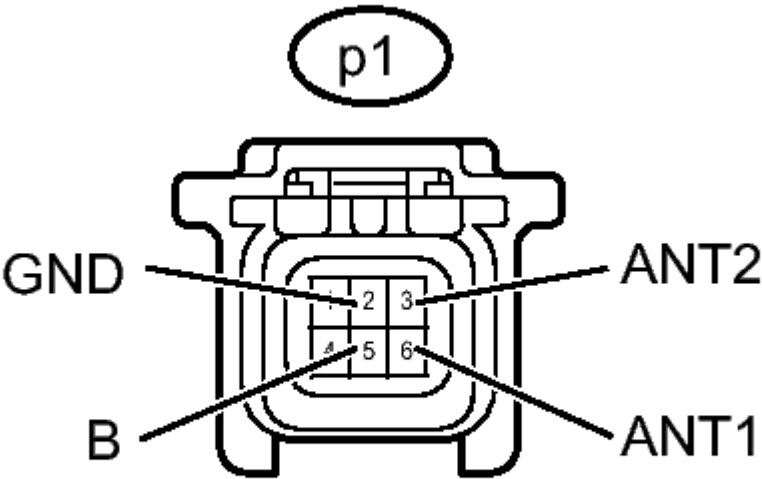


Fig. 38: Inspecting Front Door Outside Handle Assembly (Door Oscillator, Lock/Unlock Sensor Signal Input)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

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Tester Connection	Switch Condition	Specified Condition
p1-6 (ANT1) - p1-3 (ANT2)	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
p1-6 (ANT1) - p1-3 (ANT2)	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation
p1-5 (B) - p1-2 (GND)	Engine switch off	9 to 14 V
p1-5 (B) - p1-2 (GND)	Engine switch on (IG)	Below 2 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Front Door Outside Handle Assembly (for Driver
----	---

|Side))

NG --> See step 9

OK: Go to next step

6. REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side)

- a. Replace the front door outside handle assembly (for driver side). Refer to **DISASSEMBLY**

NEXT: Go to next step

7. CHECK FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side)

- a. Check that the entry functions operate normally. Refer to **OPERATION CHECK** .

OK

Entry functions operate normally.

NG --> See step 9

OK --> END (FRONT DOOR OUTSIDE HANDLE ASSEMBLY WAS DEFECTIVE)

**8. GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table).
Refer to **PROBLEM SYMPTOMS TABLE****

9. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to **REMOVAL**

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

DESCRIPTION

When the entry lock and unlock functions do not operate only for the front passenger door, an error in output request codes from the front passenger door or malfunction in the front door outside handle assembly is suspected. If the entry functions for the other doors operate normally, then the communication circuit between the key and door control receiver assembly is functioning normally. In this case, radio wave interference or a malfunction in the request code sending circuit (from the certification ECU (smart key ECU assembly) to the front door outside handle assembly (for driver side)) is suspected.

WIRING DIAGRAM

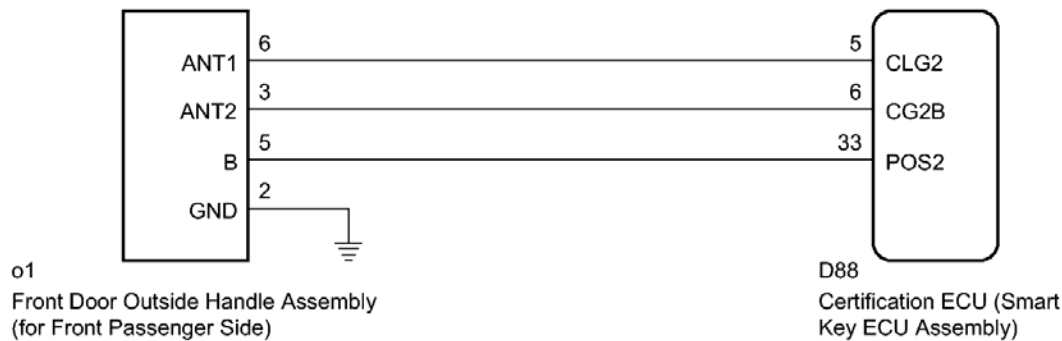


Fig. 39: Passenger Side Door Outside Handle Assembly Circuit Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to **OPERATION CHECK** .

OK

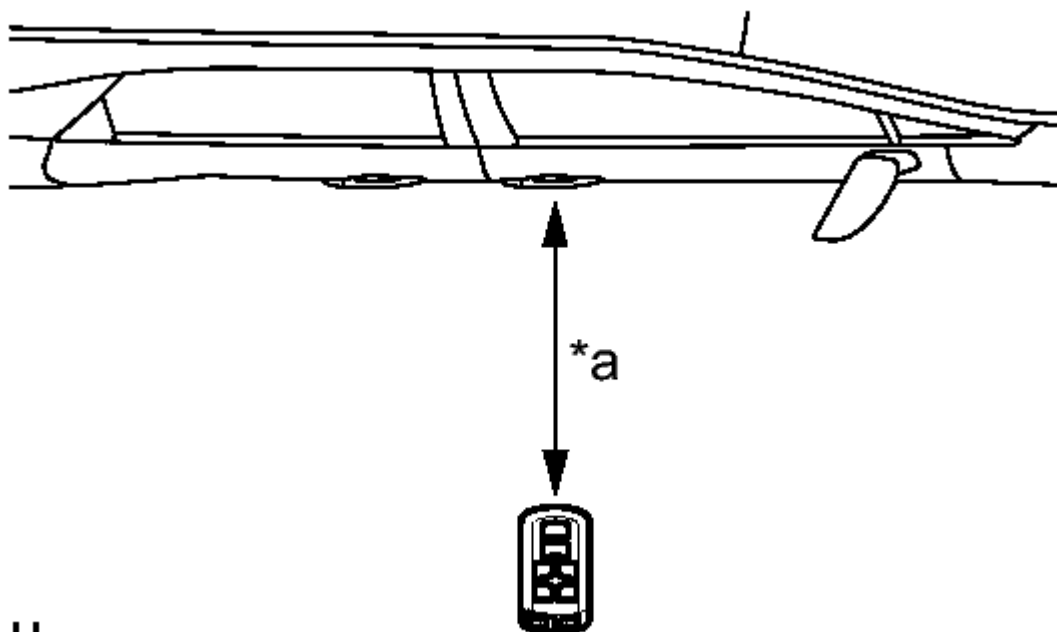
Door locks operate normally.

NG --> See step 8

OK: Go to next step

2. CHECK WAVE ENVIRONMENT

- Bring the key near the front door outside handle assembly (for front passenger side), and perform a front passenger door entry lock and unlock operation check.



H

Fig. 40: Checking Front Passenger Door Entry Lock And Unlock Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Approximately
*a	0.3 m (0.984 ft.)

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the door outside handle assembly, communication is not possible.

HINT:

- When the key is brought near the front door outside handle assembly (for front passenger side), the possibility of wave interference decreases, and it can be determined if wave interference is causing the problem symptom.
- If the operation is normal, the possibility of wave interference is high. Also, added vehicle components may cause wave interference. If installed, remove them and perform the operation check.

OK

Entry functions operate normally.

NG --> See step 3

OK --> AFFECTED BY WAVE INTERFERENCE

3. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - FRONT DOOR OUTSIDE HANDLE)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the front door outside handle assembly (for front passenger side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-5 (CLG2) - o1-6 (ANT1)	Always	Below 1 ohms
D88-6 (CG2B) - o1-3 (ANT2)	Always	Below 1 ohms
D88-33 (POS2) - o1-5 (B)	Always	Below 1 ohms
D88-5 (CLG2) - Body ground	Always	10 kohms or higher
D88-6 (CG2B) - Body ground	Always	10 kohms or higher
D88-33 (POS2) - Body ground	Always	10 kohms or higher
o1-6 (ANT1) - Body ground	Always	10 kohms or higher
o1-3 (ANT2) - Body ground	Always	10 kohms or higher
o1-5 (B) - Body	Always	10 kohms or higher

ground		
--------	--	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (FRONT DOOR OUTSIDE HANDLE - BODY GROUND)
- a. Measure the resistance according to the value(s) in the table below.

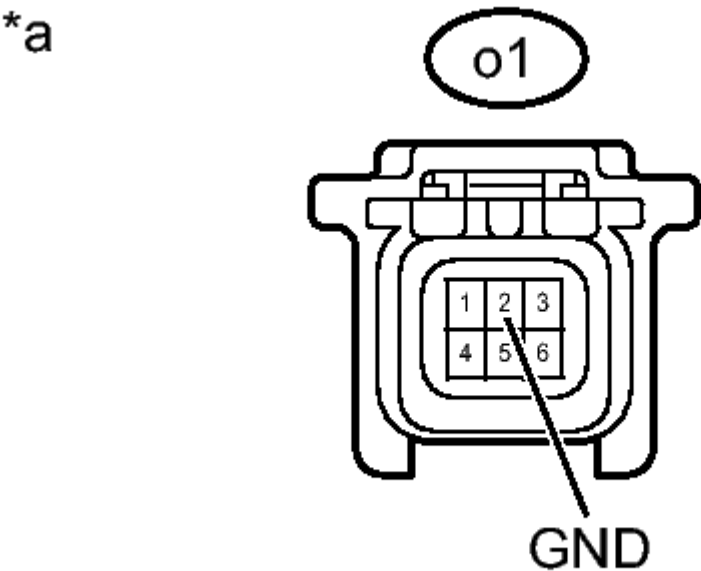


Fig. 41: Checking Harness And Connector (Front Door Outside Handle - Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
o1-2 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

Front view of wire

	harness
	connector
	(to Front
	Door
*a	Outside
	Handle
	Assembly
	(for Front
	Passenger
	Side))

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. **INSPECT FRONT DOOR OUTSIDE HANDLE ASSEMBLY (DOOR OSCILLATOR, LOCK/UNLOCK SENSOR SIGNAL INPUT)**
 - a. Reconnect the certification ECU (smart key ECU assembly) connector.
 - b. Measure the voltage and check for pulses according to the value(s) in the table below.

*a

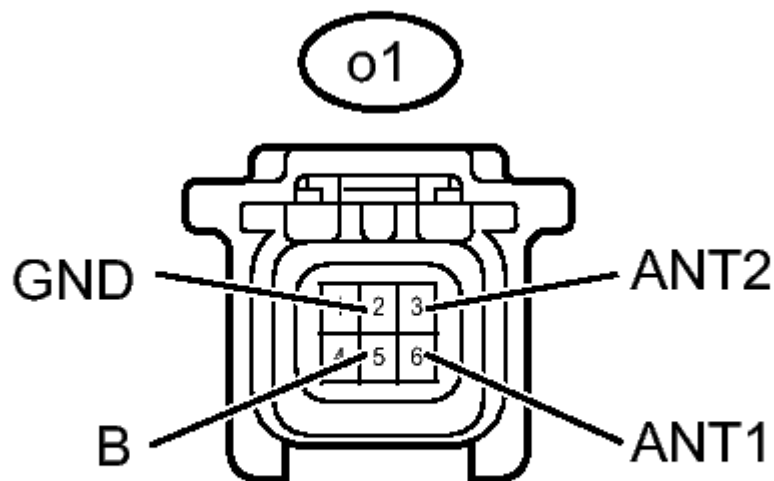


Fig. 42: Inspecting Front Door Outside Handle Assembly (Door Oscillator, Lock/Unlock Sensor Signal Input)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

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Tester Connection	Switch Condition	Specified Condition
o1-6 (ANT1) - o1-3 (ANT2)	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
o1-6 (ANT1) - o1-3 (ANT2)	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation
o1-5 (B) - o1-2 (GND)	Engine switch off	9 to 14 V
o1-5 (B) - o1-2 (GND)	Engine switch on (IG)	Below 2 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Front Door Outside Handle Assembly (for Front Passenger
----	--

|Side))

NG --> See step 9

OK: Go to next step

6. REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Front Passenger Side)

- a. Replace the front door outside handle assembly (for front passenger side). Refer to **DISASSEMBLY** .

NEXT: Go to next step

7. CHECK FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Front Passenger Side)

- a. Check that the entry functions operate normally. Refer to **OPERATION CHECK** .

OK

Entry functions operate normally.

NG --> See step 9

OK --> END (FRONT DOOR OUTSIDE HANDLE ASSEMBLY WAS DEFECTIVE)

8. GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE

9. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL

Driver Side Door Entry Lock Function does not Operate

DESCRIPTION

If the driver door entry unlock function operates normally, but its entry lock function does not, this means that the request code from the driver door is being output normally. In this case, a malfunction in the lock sensor circuit (from the certification ECU (smart key ECU assembly) to the front door outside handle assembly (lock sensor)) is suspected.

WIRING DIAGRAM



Fig. 43: Driver Side Door Outside Handle Assembly Circuit Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to OPERATION CHECK .

OK

Door locks operate normally.

NG --> See step 6

OK: Go to next step

2. READ VALUE USING TECHSTREAM (DOOR LOCK POSITION SWITCH)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.

- e. Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FL Door Lock Pos	Front LH side door lock position switch signal / UNLOCK or LOCK	UNLOCK: Front LH side door unlocked LOCK: Front LH side door locked	-

OK

On the Techstream screen, the display changes between UNLOCK and LOCK as shown in the chart above.

NG --> See step 7

OK: Go to next step

3. READ VALUE USING TECHSTREAM (DOOR OUTSIDE HANDLE)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D-Door Trigger SW	Driver side door lock switch / ON or OFF	ON: Entry lock switch pressed OFF: Entry lock switch not pressed	-

OK

On the Techstream screen, the display changes between ON and OFF as shown in the chart above.

NG --> See step 4

OK --> See step 8

4. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - FRONT DOOR OUTSIDE HANDLE)

- Disconnect the certification ECU (smart key ECU assembly) connector.
- Disconnect the front door outside handle assembly (for driver side) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-18 (TSW1) - p1-1 (TRG+)	Always	Below 1 ohms
D88-18 (TSW1) - Body ground	Always	10 kohms or higher
p1-1 (TRG+) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (LOCK SENSOR SIGNAL INPUT)

- Reconnect the certification ECU (smart key ECU assembly) connector.
- Reconnect the front door outside handle assembly (for driver side) connector.

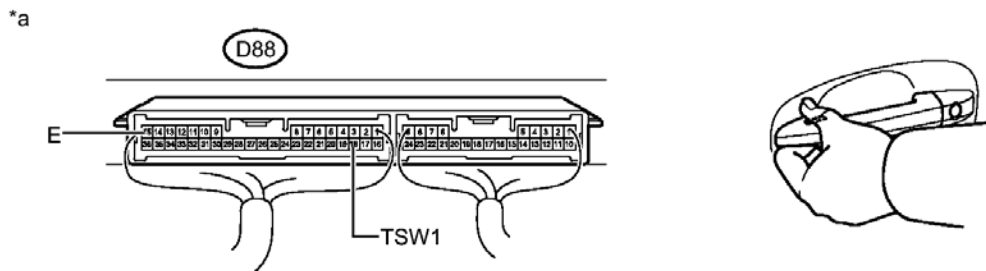


Fig. 44: Inspecting Certification ECU (Smart Key ECU Assembly) (Lock Sensor Signal

Input)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Measure the voltage and check for pulses according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
D88-18 (TSW1) - D88-15 (E)	• Engine switch off • All doors closed • Lock sensor (for driver side) not touched	Pulse generation
D88-18 (TSW1) - D88-15 (E)	• Engine switch off • All doors closed • Lock sensor (for driver side) touched	Below 2 V

TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))
----	---

NG --> See step 9

OK --> See step 8

6. **GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE**
7. **GO TO LIGHTING SYSTEM (Proceed to Door Unlock Detection Switch). Refer to Door Unlock Detection Switch Circuit**
8. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
9. **REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Driver Side). Refer to DISASSEMBLY**

Front Passenger Side Door Entry Lock Function does not Operate

DESCRIPTION

If the front passenger door entry unlock function operates normally, but its entry lock function does not, this means that the request code from the front passenger door is being output normally. In this case, a malfunction in the lock sensor circuit (from the certification ECU (smart key ECU assembly) to the front door outside handle assembly (lock sensor)) is suspected.

WIRING DIAGRAM

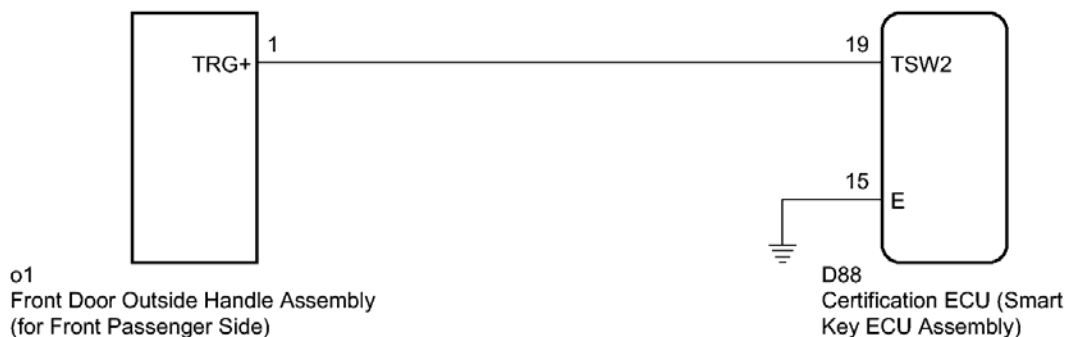


Fig. 45: Passenger Side Door Outside Handle Assembly Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to **OPERATION CHECK**.

OK

Door locks operate normally.

NG --> See step 6

OK: Go to next step

2. READ VALUE USING TECHSTREAM (DOOR LOCK POSITION SWITCH)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Main Body / Data List.
- Read the Data List according to the display on the Techstream.

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
FR Door Lock Pos	Front RH side door lock position switch signal/UNLOCK or LOCK	UNLOCK: Front RH side door unlocked LOCK: Front RH side door locked	-

OK

On the Techstream screen, the display changes between UNLOCK and LOCK as shown in the chart above.

NG --> See step 7

OK: Go to next step

3. READ VALUE USING TECHSTREAM (DOOR OUTSIDE HANDLE)

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).

- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
P-Door Trigger SW	Front passenger side door lock switch / ON or OFF	ON: Entry lock switch pressed OFF: Entry lock switch not pressed	-

OK

On the Techstream screen, the display changes between ON and OFF as shown in the chart above.

NG --> See step 4

OK --> See step 8

4. CHECK HARNESS AND CONNECTOR (FRONT DOOR OUTSIDE HANDLE - CERTIFICATION ECU)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the front door outside handle assembly (for front passenger side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-19 (TSW2) - o1-1 (TRG+)	Always	Below 1 ohms
D88-19 (TSW2) - Body ground	Always	10 kohms or higher
o1-1 (TRG+) - Body	Always	10 kohms or higher



NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. **INSPECT CERTIFICATION ECU (SMART KEY ECU ASSEMBLY) (LOCK SENSOR SIGNAL INPUT)**

- a. Reconnect the certification ECU (smart key ECU assembly) connector.
- b. Reconnect the front door outside handle assembly (for front passenger side) connector.

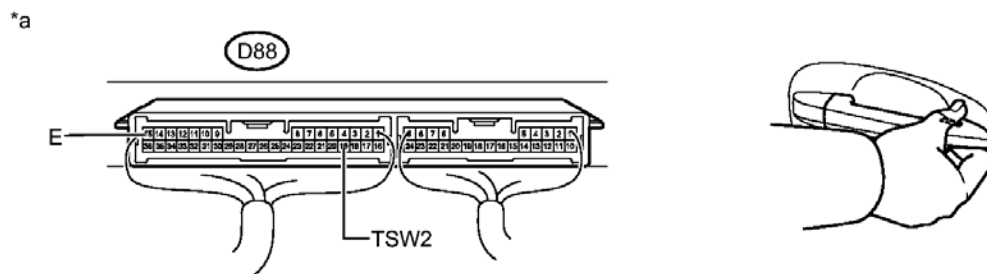


Fig. 46: Inspecting Certification ECU (Smart Key ECU Assembly) (Lock Sensor Signal Input)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Measure the voltage and check for pulses according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
D88-19 (TSW2) - D88-15 (E)	- Engine switch off - All doors closed - Lock sensor (for front passenger side) not touched	Pulse generation
D88-19	- Engine switch off - All doors closed	

(TSW2) - D88-15 (E)	• Lock sensor (for front passenger side) touched	Below 2 V
------------------------	--	--------------

TEXT IN ILLUSTRATION

*a	Component with harness connected (Certification ECU (Smart Key ECU Assembly))
----	---

NG --> See step 9

OK --> See step 8

6. **GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE**
7. **GO TO LIGHTING SYSTEM (Proceed to Door Unlock Detection Switch). Refer to Door Unlock Detection Switch Circuit**
8. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
9. **REPLACE FRONT DOOR OUTSIDE HANDLE ASSEMBLY (for Front Passenger Side). Refer to DISASSEMBLY**

Power Slide Door Entry Function does not Operate

DESCRIPTION

Pulling on the rear outside door handle for approximately 1 second causes the power slide door ECU to send a smart power slide door request signal to the certification ECU via the main body ECU. Once the certification ECU judges and certifies the key ID code, the certification ECU outputs a smart power slide door request signal to the main body ECU. The main body ECU then unlocks the doors and simultaneously transmits a power slide door open request signal to the power slide door ECU, which then performs a slide door open operation.

FAIL-SAFE

If the door unlock operation has completed but the power slide door open operation does not successfully complete (for example, if the door is covered by ice and is frozen shut), then the doors automatically lock after 30 seconds.

WIRING DIAGRAM

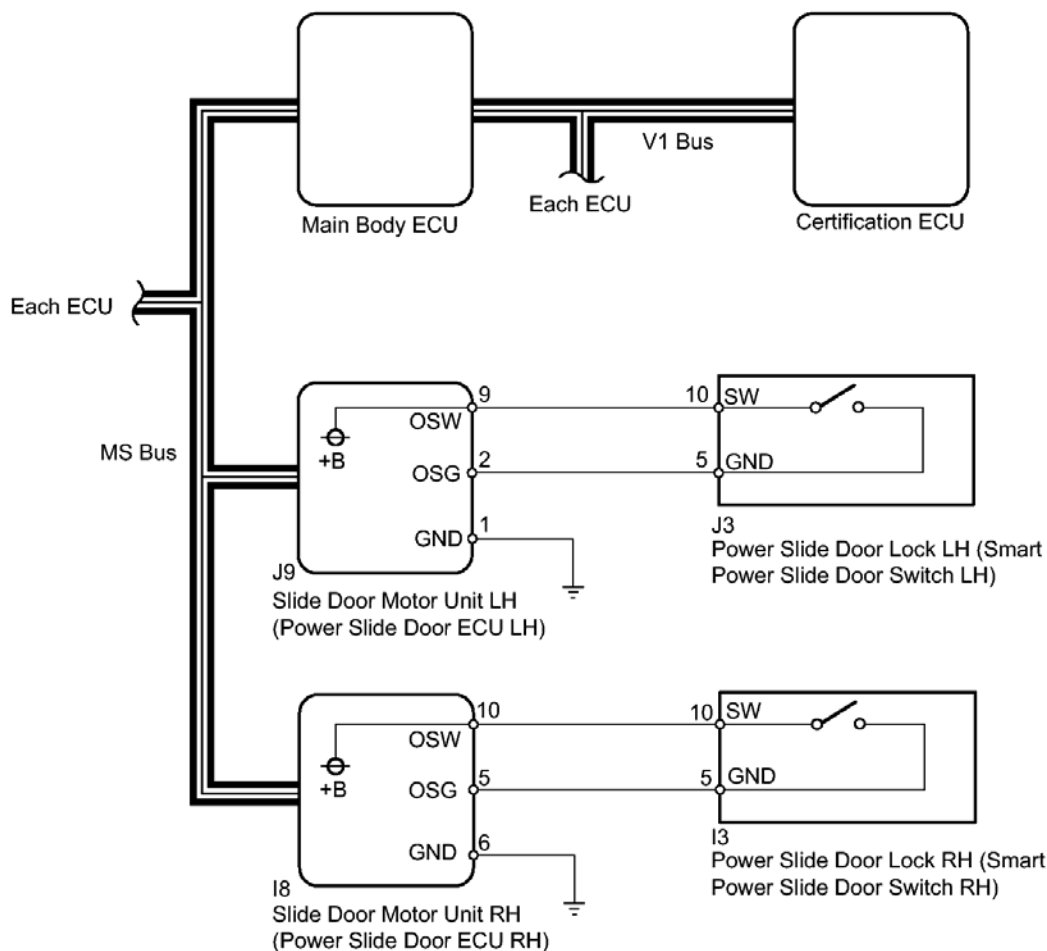


Fig. 47: Power Slide Door Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for Entry Function) uses a multiplex communication system (LIN communication system) and the CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for Entry Function) after confirming that the communication systems are functioning properly.
- When using the Techstream with the engine switch off to troubleshoot: Connect the Techstream to the DLC3 and turn a courtesy light switch on and off at 1.5-second intervals until communication between the Techstream and vehicle begins.

PROCEDURE

1. READ VALUE USING TECHSTREAM (OUTSIDE PSD SWITCH OPERATION)

- Connect the Techstream to the DLC3.
- Turn the power switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / RR Door or RL Door / Utility / Customize.
- Select the setting by referring to the table below.

RR DOOR OR RL DOOR

Display (item)	Default	Function	Setting
Outside PSD SW Operation	ON	Function to change the operation method of operating the smart power slide door.	ON or OFF

Result

Result	Proceed to
Customize setting is ON	A
Customize setting is off	B

B --> See step 9

A: Go to next step

2. READ VALUE USING TECHSTREAM (OUTSIDE PSD SWITCH)

- Connect the Techstream to the DLC3.
- Turn the power switch on (IG).
- Turn the Techstream on.

- d. Enter the following menus: Body Electrical / RR Door or RL Door / Data List.
- e. Read the Data List according to the display on the Techstream.

RR DOOR OR RL DOOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Outside PSD Switch	Smart power slide door switch signal/ON or OFF	ON: Rear door outside handle pulled for 0.2 seconds or more OFF: Rear door outside handle not pulled	-

OK

The Techstream indicates ON and OFF according to the rear door outside handle operation shown in the table.

NG --> See step 3

OK --> See step 8

3. CHECK HARNESS AND CONNECTOR (POWER SLIDE DOOR ECU POWER SOURCE AND GROUND)

- a. for LH Side

*a

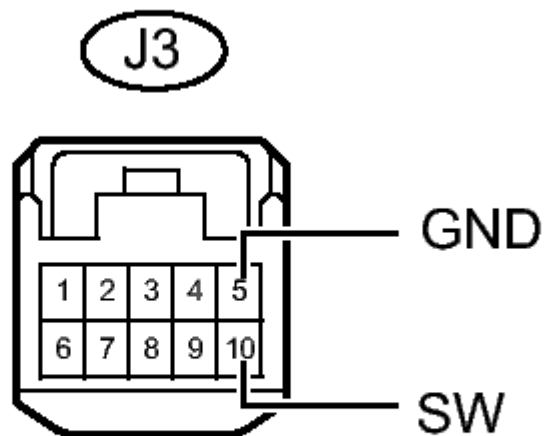


Fig. 48: Checking Harness And Connector (Power Slide Door ECU Power Source And Ground)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Disconnect the J3 slide door lock LH connector.
2. Measure the voltage and resistance according to the values in the table below.

Standard

Tester Connection	Condition	Specified Condition
J3-10 (SW) - Body ground	Always	11 to 14 V
J3-5 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Slide Door)
----	--

Lock LH)

b. for RH Side

*a

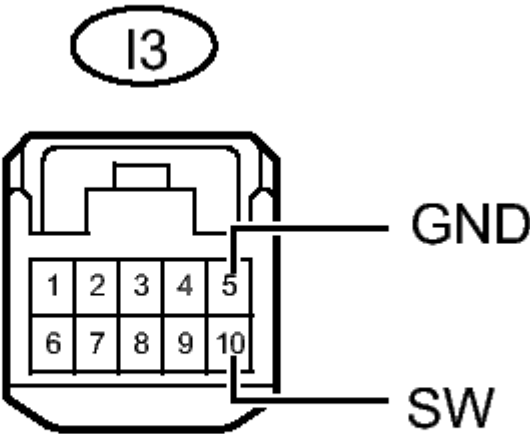


Fig. 49: I3 Slide Door Lock RH Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- 1. Disconnect the I3 slide door lock RH connector.
- 2. Measure the voltage and resistance according to the values in the table below.

Standard

Tester Connection	Condition	Specified Condition
I3-10 (SW) - Body ground	Always	11 to 14 V
I3-5 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

Front view of wire

*a	harness connector (to Slide Door Lock RH)
----	--

NG --> See step 5

OK: Go to next step

4. **INSPECT POWER SLIDE DOOR LOCK ASSEMBLY (SMART POWER SLIDE DOOR SWITCH)**
 - a. for LH Side

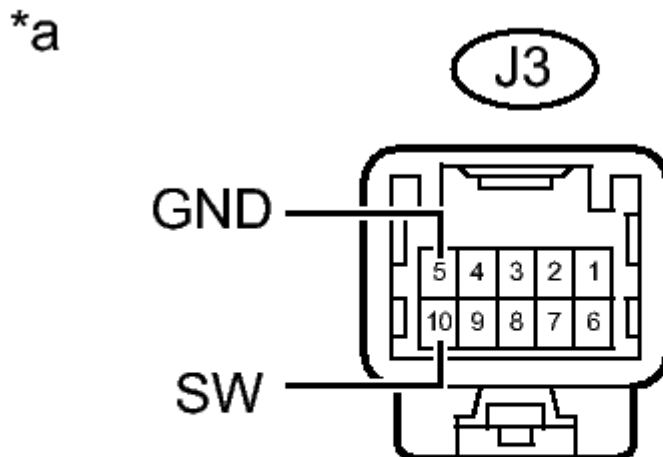


Fig. 50: Inspecting Power Slide Door Lock Assembly (Smart Power Slide Door Switch)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Remove the power slide door lock LH. Refer to **REMOVAL** .
2. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
J3-10 (SW)		Below 1

- J3-5 (GND)	ON	ohms
J3-10 (SW) - J3-5 (GND)	off	10 kohms or higher

TEXT IN ILLUSTRATION

*a	Component without harness connected (Slide Door Lock LH)
----	--

b. for RH Side

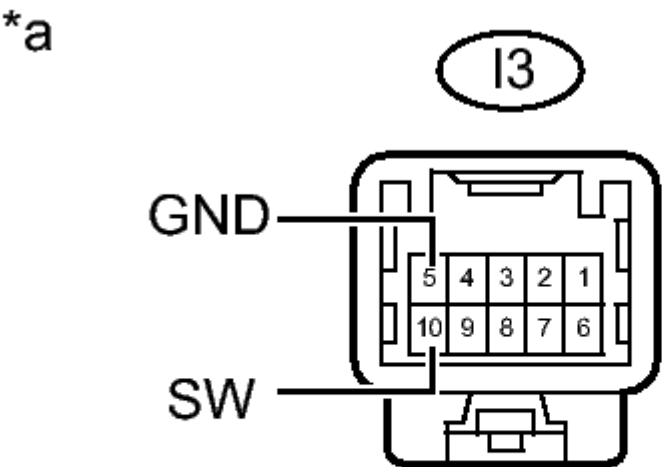


Fig. 51: I3 Slide Door Lock RH Connector End View
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

1. Remove the power slide door lock RH. Refer to **REMOVAL** .
2. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester	Switch	Specified
--------	--------	-----------

Connection	Condition	Condition
I3-10 (SW) - I3-5 (GND)	ON	Below 1 ohms
I3-10 (SW) - I3-5 (GND)	off	10 kohms or higher

TEXT IN ILLUSTRATION

*a	Component without harness connected (Slide Door Lock RH)
----	--

NG --> See step 7

OK --> See step 6

5. CHECK HARNESS AND CONNECTOR (POWER SLIDE DOOR ECU - SMART POWER SLIDE DOOR SWITCH AND GROUND)

a. for LH Side

1. Disconnect the J9 power slide door ECU connector.
2. Measure the resistance according to the values in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
J9-9 (OSW) - J3-10 (SW)	Always	Below 1 ohms
J9-2 (OSG) - J3-5 (GND)	Always	Below 1 ohms
J9-1(GND) - Body ground	Always	Below 1 ohms

b. for RH Side

1. Disconnect the I8 power slide door ECU connector.
2. Measure the resistance according to the values in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
I8-10 (OSW) - I3-10 (SW)	Always	Below 1 ohms
I8-5 (OSG) - I3-5 (GND)	Always	Below 1 ohms
I8-6(GND) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 6

- 6. REPLACE SLIDE DOOR MOTOR UNIT (POWER SLIDE DOOR ECU). Refer to REMOVAL**
- 7. REPLACE POWER SLIDE DOOR LOCK ASSEMBLY (SMART POWER SLIDE DOOR SWITCH). Refer to REMOVAL**
- 8. USE SIMULATION METHOD TO CHECK. Refer to ELECTRONIC CIRCUIT INSPECTION PROCEDURE**
- 9. CUSTOMIZE FUNCTION (OUTSIDE PSD SW OPERATION). Refer to CUSTOMIZE PARAMETERS**

Room Oscillator does not Recognize Key

DESCRIPTION

If the room oscillator does not recognize a key, one of the following may be the cause: 1) communication between the indoor electrical key oscillator (for front floor) and key cannot be performed; 2) communication between the indoor electrical key oscillator (for center floor) and key cannot be performed; or 3) communication between the indoor electrical key oscillator (for rear floor) and key cannot be performed.

WIRING DIAGRAM

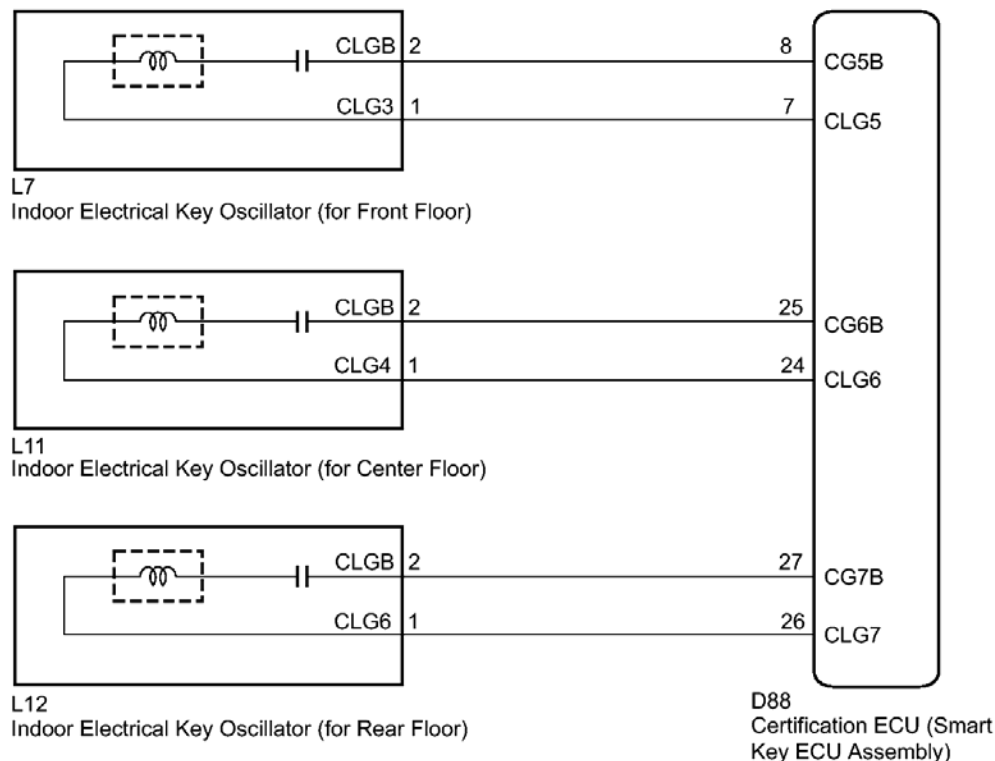


Fig. 52: Room Oscillator - Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

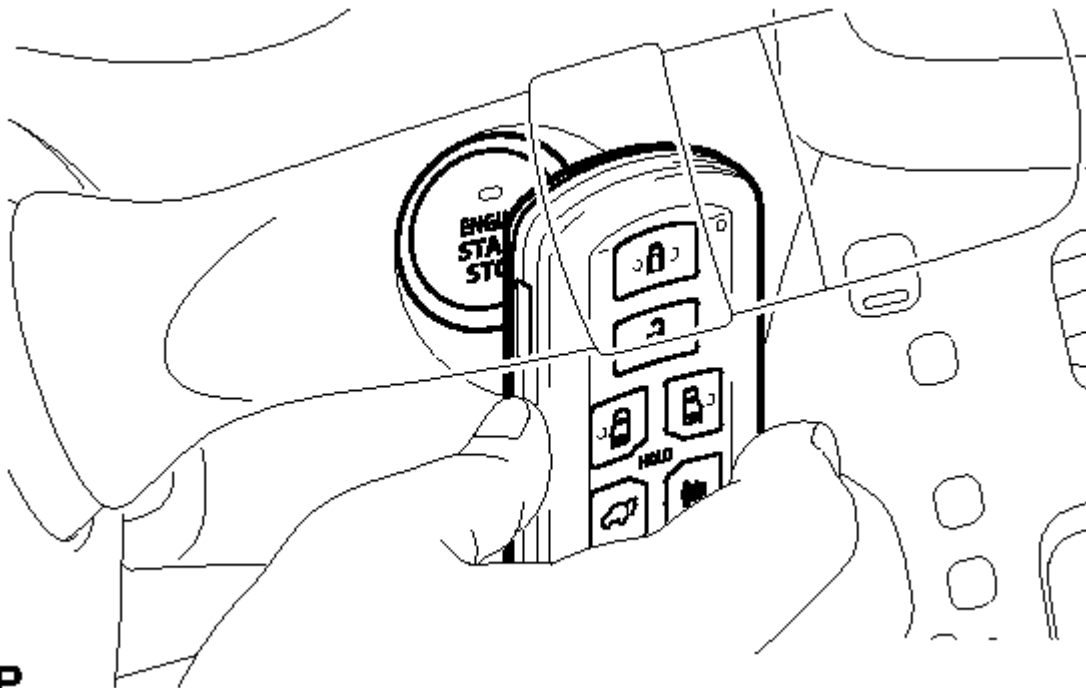
- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- When using the Techstream with the engine switch off to troubleshoot: Connect the Techstream to the DLC3, and turn a courtesy light switch on and off at 1.5-second intervals until communication between the Techstream and vehicle begins.

PROCEDURE

1. CHECK SMART KEY SYSTEM (for Start Function)

- a. Remove the battery of the key. Refer to REPLACEMENT .

- b. With the brake pedal depressed, touch the engine switch while facing the logo side of the key to the engine switch.



P

Fig. 53: Checking Smart Key System (For Start Function)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. When operating the engine switch, check whether the power source mode changes.

OK

Power source mode changes.

HINT:

- When the key cannot be verified even though it is within the specified range, the engine start check can be performed by removing the transmitter battery from the key and holding the transmitter close to the engine switch.
- When performing the check, if the power source mode changes, there is a problem with key certification inside the cabin.

NG --> See step 20

OK: Go to next step

2. CHECK WAVE ENVIRONMENT

- a. Install the battery to the key. Refer to **REPLACEMENT** .

- b. Bring the key near the indoor electrical key oscillator (for front floor), and check that the engine can be started.

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the indoor electrical key oscillator (for front floor), communication is not possible.

- c. Bring the key near the indoor electrical key oscillator (for center floor), and check that the engine can be started.

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the indoor electrical key oscillator (for center floor), communication is not possible.

- d. Bring the key near the indoor electrical key oscillator (for rear floor), and check that the engine can be started*.

*: If the customize setting for Ignition Available Area is not set ALL, the engine will not start. Before performing this inspection, check that ALL has been selected. Refer to **CUSTOMIZE PARAMETERS** .

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the indoor electrical key oscillator (for rear floor), communication is not possible.

HINT:

- When the key is brought near the indoor electrical key oscillator, the possibility of wave interference decreases, and it can be determined if wave interference is causing the problem symptom.
- If the operation is normal, the possibility of wave interference is high. Also, added vehicle components may cause wave interference. If installed, remove them and perform the operation check.

OK

The engine starts.

NG --> See step 3

OK --> AFFECTED BY WAVE INTERFERENCE

3. PERFORM KEY DIAGNOSTIC MODE INSPECTION

- a. Diagnostic mode inspection (indoor electrical key oscillator (for front floor))

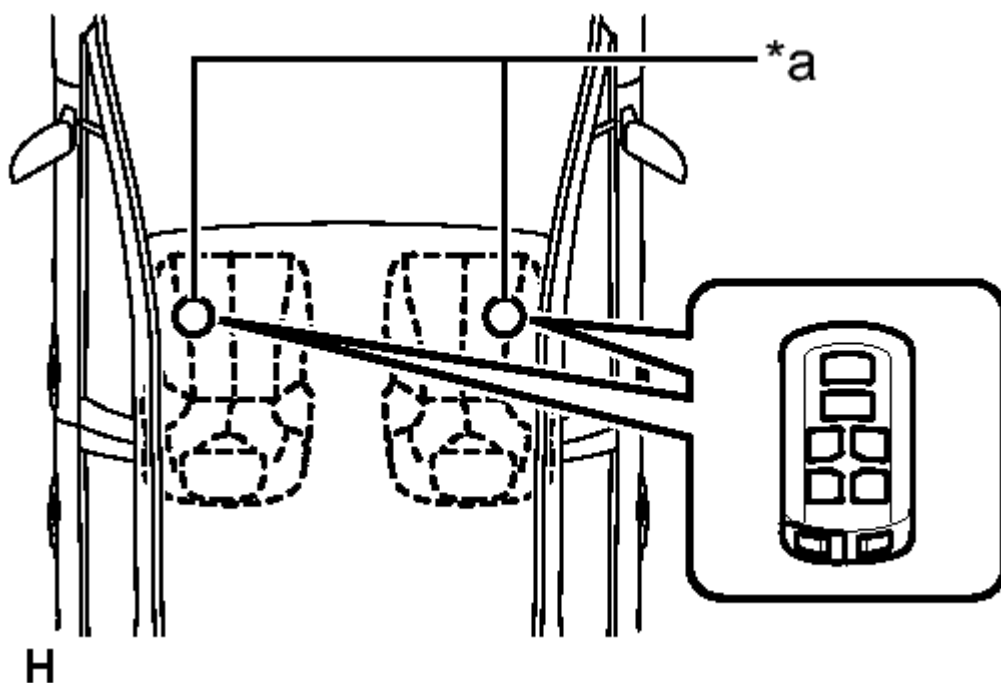


Fig. 54: Checking Indoor Electrical Key Oscillator (For Front Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

1. Connect the Techstream to the DLC3.
 2. Turn the engine switch on (IG).
 3. Turn the Techstream on.
 4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Front Room.
 5. When the key is placed on the driver seat or front passenger seat cushion, check that the wireless door lock buzzer sounds.
- b. Diagnostic mode inspection (indoor electrical key oscillator (for center floor))

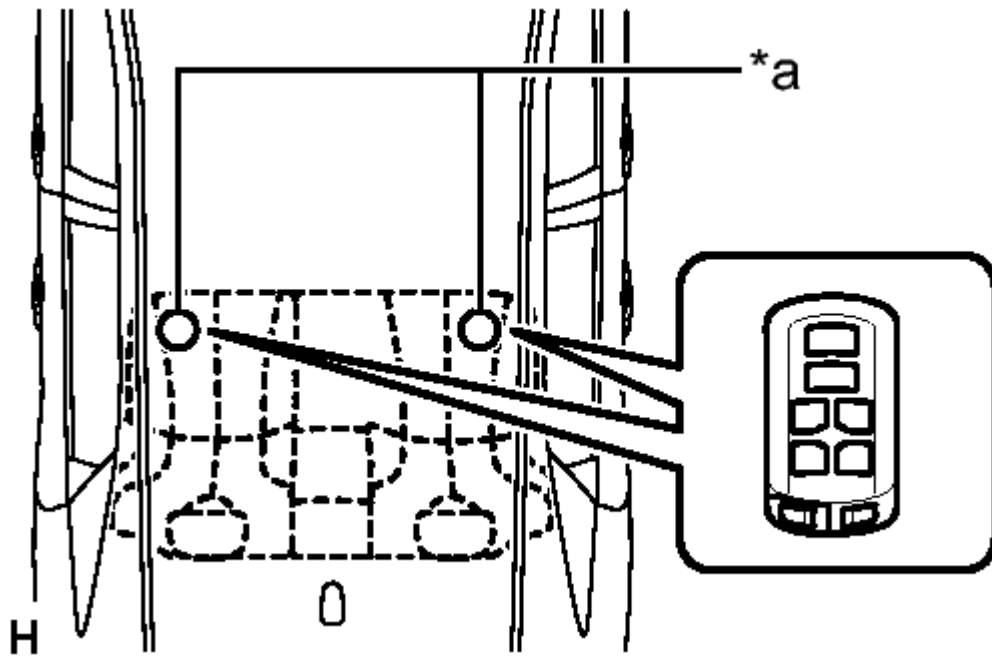
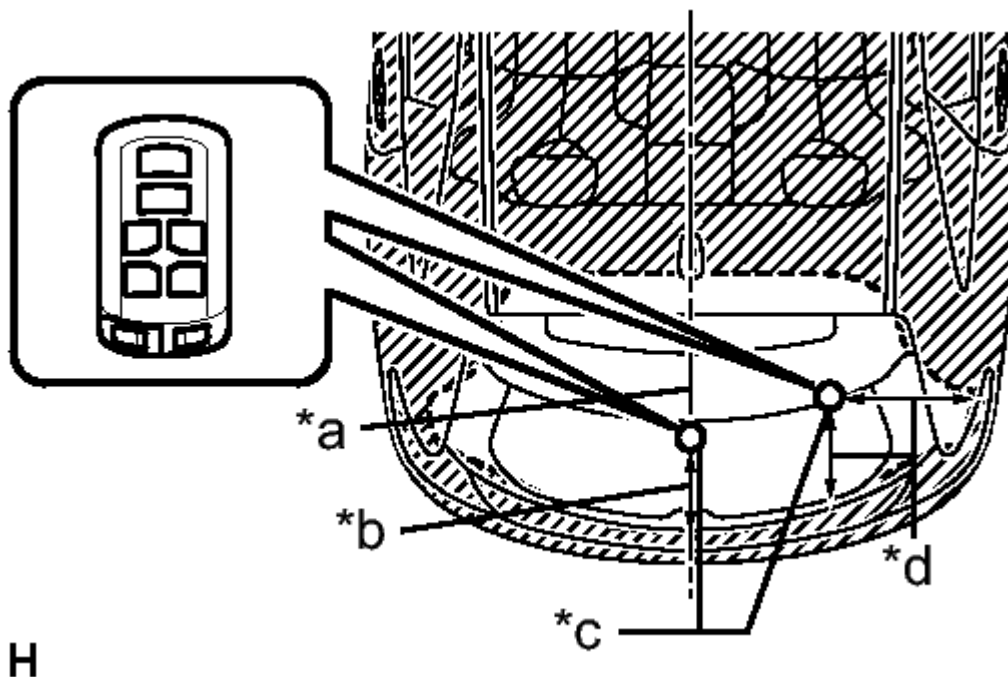


Fig. 55: Checking Indoor Electrical Key Oscillator (For Center Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

1. Connect the Techstream to the DLC3.
 2. Turn the engine switch on (IG).
 3. Turn the Techstream on.
 4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Rear Room.
 5. When the key is placed on the rear seat cushion, check that the wireless door lock buzzer sounds.
- c. Diagnostic mode inspection (indoor electrical key oscillator (for rear floor))



H

Fig. 56: Checking Indoor Electrical Key Oscillator (For Rear Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.1 m (0.328 ft.)
*c	Inspection Point
*d	0.2 m (0.656 ft.)

1. Connect the Techstream to the DLC3.
2. Turn the engine switch on (IG).
3. Turn the Techstream on.
4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Back Door (inside).
5. When the key is held at the same height as the rear bumper upper surface and aligned with the center of the rear of the vehicle, check that the wireless door lock buzzer sounds.

HINT:

If the buzzer sounds, it can be determined that the indoor electrical key oscillators are operating normally.

Result

Result	Proceed to
Wireless door lock buzzer does not sound only for indoor electrical key oscillator (for front floor).	A
Wireless door lock buzzer does not sound only for indoor electrical key oscillator (for center floor).	B
Wireless door lock buzzer does not sound only for indoor electrical key oscillator (for rear floor).	C
Wireless door lock buzzer does not sound for all indoor electrical	D

key oscillators.	
Wireless door lock buzzer sounds for all indoor electrical key oscillators.	E

B --> See step 8

C --> See step 12

D --> See step 16

E --> See step 21

A: Go to next step

4. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - INDOOR ELECTRICAL KEY OSCILLATOR)

- Disconnect the certification ECU (smart key ECU assembly) connector.
- Disconnect the indoor electrical key oscillator (for front floor) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-7 (CLG5) - L7-1 (CLG3)	Always	Below 1 ohms
D88-8 (CG5B) - L7-2 (CLGB)	Always	Below 1 ohms
D88-7 (CLG5) - Body ground	Always	10 kohms or higher
D88-8 (CG5B) -	Always	10 kohms

Body ground		or higher
L7-1 (CLG3) - Body ground	Always	10 kohms or higher
L7-2 (CLGB) - Body ground	Always	10 kohms or higher

NG --> **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK: Go to next step

5. INSPECT INDOOR ELECTRICAL KEY OSCILLATOR (for Front Floor (INPUT))

- a. Reconnect the certification ECU (smart key ECU assembly) connector.

*a

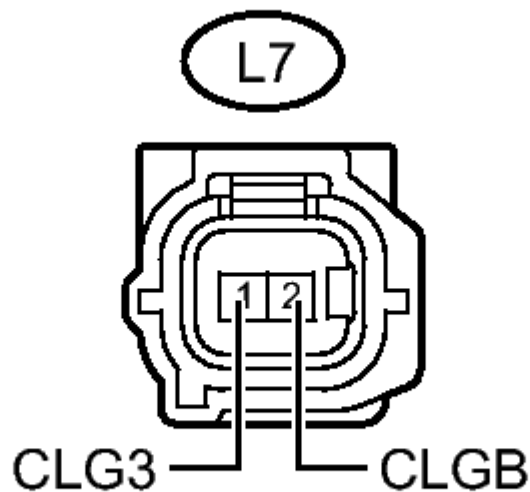


Fig. 57: Inspecting Indoor Electrical Key Oscillator - For Front Floor (Input)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check for pulses according to the value(s) in the table below.

OK

Tester	Condition	Specified
--------	-----------	-----------

Connection		Condition
L7-1 (CLG3) - L7-2 (CLGB)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
L7-1 (CLG3) - L7-2 (CLGB)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Indoor Electrical Key Oscillator (for Front
----	--

|Floor))

NG --> See step 21

OK: Go to next step

6. **REPLACE INDOOR ELECTRICAL KEY OSCILLATOR (for Front Floor)**

- a. Replace the indoor electrical key oscillator (for front floor. Refer to **REMOVAL** .

NEXT: Go to next step

7. **CHECK SMART KEY SYSTEM (ENTRY IGNITION FUNCTION (for Front Floor))**

- a. Inspect the detection area for the entry ignition function (for front floor). Make sure that the direction of the key is as shown in the illustration. When the key is in either of the 2 inspection points shown in the illustration, check that the engine can start.

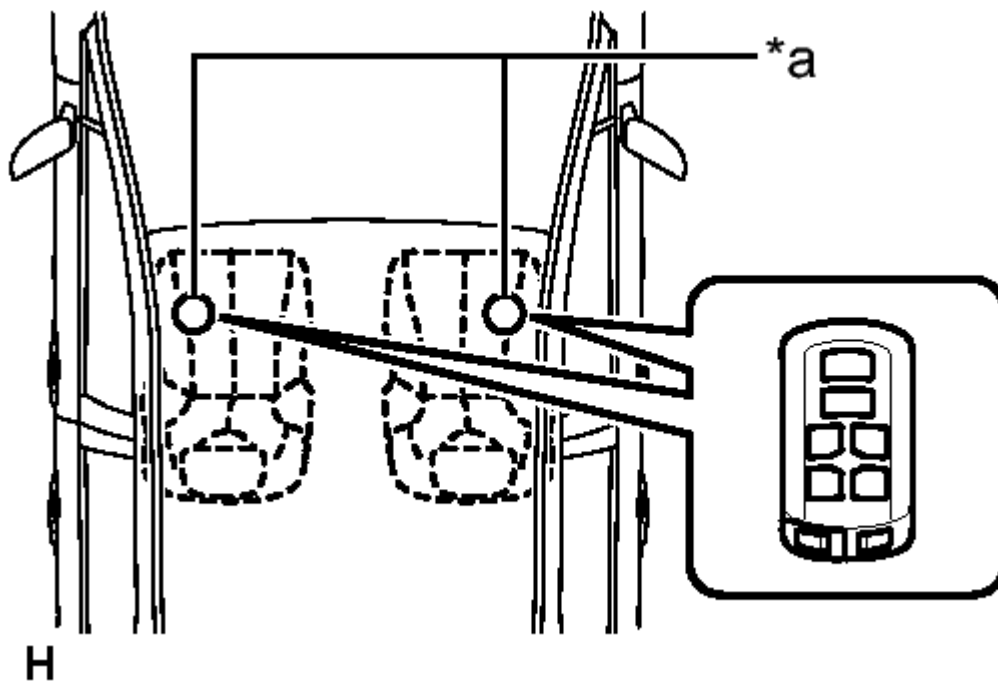


Fig. 58: Checking Indoor Electrical Key Oscillator (For Front Floor)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a Inspection
Point

OK

Engine starts normally.

NG --> See step 21

OK --> END (INDOOR ELECTRICAL KEY OSCILLATOR WAS DEFECTIVE)

8. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - INDOOR ELECTRICAL KEY OSCILLATOR)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the indoor electrical key oscillator (for center floor) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-24 (CLG6) - L11-1 (CLG4)	Always	Below 1 ohms
D88-25 (CG6B) - L11-2 (CLGB)	Always	Below 1 ohms
D88-24 (CLG6) - Body ground	Always	10 kohms or higher
D88-25 (CG6B) - Body ground	Always	10 kohms or higher
L11-1 (CLG4) - Body ground	Always	10 kohms or higher
L11-2 (CLGB) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

9. INSPECT INDOOR ELECTRICAL KEY OSCILLATOR (for Center Floor (INPUT))

- a. Reconnect the certification ECU (smart key ECU assembly) connector.

*a

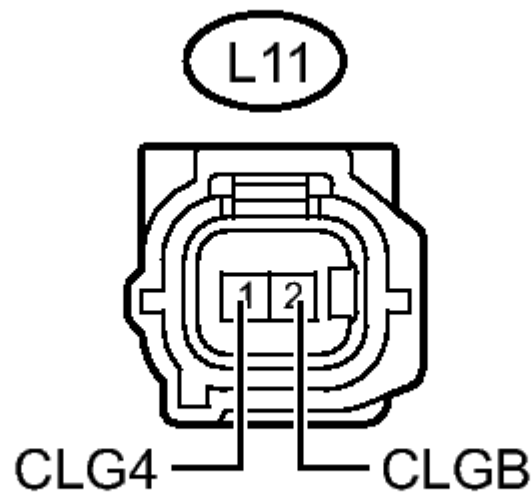


Fig. 59: Inspecting Indoor Electrical Key Oscillator - For Center Floor (Input)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check for pulses according to the value(s) in the table below.

OK

Tester Connection	Condition	Specified Condition
L11-1 (CLG4) - L11-2 (CLGB)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
	• Engine	

L11-1 (CLG4) - L11-2 (CLGB)	switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
--------------------------------------	---	------------------

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Indoor Electrical Key Oscillator (for Center Floor))
----	---

NG --> See step 21

OK: Go to next step

10. REPLACE INDOOR ELECTRICAL KEY OSCILLATOR (for Center Floor)

- Replace the indoor electrical key oscillator (for center floor). Refer to **REMOVAL** .

NEXT: Go to next step

11. CHECK SMART KEY SYSTEM (ENTRY IGNITION FUNCTION (for Center Floor))

- Inspect the detection area for the entry ignition function (for center floor). Make sure that the direction of the key is as shown in the illustration. When the key is in either of the 2 inspection points shown in the illustration, check that the engine can start.

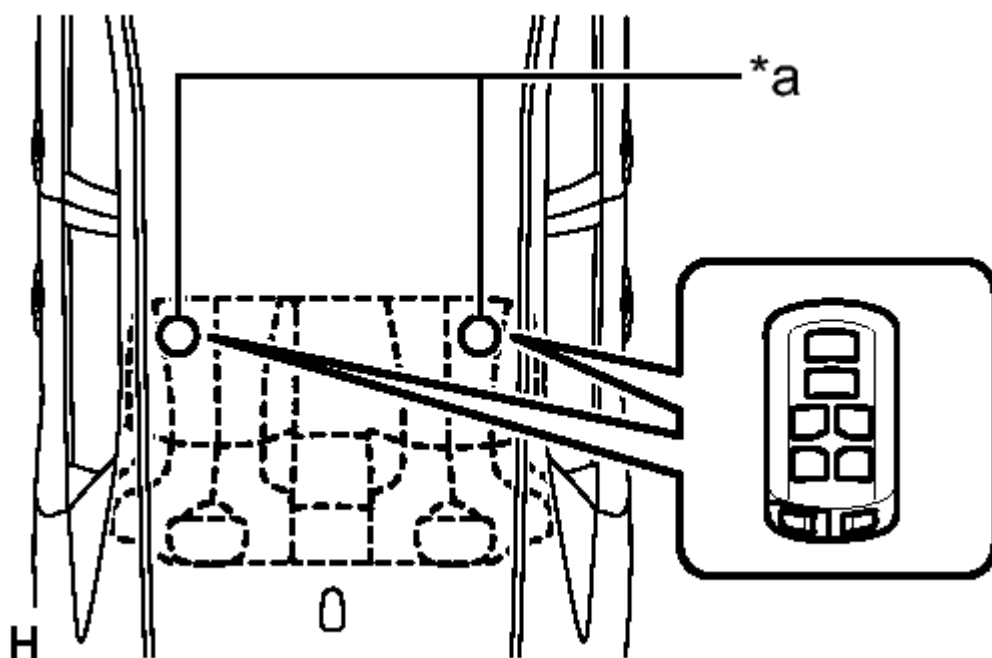


Fig. 60: Checking Indoor Electrical Key Oscillator (For Center Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

OK

Engine starts normally.

NG --> See step 21

OK --> END (INDOOR ELECTRICAL KEY OSCILLATOR WAS DEFECTIVE)

12. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - INDOOR ELECTRICAL KEY OSCILLATOR)

- Disconnect the certification ECU (smart key ECU assembly) connector.
- Disconnect the indoor electrical key oscillator (for rear floor) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-26		

(CLG7) - L12-1 (CLG6)	Always	Below 1 ohms
D88-27 (CG7B) - L12-2 (CLGB)	Always	Below 1 ohms
D88-26 (CLG7) - Body ground	Always	10 kohms or higher
D88-27 (CG7B) - Body ground	Always	10 kohms or higher
L12-1 (CLG6) - Body ground	Always	10 kohms or higher
L12-2 (CLGB) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

13. **INSPECT INDOOR ELECTRICAL KEY OSCILLATOR (for Rear Floor (INPUT))**
 - a. Reconnect the certification ECU (smart key ECU assembly) connector.

*a

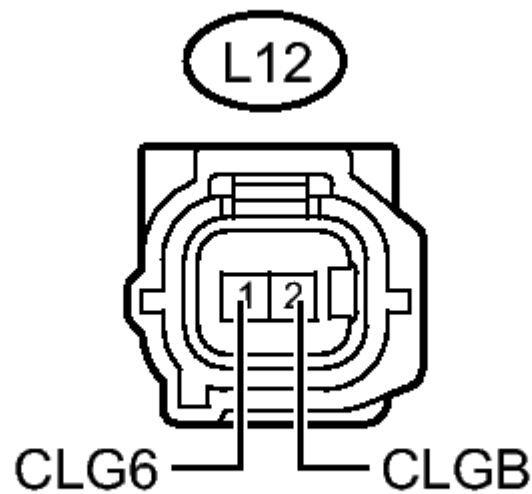


Fig. 61: Inspecting Indoor Electrical Key Oscillator - For Rear Floor (Input)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Check for pulses according to the value(s) in the table below.

OK

Tester Connection	Condition	Specified Condition
L12-1 (CLG6) - L12-2 (CLGB)	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
	• Engine	

L12-1 (CLG6) - L12-2 (CLGB)	switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
--------------------------------------	--	---------------------

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Indoor Electrical Key Oscillator (for Rear Floor))
----	--

NG --> See step 21

OK: Go to next step

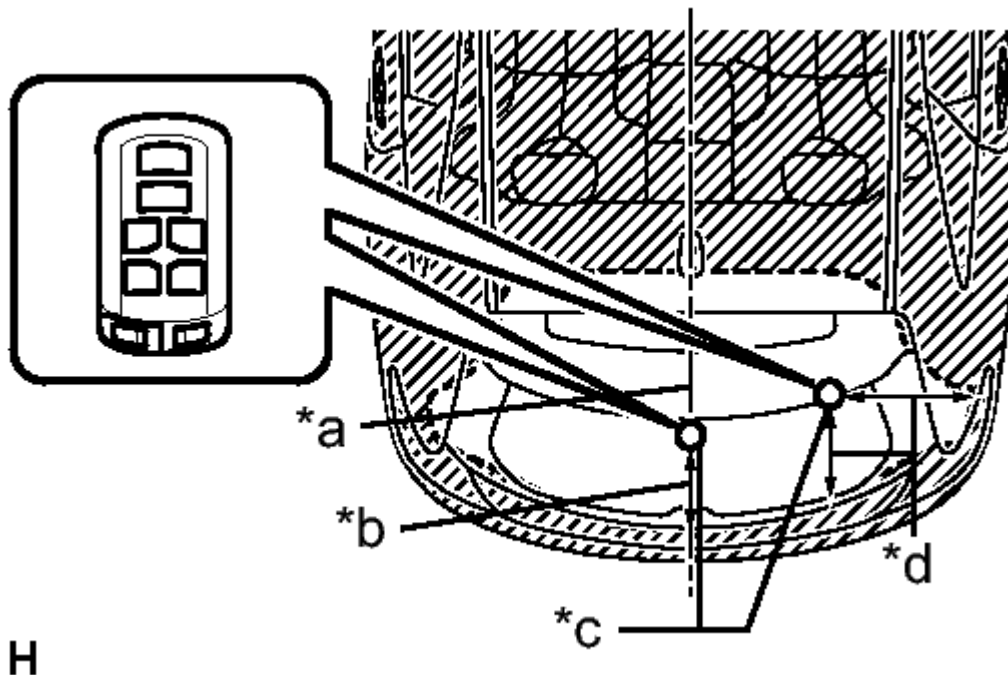
14. REPLACE INDOOR ELECTRICAL KEY OSCILLATOR (for Rear Floor)

- Replace the indoor electrical key oscillator (for rear floor). Refer to **REMOVAL** .

NEXT: Go to next step

15. CHECK SMART KEY SYSTEM (ENTRY IGNITION FUNCTION (for Rear Floor))

- Inspect the detection area for the entry ignition function (for rear floor). Make sure that the direction of the key is as shown in the illustration. When the key is in either of the 2 inspection points shown in the illustration, check that the engine can start.



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Fig. 62: Checking Indoor Electrical Key Oscillator (For Rear Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.1 m (0.328 ft.)
*c	Inspection Point
*d	0.2 m (0.656 ft.)

OK

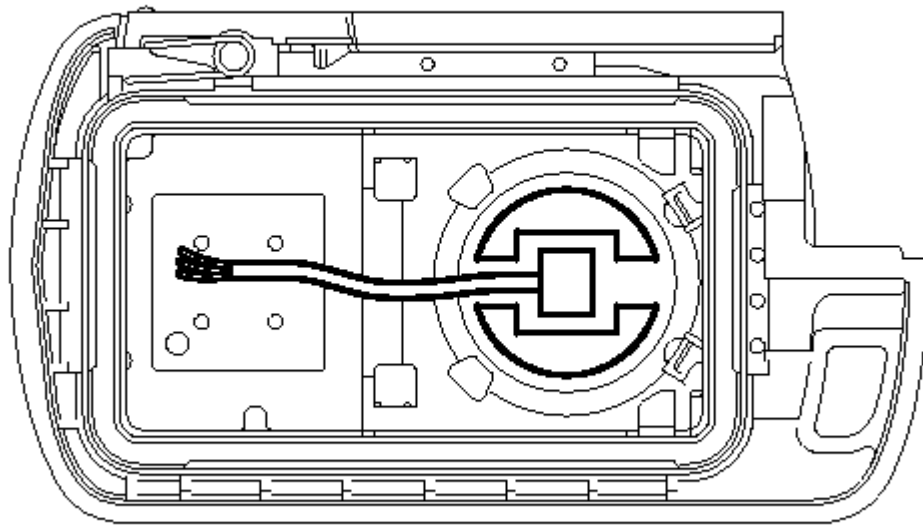
Engine starts normally.

NG --> See step 21

OK --> END (INDOOR ELECTRICAL KEY OSCILLATOR WAS DEFECTIVE)

16. CHECK TRANSMITTER BATTERY

- a. Remove the battery from the key that does not operate. Attach a lead wire (0.6 mm (0.0236 in.) or less in diameter including wire sheath) with tape or equivalent to the negative (-) terminal. Refer to **REPLACEMENT** .



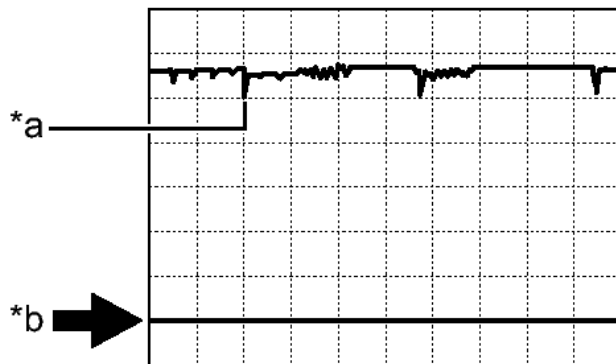
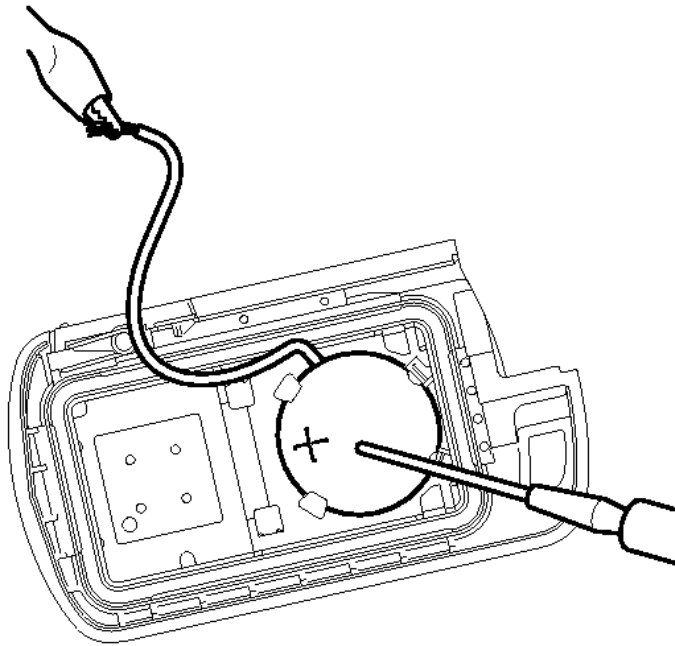
P

Fig. 63: View Of Transmitter Lead Wire

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: **Do not wrap a lead wire around the terminal, wedge it between the terminals, or solder it. Terminal may be deformed or damaged, and the battery will not be able to be installed correctly.**

- b. Carefully pull the lead wire out from the position shown in the illustration and install the previously removed transmitter battery.
- c. Using an oscilloscope, check the transmitter battery voltage waveform.



P

Fig. 64: Checking Transmitter Battery Voltage Waveform
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

When measuring the battery voltage, while operating the lock switch of a door outside handle assembly, bring the key within the entry operating range to perform the measurement. For the entry operating range, refer to System Description. Refer to **SYSTEM DESCRIPTION** .

Standard Voltage

Item	Content
Tester Connection	Battery positive (+) - Battery negative (-)
Tool Setting	0.5 V/DIV., 100 ms/DIV.
Condition	Engine switch off, all doors closed and lock switch pushed
Specified Condition	2.2 to 3.2 V (Refer to <u>Fig. 64</u>)

TEXT IN ILLUSTRATION

*a	Measurement Position
*b	GND

NG --> See step 22

OK: Go to next step

17. CHECK ELECTRICAL KEY TRANSMITTER

- Check if another registered key is available.

Result

	Proceed
--	----------------

Result	to
Another registered key is not available.	A
Another registered key is available.	B

B --> See step 19

A: Go to next step

18. REGISTER ELECTRICAL KEY TRANSMITTER

- a. Register a new key. Refer to **REGISTRATION**.

NEXT: Go to next step

19. CHECK ELECTRICAL KEY TRANSMITTER (OPERATION)

- a. Using the key registered in the previous step or another registered key, check that the engine starts normally.

OK

Engine starts normally.

NG --> See step 21

OK --> REPLACE ELECTRICAL KEY TRANSMITTER (REPLACE MALFUNCTIONING KEY)

20. GO TO SMART KEY SYSTEM (for Start Function) (Proceed to How to Proceed with Troubleshooting). Refer to **HOW TO PROCEED WITH TROUBLESHOOTING**

21. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to **REMOVAL**

22. REPLACE TRANSMITTER BATTERY. Refer to **REPLACEMENT**

Entry Interior Alarm does not Sound

DESCRIPTION

The smart key system uses the combination meter buzzer to perform various vehicle interior warnings. When the conditions for each warning are met, the certification ECU (smart key ECU assembly) sends a buzzer signal to the combination meter assembly, and the combination meter buzzer sounds.

INSPECTION PROCEDURE

NOTE: The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.

PROCEDURE

1. CHECK COMBINATION METER ASSEMBLY (OPERATION)

- When the engine switch is on (IG) and the shift lever is in R, check that the combination meter buzzer sounds.

OK

Combination meter buzzer sounds.

NG --> See step 2

OK --> REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)

2. GO TO METER / GAUGE SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE

Back Door Entry Unlock Function does not Operate

DESCRIPTION

If the entry back door open function does not operate but the back door entry lock function operates, the communication between the vehicle and key is normal. As a faulty part, the back door open switch circuit (from the back door opener switch assembly (opener switch) to the certification ECU (smart key ECU assembly)) is suspected.

WIRING DIAGRAM

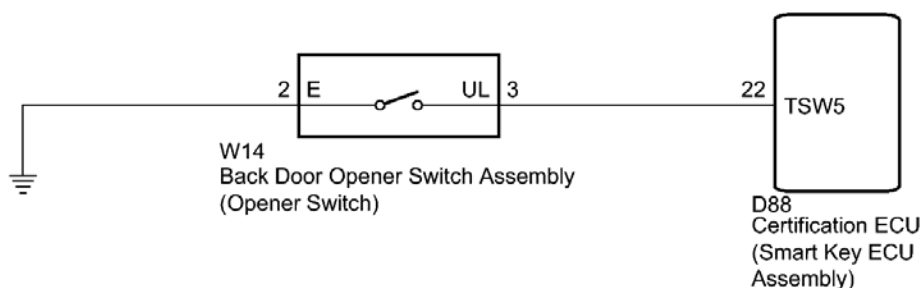


Fig. 65: Back Door Open Switch Circuit - Wiring Diagram

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE

1. READ VALUE USING TECHSTREAM (ENTRY BACK DOOR OPEN FUNCTION)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
B-Dr Opening Operation	Back door opening Operation / Long, Twice, OFF	Customization status displayed	-

Result

Result	Proceed to
Customize setting is LONG or TWICE.	A
Customize setting is OFF.	B

B --> See step 10

A: Go to next step

2. CHECK POWER DOOR LOCK CONTROL SYSTEM

- a. When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to **OPERATION CHECK** .

OK

Door locks operate normally.

NG --> See step 9

OK: Go to next step

3. READ VALUE USING TECHSTREAM (BACK DOOR OPENER SWITCH)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Tr/B-Door Unlock SW	Back door opener switch assembly (opener switch) / ON or OFF	ON: Back door opener switch assembly (opener switch) pushed OFF: Back door opener switch assembly (opener switch) not pushed	-

OK

On the Techstream screen, the display changes between ON and OFF as shown in the chart above.

NG --> See step 5

OK --> See step 4

4. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY).** Refer to REMOVAL
5. **INSPECT BACK DOOR OPENER SWITCH ASSEMBLY**
 - a. Remove the back door opener switch assembly. Refer to REMOVAL .

*a

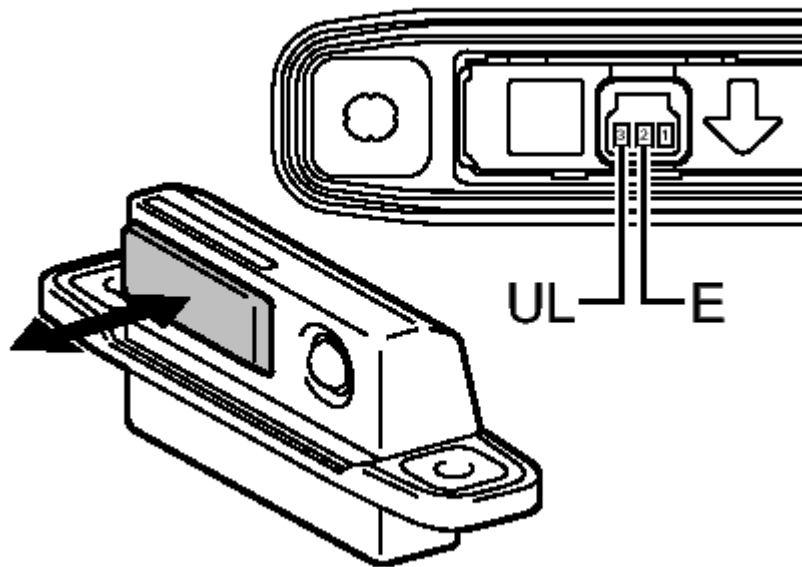


Fig. 66: Inspecting Back Door Opener Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Position	Specified Condition
2 (E) - 3 (UL)	Back door opener switch assembly (opener switch) not pushed	10 kohms or higher

	(OFF)	
2 (E) - 3 (UL)	Back door opener switch assembly (opener switch) pushed (ON)	Below 1 ohms

TEXT IN ILLUSTRATION

	Component without harness connected
*a	(Back Door Opener Switch Assembly)

NG --> See step 8

OK: Go to next step

6. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - BACK DOOR OPENER SWITCH)

- Disconnect the certification ECU (smart key ECU Assembly) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-22 (TSW5) - W14-3 (UL)	Always	Below 1 ohms
D88-22 (TSW5) - Body ground	Always	10 kohms or higher
W14-3 (UL) - Body	Always	10 kohms or higher



NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 7

7. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY).** Refer to REMOVAL
8. **REPLACE BACK DOOR OPENER SWITCH ASSEMBLY.** Refer to REMOVAL
9. **GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table).** Refer to PROBLEM SYMPTOMS TABLE
10. **PERFORM CUSTOMIZE SETTING (Proceed to Customize Parameters).** Refer to CUSTOMIZE PARAMETERS

Back Door Entry Lock and Unlock Functions do not Operate

DESCRIPTION

When the back door entry lock and unlock functions do not operate, one of the following may be malfunctioning: 1) power door lock control system; 2) outside electrical key oscillator (for rear side); 3) certification ECU (smart key ECU assembly), or 4) back door opener switch assembly.

WIRING DIAGRAM

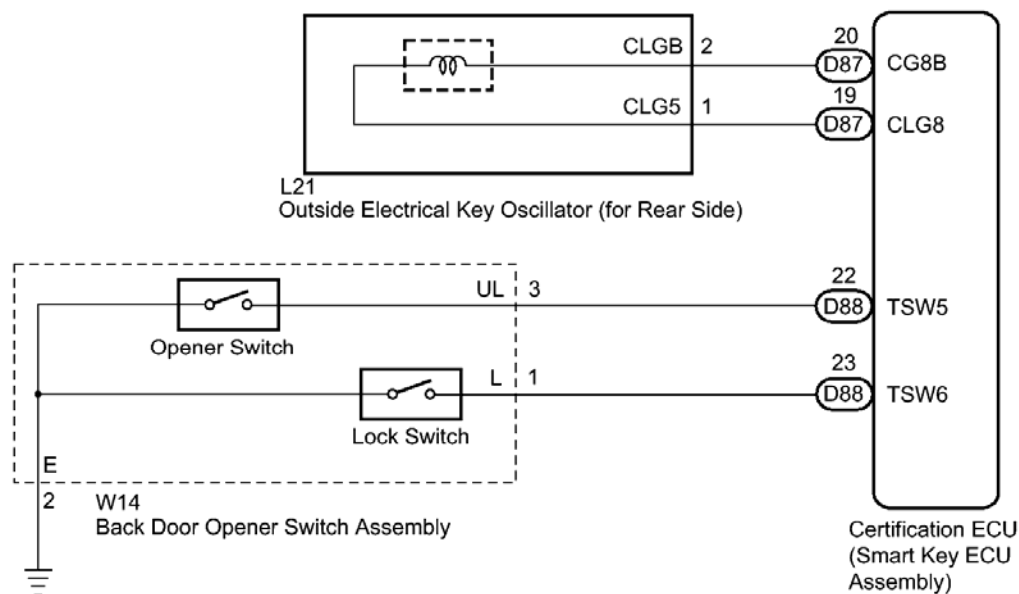


Fig. 67: Back Door Entry Lock And Unlock Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE

1. CHECK POWER DOOR LOCK OPERATION

- a. When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to OPERATION CHECK .

OK

Door locks operate normally.

NG --> See step 9

OK: Go to next step

2. READ VALUE USING TECHSTREAM

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Display	Normal Condition	Diagnostic Note
Tr/B-Door Lock	Back door opener switch assembly (lock switch) /	ON: Back door opener switch assembly (lock switch) pushed OFF: Back door	-

SW	ON or OFF	opener switch assembly (lock switch) not pushed	
Tr/B- Door Unlock SW	Back door opener switch assembly (opener switch) / ON or OFF	ON: Back door opener switch assembly (opener switch) pushed OFF: Back door opener switch assembly (opener switch) not pushed	-

OK

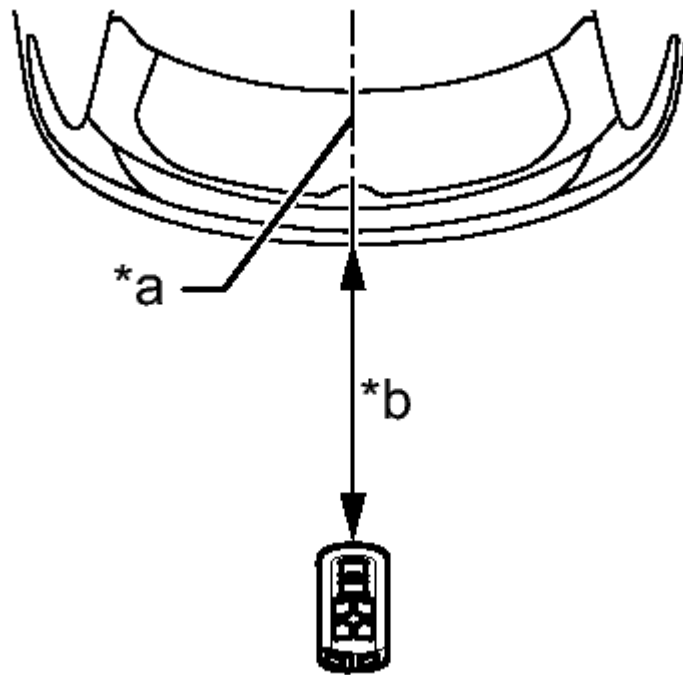
On the Techstream screen, the display changes between ON and OFF as shown in the chart above.

NG --> See step 8

OK: Go to next step

3. CHECK WAVE ENVIRONMENT

- Bring the key near the outside electrical key oscillator (for rear side), and perform an entry back door open and entry lock functions check.



H

Fig. 68: Checking Entry Back Door Open And Entry Lock Functions
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	Approximately 0.3 m (0.984 ft.)

NOTE: If the key is brought within 0.2 m (0.656 ft.) of the rear bumper, communication is not possible.

HINT:

- When the key is brought near the outside electrical key oscillator (for rear side), the possibility of wave interference decreases, and it can be determined if wave interference is causing the problem symptom.
- If the operation is normal, the possibility of wave interference is high. Also, added vehicle components may cause wave interference. If installed, remove them and perform the operation.

OK

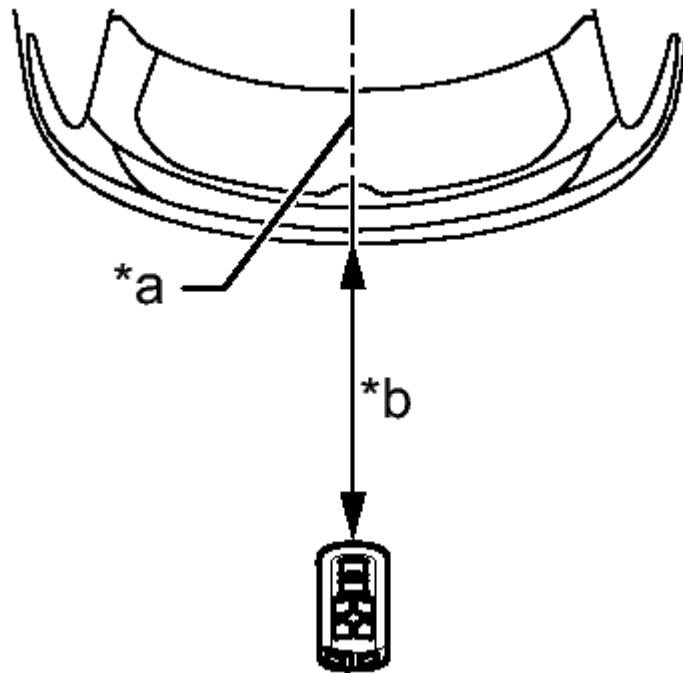
Entry functions operate normally.

NG --> See step 4

OK --> AFFECTED BY WAVE INTERFERENCE

4. PERFORM KEY DIAGNOSTIC MODE INSPECTION

- a. Diagnostic mode inspection (outside electrical key oscillator (for rear side))



H

Fig. 69: Checking Entry Back Door Open And Entry Lock Functions
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
	0.7 to 1.0 m
*b	(2.30 to 3.28 ft.)

1. Connect the Techstream to the DLC3.
2. Turn the engine switch on (IG).
3. Turn the Techstream on.
4. Enter the following menus: Body Electrical / Smart Key / Key Communication Check / Overhead + Back Door.
5. When the key is held at the same height as the rear bumper upper surface and aligned with the center of the rear of the vehicle, check that the wireless door lock buzzer sounds.

HINT:

If the buzzer sounds, it can be determined that the outside electrical key oscillator (for rear side) is operating normally.

OK

Wireless door lock buzzer sounds.

NG --> See step 5

OK --> See step 10

5. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - OUTSIDE ELECTRICAL KEY OSCILLATOR)

- a. Disconnect the certification ECU (smart key ECU assembly) connector.
- b. Disconnect the outside electrical key oscillator (for rear side) connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D87-19 (CLG8) - L21-1 (CLG5)	Always	Below 1 ohms
D87-20 (CG8B) - L21-2 (CLGB)	Always	Below 1 ohms
D87-19 (CLG8) - Body ground	Always	10 kohms or higher
D87-20 (CG8B) - Body ground	Always	10 kohms or higher
L21-1 (CLG5) - Body ground	Always	10 kohms or higher
L21-2 (CLGB) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

- 6. REPLACE OUTSIDE ELECTRICAL KEY OSCILLATOR (for Rear Side). Refer to REMOVAL
- 7. INSPECT OUTSIDE ELECTRICAL KEY OSCILLATOR (for Rear Side)
 - a. Measure the resistance according to the value(s) in the table below.

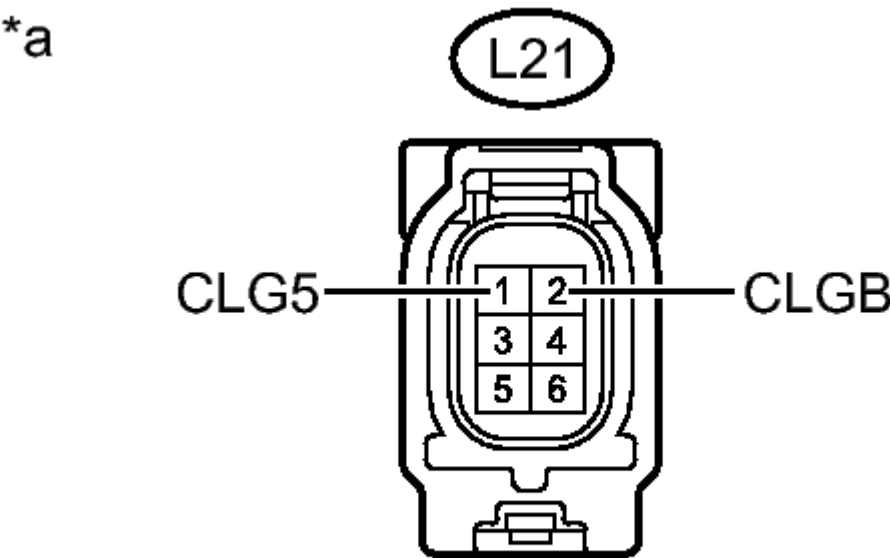


Fig. 70: Inspecting Outside Electrical Key Oscillator (For Rear Side)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
L21-1 (CLG5) - L21-2 (CLGB)	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Outside
----	--

Electrical Key Oscillator (for Rear Side))
--

NG --> See step 6

OK --> See step 10

8. CHECK HARNESS AND CONNECTOR (BACK DOOR OPENER SWITCH - BODY GROUND)

- a. Disconnect the back door opener switch assembly connector.

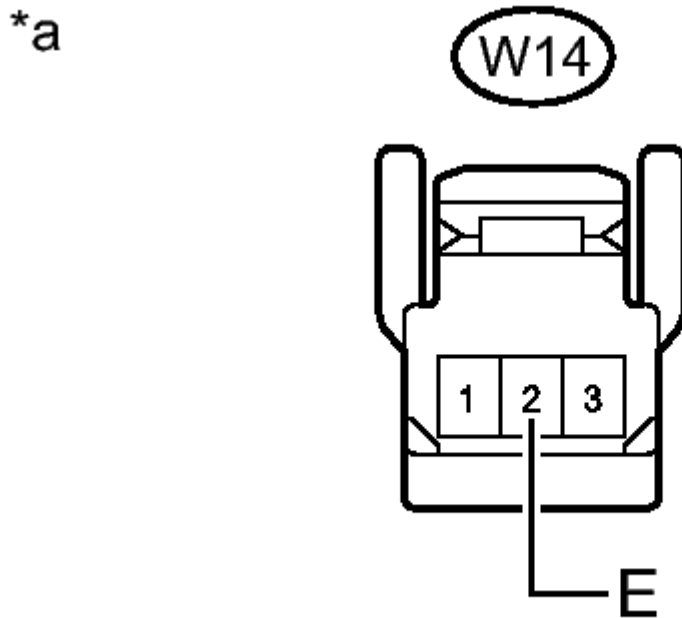


Fig. 71: Checking Harness And Connector (Back Door Opener Switch - Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
W14-2 (E) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

Front view of wire harness connector *a (to Back Door Opener Switch Assembly))
--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 11

9. **GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE**
10. **REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
11. **REPLACE BACK DOOR OPENER SWITCH ASSEMBLY. Refer to REMOVAL**

Back Door Entry Lock Function does not Operate

DESCRIPTION

If the back door entry lock function does not operate but the back door open function operates, the communication between the vehicle and key is normal. As a faulty part, the entry lock switch circuit (from the back door opener switch assembly (lock switch) to the certification ECU (smart key ECU assembly)) is suspected.

WIRING DIAGRAM

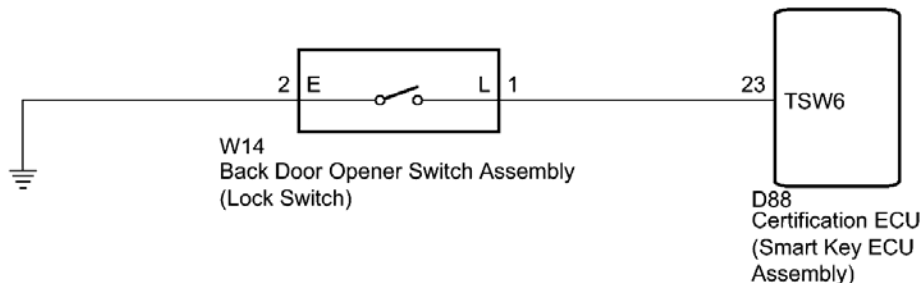


Fig. 72: Entry Lock Switch Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- The smart key system (for entry function) uses a multiplex communication system (LIN communication system) and CAN communication system. Inspect the communication function by following How to Proceed with Troubleshooting. Refer to HOW TO PROCEED WITH TROUBLESHOOTING . Troubleshoot the smart key system (for entry function) after confirming that the communication system is functioning properly.
- Confirm that another key is not in the cabin.

PROCEDURE**1. CHECK POWER DOOR LOCK OPERATION**

- a. When the door control switch on the master switch assembly is operated, check that the doors unlock and lock according to switch operation. Refer to OPERATION CHECK .

OK

Door locks operate normally.

NG --> See step 6

OK: Go to next step

2. READ VALUE USING TECHSTREAM (BACK DOOR OPENER SWITCH)

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Display	Normal Condition	Diagnostic Note
Tr/B-Door Lock SW	Back door opener switch assembly (lock switch) / ON or OFF	ON: Back door opener switch assembly (lock switch) pushed OFF: Back door opener switch	-

		assembly (lock switch) not pushed	
--	--	---	--

OK

On the Techstream screen, the display changes between ON and OFF as shown in the chart above.

NG --> See step 3

OK --> See step 5

3. INSPECT BACK DOOR OPENER SWITCH ASSEMBLY

- a. Remove the back door opener switch assembly. Refer to **REMOVAL** .

*a

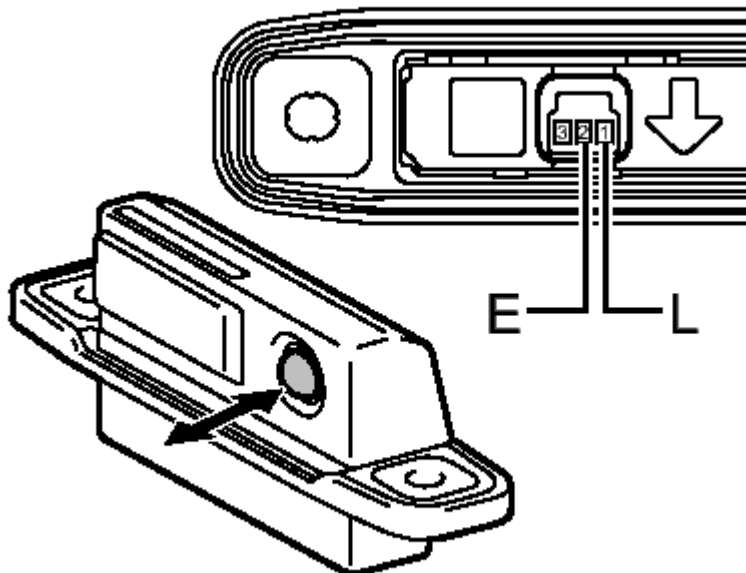


Fig. 73: Inspecting Back Door Opener Switch Assembly
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition

1 (L) - 2 (E)	Back door opener switch assembly (lock switch) not pushed (OFF)	10 kohms or higher
1 (L) - 2 (E)	Back door opener switch assembly (lock switch) pushed (ON)	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Back Door Opener Switch Assembly)
----	--

NG --> See step 7

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (CERTIFICATION ECU - BACK DOOR OPENER SWITCH)

- Disconnect the certification ECU (smart key ECU assembly) connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D88-23 (TSW6) - W14-1 (L)	Always	Below 1 ohms
D88-23		

(TSW6) - Body ground	Always	10 kohms or higher
W14-1 (L) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 5

- 5. REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY). Refer to REMOVAL**
- 6. GO TO POWER DOOR LOCK CONTROL SYSTEM (Proceed to Problem Symptoms Table). Refer to PROBLEM SYMPTOMS TABLE**
- 7. REPLACE BACK DOOR OPENER SWITCH ASSEMBLY. Refer to REMOVAL**

ACCESSORIES & EQUIPMENT

Smart Key System (For Entry Function) (Diagnostics - Introduction) - Sienna

SMART KEY SYSTEM (FOR ENTRY FUNCTION)

PRECAUTION

PRECAUTION

1. PRECAUTIONS WHEN USING TECHSTREAM

- a. When using the Techstream with the engine switch off, perform either of the following:
 - 1) Turn a courtesy light switch on and off at intervals of 1.5 seconds or less until communication between the Techstream and vehicle begins, or 2) connect the Techstream to the vehicle, select the vehicle type under manual mode, and then enter the following menus: Body Electrical / Smart Key / Trouble Codes.
- b. After all DTCs are cleared, check if the malfunction occurs again 6 seconds after the engine switch is turned on (IG).

2. PRECAUTION FOR DISCONNECTING AND CONNECTING CABLE OF NEGATIVE BATTERY TERMINAL

- a. Immediately after disconnecting or connecting the cable of the negative (-) battery terminal, the doors may not be unlocked by the smart key system. In this situation, lock and unlock the doors using the wireless function. Then, it will be possible to unlock doors using the smart key system.

3. PRECAUTIONS FOR KEY BATTERY AND VEHICLE BATTERY

- a. When the doors are locked, the vehicle battery is used to transmit radio waves. The battery may discharge if the vehicle remains stopped for a long time. If the vehicle is not to be used for a long time, remove the battery from the vehicle or cancel the smart key system.
- b. When the doors are locked and the key is in the detection area of a door electrical key oscillator, the key battery will be depleted due to regular communication between the key and vehicle. If the vehicle is not to be used, keep the key away from the vehicle (more than 2 m (6.56 ft.)).

4. PRECAUTION FOR KEY

- a. The key is a precision instrument. Be sure to observe the following:
 1. Do not drop the key, subject it to strong shocks or bend it.
 2. Do not keep the key in a high temperature area for a long time.
 3. Do not get the key wet or wash it in an ultrasonic washer etc.
 4. Keep the key away from magnets or magnetized items during use.
 5. Do not disassemble the key except when replacing the battery.
 6. Do not place the key near objects that produce magnetic fields such as TVs, audio systems and electrical ranges, or electrical medical equipment such as low-frequency therapy instruments.

5. PRECAUTIONS FOR THE SMART KEY SYSTEM (for Entry Function) INSPECTION

- a. Overall smart key system (for entry function):
 1. Make sure to carry the key.
 2. All registered keys for the vehicle should be available when repairing or diagnosing the smart key system (for entry function).
- b. The smart key system, wireless door lock control system and engine immobilizer system may not operate normally, or the size of the operation area may decrease in the following situations:

HINT:

This is because faint radio waves are used for key detection.

1. When the key battery is depleted.
2. When any facilities that generate strong radio waves or electrical noise such as a TV tower, power plant, gas station, broadcast station, video billboard or airport are located near the inspection site.
3. When the key is located near a wireless device such as a radio, cellular phone or cordless telephone.
4. When the key is in contact with or covered with a metal object similar to the following:
 - Metal or aluminum plated card
 - Aluminum film from a cigarette box
 - Metallic wallet or bag
 - Coins
 - Heating pad
 - Media such as CDs or DVDs
5. When a wireless remote is operated near the vehicle.
6. When the key is carried with following items:
 - Electrical Key or wireless remote from another vehicle
 - PC or similar handheld device (PDA etc.)
 - Digital audio player
 - Portable game device
- c. When a metallic film is applied to the back window glass
- d. Precautions for key detection
 1. When using the key outside the vehicle, do not keep it too close to the vehicle. Depending on the way the key is held, the key may not be detected properly and the system will not operate normally.

HINT:

In this situation, warning buzzer may sound accidentally or key confinement prevention function may not operate.

2. Even the key is in a detection area, it may not function normally in the following situations:

- When the doors are locked or unlocked with the key too close to a window or door outside handle, near the ground or in a high place
 - When the key is on the instrument panel, floor, rear package tray, a door pocket or in the glove box
- e. Precautions specific to the smart key system
1. If the key is within the vehicle exterior detection area, the doors can be locked or unlocked even when a person other than the person carrying the key holds the door outside handle. However, doors other than the door that detects the key cannot be unlocked.
 2. If a large amount of water is applied to the door outside handle due to a car wash or heavy rain, and the key is within the vehicle exterior detection area, the doors may be locked or unlocked. However, even when the doors are unlocked, the doors will be locked again after approximately 30 seconds if a door is not opened.
 3. If the doors are locked using the wireless remote transmitter when the key is in the cabin or near the vehicle, it may not be possible to unlock the doors using the smart key system. In this situation, use the wireless function of the key to unlock the doors.

HINT:

If the doors are locked from inside the vehicle using the wireless transmitter, it would not be desirable for it to be possible to unlock the vehicle via the touch sensors on the front outside door handles. Thus, unlocking via the touch sensors is disabled because radio waves from the door electrical key oscillator might otherwise leak into the cabin, detect the key, and enable the front door outside handle touch sensors.

6. PRECAUTIONS FOR SMART DOOR UNLOCK FUNCTION

- a. When unlocking the doors, make sure to grasp the door outside handle ensuring contact with the sensor on the inner part of the handle. Pull the handle after confirming that the door has unlocked.
- b. When attempting to open a door suddenly or immediately after entering the vehicle exterior antenna detection area, the doors may not be unlocked. If the doors are not unlocked, return the door outside handle, to its original position. Pull the handle after confirming that the door has unlocked.

HINT:

Due to mechanical reasons the door cannot be unlocked when the handle is being pulled.

- c. If the door outside handle is grasped with gloved hands, unlocking may be delayed or may not occur.
- d. If another key is in the detection area, the unlocking time may be delayed.
- e. The doors cannot be unlocked within 3 seconds after the door lock operation.

7. PRECAUTIONS FOR SMART DOOR LOCK FUNCTION

- a. Be sure to touch the lock sensor on the door outside handle (depressed portion on the handle) to lock the doors.
- b. If the doors are not locked even when the lock sensor on the door outside handle is touched, touch

both upper and lower lock sensors simultaneously.

- c. If the lock sensor is touched with gloved hands, locking may be delayed or may not occur.
- d. If water is applied to the door outside handle when washing the vehicle and carrying a key, lock and unlock operations may repeat. In this situation, keep the key more than 2 m (6.56 ft.) away from the vehicle and wash the vehicle (Be aware of the potential for key theft).
- e. If water is applied to the door outside handle due to a car wash or heavy rain with a key inside of the cabin, a warning message "Key is not detected" may be displayed and buzzer may sound outside of the vehicle. In this situation, the warning message will disappear and buzzer will stop when all the doors are locked.
- f. If ice, snow or dirt adheres to a lock sensor surface, the sensor may not react. In this situation, remove the ice, snow or dirt and touch the sensor again or touch the lock sensor on the lower part of the handle.

PARTS LOCATION

ILLUSTRATION

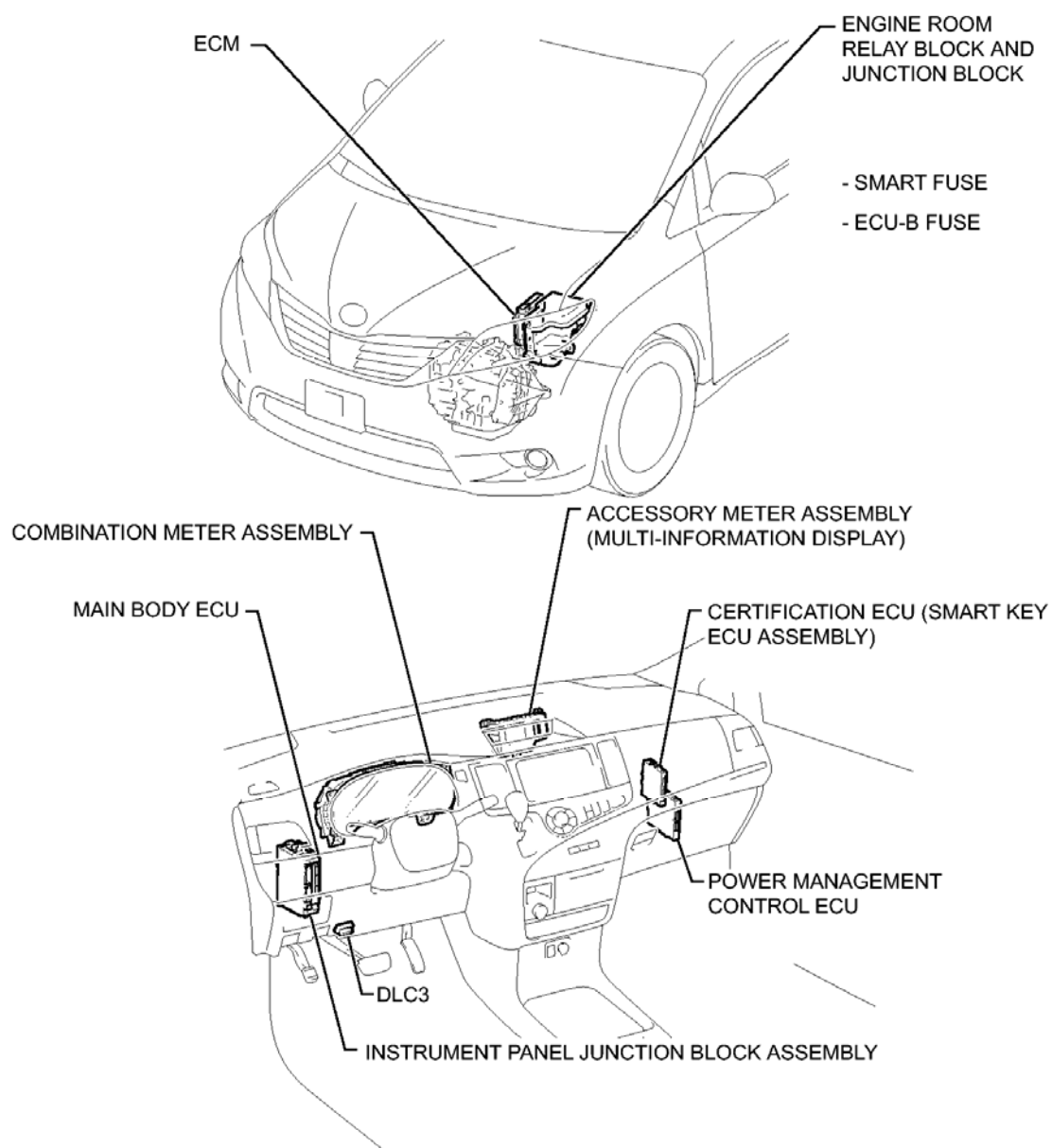
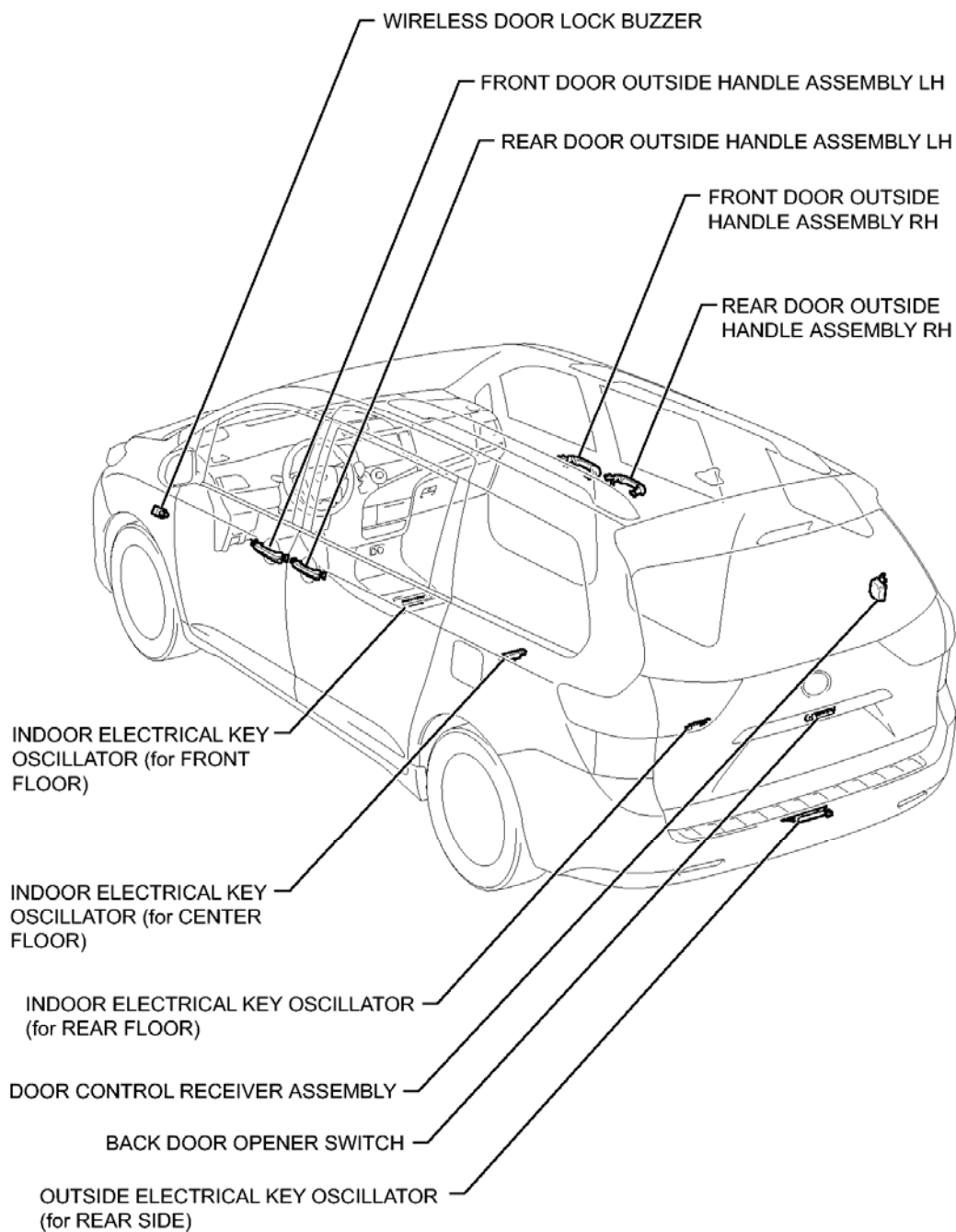


Fig. 1: Smart Key System (For Entry Function) Components Location (1 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

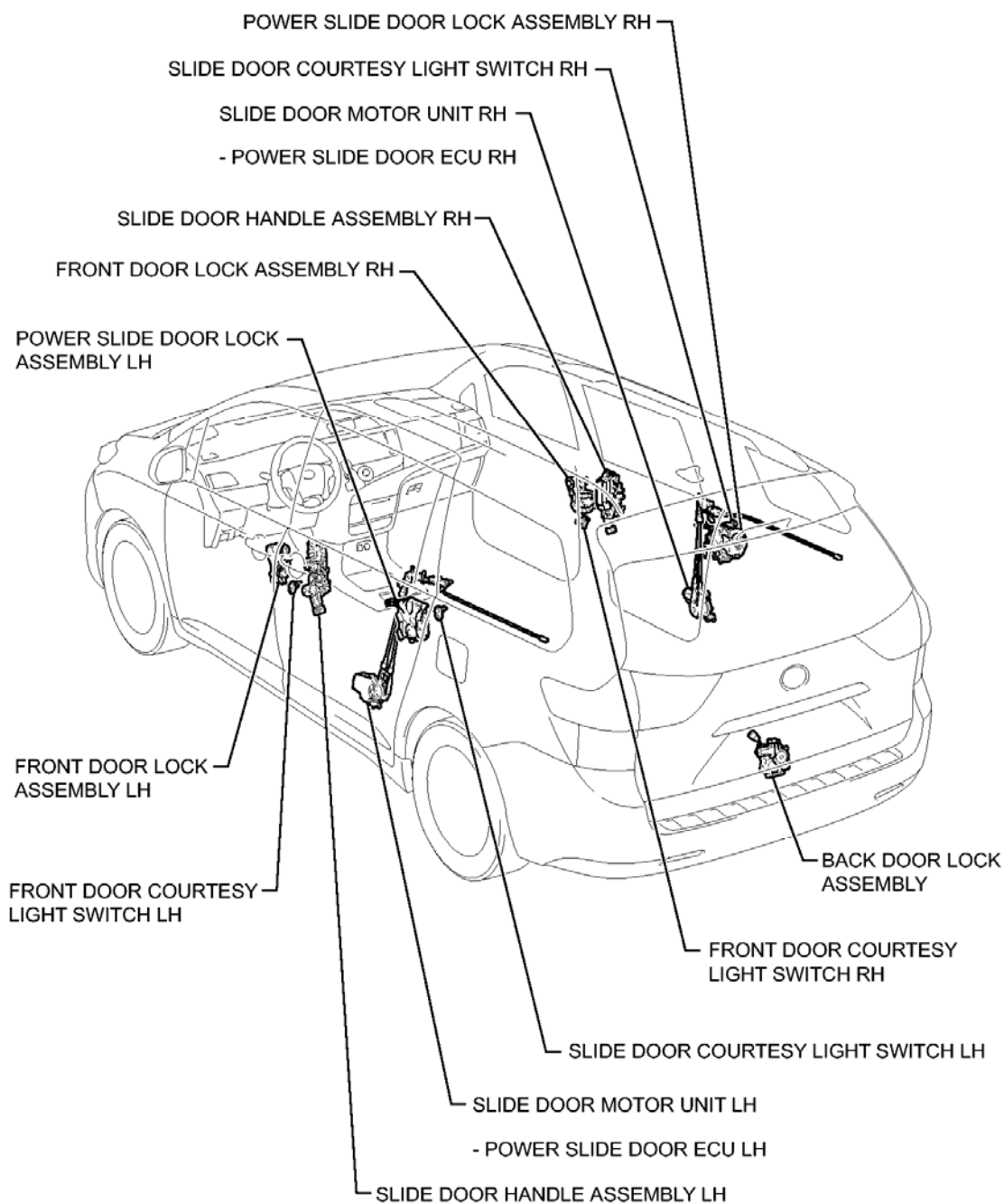
ILLUSTRATION



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Fig. 2: Smart Key System (For Entry Function) Components Location (2 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



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Fig. 3: Smart Key System (For Entry Function) Components Location (3 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

SYSTEM DIAGRAM

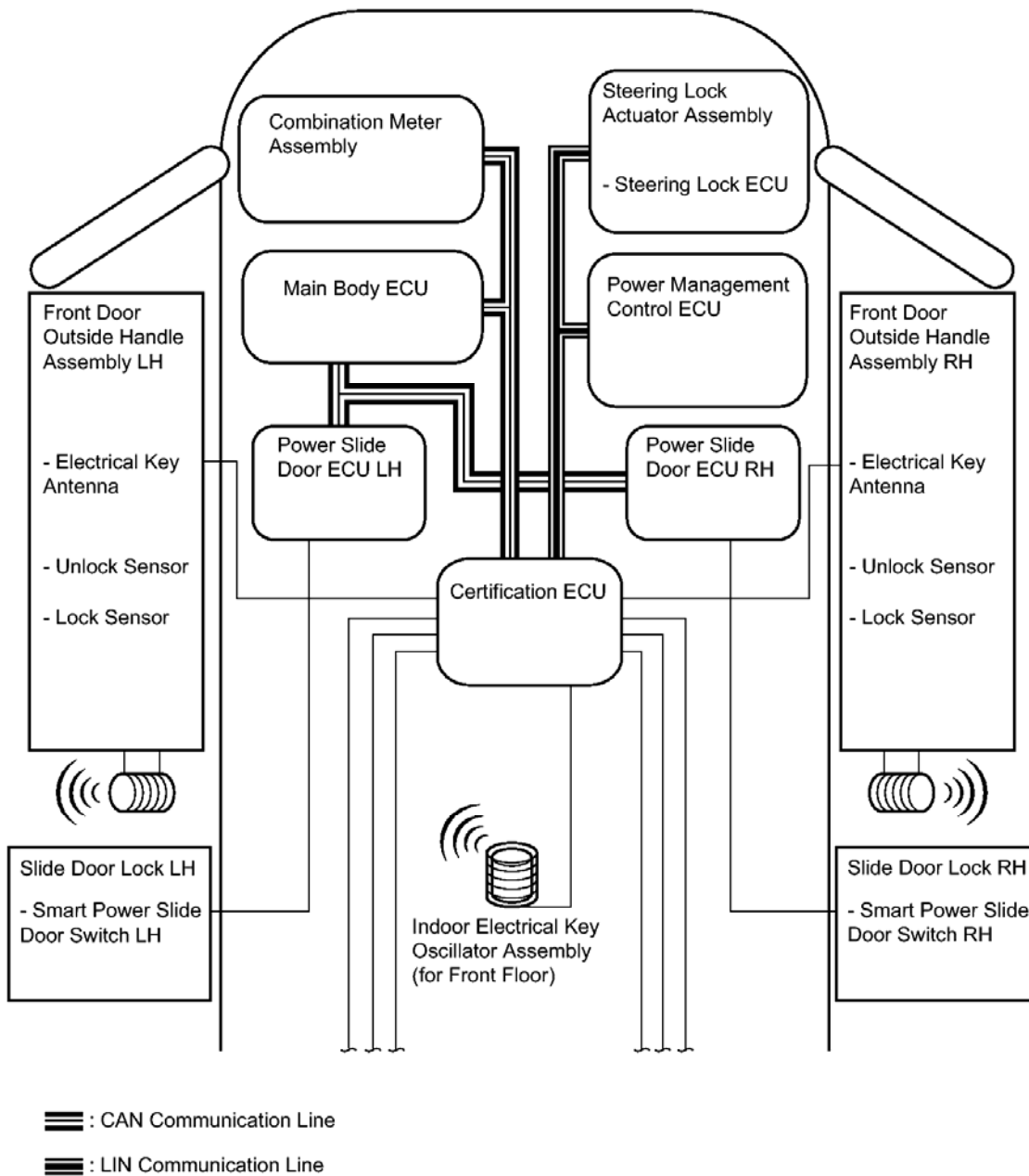


Fig. 4: Smart Key System (For Entry Function) - System Diagram (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

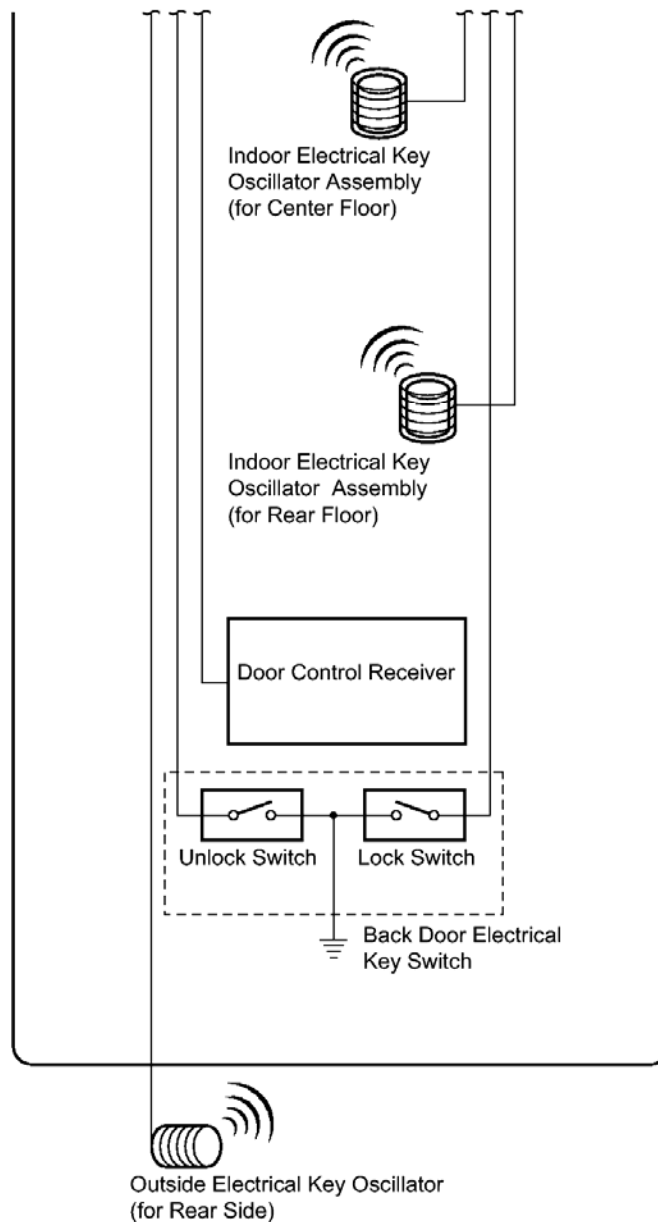


Fig. 5: Smart Key System (For Entry Function) - System Diagram (2 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

COMMUNICATION TABLE

Sender	Receiver	Signal	Line
		• Courtesy light switch signal • Door lock position switch signal	

Main body ECU	Certification ECU	• Driver door key operated switch signal • Door lock output signal • Back door output request signal • Steering wheel location (vehicle type) signal • Door lock output signal	CAN
Power Management Control ECU	Certification ECU	• IG signal • ACC signal • Engine switch signal	LIN
Combination Meter Assembly	• Certification ECU • Main Body ECU	Vehicle speed signal	CAN
Steering Lock ECU	Certification ECU	• Encryption code signal • Encryption code finish signal • Encryption calculate fixed number memory requirement signal • During entry control signal	LIN
Certification ECU	Combination Meter Assembly	• Inside key existence warning signal • Low key battery warning signal • Shift position warning signal • Meter buzzer request signal • Door open indicate signal • Steering lock warning signal	CAN
Certification ECU	Main Body ECU	• Entry door lock signal • Entry door unlock signal • Door lock/unlock standby control signal • Wireless door lock buzzer sound signal • Smart power slide door open request signal	CAN
Certification ECU	Power Management Control ECU	• Immobiliser ID entry required signal	LIN

		• Key code check signal	
Main body ECU	Power Slide Door ECU	Smart power slide door open request signal	CAN
Power Slide Door ECU	Certification ECU	Smart power slide door switch signal	CAN

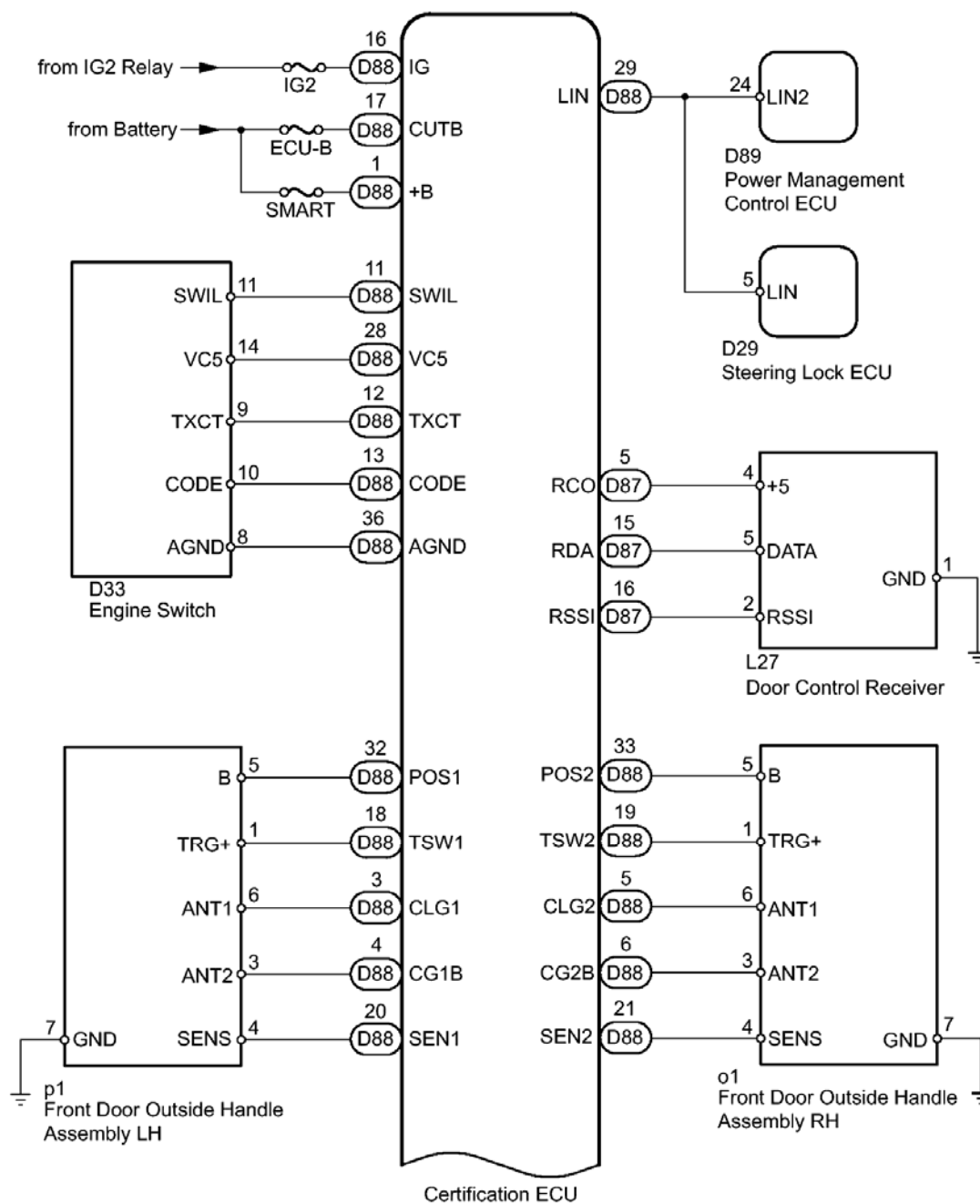


Fig. 6: Smart Key System Circuit Diagram (1 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

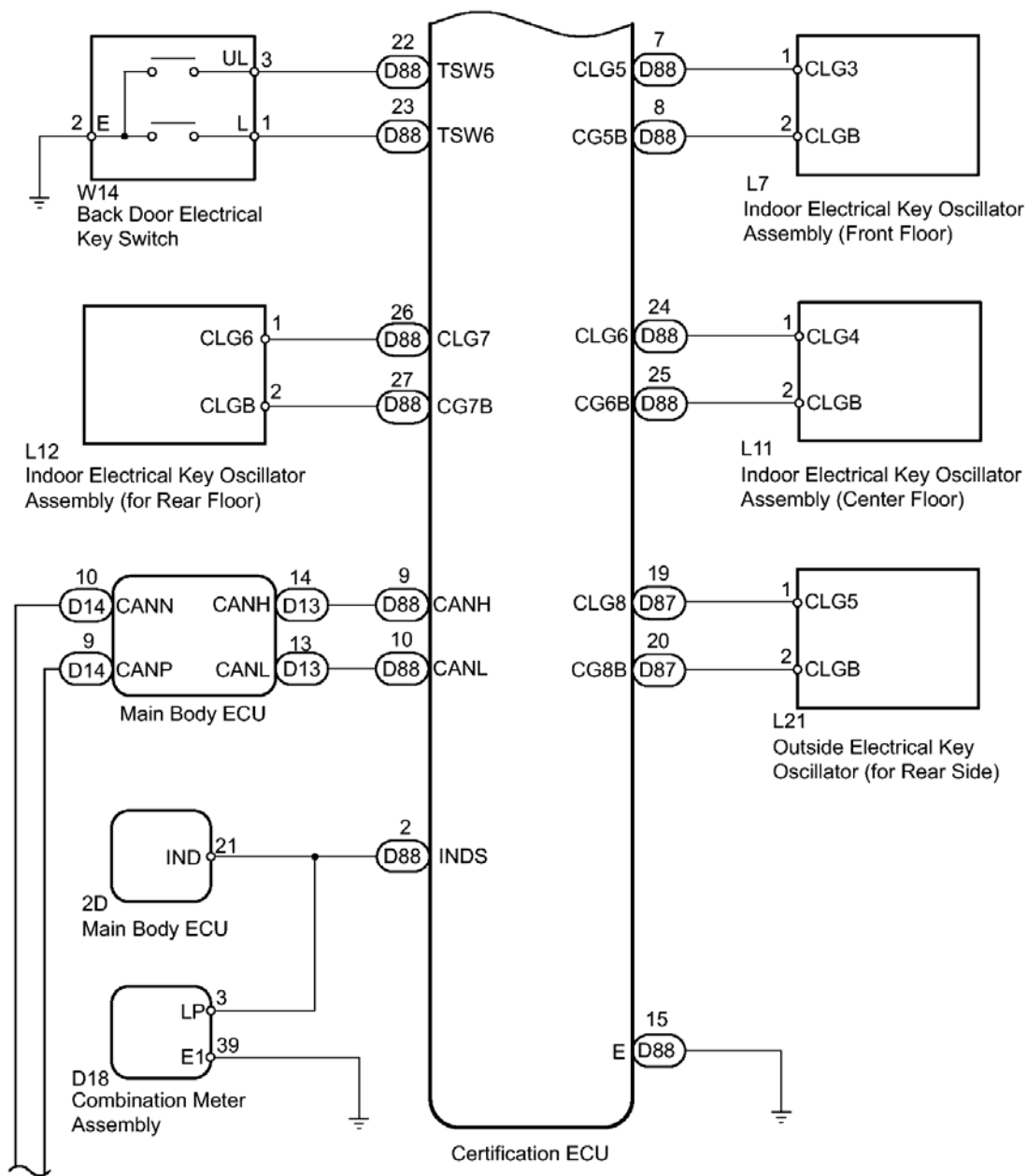


Fig. 7: Smart Key System Circuit Diagram (2 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

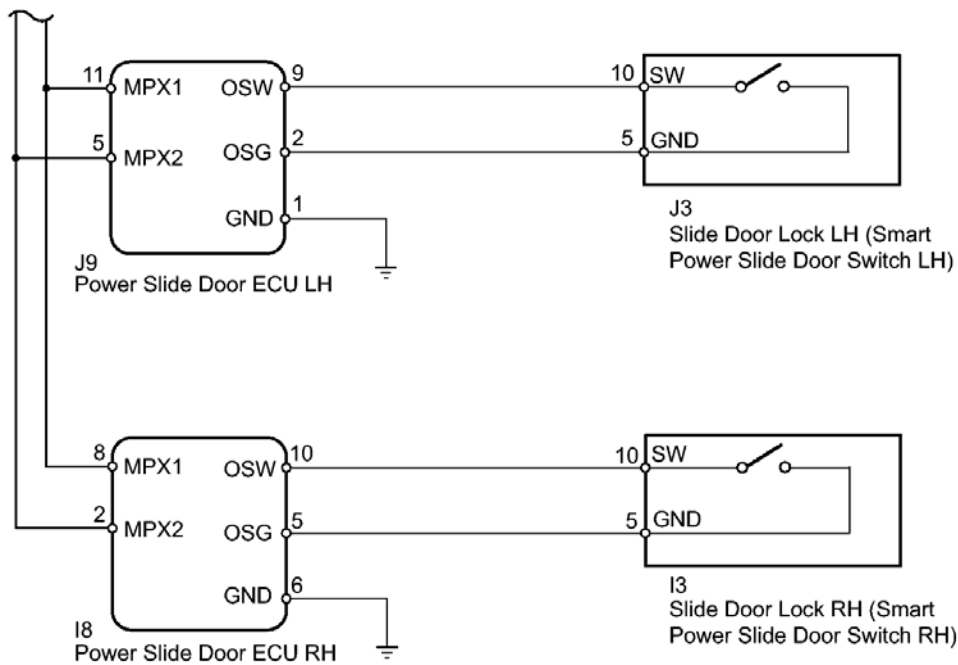


Fig. 8: Smart Key System Circuit Diagram (3 Of 3)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. SMART KEY SYSTEM DESCRIPTION

- a. In addition to conventional mechanical key and wireless door lock control functions, the smart key system enables door locking/unlocking, steering lock releasing and engine starting without operating the key. The only requirement is that the key is in the user's possession.
 - This system is controlled by the certification ECU. When the certification ECU detects the presence of the smart key system in one of the detection areas, it identifies and checks the ID code, and outputs operation signals to the related ECU in accordance with their functions.
 - The detection areas are formed by 6 oscillators (2 door oscillators, 1 outside oscillator and 3 indoor oscillators).

WARNING: If using a pacemaker, be sure to read the manual of the pacemaker before using the key, as the radio waves of the key may affect the pacemaker.

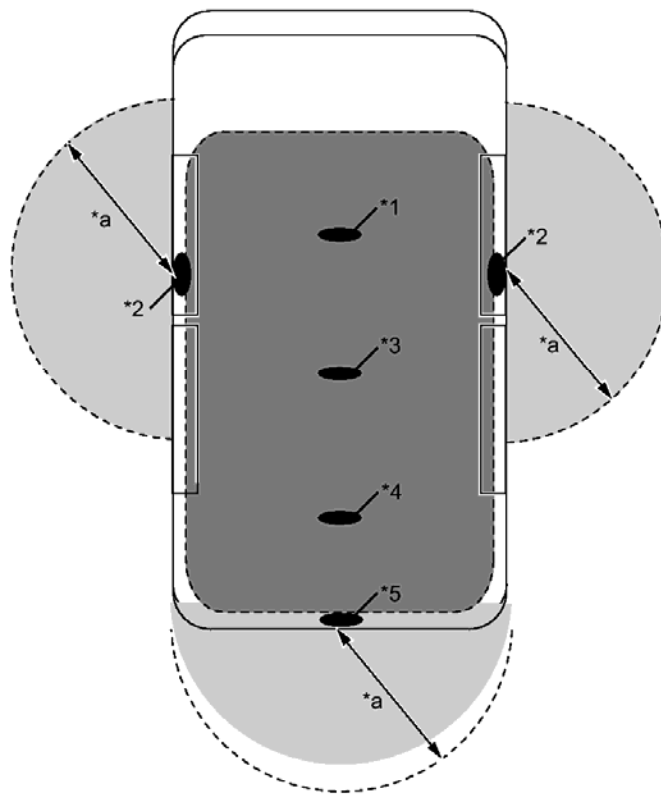


Fig. 9: Identifying Electrical Key Oscillator Detection Areas
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. DETECTION AREA

TEXT IN ILLUSTRATION

*1	Indoor Electrical Key Oscillator Assembly (for Front Floor)	*2	Electrical Key Antenna
*3	Indoor Electrical Key Oscillator Assembly (for Center Floor)	*4	Indoor Electrical Key Oscillator Assembly (for Rear Floor)
*5	Outside Electrical Key Oscillator (for	-	-

	Rear Side)		
*a	Approximately 0.7 to 1.0 m (2.30 to 3.28 ft.)	-	-
	Interior Detection Area		Exterior Detection Area

a. Precautions for the entire system:

- Be sure to carry the key during inspection of the smart key system.
- As weak radio waves are used to detect the key, the key detection area may decrease, or the key may not be detected correctly in the following situations:
 - a. The key battery is depleted.
 - b. Any facilities that generate strong radio waves, such as a TV tower, power plant, broadcast station or gas station, are located near the inspection site.
 - c. A wireless device, such as a cell phone, is carried with the key.
 - d. The key is in contact with or covered by metal.
 - e. Electric wave type keyless entry systems are being operated nearby.
 - f. The key is located near a device that generates high voltage or noise.
 - g. Film with some metallic content is applied to the back glass.

HINT:

In this case, remove the film or unlock the door using the mechanical key.

- Even if the key is in the vehicle exterior key detection area, the key may not operate properly due to the vehicle body design.
- The key may not be detected correctly if it is around the vehicle windows, door handles or bumpers, even when it is in the detection area outside the vehicle.
- The key may not be detected correctly if it is on the instrument panel or floor, or in the glove box, even when it is in the detection area inside the vehicle.
- The key may not operate if the key is not held properly.
- The smart key system does not operate under the following conditions:
 - a. The smart key system is canceled.
 - b. The key battery is completely depleted (the indicator does not blink when pushing any of the switches on the key).

3. FUNCTION OF MAIN COMPONENTS

Component	Function
	Controls the smart key system in

Certification ECU	accordance with signals from each antenna, various switches, ECUs and the key. • Performs key verification. • Performs vehicle interior/exterior transmission. • Performs occupant sensor control. • Sends lock/unlock commands during entry function. • Sends steering lock/unlock commands. • Sends immobiliser set/unset commands. • Records verification codes.
Main Body ECU	• Receives request signals from the certification ECU and actuates each door lock motor to unlock or lock the doors. • Transmits each door condition to the certification ECU.

	• Supports the communication between the certification ECU and power slide door ECU for smart power slide door operation.
Power Management Control ECU	Controls the push button start function in accordance with signals from various switches, ECUs and the combination meter. • Transmits the electrical key verification request signal to the certification ECU in accordance with the engine switch signal and turns relays on and off.
Power Slide Door ECU	• Receives request signals from the certification ECU and actuates power slide door motor to open the slide door. • Transmits smart slide door switch signal to the certification ECU.
	Receives a request

Indoor Electrical Key Oscillator (for Front, Center and Inside Luggage)	signal from the certification ECU and forms the detection area in the vehicle interior.
Door Control Receiver	Receives the ID code from the key in the detection area and transmits it to the certification ECU.
Electrical Key Antenna (Outside Luggage)	Receives a request signal from the certification ECU and forms the detection area around the back door.
Back Door Electrical Key Switch	• Transmits a back door unlock request signal to the certification ECU. • Transmits a back door lock request signal to the certification ECU.
Smart Power Slide Door Switch LH, RH	Transmits a smart power slide door operation request signal to the certification ECU. HINT: Signal is first input to the power slide door ECU, and then is transmitted through the main body ECU to the certification ECU.
	• Receives a request signal from the certification ECU and forms

Front Door Outside Handle Assembly LH, RH	the detection area around front door. • Transmits door unlock request signals to the certification ECU. • Transmits door lock request signals to the certification ECU.
Electric Key Transmitter (key)	Consists of a mechanical key, a transmitter for wireless door lock control and a transceiver for the smart key system.
• Wireless Door Lock Buzzer • Combination Meter Assembly • Buzzer • Accessory Meter Assembly	When the certification ECU detects human errors, such as those below, it warns the driver by sounding the wireless door lock buzzer, displays information and sounds the buzzer in accordance with the request signal from the ECU. Example: • The key is brought out of the vehicle while the engine is still running. • The key is brought out of the vehicle while the shift lever is in a position other

	than P.
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4. CONSTRUCTION AND OPERATION

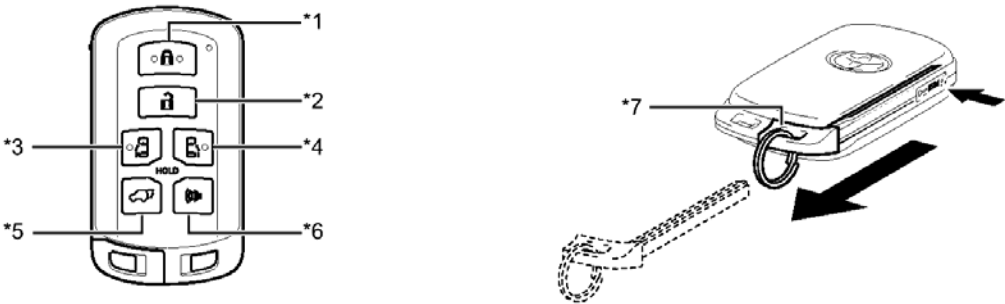
a. Key

A total of 7 keys can be registered.

1. Electrical key transmitter:

The electrical key transmitter consists of a mechanical key, a transmitter function for the wireless door lock control and a transceiver for the smart key system.

- The transceiver function for the smart key system receives the signals from the antennas and sends the ID code to the door control receiver.
- The transmitter function for the wireless door lock control has a lock switch, unlock switch and glass hatch open switch.
- The mechanical key can lock/unlock all the doors. To lock or unlock the doors, remove the cap from the driver door outside handle, insert the key into the door key cylinder, and then turn it to the lock or unlock position.



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Fig. 10: Identifying Electrical Key Transmitter Construction And Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Lock Switch	*2	Unlock switch
*3	Slide Door Open Switch LH	*4	Slide Door Open Switch RH
*5	Back Door Open	*6	Panic Switch

	Switch		
*7	Mechanical Key	-	-

- b. Antenna (front door, front floor, rear floor, inside luggage and outside luggage):

Each antenna transmits the request signal received from the certification ECU, and forms a key detection area to detect the presence of a key. The detection area formed by the front door antenna and outside luggage antenna is approximately 0.7 to 1.0 m (2.30 to 3.28 ft.) from the outside handle of the front door and rear bumper.

- The detection area of the front door antenna is formed by transmitting a request signal every 0.25 seconds while the engine switch is off and all the doors are locked. In this way, it detects the proximity of a key. During entry lock, the detection area is formed with the lock sensor on.
- The detection area of the outside luggage antenna is formed when the unlock switch is on.
- The detection area of the indoor antennas (front floor, rear floor and inside luggage) is formed when the driver door is open or closed, during starting, when a warning is activated, or when the lock sensor is on.

5. ENTRY FUNCTION OPERATION

- a. The smart key system has the following functions:

Function	Outline
Mechanical Key	Operation is the same as a conventional mechanical key.
Wireless Door Lock Control	This function remotely locks and unlocks all the doors and the back door. Operation is the same as the wireless door lock control system. However, the receiver in the certification ECU uses the door control receiver to control locking and unlocking.
Entry Illumination	When a key enters the exterior detection area of the door electrical key oscillators (for driver and front passenger side), the foot lights

	illuminate.
Entry Unlock	When the key is located in the detection area of the electrical key antenna, the door can be unlocked by touching the inside of the front door outside handle.
Entry Unlock Mode Switching	Allows switching between 2 modes that can be operated with the entry unlock function. • Driver Door Mode (Default Setting). • All Door Unlock Mode.
Entry Lock	• When the key is located in the detection area of the electrical key antenna and the engine switch is off, the door can be locked by touching the lock sensor on the front door outside handle. • When the key is located in the detection area of the outside luggage electrical key antenna and the engine switch is off, the door can be locked by pressing the lock switch on the back door

	electrical key switch.
Entry Back Door Unlock	When the key is in the detection area of the electrical key antenna (outside luggage), the back door can be unlocked by pressing the unlock switch on the back door electrical key switch.
Smart Power Slide Door Open	When the key is in the detection area formed by the outside electrical key oscillator (for driver and front passenger side), pulling on the rear door outside handle for approximately 1 second will cause all doors to unlock and the activated power slide door to open automatically. HINT: If power slide door is unable to operate due to being prohibited by the power slide door main switch or for other reasons, the door unlock and door open operations will not be performed.
Memory Call*	This function operates the driving position memory system in accordance with the key ID code.
	Prevents lock-in of the key if the door is locked while the key is still inside the vehicle.

Key Lock-in Prevention	If all the doors are locked and the glass hatch is closed while the key is still inside the vehicle, the warning buzzer sounds. If the glass hatch opener switch is operated, the glass hatch can be opened.
	When any of the situations below occur, the smart key system causes the certification ECU to sound the buzzer in the combination meter and the wireless door lock buzzer, and indicate a warning on the Accessory Meter Assembly in order to alert the driver: • The engine is left running and the shift lever is in a position other than P when the driver gets out of the vehicle. • The key reminder sounds. • The engine is left running and the shift lever is in P when the driver gets out of the vehicle. • A door is ajar. • The engine is left running

Warning

when a passenger gets out of the vehicle while holding the key.

- The key is not in the detection areas.
- The key is left in the vehicle.
- The key battery is weak.
- The steering lock does not release.
- The steering lock mechanism is malfunctioning.
- The power management control ECU is malfunctioning.
- Engine cannot be started (driver error).
- Engine cannot be started (system error).
- An attempt is made to turn off the vehicle with the shift lever in a position other than P or N.
- Auto power off operation occurs.
- Immobiliser system certification completion occurs.

	• The vehicle is driven without a key.
Battery Saving	If the key is constantly located within the detection area of the door antenna, the system maintains periodic communication with the key. Therefore, if the vehicle remains parked in that state for a long time, the key battery and vehicle battery may be drained. For this reason, the vehicle has controls for saving battery power.
Key Cancel. Refer to <u>CUSTOMIZE PARAMETERS</u>	The following key functions can be cancelled by following certain procedures: • Entry Unlock/Lock • Entry Ignition • Entry Back Door Open • Smart Power Slide Door Open • Memory Call* • Key Lock-in Prevention • Warning

*: w/ Front power seat System

6. WIRELESS DOOR LOCK CONTROL SYSTEM FUNCTION

Push the lock, unlock, panic, power back door, and power slide door switch on the key to operate each function. For details. Refer to **OPERATION CHECK** .

7. ENTRY UNLOCK FUNCTION

- a. When the key enters any exterior detection area of a front door, the certification judges and certifies the key ID code received from the door control receiver assembly.
- b. After the key certification OK is confirmed, the certification ECU transmits an unlock stand-by signal to the touch sensor of the relevant door.
- c. At the same time, the certification ECU transmits the lighting signals to the foot lights on the outside rear view mirror and interior lights (engine switch illumination and interior lights) to turn them on (Entry Illumination Function).
- d. If a touch sensor is touched in this condition, the certification ECU transmits a door unlock request signal to the main body ECU, and unlocks either the driver door or all doors.
 - The front door outside handle assembly (for driver side) unlocks the driver door.
 - The front door outside handle assembly (for front passenger side) unlocks all doors.
- e. The main body ECU sounds the wireless door lock buzzer twice, and the main body ECU flashes the hazard warning lights twice, as an answer back for entry unlock.

8. ENTRY LOCK FUNCTION

- a. The entry lock signal is transmitted to the certification ECU when the user (who has the key in their possession) exits the vehicle and touches the lock sensor on the door outside handle assembly or presses the lock switch on the back door electrical key switch.
- b. The certification ECU transmits a request signal for the indoor electrical key oscillators (for front, center and inside luggage), door electrical key oscillators (for driver and front passenger side) and outside electrical key oscillator (for outside luggage) to form detection areas.
- c. The certification ECU judges and certifies the ID code. It then checks the location of the key and, if all doors are closed, the ECU transmits a door lock signal to the main body ECU.
- d. The main body ECU receives this signal and actuates the lock motors.
- e. The main body ECU blinks the hazard warning lights once and the main body ECU sounds the wireless door lock buzzer once as an answerback for the entry lock function.

9. ENTRY BACK DOOR OPEN FUNCTION

- a. The unlock signal is transmitted to the certification ECU from the back door opener switch assembly.
- b. The certification ECU transmits a request signal for the outside electrical key oscillator (for outside luggage) to form detection area.
- c. The key receives this signal and returns the ID code to the door control receiver assembly.
- d. The certification ECU judges and certifies the ID code, and checks the location of the key. The ECU transmits a back door open signal to the main body ECU or power back door ECU.
- e. Any ECU receives this signal and actuates the motor to manually open the back door.

10. SMART POWER SLIDE DOOR OPEN FUNCTION

- a. The smart power slide door signal is transmitted to the certification ECU from the smart power slide door switch.
- b. The certification ECU transmits a request signal for the outside electrical key oscillator (for driver and front passenger side) to form detection area.
- c. If key verification is successful, the smart power slide door operation signal is sent to the main

body ECU, which performs the all door unlock while transmitting a slide door open signal to the power slide door ECU, which opens the power slide door.

11. PREVENTION OF KEY CONFINEMENT FUNCTION

- a. The key confinement prevention function prevents the key from being locked in the vehicle.
 1. When the door is locked by the lock knob in the inside door handle while the key is still in the vehicle interior, the main body ECU receives this signal and transmits the door condition signal to the certification ECU.
 2. The certification ECU transmits a request signal for the indoor electrical key oscillators (for front, center and inside luggage) to form detection area.
 3. The key receives this signal and returns the ID code to the door control receiver assembly.
 4. The certification ECU judges and certifies the ID code, and checks the location of the key. The ECU transmits a door unlock signal to the main body ECU.
 5. The main body ECU receives this signal and actuates all door lock assemblies to unlock.
 6. The certification ECU sounds the wireless door lock buzzer and buzzer in the combination meter as an answer back for unlock.

12. ENTRY ILLUMINATION FUNCTION

When a person carrying the key enters the detection area, the door will enter unlock standby mode and the front map light will illuminate.

HINT:

The entry illumination function operates when the key enters the exterior detection area from outside the detection area. If the key does not remain out of the detection area for 3 seconds or more, the illumination function does not operate.

13. WARNING FUNCTION

- a. Warning
 1. When any of the situations below occur, the smart key system causes the certification ECU to sound a buzzer in the combination meter assembly and the wireless door lock buzzer, a message to appear on the multi-information display, and the engine switch illumination to operate in order to alert the driver.

Situation	Condition
A	The engine is left running and the shift lever is in a position other than P when the driver gets out of the vehicle.
	The key

B	reminder sounds.
C	The engine is left running and the shift lever is in P when the driver gets out of the vehicle.
D	A door is ajar.
E	The engine is left running when a passenger gets out of the vehicle while holding the key.
F	The key is not in the detection areas.
G	The key is left in the vehicle.
H	The key battery is weak.
I	The steering lock does not release.
J	The steering lock mechanism is malfunctioning.
K	The power management ECU is malfunctioning.
L	Engine cannot be started (driver error).
M	Engine cannot be started (system error).
N	An attempt is made to turn off the vehicle with the shift

	lever in a position other than P or N.
O	Auto power off operation occurs.
P	Immobiliser system certification completion occurs.
Q	The vehicle is driven without a key.

2. Situation A

There are 2 patterns for situation A.

- Pattern 1:

When the engine is left running and the shift lever is in a position other than P, the driver opens the door and attempts to get out of the vehicle.

In this situation, the following control is performed:

Possible Effects without Warning	Sudden vehicle start, vehicle theft, vehicle roll-away		
Warning Active Condition	The warning is activated when all of the following conditions are met: • The engine switch is in a mode other than off. • The shift lever is in a position other than P. • The vehicle speed is 0 mph (0 km/h). • The driver door is opened.		
	Combination Meter Assembly	Buzzer	Sounds continuously
			The following warning message is displayed:

Warning Method	Accessory Meter Assembly	Multi-information Display	Shift to P position and push engine switch to turn power off
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when one of the following conditions is met: - The engine switch is turned off. - The shift lever is moved to P. - The vehicle speed is above 0 mph (0 km/h). - The driver door is closed.		

• Pattern 2:

Under the situation of pattern 1, the driver closes the door and attempts to leave the vehicle while holding the key.

In this situation, the following control is performed:

Possible Effects without Warning	Sudden vehicle start, vehicle theft, vehicle roll-away		
Warning Active Condition	The warning is activated when all of the following conditions are met: - The shift lever is in any position except P. - The shift lever is in a position other than P. - The vehicle speed is 0 mph (0 km/h). - The key is not in the vehicle. - The driver door is opened --> closed.		
	Combination Meter	Buzzer	Sounds continuously

Warning Method	Assembly		
	Accessory Meter Assembly	Multi-information Display	The following warning message are alternately displayed: • Shift to P position and push engine switch to turn power off • Key is not detected
	Wireless Door Lock Buzzer		Sounds continuously
	Engine Switch Illumination		-
	The warning is stopped when one of the following conditions is met:		
	Combination Meter Assembly	Buzzer	• The engine switch is turned off. • The shift lever is moved to P. • The vehicle speed is above 0 mph (0 km/h). • Key is returned the vehicle.
			The following warning message is displayed: • Key is not detected
			• The engine switch is turned off. • Key is returned the

				vehicle.
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: Shift to P position and push engine switch to turn power off	- The shift lever is moved to P. - The vehicle speed is above 0 mph (0 km/h).
Warning Stop Condition	Wireless Door Lock Buzzer			- The engine switch is turned off. - The shift lever is moved to P. - The vehicle speed is above 0 mph (0 km/h). - Key is returned the vehicle.

3. Situation B

There are two patterns for situation B.

- Pattern 1:

When the driver door is open, the driver turns the engine switch on (ACC) and attempts to leave the vehicle.

- Pattern 2:

When the driver door is open, the driver turns the engine switch from on (IG) to off and attempts to leave the vehicle.

In these situations, the following control is performed:

Possible Effects without Warning	Vehicle theft		
Warning Active Condition	The warning is activated when either of the following conditions is met: • The engine switch is on (ACC) and the driver door is opened. • The engine switch is off, the steering is unlocked, and the driver door is opened.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds continuously at short and even intervals
	Accessory Meter Assembly	Multi-information Display	-
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when one of the following conditions is met: • The engine switch is turned on (IG). • The driver door is closed. • The engine switch is turned off and the steering is locked.		

4. Situation C

There are 2 patterns for situation C.

- Pattern 1:

When the engine is left running and the shift lever is in P, the driver closes the driver door and attempts to leave the vehicle while holding the key.

In this situation, the following control is performed:

Possible Effects without Warning	Vehicle theft, engine cannot be restarted, discharged battery		
Warning Active Condition	The warning is activated when all of the following conditions are met: • The shift lever is moved to P. • The engine switch is in a mode other than off. • The key is not in the vehicle. • The driver door is opened --> closed.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Key is not detected
	Wireless Door Lock Buzzer		Sounds 3 times
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when either of the following conditions is met: • The engine switch is turned off. • The key is returned to the vehicle.		

• Pattern 2:

Under the situation of pattern 1, the driver touches the lock sensor on the door outside handle assembly.

In this situation, the following control is performed:

Possible Effects	Vehicle theft, discharged battery
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without Warning				
Warning Active Condition	The warning is activated when all of the following conditions are met: • The engine switch is in a mode other than off. • The shift lever is moved to P. • All doors are closed. • The key is not in the vehicle (within one of the detection areas).			
Warning Method	Combination Meter Assembly	Buzzer		Sounds once
	Accessory Meter Assembly	Multi-information Display		The following warning message is displayed for 60 seconds (and then automatically turned off). • Turn Power Off Key not Detected
	Wireless Door Lock Buzzer			Sounds continuously
	Engine Switch Illumination			-
	The warning is stopped when either of the following conditions is met:			
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Turn Power Off Key not Detected	• The engine switch is turned off. • The shift lever is in a position other than P. • The vehicle

				speed is above 0 mph (0 km/h).
	Warning Stop Condition	Wireless Door Lock Buzzer		• 10 seconds have elapsed after the wireless door lock buzzer was activated. • Any door is opened. • The engine switch is turned off. • The shift lever is in any position except P. • The vehicle speed is above 0 mph (0 km/h). • Key is returned the vehicle.

5. Situation D

The lock sensor on the door outside handle assembly is touched to perform entry lock with a door open.

In this situation, the following control is performed:

Possible	
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Effects without Warning	Vehicle theft		
Warning Active Condition	The warning is activated when all of the following conditions are met: • The engine switch is turned off. • Any door is opened. • The lock sensor on the door outside handle assembly is on (touched).		
Warning Method	Combination Meter Assembly	Buzzer	-
	Accessory Meter Assembly	Multi-information Display	-
	Wireless Door Lock Buzzer		Sounds continuously
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when one of the following conditions is met: • The engine switch is turned to a mode other than off. • All doors are closed. • An unlock operation is performed using the wireless door lock remote function. • The touch sensor on the inner side of a door outside handle assembly is used to perform entry unlock. • 10 seconds have elapsed after the wireless door lock buzzer was activated.		

6. Situation E

When the engine is left running, a passenger leaves the vehicle while holding the key.

In this situation, the following control is performed:

Possible	
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Effect without Warning	Engine cannot be restarted		
Warning Active Condition	The warning is activated when all of the following conditions are met: • The engine switch is in a mode other than off. • A door other than the driver door is opened --> closed. • The vehicle speed is 0 mph (0 km/h). • The key is not in the vehicle.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Key is not detected
	Wireless Door Lock Buzzer		Sounds 3 times
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when either of the following conditions is met: • The engine switch is turned off. • The key is returned to the vehicle.		

7. Situation F

When the key is not in the vehicle or the key battery is dead, the driver attempts to start the engine or turn the engine switch on (IG).

In this situation, the following control is performed:

Possible Effects without Warning	Confuses the user
	The warning is activated when both of

Warning Active Condition	the following conditions are met: • The engine switch is pushed. • The key is not in the vehicle.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Key is not detected
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	Check if the key is in the detection area. If the key is in the detection area, press the wireless door lock switch and confirm that the indicator comes on. If the indicator does not come on, replace the key battery with a new one.		

8. Situation G

There are two patterns for situation G.

- Pattern 1:

The lock sensor on a door outside handle assembly is touched to perform entry lock with the key left in the vehicle.

In this situation, the following control is performed:

Possible Effect without Warning	Vehicle theft
Warning Active Condition	The warning is activated when all of the following conditions are met: • The engine switch is turned off. • All doors are closed. • The key is in the vehicle.

	• The lock sensor on the door outside handle assembly is on (touched). • Any door is unlocked.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed for 60 seconds (and then automatically turned off). • Key Detected in Vehicle
	Wireless Door Lock Buzzer		Sounds continuously
	Engine Switch Illumination		-
	The warning is stopped when one of the following conditions is met:		
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Key Detected in Vehicle • The engine switch is turned to a mode other than off. • The vehicle speed is above 0 mph (0 km/h). • Lock operation is detected.
			• 10 seconds have elapsed

Warning Stop Condition	Wireless Door Lock Buzzer	after the wireless door lock buzzer was activated. - Any door is opened. - The engine switch is turned to a mode other than off. - The vehicle speed is above 0 mph (0 km/h). - Lock operation is detected.
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• Pattern 2:

With a door open and the key in the cabin, the lock knob is locked and then the door is closed with the door handle being pulled.

In this situation, the following control is performed:

Possible Effect without Warning	Vehicle theft
Warning Active Condition	The warning is activated when both of the following conditions are met: - With a door open, the lock knob is locked and then the door is closed with the door handle being pulled. - The key is in the vehicle.
	Combination

Warning Method	Meter Assembly	Buzzer		Sounds once
	Accessory Meter Assembly	Multi-information Display		The following warning message is displayed for 60 seconds (and then automatically turned off). • Key Detected in Vehicle
	Wireless Door Lock Buzzer			Sounds continuously
	Engine Switch Illumination			-
Warning Stop Condition	The warning is stopped when one of the following conditions is met:			
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Key Detected in Vehicle	• The engine switch is turned to a mode other than off. • The vehicle speed is above 0 mph (0 km/h). • Lock operation is detected.
				• 10 seconds have elapsed after the wireless door lock buzzer was

	Wireless Door Lock Buzzer	activated. • Any door is opened. • The engine switch is turned to a mode other than off. • The vehicle speed is above 0 mph (0 km/h). • Lock operation is detected.
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9. Situation H

The vehicle is driven using a key that has a low battery.

In this situation, the following control is performed:

Possible Effect without Warning	Smart key system does not function		
Warning Active Condition	The warning is activated when both of the following conditions are met: • The engine switch is turned off after being left on (IG) for more than 20 minutes. • The key battery voltage is low.		
	Combination Meter Assembly	Buzzer	Sounds once
			The following warning message is

Warning Method	Accessory Meter Assembly	Multi-information Display	displayed for 15 seconds (and then automatically turned off). • Low Key Battery
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The key battery is replaced with a new one.		

10. Situation I

The steering lock cannot be released.

In this situation, the following control is performed:

Possible Effect without Warning	Steering usability function		
Warning Active Condition	The steering lock cannot be released, thus the engine is prevented from starting.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed for 15 seconds (and then automatically turned off). • Steering Lock is still active
	Wireless Door Lock		

	Buzzer	-
	Engine Switch Illumination	The green indicator blinks at 1-second intervals (goes off automatically after 30 seconds).
Warning Stop Condition	The engine switch is pushed while the steering wheel is turned left and right, and the steering lock successfully disengages.	

11. Situation J

A malfunction of the steering lock ECU (steering lock actuator assembly) is detected.

In this situation, the following control is performed:

Possible Effect without Warning	Malfunction detection		
Warning Active Condition	A malfunction of the steering lock ECU is detected.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed for 60 seconds (and then automatically turned off). • Check Steering Lock System
	Wireless Door Lock Buzzer		-
			The amber

	Engine Switch Illumination	indicator blinks at 2-second intervals (goes off automatically after 15 seconds).
Warning Stop Condition	The steering lock ECU returns to normal.	

12. Situation K

A malfunction of the power management control ECU is detected.

In this situation, the following control is performed:

Possible Effect without Warning	Malfunction detection		
Warning Active Condition	A malfunction of the power management ECU is detected.		
Warning Method	Combination Meter Assembly	Buzzer	-
	Accessory Meter Assembly	Multi-information Display	-
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		The amber indicator blinks at 2-second intervals (goes off automatically after 15 seconds).
Warning Stop Condition	The power management control ECU returns to normal.		

13. Situation L

There are two patterns for situation L.

- Pattern 1:

A warning message appears on the multi-information display when the driver does not follow the proper procedure to start the vehicle.

In this situation, the following control is performed:

Possible Effects without Warning	Usability function		
Warning Active Condition	The warning is activated when all of the following conditions are met: • The engine switch is turned off. • Driver door is closed --> opened. • The engine switch is turned from off to on (ACC) more than twice with the engine off and brake pedal not depressed.		
Warning Method	Combination Meter Assembly	Buzzer	-
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed for 10 seconds (and then automatically turned off). • Depress brake pedal and push engine switch to start
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning			

Stop Condition	The engine switch is pushed with the brake pedal depressed.
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• Pattern 2:

A message indicating how to start the engine appears on the multi-information display when the shift lever is in a position in which the engine cannot be started.

In this situation, the following control is performed:

Possible Effects without Warning	Usability function		
Warning Active Condition	The warning is activated when all of the following conditions are met: • The engine is stopped. • The vehicle speed is 0 mph (0 km/h). • More than 0.5 seconds have elapsed after the engine switch was turned on (IG). • The engine is not cranking. • The shift lever not in P or N		
Warning Method	Combination Meter Assembly	Buzzer	-
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Shift to P position to start
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
	The warning is stopped when one of the following conditions is met:		

Warning Stop Condition	• The shift lever is moved to P or N. • The vehicle speed is above 0 mph (0 km/h). • The engine switch is turned off or on (ACC). • The engine is started.
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14. Situation M

There are two patterns for situation M.

- Pattern 1:

When the engine switch is pushed, the key cannot be detected in the vehicle two times in a row.

In this situation, the following control is performed:

Possible Effects without Warning	Usability function		
Warning Active Condition	The warning is activated when all of the following conditions are met: • The immobiliser system is set. • The key is not in the vehicle. • When the engine switch is turned on (ACC) or on (IG), a certification error occurs two times in a row.		
Warning Method	Combination Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed for 60 seconds (and then automatically turned off). • Depress brake pedal,

			touch engine switch with key
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when either of the following conditions is met: • The immobiliser system certification result is OK. • Key certification in the vehicle has stopped either because 30 seconds have elapsed after any of the doors is opened and closed, or because the brake pedal is depressed.		

• Pattern 2:

The driver attempts to start the engine after performing a driver door key linked unlock operation.

In this situation, the following control is performed:

Possible Effects without Warning	Usability function		
Warning Active Condition	The warning is activated when all of the following conditions are met: • A driver door key linked unlock operation is performed. • The immobiliser system is set. • The engine switch is pushed. • The key is not in the vehicle.		
	Combination Meter Assembly	Buzzer	Sounds once
			The following warning

Warning Method	Accessory Meter Assembly	Multi-information Display	message is displayed for 60 seconds (and then automatically turned off). • Depress brake pedal, touch engine switch with key
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when either of the following conditions is met: • The immobiliser system certification result is OK. • The key is returned to the vehicle.		

15. Situation N

A warning message appears on the multi-information display when the driver attempts to turn the engine switch off with the shift lever in any position other than P or N.

In this situation, the following control is performed:

Possible Effects without Warning	Usability function		
Warning Active Condition	The warning is activated when both of the following conditions are met: • The shift lever is in any position other than P or N. • The engine switch is turned from on (IG) to on (ACC).		
	Combination Meter	Buzzer	-

Warning Method	Assembly		
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Shift to P position and push engine switch to turn power off
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when either of the following conditions is met: • The shift lever is moved to P. • The engine switch is turned to a mode other than on (ACC).		

16. Situation O

A warning message appears on the multi-information display when automatic power off operation occurs.

In this situation, the following control is performed:

Possible Effects without Warning	Battery Saving function
Warning Active Condition	The warning is activated when all of the following conditions are met: • The shift lever is moved to P. • The engine switch is on (ACC) or on (IG). • The vehicle speed is 0 mph (0 km/h).

	• The engine is stopped. • The power source control system is turned off by automatic power off function.		
Warning Method	Combination Meter Assembly	Buzzer	-
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed for 10 seconds (and then automatically turned off). • Auto power off to conserve battery
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The engine switch is turned to a mode other than off.		

17. Situation P

A warning message appears on the multi-information display when a key with a depleted battery is touched to the engine switch while depressing the brake.

In this situation, the following control is performed:

Possible Effects without Warning	Malfunction detection		
Warning Active Condition	Key certification result is OK*		
	Combination Meter Assembly	Buzzer	Sounds once

Warning Method	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed for 10 seconds (and then automatically turned off). Depress brake pedal and push engine switch to start
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		The amber indicator blinks
Warning Stop Condition	The warning is stopped when either of the following conditions is met: - The engine is started. - The key is returned to the vehicle.		

*: This situation occurs following situation M.

18. Situation Q

A warning message appears on the multi-information display when the vehicle starts moving without the registered key in the vehicle interior.

In this situation, the following control is performed:

Possible Effects without Warning	Engine cannot be restarted		
Warning Active Condition	When vehicle speed is detected after the key is removed from the vehicle, the warning is activated (only for first time).		
	Combination		

Warning Method	Meter Assembly	Buzzer	Sounds once
	Accessory Meter Assembly	Multi-information Display	The following warning message is displayed: • Key is not detected
	Wireless Door Lock Buzzer		-
	Engine Switch Illumination		-
Warning Stop Condition	The warning is stopped when either of the following conditions is met: • The engine switch is turned off. • The key is returned to the vehicle.		

14. BATTERY SAVING

a. Vehicle Battery Saving Function

In the smart key system, signals are emitted outside the vehicle at a prescribed interval (0.25 seconds) when the doors are locked. Therefore, the vehicle battery could be drained if the vehicle remains parked for a long time. For this reason, the controls listed below are affected:

Condition	Control
Both conditions below are met for 5 days: • Key is not in detection area • Touch sensor or lock switch operation is not performed	Signal transmission interval is extended from 0.25 to 0.75 seconds
Both conditions below are met	

for 14 days:	
• Key is not in detection area • Touch sensor or lock switch operation is not performed	The smart key system automatically deactivates

Reinstatement Conditions

- A wireless door lock control signal (lock, unlock) is input and the ID code matches.
- A user carries the key and touches a lock sensor on a door outside handle assembly.
- The driver door is locked or unlocked by the mechanical key.

b. Key Battery and Vehicle Battery Saving Function

In the smart key system, if the key is constantly in the exterior detection area of the doors, the system maintains periodic communication with the key. Therefore, if the vehicle remains parked in that state for a long time, the key battery and vehicle battery could be drained. For this reason, if this state continues longer than 10 minutes, the smart key system automatically becomes deactivated.

Reinstatement Conditions

- A wireless door lock control signal (lock, unlock) is input and the ID code matches.
- A user carries the key and touches a lock sensor on a door outside handle assembly.
- A door is locked or unlocked by the mechanical key.

HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedure to troubleshoot the smart key system.
- *: Use the Techstream.

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. CUSTOMER PROBLEM ANALYSIS

HINT:

- In troubleshooting, confirm that the problem symptoms have been accurately identified. Preconceptions should be discarded in order to make an accurate judgment. To clearly understand what the problem symptoms are, it is extremely important to ask the customer about the problem and the conditions at the time the malfunction occurred.
- Gather as much information as possible for reference. Past problems that seem unrelated may also help in some cases.
- The following 5 items are important points in the problem analysis:

What	Vehicle model, system name
When	Date, time, occurrence frequency
Where	Road conditions
Under what conditions?	Running conditions, driving conditions, weather conditions
How did it happen?	Problem symptoms

NEXT: Go to next step

3. INSPECT BATTERY VOLTAGE

- a. Measure the battery voltage.

Standard voltage

11 to 14 V

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

NEXT: Go to next step

4. INSPECT COMMUNICATION FUNCTION OF CAN COMMUNICATION SYSTEM*

- a. Use the Techstream to check if the CAN communication system is functioning normally.

RESULT

Result	Proceed to
ECU connected, communication line is functioning normally.	A
ECU connected, communication line is malfunctioning.	B

B --> GO TO CAN COMMUNICATION SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

A: Go to next step

5. INSPECT COMMUNICATION FUNCTION OF LIN COMMUNICATION SYSTEM (LIN)*

- a. Use the Techstream to check if the LIN communication system (LIN) is functioning normally. Refer to **DTC CHECK / CLEAR**.

RESULT

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

B --> GO TO LIN COMMUNICATION SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

6. CHECK FOR DTC*

- a. Check for DTCs and note any codes that are output.
- b. Clear the DTCs.
- c. Recheck for DTCs. Based on the DTCs output, try to cause the same steering lock system DTC,

engine immobiliser system DTC, wireless door lock control system DTC or smart key system (for start function) DTC to be output by simulating the symptoms indicated by the DTCs.

RESULT

Result	Proceed to
DTC is not output.	A
Steering lock system DTC is output.	B
Engine immobiliser system DTC is output.	C
Wireless door lock control system DTC is output.	D
Smart key system (for start function) DTC is output.	E

B --> GO TO STEERING LOCK SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

C --> GO TO ENGINE IMMOBILISER SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

D --> GO TO WIRELESS DOOR LOCK CONTROL SYSTEM. Refer to DIAGNOSTIC TROUBLE CODE CHART

E --> GO TO SMART KEY SYSTEM (for Start Function). Refer to DIAGNOSTIC TROUBLE CODE CHART

A: Go to next step

7. PROBLEM SYMPTOMS TABLE

- a. Refer to **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 9

A: Go to next step

8. OVERALL ANALYSIS AND TROUBLESHOOTING*

- Operation Check. Refer to **OPERATION CHECK**
- Data List / Active Test. Refer to **DATA LIST / ACTIVE TEST**
- Terminals of ECU. Refer to **TERMINALS OF ECU**

NEXT: Go to next step

9. REPAIR OR REPLACEMENT

NEXT: Go to next step

10. CONFIRMATION TEST

NEXT --> END

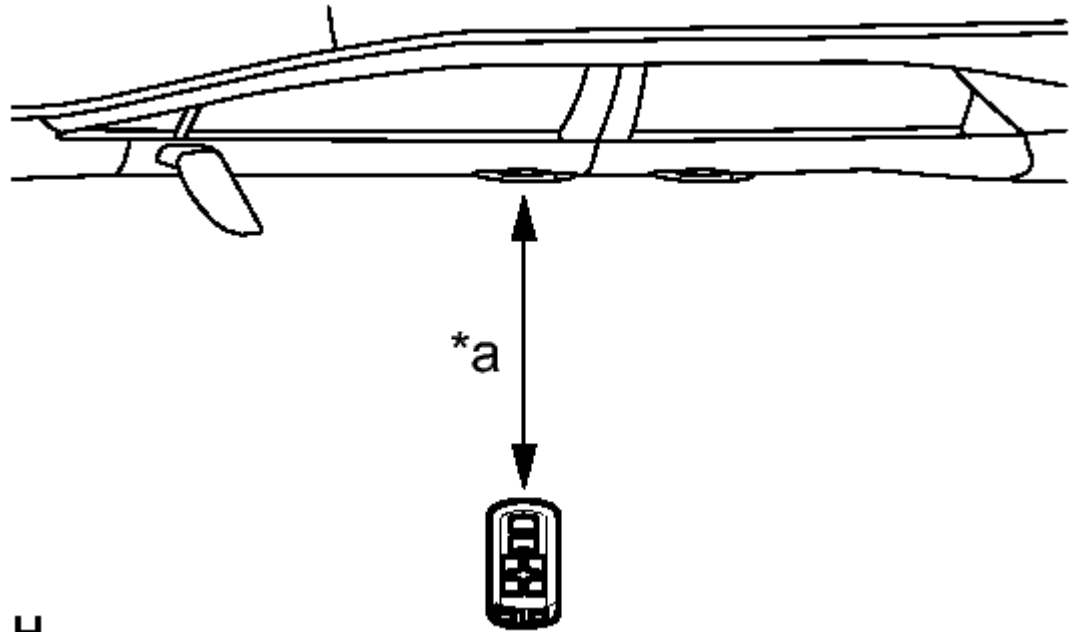
OPERATION CHECK

OPERATION CHECK

1. SMART KEY SYSTEM OPERATION INSPECTION

- Check the entry unlock function.
 - Use the wireless lock operation to lock the doors. With the key outside the vehicle, touch a front door outside handle assembly (touch sensor) and check that the door unlocks.
- Check the entry unlock operation detection area.
 - Step 1: Hold the key at the same height as the door outside handle assembly (approximately 0.8 m (2.62 ft.)). Make sure that the direction of the key is as shown in the illustration.

2. Step 2: Check that when the key is brought within 0.7 to 1.0 m (2.30 to 3.28 ft.) of the vehicle, the system enters unlock standby mode.



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Fig. 11: Checking Front Driver Door Entry Lock And Unlock Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

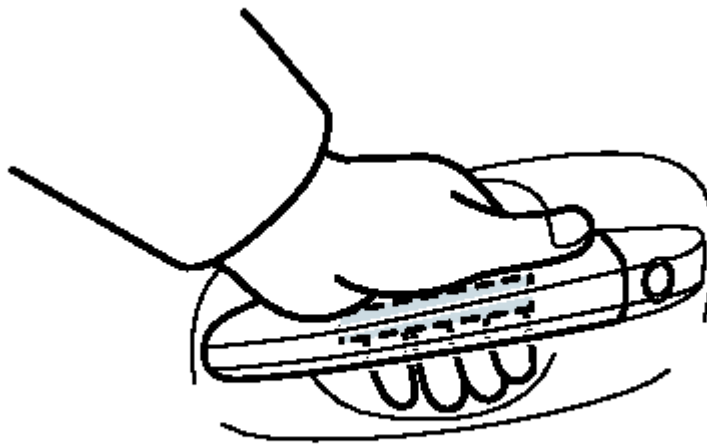
TEXT IN ILLUSTRATION

	0.7
	to 1
	m
*a	(2.30
	to
	3.28
	ft.)

HINT:

When the system enters unlock standby mode, the key LED illuminates.

3. Step 3: After the system enters unlock standby mode, touch the door outside handle assembly (touch sensor) within 3 seconds. Check that the door unlocks.



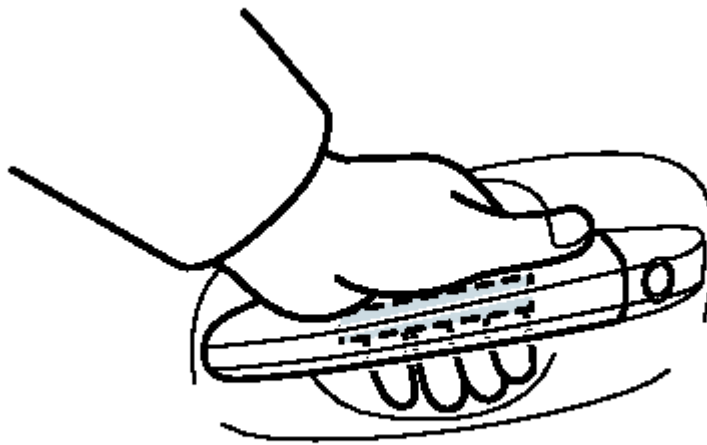
H

Fig. 12: Checking That The Door Unlocks

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: **The key may not be able to communicate with the system within a 0.2 m (0.656 ft.) radius of each door outside handle assembly.**

4. Step 4: Repeat step 2 and 3 for the remaining front door.
5. Step 5: Inspect the door outside handle assembly (touch sensor) response sensitivity. When the system is in unlock standby mode, check that touching the area shown in the illustration causes the door to unlock.



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Fig. 13: Checking That The Door Unlocks

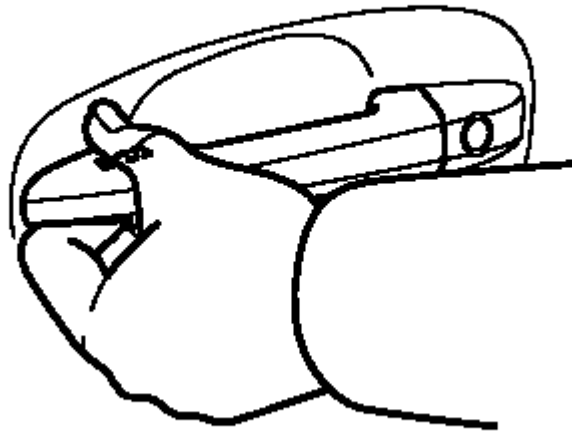
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: When touching the highlighted area, touching 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 front door.
- c. Check the entry lock function.

NOTE: If the key is in the cabin, but is not in a detection area (on the instrument panel, rear tray, in the glove box, or on the floor), the key confinement function may not operate. This can result in the key confinement.

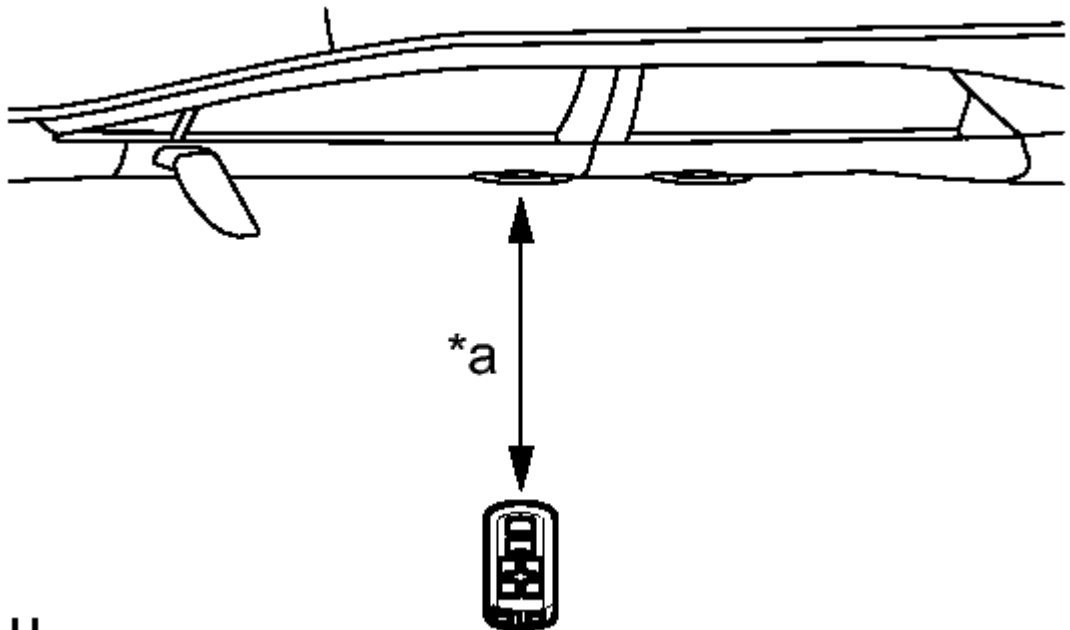
1. Step 1: Confirm that all the doors lock when a lock sensor on a front door outside handle is touched with all the doors closed and unlocked while the key is outside of the vehicle.



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Fig. 14: Confirming That Doors Lock
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. Step 2: Inspect the smart door lock detection area. Hold the key 0.1 m (0.328 ft.) below the window (about 1 m (3.28 ft.) above the ground). Move the key about 0.3 m (0.984 ft.) away from the vehicle and touch the lock sensor as shown in the illustration to check that all doors lock.



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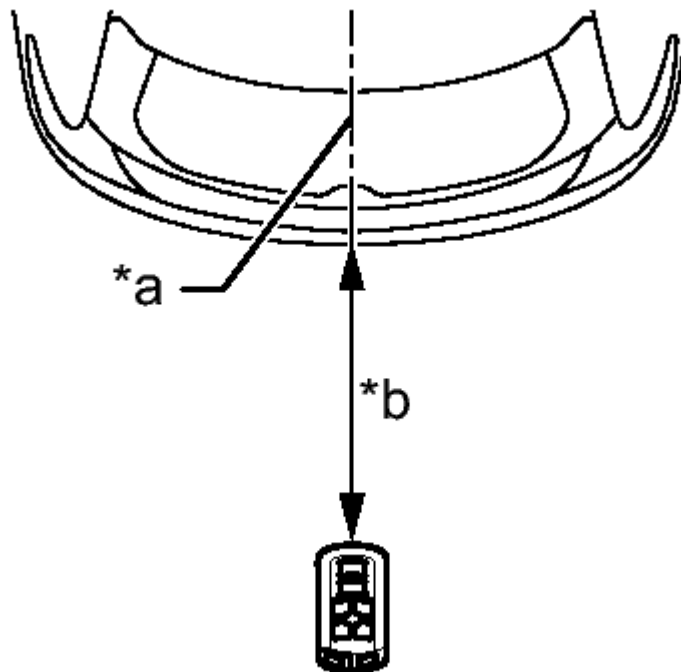
Fig. 15: Checking Front Driver Door Entry Lock And Unlock Operation
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Approximately 0.3 m
----	------------------------

HINT:

- Due to the key being unable to communicate with the system from within 0.2 m (0.656 ft.) of the door handle, the lock sensor may not operate when the lock sensor is touched by the same hand that is holding the key.
 - If the key confinement prevention function buzzer sounds, radio waves from the indoor electrical oscillator may be leaking from the vehicle.
- d. Check the entry back door open function.
1. Close the back door. With the key outside the vehicle, check that pushing the back door opener switch assembly opens the back door.
 2. Inspect the entry back door open operation detection area. Hold the key at the same height as the back door opener switch assembly (approximately 0.8 m (2.62 ft.)) aligning it with the center of the rear of the vehicle. Make sure that the direction of the key is as shown in the illustration. Check that when the key is brought within 0.7 to 1.0 m (2.30 to 3.28 ft.) of the vehicle, pushing the back door opener switch assembly opens the back door.



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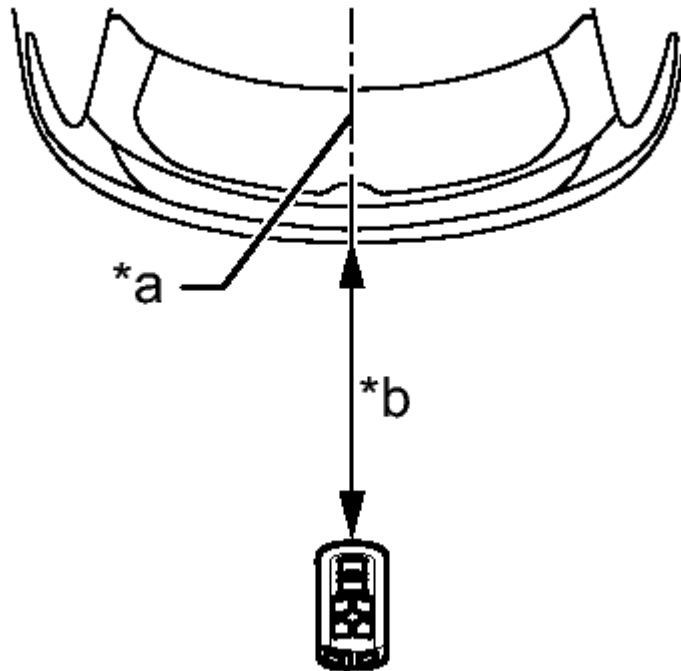
Fig. 16: Checking Entry Back Door Open And Entry Lock Functions
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.7 to 1.0 m (2.30 to 3.28 ft.)

e. Check the entry back door lock function.

1. Close all of the vehicle doors. With the key in your possession outside of the vehicle, check that pushing the back door opener switch assembly (lock switch) locks all the doors.



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Fig. 17: Checking Entry Back Door Open And Entry Lock Functions
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	Approximately 0.3 m

HINT:

- When pressing the lock switch, hold the key about 1 m (3.28 ft.) above the ground and about 0.3 m (0.984 ft.) away from the vehicle as shown in the illustration.
- Due to the key being unable to communicate with the system from within 0.2 m (0.656

ft.) of the door handle, the lock sensor may not operate when the lock sensor is touched by the same hand that is holding the key.

- If the key confinement prevention function buzzer sounds, radio waves from the indoor electrical oscillator may be leaking from the vehicle.

f. Check the smart power slide door open function.

1. Confirm that the power slide door operation requirements are met. Refer to power slide door system.
2. Use the wireless lock operation to lock the doors. With the key inside the detection area formed by the outside electrical key oscillator (for driver and front passenger side), pulling on the rear door outside handle for approximately 1 second will cause all doors to unlock and the activated power slide door to open automatically.

HINT:

The smart power slide door open function uses the detection area formed by the outside electrical key oscillator (for driver and front passenger side).

g. Check the entry ignition function.

1. While holding the key, confirm that the engine switch indicator light illuminates green when the engine switch is off, the shift lever is in P and the brake pedal is depressed. With the engine switch indicator illuminates green, confirm that the engine starts when the engine switch is pressed.
2. While holding the key, confirm that the engine switch turns off --> on (ACC) --> on (IG) --> off every time the engine switch is pressed when the brake pedal is not depressed.

HINT:

When the engine switch is pressed with the engine switch on (IG) and the shift lever is in any position except P, the engine switch will not turn off but remain on (ACC).

3. With the engine running, vehicle stopped and shift lever in P, confirm that pressing the engine switch turns the engine off, and that the steering lock engages after opening the driver door.

HINT:

When the engine switch is pressed with the engine switch on (IG) and the shift lever in any position except P, the engine switch will not turn off but remain on (ACC).

4. Inspect the detection area for the entry ignition function (for front floor). Make sure that the direction of the key is as shown in the illustration. When the key is in either of the 2 inspection points shown in the illustration, check that the engine can start.

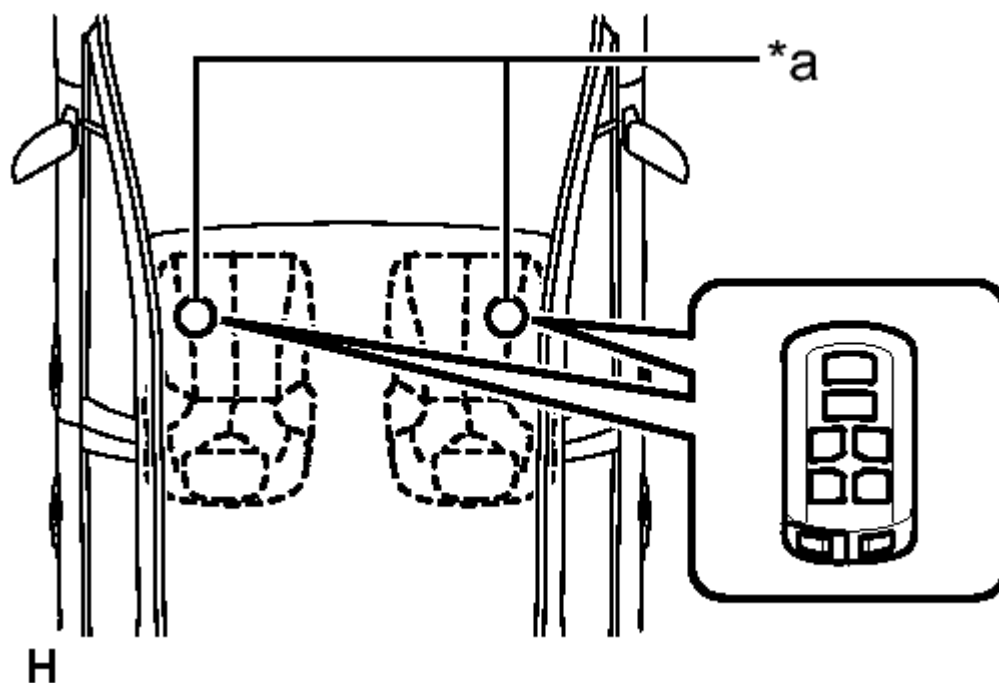


Fig. 18: Checking Indoor Electrical Key Oscillator (For Front Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

NOTE: The engine may not start when the key is on the instrument panel, rear package tray or in the glove box.

5. Inspect the detection area for the entry ignition function (for center floor). Make sure that the direction of the key is as shown in the illustration. When the key is in either of the 2 inspection points shown in the illustration, check that the engine can start.

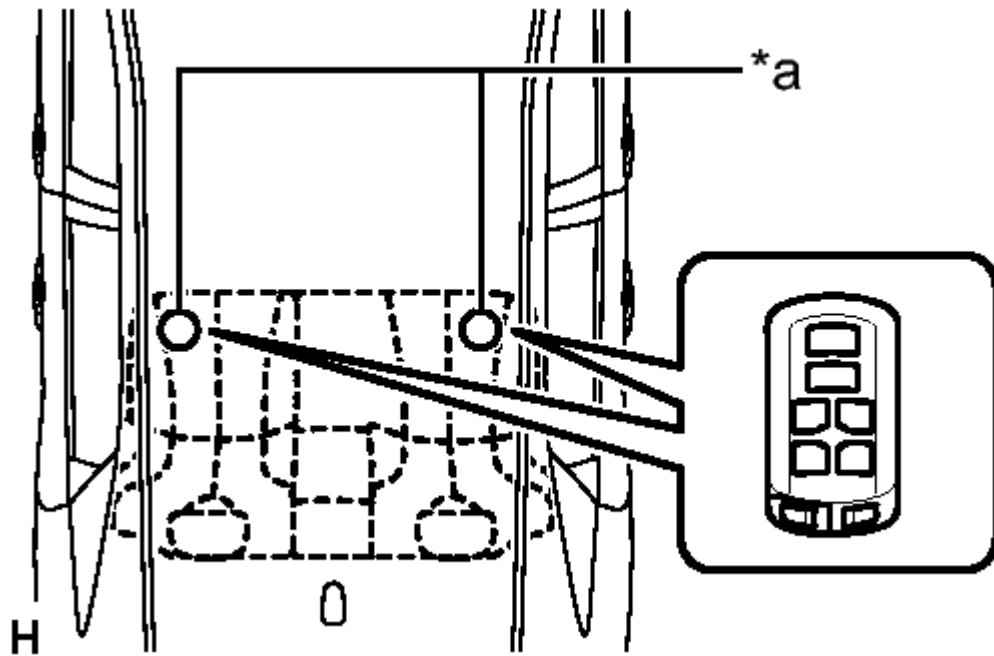


Fig. 19: Checking Indoor Electrical Key Oscillator (For Center Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

NOTE: The engine may not start when the key is on the instrument panel, rear package tray or in the glove box.

- Inspect the detection area for the entry ignition function (for rear floor). Make sure that the direction of the key is as shown in the illustration. When the key is in either of the 2 inspection points shown in the illustration, check that the engine can start.

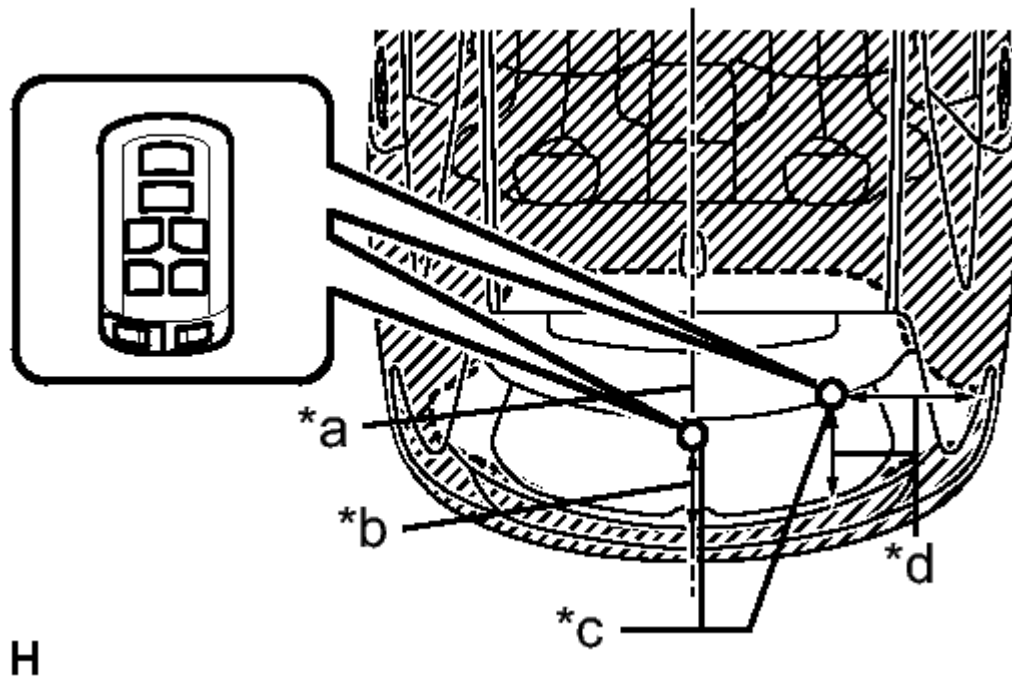


Fig. 20: Checking Indoor Electrical Key Oscillator (For Rear Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.1 m (0.328 ft.)
*c	Inspection Point
*d	0.2 m (0.656 ft.)

NOTE: The engine may not start when the key is on the instrument panel, rear package tray or in the glove box.

- h. Check the key confinement prevention function (in cabin)

NOTE: Perform this check with a window open to prevent key confinement.

1. Turn the engine switch off.
2. Put the key on a front seat or a rear seat.
3. Close all the doors (all doors are in unlocked state).
4. Confirm that the door lock does not operate but the wireless door lock buzzer sounds for 10 seconds when a front door lock sensor is touched.

- i. Check the key cancel function.
 1. While the engine switch is on (IG), check that the back door opener switch assembly (opener switch) is the only switch that can be operated in the smart key system.
 2. While the key cancel function (smart key system cancel function) is on, check that all functions of the smart key system cannot be operated.
- j. Check the answer-back function (hazard warning light flashing and buzzer sounding).

Entry Operation	Hazard Warning Light	Buzzer
Entry Door Lock	Flashes once	Sounds once
Entry Door Unlock and Entry Power Slide Door Open	Flashes twice	Sounds twice
Entry Back Door Open	Does not flash	Does not sound

- k. Check that the key reminder warning buzzer sounds.
 1. With the key inside the vehicle, close the driver door. Then turn the engine switch off or on (ACC).
 2. Open the driver door and check that the buzzer sounds intermittently.
- l. Check that the key reminder warning buzzer stops.
 1. When the buzzer is sounding, check that the buzzer stops sounding if either of the following is performed:
 - Close the driver door (front door courtesy light switch is off).
 - Turn the engine switch on (IG).

2. KEY DIAGNOSTIC MODE

HINT:

Key diagnostic mode checks if the key within a selected oscillator detection area is operating normally. The results are output through the wireless door lock buzzer.

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Key Communication Check.

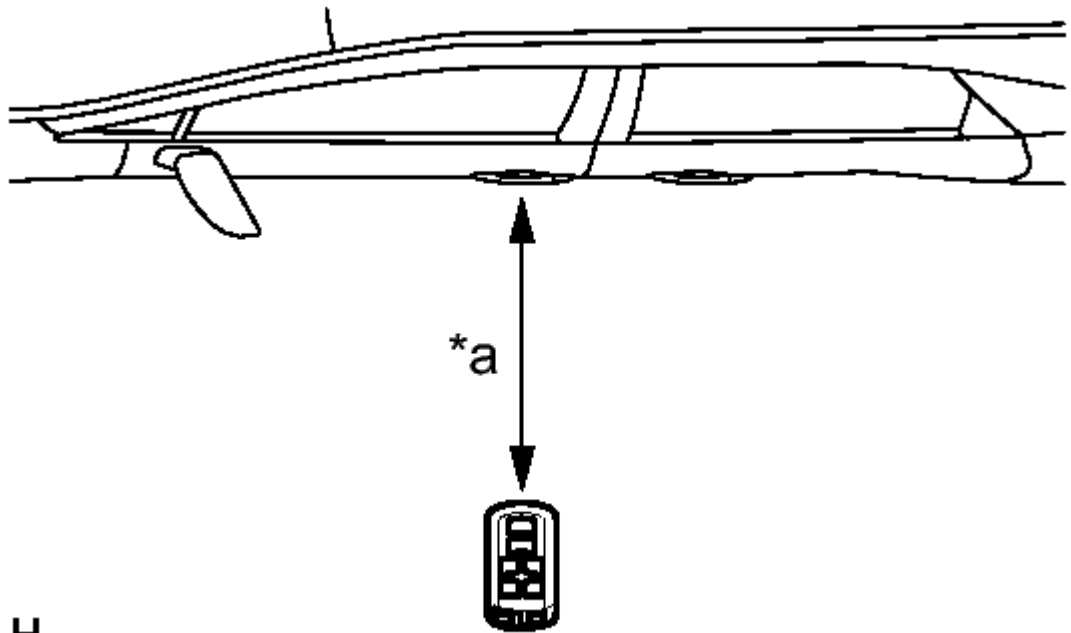
- e. Check the values by referring to the table below.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Inspection Range
Overhead + Driver Side*1	Door electrical key oscillator (for driver side)
Overhead + Passenger Side*2	Door electrical key oscillator (for front passenger side)
Overhead + Front Room*3	Indoor electrical key oscillator (for front floor)
Overhead + Rear Room*4	Indoor electrical key oscillator (for center floor)
Overhead + Back Door (inside) *5	Indoor electrical key oscillator (for rear floor)
Overhead + Back Door*6	Outside electrical key oscillator (for rear side)

- f. When the key is brought near the selected oscillator, check that the wireless door lock buzzer sounds.

1. *1: Door electrical key oscillator (for driver side)



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Fig. 21: Checking Front Driver Door Entry Lock And Unlock Operation
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	0.7
	to 1
	m
*a	(2.30
	to
	3.28
	ft.)

HINT:

- Hold the key at the same height as the door outside handle assembly (0.7 to 1.0 m (2.30 to 3.28 ft.)). Make sure that the direction of the key is as shown in the illustration.
 - *2: Perform the same inspection above for the door electrical key oscillator (for front passenger side).
2. *3: Indoor electrical key oscillator (for front floor)

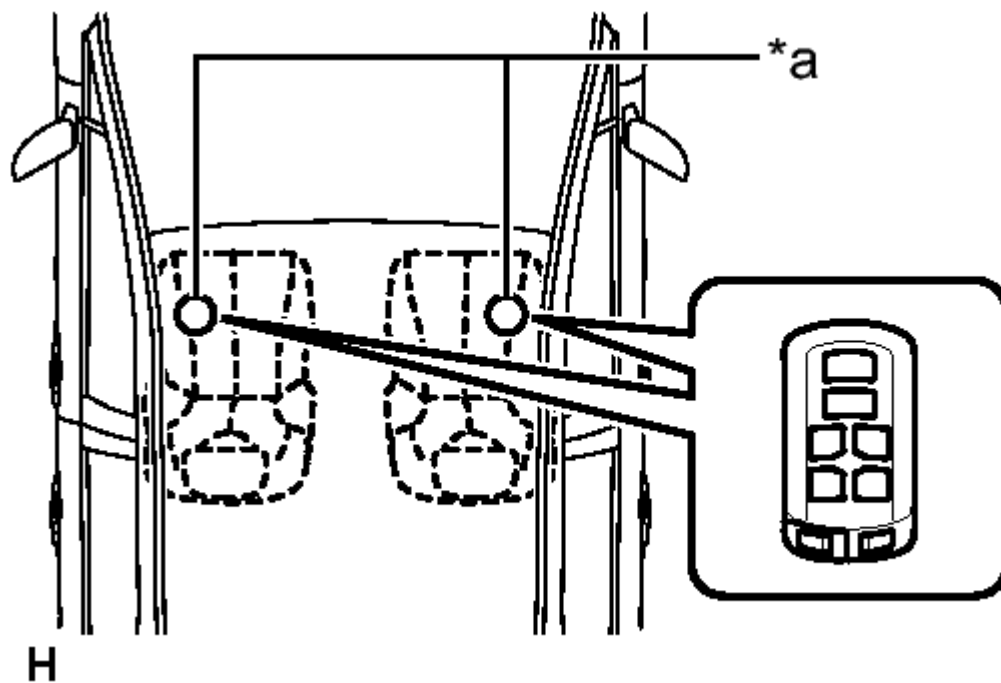


Fig. 22: Checking Indoor Electrical Key Oscillator (For Front Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

HINT:

Place the key on the driver or front passenger seat cushion.

3. *4: Indoor electrical key oscillator (for center floor)

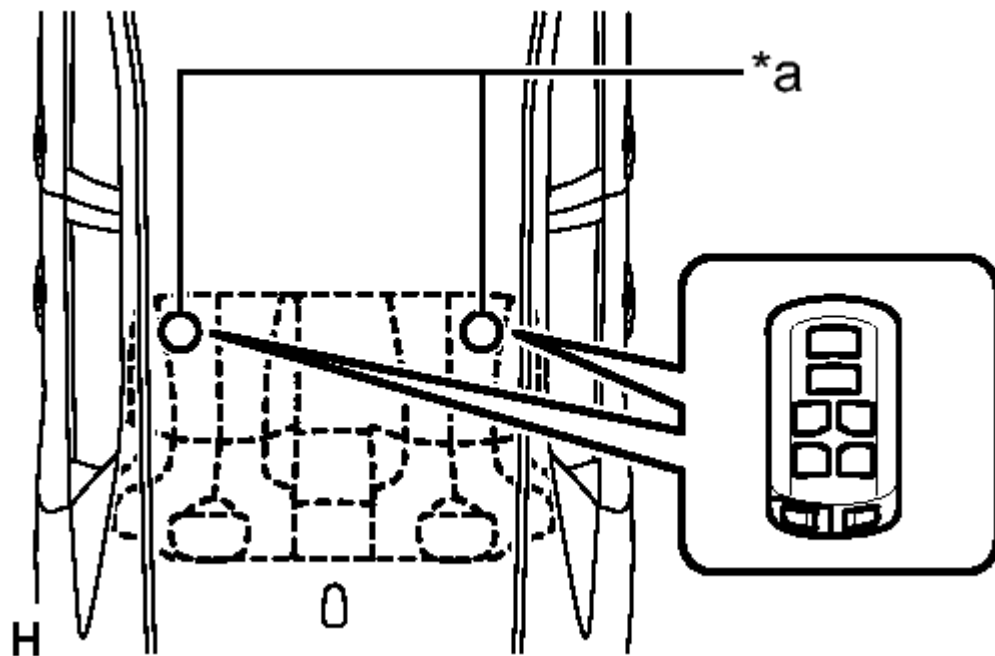


Fig. 23: Checking Indoor Electrical Key Oscillator (For Center Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

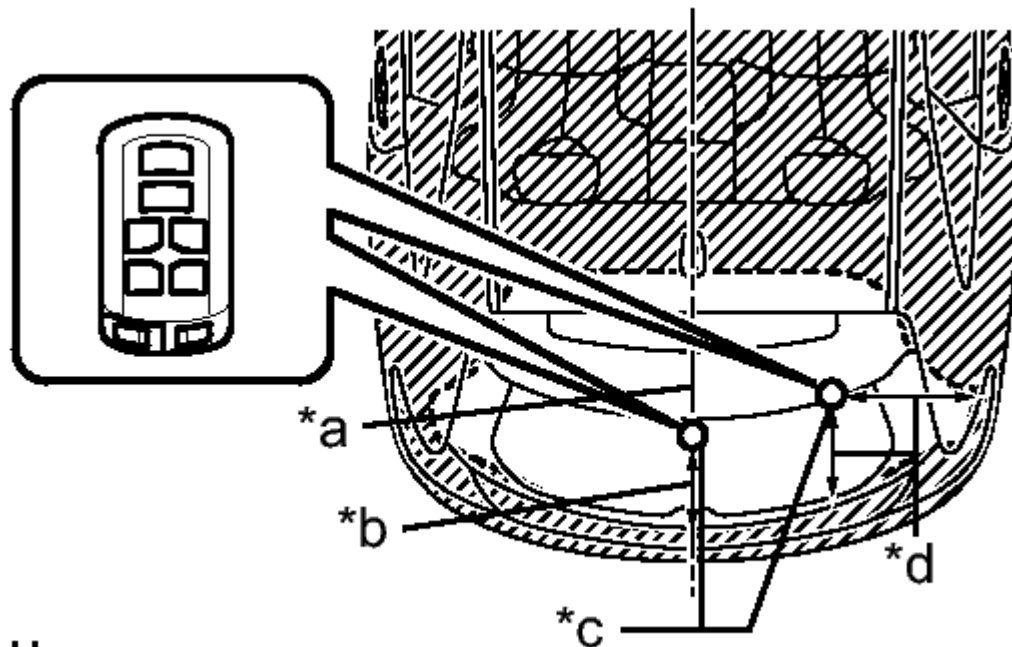
TEXT IN ILLUSTRATION

*a	Inspection Point
----	---------------------

HINT:

Place the key on the rear No. 1 seat cushion.

4. *5: Indoor electrical key oscillator (for rear floor)



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Fig. 24: Checking Indoor Electrical Key Oscillator (For Rear Floor)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

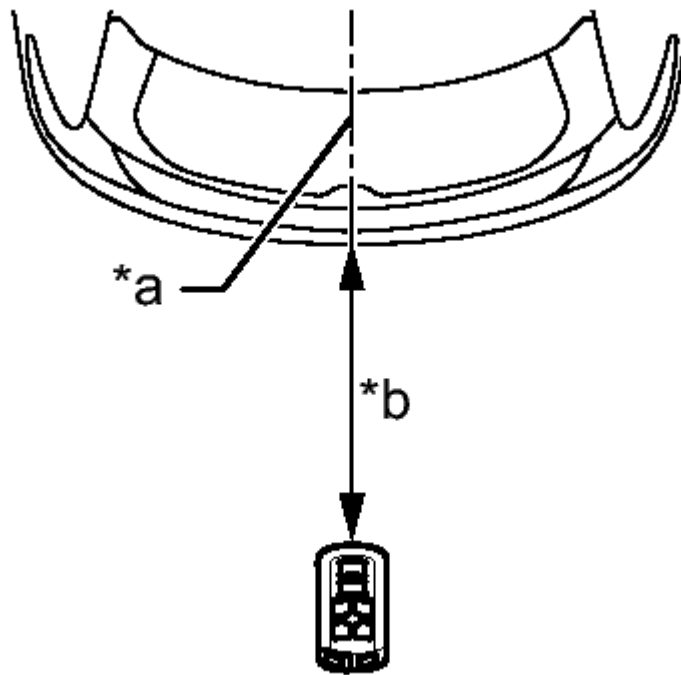
TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.1 m (0.328 ft.)
*c	Inspection Point
*d	0.2 m (0.656 ft.)

HINT:

Place the key on the luggage area.

5. *6: Outside electrical key oscillator (for rear side)



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Fig. 25: Checking Entry Back Door Open And Entry Lock Functions
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*a	Vehicle Center
*b	0.7 to 1.0 m (2.30 to 3.28 ft.)

HINT:

Hold the key at the same height as the rear bumper upper surface and align with the center of the rear of the vehicle, as shown in the illustration.

CUSTOMIZE PARAMETERS

CUSTOMIZE PARAMETERS

1. CUSTOMIZING FUNCTION WITH TECHSTREAM

HINT:

The items in the table below can be customized.

NOTE:

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

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key / Utility / Customize Setting.
- e. Select the setting by referring to the table below.

SMART KEY

Tester Display	Default	Content	Setting
Ignition Available Area	All	Function that switches the entry ignition detection area	Front or All
Park Wait Time	2.5 s	Function that sets waiting time to permit opening door after door is locked with entry lock function	0.5 s, 1.5 s, 2.5 s, or 5 s
Back Door Opening Operation	Long	Function that opens the back door when the driver has the key and presses back door opener switch assembly (opener	Long, Twice or OFF

		switch)	
Key Low Battery Warning	ON	Function that warns driver that key battery is weak	ON or OFF
Door Unlock Mode	Driver	Function that chooses the doors to be operated by entry unlock operation	All or Driver
Touch Activation Over Threshold	Active	The function that limits the consecutive entry lock operation to only 2 times can be changed between Active and Not Active. When in Not Active mode, there is no limit for the number of times that the consecutive entry lock operation can be performed.	Active or Not Active

f. Customizing with smart power slide door

1. Turn the engine switch on (IG).
2. Enter the following menus: Body Electrical / RR Door or RL Door/ Utility / Customize.
3. Select the setting by referring to the table below.

RR DOOR OR RL DOOR

Tester Display	Default	Content	Setting
Outside PSD SW Operation	ON	Function to change the operation method of operating the smart power slide door.	ON or OFF

2. ENTRY UNLOCK MODE SWITCHING

- a. Check that the power source mode is OFF and the LED on the key is not blinking. Press the lock switch and one of the other switches on the key at the same time for approximately 5 seconds while the key is in the detection area.

Driver side doors unlock default setting:

When the switches are pressed and held for 5 seconds, the entry door unlock mode changes to the mode that is not currently selected.

NOTE: **After pressing and holding the switches for 5 seconds, wait 5 seconds before performing the same procedure again.**

- Driver side doors unlock mode:

When the driver door touch sensor is touched, only the driver side doors unlock. When another touch sensor is touched, all doors unlock.

- All door unlock mode:

When any touch sensor is touched, all doors unlock.

- b. The certification ECU (smart key ECU assembly) receives this signal from the door control receiver assembly and changes the smart key system to the entry unlock mode.
- c. The certification ECU (smart key ECU assembly) sounds the buzzers of the wireless door lock buzzer and combination meter to inform the user that the mode has been changed.

	Wireless Door Lock Buzzer	Accessory Meter Assembly		Combination Meter Assembly
		Multi-information Display		Buzzer
Driver side Doors (Default)	ON  OFF Sounds 3 times	 Displayed 4 sec.	Driver side doors "open" indication	Sounds once
All Doors (Customized)	ON  OFF Sounds twice	 Displayed 4 sec.	All doors "open" indication	Sounds once

Fig. 26: Identifying Entry Unlock Mode Switching Chart
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The procedure only changes the entry unlock mode of the smart key system. It does not switch the unlocking of the wireless door lock control.

3. ELECTRICAL KEY CANCEL

The electrical key cancel operation disables the following functions:

- Entry Unlock/Lock
- Entry Ignition
- Entry Back Door Open
- Electrical Key Lock-in Prevention
- Warning

a. The operation procedures are as follows:

Precondition:

Engine switch off, driver side door closed and unlocked.

1. Push the unlock switch of the key once.

2. Open the driver door within 5 seconds.
3. Push the unlock switch of the key twice within 5 seconds.
4. Close and open the driver door twice within 30 seconds.

(Driver door: Close --> Open --> Close --> Open)

5. Push the unlock switch of the key twice within 5 seconds.
6. Close and open the driver door within 30 seconds.

(Driver door: Close --> Open)

7. Close the driver door within 5 seconds.

When electrical key cancel is activated, the wireless door lock buzzer sounds twice.

To return to the original condition, perform the procedures again. When the original condition is returned, the wireless door lock buzzer sounds once.

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

Use the table below to help determine the cause of problem symptoms. If multiple suspected areas are listed, 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
Entry answer-back buzzer does not sound	Wireless door lock control system	Refer to <u>No Answer-Back</u>
	Certification ECU (smart key ECU assembly)	-
All door entry lock/unlock functions and wireless functions do not operate	Power door lock control system	Refer to <u>All Door Entry Lock/Unlock Functions and Wireless Functions do not Operate</u>
	Key	-
	Key battery	-
	Fuse (SMART, ECU-B)	-
	Wire harness or connector	-
	Door control receiver assembly	-
	Certification ECU (Smart key ECU assembly)	-
		Refer to <u>All Door Entry</u>

All door entry lock/unlock functions do not operate, but wireless functions operate	Key	<u>Lock/Unlock Functions do not Operate, but Wireless Functions Operate</u>
	Certification ECU (Smart key ECU assembly)	-
Driver side door entry unlock function does not operate	Power door lock control system	Refer to <u>Driver Side Door Entry Unlock Function does not Operate</u>
	Front door outside handle assembly (for driver side)	-
	Certification ECU (Smart key ECU assembly)	-
	Wire harness or connector	-
Front passenger side door entry unlock function does not operate	Power door lock control system	Refer to <u>Front Passenger Side Door Entry Unlock Function does not Operate</u>
	Front door outside handle assembly (for front passenger side)	-
	Certification ECU (Smart key ECU assembly)	-
	Wire harness or connector	-
Driver side door entry lock and unlock functions do not operate	Power door lock control system	Refer to <u>Driver Side Door Entry Lock and Unlock Functions do not Operate</u>
	Front door outside handle assembly (for driver side)	-
	Certification ECU (Smart key ECU assembly)	-
	Wire harness or connector	-
Front passenger side door entry lock and unlock functions do not operate	Power door lock control system	Refer to <u>Front Passenger Side Door Entry Lock and Unlock Functions do not Operate</u>
	Front door outside handle assembly (for front passenger side)	-
	Certification ECU (Smart key ECU assembly)	-
	Wire harness or connector	-
Driver side door entry lock function does not operate	Power door lock control system	Refer to <u>Driver Side Door Entry Lock Function does not Operate</u>
	Front door outside handle assembly (for driver side)	-
	Certification ECU (Smart key ECU assembly)	-

	Wire harness or connector	-
Front passenger side door entry lock function does not operate	Power door lock control system	Refer to <u>Front Passenger Side Door Entry Lock Function does not Operate</u>
	Front door outside handle assembly (for front passenger side)	-
	Certification ECU (Smart key ECU assembly)	-
	Wire harness or connector	-
Room oscillator does not recognize key	Indoor electrical key oscillator (for front floor)	Refer to <u>Room Oscillator does not Recognize Key</u>
	Indoor electrical key oscillator (for center floor)	-
	Indoor electrical key oscillator (for rear floor)	-
	Certification ECU (Smart key ECU assembly)	-
	Wire harness or connector	-
Entry interior alarm does not sound	Meter / gauge system	Refer to <u>PROBLEM SYMPTOMS TABLE</u>
	Certification ECU (Smart key ECU assembly)	-
Back door entry unlock function does not operate	Power door lock control system	Refer to <u>Back Door Entry Unlock Function does not Operate</u>
	Back door opener switch assembly	-
	Certification ECU (Smart key ECU assembly)	-
	Wire harness or connector	-
Back door entry lock and unlock functions do not operate	Power door lock control system	Refer to <u>Back Door Entry Lock and Unlock Functions do not Operate</u>
	Outside electrical key oscillator (for rear side)	-
	Certification ECU (Smart key ECU assembly)	-
	Back door opener switch assembly	-
	Wire harness or connector	-
Back door entry lock function does not operate	Power door lock control system	Refer to <u>Back Door Entry Lock Function does not Operate</u>
	Back door opener switch assembly	-
	Certification ECU (Smart key	-

Only smart power slide door function does not operate	ECU assembly)	
	Wire harness or connector	-
	Power slide door system	Refer to <u>Power Slide Door Entry Function does not Operate</u>
	Power slide door ECU assembly	-
	Wire harness or connector	-

TERMINALS OF ECU

TERMINALS OF ECU

1. CHECK CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)

- Disconnect the D88 certification ECU (smart key ECU assembly) connector.

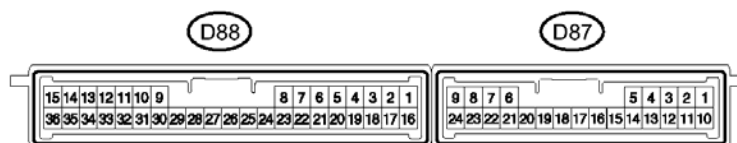


Fig. 27: Certification ECU (Smart Key ECU Assembly) Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Measure the voltage and resistance according to the value(s) in the table below.

HINT:

Measure the values on the wire harness side with the connector disconnected.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D88-1 (+B) - Body ground	G - Body ground	+B power supply	Always	11 to 14 V
D88-15 (E) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
D88-17 (CUTB) - Body ground	B - Body ground	Dark current cut fuse pin input signal	Always	11 to 14 V

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

- c. Reconnect the D88 certification ECU (smart key ECU assembly) connector.
- d. Measure the voltage and check for pulses according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D88-3 (CLG1) - D88-15 (E)	G - W- B	Door electrical key oscillator (for driver side) sensor signal	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
D88-3 (CLG1) - D88-15 (E)	G - W- B	Door electrical key oscillator (for driver side) sensor signal	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation
D88-4 (CG1B) - D88-15 (E)	R - W- B	Door electrical key oscillator (for driver side) sensor signal	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
D88-4 (CG1B) - D88-15 (E)	R - W- B	Door electrical key oscillator (for driver side) sensor signal	• Engine switch off • All doors closed • Key not in cabin • All doors locked by	Pulse generation

			wireless lock function	
D88-5 (CLG2) - D88-15 (E)	P - W-B	Door electrical key oscillator (for front passenger side) sensor signal	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
D88-5 (CLG2) - D88-15 (E)	P - W-B	Door electrical key oscillator (for front passenger side) sensor signal	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation
D88-6 (CG2B) - D88-15 (E)	V - W-B	Door electrical key oscillator (for front passenger side) sensor signal	• Engine switch off • All doors closed • Key not in cabin	No pulse generation
D88-6 (CG2B) - D88-15 (E)	V - W-B	Door electrical key oscillator (for front passenger side) sensor signal	• Engine switch off • All doors closed • Key not in cabin • All doors locked by wireless lock function	Pulse generation
			• Engine switch	

D88-7 (CLG5) - D88-15 (E)	R - W- B	Indoor electrical key oscillator (for front floor) sensor signal	off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-7 (CLG5) - D88-15 (E)	R - W- B	Indoor electrical key oscillator (for front floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
D88-8 (CG5B) - D88-15 (E)	W - W- B	Indoor electrical key oscillator (for front floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
			• Engine switch	

D88-8 (CG5B) - D88-15 (E)	W - W- B	Indoor electrical key oscillator (for front floor) sensor signal	off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
D88-16 (IG) - Body ground	B - Body ground	IG power supply	Engine switch off	Below 1 V
D88-16 (IG) - Body ground	B - Body ground	IG power supply	Engine switch on (IG)	11 to 14 V
D88-18 (TSW1) - D88-15 (E)	B - W- B	Lock sensor (for driver side) detection signal	• Engine switch off • All doors closed • Lock sensor (for driver side) not touched	Pulse generation
D88-18 (TSW1) - D88-15 (E)	B - W- B	Lock sensor (for driver side) detection signal	• Engine switch off • All doors closed • Lock sensor (for driver side) touched	Below 2 V
			• Engine switch	

D88-19 (TSW2) - D88-15 (E)	Y - W- B	Lock sensor (for front passenger side) detection signal	off • All doors closed • Lock sensor (for front passenger side) not touched	Pulse generation
D88-19 (TSW2) - D88-15 (E)	Y - W- B	Lock sensor (for front passenger side) detection signal	• Engine switch off • All doors closed • Lock sensor (for front passenger side) touched	Below 2 V
D88-20 (SEN1) - D88-15 (E)	GR - W-B	Touch sensor (for driver side) detection signal	• Engine switch off • All doors closed • Key not in detection area • Touch sensor (for driver side) not touched	Pulse generation
D88-20 (SEN1) - D88-15 (E)	GR - W-B	Touch sensor (for driver side) detection	• Engine switch off • All doors closed • Key not in detection area	Below 2 V

		signal	• Touch sensor (for driver side) touched	
D88-21 (SEN2) - D88-15 (E)	BR - W-B	Touch sensor (for front passenger side) detection signal	• Engine switch off • All doors closed • Key not in detection area • Touch sensor (for front passenger side) not touched	Pulse generation
D88-21 (SEN2) - D88-15 (E)	BR - W-B	Touch sensor (for front passenger side) detection signal	• Engine switch off • All doors closed • Key not in detection area • Touch sensor (for front passenger side) touched	Below 2 V
D88-22 (TSW5) - D88-15 (E)	L - W-B	Back door opener switch assembly (opener switch) signal	Back door opener switch assembly (opener switch) not pushed	Pulse generation
		Back door opener	Back door	

D88-22 (TSW5) - D88-15 (E)	L - W- B	switch assembly (opener switch) signal	opener switch assembly (opener switch) pushed	Below 1 V
D88-23 (TSW6) - D88-15 (E)	Y - W- B	Back door opener switch assembly (lock switch) signal	Back door opener switch assembly (lock switch) not pushed	Pulse generation
D88-23 (TSW6) - D88-15 (E)	Y - W- B	Back door opener switch assembly (lock switch) signal	Back door opener switch assembly (lock switch) pushed	Below 1 V
D88-24 (CLG6) - D88-15 (E)	V - W- B	Indoor electrical key oscillator (for center floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-24 (CLG6) - D88-15 (E)	V - W- B	Indoor electrical key oscillator (for center floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly	Pulse generation

			(lock sensor) touched	
D88-25 (CG6B) - D88-15 (E)	P - W-B	Indoor electrical key oscillator (for center floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-25 (CG6B) - D88-15 (E)	P - W-B	Indoor electrical key oscillator (for center floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
D88-26 (CLG7) - D88-15 (E)	L - W-B	Indoor electrical key oscillator (for rear floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock	No pulse generation

			sensor) not touched	
D88-26 (CLG7) - D88-15 (E)	L - W- B	Indoor electrical key oscillator (for rear floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) touched	Pulse generation
D88-27 (CG7B) - D88-15 (E)	LG - W-B	Indoor electrical key oscillator (for rear floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock sensor) not touched	No pulse generation
D88-27 (CG7B) - D88-15 (E)	LG - W-B	Indoor electrical key oscillator (for rear floor) sensor signal	• Engine switch off • All doors closed • Key not in cabin • Door outside handle assembly (lock	Pulse generation

			sensor) touched	
D88-32 (POS1) - D88-15 (E)	Y - W- B	Lock or unlock sensor (for driver side) output signal	Engine switch off	9 to 14 V
D88-32 (POS1) - D88-15 (E)	Y - W- B	Lock or unlock sensor (for driver side) output signal	Engine switch on (IG)	Below 2 V
D88-33 (POS2) - D88-15 (E)	LG - W-B	Lock or unlock sensor (for front passenger side) output signal	Engine switch off	9 to 14 V
D88-33 (POS2) - D88-15 (E)	LG - W-B	Lock or unlock sensor (for front passenger side) output signal	Engine switch on (IG)	Below 2 V
D87-5 (RCO) - D88-15 (E)	V - W- B	Door control receiver power source	• Engine switch off • Lock or unlock switch on key not pushed	Below 1 V
D87-5 (RCO) - D88-15 (E)	V - W- B	Door control receiver power source	• Engine switch off • Lock or unlock switch on key pushed	4.5 to 5.5 V
			Engine switch off, all doors	11 to 14 V

D87-15 (RDA) - D88-15 (E)	Y - W- B	Door control receiver data input signal	closed and transmitter switch not pressed	pulse generation at regular intervals
			Engine switch off, all doors closed and transmitter switch pressed	Pulse generation
D87-16 (RSSI) - D88-15 (E)	R - W- B	Door control receiver electric wave existence signal	• Engine switch off • All doors locked • Lock or unlock switch on key not pushed	11 to 14 V
D87-16 (RSSI) - D88-15 (E)	R - W- B	Door control receiver electric wave existence signal	• Engine switch off • All doors locked • Lock or unlock switch on key pushed	Below 2 V
D87-19 (CLG8) - D88-15 (E)	P - W- B	Outside electrical key oscillator (for rear side) sensor signal	• Engine switch off • All doors closed • Back door opener switch assembly off	No pulse generation
D87-19		Outside electrical	• Engine switch off • All doors	

(CLG8) - D88-15 (E)	P - W- B	key oscillator (for rear side) sensor signal	closed • Back door opener switch assembly on	Pulse generation
D87-20 (CG8B) - D88-15 (E)	V - W- B	Outside electrical key oscillator (for rear side) sensor signal	• Engine switch off • All doors closed • Back door opener switch assembly off	No pulse generation
D87-20 (CG8B) - D88-15 (E)	V - W- B	Outside electrical key oscillator (for rear side) sensor signal	• Engine switch off • All doors closed • Back door opener switch assembly on	Pulse generation

If the result is not as specified, the certification ECU (smart key ECU assembly) may have a malfunction.

2. CHECK INSTRUMENT PANEL JUNCTION BLOCK ASSEMBLY AND MAIN BODY ECU

- a. Turn the ignition switch off.

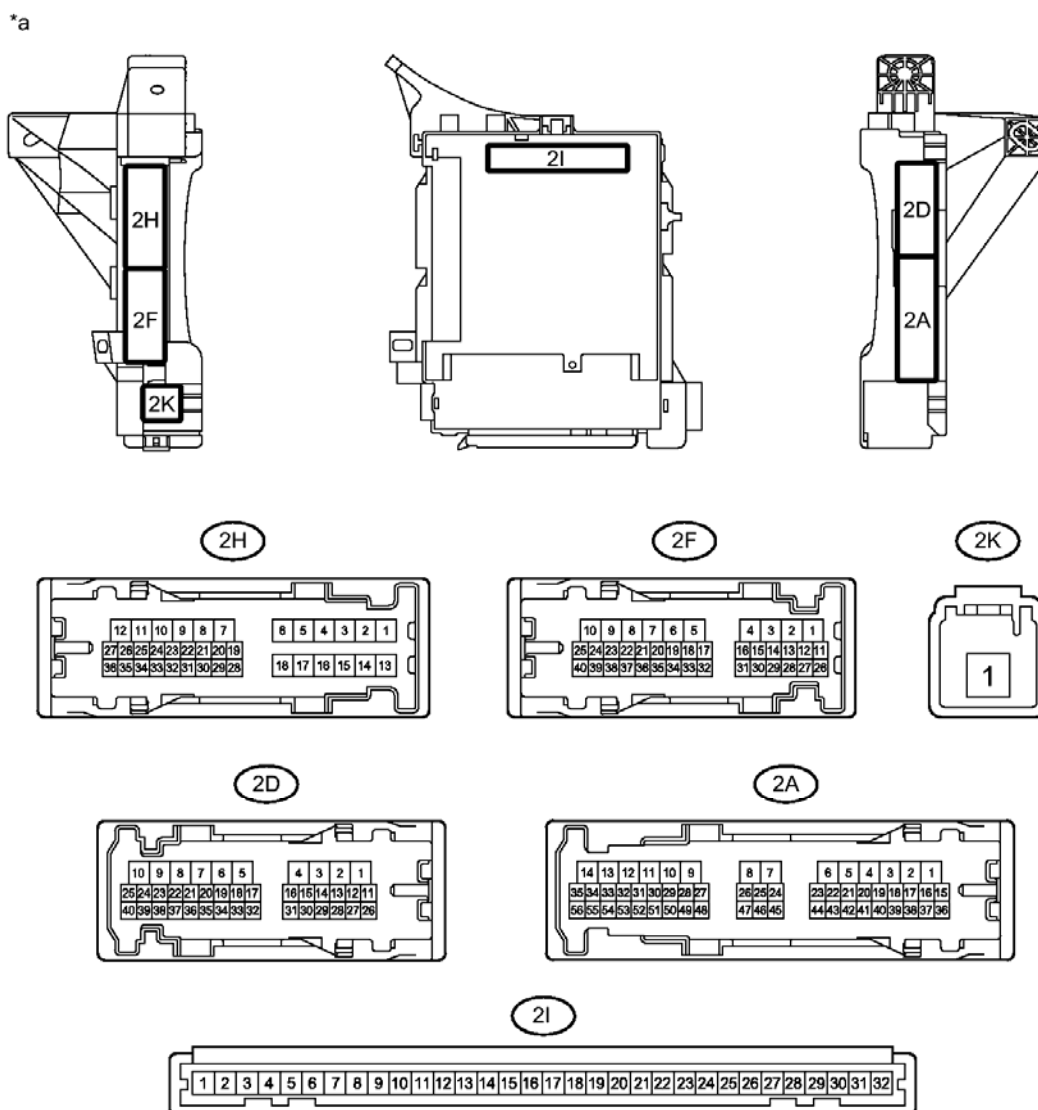


Fig. 28: Main Body ECU & Instrument Panel Junction Block Assembly Connector Terminal Identification

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Instrument Panel *a Junction Block Assembly	--
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- Remove the main body ECU from the instrument panel junction block assembly. Refer to **REMOVAL**.

HINT:

The instrument panel junction block assembly connectors must all be connected.

- c. Measure the voltage and resistance according to the value(s) in the table below.

Terminal No. (symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
2I-2 (FLCY) - Body ground	-	Front door courtesy light switch LH input	Front door LH CLOSED (off) --> OPEN (on)	10 kohms or higher - -> Below 1 ohms
2I-4 (FRCY) - Body ground	-	Front door courtesy light switch RH input	Front door RH CLOSED (off) --> OPEN (on)	10 kohms or higher - -> Below 1 ohms
2I-11 (GND1) - Body ground	-	Ground	Always	Below 1 ohms
2I-29 (ACC) - Body ground	-	Ignition power supply (ACC signal)	Ignition switch ACC --> off	11 to 14 V --> Below 1 V
2I-30 (BECU) - Body ground	-	+B (power system signal system) power supply	Always	11 to 14 V
2I-31 (ALTB) - Body ground	-	+B (power system alternator system) power supply	Always	11 to 14 V
2I-32 (IG) - Body ground	-	Ignition power supply (IG signal)	Ignition switch ON --> off	11 to 14 V --> Below 1 V

D12-3 (LCTY) - Body ground	GR - Body ground	Rear door courtesy light LH switch input	Rear door CLOSED (off) --> OPEN (on)	10 kohms or higher - -> Below 1 ohms
D13-6 (RCTY) - Body ground	L - Body ground	Rear door courtesy light RH switch input	Rear door CLOSED (off) --> OPEN (on)	10 kohms or higher - -> Below 1 ohms
D13-19 (BCTY) - Body ground	GR - Body ground	Back door courtesy light switch input	Back door CLOSED (off) --> OPEN (on)	10 kohms or higher - -> Below 1 ohms

If the result is not as specified, there may be a malfunction in the wire harness or the instrument panel junction block assembly.

- d. Reinstall the main body ECU. Refer to **REMOVAL** .

*a

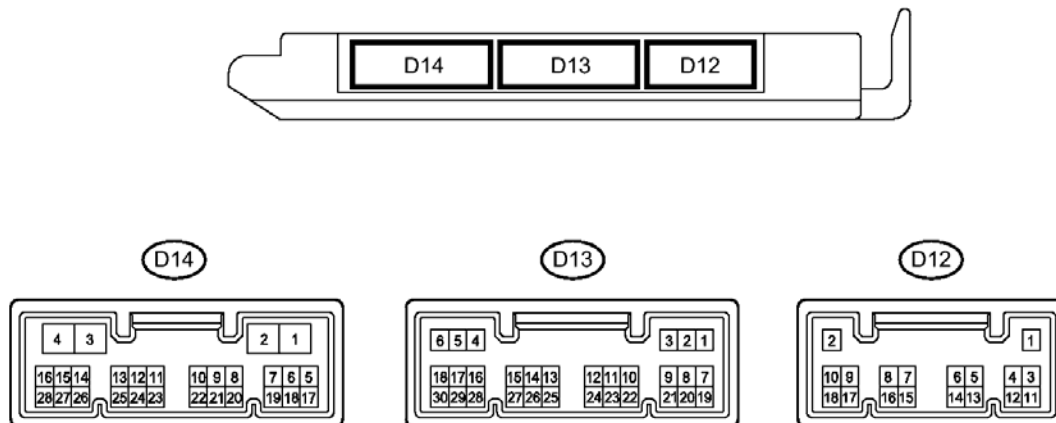


Fig. 29: Main Body ECU Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Main		
*a Body	-	-
ECU		

- e. Reconnect the D12 and D13 main body ECU connectors.
f. Measure the resistance and voltage according to the value(s) in the table below.

Terminal No. (symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D12-3 (LCTY) - Body ground	GR - Body ground	Rear door courtesy light LH switch input	Rear door CLOSED (off) --> OPEN (on)	10 kohms or higher -> Below 1ohms
D13-6 (RCTY) - Body ground	L - Body ground	Rear door courtesy light RH switch input	Rear door CLOSED (off) --> OPEN (on)	10 kohms or higher -> Below 1ohms
D13-19 (BCTY) - Body ground	GR - Body ground	Back door courtesy light switch input	Back door CLOSED (off) --> OPEN (on)	10 kohms or higher -> Below 1ohms

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

HINT:

Measure the values on the wire harness side with the connectors disconnected.

- g. Reconnect the main body ECU connectors.
- h. Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
2D-1 (ACT-) - Body ground	R - Body ground	Door lock motor unlock drive output (except driver side)	Multiplex network master switch (door control switch) or driver side door key cylinder off	Below 1 V
2D-1		Door lock motor	Multiplex network master switch	

(ACT-) - Body ground	R - Body ground	unlock drive output (except driver side)	(door control switch) or driver side door key cylinder unlocked	11 to 14 V
2D-3 (ACT+) - Body ground	P - Body ground	Door lock motor lock drive output (all doors)	Multiplex network master switch (door control switch) or driver side door key cylinder off	Below 1 V
2D-3 (ACT+) - Body ground	P - Body ground	Door lock motor lock drive output (all doors)	Multiplex network master switch (door control switch) or driver side door key cylinder locked	11 to 14 V
2D-4 (ACTD) - Body ground	SB - Body ground	Driver side door lock motor unlock drive output	Multiplex network master switch (door control switch) or driver side door key cylinder off	Below 1 V
2D-4 (ACTD) - Body ground	SB - Body ground	Driver side door lock motor unlock	Multiplex network master switch (door control switch) or	11 to 14 V

		drive output	driver side door key cylinder unlocked	
2H-27 (FRCY) - Body ground	GR - Body ground	Front passenger side door courtesy switch input	Front passenger side door open	Below 1 V
2H-27 (FRCY) - Body ground	GR - Body ground	Front passenger side door courtesy switch input	Front passenger side door closed	11 to 14 V
2H-35 (FLCY) - Body ground	P - Body ground	Driver door courtesy switch input	Driver door open	Below 1 V
2H-35 (FLCY) - Body ground	P - Body ground	Driver side door courtesy switch input	Driver door closed	11 to 14 V
2H-26 (LSWL) - Body ground	B - Body ground	Rear door LH lock position switch input	Rear door LH unlocked	Below 1 V
2H-26 (LSWL) - Body ground	B - Body ground	Rear door LH lock position switch input	Ignition switch off, all doors closed and rear door LH locked	Pulse generation
D12-3 (LCTY) - Body ground	GR - Body ground	Rear door LH courtesy light switch input	Rear door LH open	Below 1 V
D12-3 (LCTY) - Body ground	GR - Body ground	Rear door LH courtesy light switch input	Rear door LH closed	11 to 14 V
D13-6 (RCTY) - Body ground	L - Body ground	Rear door RH courtesy light switch	Rear door RH open	Below 1 V

		input		
D13-6 (RCTY) - Body ground	L - Body ground	Rear door RH courtesy light switch input	Rear door RH closed	11 to 14 V
D13-7 (LSFL) - Body ground	V - Body ground	Driver door lock position switch input	Driver door unlocked	Below 1 V
D13-7 (LSFL) - Body ground	V - Body ground	Driver door lock position switch input	Ignition switch off, all doors closed and driver door locked	Pulse generation
D13-9 (L1) - Body ground	B - Body ground	Front passenger side door control switch input	Front passenger side door control switch locked	Below 1 V
D13-9 (L1) - Body ground	B - Body ground	Front passenger side door control switch input	Front passenger side door control switch off	Pulse generation
D13-10 (UL1) - Body ground	G - Body ground	Front passenger side door control switch input	Front passenger side door control switch unlocked	Below 1 V
D13-10 (UL1) - Body ground	G - Body ground	Front passenger side door control switch input	Front passenger side door control switch off	Pulse generation
D13-11 (L2) - Body ground	LG - Body ground	Driver side door key- linked lock input	Driver side door key cylinder turned to locked	Below 1 V
D13-11		Driver side	Driver	

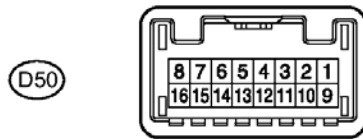
(L2) - Body ground	LG - Body ground	door key- linked lock input	side door key cylinder off	11 to 14 V
D13-18 (LSFR) - Body ground	Y - Body ground	Front passenger side door lock position switch input	Front passenger side door unlocked	Below 1 V
D13-18 (LSFR) - Body ground	Y - Body ground	Front passenger side door lock position switch input	Ignition switch off, all doors closed and front passenger side door locked	Pulse generation
D13-19 (BCTY) - Body ground	GR - Body ground	Back door courtesy light switch input	Back door open	Below 1 V
D13-19 (BCTY) - Body ground	GR - Body ground	Back door courtesy light switch input	Back door closed	11 to 14 V
D13-24 (UL3) - Body ground	L - Body ground	Driver side door key- linked unlock input	Driver side door key cylinder turned to unlocked	Below 1 V
D13-24 (UL3) - Body ground	L - Body ground	Driver side door key- linked unlock input	Driver side door key cylinder off	11 to 14 V
D14-2 (LSWR) - Body ground	L - Body ground	Rear door RH lock position switch input	Rear door RH unlocked	Below 1 V
D14-2 (LSWR) - Body ground	L - Body ground	Rear door RH lock position switch input	Ignition switch off, all doors closed and rear door RH	11 to 14 V

			locked	
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If the result is not as specified, the main body ECU or instrument panel junction block assembly may have a malfunction.

3. ACCESSORY METER ASSEMBLY

- a. Measure the voltage and resistance according to the value(s) in the table below.



P

Fig. 30: Accessory Meter Assembly (w/ Multi-Information Display) Connector Terminal Identification

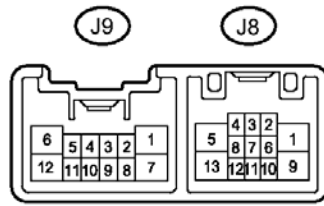
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D50-1 (IG) - Body ground	GR - Body ground	Ignition switch signal	Engine switch off	Below 1 V
D50-1 (IG) - Body ground	GR - Body ground	Ignition switch signal	Engine switch on (IG)	11 to 14 V
D50-9 (+B) - Body ground	L - Body ground	Battery	Always	11 to 14 V
D50-16 (SGND) - Body ground	BR - Body ground	Ground	Always	Below 1 ohms

If the result is not as specified, the accessory meter assembly may have a malfunction.

4. CHECK SLIDE DOOR MOTOR UNIT LH (POWER SLIDE DOOR ECU LH)

- a. Disconnect the J9 connector from the power slide door ECU LH.



H

Fig. 31: Slide Door Motor Unit LH (Power Slide Door ECU LH) Connector Terminal Identification

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

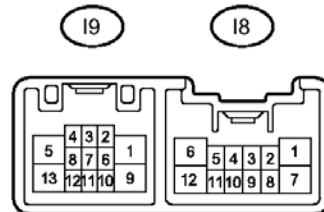
- b. Measure the voltage and resistance according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
J9-12 (ECUB) - J9-1 (GND)	SB - W-B	Power supply	Always	11 to 14 V
J9-7 (B) - J9-1 (GND)	LG - W-B	Power supply	Always	11 to 14 V
J9-4 (IG) - J9-1 (GND)	B - W-B	Power supply	Engine switch on (IG)	11 to 14 V
J9-1 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
J9-9 (OSW) - J9-2 (OSG)	G - V	Power slide door switch LH input	Slide door outside handle LH pulled	Below 1 ohms
			Slide door outside handle LH not operated	10 kohms or higher
J9-11 (MPX1) - Body ground	R - Body ground	CAN	Always	10 kohms or higher
J9-5 (MPX2) -	W - Body	CAN	Always	10 kohms

Body ground	ground			or higher
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5. CHECK SLIDE DOOR MOTOR UNIT RH (POWER SLIDE DOOR ECU RH)

- Disconnect the I8 connector from the power slide door ECU RH.



H

Fig. 32: Slide Door Motor Unit RH (Power Slide Door ECU RH) Connector Terminal Identification

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Measure the voltage and resistance according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
I8-7 (ECUB) - I8-6 (GND)	SB - W-B	Power supply	Always	11 to 14 V
I8-12 (B) - I8-6 (GND)	LG - W-B	Power supply	Always	11 to 14 V
I8-3 (IG) - I8-6 (GND)	B - W-B	Power supply	Engine switch on (IG)	11 to 14 V
I8-6 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
I8-10 (OSW) - I8-5 (OSG)	G - V	Power slide door switch RH input	Slide door outside handle RH pulled	Below 1 ohms
			Slide door outside handle RH not operated	10 kohms or higher

I8-8 (MPX1) - Body ground	R - Body ground	CAN	Always	10 kohms or higher
I8-2 (MPX2) - Body ground	W - Body ground	CAN	Always	10 kohms or higher

DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. DESCRIPTION

- The certification ECU (smart key ECU assembly) control the vehicle smart key system functions. Smart key system data and Diagnostic Trouble Codes (DTCs) can be read through the vehicle Data Link Connector 3 (DLC3). In some cases, a malfunction may be occurring in the smart key system. When the system seems to be malfunctioning, use the Techstream to check for malfunctions and perform repairs.

2. CHECK DLC3

- Check the DLC3. Refer to GENERAL INFORMATION .

3. INSPECT BATTERY VOLTAGE

- Measure the battery voltage.

Standard voltage

11 to 14 V

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

DTC CHECK / CLEAR

DTC CHECK / CLEAR

1. CHECK DTC

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Smart Key / Trouble Codes.
- Check the details of the DTC(s). Refer to DIAGNOSTIC TROUBLE CODE CHART.

2. CLEAR DTC

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.

- d. Enter the following menus: Body Electrical / Smart Key / Trouble Codes.
- e. Clear the DTCs.

DATA LIST / ACTIVE TEST

DATA LIST / ACTIVE TEST

1. DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

NOTE: In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

- a. Connect the Techstream to the DLC3.
- b. Turn the engine switch on (IG).
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Smart Key or Main Body / Data List.
- e. Read the Data List according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D-Door Touch Sensor	Driver side door touch sensor / ON or OFF	ON: Sensor touched OFF: Sensor not touched	-
P-Door Touch Sensor	Front passenger side door touch sensor / ON or OFF	ON: Sensor touched OFF: Sensor not touched	-
D-Door Trigger Switch	Driver side door lock sensor / ON or OFF	ON: Sensor touched OFF: Sensor not touched	-
P-Door Trigger	Front passenger side door lock	ON: Sensor touched	-

Switch	sensor / ON or OFF	OFF: Sensor not touched	
Tr/B-Door Lock SW	Back door opener switch assembly (lock switch) / ON or OFF	ON: Back door opener switch assembly (lock switch) pushed OFF: Back door opener switch assembly (lock switch) not pushed	-
Tr/B-Door Unlock SW	Back door opener switch assembly (opener switch) / ON or OFF	ON: Back door opener switch assembly (opener switch) pushed OFF: Back door opener switch assembly (opener switch) not pushed	-
Ignition Switch	Engine switch / ON or OFF	ON: Engine switch on (IG) OFF: Engine switch off	-
Unmatched Vehicle-ID	No communication condition between vehicle and key (vehicle-ID) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
No Response	No communication condition between vehicle and electrical key transmitter	Yes: Key ID code not matched to vehicle No: Key ID code matched	-

	(response) / Yes or No	to vehicle	
Unmatch Code or Form	No communication condition between vehicle and key (response code and format) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
Key Low Battery	Low key battery / Yes or No	Yes: Key battery voltage low No: Key battery voltage normal	-
Power Save Cnt 10 Min	Power save counter - 10 minutes / Min: 0; Max: 255	Within range from 0 to 255	-
Power Save Cnt 5 Day	Power save counter - 5 days / Min: 0; Max: 255	Within range from 0 to 255	-
Power Save Cnt 14 Day	Power save counter - 14 days / Min: 0; Max: 255	Within range from 0 to 255	-
ID Code Difference (Resp)	No communication condition between vehicle and key (ID code) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
C Code Difference	No communication condition between vehicle and key (challenge code) / Yes or No	Yes: Key ID code not matched to vehicle No: Key ID code matched to vehicle	-
Auto Entry	Entry function cancel / ON or	Mode status	-

Cancel SW	OFF	displayed	
Door Unlock Mode2	Door unlock mode / All or Driver	Mode status displayed	-
Ignition Available Area	Ignition available area / Front or All	Customization status displayed	-
Parking Wait Time	Parking wait time / 0.5s, 1.5s, 2.5s or 5s	Customization status displayed	-
B-Dr Opening Operation	Back door opening operation / Long, Twice, OFF	Customization status displayed	-
Key Low Battery Warning	Low key battery warning / ON or OFF	Customization status displayed	-

RR DOOR OR RL DOOR (POWER SLIDE DOOR ECU RH OR LH)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Outside PSD Switch	Smart power slide door switch signal / ON or OFF	ON : Rear door outside handle pulled for 0.2 seconds or more OFF : Rear door outside handle not pulled	-

MAIN BODY (MAIN BODY ECU)

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ACC SW	Engine switch on (ACC) / ON or OFF	ON: Engine switch on (ACC) OFF: Engine	-

		switch off	
IG SW	Engine switch on (IG) / ON or OFF	ON: Engine switch on (IG) OFF: Engine switch off	-
RR Door Courtesy SW	Rear door courtesy light switch RH signal / ON or OFF	ON: Rear door RH open OFF: Rear door RH closed	-
RL Door Courtesy SW	Rear door courtesy light switch LH signal / ON or OFF	ON: Rear door LH open OFF: Rear door LH closed	-
Back Door Courtesy SW	Back door courtesy light switch signal / ON or OFF	ON: Back door open OFF: Back door closed	-
FR Door Lock Pos	Front RH side door lock position switch signal / UNLOCK or LOCK	UNLOCK: Front RH side door unlocked LOCK: Front RH side door locked	-
FR Door Courtesy	Front RH side door courtesy light switch signal / ON or OFF	ON: Front RH side door closed OFF: Front RH side door open	-
FL Door Lock Pos	Front LH side door lock / UNLOCK or LOCK	UNLOCK: Front LH side door unlocked LOCK: Front LH	-

		side door locked	
FL Door Courtesy	Front LH side door courtesy light switch / ON or OFF	ON: Front LH side door closed OFF: Front LH side door open	-
RR-Door Lock Pos SW	Rear RH side door lock position switch signal / ON or OFF	ON: Rear RH side rear door unlocked OFF: Rear RH side rear door locked	-
RL-Door Lock Pos SW	Rear LH side door lock position switch signal / ON or OFF	ON: Rear LH side rear door unlocked OFF: Rear LH side rear door locked	-

2. ACTIVE TEST

HINT:

Using the Techstream to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- Connect the Techstream to the DLC3.
- Turn the engine switch on (IG).
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Smart Key or Main Body / Active Test.
- Perform the Active Test according to the display on the Techstream.

SMART KEY (CERTIFICATION ECU (SMART KEY ECU ASSEMBLY))

Tester Display	Test Part	Control Range	Diagnostic Note
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Overhead Tuner Power Supply ON	Door control receiver assembly	ON/OFF -	
Power for P- Seat Sens	Front door outside handle (for front passenger side)	ON/OFF -	

MAIN BODY (MAIN BODY ECU)

Tester Display	Test Part	Control Range	Diagnostic Note
Trunk and Back- door Open	Back door lock motor	ON/OFF -	

DIAGNOSTIC TROUBLE CODE CHART

DIAGNOSTIC TROUBLE CODE CHART

HINT:

If a trouble code is stored during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the appropriate information below.

CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)

DTC Code	Detection Item	Trouble Area	See
B27A1	Open in Driver Side Electrical Antenna Circuit	1. Front door outside handle assembly (for driver side) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or connector	Refer to <u>DTC B27A1: Open in Driver Side Electrical Antenna Circuit</u>
B27A2	Open in Front Passenger Side Electrical Antenna Circuit	1. Front door outside handle assembly (for front passenger side) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or	Refer to <u>DTC B27A2: Open in Front Passenger Side Electrical Antenna Circuit</u>

		connector	
B27A5	Open in Front Floor Electrical Key Oscillator Circuit	1. Indoor electrical key oscillator (for front floor) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or connector	Refer to <u>DTC B27A5: Open in Front Floor Electrical Key Oscillator Circuit</u>
B27A6	Open in Rear Floor Electrical Key Oscillator Circuit	1. Indoor electrical key oscillator (for center floor) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or connector	Refer to <u>DTC B27A6: Open in Rear Floor Electrical Key Oscillator Circuit</u>
B27A7	Open in Inside Luggage Compartment Electrical Key Oscillator Circuit	1. Indoor electrical key oscillator (for rear floor) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or connector	Refer to <u>DTC B27A7: Open in Inside Luggage Compartment Electrical Key Oscillator Circuit</u>
B27A8	Open in Outside Luggage Compartment Electrical Key Antenna Circuit	1. Outside electrical key oscillator (for rear side) 2. Certification ECU (smart key ECU assembly) 3. Wire harness or connector	Refer to <u>DTC B27A8: Open in Outside Luggage Compartment Electrical Key Antenna Circuit</u>