

ACCESSORIES & EQUIPMENT

Engine Immobiliser System (w/o Smart Key) (Diagnostic Codes & Circuit Tests) - Sienna

ENGINE IMMOBILISER SYSTEM (W/O SMART KEY SYSTEM)

DTC B2780: PUSH SWITCH / KEY UNLOCK WARNING SWITCH MALFUNCTION

DESCRIPTION

This DTC is stored if the transponder key ECU does not detect that the unlock warning switch is ON even when the ignition switch is ON. Under normal conditions, the unlock warning switch is ON when the ignition switch is ON.

DTC No.	DTC Detection Condition	Trouble Area
B2780	"Unlock warning switch ON" is not detected when the ignition switch is ON.	• Wire harness or connector • Unlock warning switch • Transponder key ECU

WIRING DIAGRAM

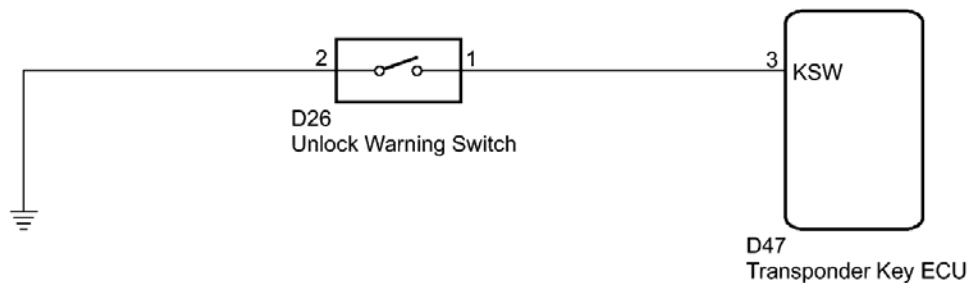


Fig. 1: Transponder Key Unlock Warning Switch Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .

PROCEDURE

1. **READ VALUE USING TECHSTREAM (KEY SW)**
 - a. Connect the Techstream to the DLC3.

- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Immobiliser / Data List.
- e. Read the Data List according to the display on the Techstream.

IMMOBILISER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Key SW	Unlock warning switch signal/ON or OFF	ON: Key in ignition key cylinder OFF: No key in ignition key cylinder	-

OK

On the Techstream screen, the item changes between ON and OFF according to the chart above.

NG --> See step 2

OK --> See step 5

2. INSPECT UNLOCK WARNING SWITCH

- a. Remove the unlock warning switch. Refer to **REMOVAL** .

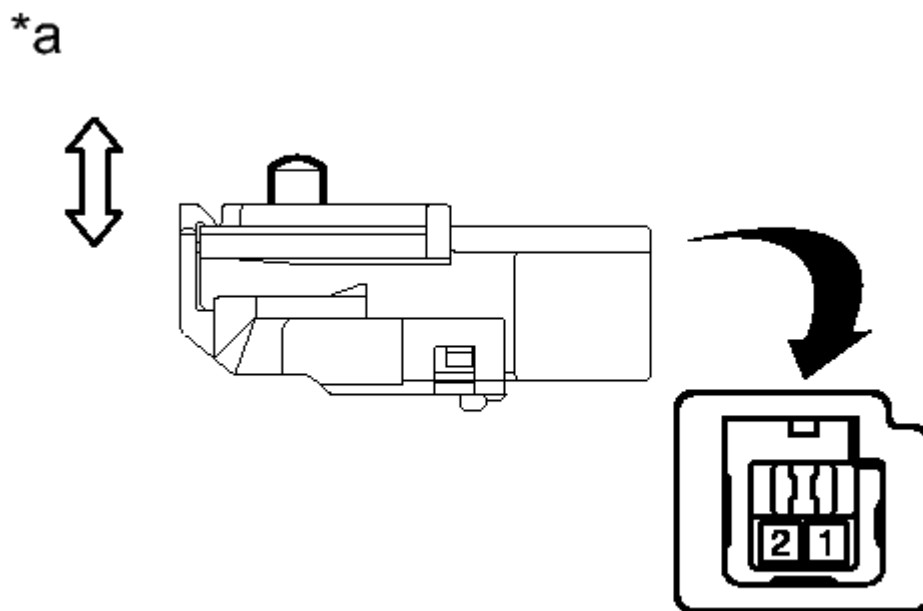


Fig. 2: Inspecting Unlock Warning Switch
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	Switch pushed (Key set)	Below 1 ohms
1 - 2	Switch free (Key removed)	10 kohms or higher

TEXT IN ILLUSTRATION

*a	Component without harness connected (Unlock Warning Switch)
----	---

NG --> See step 6

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (UNLOCK WARNING SWITCH - BODY GROUND)
- a. Measure the resistance according to the value(s) in the table below.

*a

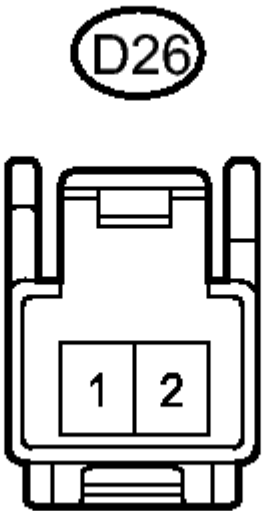


Fig. 3: Measuring Resistance Of Unlock Warning Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
D26-2 - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Unlock Warning Switch)
----	---

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. **CHECK HARNESS AND CONNECTOR (TRANSPONDER KEY ECU - UNLOCK WARNING SWITCH)**

- a. Disconnect the transponder key ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D47-3 (KSW) - D26-1	Always	Below 1 ohms
D47-3 (KSW) - Body ground	Always	10 kohms or higher
D26-1 - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 5

5. **REPLACE TRANSPONDER KEY ECU. Refer to REMOVAL**

6. **REPLACE UNLOCK WARNING SWITCH. Refer to REMOVAL**

DTC B2784: ANTENNA COIL OPEN / SHORT

DESCRIPTION

The transponder key coil is built into the transponder key amplifier and receives a key code signal from the transponder chip in the key. This signal is amplified by the amplifier, then it is output to the transponder key ECU.

DTC No.	DTC Detection Condition	Trouble Area
B2784	Antenna coil is open/shorted.	• Wire harness or connector • Transponder key amplifier • Transponder key ECU

WIRING DIAGRAM

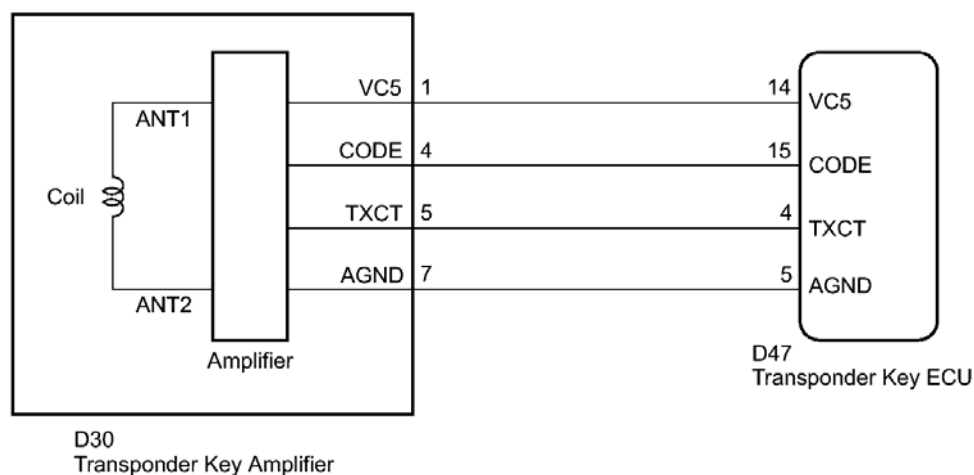


Fig. 4: Antenna Coil Circuit Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .

PROCEDURE

1. READ VALUE USING TECHSTREAM (ANTENNA COIL STATUS)

- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Immobiliser / Data List.
- Read the Data List according to the display on the Techstream.

IMMOBILISER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Antenna Coil Status	Transponder key amplifier coil condition/Normal or Fail	Normal: Antenna coil normal Fail: Antenna coil malfunctioning	-

OK

On the Techstream screen, the item displays Normal according to the chart above.

NG --> See step 2

OK --> See step 4

2. CHECK HARNESS AND CONNECTOR (TRANSPONDER KEY ECU - TRANSPONDER KEY AMPLIFIER)

- a. Disconnect the D47 transponder key ECU connector.
- b. Disconnect the D30 transponder key amplifier connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D47-4 (TXCT) - D30-5 (TXCT)	Always	Below 1 ohms
D47-5 (AGND) - D30-7 (AGND)	Always	Below 1 ohms
D47-14 (VC5) - D30-1 (VC5)	Always	Below 1 ohms
D47-15 (CODE) - D30-4 (CODE)	Always	Below 1 ohms
D47-4 (TXCT) - Body ground	Always	10 kohms or higher
D47-5 (AGND) - Body ground	Always	10 kohms or higher
D47-14 (VC5) - Body ground	Always	10 kohms or higher
D47-15		

(CODE) - Body ground	Always	10 kohms or higher
D30-5 (TXCT) - Body ground	Always	10 kohms or higher
D30-7 (AGND) - Body ground	Always	10 kohms or higher
D30-1 (VC5) - Body ground	Always	10 kohms or higher
D30-4 (CODE) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT TRANSPONDER KEY AMPLIFIER (POWER SOURCE AND GROUND)

- a. Reconnect the D47 transponder key ECU connector.
- b. Reconnect the D30 transponder key amplifier connector.

*a

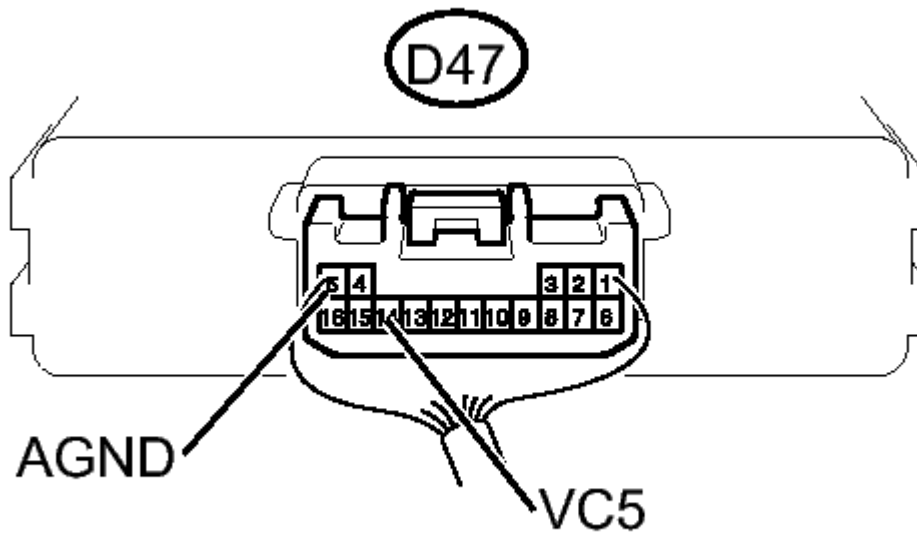


Fig. 5: Checking Transponder Key Amplifier (Power Source And Ground)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Voltage

Tester Connection	Condition	Specified Condition
D47-14 (VC5) - Body ground	No key is in ignition key cylinder	Below 1 V
D47-14 (VC5) - Body ground	Key is in ignition key cylinder	4.6 to 5.4 V

Standard Resistance

Tester Connection	Condition	Specified Condition
D47-5 (AGND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component with harness connected (Transponder Key ECU Assembly)
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NG --> See step 4

OK --> See step 5

4. REPLACE TRANSPONDER KEY ECU. Refer to REMOVAL

5. REPLACE TRANSPONDER KEY AMPLIFIER. Refer to REMOVAL

DTC B2793: TRANSPONDER CHIP MALFUNCTION

DESCRIPTION

This DTC is stored when a malfunction is found in the key during key code registration or a key code is not registered normally. Replace the key if the key code registration is not performed normally and this DTC is detected.

DTC No.	DTC Detection Condition	Trouble Area
B2793	Transponder chip malfunction.	Key

INSPECTION PROCEDURE

NOTE: If the key is replaced, register the key. Refer to REGISTRATION .

PROCEDURE

1. CLEAR DTC

- a. Clear the DTCs. Refer to DTC CHECK / CLEAR .

NEXT: Go to next step

2. RE-REGISTER KEY

- a. Re-register the key. Refer to REGISTRATION .

NEXT: Go to next step

3. CHECK ENGINE START

- a. Check that the engine starts.

OK

The engine starts.

NG --> **REPLACE KEY**

OK --> **END (KEY WAS NOT REGISTERED CORRECTLY)**

DTC B2794: UNMATCHED ENCRYPTION CODE

DESCRIPTION

This DTC is stored when a key with an incomplete key code is inserted into the ignition key cylinder.

DTC No.	DTC Detection Condition	Trouble Area
B2794	Key with incomplete key code is inserted.	Key

INSPECTION PROCEDURE

NOTE: If the key is replaced, register the key. Refer to **REGISTRATION** .

PROCEDURE

1. REPLACE KEY

- a. Replace the key.

NEXT: Go to next step

2. KEY REGISTRATION

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

NEXT --> END (KEY WAS DEFECTIVE)

DTC B2795: UNMATCHED KEY CODE

DESCRIPTION

This DTC is stored when a key with a key code that has not been registered in the ECU is inserted into the ignition key cylinder.

DTC No.	DTC Detection Condition	Trouble Area
B2795	Key with unregistered key code is inserted.	Key

INSPECTION PROCEDURE

NOTE: If the key is replaced, register the key. Refer to **REGISTRATION** .

PROCEDURE

1. CLEAR DTC

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

NEXT: Go to next step

2. RE-REGISTER KEY

- Re-register the key. Refer to REGISTRATION .

NEXT: Go to next step

3. CHECK ENGINE START

- Check that the engine starts.

OK

The engine starts.

NG --> REPLACE KEY

OK --> END (KEY WAS NOT REGISTERED CORRECTLY)

DTC B2796: NO COMMUNICATION IN IMMOBILISER SYSTEM; DTC B2798: COMMUNICATION MALFUNCTION NO. 2

DESCRIPTION

These DTCs are stored if a key that does not have a transponder chip is inserted into the ignition key cylinder or if communication between the key and the transponder key ECU is impossible.

DTC No.	DTC Detection Condition	Trouble Area
B2796	The key code cannot be transmitted.	• Key • Transponder key amplifier • Transponder key ECU
B2798	Key code identification cannot be completed within the specified time (0.15 to 0.5 seconds).	• Key • Transponder key amplifier • Transponder key ECU

INSPECTION PROCEDURE

NOTE:

- If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .
- If the key is replaced, register the key. Refer to REGISTRATION .

PROCEDURE

1. READ VALUE USING TECHSTREAM (IMMOBILISER)

- a. Connect the Techstream to the DLC3.
- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Immobiliser / Data List.
- e. Read the Data List according to the display on the Techstream.

IMMOBILISER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Immobiliser	Immobiliser system status/SET or UNSET	UNSET: Ignition switch ON SET: Without key	-

OK

On the Techstream screen, the item changes between UNSET and SET according to the chart above.

NG --> See step 2

OK --> See step 6

2. CHECK KEY

- a. Insert the vehicle's other key into the ignition key cylinder.
- b. Check that the engine starts with this key.

OK

The engine starts.

NG --> See step 5

OK: Go to next step

3. RE-REGISTER KEY

- a. Re-register the original key. Refer to REGISTRATION .

NEXT: Go to next step

4. CHECK ENGINE START

- a. Check that the engine starts.

OK

The engine starts.

NG --> REPLACE KEY

OK --> END (KEY WAS NOT REGISTERED CORRECTLY)

5. REPLACE TRANSPONDER KEY AMPLIFIER

- a. Replace the transponder key amplifier. Refer to REMOVAL .

NEXT: Go to next step

6. REPLACE TRANSPONDER KEY ECU. Refer to REMOVAL

7. CHECK ENGINE START

- a. Check that the engine starts.

OK

The engine starts.

NG --> See step 6

OK --> END (TRANSPONDER KEY AMPLIFIER WAS DEFECTIVE)

DTC B2797: COMMUNICATION MALFUNCTION NO. 1

DESCRIPTION

This DTC is stored when an error occurs in communication between the transponder key amplifier and the transponder key ECU.

HINT:

Some noise is found in the communication line.

DTC No.	DTC Detection Condition	Trouble Area
B2797	Keys are positioned too close to each other, or noise occurs in communication line.	• Key • Transponder key amplifier • Transponder key ECU

INSPECTION PROCEDURE

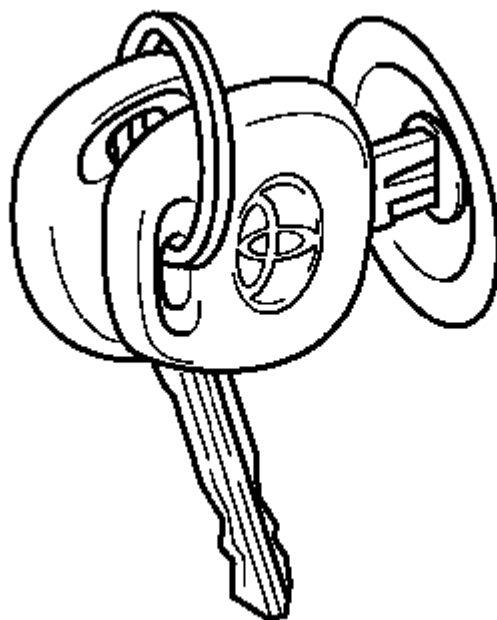
NOTE: If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REMOVAL .

PROCEDURE

1. CHECK KEY

- a. Check whether the ignition key being used is near other ignition keys, as shown in the illustration. Also, check whether the key ring is in contact with the key grip.

*a



Y

Fig. 6: Identifying Ignition Keys

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

RESULT

Result	Proceed to
Key is near other keys and/or key ring is in contact with key grip.	A

Key is not near other keys and key ring is not in contact with key grip.	B
--	---

TEXT ILLUSTRATION

*a Example:

B --> See step 3

A: Go to next step

2. CHECK DTC OUTPUT

- Separate the keys from each other or remove the key ring.
- Clear the DTCs. Refer to **DTC CHECK / CLEAR** .
- Insert a key into the ignition key cylinder and remove the key. Repeat for all the other keys of the vehicle.

OK

No DTC is output.

NG --> See step 3

OK --> END (KEYS WERE POSITIONED TOO CLOSE TO EACH OTHER)

3. REPLACE TRANSPONDER KEY AMPLIFIER

- Replace the transponder key amplifier. Refer to **REMOVAL** .

NEXT: Go to next step

4. REPLACE TRANSPONDER KEY ECU. Refer to **REMOVAL**

5. CHECK ENGINE START

- Check that the engine starts.

OK

The engine starts.

NG --> See step 4

OK --> END (TRANSPONDER KEY AMPLIFIER WAS DEFECTIVE)

DTC B2799: ENGINE IMMOBILISER SYSTEM MALFUNCTION

DESCRIPTION

This DTC is stored when one of the following occurs: 1) the ECM detects errors in its own communications with the transponder key ECU; 2) the ECM detects errors in the communication lines; or 3) the ECU communication ID between the transponder key ECU and ECM is different and an engine start is attempted.

Before troubleshooting for this DTC, make sure that no transponder key ECU DTCs are present. If present, troubleshoot the transponder key ECU DTCs first.

DTC No.	DTC Detection Condition	Trouble Area
B2799	One of the following conditions is met: - Error in communication between ECM and transponder key ECU. - Error in communication lines. - Communication ID is different during communication with transponder key ECU.	- Wire harness or connector - ECM - Transponder key ECU

WIRING DIAGRAM

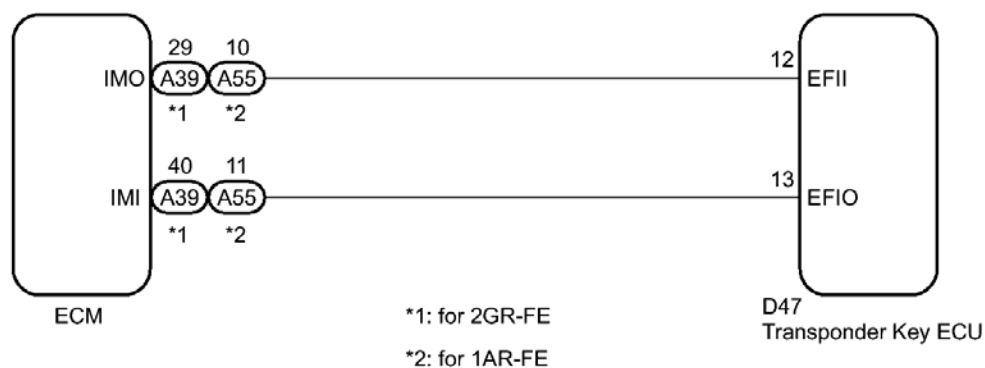


Fig. 7: Engine Immobilizer System Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .
- If the ECM is replaced, register the ECU communication ID. Refer to REGISTRATION .

PROCEDURE

1. CHECK DTC OUTPUT

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

OK

DTC B2799 is not output.

NG --> See step 2

OK --> See step 9

2. RE-REGISTER ECU COMMUNICATION ID

- a. Re-register the ECU communication ID. Refer to REGISTRATION .

NEXT: Go to next step

3. CHECK DTC OUTPUT

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

OK

DTC B2799 is not output.

NG --> See step 4

OK --> END (ECU COMMUNICATION ID WAS NOT REGISTERED CORRECTLY)

4. CHECK CONNECTION OF CONNECTOR

- a. Turn the ignition switch off.
- b. Check that the connectors are properly connected to the ECM and transponder key ECU.

OK

Connectors are properly connected.

NG --> **CONNECT CONNECTORS PROPERLY**

OK: Go to next step

5. CHECK HARNESS AND CONNECTOR (TRANSPONDER KEY ECU - ECM)

- a. Disconnect the transponder key ECU connector.
- b. Disconnect the ECM connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

FOR 2GR-FE

Tester Connection	Condition	Specified Condition
D47-12 (EFII) - A39-29 (IMO)	Always	Below 1 ohms
D47-13 (EFIO) - A39-40 (IMI)	Always	Below 1 ohms
D47-12 (EFII) - Body ground	Always	10 kohms or higher
D47-13 (EFIO) - Body ground	Always	10 kohms or higher
A39-29 (IMO) - Body ground	Always	10 kohms or higher
A39-40 (IMI) - Body ground	Always	10 kohms or higher

FOR 1AR-FE

Tester Connection	Condition	Specified Condition
D47-12 (EFII) - A55-10 (IMO)	Always	Below 1 ohms
D47-13		

(EFIO) - A55-11 (IMI)	Always	Below 1 ohms
D47-12 (EFII) - Body ground	Always	10 kohms or higher
D47-13 (EFIO) - Body ground	Always	10 kohms or higher
A55-10 (IMO) - Body ground	Always	10 kohms or higher
A55-11 (IMI) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

6. REPLACE ECM

- a. Replace the ECM. Refer to **REMOVAL** for 2GR-FE. Refer to **REMOVAL** for 1AR-FE.

NEXT: Go to next step

7. REGISTER ECU COMMUNICATION ID

- a. Register the ECU communication ID. Refer to **REGISTRATION** .

NEXT: Go to next step

8. CHECK DTC OUTPUT

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

OK

DTC B2799 is not output.

NG --> See step 10

OK --> END (ECM WAS DEFECTIVE)

9. **USE SIMULATION METHOD TO CHECK.** Refer to HOW TO PROCEED WITH TROUBLESHOOTING

10. **REPLACE TRANSPONDER KEY ECU.** Refer to REMOVAL

DTC B279A: THEFT DETERRENT SYSTEM COMMUNICATION LINE HIGH FIXATION

DESCRIPTION

If the communication line (EFIO-IMI) to the transponder key ECU is stuck high output (e.g. shorted to +B), the ECM stores this DTC.

DTC No.	DTC Detection Condition	Trouble Area
B279A	Communication line (EFIO-IMI) between the ECM and transponder key ECU is stuck high output.	• Wire harness or connector • Transponder key ECU • ECM

WIRING DIAGRAM

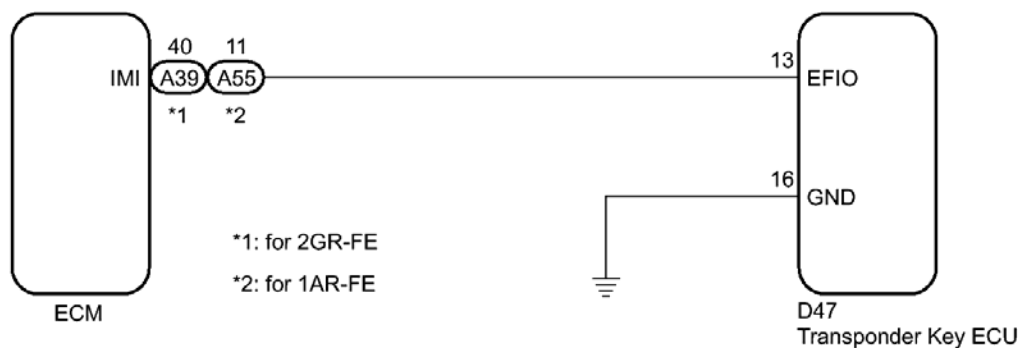


Fig. 8: Theft Deterrent System Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .
- If the ECM is replaced, register the ECU communication ID. Refer to REGISTRATION .

PROCEDURE

1. CHECK DTC OUTPUT

- a. Recheck for DTCs. Refer to DTC CHECK / CLEAR .

HINT:

If any DTCs other than DTC B279A are output, troubleshoot those DTCs first.

RESULT

Result	Proceed to
DTC B279A is output	A
DTC B279A and other DTCs are output	B

B --> See step 8

A: Go to next step

2. CHECK HARNESS AND CONNECTOR (TRANSPONDER KEY ECU - ECM)

- Disconnect the transponder key ECU connector.
- Disconnect the ECM connector.
- Measure the resistance and voltage according to the value(s) in the table below.

Standard Resistance

FOR 2GR-FE

Tester Connection	Condition	Specified Condition
D47-13 (EFIO) - A39-40 (IMI)	Always	Below 1 ohms
D47-13 (EFIO) - Body ground	Always	10 kohms or higher
A39-40 (IMI) - Body ground	Always	10 kohms or higher

FOR 1AR-FE

Tester Connection	Condition	Specified Condition
D47-13 (EFIO) - A55-11 (IMI)	Always	Below 1 ohms
D47-13 (EFIO) - Body ground	Always	10 kohms or higher
A55-11 (IMI) - Body ground	Always	10 kohms or higher

Standard Voltage

Tester Connection	Condition	Specified Condition
D47-13 (EFIO) - Body ground	Always	Below 1 V

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT TRANSPONDER KEY ECU (OUTPUT)

- a. Reconnect the transponder key ECU connector.
- b. Reconnect the ECM connector.
- c. Using an oscilloscope, check the waveform.

*1

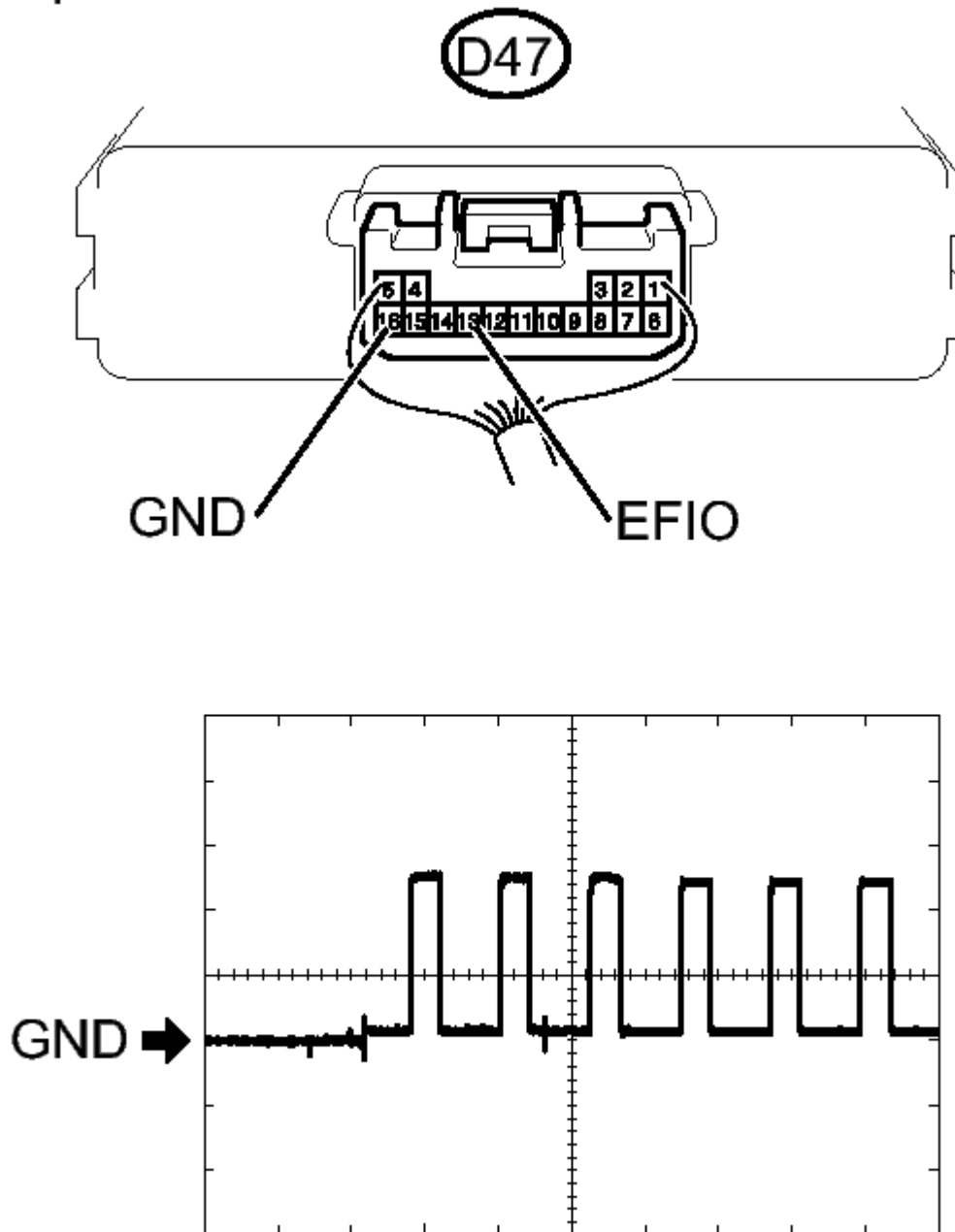


Fig. 9: Checking Transponder Key ECU (Output) With Waveform
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

WAVEFORM 1

Item	Content
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Tester Connection	D47-13 (EFIO) - D47-16 (GND)
Tool Setting	5 V/DIV., 50 ms./DIV.
Condition	Ignition switch ON

RESULT

Result	Proceed to
NG	A
OK (for 2GR-FE)	B
OK (for 1AR-FE)	C

TEXT IN ILLUSTRATION

*a	Component with harness connected (Transponder Key ECU)
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B --> See step 9

C --> See step 10

A: Go to next step

4. REPLACE TRANSPONDER KEY ECU

- Replace the transponder key ECU. Refer to **REMOVAL** .

NEXT: Go to next step

5. REGISTER KEY

- Register the key. Refer to **REGISTRATION** .

NEXT: Go to next step

6. REGISTER ECU COMMUNICATION ID

- a. Register the ECU communication ID. Refer to REGISTRATION .

NEXT: Go to next step

7. CHECK DTC OUTPUT

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

OK

DTC B279A is not output.

RESULT

Result	Proceed to
OK	A
NG (for 2GR- FE)	B
NG (for 1AR- FE)	C

B --> See step 9

C --> See step 10

A --> END (TRANSPONDER KEY ECU WAS DEFECTIVE)

8. GO TO DTC CHART. Refer to DIAGNOSTIC TROUBLE CODE CHART

9. REPLACE ECM. Refer to REMOVAL

10. REPLACE ECM. Refer to REMOVAL

DTC B279C: THEFT DETERRENT SYSTEM PRESENCE DETECTION

DESCRIPTION

If an ECM that is incompatible with the engine immobiliser system is installed, the ECM stores this DTC.

DTC No.	DTC Detection Condition	Trouble Area

B279C	An ECM that is incompatible with engine immobiliser system is installed.	ECM
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INSPECTION PROCEDURE

NOTE: If the ECM is replaced, register the ECU communication ID. Refer to REGISTRATION .

PROCEDURE

1. CHECK DTC OUTPUT

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

OK

DTC B279C is not output.

RESULT

Result	Proceed to
OK	A
NG (for 2GR- FE)	B
NG (for 1AR- FE)	C

B --> See step 3

C --> See step 4

A --> See step 2

- USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING
- REPLACE ECM. Refer to REMOVAL
- REPLACE ECM. Refer to REMOVAL

CIRCUIT TESTS

Security Indicator Light Circuit

DESCRIPTION

The security indicator light blinks continuously due to a continuous signal received from the transponder key ECU while in the armed state.

WIRING DIAGRAM

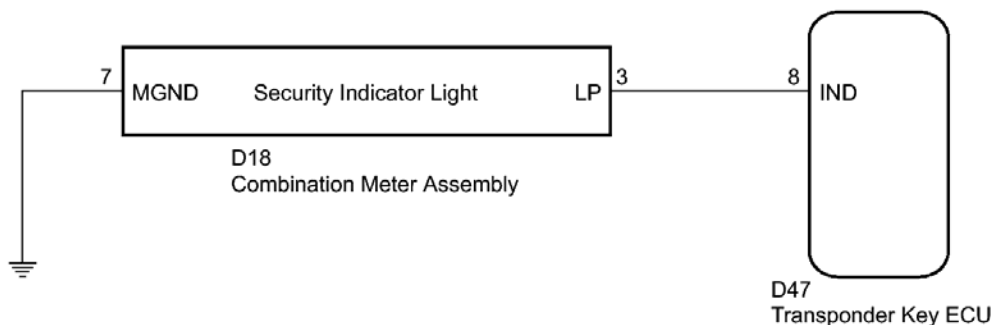


Fig. 10: Security Indicator Light Circuit Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to **REGISTRATION** .

PROCEDURE

1. **PERFORM ACTIVE TEST USING TECHSTREAM (SECURITY INDICATOR)**
 - a. Connect the Techstream to the DLC3.
 - b. Turn the ignition switch to ON.
 - c. Turn the Techstream on.
 - d. Enter the following menus: Body Electrical / Immobiliser / Active Test.
 - e. Perform the Active Test according to the display on the Techstream.

IMMOBILISER

Tester Display	Test Part	Control Range	Diagnostic Note
Security Indicator	Security indicator light	ON/OFF	-

OK

The security indicator turns on and off according to operation via the Techstream.

NG --> See step 2

OK --> See step 5

2. CHECK HARNESS AND CONNECTOR (TRANSPONDER KEY ECU - COMBINATION METER)

- a. Disconnect the D47 transponder key ECU connector.
- b. Disconnect the D18 combination meter assembly connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D47-8 (IND) - D18-3 (LP)	Always	Below 1 ohms
D47-8 (IND) - Body ground	Always	10 kohms or higher
D18-3 (LP) - Body ground	Always	10 kohms or higher

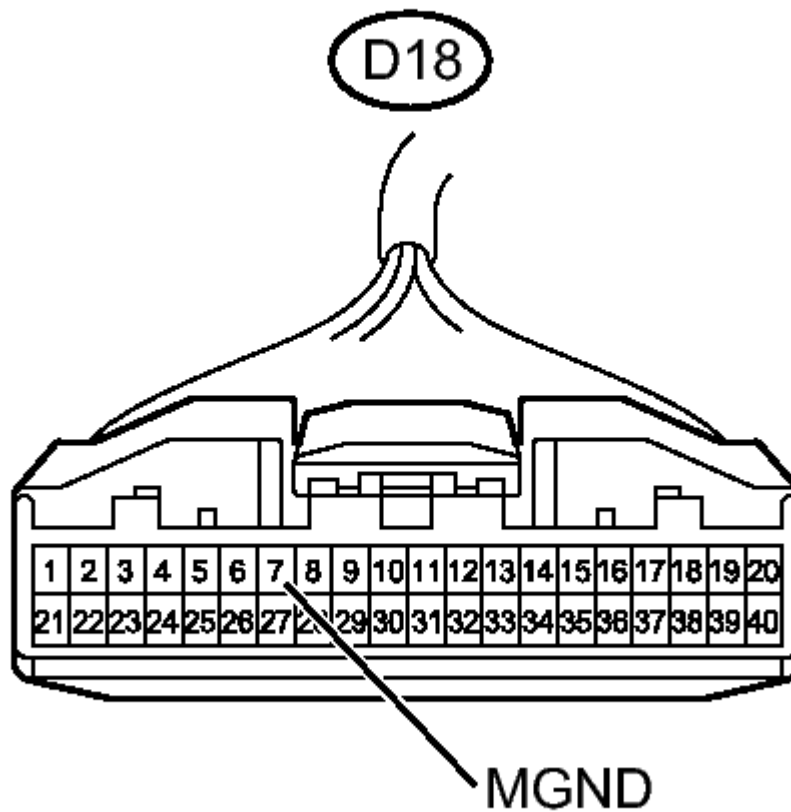
NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (COMBINATION METER - BODY GROUND)

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

*a



H

Fig. 11: Checking Harness And Connector (Combination Meter - Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
D18-7 (MGND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

Front view of wire harness

connector (to *a Combination Meter Assembly)
--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

4. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**
5. **REPLACE TRANSPONDER KEY ECU. Refer to REMOVAL**

Door Courtesy Switch Circuit

DESCRIPTION

When an additional transponder key is registered, the transponder key ECU detects the front door courtesy light switch LH open/close condition, and enters the key registration mode.

WIRING DIAGRAM

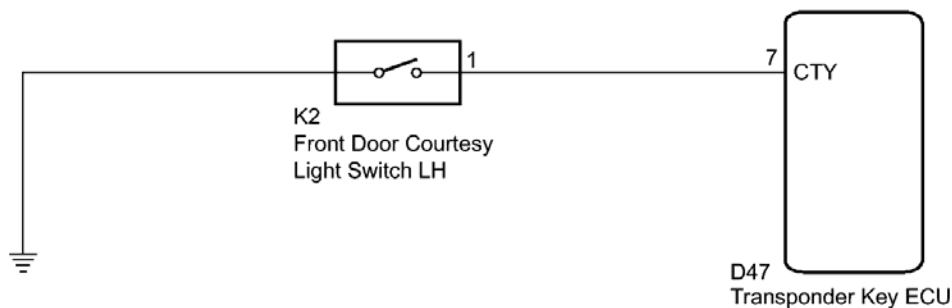


Fig. 12: Door Courtesy Switch Circuit Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE: If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .

PROCEDURE

1. **READ VALUE USING TECHSTREAM (D DOOR COURTESY SW)**
 - a. Connect the Techstream to the DLC3.

- b. Turn the ignition switch to ON.
- c. Turn the Techstream on.
- d. Enter the following menus: Body Electrical / Immobiliser / Data List.
- e. Read the Data List according to the display on the Techstream.

IMMOBILISER

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
D Door Courtesy SW	Driver door courtesy light switch signal / ON or OFF	ON: Driver door open OFF: Driver door closed	-

OK

The driver door courtesy light switch on and off according to operation via the Techstream.

NG --> See step 2

OK --> PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE

2. CHECK HARNESS AND CONNECTOR (FRONT DOOR COURTESY LIGHT SWITCH CIRCUIT)

- a. Disconnect the D47 transponder key ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
D47-7 (CTY) - Body ground	Courtesy switch pushed (Door closed)	10 kohms or higher
D47-7 (CTY) - Body ground	Courtesy switch free (Door open)	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

3. INSPECT FRONT DOOR COURTESY LIGHT SWITCH LH

- a. Remove the front door courtesy light switch LH. Refer to REMOVAL .

*a

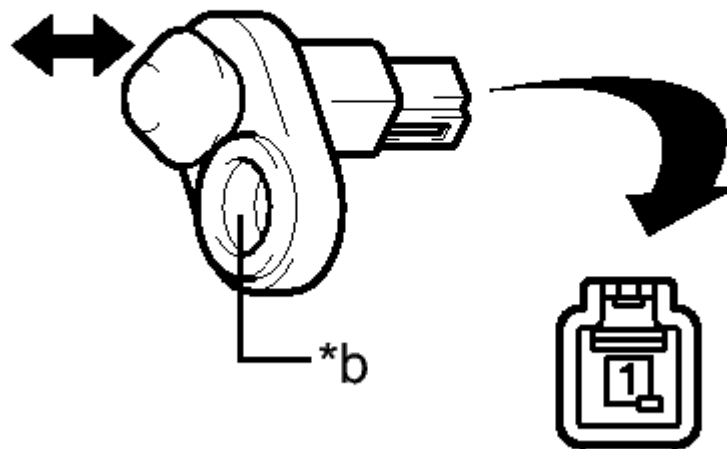


Fig. 13: Inspecting Front Door Courtesy Light Switch LH
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
1 - Switch body	Courtesy switch pushed (Door closed)	10 kohms or higher
1 - Switch body	Courtesy switch free (Door open)	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Component without harness connected (Front Door Courtesy Light Switch LH)
*b	Switch Body

NG --> See step 5

OK --> See step 4

- 4. REPLACE TRANSPONDER KEY ECU. Refer to REMOVAL**
- 5. REPLACE FRONT DOOR COURTESY LIGHT SWITCH LH. Refer to REMOVAL**

ECU Power Source Circuit

DESCRIPTION

This circuit provides power to operate the transponder key ECU.

WIRING DIAGRAM

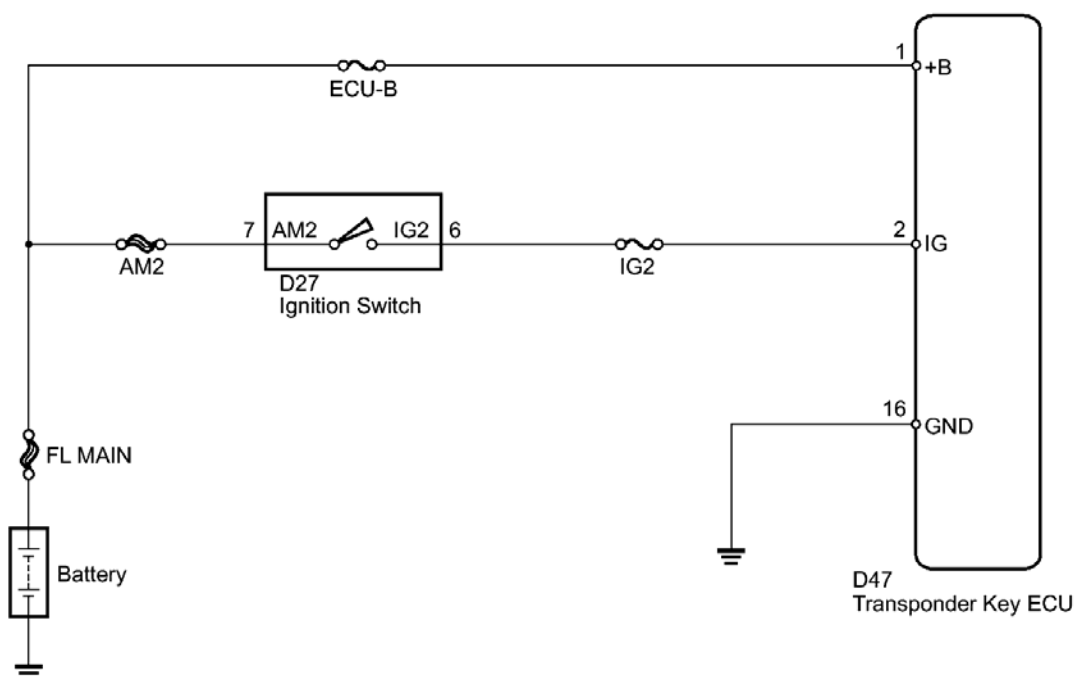


Fig. 14: ECU Power Source Circuit Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .
- Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. **CHECK HARNESS AND CONNECTOR (TRANSPONDER KEY ECU - BATTERY AND BODY GROUND)**
 - a. Disconnect the D47 transponder key ECU connector.

*a

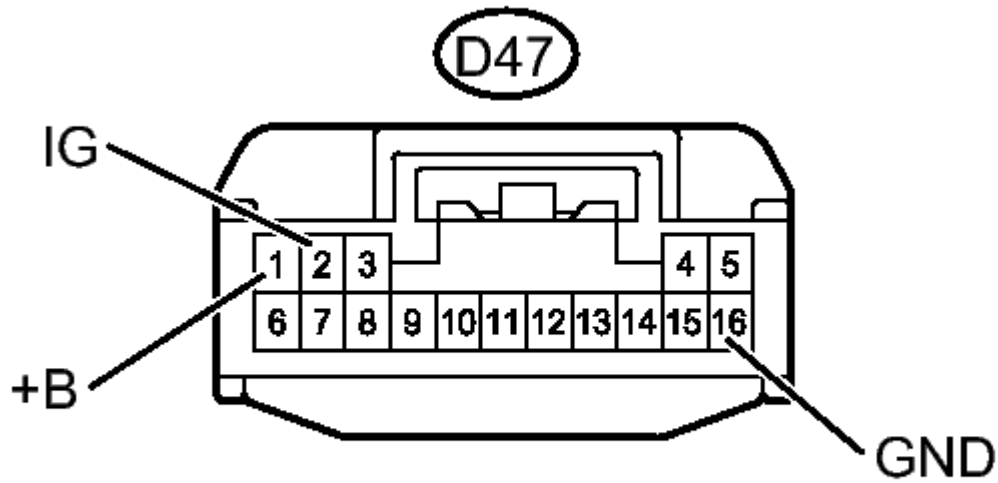


Fig. 15: Checking Harness And Connector (Transponder Key ECU - Battery And Body Ground)

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	Switch Condition	Specified Condition
D47-1 (+B) - Body ground	Always	11 to 14 V
D47-2 (IG) - Body ground	Ignition switch off	Below 1 V
D47-2 (IG) - Body ground	Ignition switch ON	11 to 14 V

Standard Resistance

Tester Connection	Condition	Specified Condition
D47-16 (GND) -	Always	Below 1

Body ground		ohms
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TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Transponder Key ECU)
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NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR, OR REPLACE FUSE

OK --> See step 2

2. PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE. Refer to PROBLEM SYMPTOMS TABLE

Diagnosis Circuit

DESCRIPTION

This circuit is used to read the DTCs that are output from the transponder key ECU with the Techstream.

WIRING DIAGRAM

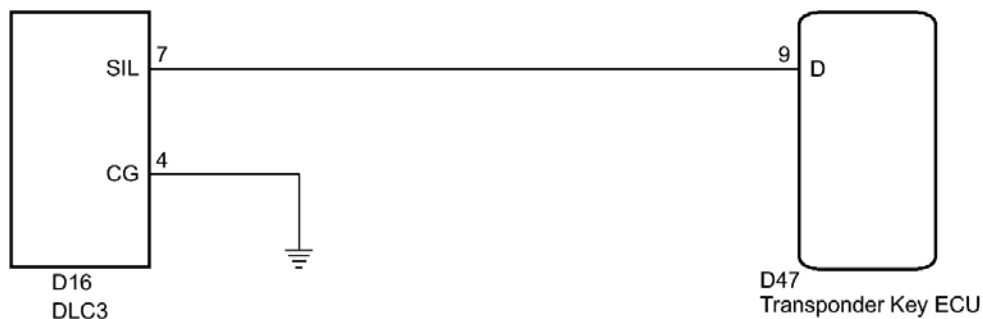


Fig. 16: Diagnosis Circuit Wiring Diagram

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

INSPECTION PROCEDURE

NOTE: If the transponder key ECU is replaced, register the key and ECU communication ID. Refer to REGISTRATION .

PROCEDURE

1. CHECK HARNESS AND CONNECTOR (DLC3 - TRANSPONDER KEY ECU AND BODY GROUND)

- a. Disconnect the transponder key ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D47-9 (D) - D16-7 (SIL)	Always	Below 1 ohms
D16-4 (CG) - Body ground	Always	Below 1 ohms
D47-9 (D) - Body ground	Always	10 kohms or higher
D16-7 (SIL)- Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 2

2. REPLACE TRANSPONDER KEY ECU. Refer to REMOVAL