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| DTC | P0115 | Engine Coolant Temp. Circuit Malfunction |
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CIRCUIT DESCRIPTION

A thermistor built into the engine coolant temp. sensor changes the resistance value according to the engine coolant temperature.

The structure of the sensor and connection to the ECM is the same as in the DTC P0110 (Intake Air Temp. Circuit Malfunction) shown on page [DI-33](#).

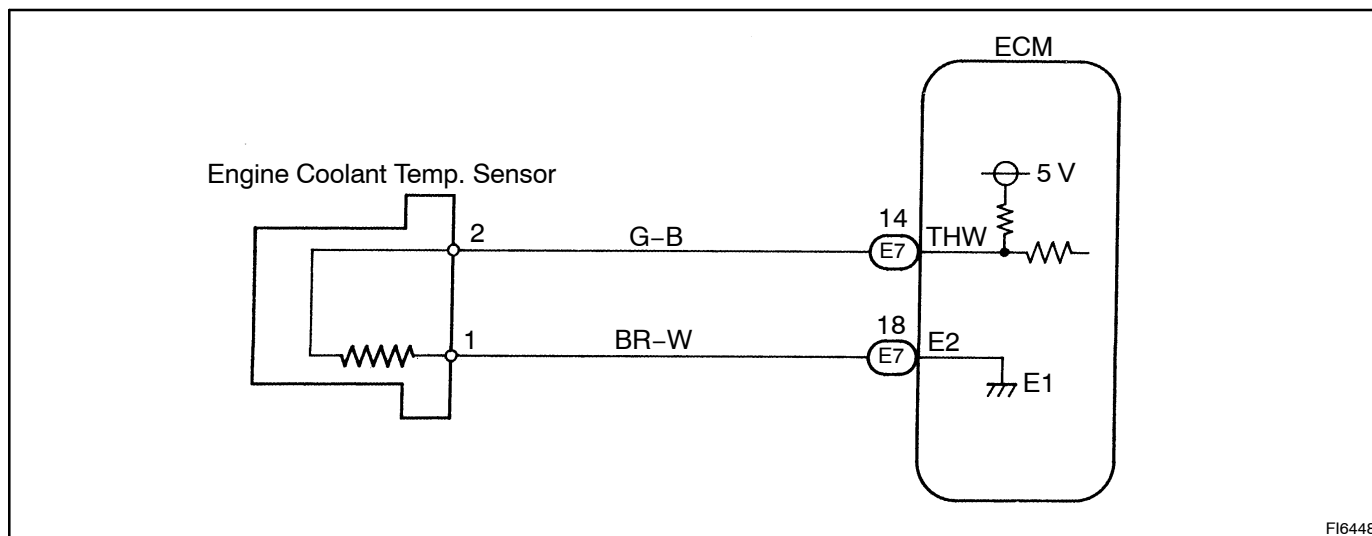
| DTC No. | DTC Detecting Condition | Trouble Area |
|---------|--|--|
| P0115 | Open or short in engine coolant temp. sensor circuit | <ul style="list-style-type: none"> • Open or short in engine coolant temp. sensor circuit • Engine coolant temp. sensor • ECM |

HINT:

After confirming DTC P0115, use the OBD II scan tool or LEXUS hand-held tester to confirm the engine coolant temperature from the CURRENT DATA.

| Temperature Displayed | Malfunction |
|-----------------------|---------------|
| -40°C (-40°F) | Open circuit |
| 140°C (284°F) or more | Short circuit |

WIRING DIAGRAM



FI6448

INSPECTION PROCEDURE

HINT:

- If DTCs P0110 (Intake Air Temp. Circuit Malfunction), P0115 (Engine Coolant Temp. Circuit Malfunction), P0120 (Throttle/Pedal Position Sensor/Switch "A" Circuit Malfunction), P0450 (Evaporative Emission Control System Pressure Sensor Malfunction) and P1120 (Accelerator Pedal Position Sensor Circuit Malfunction) are output simultaneously, E2 (sensor ground) may be open.
- Read freeze frame data using LEXUS hand-held tester or OBD II scan tool. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air-fuel ratio lean or rich, etc. at the time of the malfunction.

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| 1 | Connect OBD II scan tool or LEXUS hand-held tester, and read value of engine coolant temperature. |
|---|---|

PREPARATION:

- (a) Connect the OBD II scan tool or LEXUS hand-held tester to the DLC3.
- (b) Turn the ignition push ON and push the OBD II scan tool or LEXUS hand-held tester main switch ON.

CHECK:

Read temperature value on the OBD II scan tool or LEXUS hand-held tester.

OK:

Same as actual engine coolant temperature

HINT:

- If there is open circuit, OBD II scan tool or LEXUS hand-held tester indicates -40°C (-40°F).
- If there is short circuit, OBD II scan tool or LEXUS hand-held tester indicates 140°C (284°F) or more.

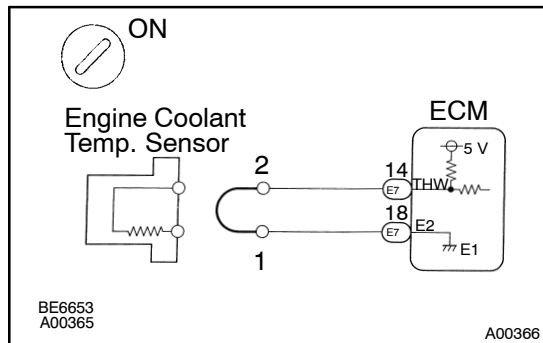
NG

-40°C (-40°F) ... Go to step 2.
140°C (284°F) or more ... Go to step 4.

OK

Check for intermittent problems
(See page DI-3).

2 Check for open in harness or ECM.



PREPARATION:

- Disconnect the engine coolant temp. sensor connector.
- Connect the sensor wire harness terminals together.
- Turn the ignition switch ON.

CHECK:

Read temperature value on the OBD II scan tool or LEXUS hand-held tester.

OK:

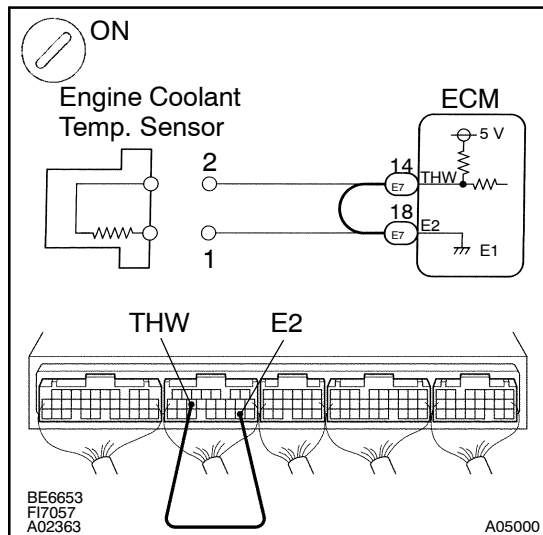
Temperature value: 140°C (284°F) or more

OK

Confirm good connection at sensor. If OK, replace engine coolant temp. sensor.

NG

3 Check for open in harness or ECM.



PREPARATION:

- Remove the glove compartment door.
- Connect between terminals THW and E2 of the ECM connector.

HINT:

The engine coolant temp. sensor connector is disconnected. Before checking, do a visual and contact pressure check for the ECM connector (See page IN-33).

- Turn the ignition switch ON.

CHECK:

Read temperature value on the OBD II scan tool or LEXUS hand-held tester.

OK:

Temperature value: 140°C (284°F) or more

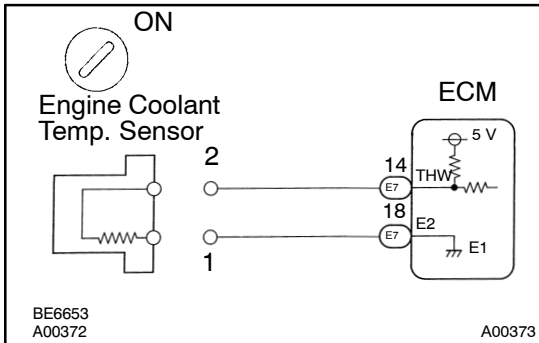
OK

Open in harness between terminals E2 and THW, repair or replace harness.

NG

Confirm good connection at ECM. If OK, check and replace ECM (See page IN-33).

4 Check for short in harness and ECM.



PREPARATION:

- Disconnect the engine coolant temp. sensor connector.
- Turn the ignition switch ON.

CHECK:

Read temperature value on the OBD II scan tool or LEXUS hand-held tester.

OK:

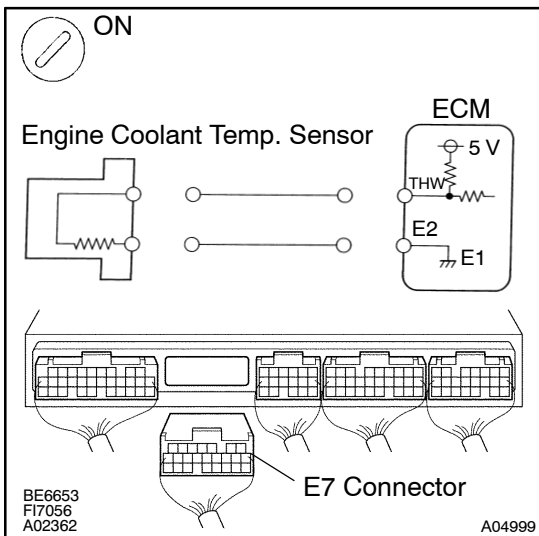
Temperature value: -40°C (-40°F)

OK

Replace engine coolant temp. sensor.

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5 Check for short in harness or ECM.



PREPARATION:

- Remove the glove compartment door.
- Disconnect the E7 connector from the ECM.

HINT:

The engine coolant temp. sensor connector is disconnected.

- Turn the ignition switch ON.

CHECK:

Read temperature value on the OBD II scan tool or LEXUS hand-held tester.

OK:

Temperature value: -40°C (-40°F)

OK

Repair or replace harness or connector.

NG

Check and replace ECM (See page [IN-33](#)).