DI6UY-04

DTC	P0115	Engine Coolant Temp. Circuit Malfunction

CIRCUIT DESCRIPTION

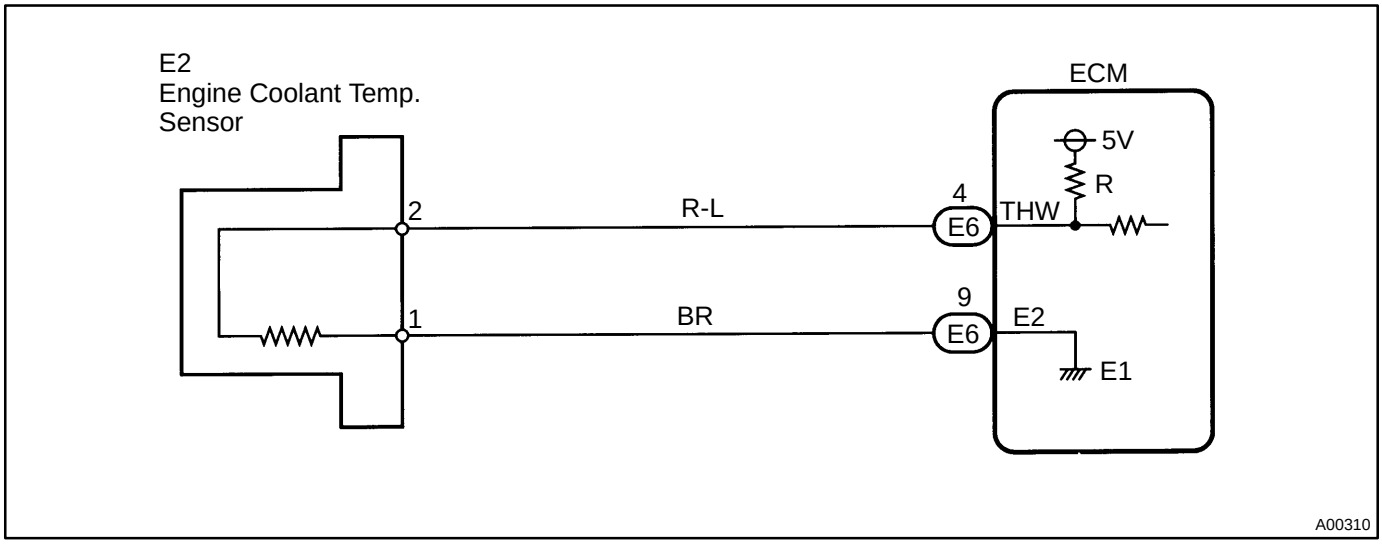
A thermistor built into the engine coolant temp. sensor changes the resistance value according to the engine coolant temp.
The structure of the sensor and connection to the ECM is the same as in the intake air temp. circuit malfunction shown on page DI-27 .
If the ECM detects the DTC P0115, it operates fail safe function in which the engine coolant temperature is assumed to be 80˚C (176˚F).

DTC No.	Detection Item	Trouble Area
P0115	Open or short in engine coolant temp. sensor circuit	• 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 TOYOTA hand-held tester to confirm the engine coolant temp. from ”CURRENT DATA”.

Temp. Displayed	Malfunction
-40 ˚C (-40˚F)	Open circuit
140˚C (284˚F) or more	Short circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC P0110 (Intake Air Temp. Circuit Malfunction), P0115 (Engine Coolant Temp. Circuit Malfunction), P0120 (Throttle/Pedal Position Sensor/Switch "A" Circuit Malfunction) are output simultaneously, E2 (sensor ground) may be open.
- Read freeze frame data using TOYOTA 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.

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

PREPARATION:

(a) Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.

(b) Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester main switch ON.

CHECK:

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

OK:

Same as actual engine coolant temperature

HINT:

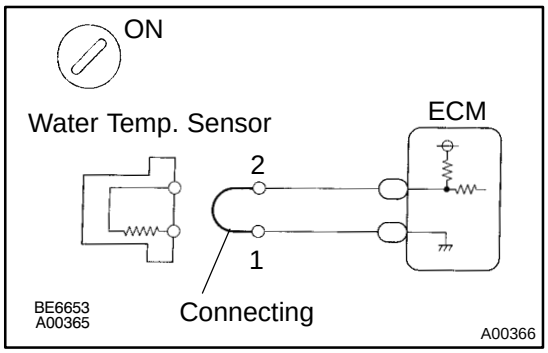
- If there is open circuit, OBD II scan tool or TOYOTA hand-held tester indicates -40˚C (-40˚F).
- If there is open circuit, OBD II scan tool or TOYOTA hand−held tester indicates 140˚C (284˚F) or more.

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:

(a) Disconnect the engine coolant temp. sensor connector.
(b) Connect the sensor wire harness terminals together.
(c) Turn the ignition switch ON.

CHECK:

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

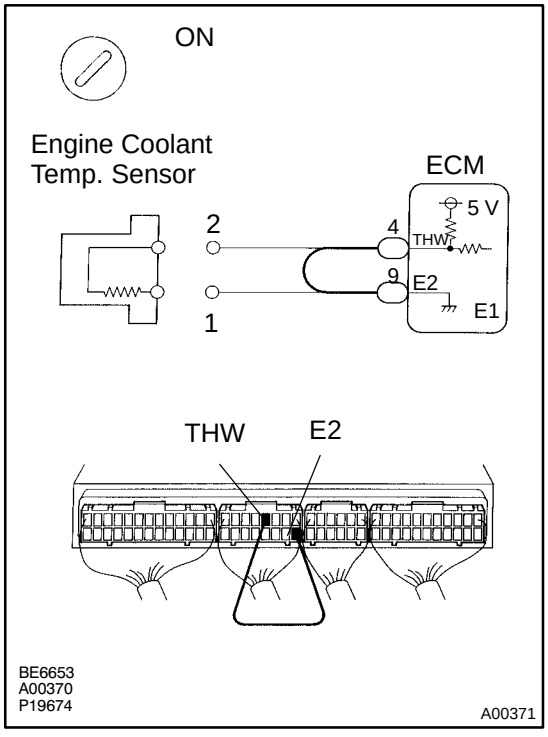
OK:

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:

(a) Remove the connector cover from the ECM.
(b) Connect between terminals THW and E2 of the ECM connector.

HINT:

Engine coolant temp. sensor connector is disconnected. Before checking, do a visual and contact pressure check for the ECM connector (See page IN-29).

(c) Turn the ignition switch ON.

CHECK:

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

OK:

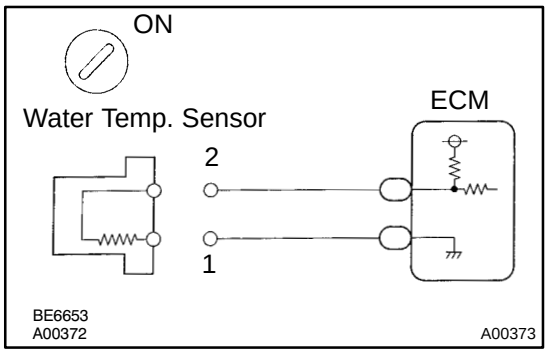
Temperature value: 140˚C (284˚F) or more

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

NG

Confirm good connection at ECM. If OK, check and replace ECM (See page IN-29).

4	Check for short in harness and ECM.

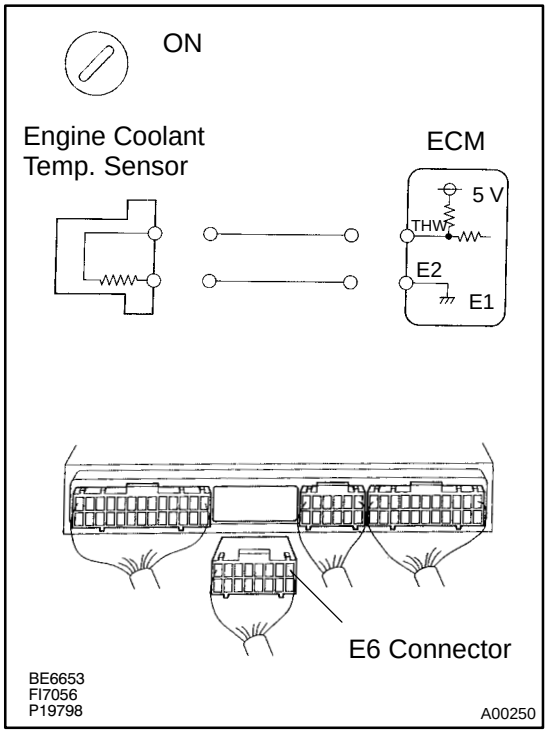


PREPARATION:
(a) Disconnect the engine coolant temp. sensor connector.
(b) Turn the ignition switch ON.
CHECK:
Read temperature value on the OBD II scan tool or TOYOTA hand-held tester.
OK:
Temperature value: - 40˚C (- 40˚F)

OK	Replace engine coolant temp. sensor.

NG

5	Check for short in harness or ECM.



PREPARATION:
(a) Remove the connector cover from the ECM.
(b) Disconnect the E6 connector of the ECM.
HINT:
Engine coolant temp. sensor connector is disconnected.
(c) Turn the ignition switch ON.
CHECK:
Read temperature value on the OBD II scan tool or TOYOTA 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-29).