

|            |              |                                                 |
|------------|--------------|-------------------------------------------------|
| <b>DTC</b> | <b>P0115</b> | <b>Engine Coolant Temp. Circuit Malfunction</b> |
|------------|--------------|-------------------------------------------------|

## CIRCUIT DESCRIPTION

A thermistor built into the engine coolant temperature 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 shown on page DI-28.

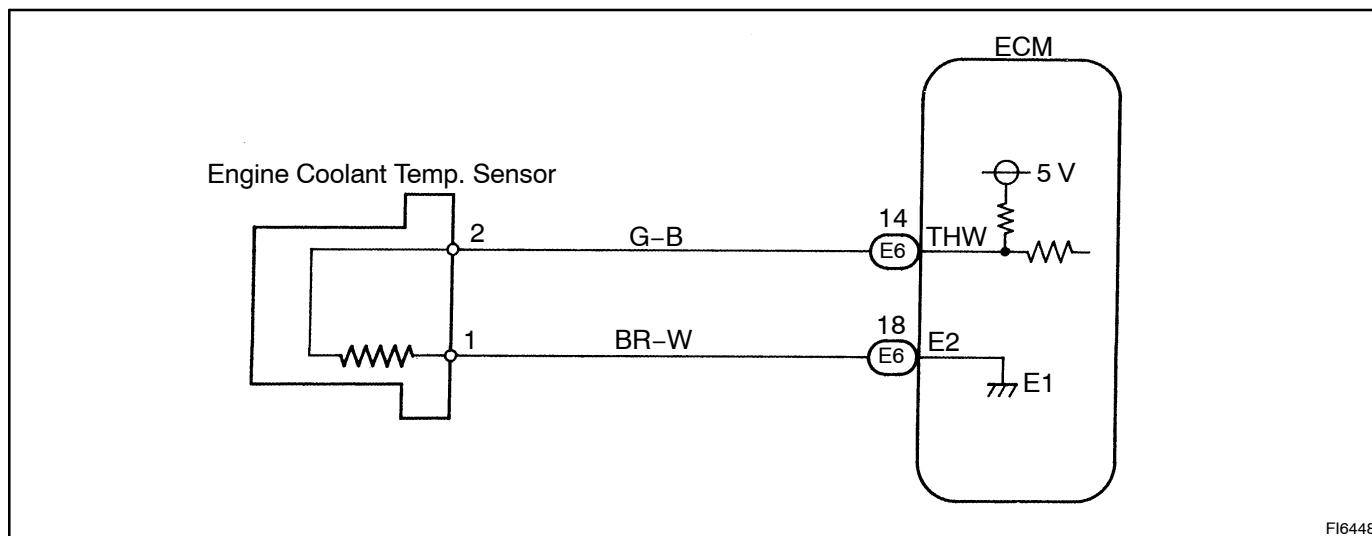
| DTC No. | DTC Detecting Condition                              | Trouble Area                                                                                                                                                   |
|---------|------------------------------------------------------|----------------------------------------------------------------------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

### HINT:

After confirming DTC P0115, use the OBD II scan tool or TOYOTA 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, P0115, P0120, P0450 and P1120 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 was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

- |          |                                                                                                           |
|----------|-----------------------------------------------------------------------------------------------------------|
| <b>1</b> | <b>Connect OBD II scan tool or TOYOTA hand-held tester, and read value of engine coolant temperature.</b> |
|----------|-----------------------------------------------------------------------------------------------------------|

**PREPARATION:**

- Connect the OBD II scan tool or TOYOTA hand-held tester to the DLC3.
- Turn the ignition switch ON and push the OBD II scan tool or TOYOTA hand-held tester main switch ON.

**CHECK:**

Read the 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  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ).
- If there is short circuit, OBD II scan tool or TOYOTA hand-held tester indicates  $140^{\circ}\text{C}$  ( $284^{\circ}\text{F}$ ) or more.

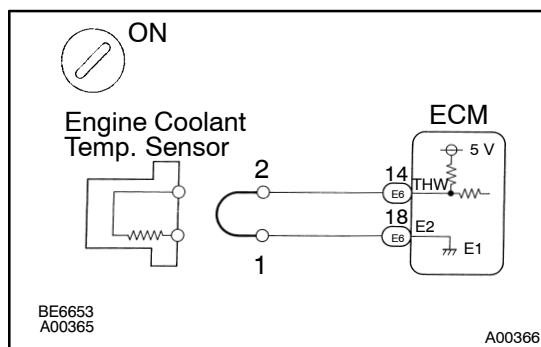
**NG**

$-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) ... Go to step 2.  
 $140^{\circ}\text{C}$  ( $284^{\circ}\text{F}$ ) or more ... Go to step 4.

**OK**

**Check for intermittent problems**  
 (See page [DI-3](#)).

- |          |                                          |
|----------|------------------------------------------|
| <b>2</b> | <b>Check for open in harness or ECM.</b> |
|----------|------------------------------------------|

**PREPARATION:**

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

**CHECK:**

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

**OK:**

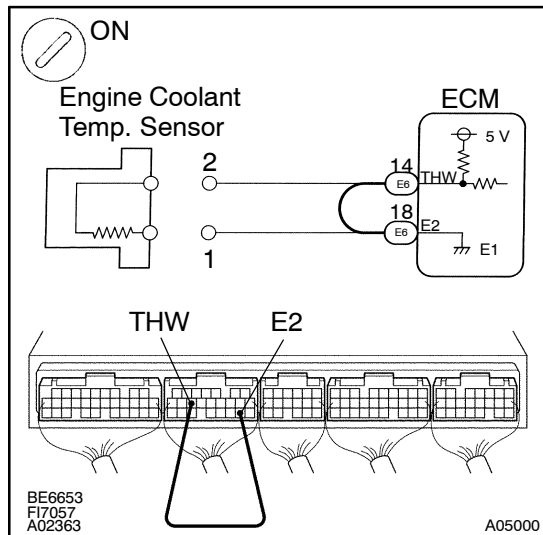
**Temperature value:  $140^{\circ}\text{C}$  ( $284^{\circ}\text{F}$ ) or more**

**OK**

**Confirm good connection at sensor. If OK, replace engine coolant temperature 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 temperature sensor connector is disconnected. Before checking, do a visual and contact pressure check for the ECM connector (See page [IN-34](#)).

- Turn the ignition switch ON.

#### CHECK:

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

#### OK:

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

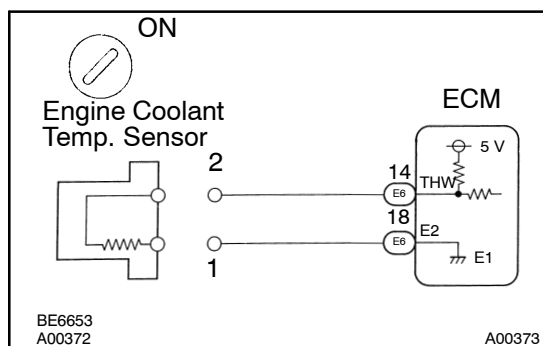
OK

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-34](#))

### 4 Check for short in harness and ECM.



#### PREPARATION:

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

#### CHECK:

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

#### OK:

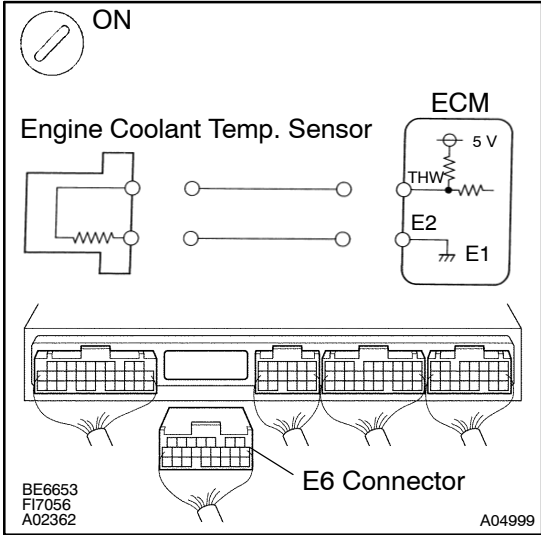
Temperature value: -40°C (-40°F)

OK

Replace engine coolant temperature sensor.

NG

**5 Check for short in harness or ECM.**



**PREPARATION:**

- (a) Remove the glove compartment door.
- (b) Disconnect the E6 connector from the ECM.

**HINT:**

The engine coolant temperature sensor connector is disconnected.

- (c) Turn the ignition switch ON.

**CHECK:**

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

**OK:**

Temperature value:  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ )

**OK**

**Repair or replace harness or connector.**

**NG**

**Check and replace ECM (See page [IN-34](#)).**