

DTC	P0115/22	WATER TEMP. CIRCUIT MALFANCTION
-----	----------	---------------------------------

CIRCUIT DESCRIPTION

A thermistor built into the water temperature sensor changes the resistance value according to the water temperature.

The structure of the sensor and connection to the ECM is the same as the ones of the air temperature sensor.

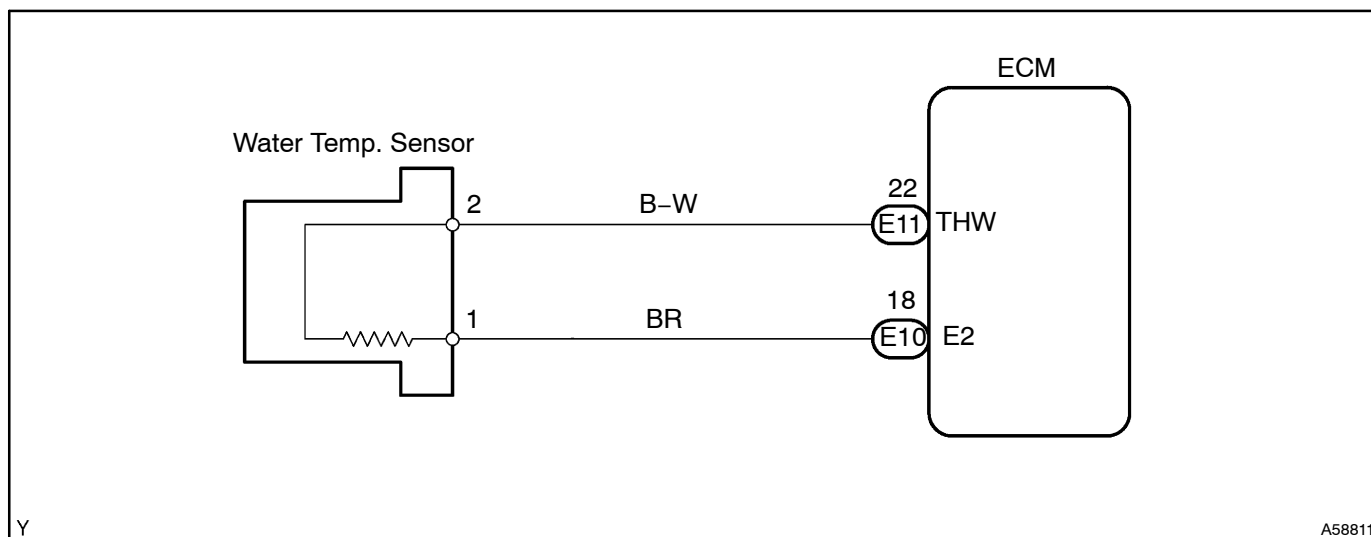
DTC No.	DTC Detecting Condition	Trouble Area
P0115/22	Open or short in water temp. sensor circuit	<ul style="list-style-type: none"> • Open or short in water temp. sensor circuit • Water temp. sensor • ECM

HINT:

After confirming DTC P0115/22, use the hand-held tester to confirm the engine coolant temperature from the CURRENT DATA.

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

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

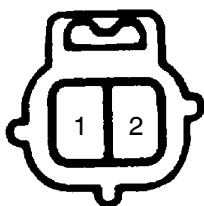
- If DTCs P0100/31, P0110/24, P0115/22 and P0120/41 are output simultaneously, E2 (sensor ground) may be open.
- Read freeze frame data using the hand-held tester1, as freeze frame data records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining 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.

When using hand-held tester:**1 READ VALUE OF HAND-HELD TESTER(WATER TEMPERATURE)**

- (a) Read temperature value on the hand-held tester.

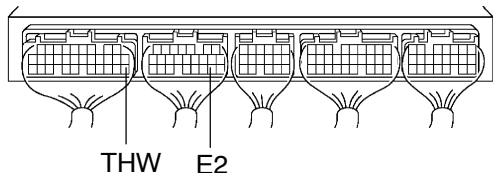
Temperature: Same as actual water temperature**Result:**

A	B	C
OK	-40°C (-40°F)	140°C (284°F)

B Go to step 2**C** Go to step 4**A****CHECK FOR INTERMITTENT PROBLEMS****2 READ VALUE OF HAND-HELD TESTER(CHECK FOR OPEN IN HARNESS)**

A50582

- (a) Disconnect the water temperature sensor connector.
- (b) Connect the terminals 1 and 2 of the water temperature sensor connector.
- (c) Turn the ignition switch ON.
- (d) Read temperature value on the hand-held tester.

Temperature: 140°C (284°F) or more**OK****REPLACE E.F.I. ENGINE COOLANT TEMPERATURE SENSOR****NG****3 READ VALUE OF HAND-HELD TESTER(CHECK FOR OPEN IN ECM)**

0

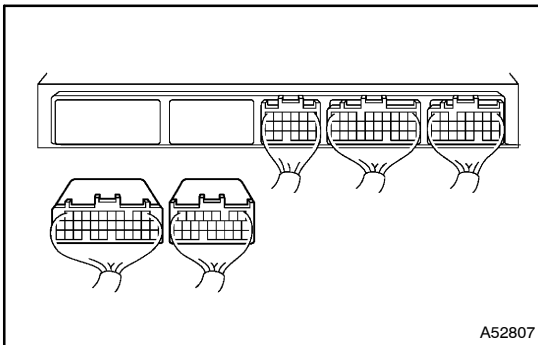
A58677

- (a) Connect the terminals THW of the ECM connector and E2 of the ECM connector.
- (b) Turn the ignition switch ON.
- (c) Read temperature value on the hand-held tester.

Temperature: 140°C (284°F) or more**OK****REPAIR OR REPLACE WIRE HARNESS OR CONNECTOR****NG****CHECK AND REPLACE ECM**

4 READ VALUE OF HAND-HELD TESTER(CHECK FOR SHORT IN HARNESS)

- (a) Disconnect the water temp. sensor connector.
- (b) Turn the ignition switch ON.
- (c) Read temperature value on the hand-held tester.

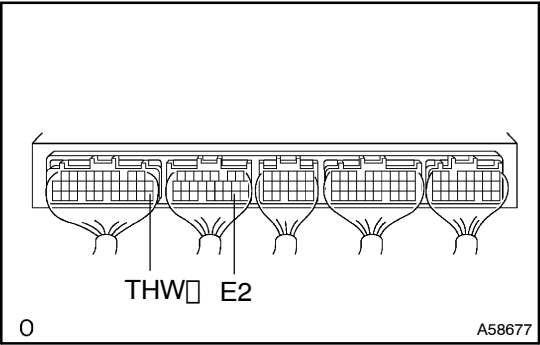
Temperature: -40°C (-40°F)**OK****REPLACE E.F.I. ENGINE COOLANT
TEMPERATURE SENSOR****NG****5 READ VALUE OF HAND-HELD TESTER(CHECK FOR SHORT IN ECM)**

- (a) Disconnect the ECM E11 and E10 connector.
- (b) Turn the ignition switch ON.
- (c) Read temperature value on the hand-held tester.

Temperature: -40°C (-40°F)**OK****REPAIR OR REPLACE WIRE HARNESS OR
CONNECTOR****NG****CHECK AND REPLACE ECM**

When not using hand-held tester:

1 INSPECT ECM (CHECK VOLTAGE)



- (a) Turn the Ignition switch ON.
- (b) Measure voltage between the terminals THW and E2 of the ECM connector.

VOLTAGE:

Intake air Temp. °C (°F)	Voltage
20 (68)	0.5 - 3.4 V
60 (140)	0.2 - 1.0 V

OK

CHECK CHECK FOR INTERMITTENT PROBLEMS

NG

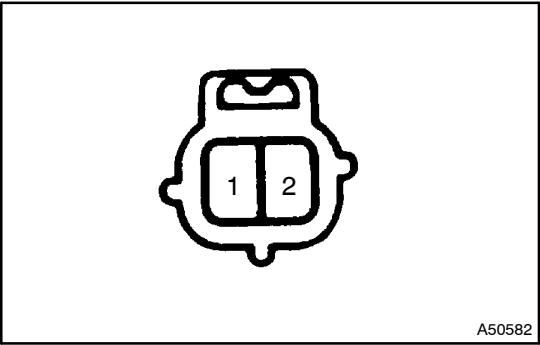
2 CHECK E.F.I. ENGINE COOLANT TEMPERATURE SENSOR (See page 10-2)

NG

REPLACE E.F.I. ENGINE COOLANT TEMPERATURE SENSOR

OK

3 CHECK WIRE HARNESS OR CONNECTOR (ECM-WATER TEMP. SENSOR)

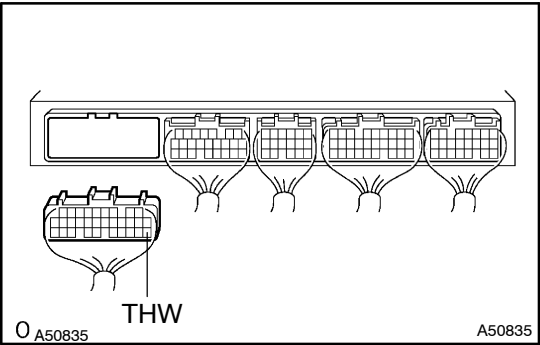


- (a) Disconnect the water temperature sensor connector.
- (b) Disconnect the ECM E11 connector.
- (c) Check for open between the terminals 2 of the air flow meter connector and THW of the ECM connector.

Resistance: 1 Ω or less

- (d) Check for short between the terminals THW and E2 of the ECM connector.

Resistance: 1 MΩ or more



NG

REPAIR OR REPLACE WIRE HARNESS OR CONNECTOR

OK

CHECK AND REPLACE ECM