DTC P0115/22 WATER TEMP. CIRCUIT MALFUNCTION

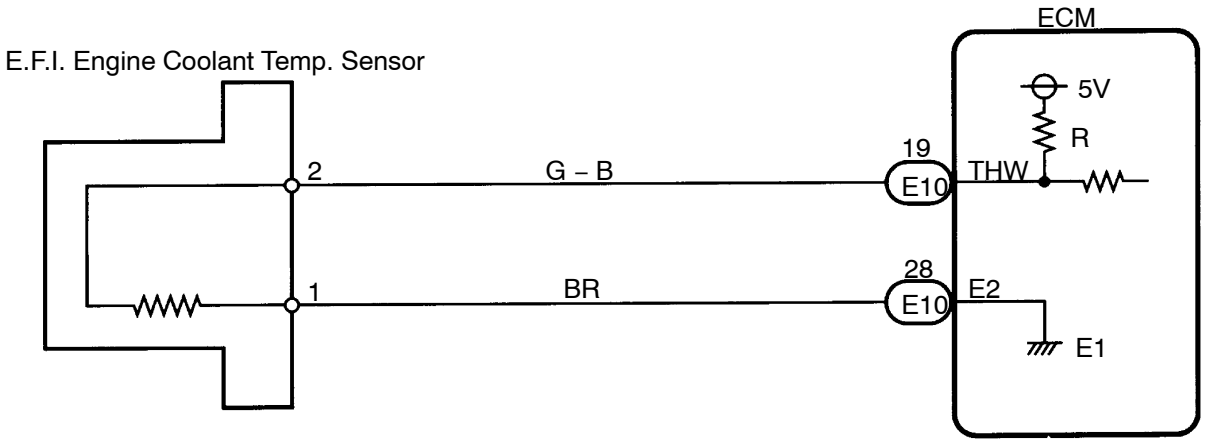
CIRCUIT DESCRIPTION

A thermistor built into the water temp. 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	• Open or short in water temp. sensor circuit • E.F.I. engine coolant temperature sensor • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC P0110 (Intake Air Temp. Circuit Malfunction), P0115 (Water Temp. Circuit Malfunction), P0120 (Throttle/Pedal Position Sensor/Switch "A" Malfunction) are output simultaneously, E1, E2 etc. (Sensor Ground system) may be open.
- Read freeze frame data using hand–held tester. 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.

When using Hand–held Tester:

1	READ VALUE OF HAND–HELD TESTER(COOLANT TEMP/WATER TEMP)

(a) Read temperature value on the hand–held tester.
Temperature: The same as actual water temperature
Result:

A	B	C
–40°C (–40°F)	140°C (284°F)	OK

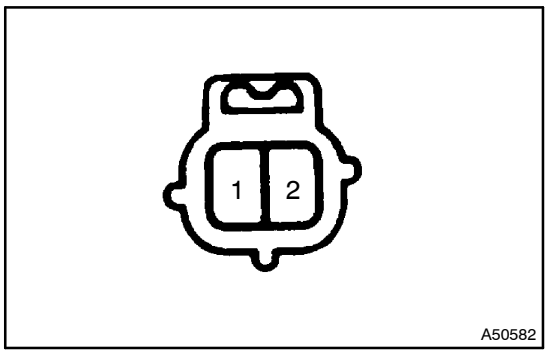
B → **Go to step 4**

C → **CHECK FOR INTERMITTENT PROBLEMS**

A

2	READ VALUE OF HAND–HELD TESTER(CHECK FOR OPEN)

SST 09843–18040

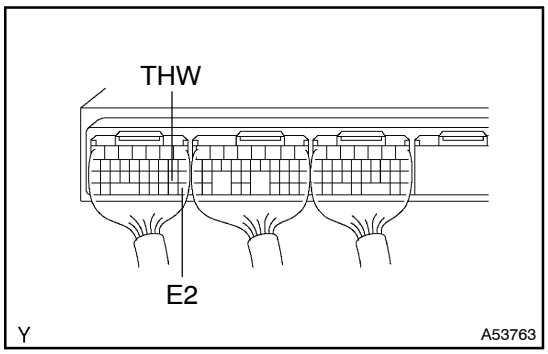


(a) Disconnect the E.F.I. engine coolant temperature sensor connector.
(b) Connect the terminals 1 with 2 of the water temperature sensor connector.
(c) Turn the ignition switch ON.
(d) Read temperature value on the hand–held tester.
Temperature: 140°C (284°F) or more

OK → **REPLACE E.F.I. ENGINE COOLANT TEMPERATURE SENSOR**

NG

3	READ VALUE OF HAND–HELD TESTER(CHECK FOR OPEN)



(a) Connect the terminals THW with E2 of the ECM E10 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 HARNESS AND CONNECTOR**

NG

CHECK AND REPLACE ECM

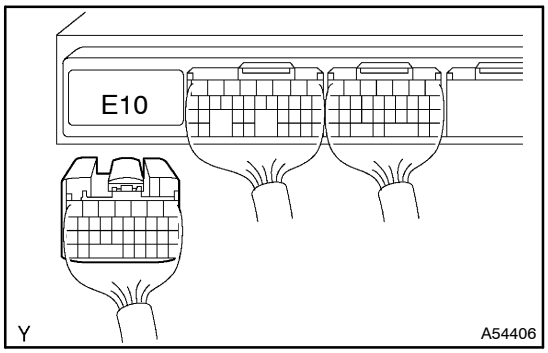
4	READ VALUE OF HAND–HELD TESTER(CHECK FOR SHORT)

(a) Disconnect the E.F.I. engine coolant 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)



(a) Disconnect the ECM 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 HARNESS AND CONNECTOR

NG

CHECK AND REPLACE ECM

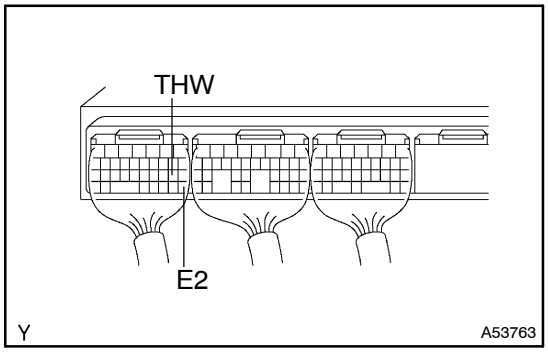
When not using Hand–held Tester:

1	INSPECT ECM

OK → CHECK FOR INTERMITTENT PROBLEMS

NG

2	INSPECT E.F.I. ENGINE COOLANT TEMPERATURE SENSOR



(a) Turn the ignition switch ON.
(b) Measure voltage between the terminals THA and E2 of the ECM connector.

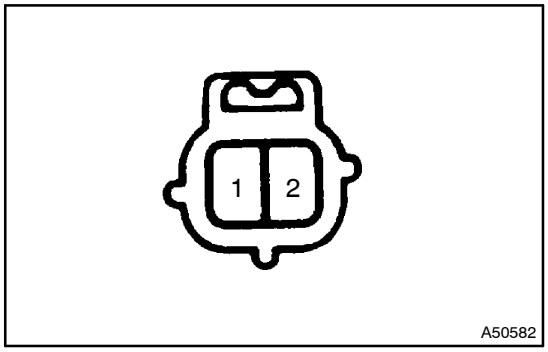
VOLTAGE:

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

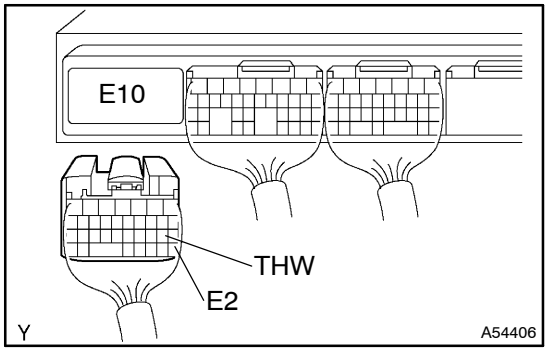
NG → REPLACE E.F.I. ENGINE COOLANT TEMPERATURE SENSOR

OK

3	CHECK HARNESS AND CONNECTOR(ECM – E.F.I. ENGINE COOLANT TEMP. SENSOR)



(a) Disconnect the E.F.I. engine coolant temperature sensor connector.
(b) Disconnect the ECM E10 connector.
(c) Check for open between the terminals 2 of the water temperature sensor 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 HARNESS AND CONNECTOR

OK

CHECK AND REPLACE ECM