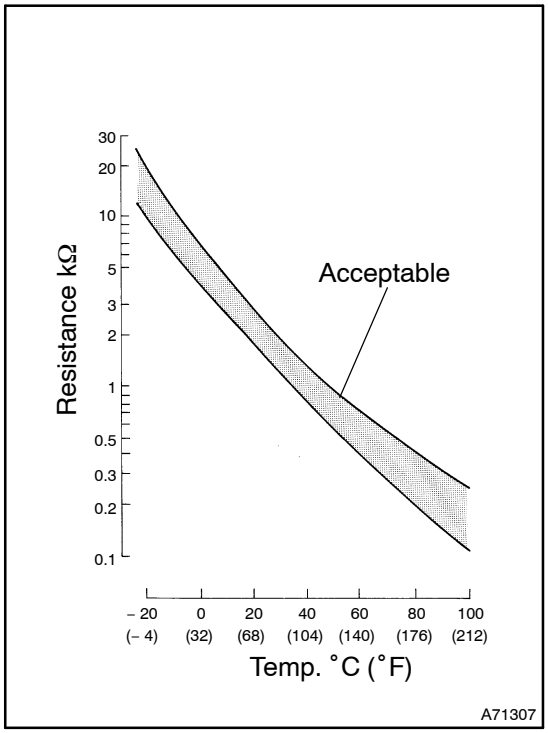
DTC	23	AIR TEMPERATURE CIRCUIT MALFUNCTION

CIRCUIT DESCRIPTION



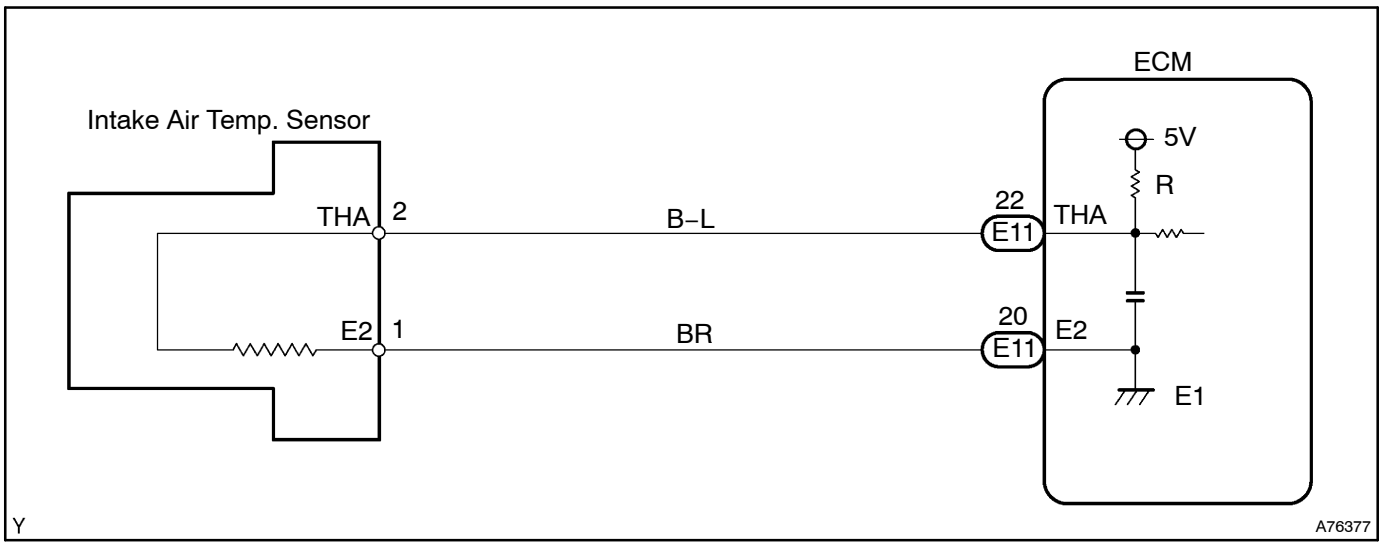
The intake air temperature sensor senses the intake air temperature. A thermistor built in this sensor changes the resistance value according to the intake air temperature as shown in the illustration. This resistance value of intake air temperature sensor is one of the factors to decide the fuel injection volume.

DTC No.	DTC Detection Condition	Trouble Area
23	Open or short in intake air temp. sensor circuit for 0.5 sec. or more	• Open or short in intake air temp. sensor circuit • Intake air temperature sensor • ECM

HINT:
After confirming DTC 23 use the hand–held tester to confirm the intake air temperature from the CURRENT DATA.

Temperature displayed	Malfunction
–40˚C (–40˚F)	Open circuit
140˚C (284˚F) or more	Short circuit

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If different DTCs that are related to different systems are output simultaneously while terminal E2 is used as a ground terminal, terminal E2 may be open.
- Read freeze frame data using the 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 was warmed up or not, etc. at the time of the malfunction.

When using Hand–Held tester:

1	READ VALUE OF HAND–HELD TESTER(INTAKE AIR TEMP.)

(a) Connect the hand–held tester to the DLC3.
(b) Read temperature value on the hand–held tester.
Temperature: The same as actual inlet air temperature

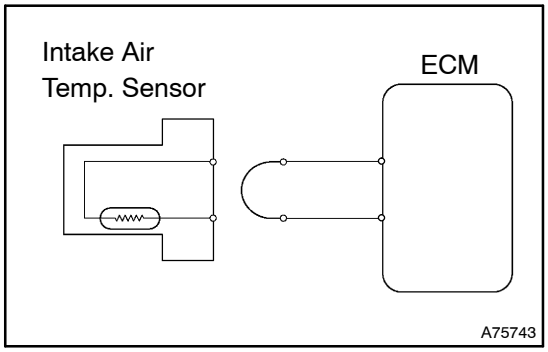
Result:

Display	Proceed
–40°C (–40°F)	A
140°C (284°F) or more	B
OK	C

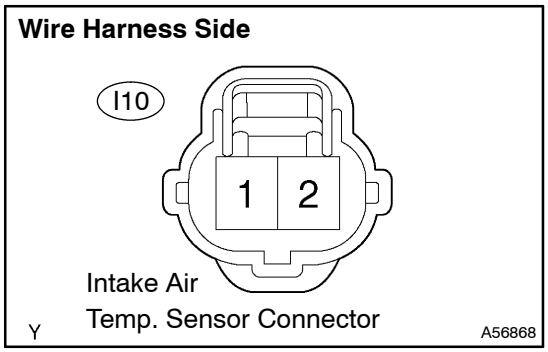
B	**Go to step 4**
C	**CHECK FOR INTERMITTENT PROBLEMS (See page 05–303)**

A

2 CHECK HARNESS AND CONNECTOR(CHECK FOR OPEN)



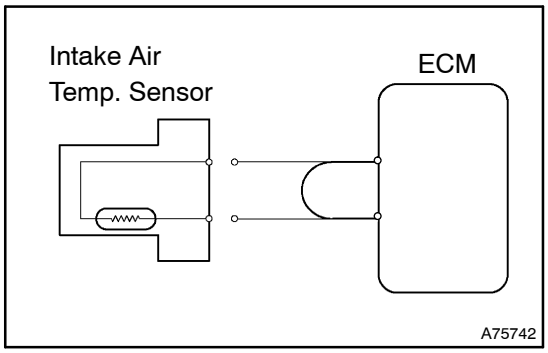
(a) Disconnect the intake air temperature sensor connector.
(b) Connect the terminals 1 with 2 of the intake air temperature sensor harness side connector.
(c) Turn the ignition switch ON.
(d) Read the temperature value on the hand–held tester.
Temperature: 140°C (284°F) or more



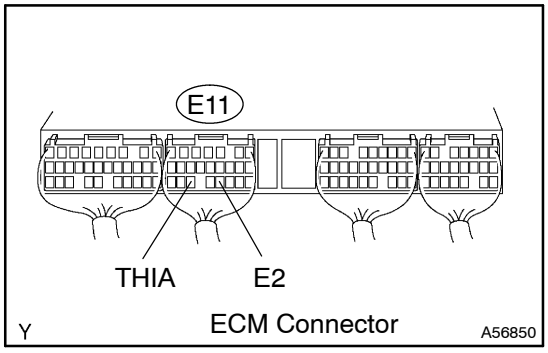
OK → **REPLACE INTAKE AIR TEMPERATURE SENSOR**

NG

3 INSPECT ECM(CHECK FOR OPEN)



(a) Connect between terminals THA and E2 of the ECM connector.
(b) Turn the ignition switch ON.
(c) Read the temperature value on the hand–held tester.
Temperature: 140°C (284°F) or more

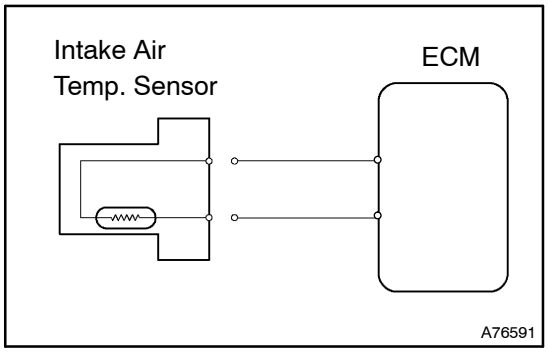


OK	REPAIR OR REPLACE HARNESS OR CONNECTOR

NG

CHECK AND REPLACE ECM

4 CHECK HARNESS AND CONNECTOR(CHECK FOR SHORT)

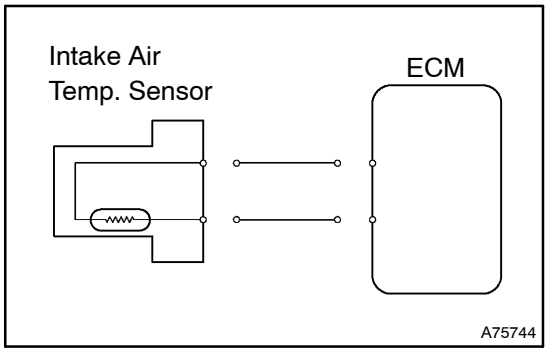


(a) Disconnect the intake air temperature sensor connector.
(b) Turn the ignition switch ON.
(c) Read the temperature value on the hand–held tester.
Temperature: –40°C (–40°F)

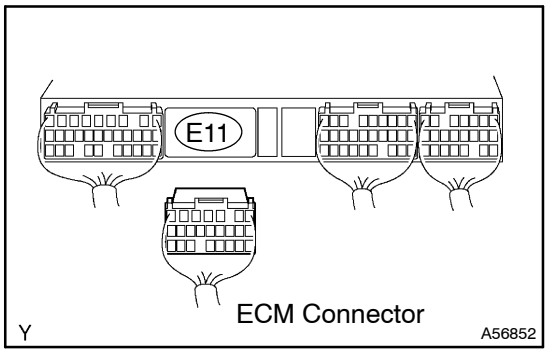
OK	REPLACE INTAKE AIR TEMPERATURE SENSOR

NG

5 INSPECT ECM(CHECK FOR SHORT)



(a) Disconnect the ECM E11 connector.
(b) Turn the ignition switch ON.
(c) Read the temperature value on the hand–held tester.
Temperature: –40°C (–40°F)



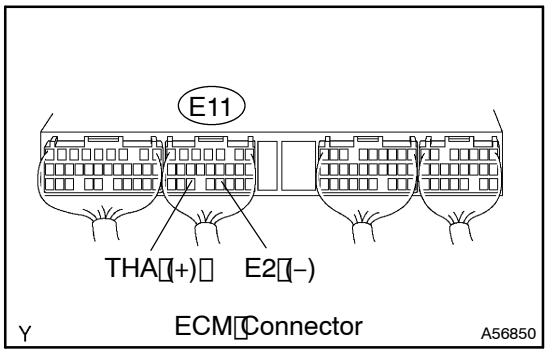
OK	REPAIR OR REPLACE HARNESS OR CONNECTOR

NG

CHECK AND REPLACE ECM

When not using Hand–held Tester:

1	INSPECT ECM



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

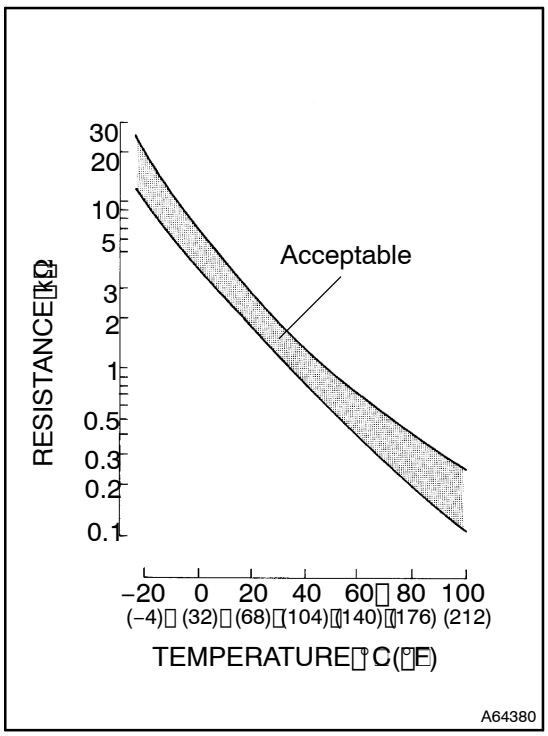
Voltage:

Symbols (Terminal No.)	Condition	Specified condition
THA (E11 – E22)	20°C (68°F)	0.2 – 3.8 V
E2 (E11 – E20)	80°C (176°F)	0.1 – 1.5 V

OK → **CHECK FOR INTERMITTENT PROBLEMS (See page 05–303)**

NG

2	INSPECT INTAKE AIR TEMPERATURE SENSOR



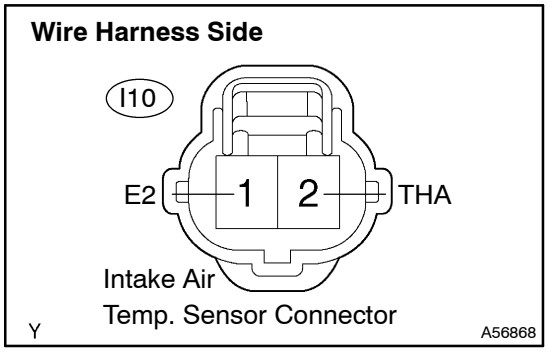
(a) Check the intake air temperature sensor for resistance.
(1) Using an ohmmeter, measure the resistance between terminals.

Resistance: Approx. 20°C (68°F) 2.21 – 2.65 kΩ

NG → **REPLACE INTAKE AIR TEMPERATURE SENSOR**

OK

3	CHECK AND REPLACE HARNESS AND CONNECTOR(ECM – INTAKE AIR TEMP. SENSOR)



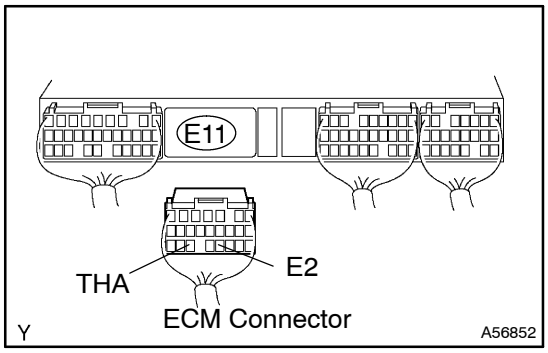
(a) Disconnect the intake air temperature sensor connector.
(b) Disconnect the ECM E11 connector.
(c) Check the continuity between the wire harness side connector.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
THA (I10 – 2) ⇔ THA (E11 – 22)	Continuity
E2 (I10 – 1) ⇔ E2 (E11 – 20)	

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
THA (E11 – 22) ⇔ E2 (E11 – 20)	No continuity



NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK →

CHECK AND REPLACE ECM