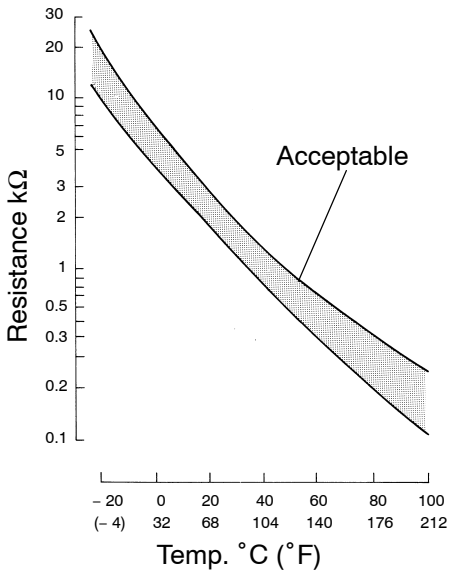
DI1LE–03

| DTC | P0110 | Intake Air Temp. Circuit Malfunction |
|---|---|---|

(fig. 1)



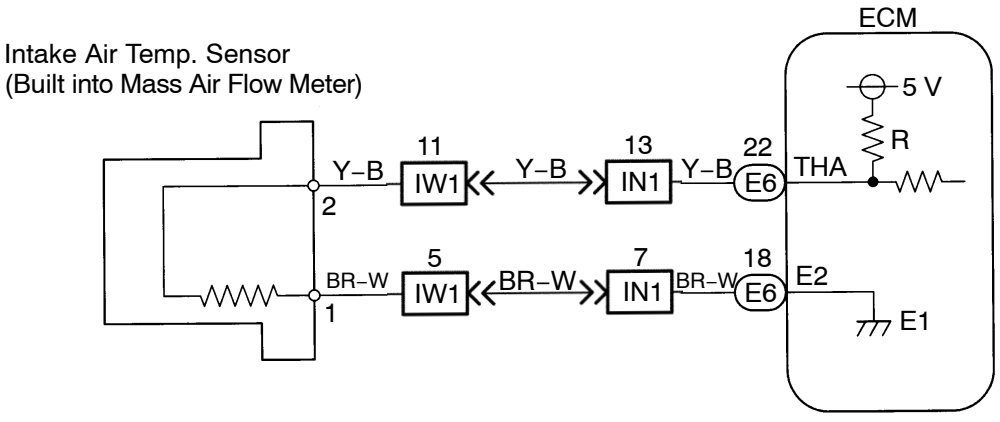

The intake air temp. sensor is built into the mass air flow meter and senses the intake air temperature.
A thermistor built in the sensor changes the resistance value according to the intake air temperature.
The lower the intake air temperature, the greater the thermistor resistance value, and the higher the intake air temperature, the lower the thermistor resistance value (See fig. 1).
The intake air temp. sensor is connected to the ECM (See below ). The 5 V power source voltage in the ECM is applied to the intake air temp. sensor from the terminal THA via resistor R.
That is, the resistor R and the intake air temp. sensor are connected in series. When the resistance value of the intake air temp. sensor changes in accordance with changes in the intake air temperature, the potential at terminal THA also changes. Based on this signal, the ECM increases the fuel injection volume to improve driveability during cold engine operation.

| DTC No. | DTC Detecting Condition | Trouble Area |
|---|---|---|
| P0110 | Open or short in intake air temp. sensor circuit | • Open or short in intake air temp. sensor circuit<br>• Intake air temp. sensor (inside mass air flow meter)<br>• ECM |

HINT:
After confirming DTC P0110, use the OBD II scan tool or TOYOTA hand–held tester to confirm the intake air temperature from 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 DTCs P0110 (Intake Air Temp. Circuit Malfunction), P0115 (Engine Coolant Temp. Circuit Malfunction), P0120 (Throttle/Pedal Position Sensor/Switch "A" Circuit Malfunction), P0450 (Evaporative Emission Control System Pressure Sensor Malfunction) and P1120 (Accelerator Pedal Position Sensor 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 intake air 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 intake air temperature**

HINT:

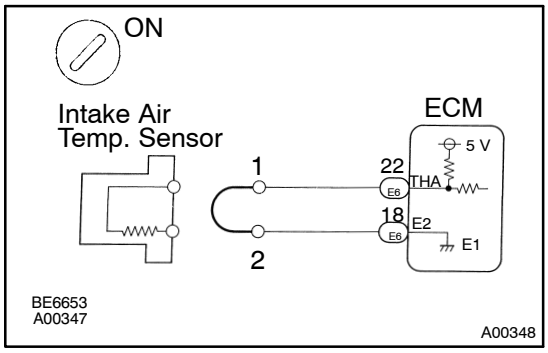
- If there is open circuit, OBD II scan tool or TOYOTA hand–held tester indicates –40°C (–40°F).
- If there is short circuit, OBD II scan tool or TOYOTA hand–held tester indicates 140°C (284°F) or more.

**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 mass air flow meter 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.

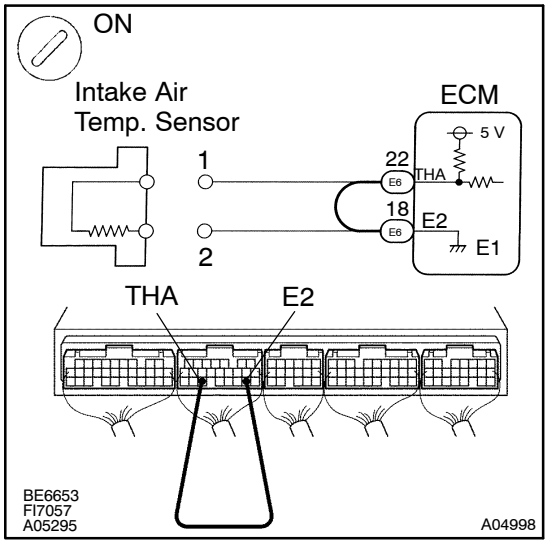
**OK:**

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

| OK | Confirm good connection at sensor. If OK, replace mass air flow meter. |
|---|---|

NG

| 3 | Check for open in harness or ECM. |
|---|---|




**PREPARATION:**

(a) Remove the glove compartment door.
(b) Connect between terminals THA and E2 of the ECM connector.

HINT:

Mass air flow meter connector is disconnected.

Before checking, do a visual and contact pressure check for the ECM connector (See page IN–34).

**CHECK:**

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

**OK:**

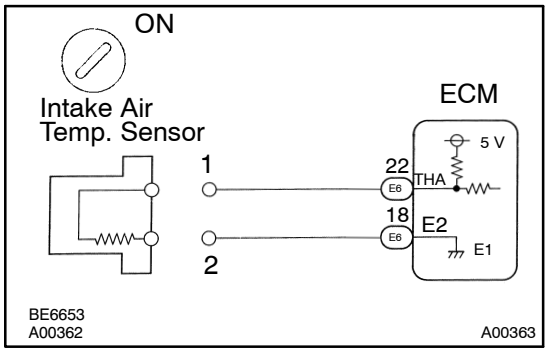
**Temperature value: 140°C (284°F) or more**

| OK | Open in harness between terminals E2 or THA, 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:**

(a) Disconnect the mass air flow meter connector.

(b) Turn the ignition switch ON.

**CHECK:**

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

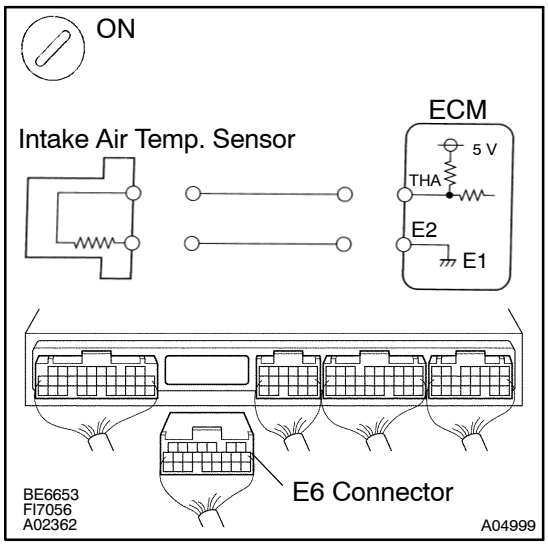
**OK:**

**Temperature value: –40°C (–40°F)**

| OK | Replace mass air flow meter. |
|---|---|

**NG**

| 5 | Check for short in harness or ECM. |
|---|---|




**PREPARATION:**

(a) Remove the glove compartment door.

(b) Disconnect the E6 connector of the ECM.

HINT:

Mass air flow meter 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–34).**