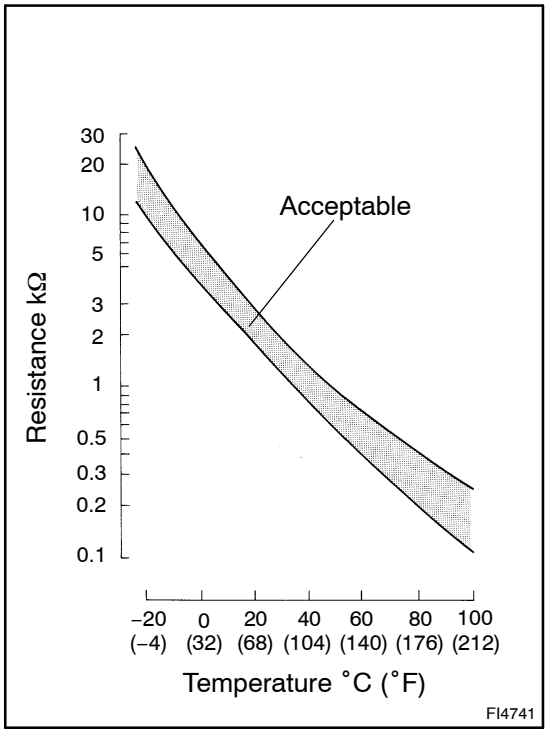
DI9S7–01

DTC	39 (1)	Fuel Temp. Sensor Circuit Malfunction

DTC	39 (2)	Fuel Temperature Too High

CIRCUIT DESCRIPTION



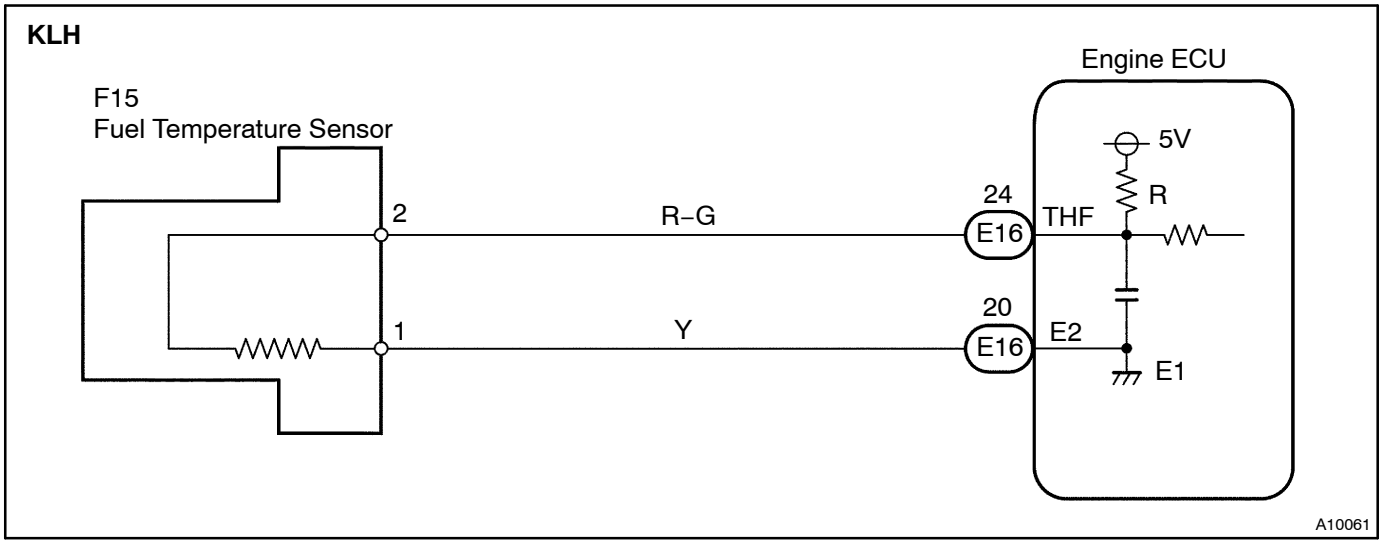
- The fuel temperature sensor senses the fuel temperature. A thermistor built in the sensor changes the resistance value according to the fuel temperature. The lower the fuel temperature is, the greater the thermistor resistance value becomes, and the higher the fuel temperature is, the lower the thermistor resistance value becomes.
  The fuel temperature sensor is connected to the engine ECU. When the resistance value of the fuel temperature sensor changes in accordance with changes in the fuel temperature, the potential at terminal THF also changes. Based on this signal, the engine ECU performs the pressure control compensation of the supply pump and error detection compensation of the highly pressurized fuel system.
- The engine ECU will output ”DTC 39 (2)” when the fuel temperature sensor judges the fuel temperature is too high.

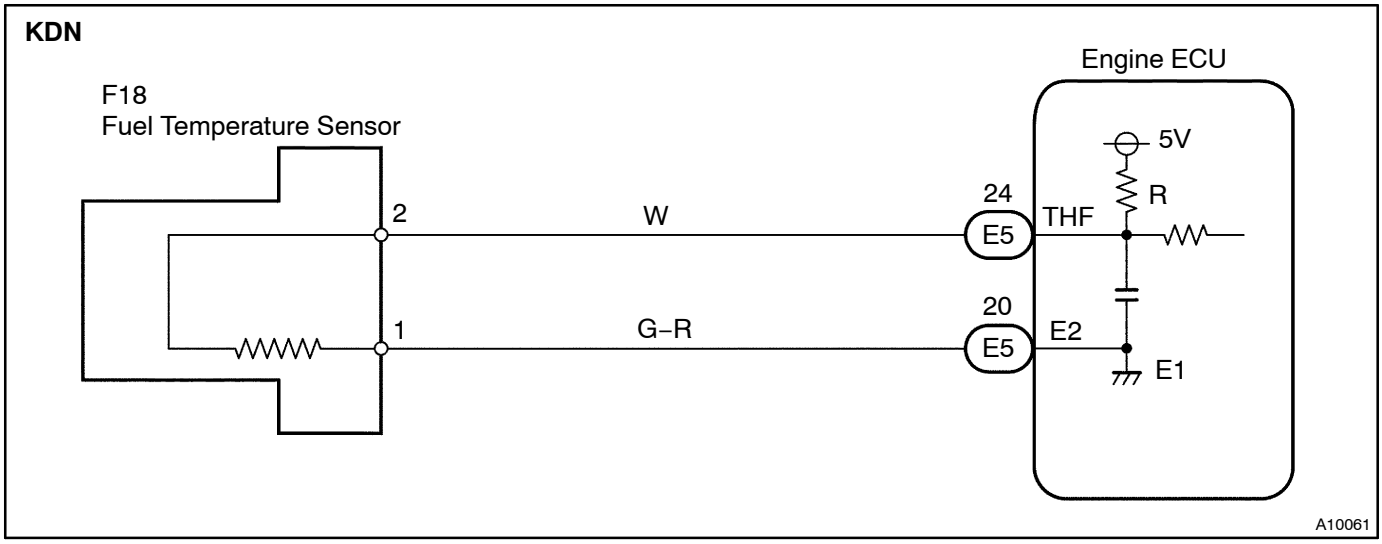
DTC No.	DTC Detecting Condition	Trouble Area
39 (1)	Open or short in fuel temp. sensor circuit for 0.5 sec. or more	• Open or short in fuel temp. sensor circuit • Fuel temp. sensor • Engine ECU
39 (2)	When all the following conditions (a), (b) and (c) are satisfied at once: (a) Fuel temp. is 96 ˚C (205 ˚F) or more. (b) Engine speed is 1,400 rpm or more. (c) Vehicle speed is 10 km/h or more.	• Open or short in fuel temperature sensor circuit • Fuel temperature sensor • Engine ECU

HINT:
After confirming DTC 39, use the hand–held tester to confirm the fuel 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:

Read freeze frame data on the hand–held tester. Because 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, etc. at the time of the malfunction.

When using hand–held tester:

1	**Read value of fuel temperature on hand–held tester.**

OK:

The same as the actual fuel temperature.

HINT:

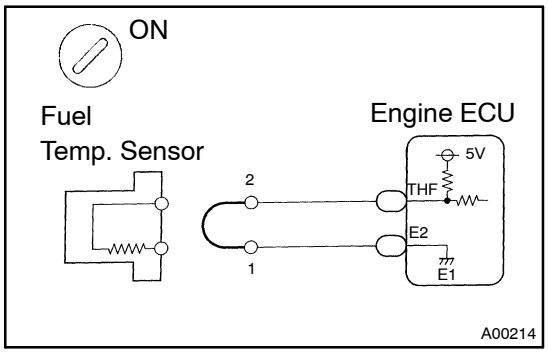
- If there is an open circuit, the hand–held tester indicates –40°C (–40°F).
- If there is a short circuit, the hand–held tester indicates 140°C (284°F) or more.

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–4).

2	Check for open in harness or engine ECU.



PREPARATION:

(a) Disconnect the fuel temperature sensor connector.
(b) Connect the sensor wire harness terminals together.
(c) Turn the ignition switch ON.

CHECK:

Read the temperature value on the hand–held tester.

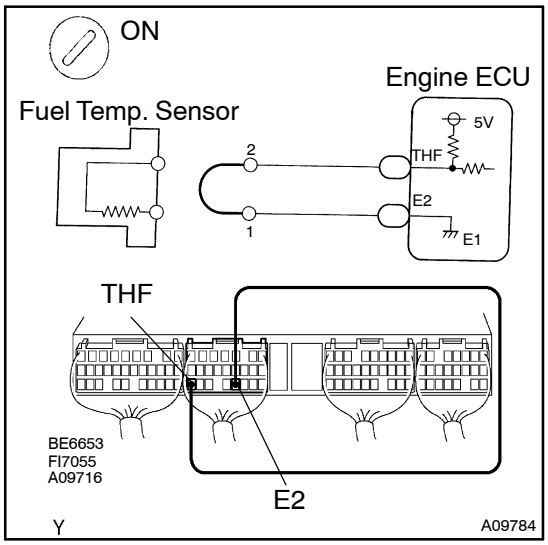
OK:

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

OK	Confirm good connection at sensor. If OK, replace fuel pump.

NG

3	Check for open in harness or engine ECU.



PREPARATION:

(a) Remove the glove compartment box.
(b) Connect between terminals THF and E2 of the engine ECU connector.
(c) Disconnect the fuel temperature sensor connector.
(d) Turn the ignition switch ON.

CHECK:

Read the temperature value on the hand–held tester.

OK:

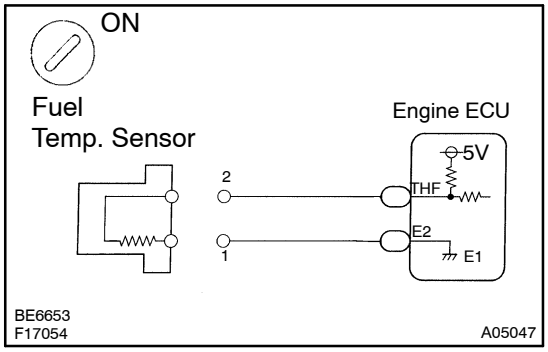
Temperature value: 140°C (284°F) or more

OK	Open in harness between terminal E2 or THF, repair or replace harness.

NG

Confirm good connection at engine ECU. If OK, replace engine ECU.

4	Check for short in harness or engine ECU.



PREPARATION:

(a) Disconnect the fuel temperature sensor connector.

(b) Turn the ignition switch ON.

CHECK:

Read the temperature value on the hand–held tester.

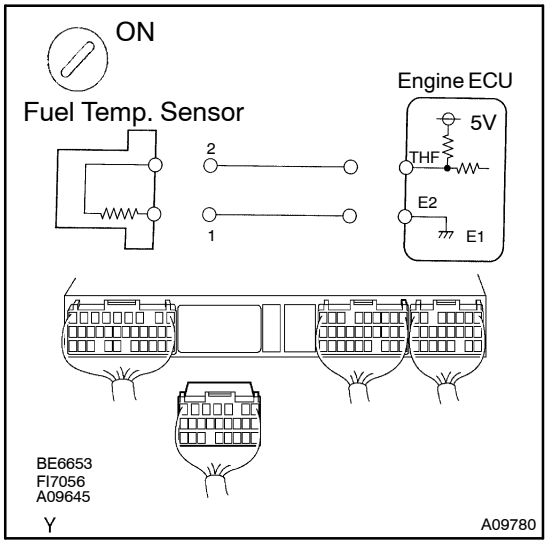
OK:

Temperature value: –40°C (–40°F)

OK	Replace fuel temperature sensor.

NG

5	Check for short in harness or engine ECU.



PREPARATION:

(a) Remove the glove compartment box.

(b) KLH:
Disconnect the E16 connector from the engine ECU.

(c) KDN:
Disconnect the E5 connector from the engine ECU.

(d) Disconnect the fuel temperature sensor connector.

(e) Turn the ignition switch ON.

CHECK:

Read the temperature value on the hand–held tester.

OK:

Temperature value: –40°C (–40°F)

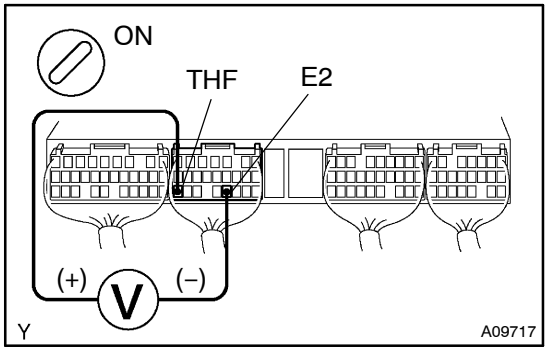
OK	Repair or replace harness or connector.

NG

Check and replace engine ECU (See page IN–20).

When not using hand–held tester:

1	**Check voltage between terminals THF and E2 of engine ECU connector.**



PREPARATION:

(a) Remove the glove compartment box.

(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals THF and E2.

OK:

Fuel Temperature	Standard voltage
20 °C (68 °F)	0.2 – 3.8 V
80 °C (176 °F)	0.1 – 1.5 V

OK → **Check for intermittent problems (See page DI–4).**

NG

2	**Check fuel temperature sensor (See page ED–13).**

NG → **Replace fuel temperature sensor.**

OK

3	**Check for open and short in harness and connector between engine ECU and fuel temperature sensor (See page IN–20).**

NG → **Repair or replace harness or connector.**

OK

Check and replace engine ECU (See page IN–20).