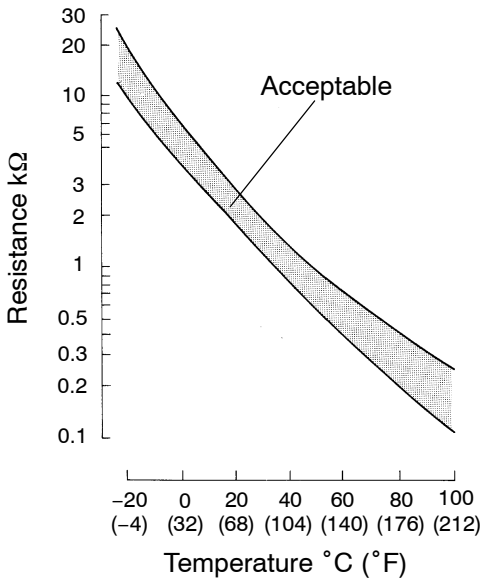
DI6JG–01

DTC	22	Water Temp. Sensor Circuit

CIRCUIT DESCRIPTION

(Fig. 1)

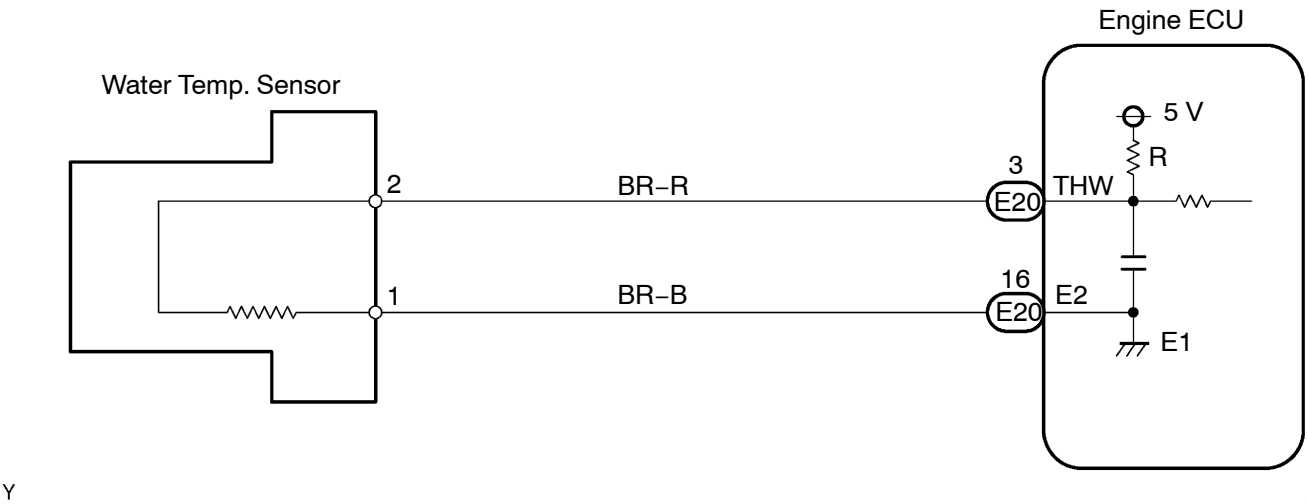


The water temperature sensor senses the coolant temperature. A thermistor built into the sensor changes the resistance value according to the coolant temperature. The lower the coolant temperature, the greater the thermistor resistance value, and the higher the coolant temperature, the lower the thermistor resistance value (See Fig. 1).

The water temperature sensor is connected to the ECU (See below). The 5 V power source voltage in the ECU is applied to the water temperature sensor from terminal THW via a resistor R. That is, resistor R and the water temperature sensor are connected in series. When the resistance value of the water temperature sensor changes in accordance with changes in the coolant temperature, the potential at terminal THW also changes. Based on this signal, the ECU increases the fuel injection volume to improve driveability during cold engine operation. If the ECU detects the diagnostic trouble code 22, it operates the fail safe function in which the engine coolant temperature is assumed to be 80°C (170°F).

DTC No.	DTC Detecting Condition	Trouble Area
22	Open or short in water temp. sensor circuit for 0.5 sec. or more	• Open or short in water temp. sensor circuit • Water temp. sensor • Engine ECU

WIRING DIAGRAM

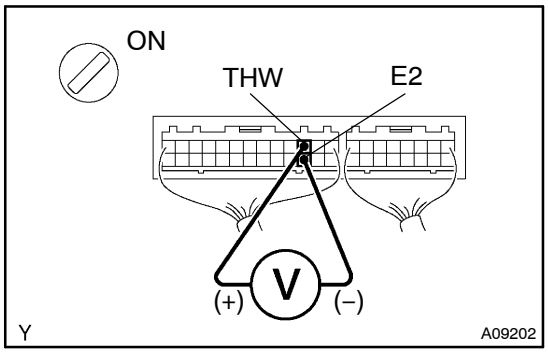


INSPECTION PROCEDURE

HINT:

If DTCs 22, 24, 31 and 41 are output simultaneously, E2 (sensor ground) may be open.

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



PREPARATION:

(a) Disconnect the engine ECU from the body bracket (See page FI–36).

(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals THW and E2 of the engine ECU connector.

OK:

Engine Coolant Temperature	Voltage
20°C (68°F) (Engine is cool)	0.5 – 3.4 V
80°C (176°F) (Engine is hot)	0.2 – 1.0 V

OK → **Check for intermittent problems (See page DI–3).**

NG

2	Check water temperature sensor (See page FI–32).

NG → **Replace water temperature sensor.**

OK

3	Check for open and short in harness and connector between engine ECU and water temperature sensor (See page IN–19).

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

OK

Check and replace engine ECU (See page FI–37).