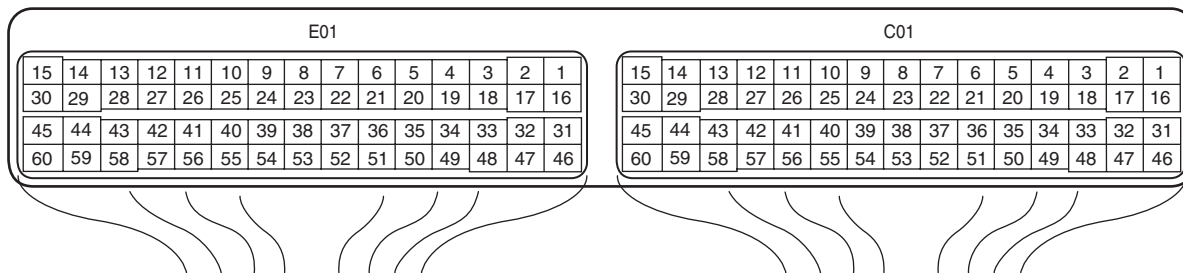
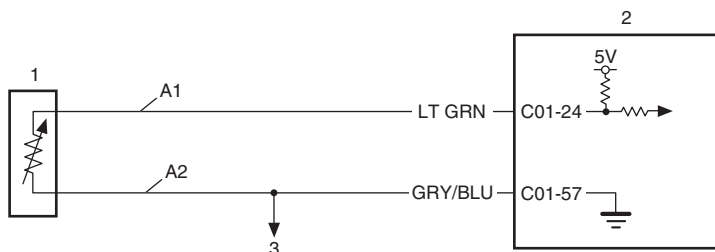


DTC P0116: Engine Coolant Temperature Circuit Range / Performance

S6RW0C1104021

Wiring Diagram



I7RW01110049-03

A1: ECT sensor signal circuit	1. ECT sensor	3. To other sensors
A2: ECT sensor ground circuit	2. ECM	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
ECT sensor value is less than 10 °C (50 °F) while engine is running under more than specified engine load (more than 1000 rpm) after 2 to 1116 min. (depending on ECT at engine start) elapsed from engine start. (2 driving cycle detection logic, monitoring once per driving cycle)	<ul style="list-style-type: none"> <li>ECT sensor and/or its circuit</li> <li>Thermostat</li> <li>ECM</li> </ul>

DTC Confirmation Procedure

**▲ WARNING**

- When performing a road test, select a place where there is no traffic or possibility of a traffic accident and very careful during testing to avoid occurrence of an accident.
- Road test should be carried out with 2 persons, a driver and a tester, on a level road.

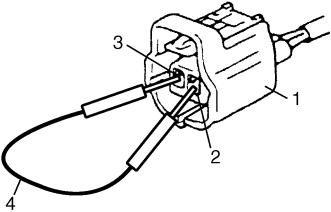
**NOTE**

Check to make sure that the following conditions are satisfied when using this “DTC Confirmation Procedure”.

- Intake air temperature at engine start: -10 °C (14 °F) to 80 °C (176 °F)
- Intake air temperature: -10 °C (14 °F) to 70 °C (158 °F)
- Altitude (barometric pressure): 2400 m, 8000 ft or less (560 mmHg, 75 kPa or more)
- The following DTCs are not detected: DTCs related to MAF sensor, ECT sensor (other than P0116), IAT sensor and barometric pressure sensor

- With ignition switch OFF, connect scan tool.
- Turn ON ignition switch, clear DTC.
- Drive vehicle more than 40 mph (65 km/h) for more than 12 minutes.
- Stop vehicle.
- Check DTC and pending DTC.

**DTC Troubleshooting**

Step	Action	Yes	No
1	Was "Engine and Emission Control System Check" performed?	Go to Step 2.	Go to "Engine and Emission Control System Check".
2	<b>DTC check</b> Is there DTC(s) other than P0116?	Go to applicable DTC diag.flow.	Go to Step 3.
3	<b>Engine coolant temperature check</b> 1) With ignition switch OFF, connect scan tool to DLC. 2) With ignition switch ON, check engine coolant temperature displayed on scan tool. (ECT 1) 3) Warm up engine to normal operating temperature. 4) Check engine coolant temperature displayed on scan tool. (ECT 2)  Is difference between ECT 1 and ECT 2 less than 2 °C?	Go to Step 5.	Go to Step 4.
4	<b>Thermostat check</b> 1) Check thermostat referring to "Thermostat Inspection in Section 1F".  Is thermostat in good condition?	Go to Step 5.	Replace thermostat.
5	<b>ECT sensor circuit check</b> 1) With ignition switch OFF, connect scan tool to DLC and disconnect ECT sensor connector (1). 2) With ignition switch ON, check engine coolant temperature displayed on scan tool.  <b>ECT sensor temperature specifications</b> <b>Signal wire terminal (2) and ground wire terminal (3) in ECT sensor connector are shorted by service wire (4): 130 °C (266 °F)</b> <b>Signal wire terminal (2) and ground wire terminal (3) in ECT sensor connector are opened: -40 °C (-40 °F)</b>    I6JB01110032-01  Is check result as specified?	Go to Step 6.	Check ECT sensor signal and ground circuits referring to Step 2 of "DTC P0117 / P0118: Engine Coolant Temperature Circuit Low / High".
6	<b>ECT sensor performance check</b> 1) Check ECT sensor referring to "Engine Coolant Temperature (ECT) Sensor Inspection in Section 1C".  Is check result as specified?	Substitute a known-good ECM and recheck.	Replace ECT sensor.

**DTC P0117 / P0118: Engine Coolant Temperature Circuit Low / High**

S6RW0C1104022

**Wiring Diagram**

Refer to “DTC P0116: Engine Coolant Temperature Circuit Range / Performance”.

**DTC Detecting Condition and Trouble Area**

DTC detecting condition	Trouble area
<b>P0117:</b> Circuit voltage of ECT sensor is lower than 0.15 V for 5 sec. (1 driving cycle detection logic)	<ul style="list-style-type: none"> <li>• ECT sensor and/or its circuit</li> <li>• ECM</li> </ul>
<b>P0118:</b> Circuit voltage of ECT sensor is higher than 4.85 V for 5 sec. (1 driving cycle detection logic)	

**DTC Confirmation Procedure**

- 1) With ignition switch OFF, connect scan tool.
- 2) Turn ON ignition switch and clear DTC by using scan tool.
- 3) Start engine and run it for 10 sec.
- 4) Check DTC.

**DTC Troubleshooting**

**NOTE**

**When DTC P0118 and P0113 are indicated together, it is possible that ECT sensor ground circuit is open.**

Step	Action	Yes	No
1	Was “Engine and Emission Control System Check” performed?	Go to Step 2.	Go to “Engine and Emission Control System Check”.
2	<b>Wire harness check</b> 1) Turn ignition switch OFF position. 2) Disconnect connectors from ECT sensor and ECM. 3) Check for proper terminal connection to ECT sensor and ECM connectors. 4) If connections are OK, check that ECT sensor circuit is as follows. <ul style="list-style-type: none"> <li>• Wiring harness resistance of each ECT sensor signal and ground circuit is less than 3 Ω.</li> <li>• Insulation resistance of ECT sensor signal circuit is infinity between ECT sensor connector and vehicle body ground.</li> <li>• Insulation resistance of wire harness is infinity between ECT sensor signal terminal and each other terminal at ECT sensor connector.</li> <li>• Circuit voltage of each ECT sensor signal and ground circuit is 0 – 1 V with ignition switch turned ON.</li> </ul> Are they in good condition?	Go to Step 3.	Repair or replace defective wire harness.
3	<b>ECT sensor reference voltage check</b> 1) Connect connectors to ECM. 2) Turn ignition switch to ON position. 3) Check that ECT sensor signal voltage is 5 V between ECT sensor connector and vehicle body ground. Is it in good condition?	Go to Step 4.	Substitute a known-good ECM and recheck.