

DTC	P0128	Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature)
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DESCRIPTION

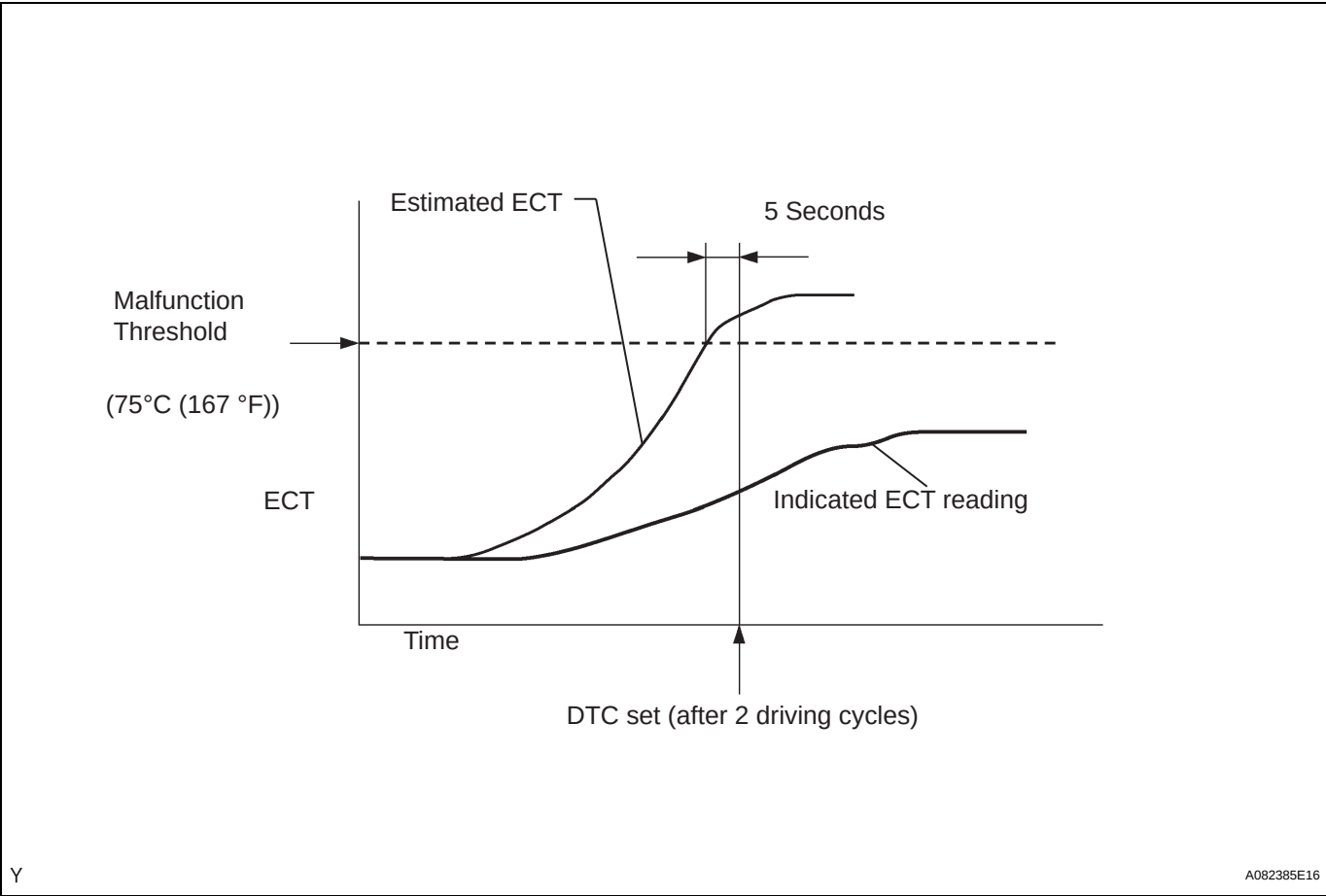
HINT:

This DTC relates to the thermostat.

This DTC is set when the Engine Coolant Temperature (ECT) does not reach 75°C (167°F) despite sufficient engine warm-up time.

DTC No.	DTC Detection Conditions	Trouble Areas
P0128	Conditions (a), (b) and (c) are met for 5 seconds (2 trip detection logic): (a) Cold start (b) Engine is warmed up (c) ECT is less than 75°C (167°F)	- Thermostat - Cooling system - ECT sensor - ECM

MONITOR DESCRIPTION



The ECM estimates the ECT based on the starting temperature, engine loads, and engine speeds. The ECM then compares the estimated temperature with the actual ECT. When the estimated ECT reaches 75°C (167°F), the ECM checks the actual ECT. If the actual ECT is less than 75°C (167°F), the ECM interprets this as a malfunction in the thermostat or the engine cooling system and sets the DTC.

MONITOR STRATEGY

Related DTCs	P0128: Coolant Thermostat
Required Sensors/Components (Main)	Thermostat

Required Sensors/Components (Related)	Engine Coolant Temperature (ECT) sensor, Intake Air Temperature (IAT) sensor, Vehicle speed sensor
Frequency of Operation	Once per driving cycle
Duration	600 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present	P0010 (VVT VSV), P0011, P0012 (VVT system-Advance, Retard), P0031, P0032 (O2 sensor heater sensor 1), P0031, P0032 (A/F sensor heater sensor 1), P0100, P0102, P0103 (MAF sensor), P0110, P0112, P0113 (IAT sensor), P0115, P0117, P0118 (ECT sensor), P0125 (Insufficient ECT for closed loop), P0136, P0137, P0138 (O2 sensor 1), P0171, P0172 (Fuel system), P0300, P0301, P0302, P0303, P0304 (Misfire), P0335 (CKP sensor), P0340, P0341 (CMP sensor), P0340, P0341 (VVT sensor), P0351, P0352, P0353, P0354 (Igniter), P0500 (VSS), P2196 (A/F sensor (Rationality)), P2A00 (A/F sensor (slow response))
Battery voltage	11 V or more
Throttle valve position learning	Completed
Either of following conditions met:	Condition 1 or 2
1. All of following conditions met:	-
ECT at engine start - IAT at engine start	-15 to 7°C (-27 to 12.6°F)
ECT at engine start	-10 to 56°C (14 to 133°F)
IAT at engine start	-10 to 56°C (14 to 133°F)
2. All of following conditions met:	-
ECT at engine start - IAT at engine start	More than 7°C (12.6°F)
ECT at engine start	56°C (133°F) or less
IAT at engine start	-10°C (14°F) or more
Accumulated time within 80 mph (128 km/h) or more of vehicle speed	Less than 20 seconds
Malfunction / Pass determination during this trip	Not yet

TYPICAL MALFUNCTION THRESHOLDS

Duration that following conditions A and B met	5 seconds or more
A. Estimated ECT	75°C (167°F) or more
B. Actual ECT	Below 75°C (167°F)

INSPECTION PROCEDURE

HINT:

Read freeze frame data using an intelligent tester or OBD II scan tool. The ECM records vehicle and driving condition information as freeze frame data the moment a DTC is stored. When troubleshooting, freeze frame data can be helpful in determining whether the vehicle was running or stopped, whether the engine was warmed up or not, whether the air/fuel ratio was lean or rich, as well as other data recorded at the time of a malfunction.

1 CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P0128)

- Connect an intelligent tester or OBD II scan tool to the DLC3.
- Turn the ignition switch to ON.
- Turn the tester or scan tool ON.

- (d) On the tester, select the following menu items:
DIAGNOSIS / ENHANCED OBD II / DTC INFO /
CURRENT CODES.
- (e) Read DTCs.
- (f) If using an OBD II scan tool, refer to the instruction
manual.

Result

Display (DTC Output)	Proceed to
P0128	A
P0128 and other DTCs	B

HINT:
If any DTCs other than P0128 are output, troubleshoot
those DTCs first.

ES

B

GO TO DTC CHART

A

2

CHECK COOLING SYSTEM

- (a) Check for defects in the cooling system that might cause
the system to be too cold, such as abnormal radiator fan
operation or any modifications.

Result:
Cooling system is normal.

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REPAIR OR REPLACE COOLING SYSTEM

OK

3

INSPECT THERMOSTAT

- (a) Remove the thermostat (See page [CO-13](#)).
- (b) Check the valve opening temperature of the thermostat
(See page [CO-13](#)).

Standard:
80° to 84°C (176° to 183°F)

HINT:
In addition to the above check, confirm that the valve is
completely closed when the temperature is below the
standard.

- (c) Reinstall the thermostat (See page [CO-13](#)).

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REPLACE THERMOSTAT

OK

REPLACE ECM