

DTC	P0128	Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature)
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HINT:
This DTC relates to the thermostat.

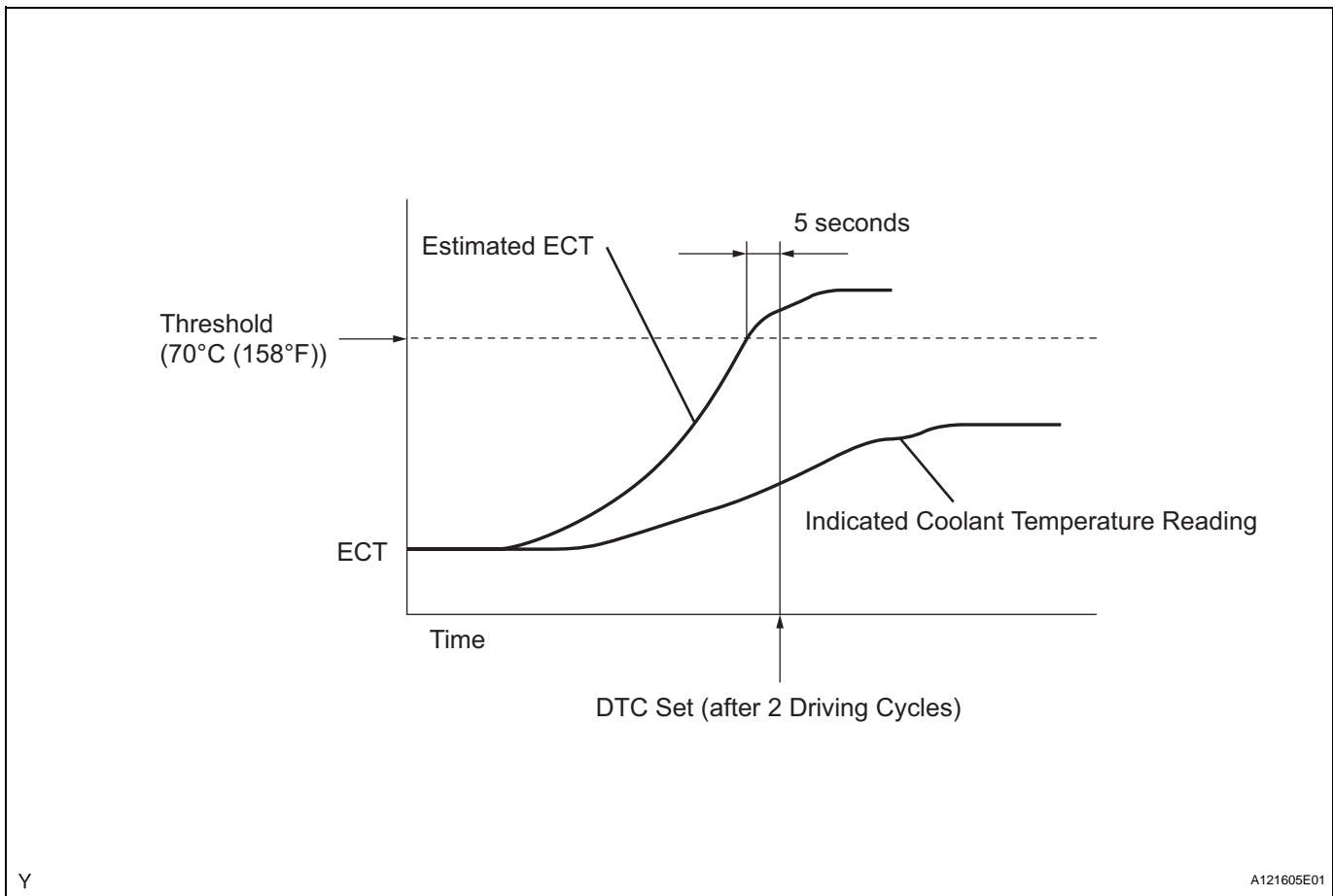
DESCRIPTION

This DTC is set when the Engine Coolant Temperature (ECT) does not reach 70°C (158°F) despite sufficient engine warm-up time.

DTC No.	DTC Detection Conditions	Trouble Areas
P0128	Conditions (a), (b) and (c) met for 5 seconds (2 trip detection logic): (a) Cold start (b) Engine warmed up (c) Engine Coolant Temperature (ECT) less than 70°C (158°F)	<ul style="list-style-type: none"> • Thermostat • Cooling system • ECT sensor • ECM

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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 70°C (158°F), the ECM checks the actual ECT. If the actual ECT is less than 70°C (158°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
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Required Sensors / Components (Main)	Thermostat
Required Sensor / Components (Related)	Engine Coolant Temperature (ECT) sensor, Intake Air Temperature (IAT) sensor, Vehicle speed sensor
Frequency of Operation	Once per driving cycle
Duration	900 seconds
MIL Operation	2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Monitor runs whenever following DTCs not present	P0010, (OCV Bank 1) P0011 (VVT System 1 - Advance) P0012 (VVT System 1 - Retard) P0031, P0032 (A/F sensor heater - Sensor 1) P0100 - P0103 (MAF meter) P0110 - P0113 (IAT sensor) P0115 - P0118 (ECT sensor) P0125 (Insufficient ECT for closed loop) P0171, P0172 (Fuel system) P0300 - P0304 (Misfire) P0335 (CKP sensor) P0340, P0341 (CMP sensor) P0351 - P0358 (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 1 or 2 met:	-
1. All of following conditions (a), (b) and (c) met:	-
(a) ECT at engine start - IAT at engine start	-15°to 7°C (-27°to 12.6°F)
(b) ECT at engine start	-10°to 51°C (14°to 133°F)
(c) IAT at engine start	-10°to 51°C (14°to 133°F)
2. All of following conditions (d), (e) and (f) met:	-
(d) ECT at engine start - IAT at engine start	More than 7°C (12.6°F)
(e) ECT at engine start	51°C (133°F) or less
(f) IAT at engine start	-10°C (14°F) or more
Accumulated time at 80 mph (128 km/h) or more of vehicle speed	Less than 20 seconds

TYPICAL MALFUNCTION THRESHOLDS

Duration that following conditions A and B met	5 seconds or more
A. Simulated ECT	70°C (158°F) or more
B. Actual ECT	Below 70°C (158°F)

HINT:

Read freeze frame data using a intelligent tester. Freeze frame data record the engine condition when malfunctions are detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, and other data, from the time the malfunction occurred.

1

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

- (a) Connect a intelligent tester to the DLC3.
- (b) Turn the ignition switch to ON.

- (c) Turn the tester ON.
- (d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
- (e) Read DTCs.

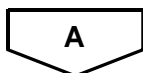
Result:

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.

B  **GO TO DTC CHART**


A 

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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.

NG  **REPAIR OR REPLACE COOLING SYSTEM**

OK 

3 **INSPECT THERMOSTAT**

- (a) Remove the thermostat (see page [CO-7](#)).
- (b) Check the valve opening temperature of the thermostat.

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-8](#)).

NG  **REPLACE THERMOSTAT**

OK 

REPLACE ECM