

DTC	P0128	THERMOSTAT MALFUNCTION
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CIRCUIT DESCRIPTION

An Engine Coolant Temperature (ECT) sensor monitors the temperature of the coolant. This input is used by the Engine Control Module (ECM) for engine control and as enabling criteria for some diagnostics. The airflow coming into the engine is accumulated and used to determine if the engine has been driven within conditions that would allow the engine coolant to heat up normally to the thermostat regulating temperature. If the coolant temperature does not increase normally or does not reach regulating temperature of the thermostat, diagnostics that use the engine coolant temperature as enabling criteria, may not when expected. If engine coolant fails to reach a preset target temperature before a calculated airflow is accumulated, DTC P0128 will be set.

VEHICLE RESPONSE TO DTC SET

The ECM illuminates the malfunction indicator lamp (MIL) on the second consecutive ignition cycle that the diagnostic runs and fails.

The ECM records the operating first time the diagnostic fails, the ECM stores this information in the failure records. If the diagnostic reports a failure on the second consecutive ignition cycle, the ECM records the operating conditions at the time of the failure. The ECM writes the operating conditions to the Freeze Frame and updates the failure records.

CONDITIONS FOR CLEARING THE MIL/DTC

The MIL turns off after 3 consecutively passing trips without a fault. A history DTC clears after 40 consecutive warm-up cycles without a fault.

DTC No.	DTC Detection condition	Trouble Area
P0128	Conditions for running the DTC: <ul style="list-style-type: none"> • The ECT is between -10°C (14°F) and 35°C (95°F) • The IAT is between -10°C (14°F) and 35°C (95°F) • Difference between ECT and IAT is between -15°C (5°F) and 7°C (13°F) Conditions for setting the DTC: The Engine Coolant Temperature failed to reach at least 75°C (167°F) during the running of the coolant temperature counter diagnostic. (2 trip detection logic)	<ul style="list-style-type: none"> • Thermostat • Cooling fan operation • Cooling system • ECM

INSPECTION PROCEDURE

- If DTC P0115 or P0116 is output, first troubleshoot DTC P0115 or P0116. If no malfunction is detected, troubleshoot DTC P0128 next.
- Read freeze frame data using TOYOTA hand-held tester or OBD II scan tool. Because freeze frame 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, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

1	CHECK COOLING FAN SYSTEM(See page16-4)
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NG	REPAIR OR REPLACE COOLING FAN SYSTEM
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OK

2	CHECK THERMOSTAT (See page 16-2)
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NG

REPLACE THERMOSTAT

OK

CHECK AND REPLACE ECM
