

DTC	P0710	Transmission Fluid Temperature Sensor "A" Circuit
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DTC	P0712	Transmission Fluid Temperature Sensor "A" Circuit Low Input
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DTC	P0713	Transmission Fluid Temperature Sensor "A" Circuit High Input
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CIRCUIT DESCRIPTION

The ATF temperature sensor converts fluid temperature into a resistance value which is input into the ECM.

DTC No.	DTC Detecting Condition	Trouble Area
P0710	(a) and (b) is detected momentary within 0.5 sec. when neither P0712 or P0713 is not detected (1-trip detection logic) (a) ATF temperature sensor resistance is less than 79 Ω . (b) ATF temperature sensor resistance is more than 156 k Ω . HINT: Within 0.5 sec. the malfunction switches from (a) to (b) or from (b) to (a)	• Open or short in ATF temperature sensor No. 1 circuit • ATF temperature sensor No. 1 • ECM
P0712	ATF temperature sensor resistance is less than 79 Ω . for 0.5 sec. or more (1-trip detection logic)	
P0713	ATF temperature sensor resistance is more than 156 k Ω . 15 minutes or more after the engine start DTC is detected for 0.5 sec. or more (1-trip detection logic)	

MONITOR DESCRIPTION

The automatic transmission fluid (ATF) temperature sensor converts ATF temperature to an electrical resistance value. Based on the resistance, the ECM determines the ATF temperature, and the ECM detects an opens or shorts in the ATF temperature circuit. If the resistance value of the ATF temperature is less than 79 Ω *¹ or more than 156 k Ω *², the ECM interprets this as a fault in the ATF sensor or wiring. The ECM will turn on the MIL and store the DTC.

*1: 150°C (302°F) or more is indicated regardless of the actual ATF temperature.

*2: -40°C (-40°F) is indicated regardless of the actual ATF temperature.

HINT:

The ATF temperature can be checked on the OBD II scan tool or hand-held tester display.

MONITOR STRATEGY

Related DTCs	P0710	ATF temperature sensor/Range check (Fluttering)
	P0712	ATF temperature sensor/Range check (Low resistance)
	P0713	ATF temperature sensor/Range check (High resistance)
Required sensors/Components	ATF temperature sensor	
Frequency of operation	Continuous	
Duration	0.5 sec.	
MIL operation	Immediate	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present.	See page DI-361	
Range check (Fluttering, Low resistance)		
The typical enabling condition is not available.	-	
Range check (High resistance)		
Time after engine start	15 min. or more	-

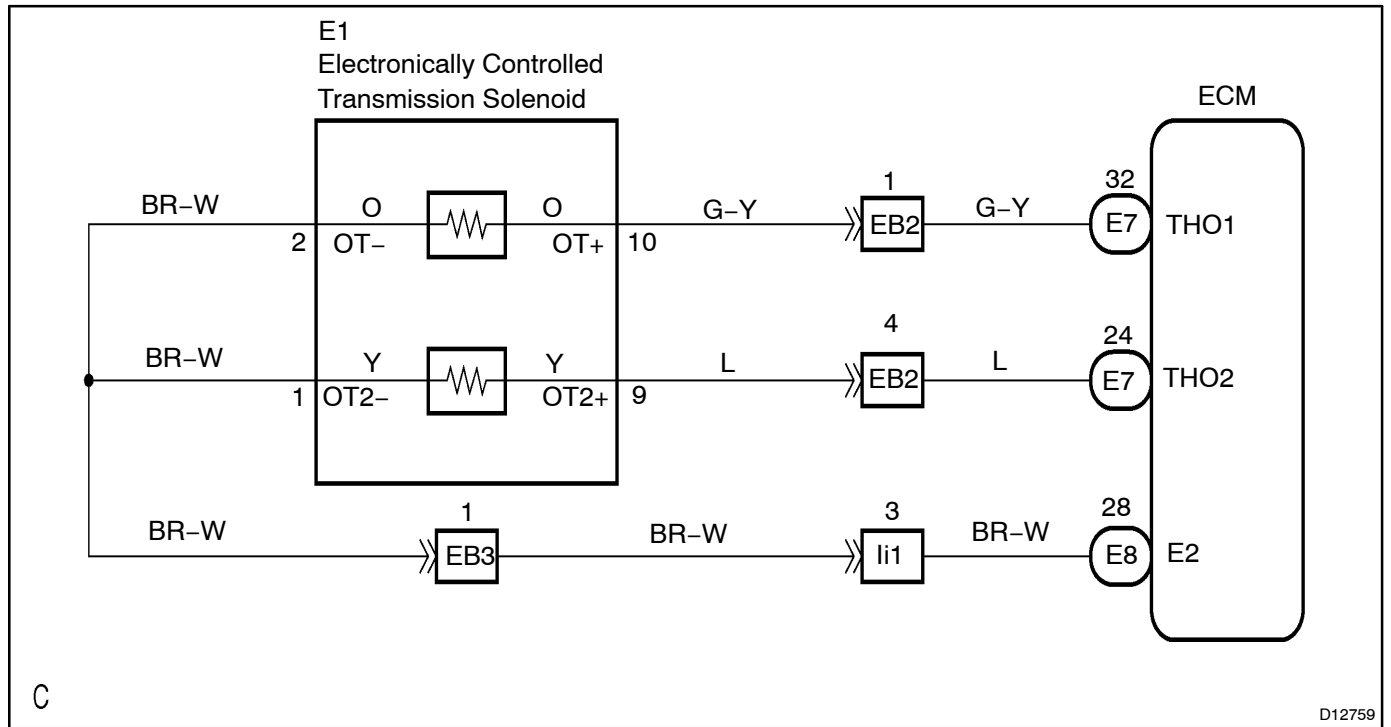
TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
Range check (Fluttering)	
ATF temperature sensor resistance	Less than 79 Ω or More than 156 kΩ
Range check (Low resistance)	
ATF temperature sensor resistance	Less than 79 Ω
Range check (High resistance)	
ATF temperature sensor resistance	More than 156 kΩ

COMPONENT OPERATING RANGE

Parameter	Standard value
ATF temperature sensor resistance	Atmospheric temperature to approx. 130°C (266°F)

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

According to the DATA LIST displayed by the OBD II scan tool or Hand-held tester, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one method to shorten labor time.

- (a) Warm up the engine.
- (b) Turn the ignition switch OFF.
- (c) Connect the OBD II scan tool or Hand-held tester to the DLC3.
- (d) Turn the ignition switch ON.
- (e) Push the "ON" button of OBD II scan tool or Hand-held tester.
- (f) Select the item "/DIAGNOSIS/ENHANCED OBD II/DATA LIST/ALL (or ATM)".
- (g) According to the display on tester, read the "DATA LIST".

Item	Measurement Item/ Display (Range)	Normal Condition	Diagnostic Note
AT FLUID TEMP	ATF Temp. Sensor No.1 Value/ min.: -40°C (-40°F) max.: 215°C (419°F)	80°C (176°F) (After Stall Test)	If the value is "-40°C (-40°F)" or "215°C (419°F)", ATF temp. sensor No. 1 circuit is opened or shorted.

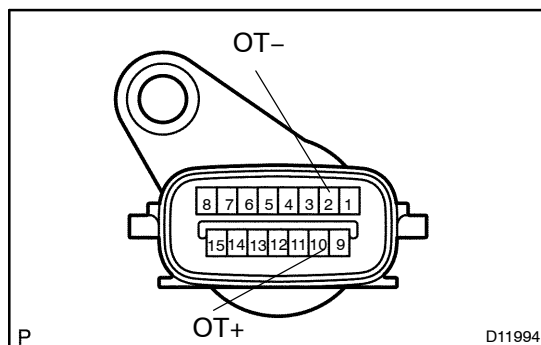
HINT:

When DTC P0712 is output and OBD II scan tool or hand-held tester output is 150°C (302°F), there is a short circuit.

Measure the resistance between THO1 (THO) and body ground.

Temperature Displayed	Malfunction
-40°C (-40°F)	Open circuit
150°C (302°F) or more	Short circuit

1	Check transmission wire.
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PREPARATION:

Disconnect the transmission wire connector from the transmission.

CHECK:

Measure the resistance between terminals OT+ and OT-.

OK:

79 Ω to 156 kΩ

CHECK:

Measure resistance between terminals OT+ and OT- of the transmission wire connector and body ground.

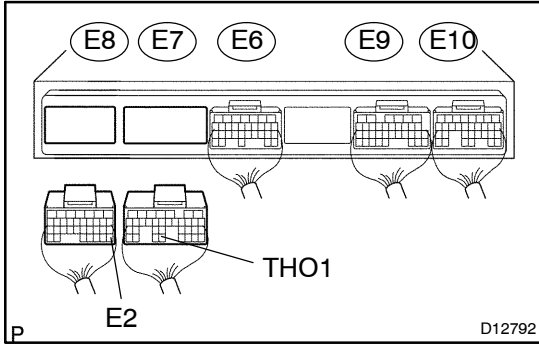
OK:

Resistance: 1 MΩ or higher

NG

Replace the transmission wire (ATF temperature sensor).

OK

2**Measure resistance between terminal THO1 and E2 of ECM connector.****PREPARATION:**

- (a) Connect the transmission wire connector.
- (b) Disconnect the connector of the ECM.

CHECK:

Measure the resistance between terminals THO1 and E2.

OK:**79 Ω to 156 k Ω** **CHECK:**

Measure resistance between terminals THO1 and E2 of the ECM connector and body ground.

OK:**Resistance: 1 M Ω or higher****NG****Repair or replace the harness or connector
(See page [IN-36](#)).****OK****Check and replace the ECM (See page
[IN-36](#)).**