DTC	P0710	Transmission Fluid Temperature Sensor "A" Circuit

DTC	P0712	Transmission Fluid Temperature Sensor "A" Circuit Low Input

DTC	P0713	Transmission Fluid Temperature Sensor "A" Circuit High Input

DESCRIPTION

The Automatic Transmission Fluid (ATF) temperature sensor converts the ATF temperature into a resistance value which is input into the ECM.
The ECM applies a voltage to the temperature sensor through ECM terminal THO1.
The sensor resistance changes with the ATF temperature.
One terminal of the sensor is grounded so that the sensor resistance and voltage decrease as the temperature becomes higher.
The ECM calculates the ATF based on the voltage signal.

DTC No.	DTC Detection Condition	Trouble Area
P0710	ATF temperature sensor resistance changes from (a) to (b) or from (b) to (a) in less than 0.5 sec., and P0712 and P0713 are 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 kΩ	• Open or short in ATF temperature sensor circuit • ATF temperature sensor • ECM
P0712	ATF temperature sensor resistance is less than 79 Ω for 0.5 sec. or more (1 trip detection logic)	• Short in ATF temperature sensor circuit • ATF temperature sensor • ECM
P0713	• ATF temperature sensor resistance is more than 156 kΩ for 15 min. or more after engine start • DTC is detected for 0.5 sec. or more (1 trip detection logic)	• Open in ATF temperature sensor circuit • ATF temperature sensor • ECM

AX

MONITOR DESCRIPTION

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 open or short in the ATF temperature circuit. If the resistance value of the ATF temperature is less than 79 Ω*1 or more than 156 kΩ*2, the ECM interprets this as a fault in the ATF sensor or wiring. The ECM will illuminate the MIL and store the DTC.
HINT:

- *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.
- The ATF temperature can be checked on the intelligent tester display.

MONITOR STRATEGY

Related DTCs	P0710: ATF temperature sensor/Range check (Chattering) 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

P0710, P0712: Range check (Chattering, Low resistance)

The monitor will run whenever the following DTCs are not present.	None
The typical enabling condition is not available.	-

P0713: Range check (High resistance)

The monitor will run whenever the following DTCs are not present.	None
Time after engine start	15 min. or more

TYPICAL MALFUNCTION THRESHOLDS

P0710: Range check (Chattering)

ATF temperature sensor resistance	Less than 79 Ω or more than 156 kΩ

P0712: Range check (Low resistance)

ATF temperature sensor resistance	Less than 79 Ω

P0713: Range check (High resistance)

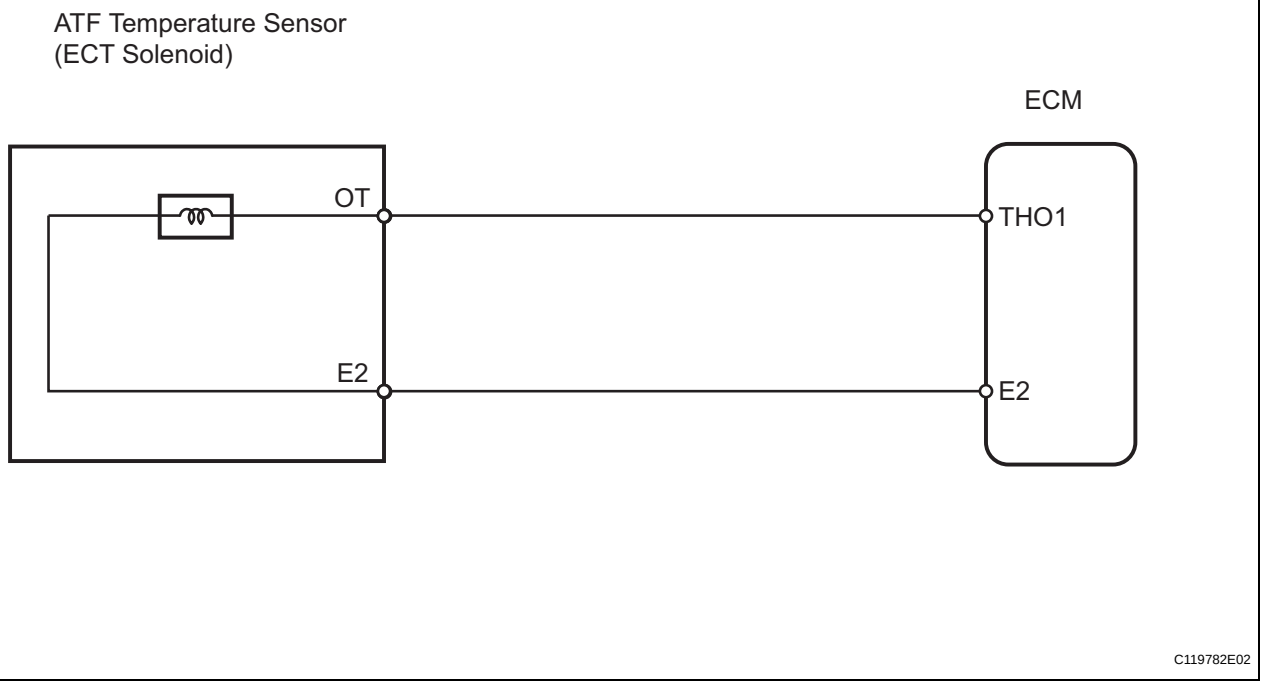
ATF temperature sensor resistance	More than 156 kΩ

COMPONENT OPERATING RANGE

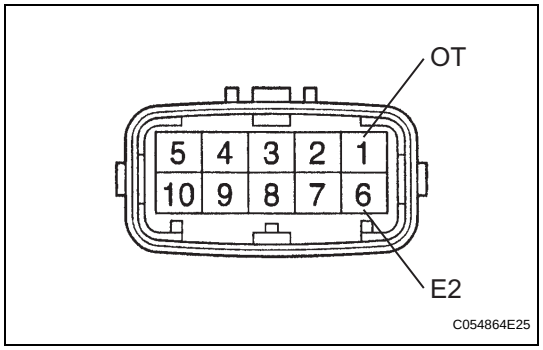
ATF temperature sensor	Resistance: 79 Ω to 156 kΩ

WIRING DIAGRAM

AX



1 INSPECT TRANSMISSION WIRE (ATF TEMPERATURE SENSOR)



(a) Disconnect the E1 wire connector.
(b) Measure the resistance of the transmission wire.
Standard resistance

Tester Connection	Specified Condition
1 (OT) - 6 (E2)	79 Ω to 156 kΩ
1 (OT) - Body ground	10 kΩ or higher
6 (E2) - Body ground	10 kΩ or higher

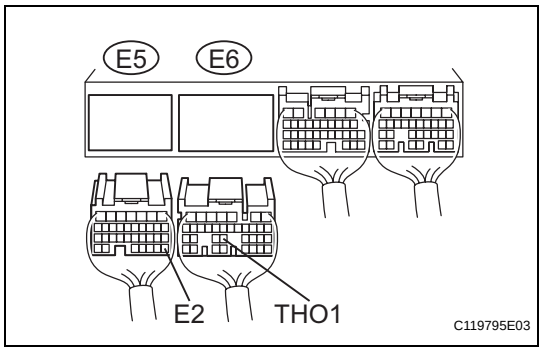
HINT:
If the resistance is out of the specified range of either of the ATF temperatures shown in the table below, the driveability of the vehicle may decrease.
Standard resistance

ATF Temperature	Specified Condition
10°C (68°F)	6.4 kΩ
110°C (230°F)	0.2 kΩ

NG → **REPAIR OR REPLACE TRANSMISSION WIRE**

OK

2 CHECK WIRE HARNESS (TRANSMISSION WIRE - ECM)



(a) Disconnect the E5 and E6 ECM connectors.
(b) Measure the resistance of the wire harness side connectors.
Standard resistance

Tester Connection	Specified Condition
E6-24 (THO1) - E5-28 (E2)	79 Ω to 156 kΩ
E6-24 (THO1) - Body ground	10 kΩ or higher
E5-28 (E2) - Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE ECM

AX