

DTC	P2102	Throttle Actuator Control Motor Circuit Low
DTC	P2103	Throttle Actuator Control Motor Circuit High

DESCRIPTION

The throttle motor is operated by the ECM and it opens and closes the throttle valve.

The opening angle of the throttle valve is detected by the throttle position sensor which is mounted on the throttle body. The throttle position sensor provides feedback to the ECM. This feedback allows the ECM to control the throttle motor and monitor the throttle opening angle as the ECM responds to driver inputs.

HINT:

This Electrical Throttle Control System (ETCS) does not use a throttle cable.

ES

DTC No.	DTC Detection Condition	Trouble Area
P2102	Conditions (a) and (b) continue for 2.0 seconds: (a) Throttle control motor output duty is 80% or more (b) Throttle control motor current is less than 0.5 A	<ul style="list-style-type: none"> Open in throttle control motor circuit Throttle control motor ECM
P2103	Following conditions are met. <ul style="list-style-type: none"> Hybrid IC diagnosis signal: Fail Hybrid IC current limiter port: Fail When electric throttle actuator is ON (i.e. actuator power ON or actuator power supply voltage is 8 V or more)	<ul style="list-style-type: none"> Short in throttle control motor circuit Throttle control motor Throttle valve Throttle body assembly ECM

MONITOR DESCRIPTION

The ECM monitors the flow of electrical current through the electronic throttle motor, and detects malfunction or open circuits in the throttle motor based on the value of the electrical current. When the current deviates from the standard values, the ECM concludes that there is a fault in the throttle motor. Or, if the throttle valve is not functioning properly (for example, stuck ON), the ECM concludes that there is a fault in the throttle motor and turns on the MIL and a DTC is set.

Example:

When the current is more than 10 A. Or, the current is less than 0.5 A when the motor driving duty ratio is more than 80%. The ECM concludes that the current is deviated from the standard values, turns on the MIL and a DTC is set.

FAIL-SAFE

If the Electronic Throttle Control System (ETCS) has a malfunction, the ECM cuts off current to the throttle control motor. The throttle control valve returns to a predetermined opening angle (approximately 16°) by the force of the return spring. The ECM then adjusts the engine output by controlling the fuel injection (intermittent fuel-cut) and ignition timing in accordance with the accelerator pedal opening angle to enable the vehicle to continue to drive.

If the accelerator pedal is depressed firmly and slowly, the vehicle can be driven slowly.

If a "pass" condition is detected and then the power switch is turned OFF, the fail-safe operation will stop and the system will return to normal condition.

MONITOR STRATEGY

P2102: Throttle actuator control motor current (low current)

Related DTCs	P2102: Throttle actuator control motor current (low current)
Required sensors/components	Throttle actuator motor
Frequency of operation	Continuous
Duration	2 seconds
MIL operation	Immediately

Sequence of operation	None
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P2103: Throttle actuator control motor current (high current)

Related DTCs	P2103: Throttle actuator control motor current (high current)
Required sensors/components	Throttle actuator motor
Frequency of operation	Continuous
Duration	0.6 seconds
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P2102: Throttle actuator control motor current (low current)

The monitor will run whenever the following DTCs are not present	None
Throttle motor	ON
Difference between motor current of present and 0.016 second ago	Less than 0.2 A

ES

P2103: Throttle actuator control motor current (high current)

The monitor will run whenever the following DTCs are not present	None
Throttle motor	ON

TYPICAL MALFUNCTION THRESHOLDS

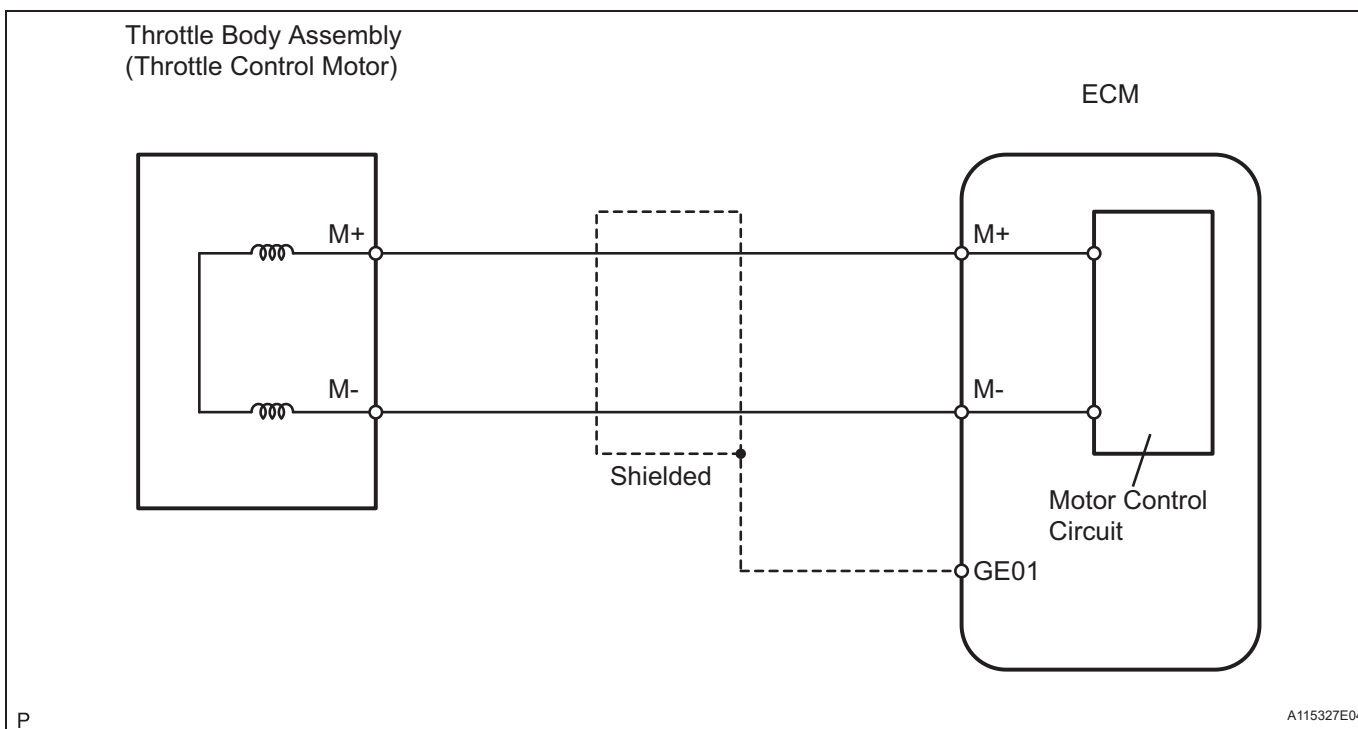
P2102: Throttle actuator control motor current (low current)

Throttle motor current	Less than 0.5 A (when motor drive duty is 80% or more)
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P2103: Throttle actuator control motor current (high current)

Hybrid IC	Fail
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WIRING DIAGRAM



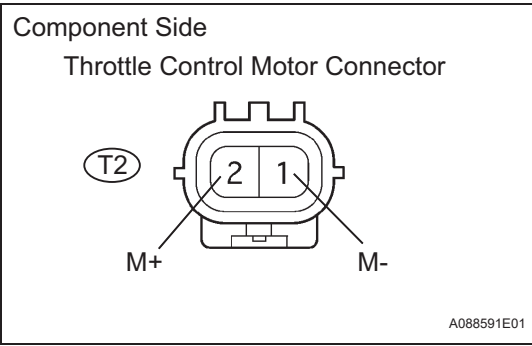
INSPECTION PROCEDURE

HINT:

Read freeze frame data using the intelligent tester. Freeze frame data records the engine condition when malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, 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.

ES

1 INSPECT THROTTLE W/MOTOR BODY ASSEMBLY (THROTTLE CONTROL MOTOR)



- (a) Disconnect the throttle control motor connector.
- (b) Measure the motor resistance between terminals 1 (M-) and 2 (M+).

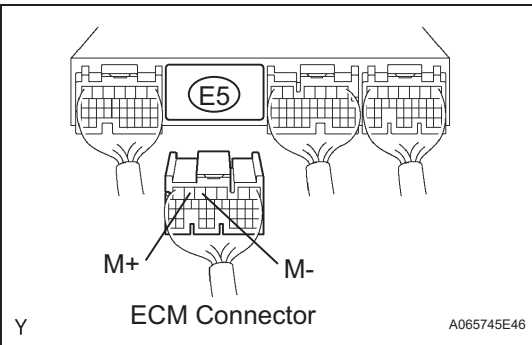
Standard resistance

Tester Connection	Specified Condition
1 (M-) - 2 (M+)	0.3 to 100 Ω at 20°C (68°F)

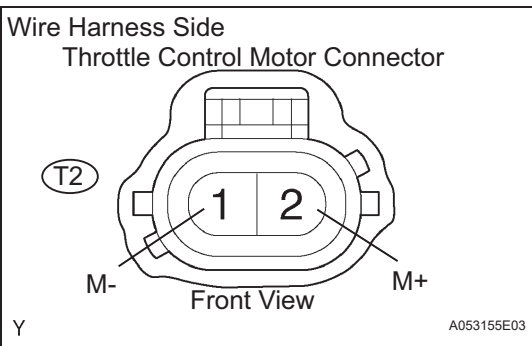
NG → **REPLACE THROTTLE W/MOTOR BODY ASSEMBLY**

OK

2 CHECK HARNESS AND CONNECTOR (ECM - THROTTLE CONTROL MOTOR)



- (a) Disconnect the E5 ECM connector.



- (b) Disconnect the T2 throttle control motor connector.
- (c) Measure the resistance between the wire harness side connectors.

Standard resistance (Check for open)

Tester Connection	Specified Condition
2 (Throttle control motor) - E5-6 (M+)	Below 1 Ω
1 (Throttle control motor) - E5-5 (M-)	Below 1 Ω

Standard resistance (Check for short)

Tester Connection	Specified Condition
2 (Throttle control motor) or E5-6 (M+) - Body ground	10 kΩ or higher
1 (Throttle control motor) or E5-5 (M-) - Body ground	10 kΩ or higher

- (d) Reconnect the ECM connector and the throttle control motor connector.

NG

REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

3**INSPECT THROTTLE W/MOTOR BODY ASSEMBLY**

- (a) Visually check between the throttle valve and the housing for foreign objects.
Also, check if the valve can open and close smoothly.

OK:

The throttle valve is not contaminated by foreign objects and can move smoothly.

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REMOVE FOREIGN OBJECT AND CLEAN THROTTLE BODY

OK

ES**REPLACE ECM**