

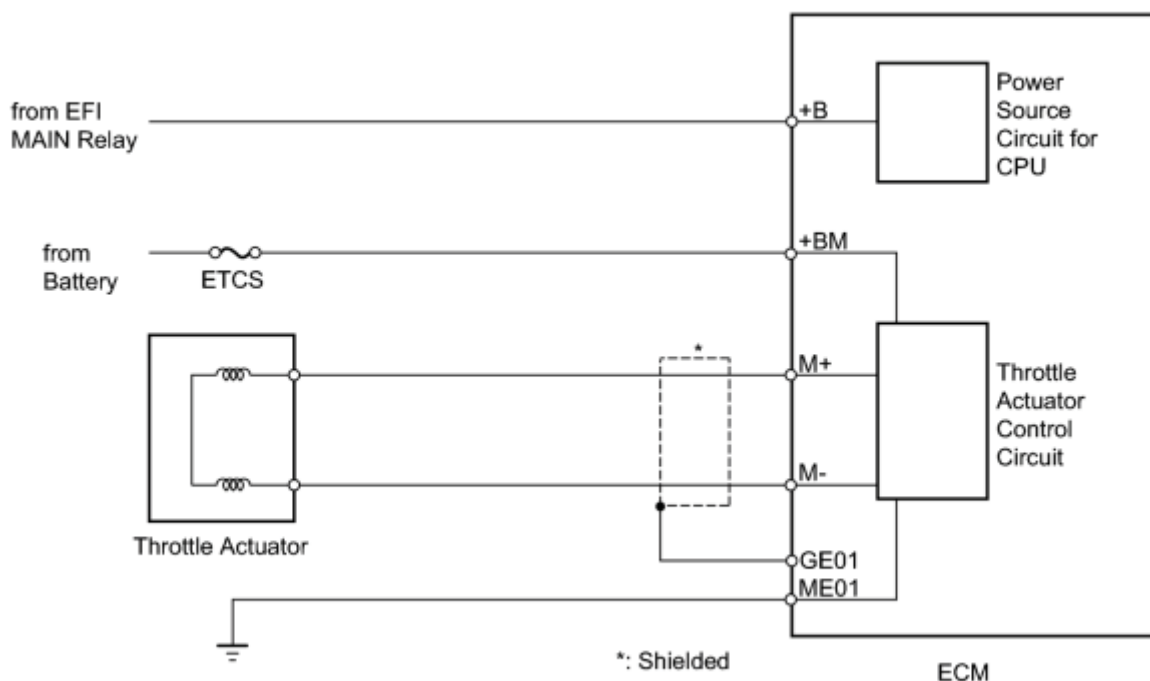
DESCRIPTION

The electronic throttle control system has a dedicated power supply circuit. The voltage (+BM) is monitored and when it is low (below 4 V), the ECM determines that there is a malfunction in the electronic throttle control system and cuts off the current to the throttle actuator.

When the voltage becomes unstable, the electronic throttle control system itself becomes unstable. For this reason, when the voltage is low, the current to the throttle actuator is cut. If repairs are made and the system returns to normal, turn the power switch off. The ECM then allows the current to flow to the throttle actuator so that it can be restarted.

HINT:

This electronic throttle control system does not use a throttle cable.



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DTC No.	DTC Detection Condition	Trouble Area
P2118	An open in electronic throttle control system power source (+BM) circuit (1 trip detection logic)	<ul style="list-style-type: none"> • Open in electronic throttle control system power source circuit • Battery • Battery terminals • ETCS fuse • ECM

MONITOR DESCRIPTION

The ECM monitors the battery supply voltage applied to the throttle actuator.

When the power supply voltage (+BM) drops below 4 V for 0.8 seconds or more, the ECM interprets this as an open in the power supply circuit (+BM). The ECM illuminates the MIL and stores the DTC.

If the malfunction is not repaired successfully, the DTC is stored 5 seconds after the engine is next started.

MONITOR STRATEGY

Related DTCs	P2118: Throttle actuator power supply
Required Sensors / Components (Main)	Throttle actuator, throttle valve (throttle body assembly), ETCS fuse
Required Sensors / Components (Related)	None
Frequency of Operation	Continuous
Duration	0.8 seconds
MIL Operation	Immediately
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

Monitor runs whenever following DTCs are not present	None
Battery voltage	8 V or higher
Electronic throttle actuator power	ON

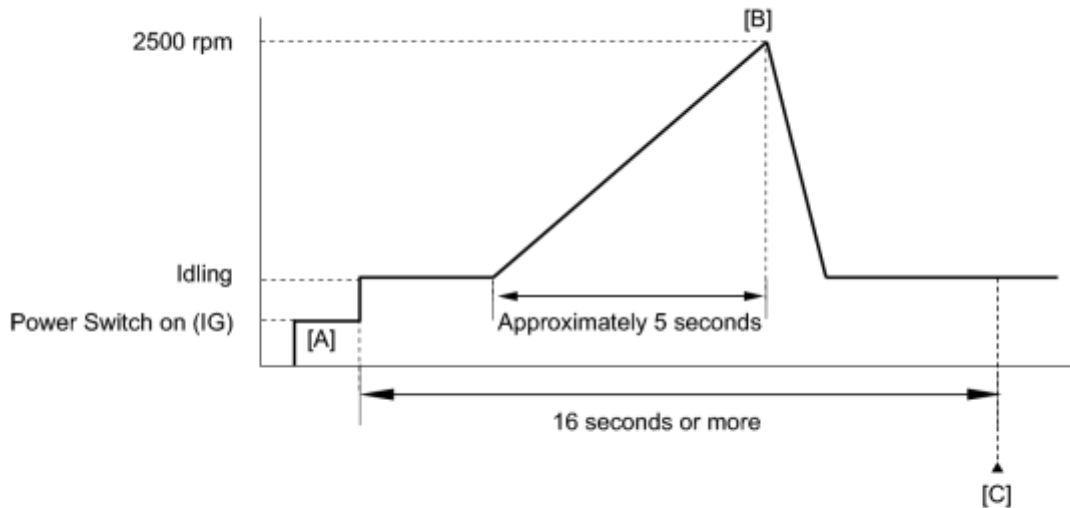
TYPICAL MALFUNCTION THRESHOLDS

Throttle actuator power supply voltage (+BM)	Below 4 V
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COMPONENT OPERATING RANGE

Throttle actuator power supply voltage (+BM)	11 to 14 V
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CONFIRMATION DRIVING PATTERN



1. Connect the Techstream to the DLC3.
2. Turn the power switch on (IG) and turn the Techstream on.
3. Clear the DTCs (even if no DTCs are stored, perform the clear DTC procedure) INFO.
4. Turn the power switch off and wait for 30 seconds.
5. Turn the power switch on (IG) and turn the Techstream on [A].
6. Put the engine in inspection mode INFO.
7. Start the engine.
8. Slowly depress the accelerator pedal, raise the engine speed to approximately 2500 rpm for approximately 5 seconds, and then idle the engine [B].
9. Enter the following menus: Powertrain / Engine and ECT / Trouble Codes.
10. Read the DTC [C].
11. If a DTC is output, the system is malfunctioning.

HINT:

If a DTC is not output, perform the following procedure.

12. Enter the following menus: Powertrain / Engine and ECT / Utility / All Readiness.
13. Input the DTC: P2118.
14. Check the DTC judgment result.

Techstream Display	Description
NORMAL	<ul style="list-style-type: none"> ○ DTC judgment completed ○ System normal
ABNORMAL	<ul style="list-style-type: none"> ○ DTC judgment completed ○ System abnormal

Techstream Display	Description
INCOMPLETE	<ul style="list-style-type: none"> ○ DTC judgment not completed ○ Perform driving pattern after confirming DTC enabling conditions
UNKNOWN	<ul style="list-style-type: none"> ○ Unable to perform DTC judgment ○ Number of DTCs which do not fulfill DTC preconditions has reached ECU memory limit

HINT:


- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows NORMAL, the system is normal.
- If the judgment result shows INCOMPLETE or UNKNOWN, perform steps [B] again.

15. Enter the following menus: Powertrain / Engine and ECT / Utility / All Readiness.

16. Check the judgment result.

HINT:

- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows NORMAL, the system is normal.

17. If the test result is INCOMPLETE or UNKNOWN and no DTC is output, perform a universal trip and check for permanent DTCs .

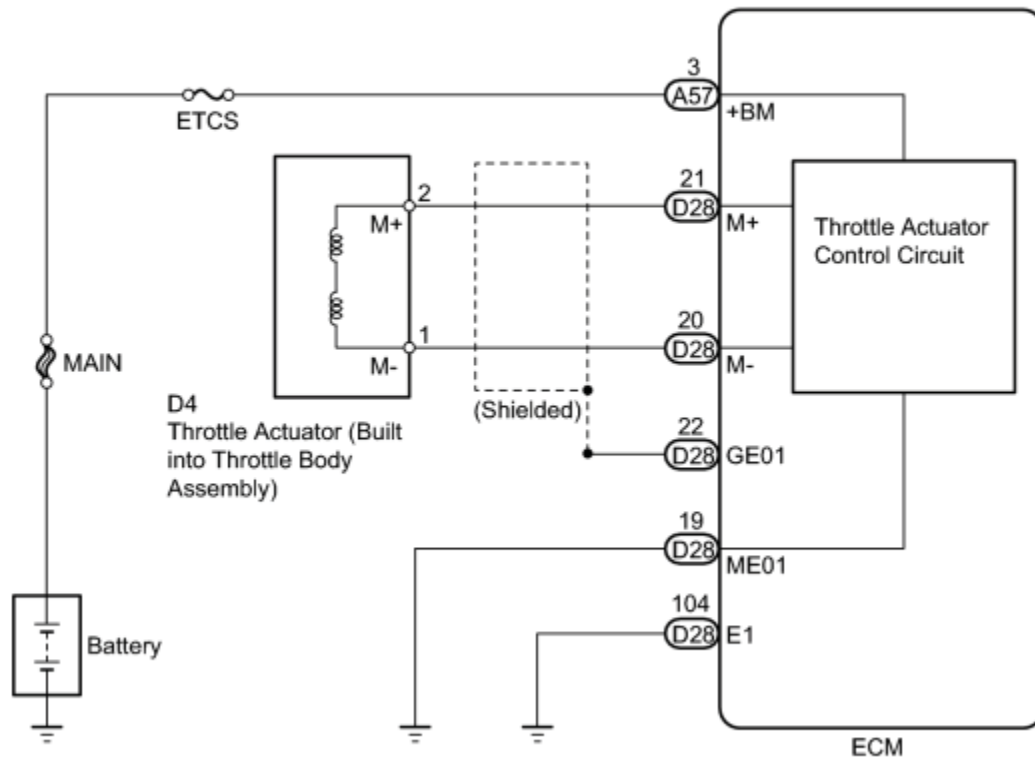
HINT:

- If a permanent DTC is output, the system is malfunctioning.
- If no permanent DTC is output, the system is normal.

FAIL-SAFE

When this DTC or other DTCs relating to electronic throttle control system malfunctions, are stored, the ECM enters fail-safe mode. During fail-safe mode, the ECM cuts the current to the throttle actuator, and the throttle valve is returned to a 5.5° throttle angle by the return spring. The ECM stops the engine and the vehicle can be driven using solely the hybrid system. If the accelerator pedal is depressed firmly and gently, the vehicle can be driven slowly. Fail-safe mode continues until a pass condition is detected, and the power switch is then turned off.

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

Inspect the fuses for circuits related to this system before performing the following inspection procedure.

HINT:

Read freeze frame data using the Techstream. The ECM records vehicle and driving condition information as freeze frame data the moment a DTC is stored. 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.

PROCEDURE

1.	READ VALUE USING TECHSTREAM (+BM VOLTAGE)
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(a) Connect the Techstream to the DLC3.

(b) Turn the power switch on (IG).

(c) Turn the Techstream on.

(d) Enter the following menus: Powertrain / Engine and ECT / Data List / +BM voltage.

(e) Read the value displayed on the Techstream.

Standard Voltage:

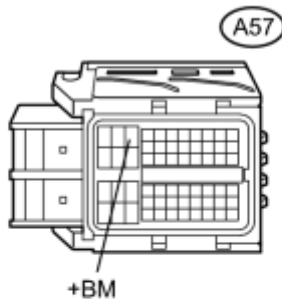
11 to 14 V

NG [▶ CHECK HARNESS AND CONNECTOR \(ECM - BATTERY, BODY GROUND\)](#)

OK [▶ CHECK FOR INTERMITTENT PROBLEMS](#)

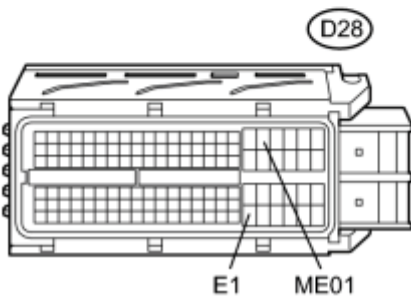
2.	CHECK HARNESS AND CONNECTOR (ECM - BATTERY, BODY GROUND)
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*1



(a) Disconnect the ECM connectors.

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(b) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

Tester Connection	Condition	Specified Condition
A57-3 (+BM) - Body ground	Always	11 to 14 V

Text in Illustration

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Front view of wire harness connector
(to ECM)

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
D28-19 (ME01) - Body ground	Always	Below 1 Ω
D28-104 (E1) - Body ground	Always	Below 1 Ω

(d) Reconnect the ECM connectors.

NG  REPAIR OR REPLACE HARNESS OR CONNECTOR (ECM - BATTERY, BODY GROUND)

OK  REPLACE ECM