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Model Year Start: 2016	**Model:** 4Runner	**Prod Date Range:** [08/2015 - 08/2019]
Title: 1GR-FE (ENGINE CONTROL): SFI SYSTEM: P2118; Throttle Actuator Control Motor Current Range / Performance; 2016 - 2019 MY 4Runner [08/2015 - 08/2019]		

DTC	**P2118**	**Throttle Actuator Control Motor Current Range / Performance**

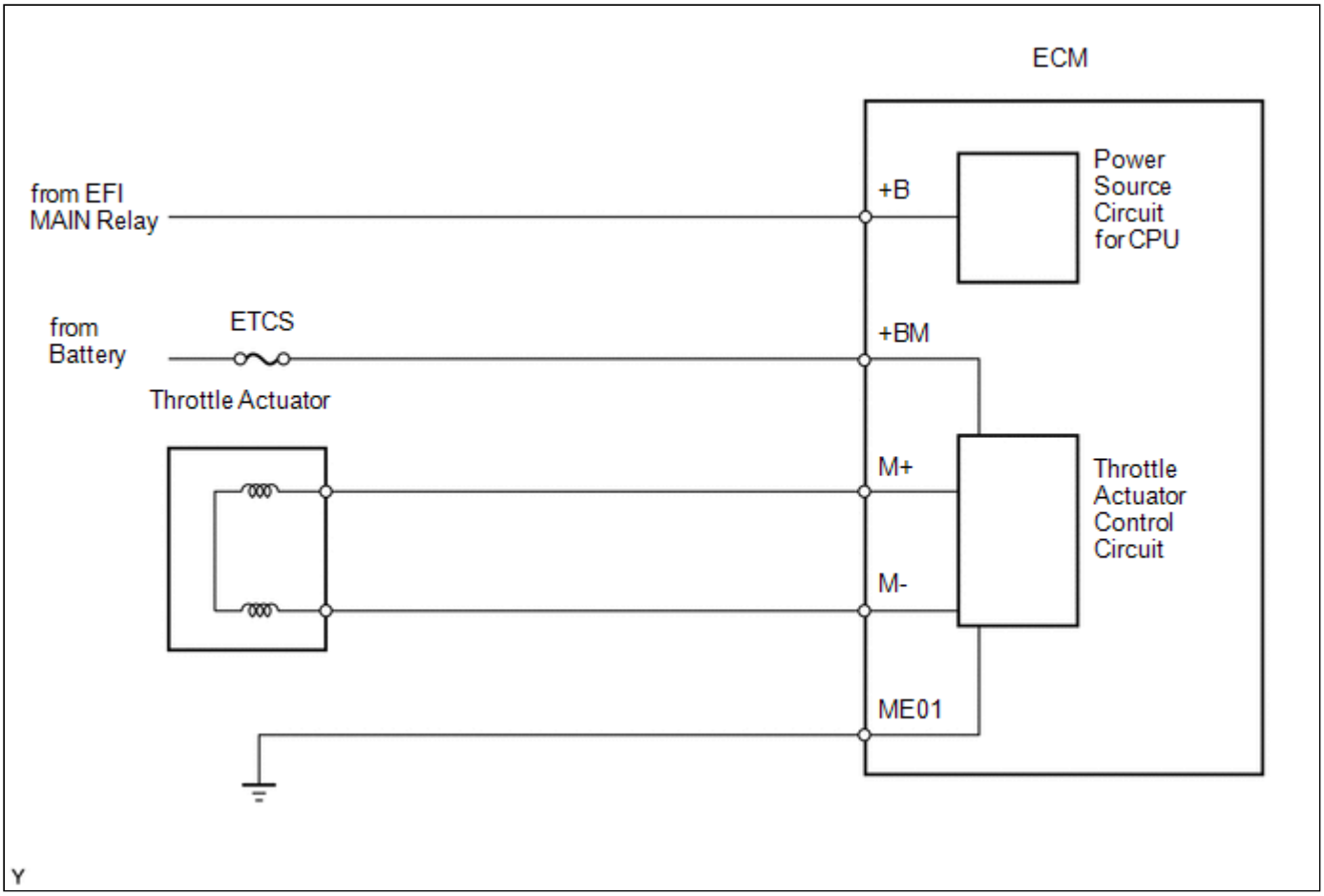
DESCRIPTION

The ETCS (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 ETCS and cuts off the current to the throttle actuator.

When the voltage becomes unstable, the ETCS 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, the ECM then allows the current to flow to the throttle actuator so that it can be restarted after the ignition switch is turned off.

HINT:

This ETCS does not use a throttle cable.



DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA

DTC NO.	DTC DETECTION CONDITION	TROUBLE AREA
P2118	Open in the ETCS power source (+BM) circuit (1 trip detection logic).	• Open in ETCS 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, ETCS fuse
Required Sensors/Components (Related)	None
Frequency of Operation	Continuous
Duration	0.8 seconds
MIL Operation	Immediate
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

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

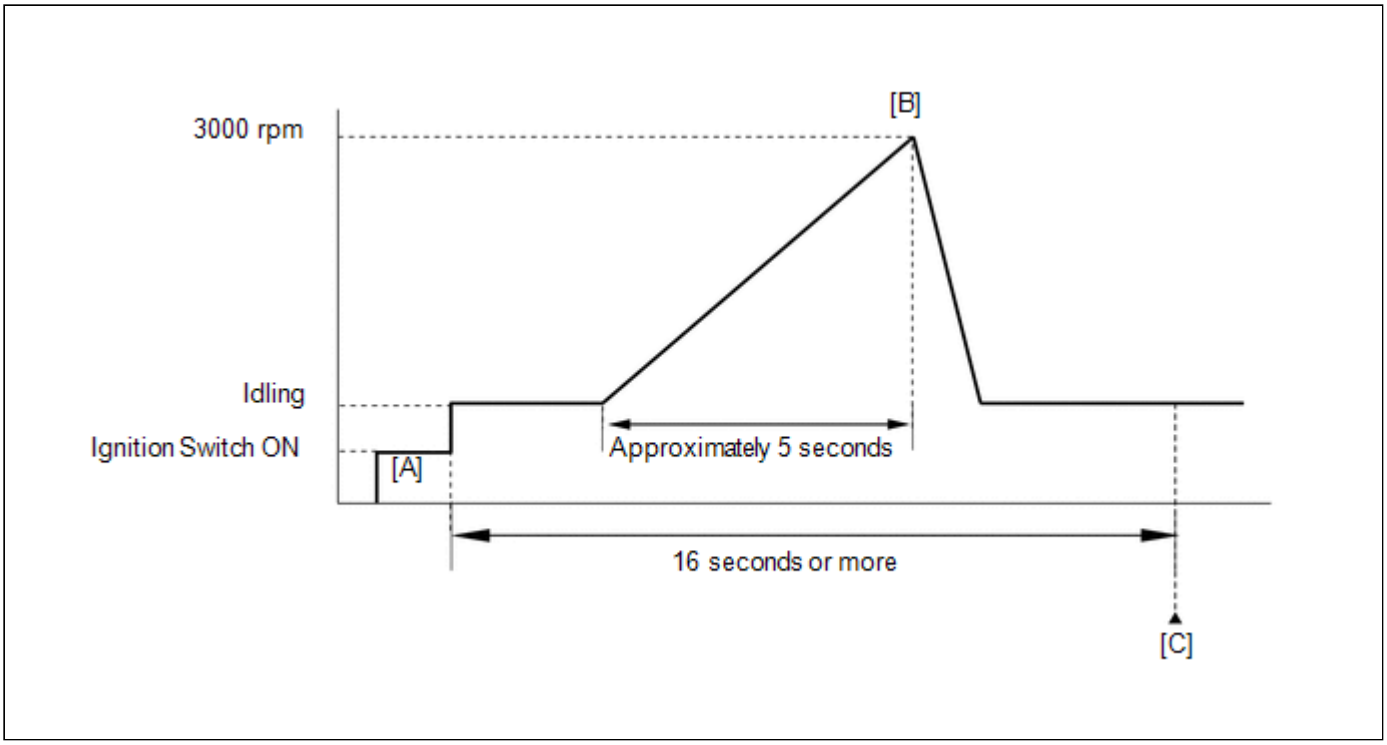
TYPICAL MALFUNCTION THRESHOLDS

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

COMPONENT OPERATING RANGE

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

CONFIRMATION DRIVING PATTERN



1. Connect the Techstream to the DLC3.
2. Turn the ignition switch to ON and turn the Techstream on.
3. Clear DTCs (even if no DTCs are stored, perform the clear DTC operation).
4. Turn the ignition switch off and wait for at least 30 seconds.
5. Turn the ignition switch to ON and turn the Techstream on [A].
6. Start the engine.
7. Slowly depress the accelerator pedal, raise the engine speed to approximately 3000 rpm for approximately 5 seconds, and then idle the engine [B].
8. Check that 16 seconds or more have elapsed since the engine was started.
9. Enter the following menus: Powertrain / Engine and ECT / Trouble Codes [C].
10. Read the pending DTCs.

HINT:

- If a pending DTC is output, the system is malfunctioning.
- If a pending DTC is not output, perform the following procedure.

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

TESTER DISPLAY	DESCRIPTION
NORMAL	◦ DTC judgment completed ◦ System normal
ABNORMAL	◦ DTC judgment completed ◦ System abnormal
INCOMPLETE	◦ DTC judgment not completed ◦ Perform driving pattern after confirming DTC enabling conditions

TESTER DISPLAY	DESCRIPTION
N/A	◦ 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 NORMAL, the system is normal.
- If the judgment result shows ABNORMAL, the system has a malfunction.
- If the judgment result shows INCOMPLETE or N/A, perform steps [B] and [C] again.

14. If no pending DTC is output, perform a universal trip and check for permanent DTCs (See page INFO).

HINT:

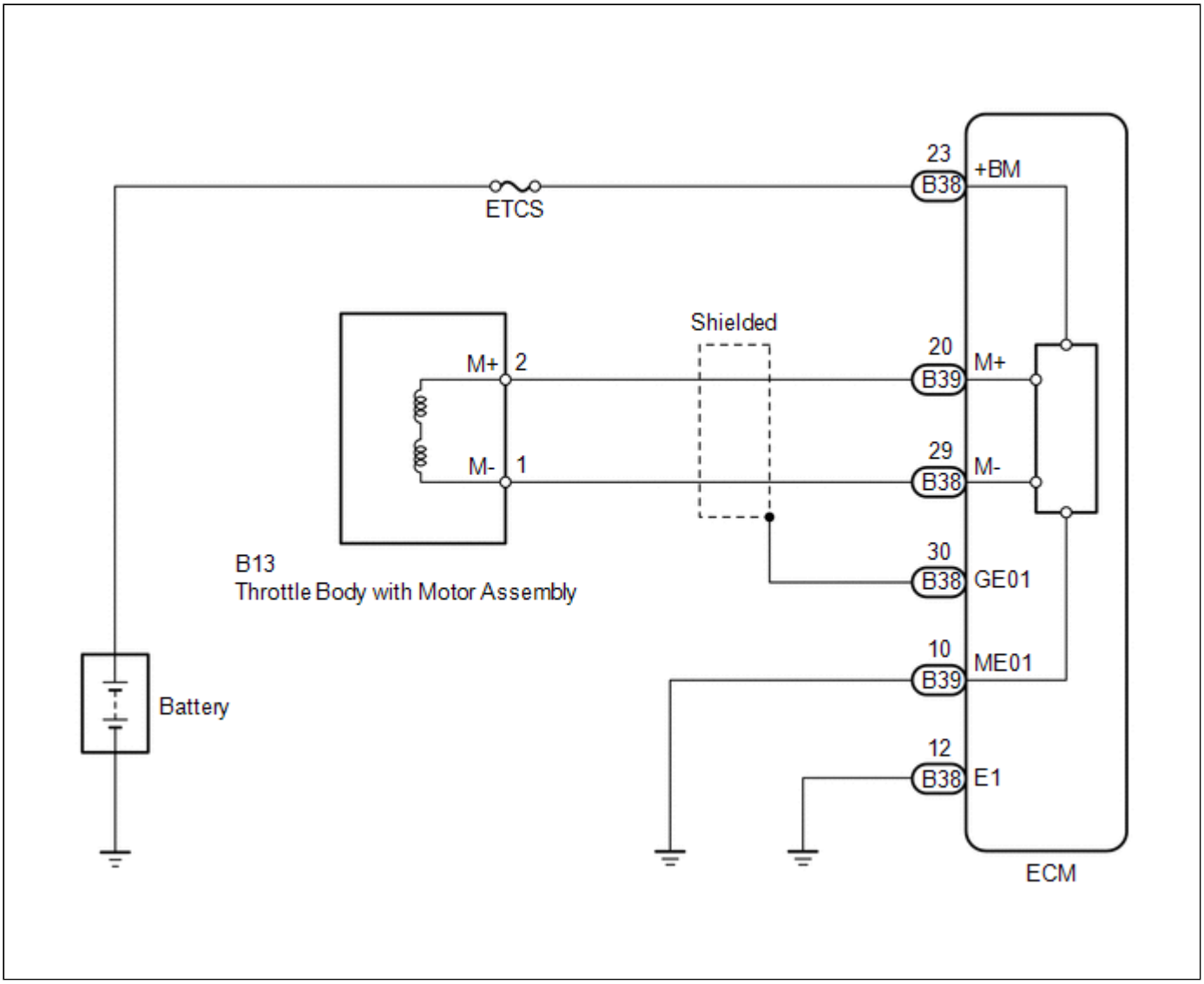
- If a permanent DTC is output, the system is malfunctioning.
- If no permanent DTC is output, the system is normal.

FAIL-SAFE

When this DTC or other DTCs relating to ETCS (Electronic Throttle Control System) malfunctions are set, 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 7° opening angle by 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 position to allow the vehicle to continue at a minimal speed. If the accelerator pedal is depressed firmly and gently, the vehicle can be driven slowly.

The ECM continues operating in fail-safe mode until a pass condition is detected and the ignition switch is turned off.

WIRING DIAGRAM



CAUTION / NOTICE / HINT

NOTICE:

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

HINT:

Read freeze frame data using the Techstream. Freeze frame data records the engine condition when malfunctions are detected. 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)**

(a) Connect the Techstream to the DLC3.

(b) Turn the ignition switch to ON.

(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.

Result

RESULT	PROCEED TO
Below 11 V or higher than 14 V	A
11 to 14 V	B

B ▶ **CHECK FOR INTERMITTENT PROBLEMS**

A ▼

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

(a) Disconnect the ECM connector.

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

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
B38-23 (+BM) - Body ground	Always	11 to 14 V

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

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
B38-12 (E1) - Body ground	Always	Below 1 Ω
B39-10 (ME01) - Body ground	Always	Below 1 Ω

(d) Reconnect the ECM connector.

OK ▶ **REPLACE ECM**

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**