

B1438:03	Battery Current Sensor, FM (Frequency Modulated) / PWM (Pulse Width Modulated) Failure	This DTC sets in the BCM when the BCM does not indicate current from the battery current sensor.
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Possible Sources

- Battery current sensor
- Wiring, terminals or connectors

Visual Inspection and Diagnostic Pre-checks

- Inspect the battery current sensor
- Inspect the battery current sensor connector

DIAGNOSIS AND TESTING > CHARGING SYSTEM - 3.5L DURATEC (209KW/284PS)/3.5L ECOBOOST (209KW/284PS)/5.0L 32V TI-VCT > PINPOINT TESTS > PINPOINT TEST I : BATTERY CURRENT SENSOR FAULTS > PINPOINT TEST I : BATTERY CURRENT SENSOR FAULTS



NOTE: Make sure battery voltage is greater than 12.2-volts prior to and during this pinpoint test.



NOTE: Do not have a battery charger attached during vehicle testing.

I1 CHECK THE BATTERY CURRENT SENSOR

Inspect the battery current sensor for the following:

physical damage

corrosion

disconnected electrical connector

battery ground cable routed through the battery current sensor

debris between the battery current sensor and the battery ground cable

Are any of these conditions found during inspection?

Yes	REPAIR as necessary. GO to I13
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No	GO to I2
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I2 CHECK THE BATTERY CURRENT SENSOR REFERENCE VOLTAGE CIRCUIT

Ignition OFF.

Disconnect Battery current sensor C1646 .

Ignition ON.

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-1		Ground

Is the voltage between 4.8 and 5.2 volts?

Yes	GO to I6
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No	If the voltage is less than 4.8-volts, GO to I4 If the voltage is greater than 5.2-volts, GO to I3
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I3 CHECK THE BATTERY CURRENT SENSOR REFERENCE VOLTAGE CIRCUIT FOR A SHORT TO VOLTAGE

Ignition OFF.

Disconnect BCM C2280F .

Using the Terminal Release Kit, release and temporarily remove BCM C2280F-3 .

Connect BCM C2280F .

Ignition ON.

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-1		Ground

Is any voltage present?

Yes	REPAIR the circuit.
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No	INSTALL C2280F-3 and GO to I14
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I4 CHECK THE BATTERY CURRENT SENSOR REFERENCE VOLTAGE CIRCUIT FOR A SHORT TO GROUND

Ignition OFF.

Disconnect BCM C2280F .

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-1	Ω	Ground

Is the resistance greater than 10, 000 ohms?

Yes	GO to I5
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No	REPAIR the circuit.
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I5 CHECK THE BATTERY CURRENT SENSOR REFERENCE VOLTAGE CIRCUIT FOR AN OPEN

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-1	Ω	C2280F-3

Is the resistance less than 3 ohms?

Yes	GO to I13
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No	REPAIR the circuit.
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I6 CHECK THE BATTERY CURRENT SENSOR SIGNAL RETURN CIRCUIT

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-1		C1646-2

Is the voltage between 4.8 and 5.2 volts?

Yes	GO to I9
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No	GO to I7
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I7 CHECK THE BATTERY CURRENT SENSOR SIGNAL RETURN CIRCUIT FOR VOLTAGE

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-2		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to I8

I8 CHECK THE BATTERY CURRENT SENSOR SIGNAL RETURN CIRCUIT FOR AN OPEN

Ignition OFF.

Disconnect BCM C2280F .

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-2	Ω	C2280F-19

Is the resistance less than 3 ohms?

Yes	GO to I13
No	REPAIR the circuit.

I9 CHECK THE BATTERY CURRENT SENSOR FEEDBACK CIRCUIT FOR A SHORT TO VOLTAGE

Disconnect BCM C2280F .

Ignition ON.

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-3		Ground

Is any voltage present?

Yes	REPAIR the circuit.
No	GO to I10

I10 CHECK THE BATTERY CURRENT SENSOR FEEDBACK CIRCUIT FOR A SHORT TO GROUND

Ignition OFF.

Disconnect BCM C2280F .

Measure:

Positive Lead	Measurement / Action	Negative Lead
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C1646-3	Ω	Ground
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Is the resistance greater than 10, 000 ohms?

Yes	GO to I11
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No	REPAIR the circuit.
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I11 CHECK THE BATTERY CURRENT SENSOR FEEDBACK CIRCUIT FOR AN OPEN

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-3	Ω	C2280F-8

Is the resistance less than 3 ohms?

Yes	GO to I12
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No	REPAIR the circuit.
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I12 CHECK THE BATTERY CURRENT SENSOR FEEDBACK CIRCUIT FOR A SHORT TO THE SIGNAL RETURN OR REFERENCE CIRCUIT

Measure:

Positive Lead	Measurement / Action	Negative Lead
C1646-3	Ω	C1646-1
C1646-3	Ω	C1646-2

Are the resistances greater than 10, 000 ohms?

Yes	GO to I13
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No	REPAIR the affected circuit.
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I13 CHECK THE BATTERY CURRENT SENSOR CONNECTION

Ignition OFF.

Disconnect Battery Current Sensor C1646 , if necessary.

Inspect the battery current sensor connector for:

corrosion (install new connector or terminals - clean module pins)

damaged or bent pins - install new terminals/pins

pushed-out pins - install new pins as necessary

Connect Battery Current Sensor C1646 .

Connect BCM C2280F .

Ignition ON.

Using a diagnostic scan tool, clear all Diagnostic Trouble Codes (DTCs) in all modules.

Using a diagnostic scan tool, perform the BCM self-test.

Did the DTC return?

Yes	REPAIR as necessary or INSTALL a new battery current sensor. REFER to: Generator Current Sensor . CLEAR the Diagnostic Trouble Codes (DTCs). REPEAT the self-test. If the DTC returns, GO to I14
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

I14 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

Ignition OFF.

Disconnect and inspect all BCM connectors.

Repair:

corrosion (install new connector or terminals - clean module pins)

damaged or bent pins - install new terminals/pins

pushed-out pins - install new pins as necessary

Reconnect the BCM connectors. Make sure they seat and latch correctly.

Operate the system and determine if the concern is still present.

Is the concern still present?

Yes	CHECK OASIS for any applicable Technical Service Bulletins (TSBs). If a TSB exists for this concern, DISCONTINUE this test and FOLLOW the TSB instructions. If no Technical Service Bulletins (TSBs) address this concern,
No	The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.