

Module Controlled Functions - System Operation and Component Description

System Operation

BCM

The BCM controls various systems by monitoring inputs from switches, sensors and network messages from other modules on the HS-CAN1 and from the GWM. Based on the inputs received, the BCM activates outputs. For example, the BCM monitors the headlamp switch position. Based on this input, the BCM may provide voltage to the exterior lamps.

Battery Saver

The battery saver feature is used to conserve battery voltage. The BCM provides automatic shut-off of the interior lamps after a time-out period when the ignition is off.

Refer to: Interior Lighting - System Operation and Component Description (417-02 Interior Lighting, Description and Operation).

Battery Load Shed

The BCM monitors the battery state of charge and when necessary will shut off accessories in order to save the remaining battery charge.

Refer to: Charging System - 2.7L EcoBoost (238kW/324PS) - System Operation and Component Description (414-00 Charging System - General Information, Description and Operation).

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Field Effect Transistor (FET) Protection

The BCM utilizes an Field Effect Transistor (FET) protective circuit strategy for many of its outputs, for example, lamp output circuits. Output loads (current level) are monitored for excessive current (typically short circuits) and are shut down (turns off the voltage or ground provided by the module) when a fault event is detected.

A Field Effect Transistor (FET) is a type of transistor that the control module software uses to control and monitor current flow on module outputs. The Field Effect Transistor (FET) protection strategy prevents module damage in the event of excessive current flow.

Output loads (current level) are monitored for excessive current draw (typically short circuits). When a fault event is detected the Field Effect Transistor (FET) turns off and a short circuit DTC sets. The module resets the Field Effect Transistor (FET) protection and allows the circuit to function when the fault is corrected or the ignition state is cycled off and then back on.

When the excessive circuit load occurs often enough, the module shuts down the output until a repair procedure is carried out. Each Field Effect Transistor (FET) protected circuit has three predefined levels of short circuit tolerance based on a module lifetime level of fault events based upon the durability of the Field Effect Transistor (FET). If the total tolerance level is determined to be 600 fault events, the three predefined levels would be 200, 400 and 600 fault events.

When each level is reached, the DTC associated with the short circuit sets along with DTC U1000:00. These Diagnostic Trouble Codes (DTCs) can be cleared using the module on-demand self-test, then the Clear DTC operation on the scan tool (if the on-demand test shows the fault corrected). The module never resets the fault event counter to zero and continues to advance the fault event counter as short circuit fault events occur.

If the number of short circuit fault events reach the third level, then Diagnostic Trouble Codes (DTCs) U1000:00 and U3000:49 set along with the associated short circuit DTC. DTC U3000:49 cannot be cleared and the module **must** be replaced after the repair.

Post Crash Alert Function

The post crash alert is a function controlled by the BCM. If the RCM determines an impact of enough severity has occurred (the airbags may or may not be deployed), the post crash alert function activates.

The post crash alert function: