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2012 FORD Mondeo Sedan OEM Service and Repair Workshop Manual

Go to manual page

- GFM2 (generic function module 2)

AT1 RETRIEVE ALL THE BECM (BATTERY ENERGY CONTROL MODULE) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- CONNECT a known good EVSE to the vehicle charge port and wait 1 minute.
- DISCONNECT the EVSE from the vehicle charge port.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

Is DTC (diagnostic trouble code) U3000:47 present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new GFM2 (generic function module 2) . REFER to: Generic Function Module 2 (GFM2) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).

No	The concern is not present at this time.

PINPOINT TEST AU : U3000:49

Normal Operation and Fault Conditions

When powered on, the OBCC (Off-Board Charger Controller) performs an internal self tests and monitors the operation of the internal voltage regulator. If an OBCC (Off-Board Charger Controller) internal voltage regulator failure occurs DTC (diagnostic trouble code) U3000:49 sets. Presence of this DTC (diagnostic trouble code) illuminates the Charger Service Required indicator in the IPC (instrument panel cluster) and results in the CSI (Charge Status Indicator) flashing a fault pattern and the vehicle will not charge.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
OBCC (Off-Board Charger Controller)	Control Module: Internal Electronic	This DTC (diagnostic trouble code) sets if the OBCC (Off-Board Charger Controller) detects an internal

No	GO to AU3

AU3 CONNECT THE VEHICLE TO A KNOWN GOOD DC (DIRECT CURRENT) FAST CHARGE STATION

- CONNECT the vehicle to a known good DC (direct current) fast charge EVSE (Electric Vehicle Supply Equipment) and attempt to charge the vehicle for a minimum of 2 minutes.
- STOP the DC (direct current) fast charge session using the normal stop button and DISCONNECT the EVSE from the vehicle charge port.
- Using the scan tool, perform OBCC (Off-Board Charger Controller) self-test.

Is DTC (diagnostic trouble code) U3000:49 present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new OBCC (Off-Board Charger Controller) . REFER to: Off-Board Charger Controller (OBCC) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).

No	If charging is successful and the DTC (diagnostic trouble code) does not repeat the concern is not present at this time.

PINPOINT TEST AV : U3000:47

Normal Operation and Fault Conditions

When powered on, the GFM2 (generic function module 2) continuously monitors for software execution failures. If the GFM2 (generic function module 2) detects a micro controller failure or a failure in the execution of operational software DTC (diagnostic trouble code) U3000:47 sets. Presence of this DTC (diagnostic trouble code) illuminates the Charger Service Required indicator in the IPC (instrument panel cluster) and results in the CSI (Charge Status Indicator) flashing a fault pattern and the vehicle will not charge.

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition

DTC Fault Trigger Conditions

DTC (diagnostic trouble code)	Description	Fault Trigger Condition
GFM2 (generic function module 2) U3000:49	Control Module: Internal Electronic Failure	This DTC (diagnostic trouble code) sets if the GFM2 (generic function module 2) detects an internal component failure.

Possible Sources

- GFM2 (generic function module 2)

AW1 RETRIEVE ALL THE GFM2 (GENERIC FUNCTION MODULE 2) DIAGNOSTIC TROUBLE CODES (DTCS)

- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- CONNECT a known good EVSE to the vehicle charge port and wait 1 minute.
- DISCONNECT the EVSE from the vehicle charge port.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

Are any DTCs other than U3000:49 present?

Yes	REFER to the GFM2 (generic function module 2) DTC (diagnostic trouble code) chart in this section and diagnose all other DTCs first.

No	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new GFM2 (generic function module 2) . GO to Pinpoint Test AW

PINPOINT TEST AX : U3003:16, U3003:17

Refer to Wiring Diagrams Cell 12for schematic and connector information.

Normal Operation and Fault Conditions When the GFM2 (generic function module 2) is operating it continuously monitors the 12-volt module power supply for being out of range. If this voltage is less or greater than a calibrated threshold a DTC (diagnostic trouble code) sets. Presence of these DTC (diagnostic

Yes	CARRY OUT self-test of the DCDC (direct current/direct current converter control module) . If a DTC (diagnostic trouble code) is present, REFER to: Direct Current/Direct Current (DC/DC) Converter Control Module - Electric (414-05 Voltage Converter/Inverter, Diagnosis and Testing). If the module passes a self test with no DTCs, GO to AX2

No	If no DTCs repeat the concern is not present at this time. For DTC (diagnostic trouble code) U3003:16 or U3003:17 present only in the SOBDM (secondary on-board diagnostic control module A) , GO to AX5

AX2 CHECK THE 12-VOLT BATTERY

- Carry out the 12-volt battery condition test.
  REFER to: Battery - Electric(414-01 Battery, Mounting and Cables, Diagnosis and Testing).

Did the 12-volt battery pass the condition test?

Yes	GO to AX3

No	INSTALL a new 12V battery. REFER to: Battery - Electric (414-01 Battery, Mounting and Cables, Removal and Installation).

AX3 CHECK THE DIRECT CURRENT/DIRECT CURRENT (DC/DC) CONVERTER CONTROL MODULE VOLTAGE CONVERTER STATUS (DCDC_ENABLE) PID (PARAMETER IDENTIFICATION)

- Using a diagnostic scan tool, view DCDC (direct current/direct current converter control module) PIDs.
- Access the DCDC (direct current/direct current converter control module) and monitor the DCDC_ENABLE (DC/DC Enable Status) PID (parameter identification)

Does the PID (parameter identification) read Enable?

Yes	GO to AX4

No	Perform the self-test for the SOBDMC (secondary on-board diagnostic control module C) and BECM (battery energy control module) . For SOBDMC (secondary on-board diagnostic control

	(414-05 Voltage Converter/Inverter, Diagnosis and Testing).

AX5 CHECK BATTERY VOLTAGE GFM2 (GENERIC FUNCTION MODULE 2) PID (PARAMETER IDENTIFICATION) MAIN ECU VOLTAGE SUPPLY (MAINECUV)

- Access the GFM2 (generic function module 2) and monitor the MAINECUV (Main ECU voltage supply) (V) PID (parameter identification)

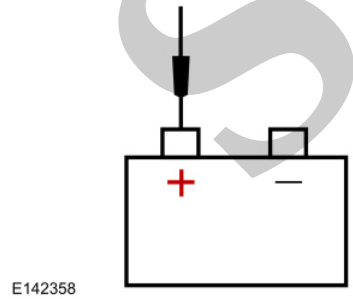
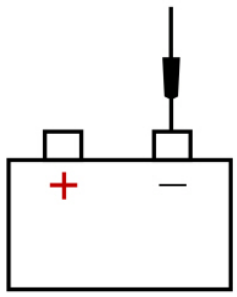
Does the PID (parameter identification) read 8-16 volts?

Yes	GO to AX8

No	If the PID (parameter identification) reads less than 8 volts or greater than 16 volts, GO to AX6

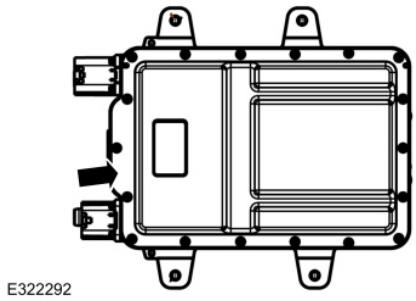
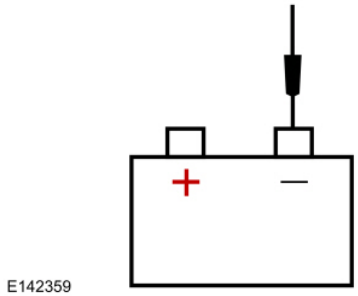
AX6 MEASURE GFM2 (GENERIC FUNCTION MODULE 2) INPUT VOLTAGE

- Ignition OFF.
- Disconnect GFM2 (generic function module 2) C3003A .
- Measure:

Positive Lead	Measurement / Action	Negative Lead
 E142358	V	 E142359

- Measure:

Positive Lead	Measurement / Action	Negative Lead

 E322292 GFM2 (generic function module 2) case ground	V	 E142359

Is the voltage less than 0.5V?

Yes	GO to AX8

No	INSPECT the SOBDM (secondary on-board diagnostic control module A) bracket to vehicle frame is mounting for excessive corrosion and/or being loose. REPAIR as necessary.

AX8 CHECK FOR CORRECT GFM2 (GENERIC FUNCTION MODULE 2) OPERATION

- Inspect GFM2 (generic function module 2) C1821A.
- 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 GFM2 (generic function module 2) connector. Make sure it seats and latches correctly.
- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

Is the DTC (diagnostic trouble code) still present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new GFM2 (generic function module 2) . REFER to: Generic Function Module 2 (GFM2) - Electric

marked with high-voltage warning labels with a high-voltage symbol. Failure to follow these instructions may result in serious personal injury or death.

NOTICE

Use the correct probe adapter(s) from the Flex Probe Kit when taking measurements. Failure to use the correct probe adapter(s) may damage the connector.

AY1 CLEAR GFM2 (GENERIC FUNCTION MODULE 2) DIAGNOSTIC TROUBLE CODES (DTCS) AND REPEAT SELF TEST

- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

Is DTC (diagnostic trouble code) U3513:00 present?

Yes	GO to AY2
No	The concern is not present at this time.

AY2 CHECK THE GFM2 (GENERIC FUNCTION MODULE 2) CABLE FOR BEING FULLY SEATED

- Ignition OFF.
- Depower the high voltage battery system.
  REFER to: High Voltage System De-energizing - Electric(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Check that the GFM2 (generic function module 2) C3003C is connected and fully seated.

Was the connector connected and fully seated?

Yes	GO to AY3
No	RECONNECT the connector and verify it is fully seated. Repower the high voltage system. REFER to: High Voltage System De-energizing - Electric (414-03A High Voltage Battery, Mounting and Cables, General Procedures).

- damaged or bent pins
- pushed-out pins

- If any concerns are present INSTALL a new high voltage cable.
  REFER to: High Voltage Battery Cables - Electric(414-03A High Voltage Battery, Mounting and Cables, Removal and Installation).
- Reconnect the GFM2 (generic function module 2) C3003C. Make sure it seats and latches correctly.
- Connect High Voltage Battery C293 .
- Connect GFM3 (generic function module 3) C4631C .
- Connect DCACA (Direct Current/Alternating Current Converter Module A) C4632C .
- Connect ACCMB (Air Conditioning Control Module B) (max trailer tow vehicles ONLY) C1039 .
- Connect SOBDMC (secondary on-board diagnostic control module C) C3471B .
- Repower the high voltage system.
  REFER to: High Voltage System De-energizing - Electric(414-03A High Voltage Battery, Mounting and Cables, General Procedures).
- Ignition ON.
- Using a diagnostic scan tool, clear the GFM2 (generic function module 2) DTCs.
- Ignition OFF.
- Ignition ON.
- Using a diagnostic scan tool, perform GFM2 (generic function module 2) self-test.

Is DTC (diagnostic trouble code) U3513:00 present?

Yes	CHECK OASIS (Online Automotive Service Information System) for any applicable service articles: TSB (Technical Service Bulletin) , GSB (General Service Bulletin) , SSM (special service message) or FSA (Field Service Action) . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL new GFM2 (generic function module 2) . REFER to: Generic Function Module 2 (GFM2) - Electric (414-03B High Voltage Battery Charging System, Removal and Installation).
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.

PINPOINT TEST AZ : P0D27:00, P0D28:00, P0D2A:00, P0D38:00, P0D3D:00

Refer to Wiring Diagrams Cell 12for schematic and connector information.
Normal Operation and Fault Conditions The GFM2 (generic function module 2) measures the AC (alternating current) voltage and current input from EVSE to be in the correct range when it closes the

- Inspect for any visual damage to the EVSE.
- Inspect vehicle charge port pins L1 and L2 for damage.

WARNING

To prevent the risk of high-voltage shock, always follow precisely all warnings and service instructions, including instructions to depower the system. The high-voltage system utilizes approximately 300 volts DC, provided through high-voltage cables to its components and modules. The high-voltage cables and wiring are identified by orange harness tape or orange wire covering. All high-voltage components are marked with high-voltage warning labels with a high-voltage symbol. Failure to follow these instructions may result in serious personal injury or death.

AZ1 TEST SYSTEM WITH A KNOWN GOOD EVSE CONNECTED TO THE VEHICLE

- Ignition ON.
- Using a diagnostic scan tool, clear the SOBDM (secondary on-board diagnostic control module A) DTCs.
- CONNECT a known good EVSE to a AC (alternating current) power outlet and the vehicle charge port. For DTC (diagnostic trouble code) P0D2A:00 wait 10 minutes. For DTC (diagnostic trouble code) P0D27:00, P0D28:00, P0D38:00, and /or P0D3D:00 wait 1 minute.
- DISCONNECT the EVSE from the vehicle charge port.
- Ignition ON.
- Using a diagnostic scan tool, perform SOBDM (secondary on-board diagnostic control module A) self-test.

Is DTC (diagnostic trouble code) P0D27:00, P0D28:00, P0D2A:00, P0D38:00, P0D3D:00, and/or P0D5E:00 present?

Yes	GO to AZ4

No	DTC (diagnostic trouble code) was the result of a faulty EVSE being connected to vehicle. Consult with customer to determine which EVSE was used when the fault occurred. If fault occurred with a customer owned EVSE ask customer to provide it for testing.

AZ2 CHECK THE CHARGE PORT AND VEHICLE HIGH VOLTAGE CABLE FOR BEING SHORTED

- Ignition OFF.
- Depower the high voltage battery system.