

GENERIC · POWERTRAIN

P06D2

OBD-II TROUBLE CODE

P06D2

Sensor Reference Voltage E Circuit/Open

P06D2 means the engine control module (ECM) has detected an open circuit on the sensor reference voltage E line, which is a regulated 5-volt supply shared by multiple sensors. The ECM monitors this line and sets the code when the voltage falls outside its expected range, indicating a break in the wiring or a failed component drawing the reference voltage down.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Computer and output circuits

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or poor engine performance if the affected sensors include the throttle position or manifold absolute pressure sensor
- Reduced fuel economy or altered shift quality as the ECM substitutes default values
- Intermittent stalling or hesitation during acceleration
- Failed emissions test due to incomplete readiness monitors
- Other sensor-related codes stored simultaneously, such as P06D3 or P0641

Common causes, most likely first

- 1 Open circuit in the reference voltage E wiring, such as a broken wire or corroded connector terminal
- 2 Failed sensor internally shorted or open, pulling the reference voltage down or interrupting it
- 3 Loose or damaged ECM connector pins for the reference voltage circuit
- 4 Water intrusion or corrosion in a harness connector along the reference voltage path
- 5 Aftermarket accessory improperly tapped into the reference voltage line
- 6 ECM internal fault, though this is less common



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for other stored codes that may indicate a shared reference voltage issue
- 2 Inspect the wiring harness and connectors for the affected sensors, looking for chafing, corrosion, or loose pins
- 3 Measure the reference voltage at each sensor connector with a digital multimeter; it should be close to 5 volts with the key on
- 4 Disconnect sensors one at a time to see if the reference voltage returns to normal, isolating a faulty sensor
- 5 Perform a voltage drop test on the reference voltage circuit to locate excessive resistance
- 6 Repair or replace any damaged wiring or connectors, then clear the code and verify the repair
- 7 If the reference voltage is still incorrect after all external checks, test the ECM and replace if necessary

Reference voltage faults often misdiagnosed

- A single shorted sensor on the shared reference voltage line can disable multiple sensors and set several codes, so always check all sensors on that circuit before replacing parts.
- The reference voltage E circuit may be shared with the throttle position sensor, accelerator pedal sensor, and manifold absolute pressure sensor, so symptoms can vary widely.
- Corrosion inside a connector that looks fine from the outside is a common cause, especially in areas exposed to road splash.
- Aftermarket alarms or remote starters tapped into the reference voltage line can introduce an open or short that sets this code.
- The ECM may set this code intermittently if the open circuit is temperature or vibration sensitive, so wiggle-test the harness while monitoring live data.

Can I keep driving with P06D2?

If the check engine light is on but the engine runs normally, you can drive cautiously to a repair shop, but avoid heavy acceleration or towing. If the engine runs poorly, stalls, or enters limp mode, stop driving and have the vehicle towed to prevent safety risks.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Back probe pins or breakout box
- Contact cleaner and dielectric grease



Reading P06D2

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 6** Computer and output circuits.
- D2** The exact fault within that area.

Often seen with

P0641 Sensor Reference Voltage 'A' Circuit/Open · **P0651** Sensor Reference Voltage 'B' Circuit/Open · **P06A6** Sensor Reference Voltage A Circuit Range/Performance · **P06D1** Internal Control Module Ignition Coil Control Performance · **P06D3** Sensor Reference Voltage E Circuit Low

See it working

Watch the animated explainer [How Regenerative Braking Works in Electric Cars](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p06d2/>

