

GENERIC · POWERTRAIN

P2506

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2506

ECM/PCM Power Input Signal Range/Performance

P2506 indicates that the engine control module (ECM) or powertrain control module (PCM) has detected an abnormal voltage level on its main power input circuit, falling outside the expected range for proper operation. The computer monitors this power feed to ensure it receives stable voltage for processing sensor data and controlling engine functions, and it sets this code when the signal performance is erratic or out of specification.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Intermittent engine stalling or difficulty starting, especially in cold conditions
- Rough idle or hesitation during acceleration due to unstable power to the ECM/PCM
- Electrical accessories behaving erratically, such as flickering lights or radio resets
- Transmission shifting poorly or entering limp mode if the PCM loses stable power

Common causes, most likely first

- 1 Corroded or loose battery terminals preventing proper voltage transfer to the ECM/PCM
- 2 Damaged or chafed power wire between the battery and the ECM/PCM, causing intermittent shorts or opens
- 3 Failing ECM/PCM power relay that drops voltage under load
- 4 Blown or intermittent fuse in the ECM/PCM power circuit
- 5 Poor ground connection for the ECM/PCM, leading to voltage reference errors
- 6 Internal fault within the ECM/PCM itself, though this is less common



How to diagnose and fix it

- 1 Inspect and clean battery terminals, then verify battery voltage and load test the battery
- 2 Check all fuses related to the ECM/PCM power circuit and replace any that are blown or corroded
- 3 Perform a voltage drop test on the power wire from the battery to the ECM/PCM to identify resistance
- 4 Test the ECM/PCM power relay for proper operation and replace if faulty
- 5 Verify and clean the ECM/PCM ground connections to ensure a solid return path
- 6 Use a scan tool to monitor live data for ECM/PCM power voltage and compare with actual battery voltage
- 7 If all external circuits check out, diagnose the ECM/PCM for internal faults following manufacturer procedures

Power Supply Faults That Mimic ECM Failure

- A weak battery or failing alternator can cause this code without setting a charging system code, so always load test the battery and check charging voltage first.
- Intermittent power loss to the ECM/PCM often results from a chafed wire hidden inside the harness loom, which a simple wiggle test may not reveal.
- Some vehicles use a dedicated power relay for the ECM/PCM that can develop high resistance internally, causing voltage drops only when the engine is running.
- This code can be set by a poor ground connection at the engine block or chassis, not just the power side, so inspect both sides of the circuit.
- Replacing the ECM/PCM without verifying the power and ground circuits is a costly misdiagnosis, as the fault is usually external to the module.

Can I keep driving with P2506?

If the engine runs normally and the light is steady, you can drive cautiously to a repair shop, but avoid long trips or heavy loads. If the engine stalls, idles roughly, or the light flashes, pull over safely and have the vehicle towed to prevent further damage or safety risks.

Tools that help

- Digital multimeter for voltage and resistance checks
- Scan tool with live data capability
- Battery load tester
- Test light for quick circuit verification
- Wiring diagram for the specific vehicle



Reading P2506

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 5** Vehicle speed, idle control and auxiliary inputs.
- 06** The exact fault within that area.

Often seen with

P0562 System Voltage Low · **P0563** System Voltage High · **P2505** ECM/PCM Power Input Signal · **P2507** ECM/PCM Power Input Signal Low · **U0100** Lost Communication With ECM/PCM A

See it working

Watch the animated explainer [How a Padlock Works: Pin Tumbler Lock in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2506/>

