

GENERIC · POWERTRAIN

P0698

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0698

Sensor Reference Voltage 'C' Circuit Low

P0698 means the engine control module (ECM) has detected that the 5-volt reference voltage supplied to one or more sensors on circuit 'C' has dropped below its normal operating range. The ECM monitors this reference line to ensure sensors such as the throttle position sensor, accelerator pedal position sensor, or manifold absolute pressure sensor receive a stable voltage, and a low reading indicates a short to ground or an excessive current draw on that circuit.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Computer and output circuits

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Reduced engine performance or limp mode due to unreliable sensor signals
- Poor throttle response or hesitation during acceleration
- Rough idle or stalling, especially when coming to a stop
- Inaccurate readings on the dashboard such as erratic fuel gauge or temperature gauge if shared reference is affected
- Transmission shifting harshly or failing to shift due to affected sensor inputs

Common causes, most likely first

- 1 A short to ground in the reference voltage wiring harness, often where it rubs against metal or passes through a tight grommet
- 2 A faulty sensor internally shorted on the reference circuit, pulling the voltage down
- 3 Corroded or damaged connector pins at a sensor or at the ECM, creating excessive resistance
- 4 Water intrusion into a connector or sensor housing causing a conductive path to ground
- 5 A defective ECM driver circuit for the reference voltage, though this is less common
- 6 Aftermarket accessories or improper wiring repairs tapping into the reference circuit and loading it down



How to diagnose and fix it

- 1 Use a scan tool to read all stored codes and freeze-frame data, then clear codes and verify if P0698 returns immediately
- 2 Visually inspect the wiring harness and connectors for the sensors on the affected reference circuit for chafing, corrosion, or loose pins
- 3 Disconnect sensors one at a time on the reference circuit and monitor the reference voltage with a digital multimeter to see if it returns to 5 volts, isolating the faulty component
- 4 Measure resistance from the reference circuit to ground with the key off and all sensors disconnected to check for a short to ground
- 5 Perform a voltage drop test on the reference circuit while wiggling the harness to identify intermittent shorts
- 6 Repair or replace the damaged wiring, connector, or sensor as identified, then clear codes and verify the repair with a test drive
- 7 If no fault is found in the wiring or sensors, consult factory service information for ECM diagnostics and consider ECM replacement as a last resort

Don't overlook shared reference circuits

- Many technicians replace the throttle body or accelerator pedal assembly when the real problem is a chafed reference wire behind the engine, so always check the circuit before condemning parts.
- A single faulty sensor on the shared 5-volt reference line can pull down the voltage for all sensors on that circuit, causing multiple unrelated codes to set simultaneously.
- The reference voltage 'C' circuit may be shared with sensors on different systems, such as the air conditioning pressure sensor, so a fault there can set P0698 without any drivability complaint.
- Intermittent P0698 codes often occur only when the engine is hot or after driving over rough roads, so a wiggle test of the harness while monitoring live data is essential.
- Aftermarket electrical accessories wired into the reference circuit, such as a piggyback tuner or alarm, can overload the circuit and trigger this code even though the factory wiring is intact.

Can I keep driving with P0698?

You can usually drive the vehicle to a repair shop, but avoid aggressive acceleration or heavy loads because the engine may enter limp mode without warning. If the engine runs poorly or stalls, stop driving and have the vehicle towed to prevent a safety hazard.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter with back-probing pins
- Wiring diagram for the affected vehicle
- Test light or load tester
- Insulated wire repair kit and heat shrink tubing
- Contact cleaner and dielectric grease

Reading P0698

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.
98	The exact fault within that area.

Often seen with

P0641 Sensor Reference Voltage 'A' Circuit/Open · **P0651** Sensor Reference Voltage 'B' Circuit/Open · **P0697** Sensor Reference Voltage 'C' Circuit/Open · **P0699** Sensor Reference Voltage 'C' Circuit High · **P2135** Throttle/Pedal Position Sensor A/B Voltage Correlation

See it working

Watch the animated explainer **V6 Engine Explained: 60° Bank and Firing Order** on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0698/>

