

GENERIC · POWERTRAIN

**P0669**

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

**P0669**

## PCM/ECM/TCM Internal Temperature Sensor Circuit High

P0669 indicates that the powertrain control module (PCM), engine control module (ECM), or transmission control module (TCM) has detected an abnormally high voltage on the internal temperature sensor circuit, which typically means the sensor is reading hotter than expected or the circuit is open. The computer sets this code when the sensor signal voltage exceeds a calibrated threshold for a set period, often indicating a faulty sensor, wiring issue, or overheating control module.

SYSTEM

**Powertrain**

CODE TYPE

**Generic (all makes)**

SEVERITY

**Medium**

FIX DIFFICULTY

**Professional**

AREA

**Computer and output circuits**

### Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Intermittent or complete loss of communication with the affected control module.
- Transmission may enter limp mode or shift harshly if the TCM is affected.
- Engine may run poorly or stall if the PCM/ECM is affected.
- Overheating of the control module, potentially leading to drivability issues.
- In rare cases, the vehicle may fail to start or run erratically.

### Common causes, most likely first

- 1 Faulty internal temperature sensor within the PCM, ECM, or TCM.
- 2 Open or shorted wiring in the sensor circuit, including poor connections or corrosion.
- 3 Damaged or corroded connector pins at the control module or sensor.
- 4 High resistance in the ground circuit for the sensor.
- 5 Control module internal failure affecting the sensor circuit.
- 6 Extreme underhood temperatures or poor module cooling causing sensor readings to spike.
- 7 Aftermarket accessories or modifications interfering with the module's electrical environment.



## How to diagnose and fix it

- 1 Use a scan tool to verify the code and check for any related codes in the PCM, ECM, and TCM.
- 2 Inspect the wiring harness and connectors for the internal temperature sensor circuit for damage, corrosion, or loose pins.
- 3 Measure the resistance of the sensor circuit and compare to manufacturer specifications to identify opens or shorts.
- 4 Check the control module's ground connections and power supply for integrity.
- 5 If the sensor is serviceable separately, replace it; otherwise, the control module may require replacement or reprogramming.
- 6 Clear the code and perform a road test to verify the repair, monitoring live data for the sensor signal.
- 7 Consult the factory service information for specific diagnostic procedures and torque specifications.

## When the module itself is the culprit

- A high voltage reading on an internal temperature sensor often indicates an open circuit rather than a genuine overheating condition, so inspect wiring before condemning the module.
- Many technicians replace the control module prematurely when the real issue is a chafed wire or corroded connector pin that only acts up under vibration or heat.
- This code can be set by a weak battery or charging system fluctuation that causes the module's internal reference voltage to spike, so always check battery health first.
- On some vehicles, the internal temperature sensor is part of the transmission control module and may require transmission removal for access, making diagnosis more labor-intensive.
- Aftermarket electrical accessories or improper jump-starting can induce voltage spikes that trigger this code, so review recent electrical work before diving into complex diagnostics.

## Can I keep driving with P0669?

If the vehicle drives normally, you can continue driving with caution, but avoid heavy loads or long trips until the fault is diagnosed. If the transmission shifts erratically or the engine stalls, stop driving and seek professional repair immediately to prevent further damage.

## Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram and service information
- Back probe kit
- Terminal cleaning tools



## Reading P0669

- 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.
- 69** The exact fault within that area.

## Often seen with

**P0601** Internal Control Module Memory Checksum Error · **P0606** PCM Processor Fault · **P0667** PCM/ECM/TCM Internal Temperature Sensor Range/Performance · **P0668** PCM/ECM/TCM Internal Temperature Sensor Circuit Low · **P0700** Transmission Control System Malfunction

## See it working

Watch the animated explainer [How a Wideband Air-Fuel Sensor Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0669/>

