

GENERIC · POWERTRAIN

P2BB9

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2BB9

Engine Coolant Temperature Sensor 6 Circuit High

P2BB9 indicates that the engine control module (ECM) has detected an abnormally high voltage on the signal circuit of engine coolant temperature (ECT) sensor 6. The ECM expects a voltage within a calibrated range that corresponds to the current coolant temperature, and a sustained high voltage typically means the circuit is open or the sensor's internal resistance has risen beyond specification.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Coolant temperature gauge reading colder than actual or staying at the bottom of the scale
- Poor fuel economy or rich fuel mixture because the ECM substitutes a default coolant temperature
- Rough idle or hesitation when the engine is cold, as cold-start enrichment is misapplied
- Electric cooling fan running continuously or not engaging at the correct temperature
- In some vehicles, a message on the driver information display indicating a temperature sensor fault

Common causes, most likely first

- 1 Open circuit in the ECT sensor 6 signal wire, such as a broken wire or corroded terminal
- 2 Faulty ECT sensor 6 with an internal open circuit or excessive resistance
- 3 Poor connection at the sensor connector or at the ECM harness connector
- 4 High resistance in the sensor ground circuit shared with other sensors
- 5 Damaged or chafed wiring harness between the sensor and the ECM
- 6 ECM internal fault on the sensor input channel (rare but possible after other causes are ruled out)



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P2BB9 to confirm the fault conditions and check for related codes
- 2 Inspect the ECT sensor 6 connector and wiring for corrosion, looseness, or physical damage, and repair as needed
- 3 Measure the resistance of ECT sensor 6 at known temperatures and compare with the manufacturer's specification chart
- 4 Back-probe the sensor signal circuit at the ECM and check voltage with the key on, engine off, looking for a value near 5 volts indicating an open circuit
- 5 Perform a voltage drop test on the sensor ground circuit to rule out high resistance in the ground path
- 6 If wiring and ground are good, substitute a known-good sensor or simulate the sensor signal with a resistor decade box to verify the ECM responds correctly
- 7 Clear the code and road-test the vehicle to confirm the repair, ensuring the monitor runs and the code does not return

Why a high voltage does not always mean a bad sensor

- A high signal voltage on an ECT circuit almost always indicates an open circuit rather than a shorted sensor, so a broken wire or unplugged connector is more likely than a failed sensor.
- Some vehicles use multiple coolant temperature sensors for different control functions, and sensor 6 may be a virtual or calculated value derived from other sensors, so consult the specific model's wiring diagram before condemning a physical part.
- A poor ground connection at the sensor or ECM can elevate the signal voltage without any visible damage, and a voltage drop test is the only reliable way to find it.
- After replacing a sensor or repairing wiring, the ECM may need to relearn the coolant temperature rationality, and some vehicles require a specific drive cycle before the code will clear permanently.
- A stuck-open thermostat can cause the engine to run cold and set a high-voltage ECT code on some strategies, so verify actual coolant temperature with an infrared thermometer before assuming an electrical fault.

Can I keep driving with P2BB9?

The vehicle is usually safe to drive short distances because the ECM substitutes a default coolant temperature, but fuel economy and cold-start behavior will suffer. Avoid sustained high-speed or heavy-load driving until the fault is repaired, as the cooling fan strategy may be compromised and could lead to overheating.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with resistance and voltage measurement
- Back-probe kit or breakout box for ECM connector testing
- Infrared thermometer for verifying actual coolant temperature
- Resistor decade box for signal simulation
- Vehicle-specific wiring diagram

Reading P2BB9

P	Powertrain: engine, transmission and emissions.
2	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
B	Hybrid propulsion.
B9	The exact fault within that area.

Often seen with

P0116 Engine Coolant Temperature Circuit Range/Performance · **P0117** Engine Coolant Temperature Circuit Low Input · **P0118** Engine Coolant Temperature Circuit High Input · **P0128** Coolant Thermostat (Coolant Temperature Below Thermostat Reg · **P2182** Engine Coolant Temperature Sensor 2 Circuit

See it working

Watch the animated explainer [Engine Cooling System Trainer: How Engines Stay Cool](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2bb9/>

