

GENERIC · POWERTRAIN

P2BBA

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2BBA

Engine Coolant Temperature Sensor 6 Circuit Intermittent/Erratic

P2BBA indicates that the powertrain control module (PCM) has detected an intermittent or erratic signal from the engine coolant temperature (ECT) sensor 6 circuit. The PCM expects a steady voltage or resistance value that changes smoothly with coolant temperature, but it is seeing the signal jump, drop out, or behave unpredictably over time.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Check engine light illuminated, often with no other noticeable symptoms
- Erratic or inaccurate temperature gauge readings on the dashboard
- Poor fuel economy or rough running when the engine is cold or warming up
- Intermittent cooling fan operation, staying on constantly or not engaging at all
- Hard starting or stalling when the engine is cold, especially in low ambient temperatures
- A/C compressor may be disabled by the PCM if it cannot trust the coolant temperature signal

Common causes, most likely first

- 1 Faulty engine coolant temperature sensor 6 that has an internal intermittent connection
- 2 Damaged or chafed wiring in the sensor 6 circuit, often near hot engine components or sharp edges
- 3 Corroded, loose, or water-intruded connector pins at the sensor or PCM
- 4 Poor ground connection for the sensor return circuit, causing voltage fluctuations
- 5 PCM internal fault affecting the sensor 6 input circuit, though this is less common
- 6 Aftermarket sensor with poor quality control or incorrect resistance curve
- 7 Heat-related intermittent open circuit inside the sensor that only appears when the engine is hot



How to diagnose and fix it

- 1 Inspect the sensor 6 connector and wiring for corrosion, chafing, or loose pins, and repair as needed
- 2 Perform a wiggle test on the sensor harness while monitoring live ECT data to reproduce the erratic signal
- 3 Measure the sensor resistance with a multimeter at known temperatures and compare to the manufacturer's specification
- 4 Check the sensor return ground circuit for excessive resistance or voltage drop
- 5 Replace the ECT sensor 6 if resistance testing or live data confirms an erratic output
- 6 Clear the diagnostic trouble codes and verify the repair by monitoring live data during a road test
- 7 If the code persists after sensor and wiring repairs, test the PCM input circuit and replace the PCM only as a last resort

Intermittent ECT faults that fool good technicians

- A sensor that tests perfectly on a cold engine can still be faulty; intermittent opens often appear only after heat soak, so always test with the engine at operating temperature.
The PCM may substitute a default coolant temperature value when the signal is erratic, which can mask driveability symptoms and make the fault seem harmless.
- Corrosion inside the connector is a frequent culprit that resistance tests at the sensor pins will miss if the connector is not disassembled and inspected closely.
- A poor ground for the sensor return circuit can cause the same erratic signal as a bad sensor, so voltage-drop testing the ground side is essential before replacing parts.
Aftermarket sensors with incorrect resistance curves can set this code intermittently even though they are new, so compare live data against a known-good sensor when possible.

Can I keep driving with P2BBA?

The vehicle is generally safe to drive short distances because the PCM substitutes a default coolant temperature, but avoid long trips or heavy loads until the fault is repaired. Prolonged driving with an erratic signal can cause poor fuel economy, increased emissions, and potential overheating if the cooling fan strategy is affected.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Back probe pins or breakout leads
- Infrared thermometer
- Wiring diagram for the ECT sensor 6 circuit



Reading P2BBA

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

Often seen with

P0115 Engine Coolant Temperature Circuit Malfunction · **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

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/p2bba/>

