

GENERIC · POWERTRAIN

P2B2E

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2B2E

Engine Coolant Temperature Sensor 5 Circuit High

P2B2E means the engine control module (ECM) has detected an abnormally high voltage on the signal circuit of engine coolant temperature (ECT) sensor 5, which usually indicates an open circuit or a short to voltage. The ECM expects the sensor's signal voltage to stay within a calibrated range, and a sustained high reading tells it the sensor circuit is not behaving as designed.

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

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Coolant temperature gauge reading cold or not moving from the bottom of the scale
- Poor fuel economy or rich-running condition because the ECM thinks the engine is cold
- Rough idle or elevated idle speed after a cold start that does not settle down
- Electric cooling fan running continuously or not engaging at all
- In some vehicles, a no-start or hard-start condition when the engine is warm

Common causes, most likely first

- 1 Open circuit in the signal wire between ECT sensor 5 and the ECM, often from a broken wire or corroded terminal
- 2 Short to voltage on the signal circuit, such as a chafed wire contacting a power feed
- 3 Faulty ECT sensor 5 internally open or out of specification
- 4 Poor connection at the sensor connector or ECM connector, including pushed-back pins or water intrusion
- 5 Damaged or melted harness near exhaust components or sharp edges
- 6 Failed ECM driver or internal circuit for that sensor input (rare but possible)



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data for P2B2E to confirm the fault was set under normal operating conditions
- 2 Inspect the ECT sensor 5 connector and harness for corrosion, loose pins, or obvious damage, and repair as needed
- 3 Measure resistance across the sensor terminals and compare to the manufacturer's temperature-resistance chart to verify the sensor
- 4 With the key on and sensor connected, back-probe the signal wire at the ECM and compare voltage to the expected range for the current coolant temperature
- 5 Disconnect the sensor and check for battery voltage or a short to power on the signal circuit; repair any short found
- 6 Check continuity and resistance of the signal and ground circuits from the sensor to the ECM, repairing opens or high resistance
- 7 If wiring and sensor test good, substitute a known-good sensor or perform a wiggle test on the harness while watching live data to isolate an intermittent fault

Why high voltage does not always mean a bad sensor

- A high signal voltage on an ECT circuit most often points to an open in the signal wire or a poor ground, not a failed sensor, so resistance testing the sensor alone can send you down the wrong path.
- Some vehicles use multiple coolant temperature sensors for different control functions, and P2B2E specifically refers to sensor 5; replacing the primary ECT sensor will not fix this code if sensor 5 is a separate unit.
- A short to voltage on the signal circuit can be intermittent and only set the code when the harness moves, so a static voltage check may pass while the fault is still present.
- The ECM may default to a substitute coolant temperature value when this code is active, which can mask driveability symptoms and make the vehicle seem to run normally during a test drive.
- Corrosion inside the sensor connector can create enough resistance to pull the signal voltage high without any visible damage to the wire itself, so terminal tension and pin drag tests matter.

Can I keep driving with P2B2E?

You can usually drive the vehicle short distances to a repair shop, but avoid long trips or heavy load because the ECM may run the engine rich and the cooling fan strategy may be incorrect. If the temperature gauge is inoperative or the engine shows any sign of overheating, stop driving and have it towed.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probe pins
- Wiring diagram for the specific vehicle
- Temperature-resistance chart for the ECT sensor
- Terminal pick and contact cleaner
- Heat gun or coolant temperature simulator for sensor testing

Reading P2B2E

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

Often seen with

P0117 Engine Coolant Temperature Circuit Low Input · **P0118** Engine Coolant Temperature Circuit High Input · **P0128** Coolant Thermostat (Coolant Temperature Below Thermostat Reg · **P2B2D** Engine Coolant Temperature Sensor 5 Circuit Low · **P2B2F** Fan 1 Performance/Stuck Off

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/p2b2e/>

