



P0BCA

Hybrid/EV Battery Pack Cooling Fan 1 Sense Circuit High

P0BCA indicates that the hybrid or electric vehicle battery pack cooling fan 1 control circuit is reading a voltage higher than the manufacturer's expected range, which the computer interprets as an open circuit or a short to voltage on the sense line. The powertrain control module monitors this circuit to ensure the cooling fan can be commanded on to regulate battery temperature, and a high sense voltage means the feedback signal is outside normal limits.

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

Symptoms you may notice

- Illumination of the check engine light or service vehicle soon message
- Often no symptoms besides the warning light, especially in mild ambient temperatures
- Reduced hybrid/EV battery cooling performance, which may lead to power reduction in hot weather or during heavy loads
- Possible forced activation of the internal combustion engine in hybrids to reduce battery stress
- In rare cases, a warning message indicating battery temperature high or propulsion power reduced

Common causes, most likely first

- 1 Open circuit or high resistance in the cooling fan 1 sense circuit wiring, including a broken wire or poor connector terminal tension
- 2 Short to voltage on the sense circuit, often from chafed wiring contacting a power wire
- 3 Faulty battery pack cooling fan 1 assembly, where the internal sensor or electronics cause an out-of-range signal
- 4 Corroded or damaged electrical connector at the fan or at the control module
- 5 Failed powertrain control module, though this is uncommon and should be diagnosed last
- 6 Aftermarket accessories or improper previous repairs that disturbed the fan circuit



How to diagnose and fix it

- 1 Connect a scan tool and record all stored and pending codes, then clear codes and verify whether P0BCA returns immediately or after a drive cycle
- 2 Visually inspect the cooling fan 1 connector and wiring for damage, corrosion, or loose pins, and check for any signs of rodent damage
- 3 Disconnect the fan connector and measure resistance across the fan sense circuit terminals to check for an open or short within the fan assembly
- 4 With the connector disconnected and key on, measure voltage on the sense circuit at the fan harness side to check for a short to voltage or an open circuit from the control module
- 5 Perform a wiggle test on the harness while monitoring the sense circuit voltage on a scan tool to catch intermittent faults
- 6 If wiring and connectors are good, substitute a known-good cooling fan 1 assembly and recheck for the code
- 7 If the code persists with a known-good fan and verified wiring, follow the manufacturer's diagnostic flow for control module testing or replacement

What a high sense voltage really tells you

- A high sense voltage on the fan circuit often means the control module is seeing an open circuit rather than a short, because the pull-up resistor inside the module pulls the sense line high when the fan is disconnected.
- Many technicians replace the cooling fan assembly only to find the real fault is a chafed wire in the harness near a sharp bracket or a corroded connector pin that was overlooked.
- This code can set intermittently due to temperature-related expansion of a marginal connector terminal, so a wiggle test while monitoring live data is more reliable than a static resistance check.
- The battery cooling fan may not run during short test drives, so the code can be stored without the fan ever being commanded on; always command the fan on with a scan tool to verify the repair.
- A weak 12-volt auxiliary battery or poor ground can cause the control module to misread the sense circuit, so check system voltage and grounds before condemning the fan or module.

Can I keep driving with P0BCA?

You can usually drive the vehicle with this code, but avoid aggressive driving or high ambient temperatures that demand maximum battery cooling, as the battery pack may overheat and trigger reduced power. If a high battery temperature warning appears, pull over and let the system cool.

Tools that help

- OBD-II scan tool with live data and bidirectional control capability
- Digital multimeter with voltage and resistance measurement
- Back probe pins or breakout leads
- Wiring diagram for the specific vehicle
- Basic hand tools for connector and panel access



Reading P0BCA

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

Often seen with

P0A93 Inverter A Cooling System Performance · **P0AFA** Hybrid/EV Battery System Voltage Low · **P0BC8** Hybrid/EV Battery Pack Cooling Fan 1 Sense Range/Performance · **P0BC9** Hybrid/EV Battery Pack Cooling Fan 1 Sense Circuit Low · **P0BCB** Hybrid/EV Battery Pack Cooling Fan 1 Sense Circuit Intermitt

See it working

Watch the animated explainer [How a Radiator Fan Relay Circuit Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0bca/>

