



P0ECA

A/C Refrigerant Temperature Sensor B Circuit Low

P0ECA means the powertrain control module (PCM) has detected a low-voltage signal on the air conditioning (A/C) refrigerant temperature sensor B circuit, which is the sensor that monitors the temperature of the refrigerant leaving the evaporator or in the high-side line. The PCM expects a voltage within a calibrated range, and a sustained low reading tells it the circuit is shorted to ground, the sensor has failed, or the reference voltage is missing.

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

Symptoms you may notice

- The A/C compressor may stop engaging or cycle erratically, leading to poor cooling or no cold air from the vents.
- The climate control panel may flash or show a fault indicator, and some vehicles default to a fixed blower speed or disable automatic temperature control.
- The check engine light (malfunction indicator lamp) illuminates, often with no other noticeable driveability problem.
- In some vehicles the radiator cooling fan may run continuously because the PCM loses reliable refrigerant temperature data for fan strategy.
- Often no symptoms besides the warning light, especially when ambient temperatures are mild and the A/C is not heavily used.

Common causes, most likely first

- 1 A short to ground in the signal wire between the refrigerant temperature sensor and the PCM, often from chafed insulation or a pinched harness.
- 2 A failed refrigerant temperature sensor whose internal thermistor has shorted, pulling the signal voltage low.
- 3 Corroded, loose, or water-intruded connector pins at the sensor or at the PCM, creating excessive resistance or a partial short.
- 4 A missing or low reference voltage from the PCM to the sensor, which can mimic a low signal on the sensor circuit.
- 5 Aftermarket or incorrect sensor installed during a previous repair, with resistance characteristics that do not match the PCM calibration.
- 6 Harness damage from road debris, engine movement, or improper routing after a prior service on the A/C system or front-end components.



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, record freeze-frame data, and verify whether P0ECA is current or history before clearing anything.
- 2 Inspect the sensor connector and the PCM connector for corrosion, bent pins, water intrusion, and loose terminals, then perform a wiggle test while watching live sensor data.
- 3 Measure the sensor resistance with a multimeter and compare it to the manufacturer's temperature-resistance chart for the current ambient or refrigerant temperature.
- 4 Backprobe the signal wire at the sensor and check voltage with the key on, engine off; a reading near zero volts confirms a short to ground or a dead sensor.
- 5 Disconnect the sensor and the PCM, then measure resistance from the signal wire to ground and to battery negative to isolate a harness short before condemning any component.
- 6 If the harness and connectors pass, substitute a known-good sensor or use a signal simulator to confirm the PCM reads correctly before replacing parts.
- 7 After the repair, clear codes, run the A/C through several complete cycles, and verify live refrigerant temperature data tracks realistically without the code returning.

What a low refrigerant signal really means

- A low signal voltage does not automatically mean the sensor is bad; a shorted signal wire or a poor ground at the PCM can produce the same reading, so harness testing must come before parts replacement.
- Some vehicles share the refrigerant temperature sensor ground with other sensors on the same reference circuit, so a fault in a neighbouring sensor can drag the signal low and set P0ECA as a secondary code.
- Low refrigerant charge from a slow leak can cause the sensor to read outside its expected range under certain conditions, and technicians sometimes replace a healthy sensor when the real problem is a leak.
- Aftermarket A/C sensors are a common source of repeat codes because their resistance curves often differ from the original part, so matching the sensor to the vehicle's calibration matters.
- The PCM may disable the A/C compressor clutch as a protective strategy when this code is active, so a no-cooling complaint can appear even though the mechanical A/C system is fully charged and functional.

Can I keep driving with P0ECA?

The vehicle remains safe to drive because this fault affects the air conditioning system rather than engine operation or safety systems, but avoid relying on the A/C for demisting in humid or cold weather and have it diagnosed soon to prevent compressor damage from repeated cycling.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with backprobe pins
- Manufacturer or equivalent wiring diagram for the A/C refrigerant temperature sensor circuit
- Temperature-resistance chart for the specific sensor
- Connector pick and terminal cleaning tools
- Hand tools for accessing the sensor and harness

Reading P0ECA

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

Often seen with

P0532 A/C Refrigerant Pressure Sensor 'A' Circuit Low · **P0533** A/C Refrigerant Pressure Sensor 'A' Circuit High
 · **P0645** A/C Clutch Relay Control Circuit · **P0EC9** A/C Refrigerant Temperature Sensor B Circuit Range/Performan · **P0ECB** A/C Refrigerant Temperature Sensor B Circuit High

See it working

Watch the animated explainer [Excavator Simulator: Hydraulics You Can Operate](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0eca/>

