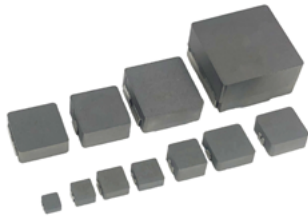


## Use case Automotive powertrain



# Eaton's powerful solutions keep automobiles moving

With new technologies being integrated into modern cars and trucks, the number of electronics in our vehicles is naturally on the rise. Nowadays, many vehicles have had most of their mechanical systems replaced by solid-state electronic devices and systems (such as in hybrid-electric vehicles that utilize a combination of combustion engines and electric batteries). Leading automakers can now offer vehicles that are more energy efficient, are safer, and have lower toxic emissions directly associated with powertrain electrification.

High-performance, reliable powertrains are crucial to a vehicle's operation, and more sophisticated electronic systems can help lower the cost of ownership of the vehicle, improve passenger safety, and protect the environment.

Eaton's HCM1AV2 inductors are developed to meet and exceed the latest trends in powertrain electrification. Increased power requirements are driving DC to DC conversion to filtering to operate at higher voltage, current, and temperature ranges.

The HCM1AV2 are pressed-powder power inductors offering superior high current, high temperature performance under harsh ambient conditions. The HCM1AV2 is AEC-Q200 qualified, ensuring automotive grade mechanical and electrical performance at a wide operating temperature range of (-55 °C to +155 °C).

HCM1AV2 power inductors offer a wide range of surface mount PCB footprints from 4 x 4 mm to 22 x 22 mm with inductance values up to 100 uH and operating currents up to 100 A. They are magnetically

shielded for low EMI with a switching frequency range of up to 1 MHz. For filtering application frequency ranges refer to the self resonant frequency (SRF) listed on the data sheet [click here](#). They feature a soft roll-off saturation capability allowing for higher inductance at higher current levels. The product offers low DCR which translates into lower losses at the component and systems level.

Modern powertrain systems are surrounded by electronic modules and can generate significant electrical noise intrusion to power and data lines, which is also a significant concern to automakers. For example, noise intrusion from various electronic systems on the engine of electric or hybrid-electric vehicles can be high-pitched sounds that are annoying to car owners and affect driver comfort and

vehicle reliability.

Eaton's HCM1AV2 high current inductors can help filter low-frequency noise intrusion from automotive powertrains with their magnetically shielded, low-EMI construction. These products are suited for a broad range of applications in automobiles, including powertrain control module (PCM), engine control unit (ECU), transmission control unit (TCU), active suspension controller, fuel pump, engine cooling pump, engine cooling fan, oil pump, e-Turbo, and e-Brake systems.

Eaton's HCM1AV2 offers automotive engineers with unique versatility anywhere in the vehicle, with one of industry's most complete selection of standard PCB footprints and low EMI across a wide range of inductance values and with superior high

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