

## Use case

Eaton EXL high performance molded inductors



# Eaton provides high power density filtering solutions for commercial applications

Designers of DC-DC converters for computing, industrial, energy, and medical applications are facing a need to develop products with lower power consumption requirements under various load conditions, even as devices shrink further in size.

Despite miniaturization trends, power requirements are growing due to the increasing number of electronic components integrated into today's circuit boards. Some critical challenges in today's designs include electromagnetic interference (EMI) due to large numbers of parts operating in close proximity and higher operating temperatures (e.g., in industrial environments). These requirements are driving the need for high power density

magnetic solutions for a broad range of applications.

DC-DC converters, including buck, boost, and buck-boost types, enable voltage regulation in electronic applications, providing various levels of voltages and load currents in multiple sections of the device. Most power converters use pulse-width modulation that produces some switching noise capable of lowering the efficiency of RF and analog circuits nearby. Filtering circuits with inductors can ensure low EMI and reject high input noise in DC-DC converters.

For example, an LC filter integrated at the input and output of a power converter helps to eliminate ripple currents and output noise and allows

designers to comply with EMC radiation and susceptibility testing limits. However, inductor selection must meet today's high-power density requirements and size constraints with reliable performance at higher currents and over a wide range of operating temperatures.

Eaton's EXL is a family of next-generation pressed powder inductors with higher power density than conventional solutions on the market. They offer a wide range of inductance values (from 0.15 uH to 15 uH) ideal for today's buck and boost converters and filtering applications with small-footprint constructions for more board savings in compact designs. These products have terminals that exit from the bottom of the part, allowing for smaller

PCB layouts. Applications for Eaton's EXL include servers, distributed power architectures, industrial IoT equipment, solar or wind power inverters, and medical equipment. Designers can leverage the EXL's high power density and operating temperature range (-40 °C to +125 °C) to develop highly efficient DC-DC power converters.

Eaton's EXL inductors feature a molded construction that allows for higher power density and better thermal dissipation characteristics, as well as magnetic shielding for EMI immunity. Eaton developed its EXL with the latest materials and advanced processes to provide a performance boost with lower DCR over competing solutions.

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