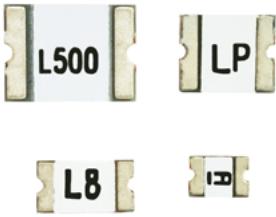


## Use case

### Low resistance resettable PTC fuses



## Low-resistance PTC resettable fuses provide reliable overcurrent and overtemperature protection

One of the most prominent trends in the expansion of IoT is a growing demand for portable, battery-powered IoT devices. Battery-powered IoT devices such as wearables, game consoles, computing devices, and VR headsets are some of the portable devices changing how we interact with the internet daily. The typical home could have up to 500 smart devices by 2022, and many of these will operate on low-voltage battery power.

With internet-ready devices being increasingly miniaturized, the power requirements are reducing, although certain challenges persist. Lithium-ion batteries commonly used in IoT devices provide useful high density power. However,

battery powered devices are prone to issues like overcurrent or overheating due to short circuits. Without adequate circuit protection, battery issues can impact the reliability and longevity of devices and pose safety hazards to users.

For reliable circuit protection in battery powered IoT devices, many manufacturers are leveraging polymer positive temperature coefficient (PTC) fuses, famed for their reusability, reliability, and low-cost potential. Resettable PTC fuses can be preferred over one-time fuses because they automatically reset after a trip and do not require immediate replacement. This feature allows for extended operation over the useful life of the device.

Eaton Bussmann® PTLR fuses provide reliable overcurrent and overtemperature protection in low-voltage IoT devices. These fuses are ideal for primary charging protection, e.g., in USB connectors and secondary battery protection alongside ICs and FETs that provide the primary balancing. With lower resistance compared to standard PTCs (initial resistance of 1 mΩ), PTLR fuses minimize power loss during charging and discharging (e.g., powering an LCD or the device itself). Their higher hold current ratings are also ideal for higher charging currents and battery capacities. PTLR fuses provide some of the highest current ratings in 0805, 1206, 1210, and 1812 footprints, ideal for board space

savings in compact devices. Eaton's PTLR fuses consist of positive temperature coefficient material whose internal resistance increases exponentially in response to overcurrent conditions or higher temperatures. When the fused device experiences a fault, the PTLR enters a high-resistance state, which prevents current from flowing through the circuit until the fault current is removed and the device cools.

PTLR fuses offer the ability to limit current flow to low leakage levels within one second of a trip. They are designed with non-toxic, eco-friendly materials. Each product is lead and halogen-free, have UL and TUV approvals, and are RoHS compliant.