

# Lithium Cells and Battery Packs

## Application Overview

### Problem/Solution

Because of their chemistry, primary lithium cells (such as the AA and 2/3A) and rechargeable lithium cells (such as the 1865, 1750, and prismatic) are sensitive to faults that cause overcurrent/overtemperature conditions, such as the accidental shorting of the cell terminals, abusive charging, and (for rechargeable lithium) charger failure. For these reasons, these cells usually need to be individually protected. Because of their electrical characteristics, as well as their thin, flat form factor, PolySwitch devices internal to each cell help provide effective protection.



### Typical Protection Requirements

Lithium cells typically require a rating of 15 volts and 40 amps minimum.

### Typical Agency Approval Requirements

Primary and rechargeable lithium cells/packs are covered under

the UL1640 Standard for lithium batteries.

### Technology Comparison

The industry standard for the protection of lithium cells for consumer applications (such as cameras, laptop/notebook

computers, cellular phones, camcorders) is the use of PolySwitch devices in the form of polymeric PTC annular discs inside the lid assembly of each cell.

PolySwitch resettable fuses latch into a high-resistance state when a fault occurs. Once fault and power to the circuit are removed, the device automatically resets and is ready for normal operation.

### Device Selection

Because the design of lid assemblies of lithium cells varies from manufacturer to manufacturer, PolySwitch annular discs are usually custom devices. Different disc sizes can be accommodated for the various cell configurations. For Li battery packs use LTP or SRP devices.

