Application Note

Protecting the Next Generation of Battery Packs

Introduction:

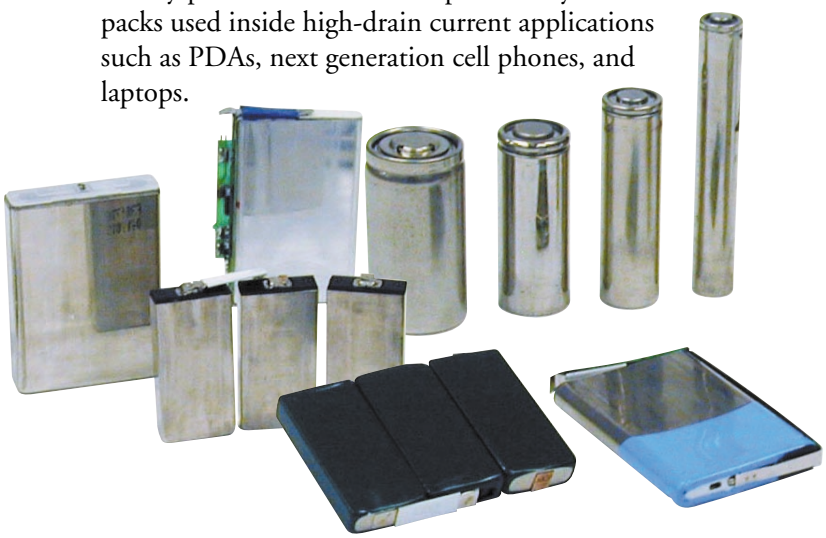
The MF-SVS product family is the next generation of Polymeric Positive Temperature Coefficient (PPTC) devices designed for battery pack protection. The product family has been designed to meet the battery pack industry's demand for a PPTC device with a lower initial resistance. A PPTC strap device is now available with a typical resistance as low as 14 mΩ.

The new product family extends the Bourns Multifuse® product portfolio of resettable fuses that offer electronic design engineers a simple and cost effective method of circuit protection in low and high voltage applications.

Applications/End Products:

Portable electronic devices require a power pack that is cost effective, reliable, and small in size. Over the years, the battery pack industry has continually improved performance while reducing the size of the average battery pack. Bourns' Multifuse® product range has kept pace with the developments in the battery pack industry with new products consistently developed offering pack designers lower resistance in a smaller package.

The new product family has been designed for use inside Li-ion, Li-Polymer and Ni-MH rechargeable battery packs. The devices are particularly suited for packs used inside high-drain current applications such as PDAs, next generation cell phones, and laptops.



Features & Benefits of the MF-SVS Product Family:

Features	Benefits
Lowest initial resistance available	Longer talk time capacity of battery pack.
Trip temperature between 80-85°C	Avoids nuisance tripping associated with PPTC devices that trip at lower temperatures. The trip temperature of 80-85°C has been used and field-tested as the standard trip temperature for the majority of battery chemistries, including Li and Ni-Mh. This optimum trip temperature gives the user the maximum possible operating temperature range without compromising the safety of the pack.
Flexible designs	Aside from our standard product family, Bourns offers custom designs to meet the requirements of each individual pack. Typical solutions are products with long leads, removing the requirement to spot weld on nickel tabs to enable the pack manufacturer to connect the PPTC into the safety circuit.
Reduced width	Our product range now includes a 3.6mm wide device that can be fitted into the slimmest battery pack.
Lead free	The product range is 100% lead-free.

Typical Resistance Values

Model Number	Typical Initial Resistance @ 23°C (Ohms)
MF-SVS230	0.014
MF-SVS210	0.016
MF-SVS175	0.023
MF-SVS170	0.023

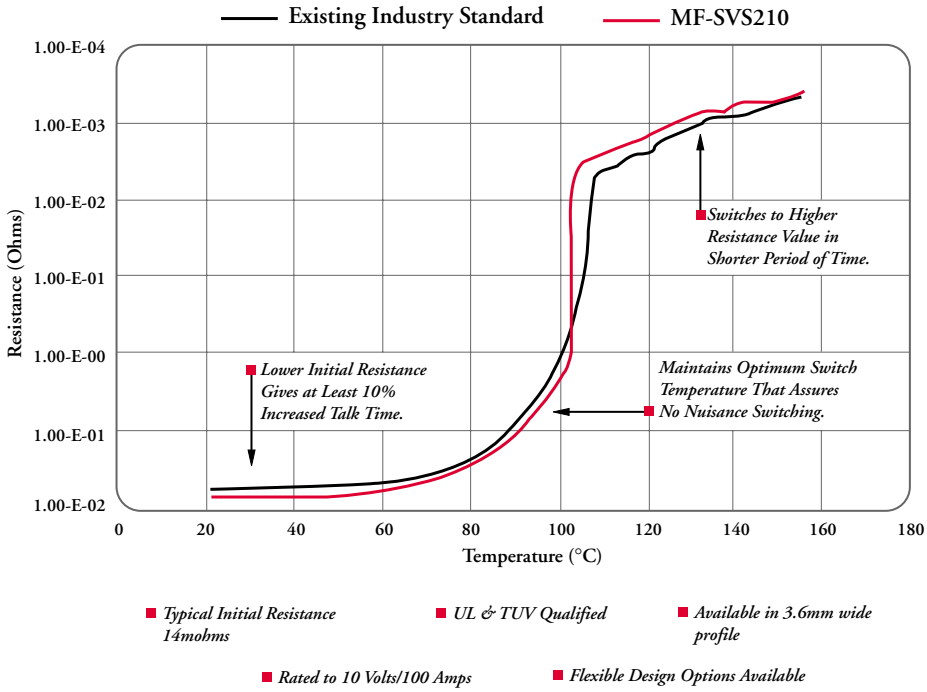
Solution Designs:

The fundamental criteria for selecting a PPTC is safety. Once this critical criterion has been fully satisfied, a designer must find Solution Designs that not just protect the pack, but also help minimize the resistance and cost of the final pack. These solutions may necessitate custom parts, and the Multifuse® product line offers custom designs to meet the requirements of individual packs.

The product family can be supplied with one or two of the leads slotted to assist in the welding procedure. As highlighted in the features and benefits section, the product can be offered with custom-designed lead lengths. A narrow product family is also available for the new generation of ultra slim packs. The Battery Pack Development Team at Bourns has the experience and capability to offer pack manufacturers unique solution designs that will enhance the technical and commercial competitiveness of their product range.

Consult your local Bourns representative for further information on Multifuse® solution designs or a full product roadmap on the development of PPTC technology for battery pack protection.

The Most Advanced Resettable Fuses for Battery Pack Protection



- *Typical Initial Resistance 14mohms*
- *UL & TUV Qualified*
- *Available in 3.6mm wide profile*
- *Rated to 10 Volts/100 Amps*
- *Flexible Design Options Available*

Asia-Pacific: TEL +886- (0)2 25624117 • FAX +886- (0)2 25624116
Europe: TEL +41-41 7685555 • FAX +41-41 7685510
North America: TEL +1-909 781-5500 • FAX +1-909 781-5700

bourns.com