



#### **Additional Information**







Resources

Accessories

Samples

#### **Agency Approvals**

Agency	Agency File/Certificatge Number
<b>71</b>	E74889
<b>®</b> :	78165C
$\triangle$	72161798

### **Description**

Littelfuse PolySwitch, a pioneer of polymeric positive temperature coefficient (PPTC) resettable devices, offers several material platforms to help protect battery applications. The high trip temperature, broad range of hold current ratings, and highest voltage ratings available, combined with automotive qualifications are a unique combination for the SRP series.

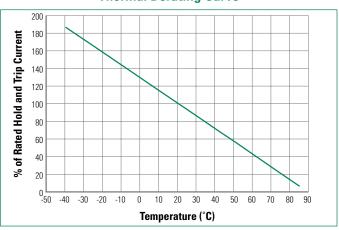
#### **Features & Benefits**

- Qualified to AEC-Q200 for automotive applications
- Current ratings from 1.2A to 4 2A
- Voltage ratings from 15V to 20V
- Fast time-to-trip
- Low-resistance devices increase battery operating time
- RoHS compliant and Halogen free
- Compatible with high-volume electronics assembly
- UL Recognized to UL 1434 CSA Certified to CSATIL No. CA-3ATUV Certified to EN 60730-1

### **Applications**

- Rechargeable batteries for mobile devices
- E-call systems
- Vacuum cleaner
- Power tools
- Portable medical devices

#### **Thermal Derating Curve**



#### Thermal Derating [Hold Current (A) at Ambient Temperature (°C)]

		Maximum Ambient Temperature										
Part Description	Ordering Part Number	-40°C	-20°C	0°C	20°C	25°C	40°C	50°C	60°C	70°C	80°C	85°C
2000		Hold Current (A)										
SRP120F	RF1669-000	1.9	1.7	1.5	1.20	1.17	1.0	0.9	0.8	0.6	0.5	0.4
SRP175F	RF1670-000	2.5	2.2	2.0	1.75	1.68	1.4	1.3	1.2	1.0	0.9	0.8
SRP200F	RF1675-000	3.1	2.8	2.5	2.00	1.97	1.7	1.5	1.4	1.2	1.0	0.9
SRP350F	RF1673-000	5.3	4.8	4.3	3.50	3.44	3.0	2.7	2.5	2.1	1.8	1.7
SRP420F	RF1672-000	6.3	5.7	5.1	4.20	4.11	3.6	3.3	3.0	2.6	2.2	2.1

<sup>\*</sup> Product electrical characteristics determined at 25°C.



#### **Electrical Characteristics**

Part Description	Ordering Part Number	I <sub>H</sub>	l <sub>T</sub>	V <sub>MAX</sub>	I <sub>MAX</sub>	P <sub>D MAX</sub>	MaxTim	e-to-trip	R <sub>MIN</sub>	R <sub>MAX</sub>	R <sub>1MAX</sub>	Typical	Typical
		(A)	(A)	(V <sub>DC</sub> )	(A)	(W)	(A)	(s)	(Ω)	(Ω)	(Ω)	Activation Temperature	Resistance
VTP*													
SRP120F	RF1669-000	1.20	2.7	15	100	1.2	6.00	5.0	0.085	0.160	0.220	125 °C	0.123
SRP175F	RF1670-000	1.75	3.8	15	100	1.5	8.75	5.0	0.050	0.090	0.120	125 °C	0.070
SRP200F	RF1675-000	2.00	4.4	30	100	1.9	10.00	4.0	0.030	0.060	0.100	125 °C	0.045
SRP350F	RF1673-000	3.50	6.3	30	100	2.5	20.00	3.0	0.017	0.031	0.050	125 °C	0.024
SRP420F	RF1672-000	4.20	7.6	30	100	2.9	20.00	6.0	0.012	0.024	0.040	125 °C	0.018

<sup>\*</sup> Product electrical characteristics determined at 25°C.

#### Notes

: Hold current: maximum current device will pass without interruption in 20°C still air unless otherwise specified.

: Trip current: minimum current that will switch the device from low-resistance to high-resistance in 20°C still air unless otherwise specified.

V<sub>MAX</sub>: Maximum voltage device can withstand without damage at rated current.

I<sub>MAX</sub>: Maximum fault current device can withstand without damage at rated voltage.

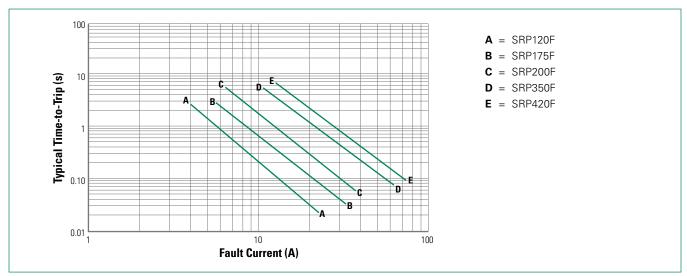
P<sub>D</sub>: Power dissipated from device when in the tripped state in 20°C still air unless otherwise specified.

Rmin : Minimum resistance of device as supplied at 20°C unless otherwise specified.

Rmax : Maximum resistance, measured at 20°C unless otherwise specified.

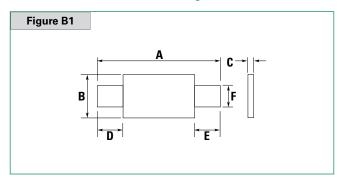
Rmax : Maximum resistance, measured at 20°C unless otherwise specified, of device one hour after being tripped the first time.

#### Typical Time-to-Trip Curve at 20°C





#### **Dimension Figure**



#### **Dimensions in Millimeters (Inches)**

Part On Description	Ordering Part	Α		В		С		D		E		F		Fi
	Number	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Figure
SRP120F	RF1669-000	19.9 (0.796)	22.1 (0.884)	4.9 (0.196)	5.2 (0.208)	0.6 (0.024)	1.0 (0.040)	5.5 (0.220)	7.5 (0.300)	5.5 (0.220)	7.5 (0.300)	3.9 (0.156)	4.1 (0.164)	B1
SRP175F	RF1670-000	20.9 (0.836)	23.1 (0.924)	4.9 (0.196)	5.2 (0.208)	0.6 (0.024)	1.0 (0.040)	4.1 (0.164)	5.5 (0.220)	4.1 (0.164)	5.5 (0.220)	3.9 (0.156)	4.1 (0.164)	B1
SRP200F	RF1675-000	21.3 (0.852)	23.4 (0.936)	10.2 (0.408)	11.0 (0.440)	0.5 (0.020)	1.1 (0.044)	5.0 (0.200)	7.6 (0.304)	5.0 (0.200)	7.6 (0.304)	4.8 (0.192)	5.4 (0.216)	B1
SRP350F	RF1673-000	28.4 (1.136)	31.8 (1.272)	13.0 (0.520)	13.5 (0.540)	0.5 (0.020)	1.1 (0.044)	6.3 (0.252)	8.9 (0.356)	6.3 (0.252)	8.9 (0.356)	6.0 (0.240)	6.6 (0.264)	B1
SRP420F	RF1672-000	30.6 (1.224)	32.4 (1.296)	12.9 (0.516)	13.6 (0.544)	0.5 (0.020)	1.1 (0.044)	5.0 (0.200)	7.5 (0.300)	5.0 (0.200)	7.5 (0.300)	6.0 (0.240)	6.7 (0.268)	B1

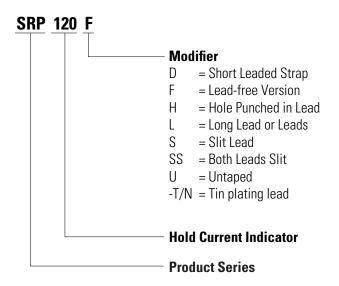
#### Physical Characteristics and Environmental Specifications

Physical Characteristics	<b>Lead Material:</b> 0.125mm Nominal Thickness, Quarter-hard Nickel								
	<b>Tape Material:</b> Polyester								
	Test	Conditions	Resistance Change						
	Passive Aging	70°C, 1000 hrs	±10% typ						
Environmental Specifications	Humidity Aging	85°C/85% RH, 7 Days	±5% typ						
	Vibration	MIL-STD-883C, Test Condition A	No Change						

#### Notes

Storage conditions: 40°C max., 70% RH max.; devices should remain in original sealed bags prior to use. Devices may not meet specified values if these storage conditions are exceeded.

#### **Part Naming System**





#### **Packaging and Marking Information/Agency Recognition**

Part Description	Ordering Part Number	Bag Quantity	Standard Package Quantity	Part Marking	Agency Recognition
SRP120F	RF1669-000	1,000	10,000	120	UL, CSA, TÜV
SRP175F	RF1670-000	2,000	10,000	175	UL, CSA, TÜV
SRP200F	RF1675-000	1,000	10,000	200	UL, CSA, TÜV
SRP350F	RF1673-000	500	10,000	350	UL, CSA, TÜV
SRP420F	RF1672-000	500	10,000	420	UL, CSA, TÜV

### **Installation Guidelines for the Strap Family**

- PPTC devices operate by thermal expansion of the conductive polymer. If devices are placed under pressure or installed in spaces that would prevent thermal expansion, they may not properly protect against damage caused by fault conditions. Designs must be selected in such a manner that adequate space is maintained over the life of the product.
- Twisting, bending, or placing the PPTC device in tension will decrease the ability of the device to protect against damage caused by electrical faults. No residual force should remain on device after installation. Mechanical damage to the PPTC device may affect device performance and should be avoided.
- Chemical contamination of PPTC devices should be avoided. Certain greases, solvents, hydraulic fluids, fuels, industrial cleaning agents, volatile components of adhesives, silicones, and electrolytes can have an adverse effect on device performance.
- PPTC strap devices are intended to be resistance welded to battery cells or to pack interconnect straps, yet some precautions must be taken when doing so. In order for the PPTC device to exhibit its specified performance, weld placement should be a minimum of 2mm from the edge of the PPTC device, weld splatter must not touch the PPTC device, and welding conditions must not heat the PPTC device above its maximum operating temperature.
- PPTC strap devices are not intended for applications where reflow onto flex circuits or rigid circuit boards is required.
- The polyester tape on PPTC strap devices is intended for marking and identification purposes only, not for electrical insulation.

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