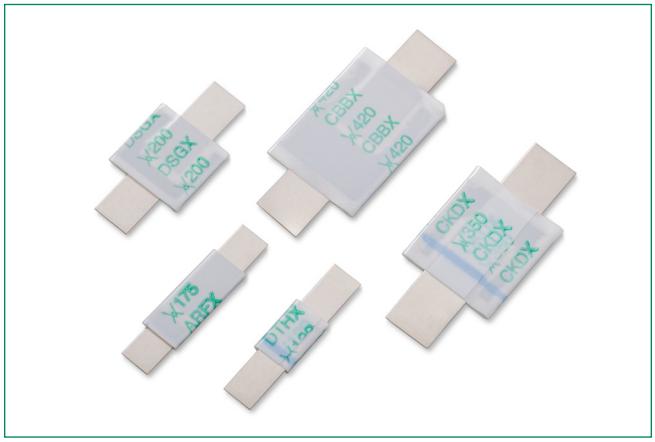
PolySwitch® Resettable PPTCs

Battery Strap > SRP Series



Additional Information

Resources | Accessories | Samples

Agency Approvals

Agency	Agency File/Certificatge Number
	E74889
	78165C
	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 temperaure, 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 CSA TIL No. CA-3A TUV Certified to EN 60730-1

Applications

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

Revised: GD. 09/27/21

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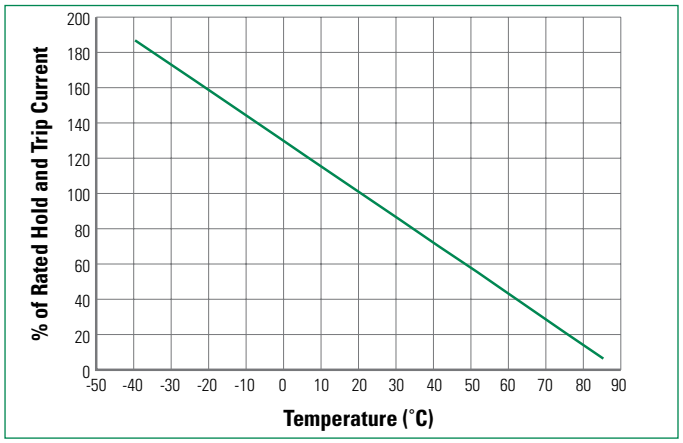
Thermal Derating Curve



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

Part Description	Ordering Part Number	Maximum Ambient Temperature										
		-40°C	-20°C	0°C	20°C	25°C	40°C	50°C	60°C	70°C	80°C	85°C
		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

* Product electrical characteristics determined at 25°C.

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Electrical Characteristics

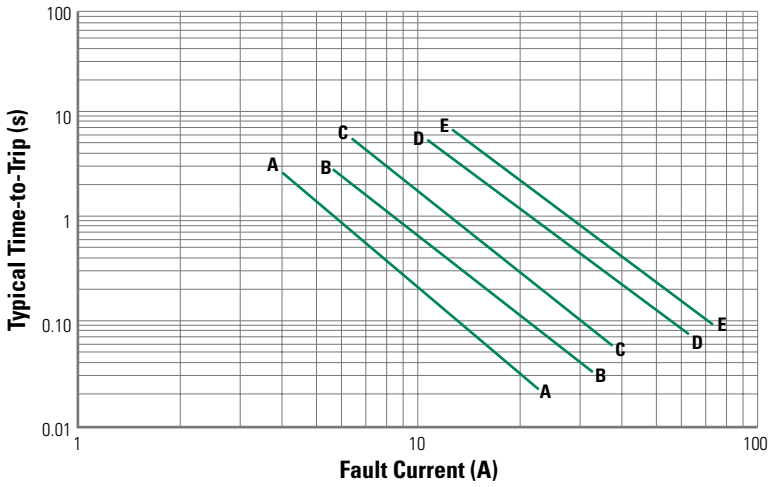
Part Description	Ordering Part Number	I_H (A)	I_T (A)	V_{MAX} (V_{DC})	I_{MAX} (A)	$P_{D\ MAX}$ (W)	Max Time-to-trip (A)	Max Time-to-trip (s)	R_{MIN} (Ω)	R_{MAX} (Ω)	R_{1MAX} (Ω)	Typical Activation Temperature	Typical Resistance
VTP*													
SRP120F	RF1669-000	1.20	2.7	15	100	1.2	6.00	5.0	0.085	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

* Product electrical characteristics determined at 25°C.

Notes

I_H : Hold current: maximum current device will pass without interruption in 20°C still air unless otherwise specified.
I_T : Trip current: minimum current that will switch the device from low-resistance to high-resistance in 20°C still air unless otherwise specified.
V_{MAX} : Maximum voltage device can withstand without damage at rated current.
I_{MAX} : Maximum fault current device can withstand without damage at rated voltage.
P_D : Power dissipated from device when in the tripped state in 20°C still air unless otherwise specified.
R_{MIN} : Minimum resistance of device as supplied at 20°C unless otherwise specified.
R_{MAX} : Maximum resistance of device as supplied at 20°C unless otherwise specified.
R_{1MAX} : 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



A = SRP120F
B = SRP175F
C = SRP200F
D = SRP350F
E = SRP420F

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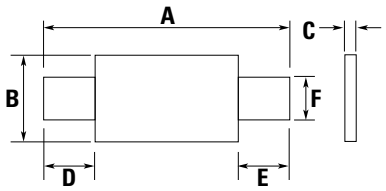
Dimension Figure

Figure B1



Dimensions in Millimeters (Inches)

Part Description	Ordering Part Number	A		B		C		D		E		F		Figure
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
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	**Lead Material:** 0.125mm Nominal Thickness, Quarter-hard Nickel		
	Tape Material: Polyester		
Environmental Specifications	**Test**	**Conditions**	**Resistance Change**
	Passive Aging	70°C, 1000 hrs	±10% typ
	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

SRP 120 F

Modifier
- D = Short Leaded Strap
- F = Lead-free Version
- H = Hole Punched in Lead
- L = Long Lead or Leads
- S = Slit Lead
- SS = Both Leads Slit
- U = Untaped
- -T/N = Tin plating lead

Hold Current Indicator

Product Series

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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.