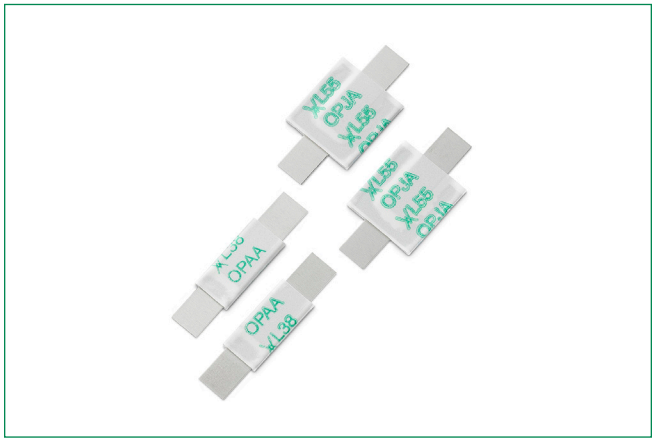
PolySwitch® Resettable PPTC

Battery Strap > LSP Series



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 high voltage ratings available, combined with automotive qualifications are a unique combination for LSP380 and LSP550.

Features and Benefits

- Qualified to AEC-Q200 for automotive applications
- Compact size (chip length and width)
- Hold current ratings 3.8 A and 5.5 A
- Voltage ratings 16 Vdc
- Compatible with high-volume electronics assembly
- Low-resistance devices increase battery operating time
- RoHS compliant, halogen-free, and lead-free

Applications

- E-call module backup battery packs
- Mobile radio device battery packs
- Mobile medical device battery packs
- Intelligent vacuum cleaner battery packs

Additional Information

Resources | Accessories | Samples

Agency Approvals

Agency	Agency File Number
	E74889*
	J50313999*

Note
* LSP380 Only

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	30 °C	40 °C	50 °C	60 °C	70 °C	85 °C
		Hold Current (A)									
LSP380	RF4906-000	5.90	5.20	4.60	3.80	3.50	3.20	3.00	2.80	2.30	1.70
LSP550	RF5079-000	7.50	6.60	6.00	5.50	5.20	4.50	4.10	3.80	3.40	2.60

Note
Product electrical characteristics determined at 25°C

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Electrical Characteristics

Part Description	Ordering Part Number	I_H	I_T	V_{MAX}	I_{MAX}	$P_{D\ MAX}$	Max Time-to-trip		R_{MIN}	R_{MAX}	R_{1MAX}	R TYP	Typical Activation Temperature (°C)
		(A)	(A)	(V_{DC})	(DC_{ADC})	(W)	(A)	(s)	(Ω)	(Ω)	(Ω)	(Ω)	
LSP380	RF4906-000	3.8	8.0	16	50	1.5	19.0	5.0	0.013	0.028	0.037	0.021	125
LSP550	RF5079-000	5.5	10.2	16	50	2.8	27.5	5.0	0.008	0.018	0.026	0.013	125

Notes

Product electrical characteristics determined at 25 °C

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.

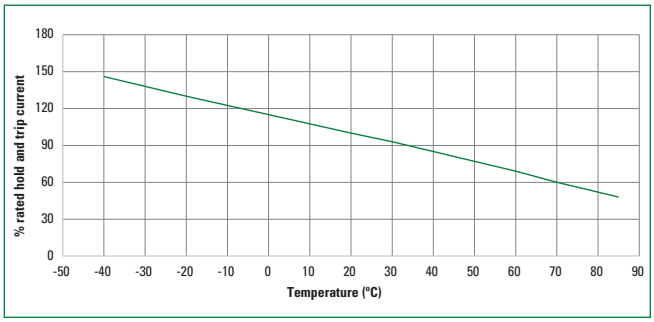
P_D – Power dissipated from device when in the tripped state in 20 °C still air unless otherwise specified.

R_{MIN} – Minimum resistance of device as supplied at 20 °C unless otherwise specified.

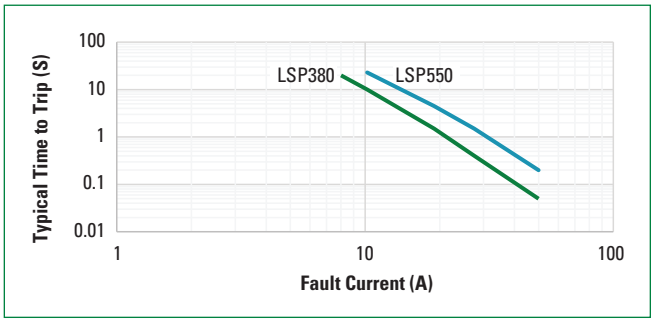
R_{MAX} – Maximum resistance of device as supplied at 20 °C unless otherwise specified.

R_{1MAX} – Maximum resistance, measured at 20 °C unless otherwise specified, of device one hour after being gripped the first time.

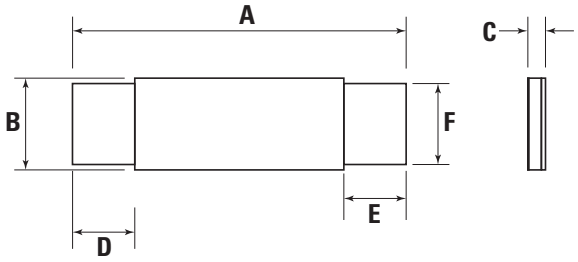
Temperature Re-rating Curve



Typical Time-to-Trip Curve at 20°C



Dimensions in Millimeters (Inches)



Part Description	Ordering Part Number	Dimensions in Millimeters (Inches)											
		A		B		C		D		E		F	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
LSP380	RF4906-000	18.5	21.5	4.9	5.5	0.5	0.9	4.0	6.0	4.0	6.0	3.9	4.1
		(0.730)	(0.85)	(0.19)	(0.22)	(0.02)	(0.04)	(0.16)	(0.24)	(0.16)	(0.24)	(0.15)	(0.16)
LSP550	RF5079-000	18.5	21.5	9.9	10.5	0.5	0.9	4.0	6.0	4.0	6.0	3.9	4.1
		(0.730)	(0.85)	(0.39)	(0.41)	(0.02)	(0.04)	(0.16)	(0.24)	(0.16)	(0.24)	(0.15)	(0.16)

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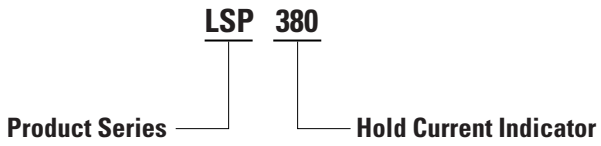
Physical Characteristics

Lead Material	0.125 mm nominal thickness, quarter-hard Nickel
Tape Material	Polyester

Part Numbering System



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-883D, Method 2026	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.

Packaging and Marking Information/Agency Recognition

Part Description	Ordering Part Number	Bag Quantity	Standard Package Quantity	Part Marking	Agency Recognition
LSP380	RF4906-000	1,000	10,000	L38	UL, TUV
LSP550	RF5079-000	1,000	10,000	L55	UL, TUV

Installation Guidelines for Strap Devices

- 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 2 mm 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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Mouser Electronics

Authorized Distributor

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Littelfuse:

RF5079-000 RF4906-000