

# Radial Lead Resettable Polymer PTCs

## SC6 Series

### Description

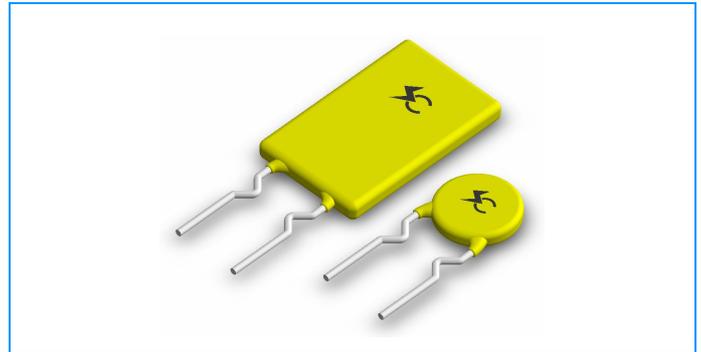
SC6 series radial leaded PTCs are designed to provide resettable over-current protection for USB, Low voltage electrical equipment applications. With maximum 6 volts and maximum 40-ampere short circuit rating.

### Features

- u RoHS compliant, Lead-Free and Halogen-Free
- u 40A short circuit rating
- u 6V operating voltage
- u Fast time-to-trip
- u Meets all USB protection requirements

### Applicable

- u Computers and peripherals
- u USB hubs ,ports and peripherals
- u Power ports
- u General electronics



### Electrical Parameters

Part Number	I <sub>hold</sub> (A)	I <sub>trip</sub> (A)	V <sub>max</sub> (Vdc)	I <sub>max</sub> (A)	P <sub>dtyp.</sub> (W)	Maximum Time To Trip		Resistance		
						Current (A)	Time (Sec.)	R <sub>min</sub> (mΩ)	R <sub>max</sub> (mΩ)	R <sub>1max</sub> (mΩ)
SC6-050	0.50	1.0	6	40	0.45	2.50	3.8	200	450	675
SC6-065	0.65	1.3	6	40	0.50	3.25	4.5	120	270	400
SC6-075	0.75	1.5	6	40	0.55	3.75	5.2	110	230	345
SC6-090	0.90	1.8	6	40	0.60	4.50	5.9	90	180	270
SC6-110	1.10	2.2	6	40	0.70	5.50	6.6	70	140	210
SC6-120	1.20	2.4	6	40	0.75	6.00	7.0	70	140	210
SC6-135	1.35	2.7	6	40	0.80	6.75	7.3	55	110	150
SC6-160	1.60	3.2	6	40	0.90	8.00	8.0	45	90	115
SC6-185	1.85	3.7	6	40	1.00	9.25	8.7	40	80	100
SC6-250	2.50	5.0	6	40	1.20	12.5	10.3	27	55	70

I<sub>hold</sub>= Hold current: maximum current device will pass without tripping in 25°C still air.

I<sub>trip</sub>= Trip current: minimum current at which the device will trip in 25°C still air.

V<sub>max</sub>= Maximum voltage device can withstand without damage at rated current (I<sub>max</sub>)

I<sub>max</sub>= Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>)

P<sub>dtyp.</sub>= Power dissipated from device when in the tripped state at 25°C still air.

R<sub>min</sub>= Minimum resistance of device in initial (un-soldered) state.

R<sub>max</sub>= Maximum resistance of device in initial (un-soldered) state.

R<sub>1max</sub>= Maximum resistance of device at 25°C measured one hour after tripping.

Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

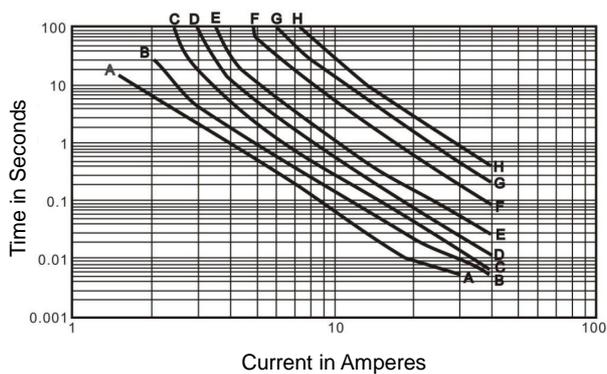
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### Temperature Derating Chart – $I_{hold}$ (A)

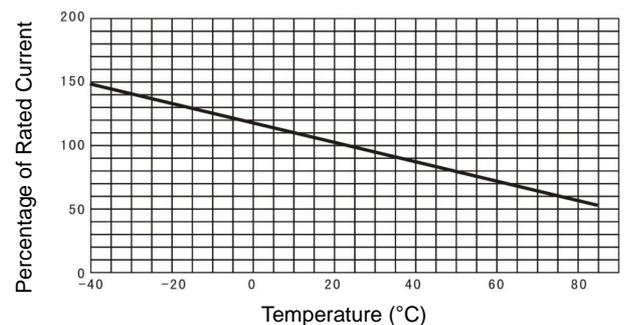
Part Number	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
	Hold Current (A)								
SC6-050	0.73	0.65	0.58	0.50	0.42	0.39	0.34	0.31	0.26
SC6-065	0.94	0.85	0.75	0.65	0.54	0.50	0.44	0.40	0.34
SC6-075	1.09	0.98	0.86	0.75	0.62	0.58	0.51	0.46	0.39
SC6-090	1.31	1.17	1.04	0.90	0.75	0.69	0.61	0.55	0.47
SC6-110	1.60	1.43	1.27	1.10	0.91	0.85	0.75	0.67	0.57
SC6-120	1.74	1.56	1.38	1.20	1.00	0.92	0.82	0.73	0.62
SC6-135	1.96	1.76	1.55	1.35	1.12	1.04	0.92	0.82	0.70
SC6-160	2.32	2.08	1.84	1.60	1.33	1.23	1.09	0.98	0.83
SC6-185	2.68	2.41	2.13	1.85	1.54	1.42	1.26	1.13	0.96
SC6-250	3.63	3.25	2.88	2.50	2.08	1.93	1.70	1.53	1.30

### Average Time Current Curves



A=SC6-075      E=SC6-135  
 B=SC6-090      F=SC6-160  
 C=SC6-110      G=SC6-185  
 D=SC6-120      H=SC6-250

### Temperature Derating Curve



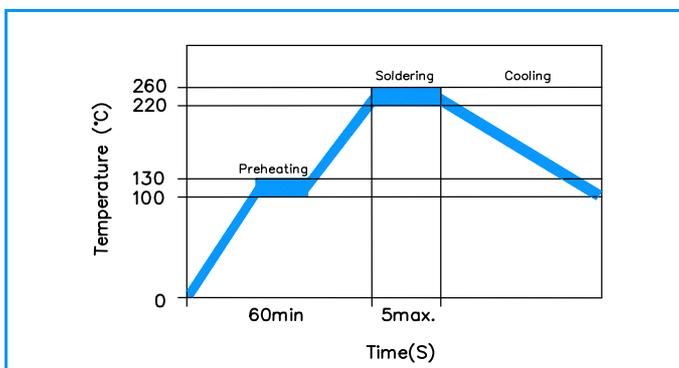
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### Test Procedures and Requirement

Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @25±2°C	$R_{min} \leq R \leq R_{max}$
Hold Current	60 min, at $I_{hold}$ , In still air @25±2°C	No trip
Time to Trip	Specified current, $V_{max}$ , @25±2°C	$T \leq$ Maximum Time To Trip
Trip Cycle Life	$V_{max}$ , $I_{max}$ , 100 cycles	No arcing or burning
Trip Endurance	$V_{max}$ , 24 hours	No arcing or burning

### Soldering Parameters

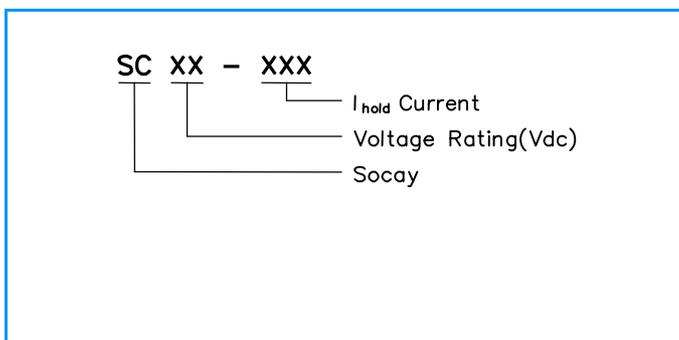


<b>Pre-Heating Zone</b>	Refer to the condition recommended by the manufacturer. Max. ramping rate should not exceed 4°C/Sec
<b>Soldering Zone</b>	Max. solder temperature should not exceed 260°C
<b>Cooling Zone</b>	Cooling by natural convection in air

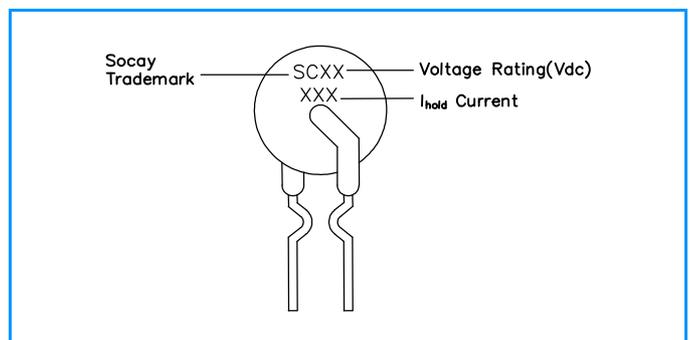
### Physical Specifications

<b>Lead Material</b>	Tin-plated Copper clad steel
<b>Soldering Characteristics</b>	Solder ability per MIL-STD-202, Method 208E
<b>Insulating Material</b>	Cured, flame retardant epoxy polymer meets UL 94V-0 requirements.
<b>Device Labeling</b>	Marked with 'SC', voltage, current rating

### Part Numbering



### Part Marking



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### Dimensions

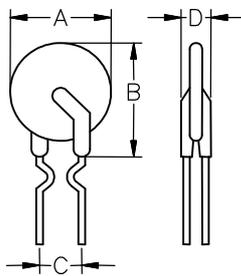


Figure1

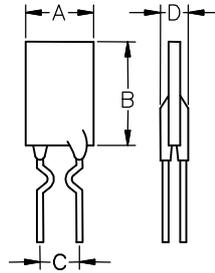


Figure2

Part Number	Figure	A		B		C		D		Lead (dia)		Packaging (Bulk Pack)
		Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	
		Max.	Max.	Max.	Max.	Typ.	Typ.	Max.	Max.			
SC6-050	Figure1	0.236	6.0	0.445	11.3	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-065	Figure1	0.236	6.0	0.472	12.0	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-075	Figure1	0.276	7.0	0.472	12.0	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-090	Figure2	0.256	6.5	0.453	11.5	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-110	Figure2	0.276	7.0	0.472	12.0	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-120	Figure1	0.283	7.2	0.480	12.2	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-135	Figure2	0.256	6.5	0.591	14.5	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-160	Figure2	0.346	8.8	0.543	13.8	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-185	Figure2	0.346	8.8	0.610	15.5	0.200	5.1	0.118	3.0	0.020	0.5	1000
SC6-250	Figure2	0.394	10.0	0.630	16.0	0.200	5.1	0.118	3.0	0.020	0.5	1000

### Warning



- ⚠ This product should not be used in an application where the maximum interrupt voltage or maximum interrupt current in a fault condition, Operation beyond the maximum rating or improper use may result in device damage and possible electrical arcing and flame.
- ⚠ A PPTC device is not a fuse, It is a nonlinear thermistor that limits current, Because under a fault condition all PPTC devices go into a high resistance state but not open circuit hazardous voltage may be present at PPTC.
- ⚠ The devices are intended for protection against occasional over-current or over-temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events.
- ⚠ In most application, power must be removed and the fault condition cleared in order to reset a PPTC device.
- ⚠ PPTC devices are not recommended to be installed in applications where the device is constrained such that its PPTC properties are inhibited, for example in rigid potting materials or Add devices surface coating, Bundled devices ontology, which lack adequate clearance to accommodate device expansion.
- ⚠ Contamination on of the PPTC material with certain silicone-based oils or some aggressive solvents can adversely impact the performance of the devices. For example, Organic solvents to cleaning.