

# Radial Lead Resettable Polymer PTCs

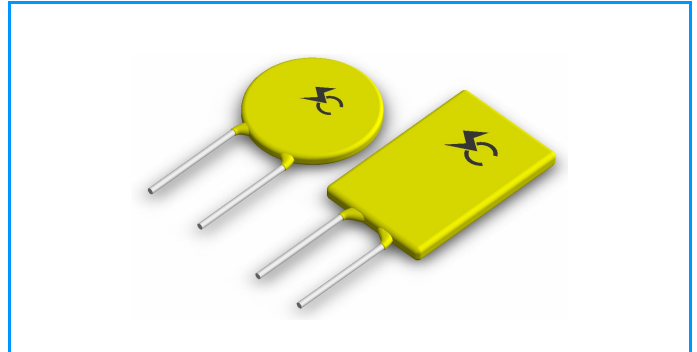
## SC135 Series

### Description

SC135 Series is designed to protect against short duration high voltage fault currents (power cross or power induction surge) typically used in AC110V.

### Features

- u 0.05-3.5A hold current rating
- u 135VAC operating voltage
- u Fast time-to- trip
- u RoHS compliant, Lead-Free and Halogen-Free



### Applicable

- u AC110V over-current protection
- u Power ports
- u Customer Premises Equipment(CPE)

### Electrical Parameters

Part Number	I <sub>hold</sub> (A)	I <sub>trip</sub> (A)	V <sub>max</sub> (Vac)	I <sub>max</sub> (A)	P <sub>dtyp.</sub> (W)	Maximum Time To Trip		Resistance		
						Current (A)	Time (Sec.)	R <sub>min</sub> (Ω)	R <sub>max</sub> (Ω)	R <sub>1max</sub> (Ω)
SC135-050	0.05	0.10	135	2.5	0.27	0.25	4.0	13.5	27.0	36.0
SC135-060	0.060	0.08	135	3.0	0.30	0.30	4.0	10.0	20.0	27.0
SC135-080	0.08	0.16	135	4.0	0.38	0.40	4.0	7.5	15.0	20.0
SC135-100	0.10	0.20	135	5.0	0.40	0.50	5.0	5.0	10.0	13.5
SC135-120	0.12	0.24	135	6.0	0.46	0.60	6.0	4.0	8.0	10.8
SC135-160	0.16	0.32	135	6.0	0.50	0.80	7.0	2.2	5.0	6.8
SC135-200	0.20	0.40	135	6.0	0.72	1.00	5.0	1.8	4.5	6.0
SC135-250	0.25	0.50	135	6.0	0.90	1.25	5.0	1.6	3.6	4.8
SC135-300	0.30	0.60	135	6.0	1.0	1.50	5.0	1.2	2.7	3.3
SC135-400	0.40	0.80	135	6.0	1.3	2.00	5.0	0.90	2.0	2.4
SC135-500	0.50	1.0	135	7.5	1.6	2.50	5.0	0.75	1.65	2.0
SC135-550	0.55	1.1	135	7.5	1.6	2.75	5.0	0.60	1.45	1.75
SC135-650	0.65	1.3	135	7.5	1.7	3.25	8.0	0.45	1.00	1.2
SC135-750	0.75	1.5	135	7.5	1.8	3.75	8.0	0.35	0.80	0.96
SC135-900	0.90	1.8	135	9.0	2.1	4.50	8.0	0.30	0.65	0.80
SC135-1000	1.00	2.0	135	10.0	2.2	5.00	8.0	0.25	0.55	0.66
SC135-1100	1.10	2.2	135	11.0	2.4	5.50	9.0	0.22	0.50	0.60
SC135-1250	1.25	2.5	135	12.5	2.6	6.25	10.0	0.18	0.40	0.48
SC135-1350	1.35	2.7	135	13.5	2.8	6.75	10.0	0.16	0.36	0.43
SC135-1600	1.60	3.2	135	16.0	3.2	8.00	10.0	0.13	0.27	0.33
SC135-1850	1.85	3.7	135	18.5	3.6	9.25	10.0	0.11	0.22	0.27
SC135-2000	2.00	4.0	135	20.0	3.9	10.0	12.0	0.10	0.20	0.24
SC135-2500	2.50	5.0	135	20.0	4.6	12.5	15.0	0.075	0.15	0.18
SC135-3000	3.00	6.0	135	20.0	5.3	15.0	15.0	0.060	0.12	0.15
SC135-3500	3.50	7.0	135	20.0	6.0	17.5	15.0	0.050	0.10	0.12

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.

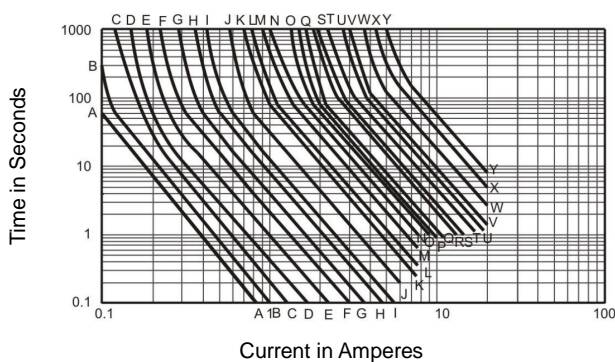
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## SC135 Series

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

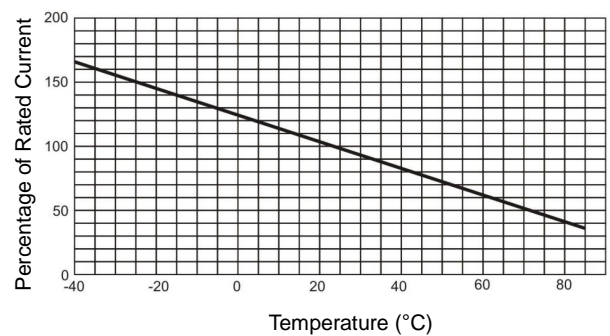
Part Number	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
	Hold Current (A)								
SC135-050	0.078	0.068	0.060	0.05	0.041	0.036	0.032	0.027	0.020
SC135-060	0.093	0.082	0.071	0.06	0.049	0.043	0.038	0.032	0.024
SC135-080	0.124	0.109	0.095	0.08	0.065	0.058	0.050	0.043	0.032
SC135-100	0.155	0.136	0.119	0.10	0.081	0.072	0.063	0.054	0.040
SC135-120	0.186	0.163	0.143	0.12	0.097	0.086	0.076	0.065	0.048
SC135-160	0.248	0.218	0.190	0.16	0.130	0.115	0.101	0.086	0.064
SC135-200	0.31	0.27	0.24	0.20	0.16	0.14	0.13	0.11	0.08
SC135-250	0.39	0.34	0.30	0.25	0.20	0.18	0.16	0.14	0.10
SC135-300	0.47	0.41	0.36	0.30	0.24	0.22	0.20	0.16	0.12
SC135-400	0.62	0.54	0.48	0.40	0.32	0.29	0.25	0.22	0.16
SC135-500	0.78	0.68	0.60	0.50	0.41	0.36	0.32	0.27	0.20
SC135-550	0.85	0.75	0.66	0.55	0.45	0.40	0.35	0.30	0.22
SC135-650	1.01	0.88	0.77	0.65	0.53	0.47	0.41	0.35	0.26
SC135-750	1.16	1.02	0.89	0.75	0.61	0.54	0.47	0.41	0.30
SC135-900	1.40	1.22	1.07	0.90	0.73	0.65	0.57	0.49	0.36
SC135-1000	1.55	1.36	1.19	1.00	0.81	0.72	0.63	0.54	0.40
SC135-1100	1.71	1.50	1.31	1.10	0.89	0.79	0.69	0.59	0.44
SC135-1250	1.94	1.70	1.49	1.25	1.01	0.90	0.79	0.68	0.50
SC135-1350	2.09	1.84	1.61	1.35	1.09	0.97	0.85	0.73	0.54
SC135-1600	2.48	2.18	1.90	1.60	1.30	1.15	1.01	0.86	0.64
SC135-1850	2.87	2.52	2.20	1.85	1.50	1.33	1.17	1.00	0.74
SC135-2000	3.10	2.72	2.38	2.00	1.62	1.44	1.26	1.08	0.80
SC135-2500	3.88	3.40	2.98	2.50	2.03	1.80	1.58	1.35	1.00
SC135-3000	4.65	4.08	3.57	3.00	2.43	2.16	1.89	1.62	1.20
SC135-3500	5.43	4.76	4.17	3.50	2.84	2.52	2.21	1.89	1.40

### Average Time Current Curves



- |             |              |              |
|-------------|--------------|--------------|
| A=SC135-050 | J=SC135-400  | R=SC135-1250 |
| B=SC135-060 | K=SC135-500  | S=SC135-1350 |
| C=SC135-080 | L=SC135-550  | T=SC135-1600 |
| D=SC135-100 | M=SC135-650  | U=SC135-1850 |
| E=SC135-120 | N=SC135-750  | V=SC135-2000 |
| F=SC135-160 | O=SC135-900  | W=SC135-2500 |
| G=SC135-200 | P=SC135-1000 | X=SC135-3000 |
| H=SC135-250 | Q=SC135-1100 | Y=SC135-3500 |
| I=SC135-300 |              |              |

### Temperature Derating Curve



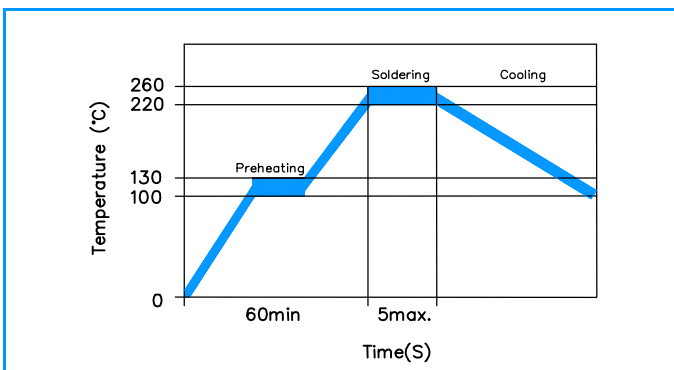
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## SC135 Series

### 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

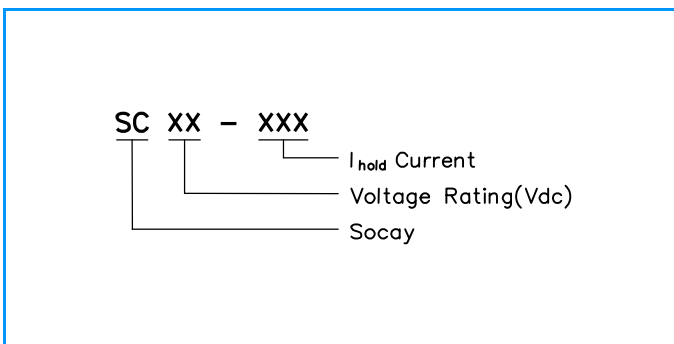


<b>Pre-Heating Zone</b>	Refer to the condition recommended by the manufacturer. Max. ramping rate should not exceed 4°C/Sec
<b>Soldering Zone</b>	Max. solder temperature should not exceed 260°C
<b>Cooling Zone</b>	Cooling by natural convection in air

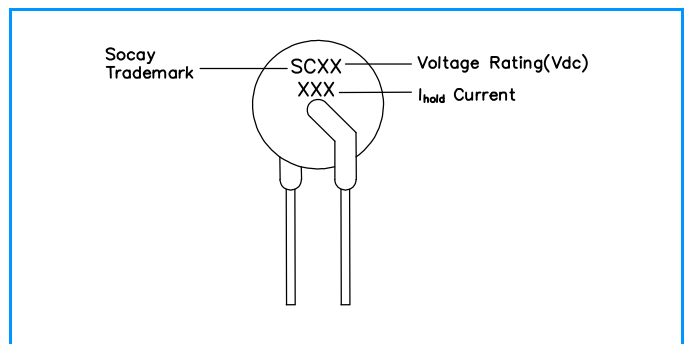
### Physical Specifications

<b>Lead Material</b>	0.05-0.16A Tin-plated Copper clad steel 0.2-3.50A Tin-plated Copper
<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



# Radial Lead Resettable Polymer PTCs

## SC135 Series

### Dimensions

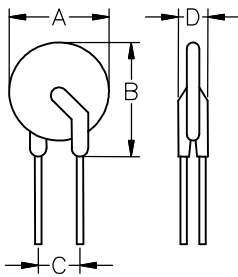


Figure1

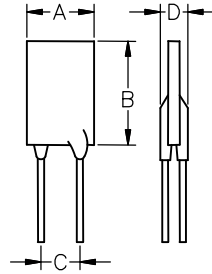


Figure2

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.			
SC135-050	Figure1	0.236	6.0	0.327	8.3	0.200	5.1	0.150	3.8	0.020	0.5	1000
SC135-060	Figure1	0.236	6.0	0.343	8.7	0.200	5.1	0.150	3.8	0.020	0.5	1000
SC135-080	Figure1	0.236	6.0	0.366	9.3	0.200	5.1	0.150	3.8	0.020	0.5	1000
SC135-100	Figure1	0.236	6.0	0.394	10.0	0.200	5.1	0.150	3.8	0.020	0.5	1000
SC135-120	Figure1	0.276	7.0	0.413	10.5	0.200	5.1	0.150	3.8	0.020	0.5	1000
SC135-160	Figure1	0.276	7.0	0.413	10.5	0.200	5.1	0.150	3.8	0.020	0.5	1000
SC135-200	Figure2	0.256	6.5	0.394	10.0	0.200	5.1	0.150	3.8	0.020	0.5	1000
SC135-250	Figure2	0.276	7.0	0.413	10.5	0.200	5.1	0.150	3.8	0.024	0.6	1000
SC135-300	Figure2	0.256	6.5	0.512	13.0	0.200	5.1	0.150	3.8	0.024	0.6	1000
SC135-400	Figure2	0.346	8.8	0.484	12.3	0.200	5.1	0.150	3.8	0.024	0.6	1000
SC135-500	Figure2	0.346	8.8	0.570	14.5	0.200	5.1	0.150	3.8	0.031	0.8	1000
SC135-550	Figure2	0.346	8.8	0.570	14.5	0.200	5.1	0.150	3.8	0.031	0.8	1000
SC135-650	Figure2	0.394	10.0	0.591	15.0	0.200	5.1	0.150	3.8	0.031	0.8	1000
SC135-750	Figure2	0.394	10.0	0.650	16.5	0.200	5.1	0.150	3.8	0.031	0.8	1000
SC135-900	Figure2	0.445	11.3	0.689	17.5	0.200	5.1	0.150	3.8	0.031	0.8	500
SC135-1000	Figure2	0.472	12.0	0.807	20.5	0.200	5.1	0.150	3.8	0.031	0.8	500
SC135-1100	Figure2	0.531	13.5	0.720	18.3	0.200	5.1	0.150	3.8	0.031	0.8	500
SC135-1250	Figure2	0.551	14.0	0.854	21.7	0.200	5.1	0.150	3.8	0.031	0.8	500
SC135-1350	Figure2	0.618	15.7	0.835	21.2	0.200	5.1	0.150	3.8	0.031	0.8	500
SC135-1600	Figure2	0.618	15.7	0.835	21.2	0.200	5.1	0.150	3.8	0.031	0.8	500
SC135-1850	Figure2	0.630	16.0	0.966	24.5	0.400	10.2	0.150	3.8	0.031	0.8	200
SC135-2000	Figure2	0.728	18.5	1.004	25.5	0.400	10.2	0.150	3.8	0.031	0.8	200
SC135-2500	Figure2	0.827	21.0	1.142	29.0	0.400	10.2	0.150	3.8	0.031	0.8	200
SC135-3000	Figure2	0.966	24.5	1.142	29.0	0.400	10.2	0.150	3.8	0.031	0.8	100
SC135-3500	Figure2	0.966	24.5	1.319	33.5	0.400	10.2	0.150	3.8	0.031	0.8	100

### 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.