

## Radial Lead Resettable Polymer PTCs

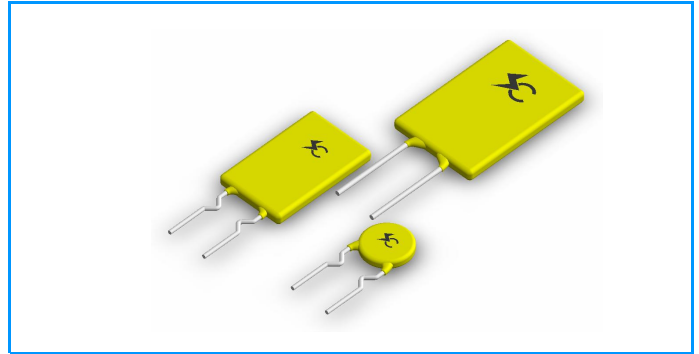
### SC16 Series

#### Description

SC16 series radial leaded PTCs are designed to provide resettable over-current protection serving a wide range of electronics applications. With maximum 16 volts and maximum 100-ampere short circuit rating.

#### Features

- u RoHS compliant, Lead-Free and Halogen-Free
- u Max 100 A short current rating
- u 16V operating voltage
- u Fast time-to-trip



#### Applicable

- u Computers and peripherals
- u Power ports
- u General electronics

#### Electrical Parameters

| Part Number | $I_{hold}$ (A) | $I_{trip}$ (A) | $V_{max}$ (Vdc) | $I_{max}$ (A) | $P_{dtyp.}$ (W) | Maximum Time To Trip |             | Resistance     |                |                 |
|-------------|----------------|----------------|-----------------|---------------|-----------------|----------------------|-------------|----------------|----------------|-----------------|
|             |                |                |                 |               |                 | Current (A)          | Time (Sec.) | $R_{min}$ (mΩ) | $R_{max}$ (mΩ) | $R_{1max}$ (mΩ) |
| SC16-050    | 0.50           | 1.0            | 16              | 40            | 0.45            | 2.50                 | 3.8         | 200            | 450            | 675             |
| SC16-065    | 0.65           | 1.3            | 16              | 40            | 0.50            | 3.25                 | 4.5         | 120            | 270            | 400             |
| SC16-075    | 0.75           | 1.5            | 16              | 40            | 0.55            | 3.75                 | 5.2         | 110            | 230            | 345             |
| SC16-090    | 0.90           | 1.8            | 16              | 40            | 0.60            | 4.50                 | 5.9         | 90             | 180            | 270             |
| SC16-110    | 1.10           | 2.2            | 16              | 40            | 0.70            | 5.50                 | 6.6         | 70             | 140            | 210             |
| SC16-120    | 1.20           | 2.4            | 16              | 40            | 0.75            | 6.00                 | 7.0         | 70             | 140            | 210             |
| SC16-135    | 1.35           | 2.7            | 16              | 40            | 0.80            | 6.75                 | 7.3         | 55             | 110            | 150             |
| SC16-160    | 1.60           | 3.2            | 16              | 40            | 0.90            | 8.00                 | 8.0         | 45             | 90             | 115             |
| SC16-185    | 1.85           | 3.7            | 16              | 40            | 1.0             | 9.25                 | 8.7         | 40             | 80             | 100             |
| SC16-250    | 2.50           | 5.0            | 16              | 40            | 1.2             | 12.5                 | 10.3        | 27             | 55             | 70              |
| SC16-200    | 2.00           | 3.4            | 16              | 40            | 2.0             | 10.0                 | 1.0         | 45             | 110            | 150             |
| SC16-300    | 3.00           | 5.1            | 16              | 100           | 2.3             | 15.0                 | 1.0         | 27             | 64.5           | 97.5            |
| SC16-400    | 4.00           | 6.8            | 16              | 100           | 2.4             | 20.0                 | 1.7         | 20             | 44.0           | 60.0            |
| SC16-500    | 5.00           | 8.5            | 16              | 100           | 2.6             | 25.0                 | 2.0         | 14             | 28.0           | 34.0            |
| SC16-600    | 6.00           | 10.2           | 16              | 100           | 2.8             | 30.0                 | 3.3         | 10             | 22.0           | 28.0            |
| SC16-700    | 7.00           | 11.9           | 16              | 100           | 3.0             | 35.0                 | 3.5         | 7.7            | 17.0           | 20.0            |
| SC16-800    | 8.00           | 13.6           | 16              | 100           | 3.3             | 40.0                 | 5.0         | 5.6            | 14.5           | 17.5            |
| SC16-900    | 9.00           | 15.3           | 16              | 100           | 3.3             | 45.0                 | 5.5         | 4.7            | 11.0           | 13.5            |
| SC16-1000   | 10.0           | 17.0           | 16              | 100           | 3.6             | 50.0                 | 6.0         | 4.0            | 10.0           | 12.5            |
| SC16-1100   | 11.0           | 18.7           | 16              | 100           | 3.7             | 55.0                 | 7.0         | 3.7            | 9.0            | 11.0            |
| SC16-1200   | 12.0           | 20.4           | 16              | 100           | 4.2             | 60.0                 | 7.5         | 3.3            | 8.0            | 10.0            |
| SC16-1400   | 14.0           | 23.8           | 16              | 100           | 4.6             | 70.0                 | 9.0         | 2.6            | 6.0            | 7.5             |

$I_{hold}$  = Hold current: maximum current device will pass without tripping in 25°C still air.

$I_{trip}$  = Trip current: minimum current at which the device will trip in 25°C still air.

$V_{max}$  = Maximum voltage device can withstand without damage at rated current ( $I_{max}$ )

$I_{max}$  = Maximum fault current device can withstand without damage at rated voltage ( $V_{max}$ )

$P_{dtyp.}$  = Power dissipated from device when in the tripped state at 25°C still air.

$R_{min}$  = Minimum resistance of device in initial (un-soldered) state.

$R_{max}$  = Maximum resistance of device in initial (un-soldered) state.

$R_{1max}$  = 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.

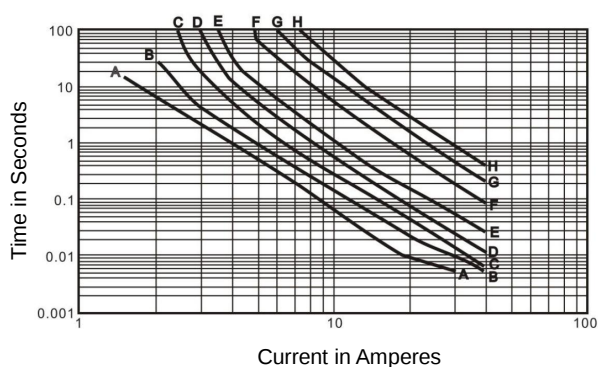
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## SC16 Series

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

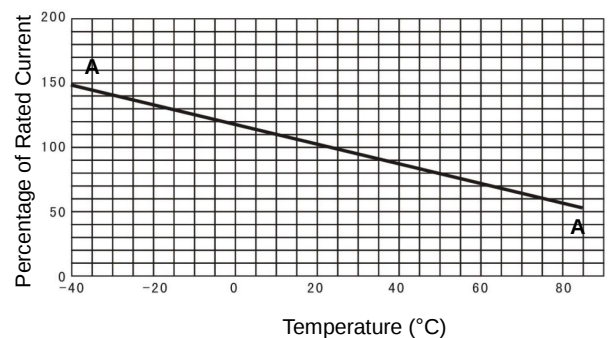
| Part Number | Ambient Operation Temperature |       |      |      |      |      |      |      |      |
|-------------|-------------------------------|-------|------|------|------|------|------|------|------|
|             | -40°C                         | -20°C | 0°C  | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
|             | Hold Current (A)              |       |      |      |      |      |      |      |      |
| SC16-050    | 0.73                          | 0.65  | 0.58 | 0.50 | 0.42 | 0.39 | 0.34 | 0.31 | 0.26 |
| SC16-065    | 0.94                          | 0.85  | 0.75 | 0.65 | 0.54 | 0.50 | 0.44 | 0.40 | 0.34 |
| SC16-075    | 1.09                          | 0.98  | 0.86 | 0.75 | 0.62 | 0.58 | 0.51 | 0.46 | 0.39 |
| SC16-090    | 1.31                          | 1.17  | 1.04 | 0.90 | 0.75 | 0.69 | 0.61 | 0.55 | 0.47 |
| SC16-110    | 1.60                          | 1.43  | 1.27 | 1.10 | 0.91 | 0.85 | 0.75 | 0.67 | 0.57 |
| SC16-120    | 1.74                          | 1.56  | 1.38 | 1.20 | 1.00 | 0.92 | 0.82 | 0.73 | 0.62 |
| SC16-135    | 1.96                          | 1.76  | 1.55 | 1.35 | 1.12 | 1.04 | 0.92 | 0.82 | 0.70 |
| SC16-160    | 2.32                          | 2.08  | 1.84 | 1.60 | 1.33 | 1.23 | 1.09 | 0.98 | 0.83 |
| SC16-185    | 2.68                          | 2.41  | 2.13 | 1.85 | 1.54 | 1.42 | 1.26 | 1.13 | 0.96 |
| SC16-250    | 3.53                          | 3.25  | 2.88 | 2.50 | 2.08 | 1.93 | 1.70 | 1.53 | 1.30 |
| SC16-200    | 2.94                          | 2.66  | 2.40 | 2.00 | 1.74 | 1.60 | 1.40 | 1.26 | 0.94 |
| SC16-300    | 4.40                          | 4.00  | 3.60 | 3.00 | 2.60 | 2.40 | 2.10 | 1.90 | 1.40 |
| SC16-400    | 5.90                          | 5.30  | 4.80 | 4.00 | 3.50 | 3.20 | 2.80 | 2.50 | 1.90 |
| SC16-500    | 7.30                          | 6.60  | 6.00 | 5.00 | 4.40 | 4.00 | 3.60 | 3.10 | 2.40 |
| SC16-600    | 8.80                          | 8.00  | 7.20 | 6.00 | 5.20 | 4.80 | 4.20 | 3.80 | 2.80 |
| SC16-700    | 10.3                          | 9.30  | 8.40 | 7.00 | 6.20 | 5.60 | 5.00 | 4.40 | 3.30 |
| SC16-800    | 11.7                          | 10.7  | 9.60 | 8.00 | 6.90 | 6.40 | 5.60 | 5.10 | 3.70 |
| SC16-900    | 13.2                          | 11.9  | 10.7 | 9.00 | 7.90 | 7.20 | 6.40 | 5.60 | 4.20 |
| SC16-1000   | 14.7                          | 13.3  | 12.0 | 10.0 | 8.70 | 8.00 | 7.00 | 6.30 | 4.70 |
| SC16-1100   | 16.1                          | 14.6  | 13.1 | 11.0 | 9.70 | 8.80 | 7.80 | 6.90 | 5.20 |
| SC16-1200   | 17.6                          | 16.0  | 14.4 | 12.0 | 10.4 | 9.60 | 8.40 | 7.60 | 5.60 |
| SC16-1400   | 20.5                          | 18.7  | 16.8 | 14.0 | 12.1 | 11.2 | 9.80 | 8.90 | 6.50 |

### Average Time Current Curves



A=SC16-075      E=SC16-135  
 B=SC16-090      F=SC16-160  
 C=SC16-110      G=SC16-185  
 D=SC16-120      H=SC16-250

### Temperature Derating Curve

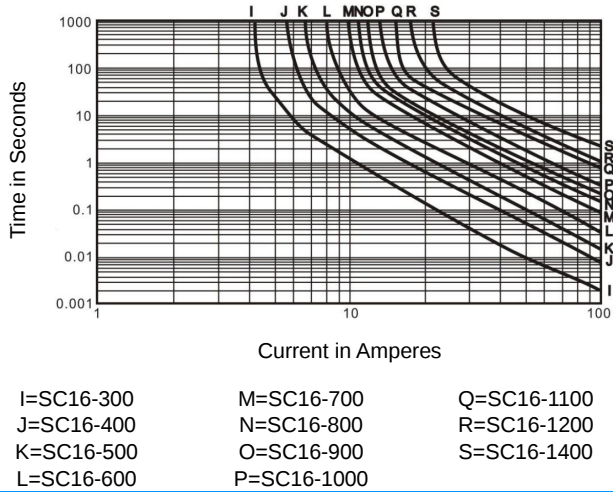


A=SC16-050~ SC16-250

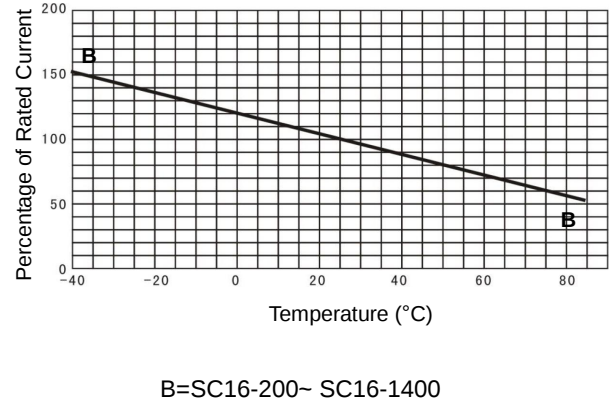
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### Average Time Current Curves



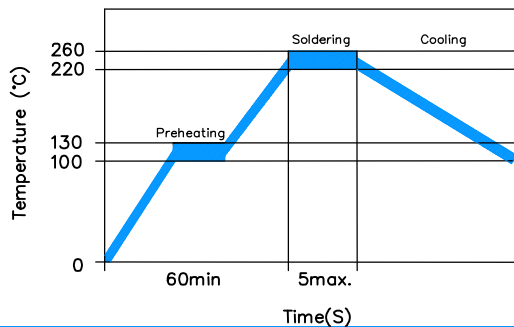
### Temperature Rerating Curve



### 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       | $T \leq \text{Maximum Time To Trip}$ |
| Trip Cycle Life | $V_{max}$ , $I_{max}$ , 100 cycles           | No arcing or burning                 |
| Trip Endurance  | $V_{max}$ , 24hours                          | No arcing or burning                 |

### Soldering Parameters



#### Pre-Heating Zone

Refer to the condition recommended by the manufacturer. Max. ramping rate should not exceed 4°C/Sec

#### Soldering Zone

Max. solder temperature should not exceed 260°C

#### Cooling Zone

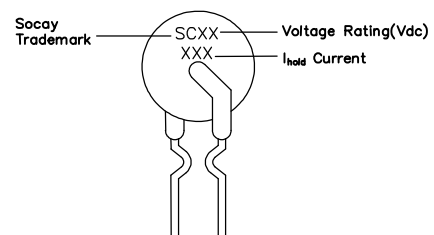
Cooling by natural convection in air

### Part Numbering

SC XX - XXX

SC: Socay  
XX: Voltage Rating(Vdc)  
XXX:  $I_{hold}$  Current

### Part Marking



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### Physical Specifications

|                                  |                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------|
| <b>Lead Material</b>             | 0.5-1.85A and 2.5ATin-plated Copper clad steel<br>2.0A and 3-14A 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                                          |

### Dimensions

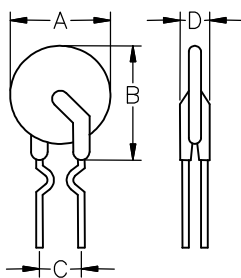


Figure1

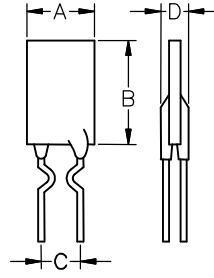


Figure2

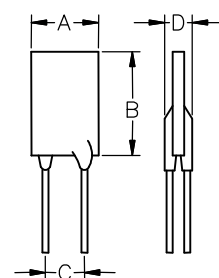


Figure3

| 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. |            |     |                       |
| SC16-050    | Figure1 | 0.236  | 6.0  | 0.445  | 11.3 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-065    | Figure1 | 0.236  | 6.0  | 0.472  | 12.0 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-075    | Figure1 | 0.276  | 7.0  | 0.472  | 12.0 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-090    | Figure1 | 0.256  | 6.5  | 0.453  | 11.5 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-110    | Figure2 | 0.276  | 7.0  | 0.472  | 12.0 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-120    | Figure2 | 0.283  | 7.2  | 0.480  | 12.2 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-135    | Figure2 | 0.256  | 6.5  | 0.570  | 14.5 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-160    | Figure2 | 0.346  | 8.8  | 0.543  | 13.8 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-185    | Figure2 | 0.346  | 8.8  | 0.610  | 15.5 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-250    | Figure2 | 0.394  | 10.0 | 0.630  | 16.0 | 0.200  | 5.1  | 0.118  | 3.0  | 0.020      | 0.5 | 1000                  |
| SC16-200    | Figure3 | 0.256  | 6.5  | 0.492  | 12.5 | 0.200  | 5.1  | 0.118  | 3.0  | 0.024      | 0.6 | 1000                  |
| SC16-300    | Figure3 | 0.346  | 8.8  | 0.465  | 11.8 | 0.200  | 5.1  | 0.118  | 3.0  | 0.031      | 0.8 | 1000                  |
| SC16-400    | Figure3 | 0.346  | 8.8  | 0.531  | 13.5 | 0.200  | 5.1  | 0.118  | 3.0  | 0.031      | 0.8 | 1000                  |
| SC16-500    | Figure3 | 0.394  | 10.0 | 0.630  | 16.0 | 0.200  | 5.1  | 0.118  | 3.0  | 0.031      | 0.8 | 1000                  |
| SC16-600    | Figure3 | 0.445  | 11.3 | 0.669  | 17.0 | 0.200  | 5.1  | 0.118  | 3.0  | 0.031      | 0.8 | 1000                  |
| SC16-700    | Figure3 | 0.472  | 12.0 | 0.787  | 20.0 | 0.200  | 5.1  | 0.118  | 3.0  | 0.031      | 0.8 | 500                   |
| SC16-800    | Figure3 | 0.551  | 14.0 | 0.835  | 21.2 | 0.200  | 5.1  | 0.118  | 3.0  | 0.031      | 0.8 | 500                   |
| SC16-900    | Figure3 | 0.618  | 15.7 | 0.815  | 20.7 | 0.200  | 5.1  | 0.118  | 3.0  | 0.031      | 0.8 | 500                   |
| SC16-1000   | Figure3 | 0.728  | 18.5 | 0.965  | 24.5 | 0.400  | 10.2 | 0.118  | 3.0  | 0.031      | 0.8 | 200                   |
| SC16-1100   | Figure3 | 0.728  | 18.5 | 0.966  | 24.5 | 0.400  | 10.2 | 0.118  | 3.0  | 0.031      | 0.8 | 200                   |
| SC16-1200   | Figure3 | 0.728  | 18.5 | 1.102  | 28.0 | 0.400  | 10.2 | 0.118  | 3.0  | 0.031      | 0.8 | 200                   |
| SC16-1400   | Figure3 | 0.965  | 24.5 | 1.102  | 28.0 | 0.400  | 10.2 | 0.118  | 3.0  | 0.031      | 0.8 | 200                   |

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#### 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.