

# Surface Mount Resettable PTCs

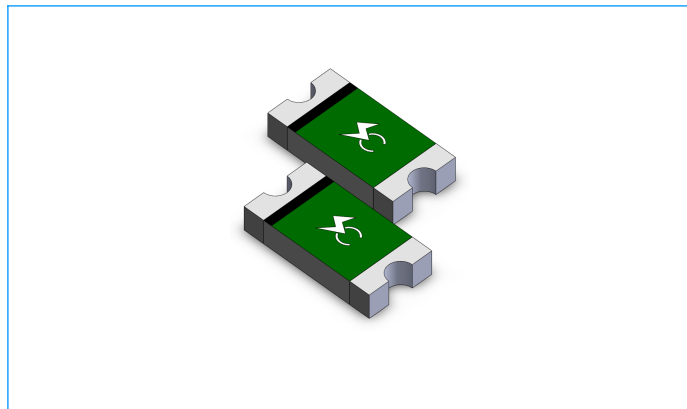
## SCF1206 Series

### Description

The SCF1206 Series PTC provides surface mount over-current protection for applications where space is at a premium and resettable protection is desired.

### Features

- u RoHS compliant, Lead-Free and Halogen-Free
- u Fast time-to-trip
- u Compact design saves board space
- u Low resistance
- u Low-profile



### Applications

- u PC motherboard - plug and play protection
- u Mobile phones - battery and port protection
- u Game console port protection
- u USB peripherals
- u Disk drive
- u PDAS / digital cameras
- u Power ports
- u General electronics

### Electrical Parameters

| Part Number     | Hold Current   | Trip Current   | Rated Voltage   | Max Current   | Typical Power   | Maximum Time To Trip |             | Resistance             |                         |
|-----------------|----------------|----------------|-----------------|---------------|-----------------|----------------------|-------------|------------------------|-------------------------|
|                 | $I_{hold}$ (A) | $I_{trip}$ (A) | $V_{max}$ (Vdc) | $I_{max}$ (A) | $P_{dtyp.}$ (W) | Current (A)          | Time (Sec.) | $R_{min}$ ( $\Omega$ ) | $R_{1max}$ ( $\Omega$ ) |
| SCF005-1206R    | 0.05           | 0.15           | 60              | 100           | 0.4             | 0.25                 | 1.50        | 3.600                  | 50.000                  |
| SCF010-1206R    | 0.10           | 0.25           | 60              | 100           | 0.4             | 0.50                 | 1.00        | 1.600                  | 15.000                  |
| SCF012-1206R    | 0.12           | 0.39           | 48              | 100           | 0.6             | 1.00                 | 0.20        | 1.400                  | 6.500                   |
| SCF016-1206R    | 0.16           | 0.45           | 48              | 100           | 0.6             | 1.00                 | 0.30        | 1.100                  | 5.000                   |
| SCF020-1206R    | 0.20           | 0.40           | 30              | 100           | 0.4             | 8.00                 | 0.10        | 0.600                  | 2.500                   |
| SCF025-1206R    | 0.25           | 0.50           | 16              | 100           | 0.6             | 8.00                 | 0.08        | 0.550                  | 2.300                   |
| SCF025-24-1206R | 0.25           | 0.50           | 24              | 100           | 0.6             | 8.00                 | 0.08        | 0.550                  | 2.300                   |
| SCF035-1206R    | 0.35           | 0.75           | 16              | 100           | 0.4             | 8.00                 | 0.10        | 0.300                  | 1.200                   |
| SCF035-30-1206R | 0.35           | 0.75           | 30              | 100           | 0.6             | 8.00                 | 0.10        | 0.300                  | 1.200                   |
| SCF050-1206R    | 0.50           | 1.00           | 8               | 100           | 0.4             | 8.00                 | 0.10        | 0.150                  | 0.700                   |
| SCF050-24-1206R | 0.50           | 1.00           | 24              | 100           | 0.6             | 8.00                 | 0.10        | 0.150                  | 0.750                   |
| SCF075-1206R    | 0.75           | 1.50           | 8               | 100           | 0.6             | 8.00                 | 0.20        | 0.090                  | 0.290                   |
| SCF075-16-1206R | 0.75           | 1.50           | 16              | 100           | 0.6             | 8.00                 | 0.20        | 0.090                  | 0.290                   |
| SCF100-1206R    | 1.00           | 1.80           | 6               | 100           | 0.6             | 8.00                 | 0.30        | 0.055                  | 0.210                   |
| SCF110-1206R    | 1.10           | 2.20           | 8               | 100           | 0.8             | 8.00                 | 0.30        | 0.040                  | 0.180                   |
| SCF150-1206R    | 1.50           | 3.00           | 8               | 100           | 0.8             | 8.00                 | 1.00        | 0.040                  | 0.120                   |
| SCF200-1206R    | 2.00           | 3.50           | 6               | 100           | 0.8             | 8.00                 | 1.50        | 0.018                  | 0.080                   |

$I_{hold}$ = Hold current: maximum current device will pass without tripping in 23°C still air.

$I_{trip}$ = Trip current: minimum current at which the device will trip in 23°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 23°C still air.

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

$R_{1max}$ = Maximum resistance of device at 23°C measured one hour after tripping.

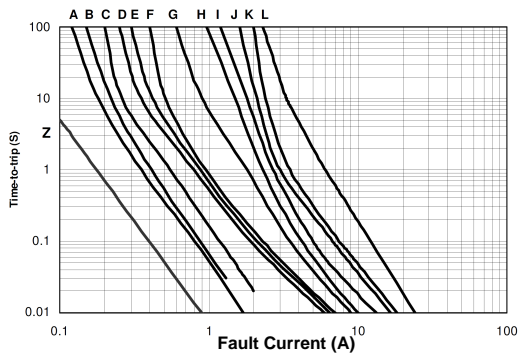
Caution: Operation beyond the specified rating may result in damage and possible arcing and flame.

# Surface Mount Resettable PTCs

## SCF1206 Series

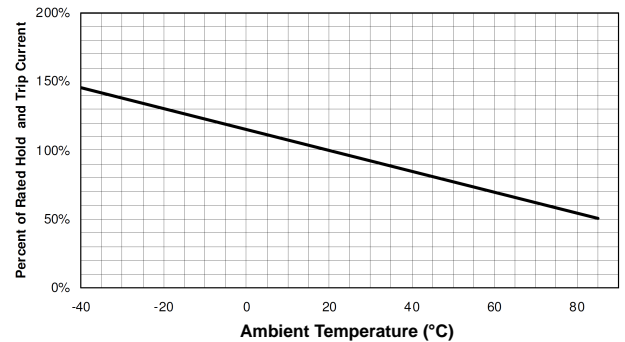
### Temperature Derating Chart – $I_{hold}$ (A)

#### Average Time Current Curves



Z= SCF005-1206R      F= SCF035-1206R      J= SCF110-1206R  
 A= SCF010-1206R      /SCF035-60-1206R      K= SCF150-1206R  
 B= SCF012-1206R      G= SCF050-1206R      L= SCF200-1206R  
 C= SCF020-1206R      /SCF050-24-1206R  
 D= SCF025-1206R      H= SCF075-1206R  
 E= SCF025-1206R      /SCF075-16-1206R  
     /SCF025-24-1206R      I= SCF100-1206R

#### Temperature Derating Curve



### Material Specifications

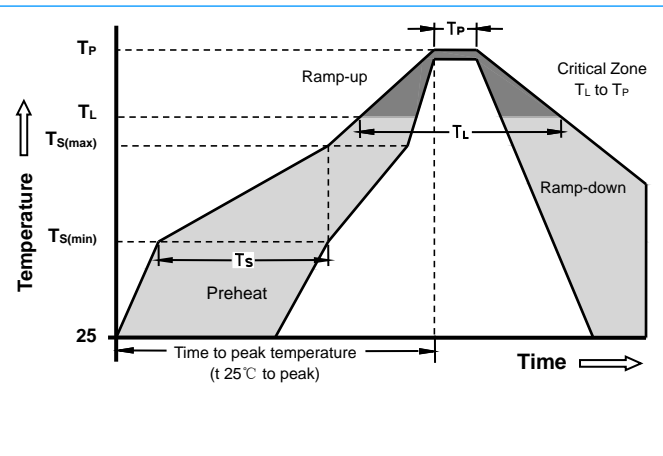
**Terminal pad material**

Pure Tin

**Soldering Characteristics**

Meets EIA specification RS 186-9E, ANSI/J-std-002 Category 3

### Soldering Parameters



| Profile Feature  | Pb-Free Assembly |
|--|------------------|
| <b>Average Ramp-Up Rate (<math>T_s</math> max to <math>T_P</math>)</b> | 3°C/second max.  |
| <b>Preheat :</b>   |                  |
| <b>Temperature Min (<math>T_{Smin}</math>)</b>                         | 150°C            |
| <b>Temperature Max (<math>T_{Smax}</math>)</b>                         | 200°C            |
| <b>Time (<math>T_{Smin}</math> to <math>T_{Smax}</math>)</b>           | 60-180 seconds   |
| <b>Time maintained above:</b>  |                  |
| <b>Temperature(<math>T_L</math>)</b>                                   | 217°C            |
| <b>Time (<math>T_L</math>)</b>   | 60-150 seconds   |
| <b>Peak/Classification Temperature(<math>T_P</math>):</b>              | 260°C            |
| <b>Time within 5°C of actual peak:</b>                                 |                  |
| <b>Temperature</b>   | 20-40 seconds    |
| <b>Ramp-down Rate:</b>   | 6°C/ second max. |
| <b>Time 25°C to Peak Temperature</b>                                   | 8 minutes max.   |

Note: All temperatures refer to of the package, measured on the package body surface.

#### Solder reflow

Due to "Lead Free" nature, Temperature and Dwelling time for the soldering zone is higher than those for Regular. This may cause damage to other components.

1. Recommended max past thickness > 0.25mm.
2. Devices can be cleaned using standard methods and aqueous solvent.
3. Rework use standard industry practices.
4. Storage Environment : < 30°C/ 60%RH

#### Caution:

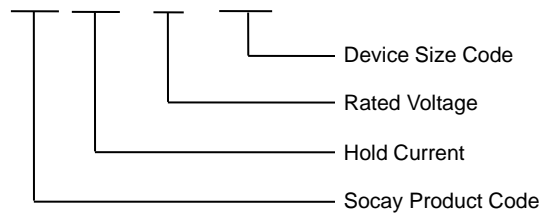
1. If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
2. Devices are not designed to be wave soldered to the bottom side of the board.

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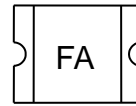
## SCF1206 Series

### Part Numbering

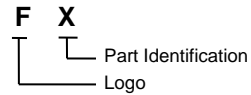
**SCF XXX – XX – 1206R**



### Part Marking



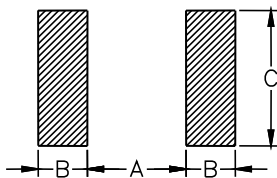
Example



- FZ= SCF005-1206R
- FA= SCF010-1206R
- FJ= SCF012-1206R
- FK= SCF016-1206R
- FB= SCF020-1206R
- FL= SCF025-1206R
- FP= SCF025-24-1206R
- FC= SCF035-1206R
- FM= SCF035-30-1206R
- FD= SCF050-1206R
- FN= SCF050-24-1206R
- FE= SCF075-1206R
- FO= SCF075-16-1206R
- FF= SCF100-1206R
- FG= SCF110-1206R
- FH= SCF150-1206R
- FI = SCF200-1206R

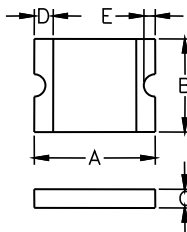
### Pad Layouts Unit: mm

The dimension in the table below provide the recommended pad layout for each SCF1206 device



| Device      | A       | B       | C       |
|-------------|---------|---------|---------|
|             | Nominal | Nominal | Nominal |
| 1206 Series | 2.00    | 1.00    | 1.90    |

### Dimensions Unit: mm



| Part Number     | A    |      | B    |      | C    |      | D    |      | E    |      |
|-----------------|------|------|------|------|------|------|------|------|------|------|
|                 | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| SCF005-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF010-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF012-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.85 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF016-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF020-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF025-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF025-24-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF035-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.30 | 0.75 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF035-30-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.90 | 1.30 | 0.25 | 0.75 | 0.10 | 0.45 |
| SCF050-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.25 | 0.55 | 0.10 | 0.75 | 0.10 | 0.45 |
| SCF050-24-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.80 | 1.20 | 0.25 | 0.75 | 0.10 | 0.45 |
| SCF075-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.25 | 0.25 | 0.75 | 0.10 | 0.45 |
| SCF075-16-1206R | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.25 | 0.25 | 0.75 | 0.10 | 0.45 |
| SCF100-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| SCF110-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.45 | 1.00 | 0.25 | 0.75 | 0.10 | 0.45 |
| SCF150-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.80 | 1.40 | 0.25 | 0.75 | 0.10 | 0.45 |
| SCF200-1206R    | 3.00 | 3.50 | 1.50 | 1.80 | 0.85 | 1.60 | 0.25 | 0.75 | 0.10 | 0.45 |

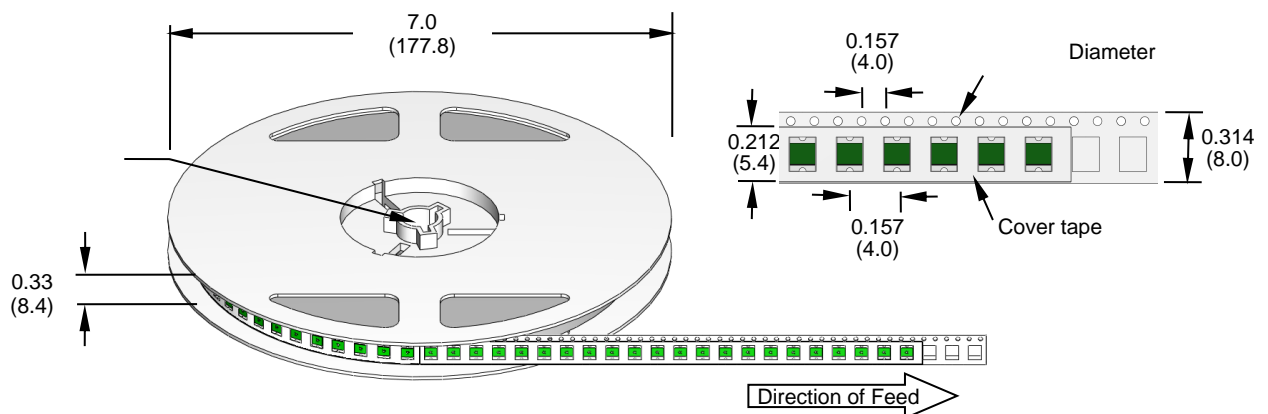
## Surface Mount Resettable PTCs

### SCF1206 Series

#### Packaging

| Part Number     | Packaging Option        | Quantity |
|-----------------|-------------------------|----------|
| SCF005-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF010-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF012-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF016-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF020-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF025-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF025-24-1206R | Tape & Reel -8mm/7"tape | 3000     |
| SCF035-1206R    | Tape & Reel -8mm/7"tape | 4000     |
| SCF035-30-1206R | Tape & Reel -8mm/7"tape | 3000     |
| SCF050-1206R    | Tape & Reel -8mm/7"tape | 4000     |
| SCF050-24-1206R | Tape & Reel -8mm/7"tape | 3000     |
| SCF075-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF075-16-1206R | Tape & Reel -8mm/7"tape | 3000     |
| SCF100-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF110-1206R    | Tape & Reel -8mm/7"tape | 3000     |
| SCF150-1206R    | Tape & Reel -8mm/7"tape | 2000     |
| SCF200-1206R    | Tape & Reel -8mm/7"tape | 2000     |

#### Tape and Reel Specifications



#### Warning



- ⊍ Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.
- ⊍ PPTC device are intended for occasional over-current protection. Application for repeated over-current condition and/or prolonged trip are not anticipated.
- ⊍ Avoid contact of PPTC device with chemical solvent. Prolonged contact will damage the device performance.