

## Description

Positive Thermal Coefficient devices(PTC),provide over-current protection for electrical and electronic devices. They function using conducting strips of metal imbedded inside polymers. Under normal conditions, the devices resistance is near zero, but over-current conditions will heat the PTC and expand the polymer, increasing the impedance. When current returns to normal, the components cool down, returning to their original shape and very low levels of resistance.



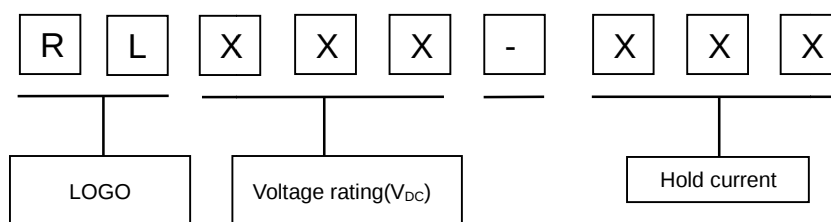
## Features

- I I(hold): 0.5~9.0A
- I 30V Operating voltages
- I Radial leaded devices.
- I Over-current protection
- I Very high voltage surge capabilities.
- I Available in lead-free version.
- I Fast time-to-trip
- I RoHS compliant, Lead- Free and Halogen-Free

## Applications

- I Over-current and over-temperature protection of automotive electronics
- I Hard disk drives
- I Point-of-sale (POS) equipment
- I PCMCIA cards
- I Power over Ethernet (POE)
- I HDMI 1.4 Source protection
- I Computers & peripherals
- I Industrial control
- I Security systems

## Part Number Code



## Environmental Specifications

| Test                  | Conditions              | Resistance change |
|-----------------------|-------------------------|-------------------|
| Passive aging         | +85℃,1000hrs            | ±8% typical       |
| Humidity aging        | +85℃, 85%R.H.1000hrs    | ±8% typical       |
| Thermal shock         | +125℃ to -55℃, 10times  | ±12% typical      |
| Resistance to solvent | MIL-STD-202, Method 215 | No change         |
| Vibration             | MIL-STD-202, Method 201 | No change         |



**Electrical Characteristic**

| Model    | $I_{hold}$<br>(A) | $I_T$<br>(A) | $V_{max}$<br>(V) | Maximum Time to Trip |         | $I_{max}$<br>(A) | $P_{d\ typ}$<br>(W) | Resistance( $\Omega$ ) |              |
|----------|-------------------|--------------|------------------|----------------------|---------|------------------|---------------------|------------------------|--------------|
|          |                   |              |                  | Current(A)           | Time(S) |                  |                     | $R_{i\ min}$           | $R_{1\ max}$ |
| RL30-050 | 0.50              | 1.0          | 30               | 2.5                  | 4.1     | 40               | 0.5                 | 0.25                   | 0.25~1.20    |
| RL30-070 | 0.70              | 1.4          | 30               | 3.50                 | 4.3     | 40               | 0.6                 | 0.14                   | 0.35         |
| RL30-075 | 0.75              | 1.5          | 30               | 3.75                 | 5.2     | 40               | 0.6                 | 0.12                   | 0.42         |
| RL30-090 | 0.90              | 1.8          | 30               | 4.5                  | 5.9     | 40               | 0.6                 | 0.07                   | 0.30         |
| RL30-110 | 1.10              | 2.2          | 30               | 5.5                  | 6.6     | 40               | 0.7                 | 0.05                   | 0.26         |
| RL30-120 | 1.20              | 2.4          | 30               | 6.0                  | 8.0     | 40               | 0.8                 | 0.08                   | 0.20         |
| RL30-135 | 1.35              | 2.7          | 30               | 6.75                 | 7.3     | 40               | 0.8                 | 0.04                   | 0.22         |
| RL30-160 | 1.60              | 3.2          | 30               | 8.0                  | 8.0     | 40               | 0.9                 | 0.03                   | 0.18         |
| RL30-185 | 1.85              | 3.7          | 30               | 9.25                 | 8.7     | 40               | 1.0                 | 0.03                   | 0.15         |
| RL30-200 | 2.00              | 4.0          | 30               | 10.0                 | 11      | 40               | 1.0                 | 0.03                   | 0.13         |
| RL30-250 | 2.50              | 5.0          | 30               | 12.5                 | 10.3    | 40               | 1.2                 | 0.02                   | 0.10         |
| RL30-300 | 3.00              | 6.0          | 30               | 15.0                 | 10.8    | 40               | 2.0                 | 0.02                   | 0.10         |
| RL30-400 | 4.00              | 8.0          | 30               | 20.0                 | 12.7    | 40               | 2.5                 | 0.01                   | 0.09         |
| RL30-500 | 5.00              | 10.0         | 30               | 25.0                 | 14.5    | 40               | 3.0                 | 0.01                   | 0.08         |
| RL30-600 | 6.00              | 12.0         | 30               | 30.0                 | 16      | 40               | 3.5                 | 0.005                  | 0.06         |
| RL30-700 | 7.00              | 14.0         | 30               | 35.0                 | 17.5    | 40               | 3.8                 | 0.005                  | 0.05         |
| RL30-800 | 8.00              | 16.0         | 30               | 40.0                 | 18.8    | 40               | 4.0                 | 0.005                  | 0.18         |
| RL30-900 | 9.00              | 18.0         | 30               | 45.0                 | 20      | 40               | 4.2                 | 0.005                  | 0.025        |

$I_H$ =Hold current: maximum current at which the device will not trip at 25°C still air.

$I_T$ =Trip current: minimum current at which the device will nalways at 25°C still air.

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

$I_{max}$ =Maximum fault current device can withstand tithout damage at rated voltage.

$T_{trip}$ =Maximum time to trip(s) at assigned current.

$P_d$ =Typical power dissipation: typical amount of power dissipated by the decice when in state air environment.

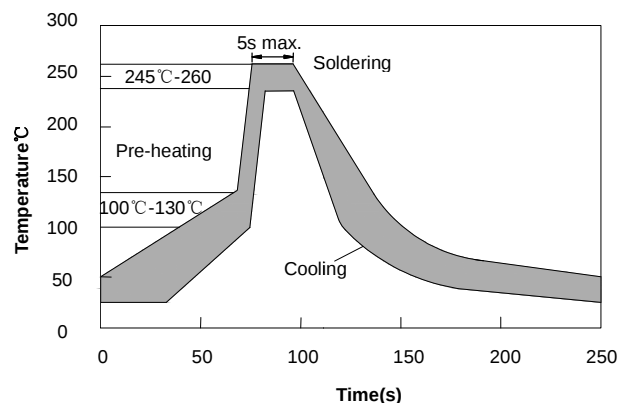
$R_{i\ min}$ =Minimum device resistance at 25°C prior to tripping.

$R_{1\ max}$ =Maximum device resistance is measured one hour post reflow.



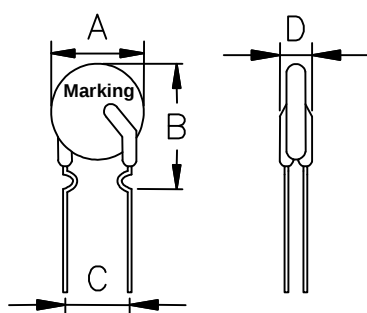
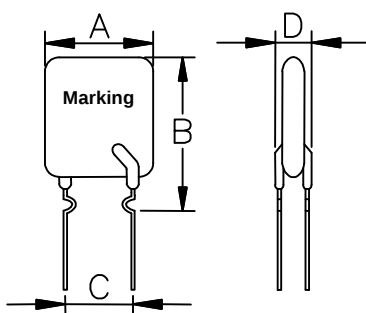
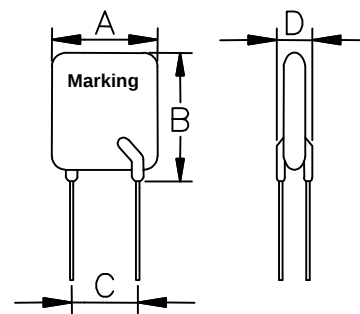
**Solder reflow conditions**

|                                                                |
|----------------------------------------------------------------|
| <b>Wave Soldering</b>                                          |
| Soldering Temperature: 260°C~270°C                             |
| Soldering Time: ≤3sec.                                         |
| Soldering Position: Resettable fuse wire and the bottom ≥ 6mm。 |
| <b>Manual soldering</b>                                        |
| Soldering Temperature: 250°C~280°C                             |
| Soldering Time: ≤3sec.                                         |
| Soldering Position: Resettable fuse wire and the bottom ≥ 6mm。 |


**I<sub>hold</sub> Versus Temperature**

| Part Number | Ambient Operation Temperature |        |      |       |       |       |       |       |       |
|-------------|-------------------------------|--------|------|-------|-------|-------|-------|-------|-------|
|             | -40 °C                        | -20 °C | 0 °C | 25 °C | 40 °C | 50 °C | 60 °C | 70 °C | 85 °C |
| RL30-050    | 0.73                          | 0.65   | 0.58 | 0.50  | 0.42  | 0.38  | 0.34  | 0.31  | 0.26  |
| RL30-070    | 1.01                          | 0.95   | 0.84 | 0.70  | 0.63  | 0.58  | 0.50  | 0.47  | 0.38  |
| RL30-075    | 1.10                          | 1.13   | 0.93 | 0.75  | 0.69  | 0.63  | 0.54  | 0.51  | 0.42  |
| RL30-090    | 1.31                          | 1.17   | 1.04 | 0.90  | 0.75  | 0.69  | 0.61  | 0.55  | 0.47  |
| RL30-110    | 1.60                          | 1.43   | 1.27 | 1.10  | 0.91  | 0.85  | 0.75  | 0.67  | 0.57  |
| RL30-120    |                               |        |      |       |       |       |       |       |       |
| RL30-135    | 1.96                          | 1.76   | 1.55 | 1.35  | 1.12  | 1.04  | 0.92  | 0.82  | 0.70  |
| RL30-160    | 2.32                          | 2.08   | 1.84 | 1.60  | 1.33  | 1.23  | 1.09  | 0.98  | 0.83  |
| RL30-185    | 2.68                          | 2.41   | 2.13 | 1.85  | 1.54  | 1.42  | 1.26  | 1.13  | 0.96  |
| RL30-200    | 3.13                          | 2.80   | 2.35 | 2.00  | 1.82  | 1.66  | 1.45  | 1.33  | 1.01  |
| RL30-250    | 3.63                          | 3.25   | 2.88 | 2.50  | 2.08  | 1.93  | 1.54  | 1.53  | 1.30  |
| RL30-300    | 4.35                          | 3.90   | 3.45 | 3.00  | 2.49  | 2.31  | 2.04  | 1.83  | 1.56  |
| RL30-400    | 5.80                          | 5.20   | 4.60 | 4.00  | 3.32  | 3.08  | 2.72  | 2.44  | 2.08  |
| RL30-500    | 7.25                          | 6.50   | 5.75 | 5.00  | 4.15  | 3.85  | 3.40  | 3.05  | 2.60  |
| RL30-600    | 8.70                          | 7.80   | 6.90 | 6.00  | 4.98  | 4.62  | 4.08  | 3.66  | 3.12  |
| RL30-700    | 10.15                         | 9.10   | 8.05 | 7.00  | 5.81  | 5.39  | 4.76  | 4.27  | 3.64  |
| RL30-800    | 11.60                         | 10.40  | 9.20 | 8.00  | 6.64  |       |       |       |       |
| RL30-900    |                               |        |      |       |       |       |       |       |       |



**Product Dimensions**

**fig.1**

**fig.2**

**fig.3**

| Type Number | Dimensions (mm) |        |        |        |                   | Dimensions (in) |        |        |        |                   | Shape |  |
|-------------|-----------------|--------|--------|--------|-------------------|-----------------|--------|--------|--------|-------------------|-------|--|
|             | A(max)          | B(max) | C(typ) | D(max) | Lead $\Phi$ (typ) | A(max)          | B(max) | C(typ) | D(max) | Lead $\Phi$ (typ) | Fig   |  |
| RL30-050    | 8.0             | 14.0   | 5.1    | 3.1    | 0.5               | 0.315           | 0.551  | 0.201  | 0.122  | 0.02              | 1     |  |
| RL30-070    | 7.4             | 14.2   | 5.1    | 3      | 0.5               | 0.291           | 0.559  | 0.201  | 0.118  | 0.02              | 2     |  |
| RL30-075    | 7.4             | 14.2   | 5.1    | 3      | 0.5               | 0.291           | 0.559  | 0.201  | 0.118  | 0.02              | 2     |  |
| RL30-090    | 7.4             | 18.5   | 5.1    | 3      | 0.5               | 0.291           | 0.728  | 0.201  | 0.118  | 0.02              | 2     |  |
| RL30-110    | 7.4             | 18.5   | 5.1    | 3      | 0.5               | 0.291           | 0.728  | 0.201  | 0.118  | 0.02              | 2     |  |
| RL30-120    | 7.4             | 18.5   | 5.1    | 3      | 0.5               | 0.291           | 0.728  | 0.201  | 0.118  | 0.02              | 2     |  |
| RL30-135    | 9.2             | 17.6   | 5.1    | 3      | 0.6               | 0.362           | 0.693  | 0.201  | 0.118  | 0.024             | 2     |  |
| RL30-160    | 9.2             | 20.2   | 5.1    | 3      | 0.6               | 0.362           | 0.795  | 0.201  | 0.118  | 0.024             | 2     |  |
| RL30-185    | 10.2            | 20.2   | 5.1    | 3      | 0.6               | 0.402           | 0.795  | 0.201  | 0.118  | 0.024             | 2     |  |
| RL30-200    | 15.2            | 20.2   | 5.1    | 3      | 0.6               | 0.598           | 0.795  | 0.201  | 0.118  | 0.024             | 2     |  |
| RL30-250    | 13.2            | 22.4   | 5.1    | 3      | 0.6               | 0.52            | 0.882  | 0.201  | 0.118  | 0.024             | 2     |  |
| RL30-300    | 13.2            | 20.4   | 5.1    | 3      | 0.8               | 0.52            | 0.803  | 0.201  | 0.118  | 0.031             | 3     |  |
| RL30-400    | 14.0            | 23.7   | 5.1    | 3      | 0.8               | 0.551           | 0.933  | 0.201  | 0.118  | 0.031             | 3     |  |
| RL30-500    | 17.7            | 24.9   | 10.2   | 3      | 0.8               | 0.697           | 0.980  | 0.402  | 0.118  | 0.031             | 3     |  |
| RL30-600    | 17.2            | 27.0   | 10.2   | 3      | 0.8               | 0.677           | 1.063  | 0.402  | 0.118  | 0.031             | 3     |  |
| RL30-700    | 19.1            | 27.0   | 10.2   | 3      | 0.8               | 0.752           | 1.063  | 0.402  | 0.118  | 0.031             | 3     |  |
| RL30-800    | 23.5            | 29.2   | 10.2   | 3      | 0.8               | 0.925           | 1.150  | 0.402  | 0.118  | 0.031             | 3     |  |
| RL30-900    | 25.5            | 30.0   | 10.2   | 3      | 0.8               | 1.004           | 1.181  | 0.402  | 0.118  | 0.031             | 3     |  |

**Packaging**

| Part Number       | Quantity   |
|-------------------|------------|
| RL30-050~RL30-700 | 500pcs/bag |
| RL30-800~RL30-900 | 200pcs/bag |

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