

ELECTRONICS



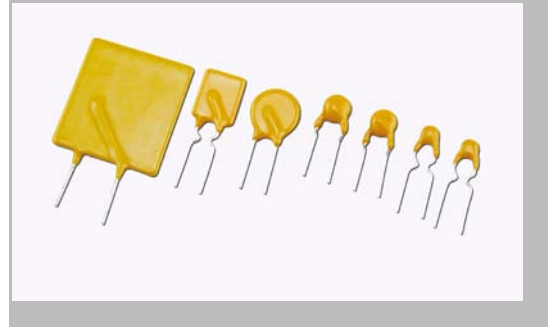
Positive Thermal Coefficient

RL600 Series

Positive Thermal Coefficient - RL600 Series

Features

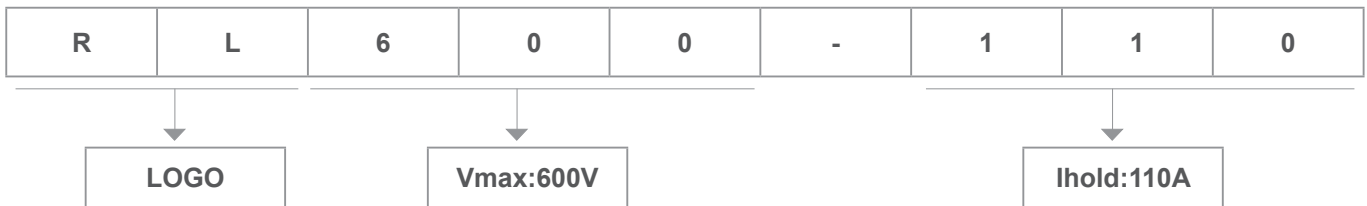
1. I(hold):110~160mA
2. 600V Operating voltages
3. Radial leaded devices.
4. Very high voltage surge capabilities.
5. Available in lead-free version.
6. Fast time-to-trip
7. RoHS compliant, Lead- Free and Halogen-Free



Applications

1. Overcurrent and overtemperature
 2. protection of automotive electronics
 3. Hard disk drives
 4. PC motherboards
 5. PC peripherals
- Point-of-sale (POS) equipment
 - PCMCIA cards
 - USB port protection
 - HDMI 1.4 Source protection
 - Computers & peripherals
 - General Electronics

Product Name



Positive Thermal Coefficient - RL600 Series

Dimension

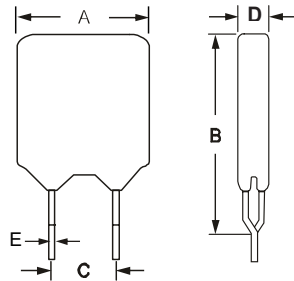


Fig.1

| Type Number | I _{hold} | V _{max} | I _{trip} | T _{trip} | | I _{max} | R _{max} | R _{min} | Package Dimensions (mm) | | | | | Circuit Figure |
|-------------|-------------------|------------------|-------------------|-------------------|---------|------------------|------------------|------------------|-------------------------|----|-----|-----|-----|----------------|
| | A | V | A | Current A | Times S | A | Ω | Ω | A | B | C | D | E | |
| RL600-110 | 0.11 | 600 | 0.3 | 0.5 | 1.5 | 3 | 14 | 7 | 14 | 14 | 5.1 | 6.1 | 0.8 | Fig.1 |
| RL600-150 | 0.15 | 600 | 0.3 | 1.5 | 0.15 | 3 | 12 | 6 | 14 | 14 | 5.1 | 6.1 | 0.8 | Fig.1 |
| RL600-160 | 0.16 | 600 | 0.32 | 1.5 | 0.15 | 3 | 10 | 4 | 14 | 14 | 5.1 | 6.1 | 0.8 | Fig.1 |

I_{hold} = Hold Current. Maximum current device will not trip in 25°C still air.

I_{trip} = Trip Current. Minimum current at which the device will always trip in 25°C still air.

V_{max} = Maximum operating 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}).

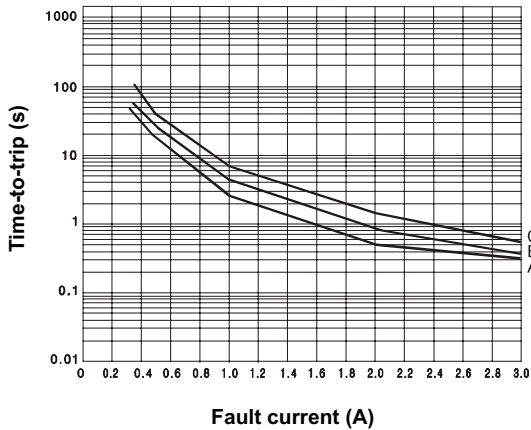
R_{min}/max = Minimum/Maximum device resistance prior to tripping at 25°C.

Environmental Specifications

| Test | Conditions | Resistance change |
|---|----------------------------|-------------------|
| Passive aging | +85°C, 1000 hrs | ±5% typical |
| Humidity aging | +85°C, 85% R.H., 168 hours | ±5% typical |
| Thermal shock | +85°C to -40°C, 20 times | ±33% typical |
| Resistance to so vent | MIL-STD-202, Method 215 | Nn change |
| Vibration | MIL-STD-202, Method 201 | Nn change |
| Ambient operating conditions: -40°C to +85°C | | |
| Maximum surface temperature of the device in the tripped state is 125°C | | |

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TYPICAL TIME-TO-TRIP CHARTS @ 25°C

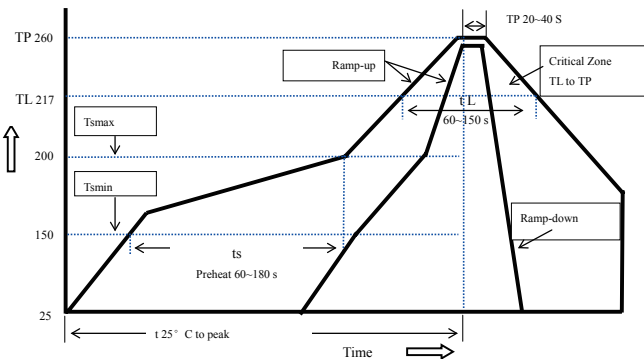


A = RL600-110
 B = RL600-150
 C = RL600-160

STORAGE RECOMMENDATIONS

1. Storage Temperature : -10 °C~+40°C
2. Relative Humidity : ≤ 80%RH
3. Keep away from corrosive atmosphere and sunlight.
4. Period of Storage: 1 year.

Soldering Parameters



| Profile Feature | Pb-Free Assembly |
|--------------------------------------|------------------|
| Average Ramp-Up Rate(Ts max to T p) | 3°C/second mac. |
| Preheat | |
| -Temperature Min(Ts min) | 150°C |
| -Temperature Max(Ts max) | 200°C |
| -Time(Ts min to Ts max) | 60~180 seconds |
| Time maintained above: | |
| -Temperature(TL) | +217°C |
| -Time(tL) | 60~150 seconds |
| Peak Temperature(Tp) | 260°C |
| Ramp-Down Rate | 6°C/second max. |
| Time 25°C to Peak Temperature | 8 minutes max |
| Storage Condition | 0°C~35°C,70%RH |

Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead-free

Recommended maximum paste thickness is 0.25mm
 Devices can be cleaned using standard industry methods and solvents.

Note 1: All temperature refer to topside of the package, measured on the package body surface.

Note 2: If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Positive Thermal Coefficient - RL600 Series

TEST PROCEDURES AND REQUIREMENT

| Test | Test Conditions | Accept/Reject Criteria |
|-----------------|-------------------------------------|---|
| Resistance | In still air @25°C | $R_{min} \leq R \leq R_{max}$ |
| Time to Trip | Specified current, V_{max} , 25°C | $T \leq \text{max. Time to trip}(T_{trip})$ |
| Hold Current | 30 min, at I_H | No trip |
| Trip Cycle Life | V_{max} , I_{max} , 100 cycles | No arcing or burning |
| Trip Endurance | V_{max} , 24hours | No arcing or burning |

Ihold Versus Temperature

| Type Number | -20°C | 0°C | 25°C | 30°C | 40°C | 50 °C | 60°C | 70°C | 85°C |
|-------------|-------|-----|------|------|------|-------|------|------|------|
| RL600-110 | 152 | 131 | 110 | 100 | 91 | 80 | 70 | 61 | 46 |
| RL600-150 | 207 | 179 | 150 | 137 | 125 | 110 | 96 | 83 | 63 |
| RL600-160 | 221 | 190 | 160 | 146 | 133 | 117 | 102 | 88 | 67 |

Warehouse Storage Conditions of Products

- Storage Conditions:
 1. Storage Temperature: -10°C~+40°C
 2. Relative Humidity: ≤75%RH
 3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year

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