RUILON ELECTRONICS

Positive Thermal Coefficient (PTC) RL30-160

Product code: 10.22.02.1600-ZDR/PP202

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.

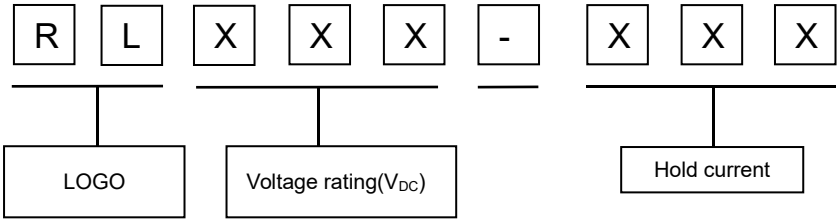
Features

- I(hold): 1.60A
- 30V Operating voltages
- Radial leaded devices.
- Over-current protection
- Very high voltage surge capabilities.
- Available in lead-free version.
- Fast time–to–trip
- RoHS compliant, Lead- Free and Halogen-Free
- Operating temperature range: -40℃ ~ +85℃
- Maximum Device Surface Temperature in Tripped State: 125℃

Applications

- Over-current and over-temperature protection of automotive electronics
- Hard disk drives
- Point-of-sale (POS) equipment
- PCMCIA cards
- Power over Ethernet (POE)
- HDMI 1.4 Source protection
- Computers & peripherals
- Industrial control
- 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} (A)	I_T (A)	V_{max} (V)	Maximum Time to Trip		I_{max} (A)	Pd typ (W)	Resistance(Ω)	
				Current(A)	Time(S)			Ri_{min}	$R1_{max}$
RL30-160	1.60	3.2	30	8.0	8	40	1.0	0.03	0.120

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

I_T=Trip current: minimum current at which the device will nalways at 25℃ 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.

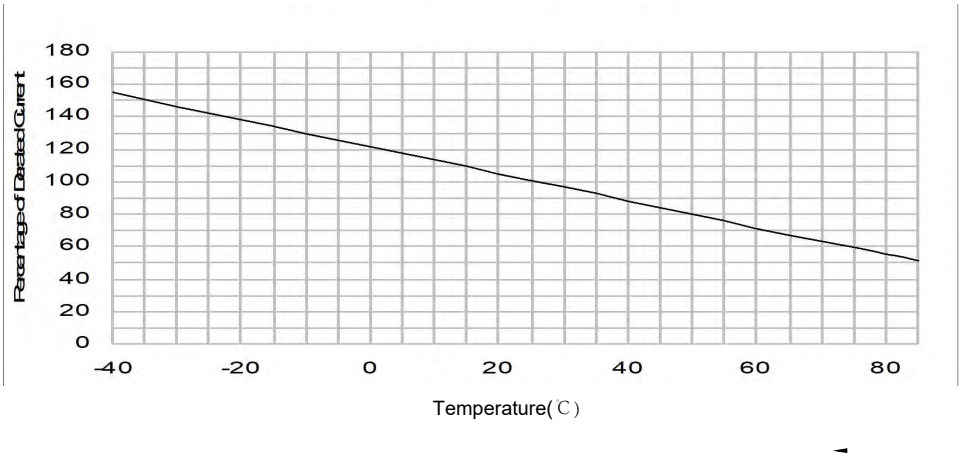
T_{trip}=Maximum time to trip(s) at assigned current.

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

Ri_{min}=Minimum device resistance at 25℃ prior to tripping.

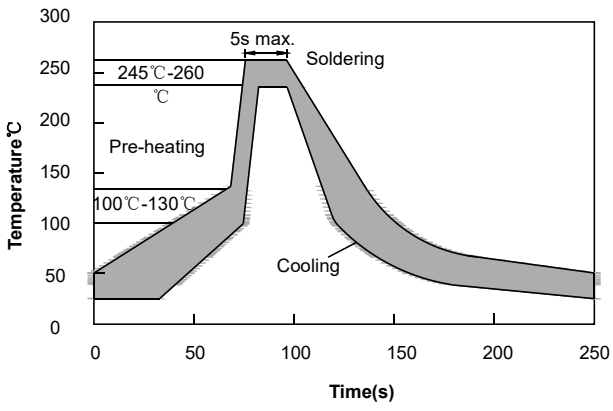
$R1_{max}$=Maximum device resistance is measured one hour post reflow.

Thermal Derating Curve



Solder reflow conditions

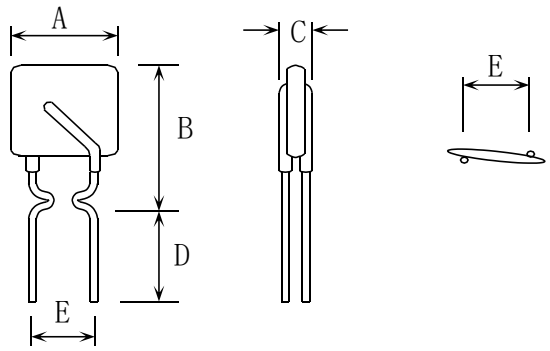
Wave Soldering
Soldering Temperature:260℃~270℃
Soldering Time:≤3sec.
Soldering Position: Resettable fuse wire and the bottom ⩾ 6mm。
Manual soldering
Soldering Temperature:250℃~280℃
Soldering Time:≤3sec.
Soldering Position: Resettable fuse wire and the bottom ⩾ 6mm。



Ihold Versus Temperature

Model	Maximum ambient operating temperature (T_{mao}) vs. hold current (I_{hold})								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
RL30-160	2.49	2.21	1.94	1.60	1.42	1.31	1.19	1.03	0.88

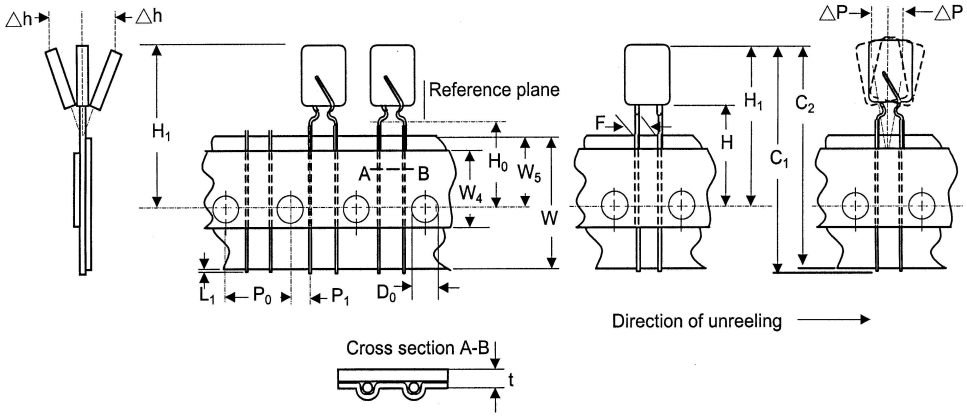
Product Dimensions



Type Number	Dimensions（mm）						Dimensions（in）					
	A(max)	B(max)	C(max)	D(min)	E(typ)	Lead Φ (typ)	A(max)	B(max)	C	D(max)	E	LeadΦ (typ)
RL30-160	9.7	17.0	3.1	7.6	5.1	0.6	0.382	0.669	0.122	0.299	0.201	0.024

EIA Referenced Taped Component Dimentions

Model	Inside the box (pcs)
RL30-160	2000



Symbol	DIM(mm)
W	18(-0.5 / +1.0)
W4	8 (Min.)
W5	9 (-0.5 / +0.75)
D0	4 (±0.2)
H0	18.4 (±1)
H1	33 (Max.)
L1	1.0 (Max.)
P0	12.7 (±0.3)
t	0.9 (Max.)
△h	0 (±1.0)
△p	0 (±1.3)
P1	3.81 (±1.0)
F	5.08(+0.6/-0.2)

插件 PTC 使用注意事项

Cautions for R-line PTC Use

1. 请在规格书规定的最大电压和最大电流下使用，超出 PTC 最大电压或最大电流规格值的操作，可能会导致 PTC 出现电弧， 阻值升高，甚至烧片。

   Operation beyond the maximum voltage or current may result in device damage PTC arcing, resistance increasing, even buming.

2. 规格书所规定的各温度下的 Hold current 均是 PTC 经过一次回流焊接得出的常规性能，PTC 能够在不同温度对应的电流条件下保持 1 小时。该电流并不是该型号 PTC 能够适用的长期充电或放电电流的条件。

   The Hold current specified at different temperatures in the datasheet is the conventional performance of after one wave-soldering or manual soldering. PTC can hold 1 hour at the current corresponding to different temperatures. But this current is not the condition that PTC can charging or discharging current for long time.

3. 规格书所规定的电阻以及电气特性，均是基于在瑞隆源实验室测试所得。用户应独立评估和测试为其应用选择合适的产品。

   All resistance and the electronic characteristics specifed in the datasheet are based on the test tested on Ruilongyuan Lab. The applicability needs to be verffied because above parameters may be attenuated if customer has other processes, like twice soldering or injection. Customer needs to independently evaluate and test to select appropriate products for their applications.

4. PTC 为热敏元件，对环境温度比较敏感，建议在 PTC 周围不要设计热源元件，尽量减少外部热源的影响。

   PTC is thermal sensitive device. It is recommended that no heat source devices be designed to around in order to reduce the outside heat source impact.

5. 插件PTC产品焊接工艺推荐波峰焊或手工焊。焊接工艺可参考瑞隆源推荐的回流焊曲线。如果温度超过推荐的值，PTC有可能受损伤。

   Wave Soldering or Hand Soldering are recommended for R-line PTC. Please refer to the Ruilongyuan recommended soldering curve. If the soldering temperature exceeds the recommended value, the PTC might be damaged.

6. PTC 组装或应用过程中,所使用到的各类注塑料、单组份、双组份固化胶粘剂、硅胶，需要对注塑料胶料等材料牌号以及应用参数（如温度、时间等）进行验证，以确保产品及工艺的匹配性，确认不会影响 PTC 性

能之后方可使用。

When assembling and applying PTC, the material mark and application parameters (Temperature, Time, and etc.) of all injection or plastic materials, like dhesives, silica gels and etc. should be verified to ensure the consistency between the products and the processing technology. Only it is confirmed that would not influent PTC then can be used.

7. PTC 组装或使用过程中，不建议使用洗板水或其他清洗剂进行清洗。如必须使用，需要验证各类清洗剂、洗板水以及溶剂的适用性，确认不会影响 PTC 性能之后方可使用。已知对 PTC 有影响的化学药品包括但不仅限于醚类、苯类、酮类以及脂类等较强溶解性、破坏性的有机化合物。清洗后将产品放置于敞开的环境中至少 24 小时，将残留的溶剂进行充分的挥发。

   When assembling and applying PTC, it is not recommended that using washer water or other cleaner to clean PTC. If it required, it is necessary to verify the applicability of various cleaner, washer water and solvents, it is also confirmed that they will not affect the PTC performance.Chemicals that are known to have an effert on PTC include, but are not limited to, highly solubility and destructive organic compounds sush as ethers, benzenes, ketones, and lipids. Placing the product in open environment for at lesst 24 hours to volatilize the residual solvents.

8. 装配过程中，避免用暴力砸、挤、压、拉、扭、刺等方式作用 PTC 本体，以免引起 PTC 性能衰减。

   Please do not smash, clamp, pull, dent , twist and erc. To PTC during assembling process to avoid the performance degradation.

9. PTC是二级保护元件，仅用于零星、意外过流或过温等情况，持续或重复的故障情况不得使用。

   PTC is a secondary protector, which is only can be used as sporadic, acdidental over-current or over-temperature, the continuous or repeated failure can not use PTC.

10. 不建议将PTC安装在空间受到限制的环境中，这将会抑制其PTC性能。

    PTC is not recommend installation in space-constrained environments, which can inhibit its performance.

11. 产品终弃时，可按照一般电子废弃物处理，具体原材料组成可参见MSDS.

    When the product is finally discarded, it can be treated as general electronic waste, and raw material compositions of PPTC can be referred to MSDS.

Specifications are subject to change without notice.