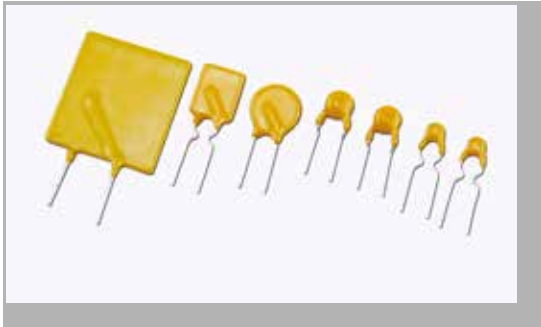


Positive Thermal Coefficient

RL250 Series

Positive Thermal Coefficient - RL250 Series

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.



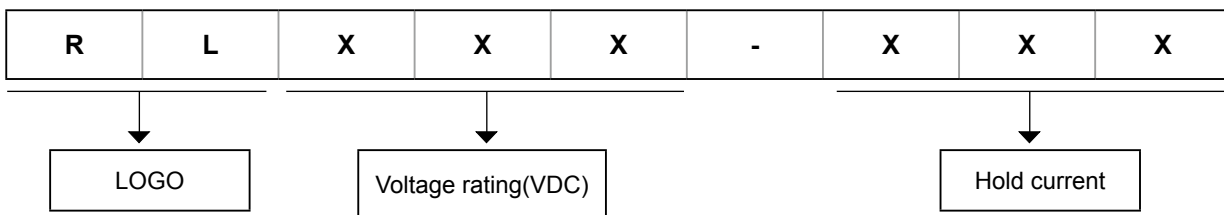
Features

- I(hold): 0.03~2.0A
- 250V 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

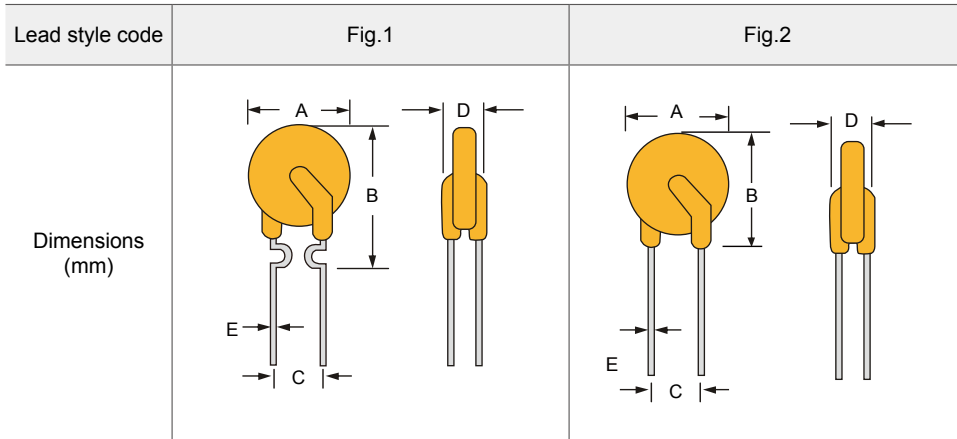
Applications

- Overcurrent and overtemperature 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

Product Name



Positive Thermal Coefficient - RL250 Series



Type Number	I_{hold}	I_T	V_{max}	Time-to-Trip		I_{max}	R_{max}	R_{min}	Package Dimensions (mm)					Circuit Figure
	A	A	V	I_{trip} A	T_{max} S	A	Ω	Ω	A (max)	B (max)	C (max)	D (max)	E (max)	
RL250-030	0.03	0.06	250	0.09	25	1	125	35	6	8	5.1	4.7	0.5	Fig.1
RL250-040	0.04	0.08	250	0.12	20	1	65	25	6	8	5.1	4.7	0.5	Fig.1
RL250-050	0.05	0.1	250	0.15	15	1	50	20	6	8	5.1	4.7	0.5	Fig.1
RL250-060	0.06	0.12	250	0.35	2	3	40	26	7.4	10	5.1	4.7	0.5	Fig.1
RL250-080	0.08	0.16	250	0.35	3	3	22	14	7.4	10	5.1	4.7	0.5	Fig.1
RL250-090	0.09	0.18	250	0.35	3	3	20	10	7.4	10	5.1	4.7	0.5	Fig.1
RL250-110	0.11	0.22	250	1	1.5	3	12	6	7.4	10	5.1	4.7	0.6	Fig.2
RL250-120	0.12	0.24	250	1	5	3	10	5	7.4	10	5.1	4.7	0.6	Fig.2
RL250-145	0.145	0.29	250	1	18	3	6.5	3.5	7	10	5.1	4.7	0.6	Fig.2
RL250-180	0.18	0.32	250	1	18	10	3	1	10.5	13.5	5.1	4.7	0.6	Fig.1
RL250-200	0.2	0.4	250	1	15	10	6	3	10.5	13.5	5.1	4.7	0.6	Fig.1
RL250-300	0.3	0.6	250	1	30	10	3	1	11.2	15.2	5.1	4.7	0.8	Fig.2
RL250-400	0.4	0.8	250	1	30	10	3	1	11.2	15.2	5.1	4.7	0.8	Fig.2
RL250-500	0.5	1	250	2	15	10	2.5	1.5	12.6	15.6	5.1	4.7	0.8	Fig.2
RL250-600	0.6	1.2	250	3	20	10	2	0.6	12.6	15.6	5.1	4.7	0.8	Fig.2
RL250-700	0.7	1.4	250	3	20	10	1.5	0.5	15	19.5	5.1	4.7	0.6	Fig.2
RL250-800	0.8	1.6	250	3	20	10	1	0.4	15	19.5	5.1	4.7	0.6	Fig.2
RL250-900	0.9	1.8	250	3	40	10	1	0.4	21.1	23.6	10.5	4.7	0.6	Fig.1
RL250-1000	1	2	250	3	40	10	0.8	0.35	21.1	23.6	10.5	4.7	0.8	Fig.1
RL250-1200	1.2	3	250	4.5	40	10	0.6	0.25	22.4	27.5	10.5	4.7	0.8	Fig.1
RL250-1500	1.5	3	250	4.5	50	10	0.6	0.25	22.4	27.5	10.5	4.7	0.8	Fig.2
RL250-2000	2	4	250	6	60	10	0.4	0.25	26.2	32.8	10.5	4.7	0.8	Fig.2

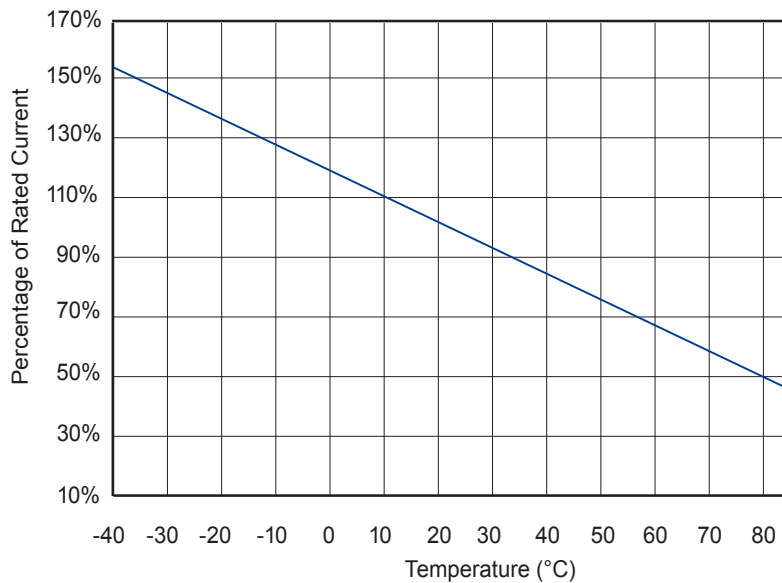
- I_H = Hold current: maximum current device will pass without tripping in 25°C still air.
- I_T = Trip current: minimum current at which the device will trip in 25°C still air.
- V_{MAX} = Maximum voltage device can withstand without damage at rated current.
- I_{MAX} = Maximum fault current device can withstand without damage at rated voltage.
- R_{MAX} = Maximum resistance of device in initial (un-soldered) state.
- R_{MIN} = Minimum resistance of device in initial (un-soldered) state.
- Pd typ. = Typical power dissipation from device when in the tripped state at 25°C still air

Positive Thermal Coefficient - RL250 Series

Ihold Versus Temperature

Type Number	-20°C	0°C	23°C	40°C	50 °C	60°C	70°C	85°C
RL250-030	0.050	0.039	0.030	0.025	0.020	0.015	0.010	0.005
RL250-040	0.071	0.055	0.040	0.035	0.028	0.020	0.016	0.010
RL250-050	0.085	0.070	0.050	0.041	0.035	0.030	0.024	0.014
RL250-060	0.09	0.076	0.060	0.051	0.046	0.041	0.037	0.029
RL250-080	0.106	0.094	0.080	0.068	0.062	0.054	0.049	0.038
RL250-090	0.119	0.105	0.090	0.077	0.069	0.061	0.055	0.043
RL250-110	0.145	0.129	0.110	0.094	0.085	0.075	0.067	0.053
RL250-120	0.158	0.140	0.120	0.102	0.092	0.082	0.073	0.058
RL250-145	0.191	0.170	0.145	0.123	0.112	0.099	0.088	0.070
RL250-180	0.238	0.211	0.180	0.153	0.139	0.122	0.110	0.086
RL250-200	0.264	0.234	0.200	0.170	0.154	0.136	0.122	0.096
RL250-400	0.528	0.468	0.400	0.340	0.308	0.272	0.344	0.192
RL250-600	0.792	0.702	0.600	0.510	0.462	0.408	0.366	0.288
RL250-800	1.056	0.936	0.800	0.680	0.616	0.544	0.488	0.384
RL250-900	1.200	1.20	0.900	0.720	0.763	0.645	0.577	0.452
RL250-1000	1.342	1.245	1.000	0.877	0.821	0.722	0.658	0.563
RL250-1200	1.452	1.296	1.210	0.925	0.915	0.812	0.725	0.652
RL250-1500	2.000	1.800	1.500	1.200	1.050	0.980	0.760	0.540
RL250-2000	2.600	2.300	2.000	1.650	1.540	1.360	1.220	1.040

Temperature Rerating curve



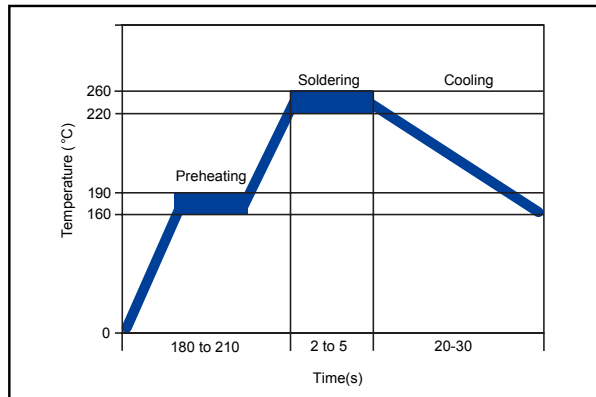
Positive Thermal Coefficient - RL250 Series

Soldering Parameters - Wave Soldering

Condition	Wave Soldering
Peak Temp/ Duration Time	260°C ≤ 5 Sec
≥ 220°C	2 Sec ~ 20 Sec
Preheat 140°C ~ 180°C	180 Sec ~ 210 Sec
Storage Condition	0°C~35°C ≤ 70%RH

- Recommended soldering methods: heat element oven or N₂ environment for lead-free.
- Devices are designed to be wave soldered to the bottom side of the board.
- Devices can be cleaned using standard industry methods and solvents.
- This profile can be used for lead-free device

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



Physical Specifications

Lead Material	Tin-plated Copper
Soldering Characteristics	Solderability per MIL-STD-202, Method 208E
Insulating Material	Cured, flame retardant epoxy polymer meets UL94V-0 requirements.
Device Labeling	Marked with 'LF', voltage, current rating, and date code.

Environmental Specifications

Operating/Storage Temperature	-40°C to +85°C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	65°C/85°C, 1000 hours
Humidity Aging	+85°C, 85% R.H., 1000 hours
Thermal Shock	MIL-STD-202F, Method 107G +125°C to -55°C 10 times
Solvent Resistance	MIL-STD-202, Method 215F
Moisture Sensitivity Level	Level 1, J-STD-020C

Test procedures and requirement

Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @25°C	R _{min} ≤ R ≤ R _{max}
Time to Trip	Specified current, V _{max} , 25°C	T ≤ max. Time to trip (T _{trip})
Hold Current	30 min, at IH	No trip
Trip Cycle Life	V _{max} , I _{max} , 100 cycles	No arcing or burning
Trip Endurance	V _{max} , 24 hours	No arcing or burning