

UN250 Series

ROHS

Radial Lead Resettable Polymer PTCs

Description

UN250 Series is designed to protect against short duration high voltage fault currents (power cross or power induction surge) typically found in telecom applications (250Vrms). The series can be used to help telecom networking equipment meet the protection requirements specified in ITU K.20 and K.21.

Features

- ◆ RoHS compliant, Lead-Free and Halogen-Free
- ◆ 0.02-2.0A hold current range
- ◆ 250VAC operating voltage
- ◆ Fast time-to-trip

Applicable

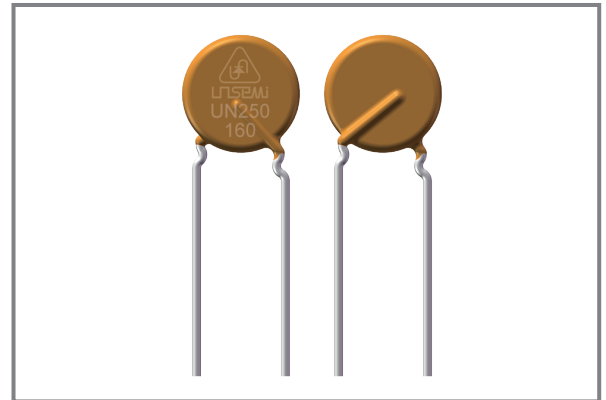
- ◆ Customer Premises Equipment (CPE)
- ◆ Power ports
- ◆ Central Office (CO)/telecom centers
- ◆ LAN/WAN equipment

Electrical Parameters

Part Number	I hold (A)	I trip (A)	V max (Vac)	I max (A)	Pdtype. (W)	Maximum Time To Trip		Resistance		
						Current (A)	Time (Sec.)	R min (Ω)	R max (Ω)	R 1max (Ω)
UN250-020	0.02	0.04	250	1.0	0.6	0.06	25	60.0	150	200
UN250-030	0.03	0.06	250	1.0	0.6	0.09	20	35.0	90	120
UN250-040	0.04	0.08	250	1.0	0.7	0.12	20	25.0	65	90
UN250-050	0.05	0.10	250	1.0	0.7	0.15	15	22.0	55	75
UN250-060	0.06	0.12	250	1.2	0.8	0.18	15	18.0	45	60
UN250-080	0.08	0.16	250	1.2	0.8	0.24	15	11.0	22	33
UN250-120	0.12	0.24	250	1.2	1.0	0.36	15	6.0	12	16
UN250-160	0.16	0.32	250	2.0	1.4	0.48	25	3.5	7.8	10.4
UN250-200	0.20	0.40	250	3.0	1.5	0.60	25	3.0	6.5	8.0
UN250-250	0.25	0.50	250	3.5	1.5	0.75	20	2.2	5.0	6.0
UN250-300	0.30	0.60	250	4.5	1.7	0.90	20	1.8	4.0	4.8
UN250-330	0.33	0.66	250	4.5	1.7	0.99	20	1.6	3.6	4.3
UN250-400	0.40	0.80	250	5.5	2.0	1.20	25	1.35	3.0	3.6
UN250-500	0.50	1.00	250	6.5	2.5	1.50	25	0.9	2.0	2.4
UN250-550	0.55	1.10	250	7.0	2.5	1.65	25	0.8	1.65	2.0



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Electrical Parameters

UN250-600	0.600	1.200	250	6.0	2.5	1.80	25	0.75	1.50	1.80
UN250-650	0.650	1.300	250	6.5	2.6	1.95	30	0.65	1.30	1.60
UN250-750	0.750	1.500	250	7.5	2.6	2.25	30	0.55	1.10	1.30
UN250-800	0.800	1.600	250	8.0	2.7	2.40	30	0.50	1.00	1.20
UN250-900	0.900	1.800	250	9.0	2.8	2.70	35	0.45	0.90	1.10
UN250-1000	1.000	2.000	250	10.0	2.9	3.00	35	0.37	0.75	0.90
UN250-1100	1.100	2.200	250	10.0	3.1	3.30	35	0.33	0.66	0.80
UN250-1250	1.250	2.500	250	10.0	3.3	3.75	40	0.27	0.55	0.66
UN250-1350	1.350	2.700	250	10.0	3.5	4.05	40	0.25	0.50	0.60
UN250-1600	1.600	3.200	250	10.0	3.9	4.80	40	0.20	0.40	0.48
UN250-1850	1.850	3.700	250	10.0	4.3	5.55	50	0.165	0.33	0.40
UN250-2000	2.000	4.000	250	10.0	4.5	6.00	50	0.135	0.27	0.33

I_{hold} = Hold current: maximum current device will pass without tripping in 25°C still air.

I_{trip} = 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})

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 25°C still air.

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

R_{max} = Maximum resistance of device in initial (un-soldered) state.

R_{1max} = Maximum resistance of device at 25°C measured one hour after tripping.

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

Temperature Derating Chart – I_{hold} (A)

Part Number	Ambient Operation Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
	Hold Current (A)								
UN250-020	0.031	0.027	0.024	0.020	0.016	0.015	0.013	0.011	0.008
UN250-030	0.047	0.041	0.036	0.030	0.025	0.022	0.019	0.017	0.012
UN250-040	0.062	0.055	0.048	0.040	0.033	0.029	0.026	0.022	0.016
UN250-050	0.078	0.069	0.060	0.050	0.041	0.037	0.032	0.028	0.021
UN250-060	0.093	0.082	0.070	0.060	0.049	0.044	0.038	0.033	0.025
UN250-080	0.124	0.110	0.095	0.080	0.066	0.059	0.051	0.044	0.033
UN250-120	0.186	0.164	0.143	0.120	0.098	0.088	0.077	0.066	0.049
UN250-160	0.248	0.219	0.190	0.160	0.131	0.117	0.102	0.088	0.064
UN250-200	0.310	0.274	0.238	0.200	0.164	0.146	0.128	0.110	0.082
UN250-250	0.390	0.340	0.300	0.250	0.210	0.180	0.160	0.140	0.100
UN250-300	0.470	0.410	0.360	0.300	0.250	0.220	0.190	0.170	0.012
UN250-330	0.510	0.450	0.390	0.330	0.270	0.240	0.210	0.180	0.140

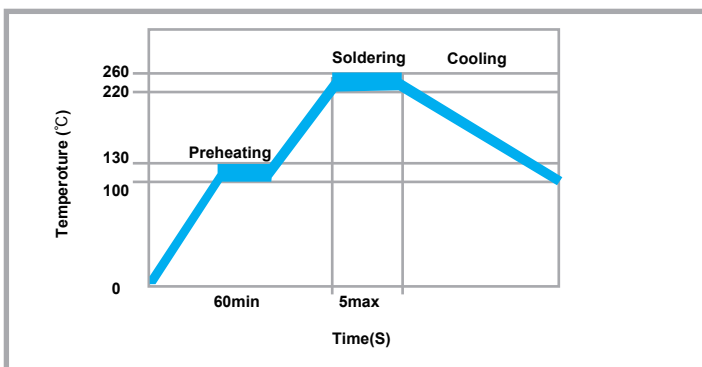
Temperature Derating Chart – I hold (A)

UN250-400	0.620	0.550	0.480	0.400	0.330	0.290	0.260	0.220	0.160
UN250-500	0.780	0.690	0.600	0.500	0.410	0.370	0.320	0.280	0.210
UN250-550	0.850	0.750	0.660	0.550	0.450	0.400	0.350	0.300	0.230
UN250-600	0.930	0.820	0.710	0.600	0.490	0.440	0.380	0.330	0.250
UN250-650	1.010	0.890	0.770	0.650	0.530	0.470	0.420	0.360	0.270
UN250-750	1.160	1.030	0.890	0.750	0.620	0.550	0.480	0.410	0.310
UN250-800	1.240	1.100	0.950	0.800	0.660	0.580	0.510	0.440	0.330
UN250-900	1.400	1.230	1.070	0.900	0.740	0.660	0.580	0.500	0.370
UN250-1000	1.550	1.370	1.190	1.000	0.820	0.730	0.640	0.550	0.410
UN250-1100	1.710	1.510	1.310	1.100	0.900	0.800	0.700	0.610	0.450
UN250-1250	1.940	1.710	1.490	1.250	1.030	0.910	0.800	0.690	0.510
UN250-1350	2.090	1.850	1.610	1.350	1.110	0.990	0.860	0.740	0.550
UN250-1600	2.480	2.190	1.900	1.600	1.310	1.170	1.020	0.880	0.660
UN250-1850	2.870	2.530	2.200	1.850	1.520	1.350	1.180	1.020	0.760
UN250-2000	3.100	2.740	2.380	2.000	1.640	1.460	1.280	1.100	0.820

Test Procedures and Requirement

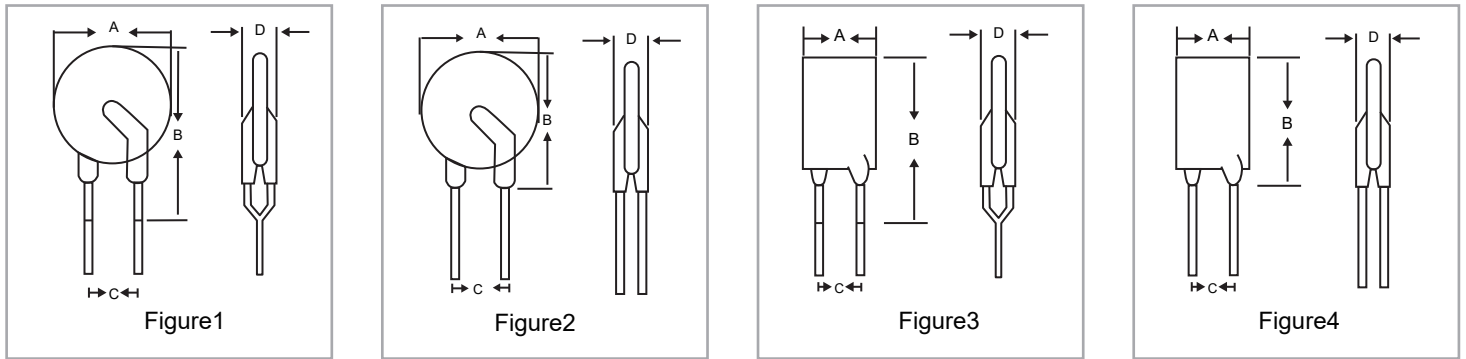
Test	Test Conditions	Accept/Reject Criteria
Resistance	In still air @25°C±2°C	$R_{min} \leq R \leq R_{max}$
Hold Current	60 min, at Ihold, In still air @25°C±2°C	No trip
Time to Trip	Specified current, 3Ihold, @25°C±2°C	$T \leq$ Maximum Time To Trip
Trip Cycle Life	$V_{max}, I_{max}, 15min$	Resistance change rate $\leq 50\%$
Trip Endurance	$V_{max}, 24hours$	No arcing or burning

Soldering Parameters



Pre-Heating Zone	Refer to the condition recommended by the manufacturer. Max.ramping rate should not exceed 4°C/Sec
Soldering Zone	Max.solder temperature should not exceed 260°C
Cooling Zone	Cooling by natural convection in air

Dimensions



Part Number	Figure	A	B	C	D	Lead (dia)	Packaging mm (Bulk Pack)
		mm (Max.)	mm (Max.)	mm (Typ.)	mm (Max.)	mm	
UN250-020	Figure1	6.0	8.7	5.1±0.5	4.6	0.5	1000
UN250-030	Figure1	6.0	8.7	5.1±0.5	4.6	0.5	1000
UN250-040	Figure1	6.0	9.3	5.1±0.5	4.6	0.5	1000
UN250-050	Figure1	6.0	9.3	5.1±0.5	4.6	0.5	1000
UN250-060	Figure2	6.0	10.0	5.1±0.5	4.6	0.6	1000
UN250-080	Figure1	6.0	10.0	5.1±0.5	4.6	0.6	1000
UN250-120	Figure3	6.5	10.5	5.1±0.5	4.6	0.6	1000
UN250-160	Figure1	9.3	12.8	5.1±0.5	4.6	0.6	1000
UN250-200	Figure3	9.3	12.8	5.1±0.5	4.6	0.6	1000
UN250-250	Figure3	9.3	12.8	5.1±0.5	4.6	0.6	1000
UN250-300	Figure3	9.3	14.5	5.1±0.5	4.6	0.6	1000
UN250-330	Figure3	9.3	14.5	5.1±0.5	4.6	0.6	1000
UN250-400	Figure4	10.5	16.5	5.1±0.5	4.6	0.8	1000
UN250-500	Figure4	11.8	17.5	5.1±0.5	4.6	0.8	500
UN250-550	Figure4	11.8	17.5	5.1±0.5	4.6	0.8	500
UN265-600	Figure4	11.8	17.5	5.1±0.5	4.6	0.8	500
UN250-650	Figure4	14.0	18.8	5.1±0.5	4.6	0.8	500
UN250-750	Figure4	14.5	22.2	5.1±0.5	4.6	0.8	500
UN250-800	Figure4	14.5	22.2	5.1±0.5	4.6	0.8	500
UN250-900	Figure4	16.5	24.5	10.2±0.5	4.6	0.8	200

Dimensions

UN250-1000	Figure4	19.0	25.5	10.2±0.5	4.6	0.8	200
UN250-1100	Figure4	19.0	25.5	10.2±0.5	4.6	0.8	200
UN250-1250	Figure4	19.0	29.0	10.2±0.5	4.6	0.8	200
UN250-1350	Figure4	19.0	29.0	10.2±0.5	4.6	0.8	200
UN250-1600	Figure4	21.5	29.0	10.2±0.5	4.6	0.8	200
UN250-1850	Figure4	25.0	29.0	10.2±0.5	4.6	0.8	100
UN250-2000	Figure4	25.0	33.5	10.2±0.5	4.6	0.8	100

Physical Specifications

Lead Material	0.02-0.04A Tin-plated Copper clad steel 0.05-2.00A Tin-plated Copper
Soldering Characteristics	Solder ability per MIL -STD-202, Method 208E
Insulating Material	Cured, flame retardant epoxy polymer meets UL 94V-0 requirements.
Device Labeling	Marked with "UN" voltage, current rating

Warning



- ◆ This product should not be used in an application where the maximum interrupt voltage or maximum interrupt current in a fault condition, Operation beyond the maximum rating or improper use may result in device damage and possible electrical arcing and flame.
- ◆ PPTC device is not a fuse, It is a nonlinear thermistor that limits current, Because under a fault condition all PPTC devices go into a high resistance state but not open circuit hazardous voltage may be present at PPTC.
- ◆ The devices are intended for protection against occasional over-current or over-temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events
- ◆ In most application, power must be removed and the fault condition cleared in order to reset a PPTC device
- ◆ PPTC devices are not recommended to be installed in applications where the device is constrained such that its PPTC properties are inhibited, for example in rigid potting materials or Add devices surface coating, Bundled devices ontology, which lack adequate clearance to accommodate device expansion.
- ◆ Contamination on of the PPTC material with certain silicone-based oils or some aggressive solvents can adversely impact the performance of the devices. For example, Organic solvents to cleaning.

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