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PRODUCT DATASHEET

PTC Devices

A250 Series PTC Devices

Description

The JDTFUSE A250 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

- Low resistance
- Solid state
- Radial lead products
- Fast time-to-trip
- Binned and sorted narrow resistance ranges available
- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- RoHS compliant, Lead-Free and Halogen-Free*

Agency Approvals

Agency	File Number
	E472196

Applications

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

Regulation	Standard
	2002/95/EC
	EN14582

Performance Specification

Model	I _{hold} @25°C (A)	I _{trip} @25°C (A)	V _{max} V _{int} / V _{op} (V)	I _{max} (A)	P _d Typ. (W)	Maximum Time To Trip		Resistance	
						Current (A)	Time (Sec)	R _{i min} (Ω)	R _{1max} (Ω)
A250-030	0.03	0.08	250/60	3.0	1.00	0.15	10.0	40.0	153.0
A250-040	0.04	0.12	250/60	3.0	1.00	0.20	10.0	33.0	110.5
A250-050	0.05	0.12	250/60	3.0	1.00	0.25	10.0	24.0	102.0
A250-060	0.06	0.12	250/60	3.0	1.00	0.30	10.0	22.0	54.40
A250-080	0.08	0.16	250/60	3.0	1.00	0.40	10.0	14.0	37.40
A250-090	0.09	0.18	250/60	3.0	1.00	0.45	10.0	10.0	34.00
A250-110	0.11	0.22	250/60	3.0	1.00	0.55	15.0	7.00	18.70
A250-120	0.12	0.24	250/60	3.0	1.00	0.60	15.0	6.00	20.40
A250-145	0.145	0.29	250/60	3.0	1.00	0.725	15.0	3.50	11.05
A250-180	0.18	0.50	250/60	3.0	1.50	0.90	15.0	0.80	5.10
A250-200	0.20	0.40	250/60	3.0	1.50	1.00	15.0	1.50	5.44
A250-300	0.30	0.60	250/60	3.0	1.50	1.50	15.0	0.90	2.38
A250-350	0.35	0.70	250/60	3.0	1.50	1.75	10.0	0.80	2.55
A250-400	0.40	0.80	250/60	3.0	2.50	2.00	10.0	0.75	1.87
A250-500	0.50	1.00	250/60	5.0	3.00	2.50	15.0	0.50	1.36
A250-600	0.60	1.20	250/60	5.0	3.00	3.00	10.0	0.50	1.275
A250-800	0.80	1.60	250/60	5.0	3.50	4.00	10.0	0.45	1.05
A250-1000	1.00	2.00	250/60	5.0	4.00	5.00	10.0	0.28	0.765
A250-1200	1.20	2.40	250/60	10.0	4.20	6.00	15.0	0.17	0.420
A250-1400	1.40	2.80	250/60	10.0	4.50	7.00	20.0	0.18	0.375
A250-2000	2.00	4.00	250/60	10.0	5.00	10.0	25.0	0.12	0.285

I_{hold} = Hold Current. Maximum current device will not trip in 23°C still air.

I_{trip} = Trip Current. Minimum current at which the device will always trip in 23°C still air.

V_{max} = Maximum operating voltage device can withstand without damage at rated current (I_{max}).

V_{int} = Maximum impulse voltage.

V_{op} = Maximum operating voltage.

I_{max} = Maximum fault current device can withstand without damage at rated voltage (V_{max}).

P_d = Power dissipation when device is in the tripped state in 23°C still air environment at rated voltage.

R_{i min} = Minimum device resistance prior to tripping at 23°C.

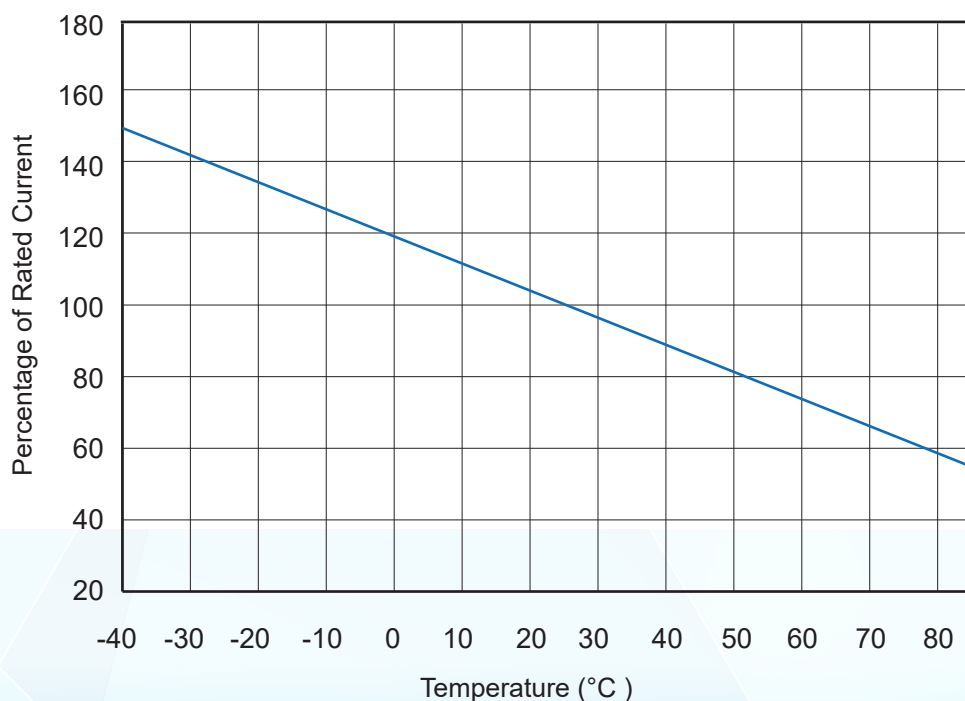
R_{1max} = Maximum device resistance is measured one hour post reflow.

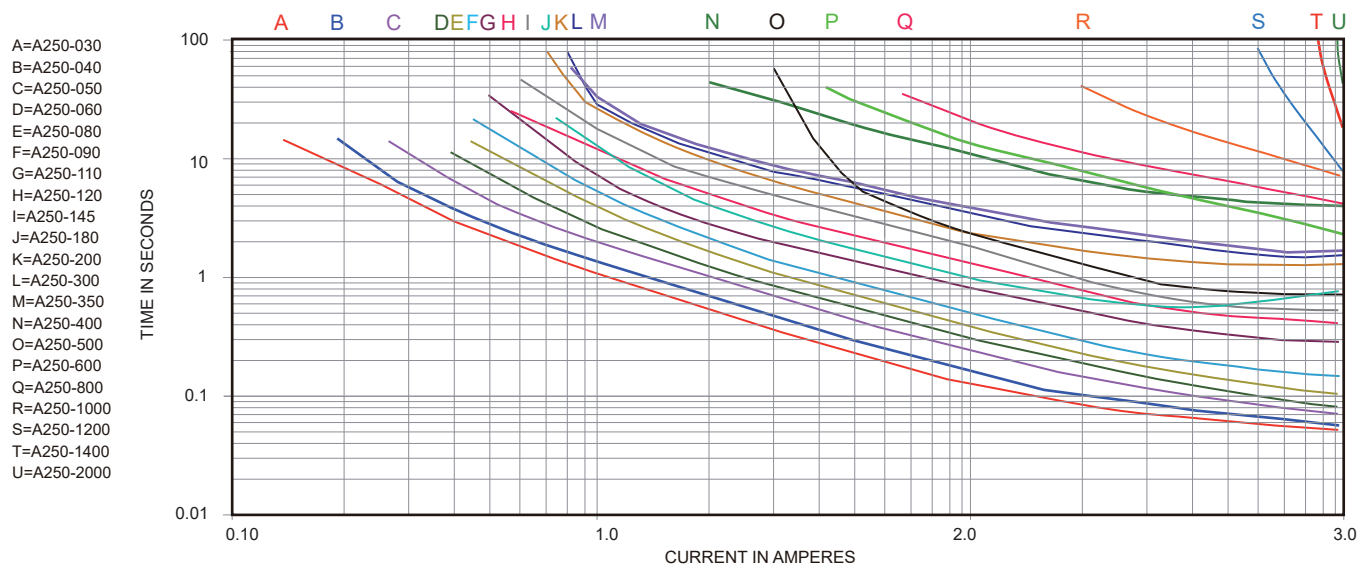
CAUTION : Operation beyond the specified ratings may result in damage and possible arcing and flame.

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 solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-202,Method 201	No change
Ambient operating conditions : - 40 °C to +85 °C		
Maximum surface temperature of the device in the tripped state is 125 °C		

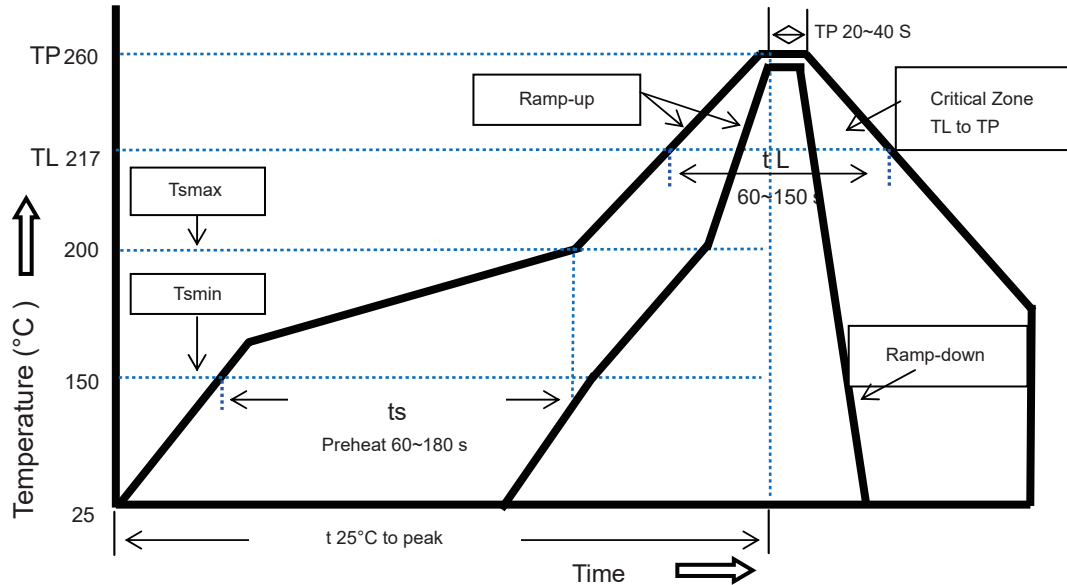
Thermal Derating Curve



Average Time-Current Curve

 I_{hold} Versus Temperature

Model	Maximum ambient operating temperature (T_{mao}) vs. hold current (I_{hold})									
	- 40°C	- 20°C	0°C	23°C	30°C	40°C	50°C	60°C	70°C	85°C
A250-030	0.047	0.041	0.036	0.030	0.028	0.025	0.022	0.019	0.016	0.012
A250-040	0.063	0.055	0.048	0.040	0.037	0.033	0.029	0.026	0.022	0.016
A250-050	0.079	0.069	0.060	0.050	0.046	0.042	0.037	0.032	0.027	0.020
A250-060	0.095	0.083	0.071	0.060	0.055	0.050	0.044	0.038	0.032	0.024
A250-080	0.126	0.110	0.095	0.080	0.074	0.066	0.058	0.051	0.043	0.032
A250-090	0.142	0.124	0.107	0.090	0.083	0.075	0.066	0.058	0.049	0.036
A250-110	0.174	0.152	0.131	0.110	0.101	0.091	0.080	0.070	0.059	0.044
A250-120	0.190	0.166	0.143	0.120	0.110	0.100	0.088	0.077	0.065	0.048
A250-145	0.229	0.200	0.173	0.145	0.133	0.120	0.106	0.093	0.078	0.058
A250-180	0.284	0.248	0.214	0.180	0.166	0.149	0.131	0.115	0.097	0.072
A250-200	0.316	0.276	0.238	0.200	0.184	0.166	0.146	0.128	0.108	0.080
A250-300	0.474	0.414	0.357	0.300	0.276	0.249	0.219	0.192	0.162	0.120
A250-350	0.553	0.483	0.417	0.350	0.322	0.291	0.256	0.224	0.189	0.140
A250-400	0.632	0.552	0.476	0.400	0.368	0.332	0.292	0.256	0.216	0.160
A250-500	0.790	0.690	0.595	0.500	0.460	0.415	0.365	0.320	0.270	0.200
A250-600	0.948	0.828	0.714	0.600	0.552	0.498	0.438	0.384	0.324	0.240
A250-800	1.264	1.104	0.952	0.800	0.736	0.664	0.584	0.512	0.432	0.320
A250-1000	1.580	1.380	1.190	1.000	0.920	0.830	0.730	0.640	0.540	0.400
A250-1200	1.896	1.656	1.428	1.200	1.104	0.996	0.876	0.768	0.648	0.480
A250-1400	2.212	1.932	1.666	1.400	1.288	1.162	1.022	0.896	0.756	0.560
A250-2000	3.160	2.760	2.380	2.000	1.840	1.660	1.460	1.280	1.080	0.800

Soldering Parameters



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Ts max to T p)	3°C/second max.
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.

Physical Dimensions(mm.)

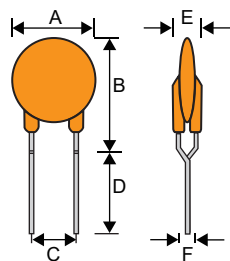


FIG 1

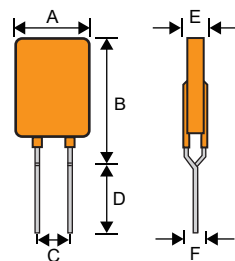


FIG 2

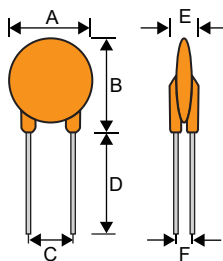


FIG 3

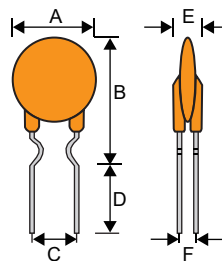


FIG 4

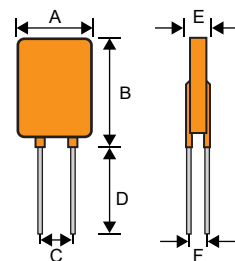


FIG 5

Model	A Max.	B Max.	C Typ.	D Min.	E Max.	F Typ.	Lead φ	FIG
A250-030	7.00	12.80	5.1±0.5	7.6	4.40	/	0.6	1
A250-040	7.00	12.80	5.1±0.5	7.6	4.40	/	0.6	1
A250-050	7.00	12.80	5.1±0.5	7.6	4.40	/	0.6	1
A250-060	7.00	12.80	5.1±0.5	7.6	4.40	/	0.6	1
A250-080	7.00	12.80	5.1±0.5	7.6	4.40	/	0.6	1
A250-090	7.00	12.80	5.1±0.5	7.6	4.40	/	0.6	1
A250-110	7.00	13.50	5.1±0.5	7.6	4.40	/	0.6	2
A250-120	7.00	13.50	5.1±0.5	7.6	4.40	/	0.6	2
A250-145	7.00	13.50	5.1±0.5	7.6	4.40	/	0.6	2
A250-180	9.00	15.50	5.1±0.5	7.6	4.40	/	0.6	1
A250-200	9.00	15.50	5.1±0.5	7.6	4.40	/	0.6	1
A250-300	9.00	15.50	5.1±0.5	7.6	4.40	/	0.6	1
A250-350	9.50	15.50	5.1±0.5	7.6	4.40	/	0.6	1
A250-400	10.00	16.40	5.1±0.5	7.6	4.40	2.20	0.6	4
A250-500	11.00	15.80	5.1±0.5	7.6	4.40	2.20	0.8	3
A250-600	11.00	15.80	5.1±0.5	7.6	4.40	2.20	0.8	3
A250-800	11.00	15.80	5.1±0.5	7.6	4.40	2.20	0.8	3
A250-1000	14.00	19.10	5.1±0.5	7.6	4.40	2.20	0.8	3
A250-1200	16.00	21.00	5.1±0.5	7.6	4.40	2.20	0.8	3
A250-1400	17.10	21.60	5.1±0.5	7.6	4.40	2.20	0.8	3
A250-2000	21.00	25.00	10.2±0.5	7.6	4.40	2.20	0.8	5

PHYSICAL SPECIFICATIONS :

Lead Materials : A250-030~A250-1400:Tinned copper clad steel wire (CP wire);
A250-2000:Tinned copper wire.

Lead Solderability: MIL-STD-202.

Encapsulation: Flame retardant epoxy resin, This meets the requirements of UL-94V-0.

Packaging Quantity

Model	Reel QTY	Bag QTY
A250-030~A250-800	2000	1000
A250-1000~A250-2000	2000	500

Tape & Reel packaging per EIA468-B standard.

Cross Reference

Model	Cross Reference		
	Tyco / PolySwitch®	Bourns / POLY-FUSE®	Polytronics / EVERFUSE®
A250-030	-	-	-
A250-040	-	-	-
A250-050	-	-	-
A250-060	-	-	-
A250-080	TRF250-080	-	HVR250P080CF
A250-090	-	-	-
A250-110	TRF250-110	-	-
A250-120	TRF250-120	MF-RX012/250	HVR250P120CF
A250-145	TRF250-145	MF-RX014/250	HVR250P145CF
A250-180	TRF250-180	MF-RX018/250	HVR250P180CF
A250-200	-	-	-
A250-300	-	-	-
A250-400	-	-	-
A250-500	-	-	-
A250-600	-	-	-
A250-800	-	-	-
A250-1000	-	-	-

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