Positive Temperature Coefficient (PTC) Data Sheet

Description

The 250V series provides radial resettable overcurrent protection with holding current from 0.03A to 2.0A. This series is suitable for applications with higher working voltage up to 250V.

Features

- Radial leaded devices.
- High voltage surge capabilities
- Flame retardant epoxy polymer insulating material meets UL94 V-0 requirement.
- Over-current protection
- Available in lead-free version.
- Operating Temperature: -40℃~+85℃
- Meets MSL level 1, per J-STD-020

Applications

- Powered supplies
- Security systems
- Network equipment
- IT equipment
- XDSL equipment
- Motor protection

Electrical Characteristics

Part Number	I_{hold} (A)	I_{trip} (A)	Vmax (V_{AC})	Imax (A)	Pd typ. (W)	Maximum time to trip		Resistace	
						Current(A)	Times（S）	R_{min}(Ω)	R_{max}(Ω)
FTR250-030	0.030	0.060	250	1	0.6	0.15	5.0	35.0	90.0
FTR250-040	0.040	0.080	250	3	0.7	0.20	6.0	27.0	65.0
FTR250-060	0.060	0.120	250	3	0.8	0.30	5.0	20.0	45.0
FTR250-080	0.080	0.160	250	3	0.8	0.40	5.0	10.0	22.0
FTR250-090	0.090	0.180	250	3	0.8	0.45	5.0	7.0	20.0
FTR250-110	0.110	0.220	250	3	1.0	0.55	5.0	6.0	12.0
FTR250-120	0.120	0.240	250	3	1.0	0.60	5.0	6.0	10.5
FTR250-145	0.145	0.290	250	3	1.0	0.73	15.0	3.5	6.5
FTR250-180	0.180	0.540	250	10	1.5	0.90	15.0	3.0	10.0
FTR250-200	0.200	0.400	250	10	1.5	1.00	9.0	3.0	6.0
FTR250-250	0.250	0.500	250	10	1.5	1.25	7.0	1.6	4.8
FTR250-400	0.400	0.800	250	10	2.0	2.00	9.0	1.0	3.0
FTR250-600	0.600	1.200	250	10	2.5	3.00	8.0	0.6	2.0
FTR250-800	0.800	1.600	250	10	2.7	4.00	18.0	0.4	1.0
FTR250-1000	1.000	2.000	250	10	2.9	5.00	21.0	0.3	0.8
FTR250-1500	1.500	3.000	250	10	3.9	7.50	23.0	0.2	0.6
FTR250-2000	2.000	4.000	250	10	4.5	10.00	28.0	0.1	0.4

·Ihold= Hold current: maximum current device will pass without tripping in 25℃ still air.
·Itrip= Trip current: minimum current at which the device will trip in 25℃ still air.
·Vmax= Maximum voltage device can withstand without damage at rated current (Imax)
·Imax= Maximum fault current device can withstand without damage at rated voltage
·Pd typ.= Typical power dissipated from device when in the tripped state at 23℃still air.
·Rmin= Minimum resistance of device in initial (un-soldered) state.
·Rmax= Maximum resistance of device in initial (un-soldered) state.

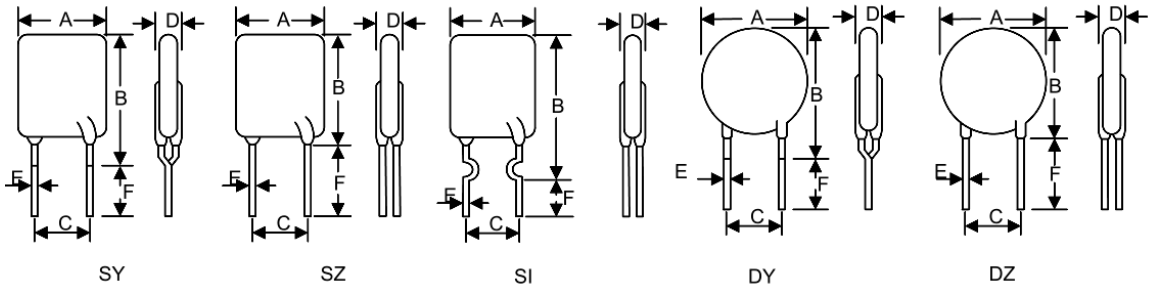
Test Procedures and Requirement

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

Thermal Derating Chart – I_{hold}

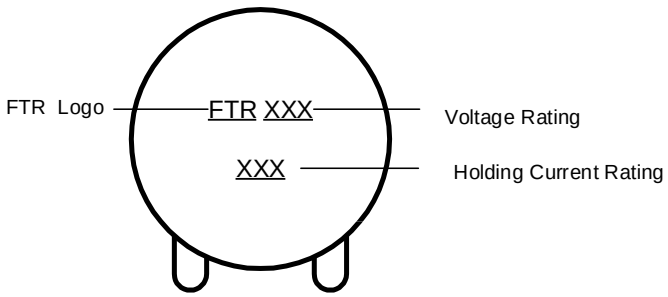
Part Number	Ambient Operation Temperature									
	-40℃	-20℃	0℃	25℃	30℃	40℃	50℃	60℃	70℃	85℃
FTR250-030	0.044	0.040	0.035	0.030	0.027	0.025	0.023	0.020	0.017	0.013
FTR250-040	0.058	0.053	0.047	0.040	0.036	0.034	0.031	0.027	0.024	0.019
FTR250-060	0.085	0.079	0.070	0.060	0.055	0.051	0.046	0.041	0.037	0.029
FTR250-080	0.113	0.106	0.094	0.080	0.073	0.068	0.062	0.054	0.049	0.038
FTR250-090	0.131	0.119	0.105	0.090	0.082	0.077	0.069	0.061	0.055	0.043
FTR250-110	0.160	0.145	0.129	0.110	0.100	0.094	0.085	0.075	0.067	0.053
FTR250-120	0.172	0.158	0.140	0.120	0.109	0.102	0.092	0.082	0.073	0.058
FTR250-145	0.210	0.191	0.170	0.145	0.132	0.123	0.112	0.099	0.088	0.070
FTR250-180	0.260	0.238	0.211	0.180	0.164	0.153	0.139	0.122	0.110	0.086
FTR250-200	0.290	0.264	0.234	0.200	0.182	0.170	0.154	0.136	0.122	0.096
FTR250-250	0.390	0.340	0.300	0.250	0.230	0.210	0.180	0.160	0.140	0.100
FTR250-400	0.580	0.528	0.468	0.400	0.364	0.340	0.308	0.272	0.244	0.192
FTR250-600	0.870	0.792	0.702	0.600	0.546	0.510	0.462	0.408	0.366	0.288
FTR250-800	1.160	1.056	0.936	0.800	0.728	0.680	0.616	0.544	0.488	0.384
FTR250-1000	1.550	1.370	1.190	1.000	0.910	0.820	0.730	0.640	0.550	0.410
FTR250-1500	2.400	2.100	1.800	1.500	1.365	1.300	1.150	1.020	0.880	0.660
FTR250-2000	3.100	2.740	2.380	2.000	1.820	1.640	1.460	1.280	1.100	0.820

Dimensions



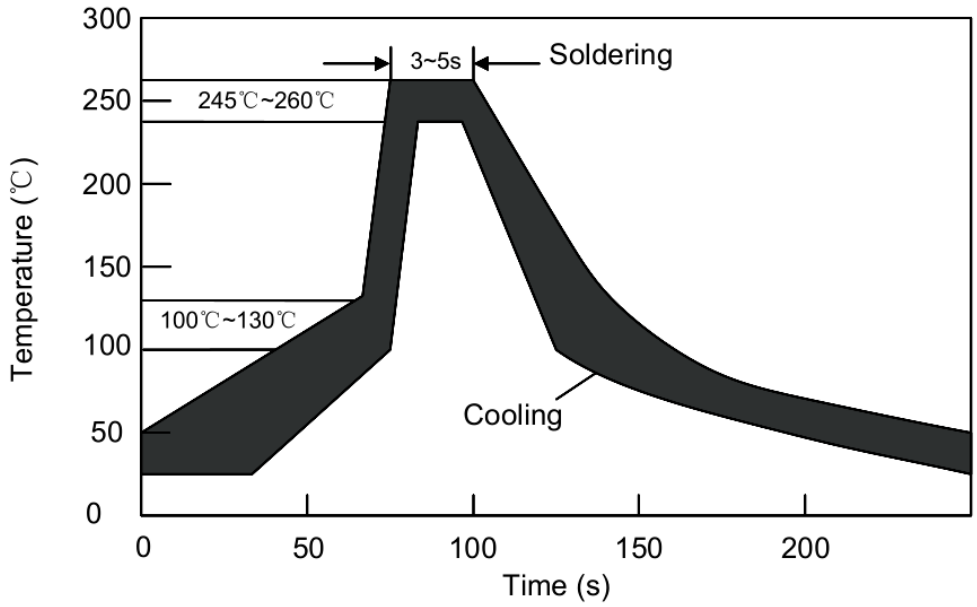
Part Number	Dimensions（mm）						Style.
	A	B	C	D	E	F	
	Max.	Max.	±0.6	Max.	Typ.	Min.	
FTR250-030	6.0	8.0	5.1	4.6	0.6	7.6	DZ
FTR250-040	7.4	13.5 / 12.7	5.1	4.6	0.6	4.6 / 7.6	DY / DZ
FTR250-060	7.4	14.5 / 12.7	5.1	4.6	0.6	4.6 / 7.6	DY / DZ
FTR250-080	7.4	14.5 / 12.7	5.1	4.6	0.6	4.6 / 7.6	DY / DZ
FTR250-090	7.4	14.5 / 12.7	5.1	4.6	0.6	4.6 / 7.6	DY / DZ
FTR250-110	7.0	14.5 / 10.5	5.1	4.6	0.6	4.6 / 7.6	SY / SZ
FTR250-120	7.0	14.5 / 10.5	5.1	4.6	0.6	4.6 / 7.6	SY / SZ
FTR250-145	7.5	15.0 / 11.0	5.1	4.6	0.6	4.6 / 7.6	SY / SZ
FTR250-180	10.5	18.5 / 14.5	5.1	4.6	0.6	4.6 / 7.6	SY/SZ/DZ
FTR250-200	10.5	18.5/17.0	5.1	4.6	0.6	7.6	SZ / DZ
FTR250-250	9.3	15.0/12.8	5.1	4.6	0.6	7.6	SY/SZ
FTR250-400	11.2	17.0/19.5	5.1	4.6	0.8/0.6	7.6	SZ/SI
FTR250-600	16.0	18.0	5.1	4.6	0.8	7.6	SZ
FTR250-800	20.0	22.0	5.1	4.6	0.8	7.6	SZ
FTR250-1000	21.1	23.6	10.2	4.6	0.8	7.6	DZ
FTR250-1500	21.0	27.5	10.2	4.6	0.8	7.6	SZ
FTR250-2000	26.2	32.8	10.2	4.6	0.8	7.6	SZ

Marking Code



Recommended Soldering Conditions

Wave Soldering Recommendation Parameters

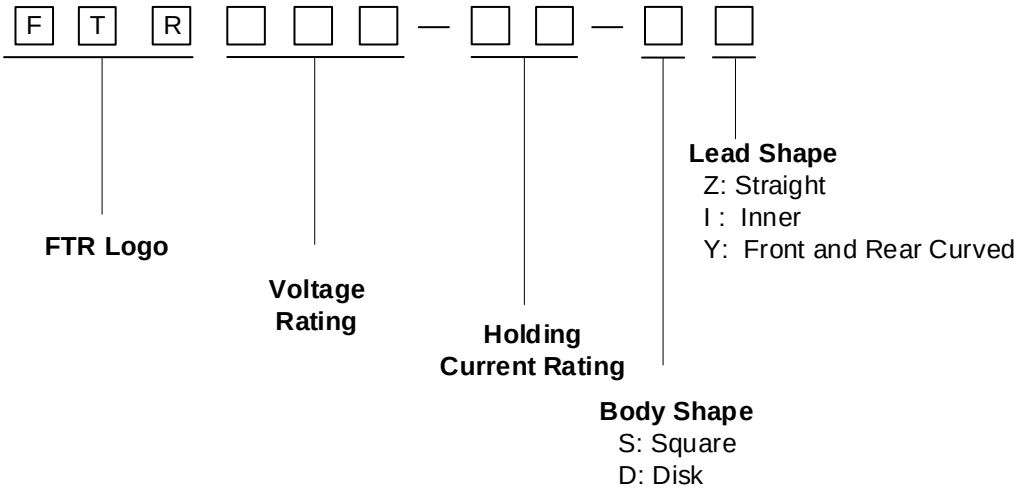


Items	Conditions
Pre-Heating Zone	Refer to the condition recommended by the flux manufacturer. Max. ramping rate should not exceed 4°C/Sec.
Soldering Zone	Max. solder temperature should not exceed 260°C Time within 5°C of actual Max. solder temperature within 3 - 5 seconds Total time from 25°C room to Max. solder temperature within 5 minutes including Pre-Heating time
Cooling Zone	Cooling by natural convection in air. Max. ramping down rate should not exceed 6°C/Sec.

Manual Soldering Recommendation Parameters

Items	Conditions
Soldering condition	The highest power of the manual soldering iron should be 30W or less, soldering temperature should not be higher than 280℃.
Soldering time	The soldering time should be kept within 3 seconds, otherwise it might cause insulation layer cracking, and increased part resistance.
Soldering position	The distance on the leads between the soldering point and bottom of the PPTC body should be equal or greater than 4mm.
Other	The soldering iron should not contact the PPTC body except the leads. If the soldering conditions are kept to lower temperature, less time and larger distance, the outcome of the soldering will be better.

Partnumber code



Environmental Specifications

Operating / Storage temperature	-40℃ to +85℃
Maximum Device Surface Temperature in Tripped State	125℃
Passive Aging	+85℃, 1000 hours ±5% typical resistance change
Humidity Aging	+85℃, 85%RH, 1000 hours ±5% typical resistance change
Thermal Shock	+85°C to -40°C 10 times 30% typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 No change
Moisture Level Sensitivity	Level 1, J-STD-020

Mechanical Specifications

Tensile strength	1.0Kgf, 10 seconds，No visible damage
Bending strength	0.5Kgf, 90°, 3 times，No visible damage
Vibration	Freq: 10-55Hz, Amp: 0.75mm, 1min；No visible damage

Packaging

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 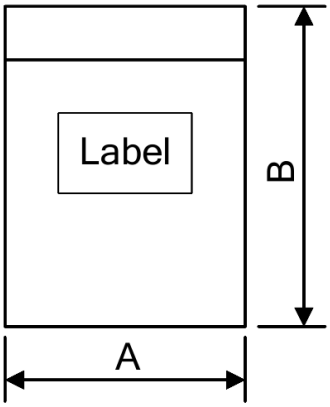
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4000pcs/box</td></tr>
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 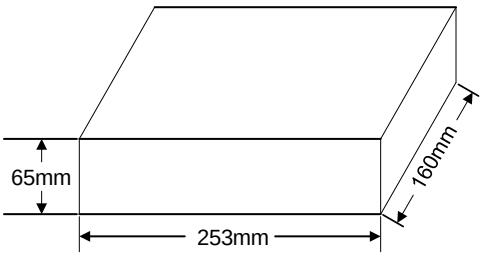
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800pcs/box</td></tr>
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