

## Features

- ▶ compact design saves board space
- ▶ RoHS compliant and lead-free
- ▶ Halogen-free
- ▶ Fast reponse to fault current
- ▶ Symmetrical design

## Applications

- ▶ USB port protection - USB 2.0, 3.0&OTG
- ▶ HDMI 1.4 Source protection
- ▶ PDAs / digital cameras
- ▶ Game console port protection
- ▶ PC motherboards-plug and play protection

HF RoHS REACH Pb

## 1. Electrical Characteristics

Model	I-hold (A)	I-trip (A)	Vmax (Vdc)	Imax (A)	Pd typ (W)	Max. Time to trip		R0 min (Ohm)	R1max (Ohm)
						Current (A)	Time (Sec.)		
WT1206-005	0.05	0.15	30.00	40.00	0.60	0.25	1.50	2.50	40.00
WT1206-005/60	0.05	0.15	60.00	10.00	0.60	0.25	1.50	2.50	40.00
WT1206-010	0.10	0.25	30.00	40.00	0.60	0.50	1.50	1.40	15.00
WT1206-010/60	0.10	0.25	60.00	10.00	0.60	0.50	1.50	1.40	15.00
WT1206-012	0.12	0.29	30.00	100.00	0.60	1.00	0.20	1.35	8.50
WT1206-012/48	0.12	0.29	48.00	100.00	0.60	1.00	0.20	1.40	6.50
WT1206-012/60	0.12	0.29	60.00	10.00	0.60	1.00	0.20	1.35	8.50
WT1206-016	0.16	0.45	48.00	10.00	0.60	1.00	0.30	1.10	5.00
WT1206-020	0.20	0.40	24.00	100.00	0.60	8.00	0.10	0.50	2.60
WT1206-020/30	0.20	0.40	30.00	100.00	0.60	8.00	0.10	0.50	2.60
WT1206-025	0.25	0.50	16.00	100.00	0.60	8.00	0.08	0.40	2.40
WT1206-025/24	0.25	0.50	24.00	100.00	0.60	8.00	0.08	0.40	2.40
WT1206-025/30	0.25	0.50	30.00	100.00	0.60	8.00	0.08	0.40	2.40
WT1206-025/48	0.25	0.50	48.00	40.00	0.60	8.00	0.08	0.40	2.70
WT1206-035	0.35	0.70	16.00	100.00	0.60	8.00	0.10	0.30	1.20
WT1206-035/30	0.35	0.70	30.00	100.00	0.60	8.00	0.10	0.30	1.40
WT1206-050	0.50	1.00	6.00	100.00	0.60	8.00	0.10	0.15	0.75
WT1206-050/8	0.50	1.00	8.00	100.00	0.60	8.00	0.10	0.15	0.75
WT1206-050/16	0.50	1.00	16.00	100.00	0.60	8.00	0.10	0.15	0.75
WT1206-050/24	0.50	1.00	24.00	100.00	0.60	8.00	0.10	0.15	1.00
WT1206-050/30	0.50	1.00	30.00	100.00	0.60	8.00	0.10	0.15	1.00
WT1206-075	0.75	1.50	8.00	100.00	0.60	8.00	0.20	0.09	0.40
WT1206-075/13.2	0.75	1.50	13.20	100.00	0.60	8.00	0.20	0.09	0.40
WT1206-075/16	0.75	1.50	16.00	100.00	0.60	8.00	0.20	0.09	0.50
WT1206-075/24	0.75	1.50	24.00	100.00	0.60	8.00	0.20	0.09	0.50
WT1206-075/30	0.75	1.50	30.00	100.00	0.60	8.00	0.20	0.09	0.50
WT1206-100	1.00	2.00	6.00	100.00	0.80	8.00	0.10	0.04	0.21

WT1206-100/8	1.00	2.00	8.00	100.00	0.80	8.00	0.10	0.04	0.21
WT1206-100/12	1.00	2.00	12.00	100.00	0.80	8.00	0.10	0.04	0.25
WT1206-100/16	1.00	2.00	16.00	100.00	0.80	8.00	0.10	0.04	0.25
WT1206-110	1.10	2.20	6.00	100.00	0.80	8.00	0.10	0.04	0.21
WT1206-110/8	1.10	2.20	8.00	100.00	0.80	8.00	0.10	0.04	0.21
WT1206-110/12	1.10	2.20	12.00	100.00	0.80	8.00	0.10	0.04	0.25
WT1206-110/16	1.10	2.20	16.00	100.00	0.80	8.00	0.10	0.04	0.25
WT1206-125	1.25	2.50	6.00	100.00	0.80	8.00	0.50	0.035	0.16
WT1206-125/8	1.25	2.50	8.00	100.00	0.80	8.00	0.50	0.035	0.16
WT1206-150	1.50	3.00	6.00	100.00	0.80	8.00	0.30	0.03	0.15
WT1206-150/8	1.50	3.00	8.00	100.00	0.80	8.00	0.30	0.03	0.15
WT1206-150/12	1.50	3.00	12.00	100.00	0.80	8.00	0.30	0.03	0.15
WT1206-150/16	1.50	3.00	16.00	100.00	0.80	8.00	0.30	0.03	0.15
WT1206-175	1.75	3.50	6.00	100.00	0.80	8.00	0.50	0.02	0.09
WT1206-200	2.00	4.00	6.00	100.00	0.80	8.00	0.50	0.018	0.085
WT1206-200/10	2.00	4.00	10.00	40.00	0.80	8.00	0.50	0.018	0.080
WT1206-200/12	2.00	4.00	12.00	40.00	0.80	8.00	0.50	0.018	0.080

I-hold: Holding Current: maximum current at which the device will not trip in 25°C still air.

I-trip: Tripping Current: minimum current at which the device will trip in 25°C still air.

Vmax: Maximum voltage device can withstand without damage at rated current(I<sub>max</sub>).

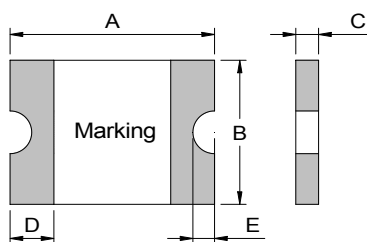
I<sub>max</sub>: Maximum fault current device can withstand without damage at rated voltage(V<sub>max</sub>).

Pd typ: Typical power dissipated from device when in the tripped state at 25°C still air.

R0 min: Minimum resistance of device in initial (un-soldered) state.

R1 max: Maximum resistance of device at 25°C measured one hour after tripping or reflow soldering of 260°C for 20 sec.

## 2. Product Dimensions(mm)&Marking



Model	A		B		C		D		E	Marking
	Min	Max	Min	Max	Min	Max	Min	Max	Min	
WT1206-005	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XZ
WT1206-005/60	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XZ
WT1206-010	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XN
WT1206-010/60	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XN
WT1206-012	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XN
WT1206-012/48	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XN

WT1206-012/60	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XN
WT1206-016	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XF
WT1206-020	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XF
WT1206-020/30	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XF
WT1206-025	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XF
WT1206-025/24	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XF
WT1206-025/30	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XF
WT1206-025/48	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XF <sup>*</sup>
WT1206-035	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XB
WT1206-035/30	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XB
WT1206-050	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XG
WT1206-050/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XG
WT1206-050/16	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XG
WT1206-050/24	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XG <sup>*</sup>
WT1206-050/30	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XG <sup>*</sup>
WT1206-075	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XA
WT1206-075/13.2	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XA
WT1206-075/16	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XA <sup>*</sup>
WT1206-075/24	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XA <sup>*</sup>
WT1206-075/30	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	<u>XA</u>
WT1206-100	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XH
WT1206-100/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XH
WT1206-100/12	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XH <sup>*</sup>
WT1206-100/16	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XH <sup>*</sup>
WT1206-110	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XH
WT1206-110/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XH
WT1206-110/12	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XH <sup>*</sup>
WT1206-110/16	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XH <sup>*</sup>
WT1206-125	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XI
WT1206-125/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	XI
WT1206-150	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XI
WT1206-150/8	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XI
WT1206-150/12	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	XI <sup>*</sup>
WT1206-150/16	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	XI
WT1206-175	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	XK
WT1206-200	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	XK
WT1206-200/10	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	XK <sup>*</sup>
WT1206-200/12	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	XK

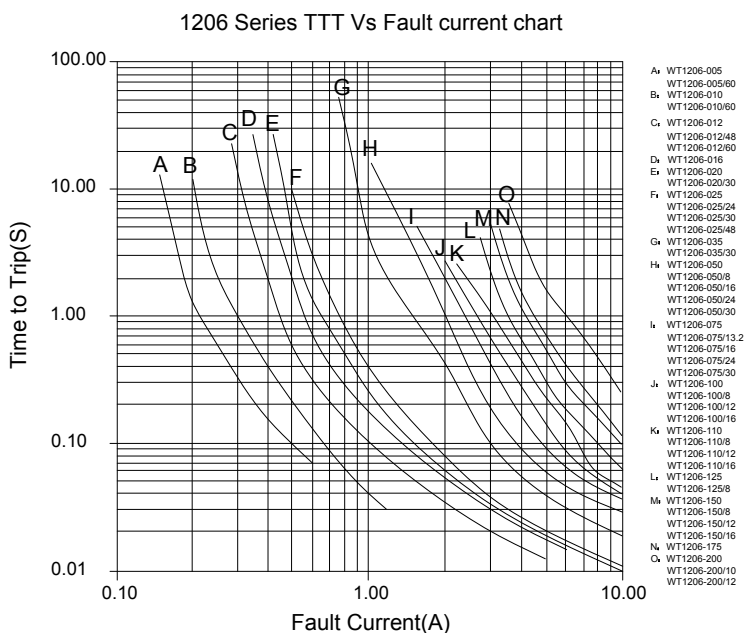
## 3. Thermal Derating Chart

Recommended hold current(A) at ambient Temperature(°C)

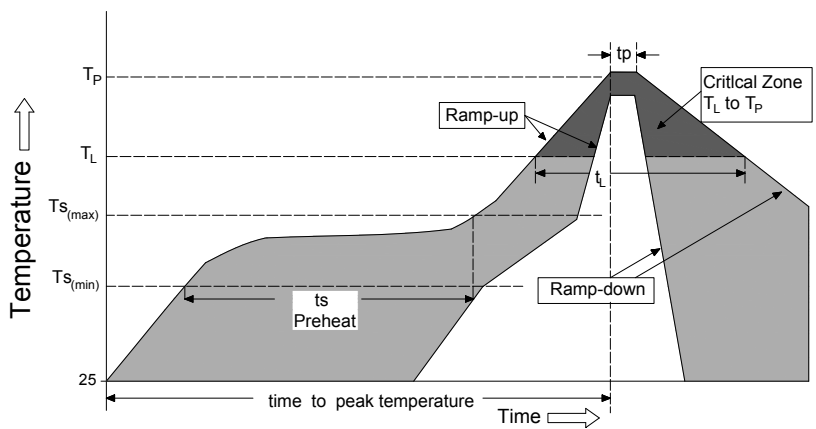
Model	Ambient Operating Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
WT1206-005	0.076	0.068	0.060	0.050	0.043	0.039	0.034	0.030	0.023
WT1206-005/60	0.076	0.068	0.060	0.050	0.043	0.039	0.034	0.030	0.023
WT1206-010	0.156	0.139	0.120	0.100	0.083	0.074	0.065	0.056	0.042
WT1206-010/60	0.156	0.139	0.120	0.100	0.083	0.074	0.065	0.056	0.042
WT1206-012	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.05
WT1206-012/48	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.05
WT1206-012/60	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.05
WT1206-016	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.11	0.09
WT1206-020	0.28	0.25	0.23	0.20	0.17	0.15	0.14	0.12	0.09
WT1206-020/30	0.28	0.25	0.23	0.20	0.17	0.15	0.14	0.12	0.09
WT1206-025	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
WT1206-025/24	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
WT1206-025/30	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
WT1206-025/48	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
WT1206-035	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
WT1206-035/30	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
WT1206-050	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
WT1206-050/8	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
WT1206-050/16	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
WT1206-050/24	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
WT1206-050/30	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
WT1206-075	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
WT1206-075/13.2	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
WT1206-075/16	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
WT1206-075/24	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
WT1206-075/30	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
WT1206-100	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
WT1206-100/8	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
WT1206-100/12	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
WT1206-100/16	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
WT1206-110	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
WT1206-110/8	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
WT1206-110/12	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
WT1206-110/16	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
WT1206-125	1.83	1.65	1.43	1.25	1.09	0.96	0.87	0.76	0.60
WT1206-125/8	1.83	1.65	1.43	1.25	1.09	0.96	0.87	0.76	0.60
WT1206-150	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
WT1206-150/8	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
WT1206-150/12	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
WT1206-150/16	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
WT1206-175	2.50	2.25	2.00	1.75	1.55	1.45	1.35	1.25	1.10
WT1206-200	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10
WT1206-200/10	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10

WT1206-200/12	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10
---------------	------	------	------	------	------	------	------	------	------

## 4. Typical time to trip at 25°C



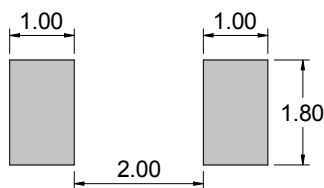
## 5. Soldering parameters



Profile Feature	Pb-Free Assembly	
Average Ramp-Up Rate ( $T_{S(max)}$ to $T_P$ )	3°C/second max	
Pre Heat:	Temperature Min ( $T_{S(min)}$ )	150°C
	Temperature Max ( $T_{S(max)}$ )	200°C
	Time (Min to Max) ( $t_s$ )	60 – 180 secs
Time Maintained Above:	Temperature ( $T_L$ )	217°C
	Temperature ( $t_L$ )	60 – 150 seconds
Peak / Classification Temperature ( $T_P$ )	260 <sup>+0/-5</sup> °C	
Time within 5°C of actual peak Temperature ( $t_p$ )	20 – 40 seconds	
Ramp-down Rate	6°C/second max	
Time 25°C to peak Temperature ( $T_P$ )	8 minutes Max.	

- ◆ All temperature refer to topside of the package, measured on the package body surface
- ◆ If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements
- ◆ Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead
- ◆ Recommended maximum paste thickness is 0.25mm (0.010inch)
- ◆ Devices can be cleaned using standard industry

## 6.Recommended Pad Layout(mm) & Physical Specifications



Terminal Material	Tin-Plated Nickel-Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/J-STD-002 Category 3.

## 7.Environmental Specifications

Operating Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	+85 °C, 1000 hours ; ±5 % typical resistance change
Humidity Aging	+85 °C, 85 % R.H. 1000 hours; ±5 % typical resistance change
Thermal Shock	MIL-STD-202, Method 107; +85 °C to -40 °C, 20 times;-30 % typical resistance change
Solvent Resistance	MIL-STD-202, Method 215 ; No change
Vibration	MIL-STD-883, Method 2007, Condition A; No change
Moisture Sensivity Level	Level 1, J-STD-020
Storage Conditions	+40 °C Max. 70% RH Max. Packed in original packaging.

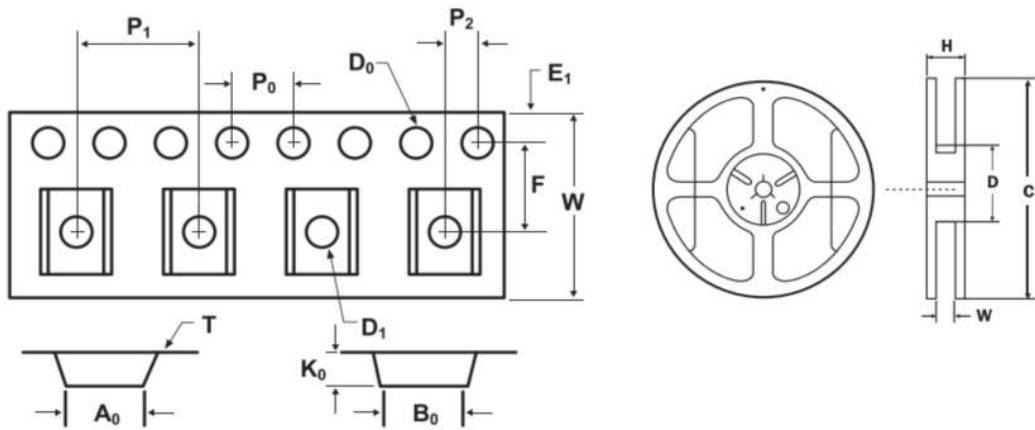
## 8. Test Procedures And Requirements

No.	Test	Test Conditions	Accept/Reject Criteria
1	R0 min	Resistance measurement at 25°C	R0min ≤ R ≤ R1max
2	R1 max	Resistance measurement one hour after post trip	R0min ≤ R ≤ R1max
3	I-hold	Hold rated current 1800 second without trip, @ 25°C	No trip
4	I-trip	Device must trip within 900 second under rated current, @25°C	Trip
5	Max. time to trip	At specified current, 25 °C	T ≤ max. time to trip (seconds)
6	Trip Cycle Life	Vmax, Imax, 100 cycles	No arcing or burning
7	Trip Endurance	Vmax,Imax 24 hours	No arcing or burning
8	Solderability	ANSI/J-STD-002	95 % min. coverage

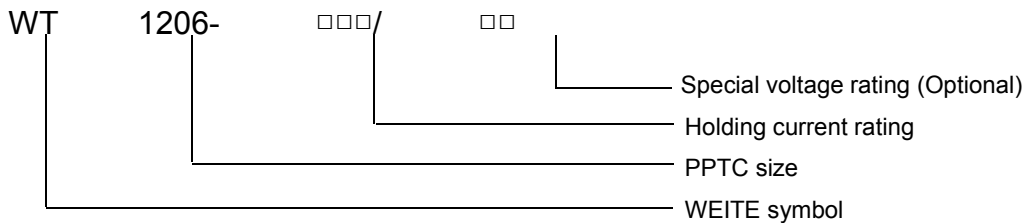
## 9.Tape and Reel Specifications&Packaging quantity per Reel

TAPE SPECIFICATIONS: EIA-481-1 (mm)						REEL DIMENSIONS: EIA-481-1 (mm)	
Item	WT1206-020	WT1206-020/30	WT1206-005	WT1206-005/60	WT1206-010	C	Ø178±1.0
	WT1206-025	WT1206-025/24	WT1206-010/60	WT1206-012	WT1206-012/48	D	Ø60.2±0.5
	WT1206-025/30	WT1206-035	WT1206-012/60	WT1206-016	WT1206-025/48	W	9.0±1.5
	WT1206-035/30	WT1206-050	WT1206-050/24	WT1206-050/30	WT1206-075/16	H	11.0±0.5
	WT1206-050/8	WT1206-050/16	WT1206-075/24	WT1206-100/12	WT1206-100/16		
	WT1206-075	WT1206-075/13.2	WT1206-110/12	WT1206-110/16	WT1206-125		
	WT1206-100	WT1206-100/8	WT1206-125/8	WT1206-150	WT1206-150/8		
	WT1206-110	WT1206-110/8	WT1206-175	WT1206-200	WT1206-075/30		
			WT1206-150/12	WT1206-150/16	WT1206-200/10		
		WT1206-200/12					
W	8.10±0.10		8.10±0.10				

F	3.50±0.05	3.50±0.05
E1	1.75±0.10	1.75±0.10
D0	1.55±0.05	1.55±0.05
D1	1.00 min	1.00 min
P0	4.0±0.10	4.0±0.10
P1	4.0±0.10	4.0±0.10
P2	2.0±0.05	2.0±0.05
A0	1.90±0.10	2.00±0.10
B0	3.45±0.10	3.50±0.10
T	0.25±0.05	0.25±0.05
K0	0.80±0.10	1.30±0.10
Leader	390mm	390mm
Trailer	160mm	160mm
Q'ty	5,000pcs/Reel	3,500pcs/Reel



## 10. Part Ordering Number System



### Warning:

- ▣ Users shall independently assess the suitability of these devices for each of their applications
- ▣ Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire
- ▣ These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration
- ▣ Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the performance of these PPTC devices
- ▣ These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses
- ▣ Circuits with inductance may generate a voltage ( $L di/dt$ ) above the rated voltage of the PPTC device.