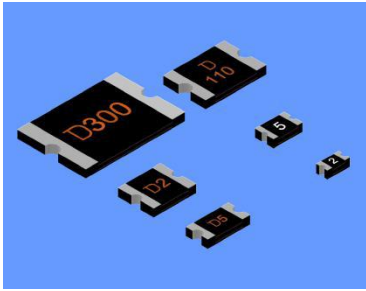



DT-1206 Series Surface Mount PPTC Devices




Features	Applications
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- | | |
|--|---|
| <ul style="list-style-type: none"> <input type="checkbox"/> compact design saves board space <input type="checkbox"/> RoHS compliant and lead-free <input type="checkbox"/> Halogen-free <input type="checkbox"/> Fast reponse to fault current <input type="checkbox"/> Symmetrical design | <ul style="list-style-type: none"> <input type="checkbox"/> USB port protection - USB 2.0, 3.0&OTG <input type="checkbox"/> HDMI 1.4 Source protection <input type="checkbox"/> PDAs / digital cameras <input type="checkbox"/> Game console port protection <input type="checkbox"/> PC motherboards-plug and play protection |
|--|---|

AGENCY	AGENCY FILE NUMBER
	E509656

HF RoHS REACH Pb Free

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)	Agency Approval 
						Current (A)	Time (Sec.)			
						DT-1206-005	0.05			
DT-1206-005/60	0.05	0.15	60.00	10.00	0.60	0.25	1.50	2.50	40.00	√
DT-1206-010	0.10	0.25	30.00	40.00	0.60	0.50	1.50	1.40	15.00	√
DT-1206-010/60	0.10	0.25	60.00	10.00	0.60	0.50	1.50	1.40	15.00	√
DT-1206-012	0.12	0.29	30.00	100.00	0.60	1.00	0.20	1.35	8.50	√
DT-1206-012/48	0.12	0.29	30.00	100.00	0.60	1.00	0.20	1.40	6.50	×
DT-1206-012/60	0.12	0.29	60.00	10.00	0.60	1.00	0.20	1.35	8.50	×
DT-1206-016	0.16	0.45	48.00	10.00	0.60	1.00	0.30	1.10	5.00	×
DT-1206-020	0.20	0.40	24.00	100.00	0.60	8.00	0.10	0.50	2.60	√
DT-1206-020/30	0.20	0.40	30.00	100.00	0.60	8.00	0.10	0.50	2.60	√
DT-1206-025	0.25	0.50	16.00	100.00	0.60	8.00	0.08	0.40	2.40	√
DT-1206-025/24	0.25	0.50	24.00	100.00	0.60	8.00	0.08	0.40	2.40	√
DT-1206-025/30	0.25	0.50	30.00	100.00	0.60	8.00	0.08	0.40	2.40	×
DT-1206-025/48	0.25	0.50	48.00	40.00	0.60	8.00	0.08	0.40	2.70	×
DT-1206-035	0.35	0.70	16.00	100.00	0.60	8.00	0.10	0.30	1.20	√
DT-1206-035/30	0.35	0.70	30.00	100.00	0.60	8.00	0.10	0.30	1.40	√
DT-1206-035/30S	0.35	0.70	30.00	100.00	0.60	8.00	0.10	0.30	1.40	×
DT-1206-050	0.50	1.00	6.00	100.00	0.60	8.00	0.10	0.15	0.75	√
DT-1206-050/8	0.50	1.00	8.00	100.00	0.60	8.00	0.10	0.15	0.75	√
DT-1206-050/16	0.50	1.00	16.00	100.00	0.60	8.00	0.10	0.15	0.75	√
DT-1206-050/24	0.50	1.00	24.00	100.00	0.60	8.00	0.10	0.15	1.00	√
DT-1206-050/30	0.50	1.00	30.00	100.00	0.60	8.00	0.10	0.15	1.00	×
DT-1206-075	0.75	1.50	8.00	100.00	0.60	8.00	0.20	0.09	0.40	√
DT-1206-075/13.2	0.75	1.50	13.20	100.00	0.60	8.00	0.20	0.09	0.40	√
DT-1206-075/16	0.75	1.50	16.00	100.00	0.60	8.00	0.20	0.09	0.50	√
DT-1206-075/24	0.75	1.50	24.00	100.00	0.60	8.00	0.20	0.09	0.50	×
DT-1206-075/30	0.75	1.50	30.00	100.00	0.60	8.00	0.20	0.09	0.50	×

DT-1206-100	1.00	2.00	6.00	100.00	0.80	8.00	0.10	0.04	0.21	√
DT-1206-100/8	1.00	2.00	8.00	100.00	0.80	8.00	0.10	0.04	0.21	√
DT-1206-100/12	1.00	2.00	12.00	100.00	0.80	8.00	0.10	0.04	0.25	√
DT-1206-100/16	1.00	2.00	16.00	100.00	0.80	8.00	0.10	0.04	0.25	×
DT-1206-110	1.10	2.20	6.00	100.00	0.80	8.00	0.10	0.04	0.21	√
DT-1206-110/8	1.10	2.20	8.00	100.00	0.80	8.00	0.10	0.04	0.21	√
DT-1206-110/12	1.10	2.20	12.00	100.00	0.80	8.00	0.10	0.04	0.25	√
DT-1206-110/16	1.00	2.00	16.00	100.00	0.80	8.00	0.10	0.04	0.25	×
DT-1206-125	1.25	2.50	6.00	100.00	0.80	8.00	0.50	0.035	0.16	×
DT-1206-125/8	1.25	2.50	8.00	100.00	0.80	8.00	0.50	0.035	0.16	×
DT-1206-150	1.50	3.00	6.00	100.00	0.80	8.00	0.30	0.03	0.15	√
DT-1206-150/8	1.50	3.00	8.00	100.00	0.80	8.00	0.30	0.03	0.15	√
DT-1206-150/12	1.50	3.00	12.00	100.00	0.80	8.00	0.30	0.03	0.15	×
DT-1206-150/16	1.50	3.00	16.00	100.00	0.80	8.00	0.30	0.03	0.15	×
DT-1206-175	1.75	3.50	6.00	100.00	0.80	8.00	0.50	0.02	0.09	√
DT-1206-200	2.00	4.00	6.00	100.00	0.80	8.00	0.50	0.018	0.085	√
DT-1206-200/10	2.00	4.00	10.00	40.00	0.80	8.00	0.50	0.018	0.080	×
DT-1206-200/12	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_{max}).

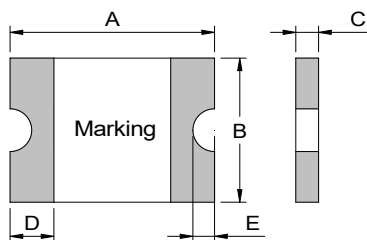
I_{max}: Maximum fault current device can withstand without damage at rated voltage(V_{max}).

P_{d typ}: Typical power dissipated from device when in the tripped state at 25°C still air.

R_{0 min}: Minimum resistance of device in initial (un-soldered) state.

R_{1 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	
DT-1206-005	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	D0
DT-1206-005/60	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	D0
DT-1206-010	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	D1
DT-1206-010/60	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	D1
DT-1206-012	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DA

DT-1206-012/48	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DA
DT-1206-012/60	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DA
DT-1206-016	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DR
DT-1206-020	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D2
DT-1206-020/30	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D2
DT-1206-025	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	DB
DT-1206-025/24	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	DB
DT-1206-025/30	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	DB
DT-1206-025/48	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DN
DT-1206-035	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D3
DT-1206-035/30	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DC
DT-1206-035/30S	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D3
DT-1206-050	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D5
DT-1206-050/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D5
DT-1206-050/16	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D5
DT-1206-050/24	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DE
DT-1206-050/30	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DE
DT-1206-075	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D7
DT-1206-075/13.2	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D7
DT-1206-075/16	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DF
DT-1206-075/24	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DF
DT-1206-075/30	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	DK
DT-1206-100	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D8
DT-1206-100/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D8
DT-1206-100/12	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DG
DT-1206-100/16	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DG
DT-1206-110	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D8
DT-1206-110/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	D8
DT-1206-110/12	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DG
DT-1206-110/16	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DG
DT-1206-125	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	DS
DT-1206-125/8	3.00	3.40	1.40	1.80	0.35	0.85	0.25	0.75	0.10	DS
DT-1206-150	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DH
DT-1206-150/8	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DH
DT-1206-150/12	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	DL
DT-1206-150/16	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	DL
DT-1206-175	3.00	3.40	1.40	1.80	0.65	1.15	0.25	0.75	0.10	DI
DT-1206-200	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	DJ
DT-1206-200/10	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	DP
DT-1206-200/12	3.00	3.40	1.40	1.80	1.00	1.50	0.25	0.75	0.10	DP

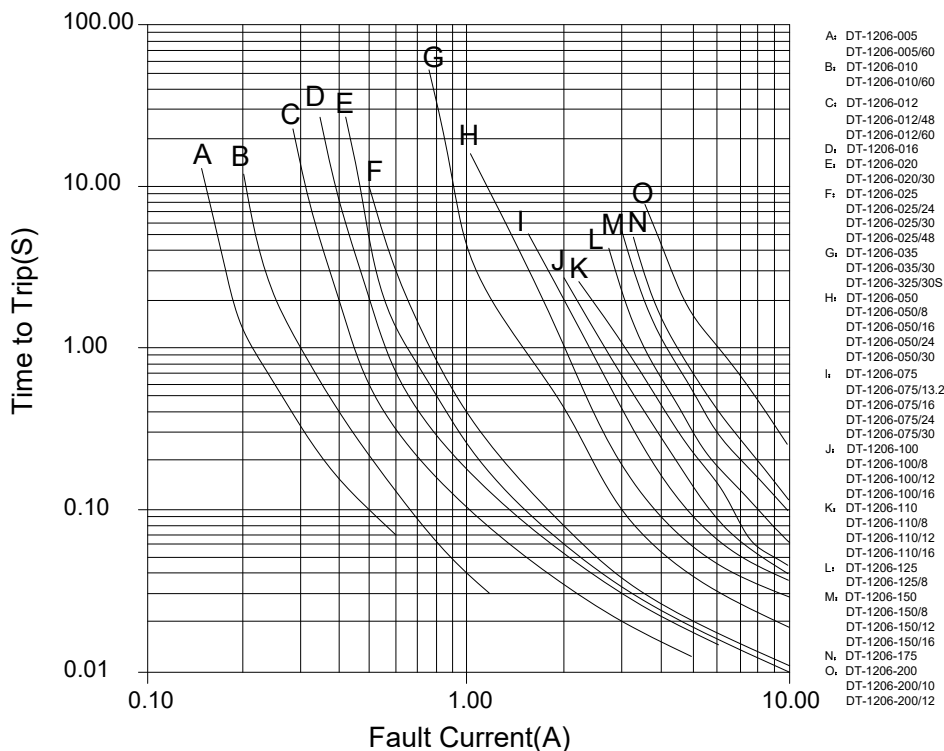
3. Thermal Derating Chart

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

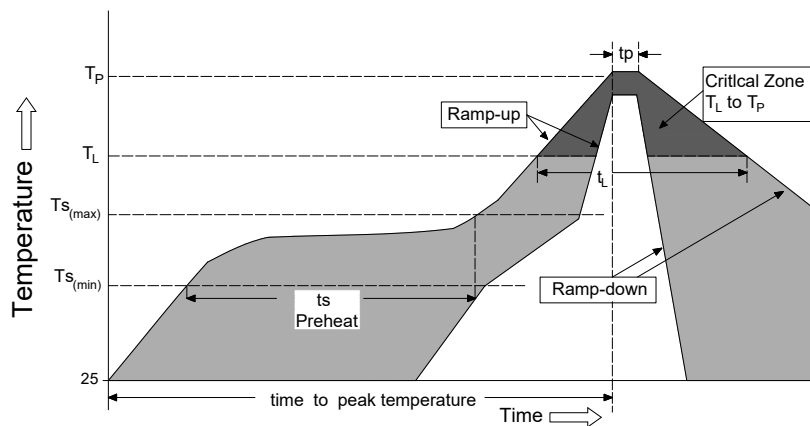
Model	Ambient Operating Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
DT-1206-005	0.076	0.068	0.060	0.050	0.043	0.039	0.034	0.030	0.023
DT-1206-005/60	0.076	0.068	0.060	0.050	0.043	0.039	0.034	0.030	0.023
DT-1206-010	0.156	0.139	0.120	0.100	0.083	0.074	0.065	0.056	0.042
DT-1206-010/60	0.156	0.139	0.120	0.100	0.083	0.074	0.065	0.056	0.042
DT-1206-012	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.05
DT-1206-012/48	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.05
DT-1206-012/60	0.18	0.16	0.14	0.12	0.10	0.09	0.08	0.07	0.05
DT-1206-016	0.22	0.20	0.18	0.16	0.14	0.13	0.12	0.11	0.09
DT-1206-020	0.28	0.25	0.23	0.20	0.17	0.15	0.14	0.12	0.09
DT-1206-020/30	0.28	0.25	0.23	0.20	0.17	0.15	0.14	0.12	0.09
DT-1206-025	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
DT-1206-025/24	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
DT-1206-025/30	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
DT-1206-025/48	0.37	0.33	0.29	0.25	0.22	0.2	0.17	0.15	0.12
DT-1206-035	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
DT-1206-035/30	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
DT-1206-035/30S	0.50	0.45	0.40	0.35	0.30	0.27	0.24	0.21	0.15
DT-1206-050	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
DT-1206-050/8	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
DT-1206-050/16	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
DT-1206-050/24	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
DT-1206-050/30	0.71	0.64	0.57	0.50	0.42	0.39	0.35	0.31	0.25
DT-1206-075	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
DT-1206-075/13.2	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
DT-1206-075/16	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
DT-1206-075/24	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
DT-1206-075/30	1.14	1.01	0.88	0.75	0.65	0.59	0.54	0.49	0.41
DT-1206-100	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
DT-1206-100/8	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
DT-1206-100/12	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
DT-1206-100/16	1.49	1.33	1.18	1.00	0.84	0.75	0.73	0.59	0.47
DT-1206-110	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
DT-1206-110/8	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
DT-1206-110/12	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
DT-1206-110/16	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
DT-1206-125	1.83	1.65	1.43	1.25	1.09	0.96	0.87	0.76	0.60
DT-1206-125/8	1.83	1.65	1.43	1.25	1.09	0.96	0.87	0.76	0.60
DT-1206-150	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
DT-1206-150/8	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
DT-1206-150/12	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
DT-1206-150/16	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
DT-1206-175	2.50	2.25	2.00	1.75	1.55	1.45	1.35	1.25	1.10
DT-1206-200	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10
DT-1206-200/10	2.60	2.44	2.35	2.00	1.78	1.67	1.50	1.45	1.10
DT-1206-200/12	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

1206 Series TTT Vs Fault current chart



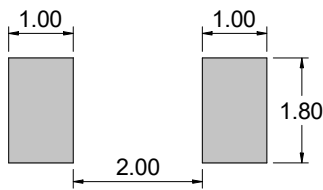
5. Soldering parameters



Profile Feature		Pb-Free Assembly
Average Ramp-Up Rate (Ts(max) to Tp)		3°C/second max
Pre Heat:	Temperature Min (Ts(min))	150°C
	Temperature Max (Ts(max))	200°C
	Time (Min to Max) (ts)	60 – 180 secs
Time Maintained Above:	Temperature (Tl)	217°C
	Temperature (tl)	60 – 150 seconds
Peak / Classification Temperature (Tp)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (tp)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (Tp)		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 methods and solvents

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.

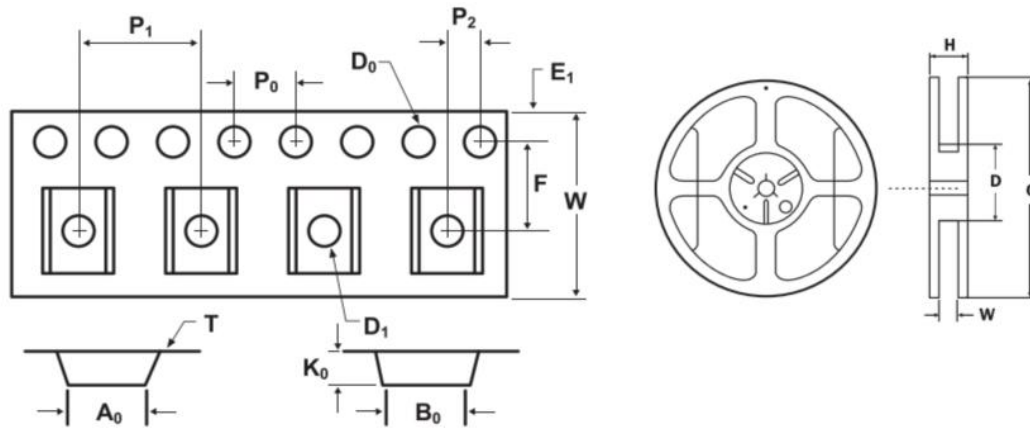
8. Test Procedures And Requirements

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

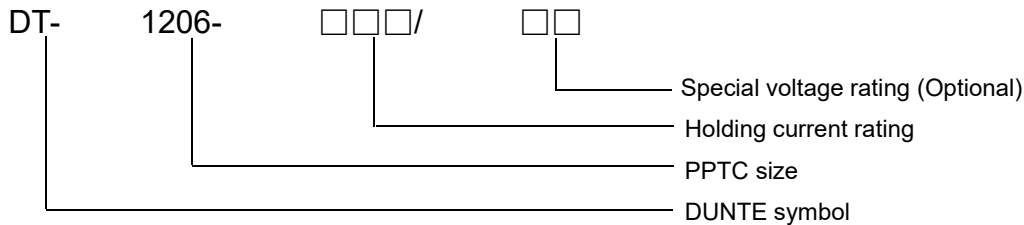
9. Tape and Reel Specifications & Packaging quantity per Reel

Item	TAPE SPECIFICATIONS: EIA-481-1 (mm)						REEL DIMENSIONS: EIA-481-1 (mm)	
	DT-1206-020	DT-1206-020/30	DT-1206-005	DT-1206-005/60	DT-1206-075/30		C	Ø178±1.0
	DT-1206-025	DT-1206-025/24	DT-1206-010	DT-1206-010/60	DT-1206-150/12		D	Ø60.2±0.5
	DT-1206-025/30	DT-1206-035	DT-1206-012	DT-1206-012/48	DT-1206-150/16		W	9.0±1.5
	DT-1206-035/30S	DT-1206-050	DT-1206-012/60	DT-1206-016	DT-1206-200/10		H	11.0±0.5
	DT-1206-050/8	DT-1206-050/16	DT-1206-025/48	DT-1206-035/30	DT-1206-200/12			
	DT-1206-075	DT-1206-075/13.2	DT-1206-050/24	DT-1206-050/30				
	DT-1206-100	DT-1206-100/8	DT-1206-075/16	DT-1206-075/24				
	DT-1206-110	DT-1206-110/8	DT-1206-100/12	DT-1206-100/16				
			DT-1206-110/12	DT-1206-110/16				
			DT-1206-125	DT-1206-125/8				
			DT-1206-150	DT-1206-150/8				
			DT-1206-175	DT-1206-200				
W	8.10±0.10		8.10±0.10		8.10±0.10			
F	3.50±0.05		3.50±0.05		3.50±0.05			
E1	1.75±0.10		1.75±0.10		1.75±0.10			
D0	1.55±0.05		1.55±0.05		1.55±0.05			

D1	1.00 min	1.00 min	1.00 min
P0	4.0±0.10	4.0±0.10	4.0±0.10
P1	4.0±0.10	4.0±0.10	4.0±0.10
P2	2.0±0.05	2.0±0.05	2.0±0.05
A0	1.90±0.10	2.00±0.10	2.00±0.10
B0	3.45±0.10	3.50±0.10	3.50±0.10
T	0.25±0.05	0.25±0.05	0.25±0.05
K0	0.85±0.10	1.05±0.10	1.30±0.10
Leader	390mm	390mm	390mm
Trailer	160mm	160mm	160mm
Q'ty	4,000pcs/Reel	3,500pcs/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.