
Features

- ▶ Ultra low resistance
- ▶ RoHS compliant and lead-free
- ▶ Halogen-free
- ▶ Fast reponse to fault current
- ▶ Symmetrical design

Applications

- ▶ USB port protection - USB 2.0, 3.0&OTG
- ▶ Li-ion/Li-Polymer battery packs
- ▶ PDAs / digital cameras
- ▶ Computer peripherals
- ▶ PC motherboards-plug and play protection

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)
						Current (A)	Time (Sec.)		
DT-1812-450L	4.50	9.00	9.0	50.0	1.20	22.50	5.0	0.002	0.012
DT-1812-450/12L	4.50	9.00	12.0	50.0	1.20	22.50	5.0	0.002	0.012
DT-1812-450/18L	4.50	9.00	18.0	20.0	1.20	22.50	5.0	0.002	0.012
DT-1812-500L	5.00	10.0	9.0	50.0	1.20	25.00	5.0	0.002	0.011
DT-1812-500/12L	5.00	10.0	12.0	50.0	1.20	25.00	5.0	0.002	0.011
DT-1812-550L	5.50	11.0	9.0	50.0	1.20	27.50	5.0	0.002	0.010
DT-1812-550/12L	5.50	11.0	12.0	50.0	1.20	27.50	5.0	0.002	0.010
DT-1812-600L	6.00	12.0	9.0	50.0	1.20	30.0	5.0	0.001	0.009
DT-1812-600/12L	6.00	12.0	12.0	50.0	1.20	30.0	5.0	0.001	0.009
DT-1812-650L	6.50	13.0	9.0	50.0	1.20	32.5	5.0	0.001	0.008
DT-1812-650/12L	6.50	13.0	12.0	50.0	1.20	32.5	5.0	0.001	0.008
DT-1812-700L	7.00	14.0	9.0	50.0	1.20	35.0	5.0	0.001	0.007
DT-1812-700/12L	7.00	14.0	12.0	50.0	1.20	35.0	5.0	0.001	0.007
DT-1812-750L	7.50	15.0	9.0	50.0	1.20	37.5	5.0	0.001	0.006
DT-1812-750/12L	7.50	15.0	12.0	50.0	1.20	37.5	5.0	0.001	0.006
DT-1812-800L	8.00	16.0	9.0	50.0	1.20	40.0	5.0	0.0005	0.005
DT-1812-800/12L	8.00	16.0	12.0	50.0	1.20	40.0	5.0	0.0005	0.005
DT-1812-850L	8.50	17.0	9.0	50.0	1.20	42.5	5.0	0.0005	0.0045
DT-1812-850/12L	8.50	17.0	12.0	50.0	1.20	42.5	5.0	0.0005	0.0045
DT-1812-900L	9.00	18.0	9.0	50.0	1.20	45.0	5.0	0.0005	0.0040
DT-1812-900/12L	9.00	18.0	12.0	50.0	1.20	45.0	5.0	0.0005	0.0040

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(Imax).

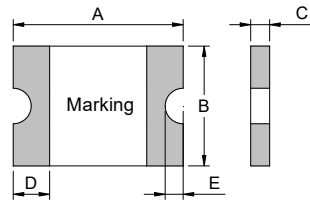
I max: Maximum fault current device can withstand without damage at rated voltage(Vmax).

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



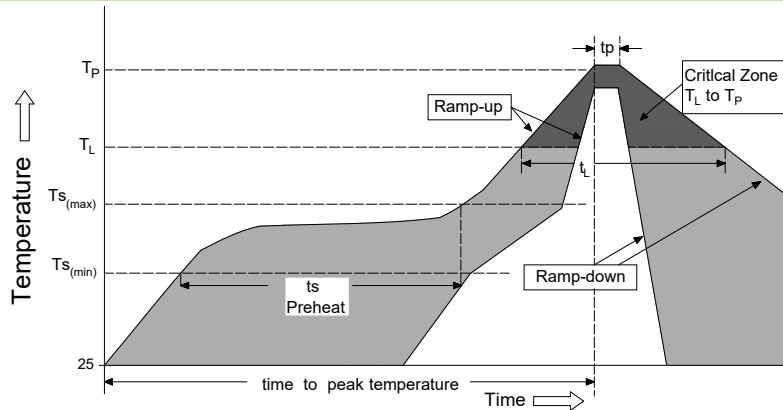
Model	A		B		C		D		E	Marking
	Min	Max	Min	Max	Min	Max	Min	Max	Min	
DT-1812-450L	4.37	4.73	3.07	3.41	0.35	0.75	0.30	1.20	0.20	D 450
DT-1812-450/12L	4.37	4.73	3.07	3.41	0.35	0.75	0.30	1.20	0.20	D 450
DT-1812-450/18L	4.37	4.73	3.07	3.41	0.35	0.75	0.30	1.20	0.20	D ⁴⁵⁰ 18
DT-1812-500L	4.37	4.73	3.07	3.41	0.35	0.75	0.30	1.20	0.20	D 500
DT-1812-500/12L	4.37	4.73	3.07	3.41	0.35	0.75	0.30	1.20	0.20	D 500
DT-1812-550L	4.37	4.73	3.07	3.41	0.35	0.75	0.30	1.20	0.20	D 550
DT-1812-550/12L	4.37	4.73	3.07	3.41	0.35	0.75	0.30	1.20	0.20	D 550
DT-1812-600L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 600
DT-1812-600/12L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 600
DT-1812-650L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 650
DT-1812-650/12L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 650
DT-1812-700L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 700
DT-1812-700/12L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 700
DT-1812-750L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 750
DT-1812-750/12L	4.37	4.73	3.07	3.41	0.60	1.00	0.30	1.20	0.20	D 750
DT-1812-800L	4.37	4.73	3.07	3.41	0.90	1.30	0.30	1.20	0.20	D 800
DT-1812-800/12L	4.37	4.73	3.07	3.41	0.90	1.30	0.30	1.20	0.20	D 800
DT-1812-850L	4.37	4.73	3.07	3.41	0.90	1.30	0.30	1.20	0.20	D 850
DT-1812-850/12L	4.37	4.73	3.07	3.41	0.90	1.30	0.30	1.20	0.20	D 850
DT-1812-900L	4.37	4.73	3.07	3.41	0.90	1.30	0.30	1.20	0.20	D 900
DT-1812-900/12L	4.37	4.73	3.07	3.41	0.90	1.30	0.30	1.20	0.20	D 900

3.Thermal Derating Chart

Model	Ambient Operating Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
DT-1812-450L	6.57	5.94	5.15	4.50	3.93	3.46	3.14	2.72	2.14
DT-1812-450/12L	6.57	5.94	5.15	4.50	3.93	3.46	3.14	2.72	2.14
DT-1812-450/18L	6.57	5.94	5.15	4.50	3.93	3.46	3.14	2.72	2.14
DT-1812-500L	7.30	6.61	5.72	5.00	4.37	3.84	3.49	3.03	2.38
DT-1812-500/12L	7.30	6.61	5.72	5.00	4.37	3.84	3.49	3.03	2.38
DT-1812-550L	8.03	7.27	6.30	5.50	4.81	4.23	3.84	3.33	2.62
DT-1812-550/12L	8.03	7.27	6.30	5.50	4.81	4.23	3.84	3.33	2.62
DT-1812-600L	8.76	7.93	6.87	6.00	5.24	4.61	4.18	3.63	2.86

DT-1812-600/12L	8.76	7.93	6.87	6.00	5.24	4.61	4.18	3.63	2.86
DT-1812-650L	9.49	8.59	7.44	6.50	5.68	4.99	4.53	3.93	3.10
DT-1812-650/12L	9.49	8.59	7.44	6.50	5.68	4.99	4.53	3.93	3.10
DT-1812-700L	10.22	9.25	8.01	7.00	6.12	5.38	4.88	4.24	3.33
DT-1812-700/12L	10.22	9.25	8.01	7.00	6.12	5.38	4.88	4.24	3.33
DT-1812-750L	10.95	9.91	8.59	7.50	6.55	5.76	5.23	4.54	3.57
DT-1812-750/12L	10.95	9.91	8.59	7.50	6.55	5.76	5.23	4.54	3.57
DT-1812-800L	11.68	10.57	9.16	8.00	6.99	6.15	5.58	4.84	3.81
DT-1812-800/12L	11.68	10.57	9.16	8.00	6.99	6.15	5.58	4.84	3.81
DT-1812-850L	12.41	11.23	9.73	8.50	7.43	6.53	5.93	5.14	4.05
DT-1812-850/12L	12.41	11.23	9.73	8.50	7.43	6.53	5.93	5.14	4.05
DT-1812-900L	13.14	11.89	10.30	9.00	7.86	6.92	6.28	5.45	4.29
DT-1812-900/12L	13.14	11.89	10.30	9.00	7.86	6.92	6.28	5.45	4.29

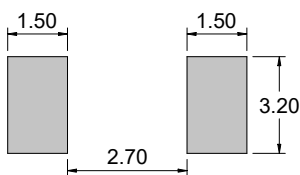
4.Soldering parameters



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

5.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.

6.Environmental Specifications

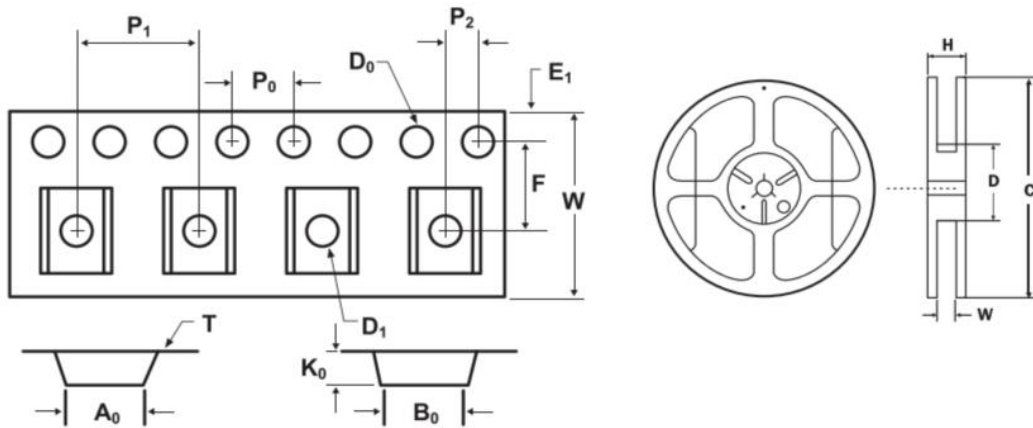
Operating Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	+85 °C, 1000 hours ; ±10 % typical resistance change
Humidity Aging	+85 °C, 85 % R.H. 100 hours; ±15 % typical resistance change
Thermal Shock	MIL-STD-202, Method 107; +85 °C to -40 °C, 20 times;-30 % 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 2, J-STD-020
Storage Conditions	+30 °C Max. 60% RH Max. Packed in original packaging.

7.Test Procedures And Requirements

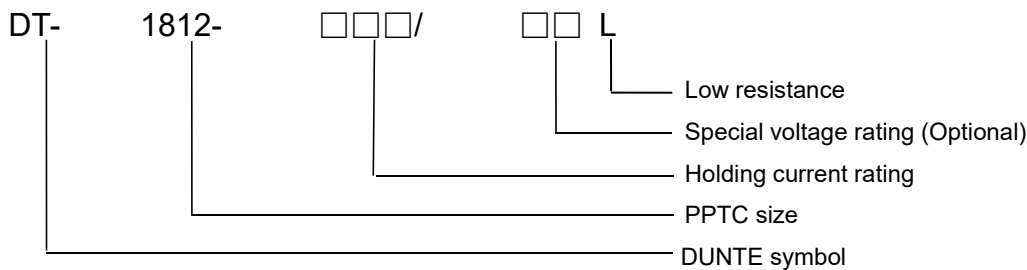
No.	Test	Test Conditions	Accept/Reject Criteria
1	R0 min	Resistance measurement at 25°C	$R_{0min} \leq R \leq R_{1max}$
2	R1 max	Resistance measurement one hour after post trip	$R_{0min} \leq R \leq R_{1max}$
3	I-hold	Hold rated current 1800 second without trip, @ 25°C	No trip
4	I-trip	Device must trip within 900 second under rated current, @25°C	Trip
5	Max. time to trip	At specified current, 25 °C	$T \leq \text{max. time to trip (seconds)}$
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

8.Tape and Reel Specifications&Packaging quantity per Reel

Item	DT-1812-450L DT-1812-450/18L DT-1812-500/12L DT-1812-550/12L	DT-1812-450/12L DT-1812-500L DT-1812-550L	DT-1812-600L DT-1812-650L DT-1812-700L DT-1812-750L DT-1812-800L DT-1812-850L DT-1812-900L	DT-1812-600/12L DT-1812-650/12L DT-1812-700/12L DT-1812-750/12L DT-1812-800/12L DT-1812-850/12L DT-1812-900/12L	REEL DIMENSIONS: EIA-481-1 (mm)	
					C	Ø178±1.0
					D	Ø60.2±0.5
					W	13.2±1.5
					H	16.0±0.5
W	12.0±0.10		12.0±0.10			
F	5.50±0.05		5.50±0.05			
E1	1.75±0.10		1.75±0.10			
D0	1.55±0.05		1.55±0.05			
D1	1.50 min		1.50 min			
P0	4.0±0.10		4.0±0.10			
P1	8.0±0.10		8.0±0.10			
P2	2.0±0.05		2.0±0.05			
A0	3.58±0.10		3.58±0.10			
B0	4.93±0.10		4.93±0.10			
T	0.25±0.05		0.25±0.05			
K0	0.87±0.10		1.30±0.10			
Leader	390mm		390mm			
Trailer	160mm		160mm			
Q'ty	2,000pcs/Reel		1,500pcs/Reel			



9. Part Ordering Number System



APPLICATION NOTICE

- Operation of these PPTC devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire;
PPTC 器件在超过规定的最大值额定值运行可能会导致器件损坏以及导致电弧和/或火灾。
- These PPTC devices are intended to protect against the effects of temporary over-current or over-temperature conditions and shall not be taken for use as switch.
PPTC 的作用是防止临时的过流或过温造成的不良影响，不能当作开关使用。
- Exposure to lubricants, silicon-based oils, solvents, gels, electrolytes, acids, and other related or similar materials may adversely affect the performance of PPTC devices.
PPTC 接触润滑剂、硅基油、溶剂、凝胶、电解质、酸和其他相关或类似材料可能会对 PPTC 器件的性能有不利影响。
- Circuits with inductance may generate a voltage above the rated voltage of the PPTC device and should be thoroughly evaluated within the user's application during the PPTC selection and qualification process.
带有电感的电路可能产生高于 PPTC 额定电压的电压，因此客户在选型和认定过程中应进行彻底的评估。
- Please do not smash, clamp, pull, dent or twist by tool during assembling process, as they may result in the PPTC damage.
在装配过程中，避免有砸、挤、拉、扭等方式外力作用于 PPTC 本体上，因为它们可能导致 PPTC 损坏。
- Hand-soldering of PPTC devices on boards is generally not recommended. Users shall define and verify this process if needed.
不推荐使用手工焊接的方式焊接 PPTC。如果需要，用户需要定义和验证此过程。
- Recommended storage conditions should be followed at all times, The MSL classification of DTE's low resistance PPTC is grade 2.
必须始终遵守推荐的保存条件要求，DTE 低阻 PPTC 的 MSL 等级为 2 级。