

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

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-0805-005	0.05	0.15	30.00	40.00	0.50	0.25	1.50	3.60	20.00	√
DT-0805-005/48	0.05	0.15	48.00	40.00	0.50	0.25	1.50	3.60	20.00	×
DT-0805-010	0.10	0.30	15.00	100.00	0.50	0.50	1.50	1.00	6.50	√
DT-0805-010/24	0.10	0.30	24.00	100.00	0.50	0.50	1.50	1.00	7.50	√
DT-0805-010/30	0.10	0.30	30.00	100.00	0.50	0.50	1.50	1.00	7.50	×
DT-0805-020	0.20	0.50	9.00	100.00	0.50	8.00	0.02	0.65	3.50	√
DT-0805-020/16	0.20	0.50	16.00	100.00	0.50	8.00	0.02	0.65	3.50	×
DT-0805-020/24	0.20	0.50	24.00	100.00	0.50	8.00	0.02	0.65	3.50	×
DT-0805-035	0.35	0.70	6.00	100.00	0.50	8.00	0.10	0.25	1.20	√
DT-0805-035/9	0.35	0.70	9.00	100.00	0.50	8.00	0.10	0.25	1.20	√
DT-0805-035/16	0.35	0.70	16.00	100.00	0.50	8.00	0.10	0.25	1.20	×
DT-0805-050	0.50	1.00	6.00	100.00	0.50	8.00	0.10	0.15	0.85	√
DT-0805-050/9	0.50	1.00	9.00	100.00	0.50	8.00	0.10	0.15	0.85	√
DT-0805-050/12	0.50	1.00	12.00	100.00	0.50	8.00	0.10	0.15	0.85	×
DT-0805-075	0.75	1.50	6.00	100.00	0.60	8.00	0.20	0.09	0.35	√
DT-0805-100	1.00	2.00	6.00	100.00	0.60	8.00	0.30	0.06	0.22	√
DT-0805-110	1.10	2.20	6.00	100.00	0.60	8.00	0.30	0.06	0.20	√
DT-0805-125	1.25	2.50	6.00	100.00	0.60	8.00	0.60	0.025	0.140	×

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).

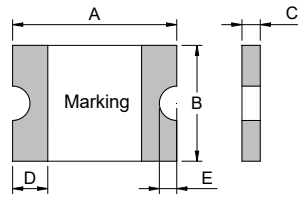
I max: Maximum fault current device can withstand without damage at rated voltage(Vmax).

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



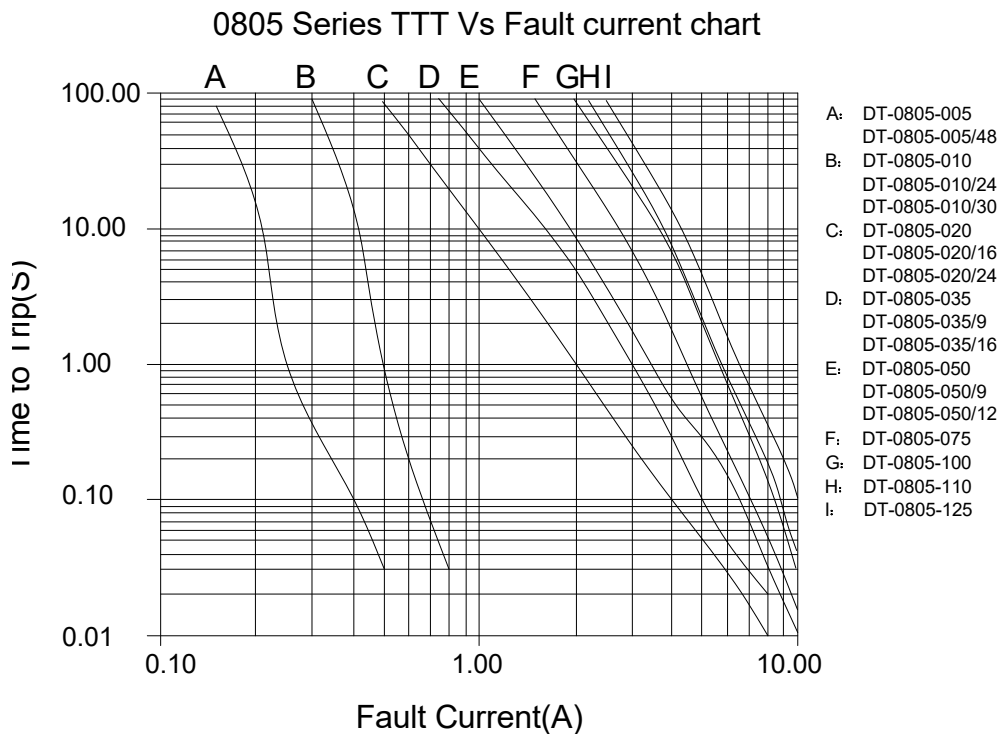
Model	A		B		C		D		E	Marking
	Min	Max	Min	Max	Min	Max	Min	Max	Min	
DT-0805-005	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	0
DT-0805-005/48	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	0
DT-0805-010	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	1
DT-0805-010/24	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	1
DT-0805-010/30	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	1
DT-0805-020	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	2
DT-0805-020/16	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	2
DT-0805-020/24	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	2
DT-0805-035	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	3
DT-0805-035/9	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	3
DT-0805-035/16	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	3
DT-0805-050	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	5
DT-0805-050/9	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	5
DT-0805-050/12	2.00	2.30	1.20	1.50	0.40	0.90	0.20	0.55	0.10	5
DT-0805-075	2.00	2.30	1.20	1.50	0.65	1.15	0.20	0.55	0.10	7
DT-0805-100	2.00	2.30	1.20	1.50	0.65	1.15	0.20	0.55	0.10	F
DT-0805-110	2.00	2.30	1.20	1.50	0.65	1.15	0.20	0.55	0.10	F
DT-0805-125	2.00	2.30	1.20	1.50	0.65	1.15	0.20	0.55	0.10	12

3. Thermal Derating Chart

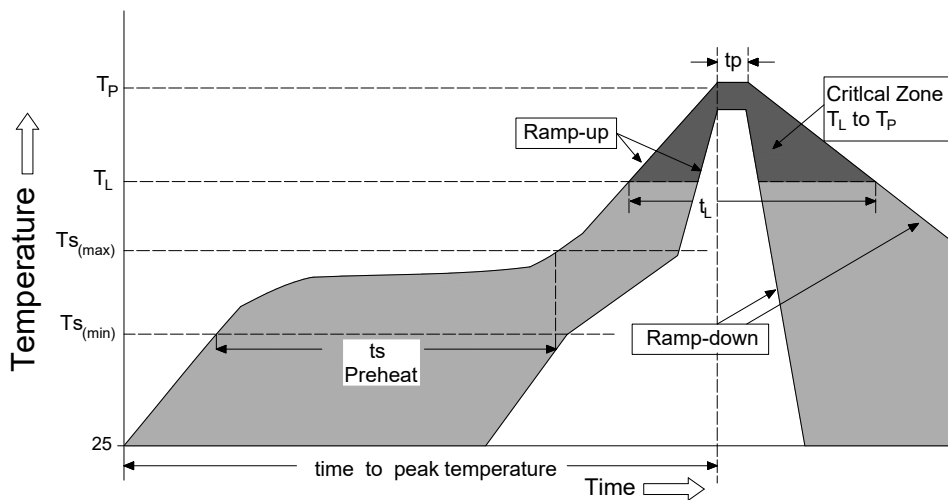
Recommended hold current(A) at ambient Temperature(°C)

Model	Ambient Operating Temperature								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
DT-0805-005	0.078	0.070	0.060	0.050	0.041	0.038	0.033	0.028	0.021
DT-0805-005/48	0.078	0.070	0.060	0.050	0.041	0.038	0.033	0.028	0.021
DT-0805-010	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
DT-0805-010/24	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
DT-0805-010/30	0.14	0.12	0.11	0.10	0.08	0.07	0.06	0.05	0.03
DT-0805-020	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
DT-0805-020/16	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
DT-0805-020/24	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
DT-0805-035	0.48	0.45	0.40	0.35	0.31	0.28	0.25	0.20	0.14
DT-0805-035/9	0.48	0.45	0.40	0.35	0.31	0.28	0.25	0.20	0.14
DT-0805-035/16	0.48	0.45	0.40	0.35	0.31	0.28	0.25	0.20	0.14
DT-0805-050	0.70	0.65	0.55	0.50	0.40	0.37	0.33	0.29	0.23
DT-0805-050/9	0.70	0.65	0.55	0.50	0.40	0.37	0.33	0.29	0.23
DT-0805-050/12	0.70	0.65	0.55	0.50	0.40	0.37	0.33	0.29	0.23
DT-0805-075	1.00	0.90	0.80	0.75	0.63	0.57	0.53	0.41	0.34
DT-0805-100	1.35	1.25	1.10	1.00	0.82	0.74	0.65	0.55	0.42
DT-0805-110	1.40	1.30	1.15	1.10	0.90	0.82	0.70	0.60	0.47
DT-0805-125	1.65	1.55	1.35	1.25	1.05	0.95	0.85	0.75	0.60

4. Typical time to trip at 25°C



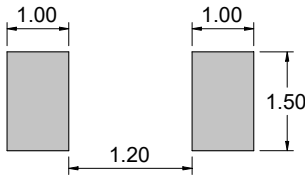
5. Soldering parameters



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 ^{+0/-5} °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 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.

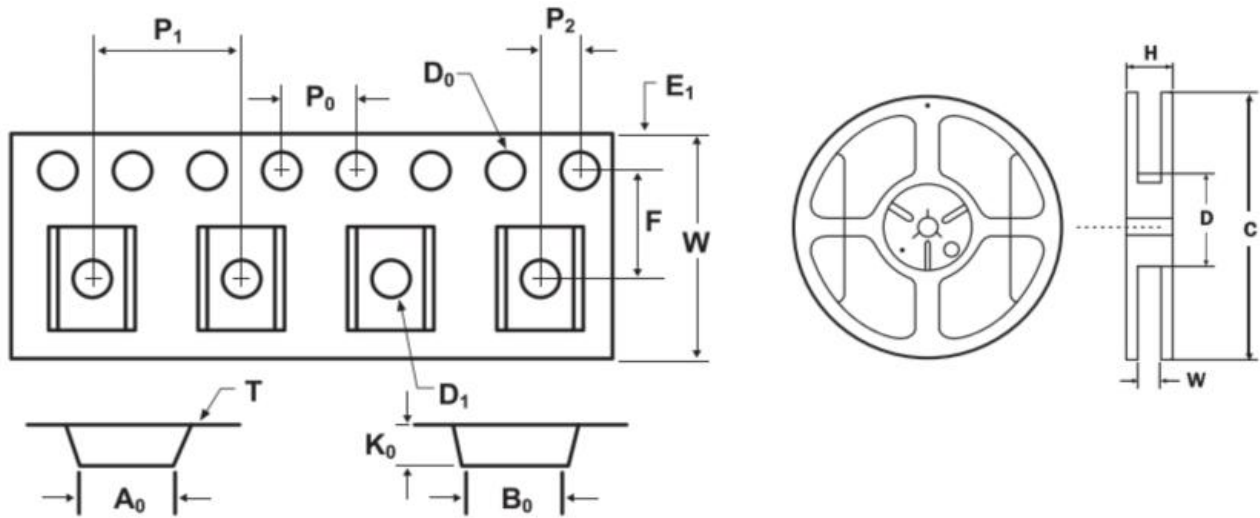
8. Test Procedures And Requirements

No.	Test	Test Conditions	Accept/Reject Criteria
1	R0 min	Resistance measurement at 25°C	$R0min \leq R \leq R1max$
2	R1 max	Resistance measurement one hour after post trip	$R0min \leq R \leq R1max$
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	$T \leq \text{max. time to trip (seconds)}$
6	Trip Cycle Life	V_{max} , I_{max} , 100 cycles	No arcing or burning
7	Trip Endurance	V_{max} , I_{max} 24 hours	No arcing or burning
8	Solderability	ANSI/J-STD-002	95 % min. coverage

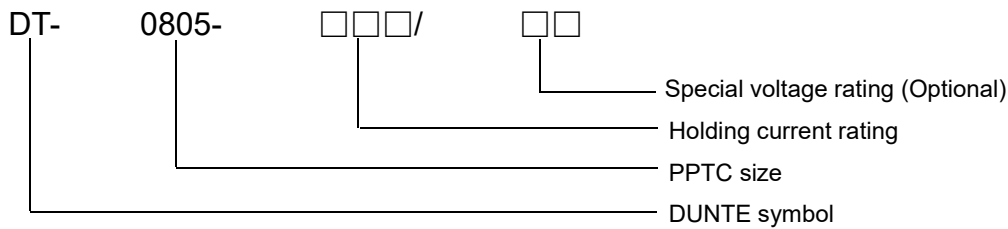
9. Tape and Reel Specifications&Packaging quantity per Reel

TAPE SPECIFICATIONS: EIA-481-1 (mm)					REEL DIMENSIONS: EIA-481-1 (mm)	
Item	DT-0805-005	DT-0805-005/48	DT-0805-010	DT-0805-075	C	Ø178±1.0
	DT-0805-010/24	DT-0805-010/30	DT-0805-020	DT-0805-100	D	Ø60.2±0.5
	DT-0805-020/16	DT-0805-020/24	DT-0805-035	DT-0805-110	W	9.0±1.5
	DT-0805-035/9	DT-0805-035/16	DT-0805-050	DT-0805-125	H	11.0±0.5
	DT-0805-050/9	DT-0805-050/12				
W	8.00±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	1.70±0.10	1.70±0.10
B0	2.45±0.10	2.45±0.10
T	0.20±0.05	0.25±0.05
K0	0.80±0.10	0.95±0.10
Leader	390mm	390mm
Trailer	160mm	160mm
Q'ty	5,000pcs/Reel	4,000pcs/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.