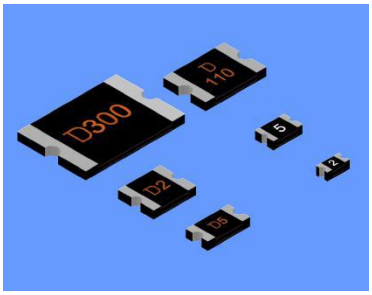
DTE® 敦特电子 DUNTE ELECTRONICS

DT-2920 Series Surface Mount PPTC Devices



Features

- compact design saves board space
- RoHS compliant and lead-free
- Halogen-free
- Fast reponse to flault 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 Free

1.Electrical Characteristics

Model	I-hold	I-trip	Vmax	Imax	Pd typ	Max. Time to trip		R0 min	R1max	Agency Approval
						Current	Time			
	(A)	(A)	(Vdc)	(A)	(W)	(A)	(Sec.)	(Ohm)	(Ohm)	c UL us
DT-2920-030	0.30	0.60	60.00	10.00	1.50	1.50	3.00	0.60	4.30	×
DT-2920-050	0.50	1.00	60.00	10.00	1.50	2.50	4.00	0.20	1.40	×
DT-2920-075	0.75	1.50	33.00	40.00	1.50	8.00	0.30	0.10	1.00	×
DT-2920-075/60	0.75	1.50	60.00	10.00	1.50	8.00	0.30	0.10	1.00	×
DT-2920-100	1.00	2.00	33.00	40.00	1.50	8.00	0.50	0.065	0.410	×
DT-2920-100/60	1.00	2.00	60.00	10.00	1.50	8.00	0.50	0.065	0.410	×
DT-2920-110/60	1.10	2.20	60.00	10.00	1.50	8.00	1.00	0.060	0.390	×
DT-2920-125	1.25	2.50	33.00	40.00	1.50	8.00	2.00	0.050	0.250	×
DT-2920-150	1.50	3.00	33.00	40.00	1.50	8.00	2.00	0.035	0.230	×
DT-2920-185	1.85	3.70	33.00	40.00	1.50	8.00	2.50	0.030	0.150	×
DT-2920-200	2.00	4.00	24.00	40.00	1.50	8.00	5.00	0.020	0.125	×
DT-2920-200/33	2.00	4.00	33.00	40.00	1.50	8.00	5.00	0.020	0.125	×
DT-2920-250/16	2.50	5.00	16.00	40.00	1.50	8.00	20.00	0.015	0.080	×
DT-2920-260	2.60	5.20	24.00	40.00	1.50	8.00	20.00	0.014	0.075	×
DT-2920-260/30	2.60	5.20	30.00	40.00	1.50	8.00	20.00	0.014	0.075	×
DT-2920-300	3.00	6.00	24.00	40.00	1.50	8.00	25.00	0.010	0.055	×
DT-2920-300/16	3.00	6.00	16.00	40.00	1.50	8.00	25.00	0.010	0.055	×
DT-2920-300/30	3.00	6.00	30.00	40.00	1.50	8.00	25.00	0.010	0.055	×
DT-2920-330	3.30	5.50	24.00	40.00	1.50	8.00	5.00	0.010	0.050	×
DT-2920-350	3.50	7.00	16.00	40.00	1.50	17.50	5.00	0.009	0.045	×
DT-2920-350/24	3.50	7.00	24.00	40.00	1.50	17.50	5.00	0.009	0.045	×
DT-2920-350/30	3.50	7.00	30.00	40.00	1.50	17.50	5.00	0.009	0.045	×
DT-2920-400	4.00	8.00	16.00	40.00	1.50	20.00	4.00	0.008	0.040	×
DT-2920-400/24	4.00	8.00	24.00	40.00	1.50	20.00	4.00	0.008	0.040	×
DT-2920-400/30	4.00	8.00	30.00	40.00	1.50	20.00	4.00	0.008	0.040	×
DT-2920-450	4.50	9.00	12.00	40.00	1.50	25.00	5.00	0.006	0.030	×
DT-2920-450/16	4.50	9.00	16.00	40.00	1.50	25.00	5.00	0.006	0.030	×

Address: Unit 501 of No.1# Factory Building, No.3 KengPing Road, GuanKou Town, JiMei District, Xiamen City, FuJian Province
Tel:86-0592-6383282 Fax:86-0592-6383281 Http://www.dte-elec.com

2019/11/12 Revision：B

DT-2920-450/24	4.50	9.00	24.00	40.00	1.50	25.00	5.00	0.006	0.030	×
DT-2920-500	5.00	10.00	12.00	40.00	1.50	25.00	5.00	0.005	0.025	×
DT-2920-500/16	5.00	10.00	16.00	40.00	1.50	25.00	5.00	0.005	0.025	×
DT-2920-500/24	5.00	10.00	24.00	40.00	1.50	25.00	5.00	0.005	0.025	×
DT-2920-600	6.00	12.00	12.00	40.00	2.00	30.00	2.00	0.003	0.020	×
DT-2920-600/16	6.00	12.00	16.00	40.00	2.00	30.00	2.00	0.003	0.020	×
DT-2920-700	7.00	14.00	12.00	40.00	2.00	35.00	2.00	0.0025	0.018	×
DT-2920-700/16	7.00	14.00	16.00	40.00	2.00	35.00	2.00	0.0025	0.018	×

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

I-trip: Tripping 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).

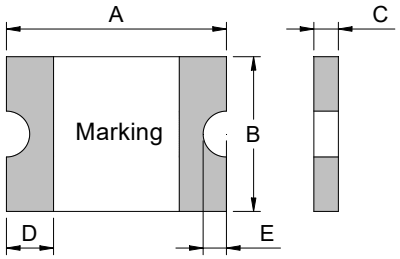
I max: Maximum fault current device can withstand without damage at rated voltage(Vmax).

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

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

R1 max:Maximum resistance of device at 25℃ measured one hour after tripping or reflow soldering of 260℃ 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-2920-030	6.73	7.98	4.80	5.44	0.65	1.05	0.30	2.50	0.25	D030
DT-2920-050	6.73	7.98	4.80	5.44	0.65	1.05	0.30	2.50	0.25	D050
DT-2920-075	6.73	7.98	4.80	5.44	0.45	0.85	0.30	2.50	0.25	D075
DT-2920-075/60	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D075 60
DT-2920-100	6.73	7.98	4.80	5.44	0.45	0.85	0.30	2.50	0.25	D100
DT-2920-100/60	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D100 60
DT-2920-110/60	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D110 60
DT-2920-125	6.73	7.98	4.80	5.44	0.45	0.85	0.30	2.50	0.25	D125
DT-2920-150	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D150
DT-2920-185	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D185
DT-2920-200	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D200
DT-2920-200/33	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D200 33
DT-2920-250/16	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D250
DT-2920-260	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D260
DT-2920-260/30	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D260 30
DT-2920-300	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D300

DT-2920-300/16	6.73	7.98	4.80	5.44	0.80	1.30	0.30	2.50	0.25	D30
DT-2920-300/30	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D300 30
DT-2920-330	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D330
DT-2920-350	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D350
DT-2920-350/24	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D350 24
DT-2920-350/30	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D350 30
DT-2920-400	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D400
DT-2920-400/24	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D400 24
DT-2920-400/30	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D400 30
DT-2920-450	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D450
DT-2920-450/16	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D450 16
DT-2920-450/24	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D450 24
DT-2920-500	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D500
DT-2920-500/16	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D500 16
DT-2920-500/24	6.73	7.98	4.80	5.44	1.00	1.50	0.30	2.50	0.25	D500 24
DT-2920-600	6.73	7.98	4.80	5.44	1.20	1.60	0.30	2.50	0.25	D600
DT-2920-600/16	6.73	7.98	4.80	5.44	1.20	1.60	0.30	2.50	0.25	D600 16
DT-2920-700	6.73	7.98	4.80	5.44	1.20	1.60	0.30	2.50	0.25	D700
DT-2920-700/16	6.73	7.98	4.80	5.44	1.20	1.60	0.30	2.50	0.25	D700 16

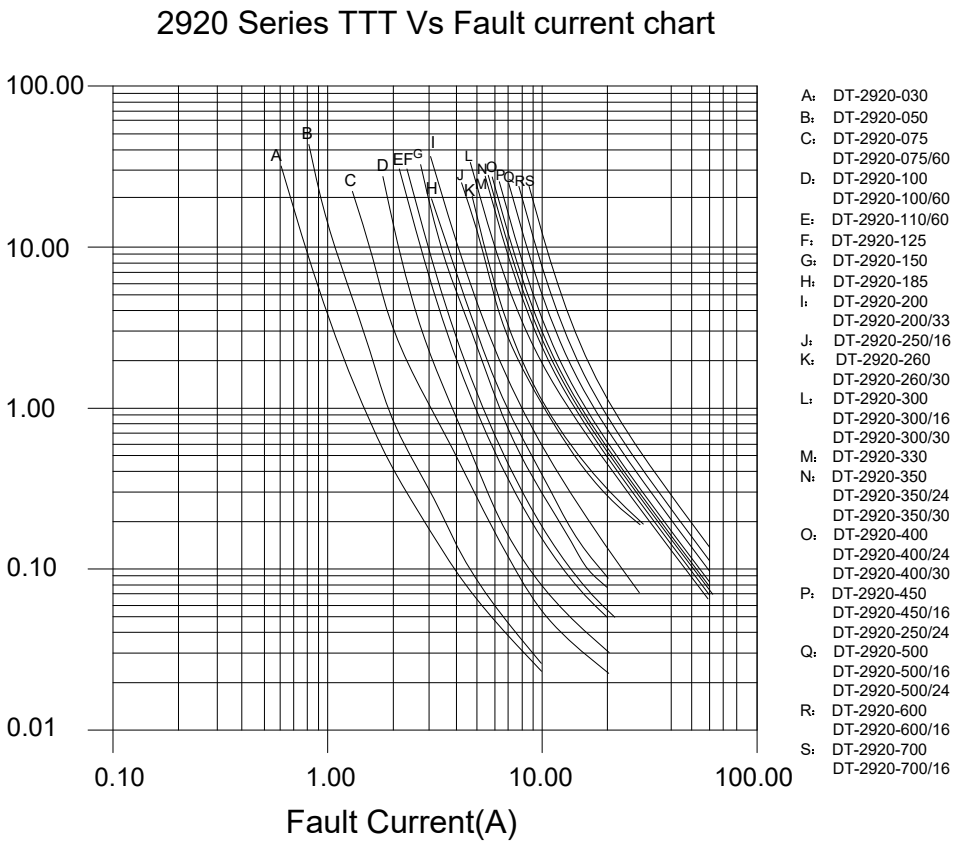
3.Thermal Derating Chart

Recommended hold current(A) at ambient Temperature(℃)

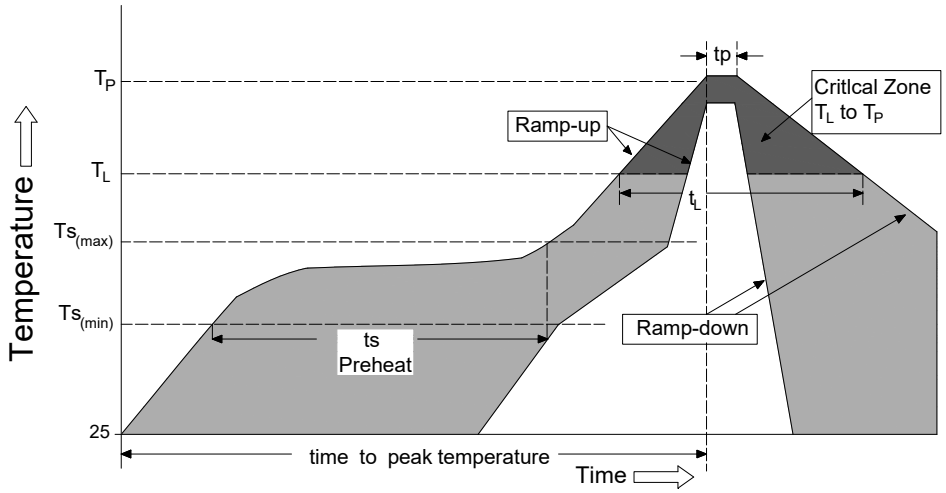
Model	Ambient Operating Temperature								
	-40℃	-20℃	0℃	25℃	40℃	50℃	60℃	70℃	85℃
DT-2920-030	0.45	0.40	0.35	0.30	0.25	0.23	0.20	0.17	0.14
DT-2920-050	0.76	0.67	0.59	0.50	0.42	0.38	0.33	0.29	0.23
DT-2920-075	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
DT-2920-075/60	1.13	1.01	0.88	0.75	0.62	0.56	0.50	0.44	0.34
DT-2920-100	1.66	1.47	1.29	1.00	0.91	0.83	0.73	0.64	0.50
DT-2920-100/60	1.66	1.47	1.29	1.00	0.91	0.83	0.73	0.64	0.50
DT-2920-110/60	1.70	1.50	1.34	1.10	1.00	0.90	0.80	0.70	0.55
DT-2920-125	1.89	1.68	1.46	1.25	1.04	0.94	0.83	0.73	0.56
DT-2920-150	2.27	2.01	1.76	1.50	1.25	1.13	1.00	0.87	0.74
DT-2920-185	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
DT-2920-200	3.14	2.77	2.42	2.00	1.73	1.56	1.38	1.20	0.98
DT-2920-200/33	3.14	2.77	2.42	2.00	1.73	1.56	1.38	1.20	0.98
DT-2920-250/16	3.54	3.15	2.81	2.50	2.16	1.98	1.86	1.64	1.38
DT-2920-260	3.64	3.25	2.91	2.60	2.26	2.08	1.96	1.74	1.48
DT-2920-260/30	3.64	3.25	2.91	2.60	2.26	2.08	1.96	1.74	1.48
DT-2920-300	4.20	3.85	3.44	3.00	2.69	2.50	2.31	2.12	1.83

DT-2920-300/16	4.20	3.85	3.44	3.00	2.69	2.50	2.31	2.12	1.83
DT-2920-300/30	4.20	3.85	3.44	3.00	2.69	2.50	2.31	2.12	1.83
DT-2920-330	4.60	4.20	3.75	3.30	2.95	2.75	2.50	2.25	1.70
DT-2920-350	5.30	4.70	4.10	3.50	2.95	2.65	2.30	2.05	1.55
DT-2920-350/24	5.30	4.70	4.10	3.50	2.95	2.65	2.30	2.05	1.55
DT-2920-350/30	5.30	4.70	4.10	3.50	2.95	2.65	2.30	2.05	1.55
DT-2920-400	6.05	5.35	4.70	4.00	3.35	3.00	2.65	2.35	1.80
DT-2920-400/24	6.05	5.35	4.70	4.00	3.35	3.00	2.65	2.35	1.80
DT-2920-400/30	6.05	5.35	4.70	4.00	3.35	3.00	2.65	2.35	1.80
DT-2920-450	6.80	6.00	5.25	4.50	3.80	3.40	3.00	2.60	2.00
DT-2920-450/16	6.80	6.00	5.25	4.50	3.80	3.40	3.00	2.60	2.00
DT-2920-450/24	6.80	6.00	5.25	4.50	3.80	3.40	3.00	2.60	2.00
DT-2920-500	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23
DT-2920-500/16	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23
DT-2920-500/24	7.55	6.70	5.85	5.00	4.20	3.77	3.32	2.92	2.23
DT-2920-600	8.50	7.80	7.00	6.00	5.25	4.85	4.45	4.00	3.40
DT-2920-600/16	8.50	7.80	7.00	6.00	5.25	4.85	4.45	4.00	3.40
DT-2920-700	9.50	8.70	7.90	7.00	6.40	5.85	5.40	4.80	3.95
DT-2920-700/16	9.50	8.70	7.90	7.00	6.40	5.85	5.40	4.80	3.95

4. Typical time to trip at 25℃



5.Soldering parameters



Profile Feature		Pb-Free Assembly
Average Ramp-Up Rate ($Ts_{(max)}$ to T_P)		3°C/second max
Pre Heat:	Temperature Min ($Ts_{(min)}$)	150°C
	Temperature Max ($Ts_{(max)}$)	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 thepackage, measured on the package body surface

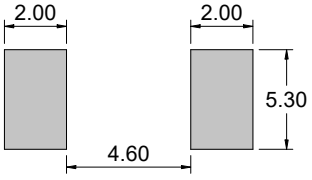
◆If reflow temperature exceeds the recommended profile,devices may not meet the performance requirements

◆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 Nickle-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.

Address: Unit 501 of No.1# Factory Building, No.3 KengPing Road, GuanKou Town, JiMei District, Xiamen City, FuJian Province
Tel:86-0592-6383282 Fax:86-0592-6383281 Http://www.dte-elec.com

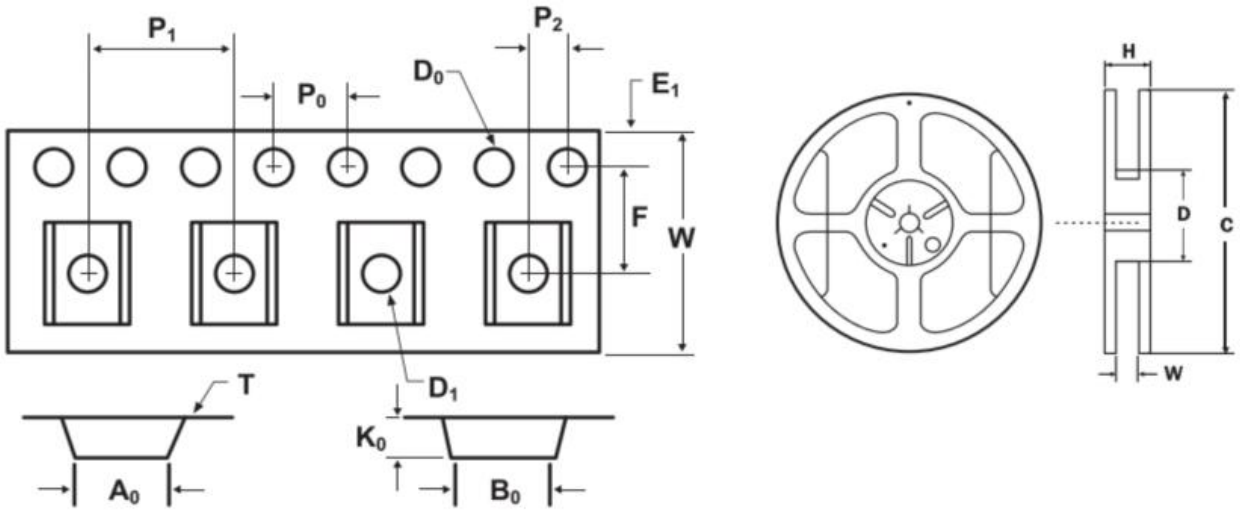
8.Test Procedures And Requirements

No.	Test	Test Conditions	Accept/Reject Criteria
1	R0 min	Resistance measurement at 25℃	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℃	No trip
4	I-trip	Device must trip within 900 second under rated current, @25℃	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)			
Item	DT-2920-075 DT-2920-100 DT-2920-125	DT-2920-030 DT-2920-050 DT-2920-075/60 DT-2920-100/60 DT-2920-110/60 DT-2920-150 DT-2920-185 DT-2920-200 DT-2920-200/33 DT-2920-250/16 DT-2920-260 DT-2920-260/30 DT-2920-300 DT-2920-300/16 DT-2920-330 DT-2920-350 DT-2920-350/16 DT-2920-350/24 DT-2920-350/30 DT-2920-400 DT-2920-400/24 DT-2920-400/30 DT-2920-450 DT-2920-450/16 DT-2920-450/24 DT-2920-500 DT-2920-500/16 DT-2920-500/24	DT-2920-600 DT-2920-600/16 DT-2920-700 DT-2920-700/16
W	16.00±0.30	16.00±0.30	16.00±0.30
F	7.50±0.10	7.50±0.10	7.50±0.10
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	1.50±0.10	1.50±0.10	1.50±0.10
P0	4.0±0.10	4.0±0.10	4.0±0.10
P1	8.0±0.10	8.0±0.10	8.0±0.10
P2	2.0±0.10	2.0±0.10	2.0±0.10
A0	5.74±0.10	5.74±0.10	5.74±0.10
B0	8.02±0.10	8.02±0.10	8.02±0.10
T	0.30±0.10	0.30±0.10	0.30±0.10
K0	0.90±0.10	1.30±0.10	1.70±0.10
Leader	390mm	390mm	390mm
Trailer	160mm	160mm	160mm
Q'ty	2,000pcs/Reel	1,500pcs/Reel	1,000pcs/Reel

REEL DIMENSIONS: EIA-481-1 (mm)	
C	Ø178±3.0
D	Ø60.2±0.5
W	17.0±0.2
H	19.5±1.0



10. Part Ordering Number System

DT- 2920- □□□/ □□

- □□ — Special voltage rating (Optional)
- □□□ — Holding current rating
- 2920 — PPTC size
- DT — DUNTE symbol

⚠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.