

Features

- ▶ Ultra low resistance
- ▶ RoHS compliant and lead-free
- ▶ Halogen-free
- ▶ Fast response 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-2920-500L | 5.0 | 10.0 | 16.0 | 50.0 | 1.60 | 25.0 | 5.0 | 0.0015 | 0.014 |
| DT-2920-500/24L | 5.0 | 10.0 | 24.0 | 50.0 | 1.60 | 25.0 | 5.0 | 0.0015 | 0.014 |
| DT-2920-600L | 6.0 | 12.0 | 16.0 | 50.0 | 1.60 | 30.0 | 5.0 | 0.0015 | 0.012 |
| DT-2920-600/24L | 6.0 | 12.0 | 24.0 | 50.0 | 1.60 | 30.0 | 5.0 | 0.0015 | 0.012 |
| DT-2920-700L | 7.0 | 14.0 | 16.0 | 50.0 | 1.60 | 35.0 | 5.0 | 0.0007 | 0.010 |
| DT-2920-700/24L | 7.0 | 14.0 | 24.0 | 50.0 | 1.60 | 35.0 | 5.0 | 0.0007 | 0.010 |
| DT-2920-800L | 8.0 | 16.0 | 16.0 | 50.0 | 1.60 | 40.0 | 5.0 | 0.0006 | 0.008 |
| DT-2920-800/24L | 8.0 | 24.0 | 16.0 | 50.0 | 1.60 | 40.0 | 5.0 | 0.0006 | 0.008 |
| DT-2920-900L | 9.0 | 18.0 | 16.0 | 50.0 | 1.60 | 45.0 | 5.0 | 0.0005 | 0.007 |
| DT-2920-900/24L | 9.0 | 18.0 | 24.0 | 50.0 | 1.60 | 45.0 | 5.0 | 0.0005 | 0.007 |
| DT-2920-1000L | 10.0 | 20.0 | 16.0 | 50.0 | 1.60 | 50.0 | 5.0 | 0.0005 | 0.0060 |
| DT-2920-1000/24L | 10.0 | 20.0 | 24.0 | 50.0 | 1.60 | 50.0 | 5.0 | 0.0005 | 0.0060 |
| DT-2920-1100L | 11.0 | 22.0 | 16.0 | 50.0 | 1.60 | 55.0 | 5.0 | 0.0003 | 0.0050 |
| DT-2920-1100/24L | 11.0 | 22.0 | 24.0 | 50.0 | 1.60 | 55.0 | 5.0 | 0.0003 | 0.0050 |
| DT-2920-1200L | 12.0 | 24.0 | 16.0 | 50.0 | 1.60 | 60.0 | 5.0 | 0.0003 | 0.0040 |
| DT-2920-1200/24L | 12.0 | 24.0 | 24.0 | 50.0 | 1.60 | 60.0 | 5.0 | 0.0003 | 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).

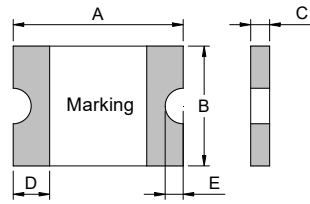
I max: Maximum fault current device can withstand without damage at rated voltage(Vmax).

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



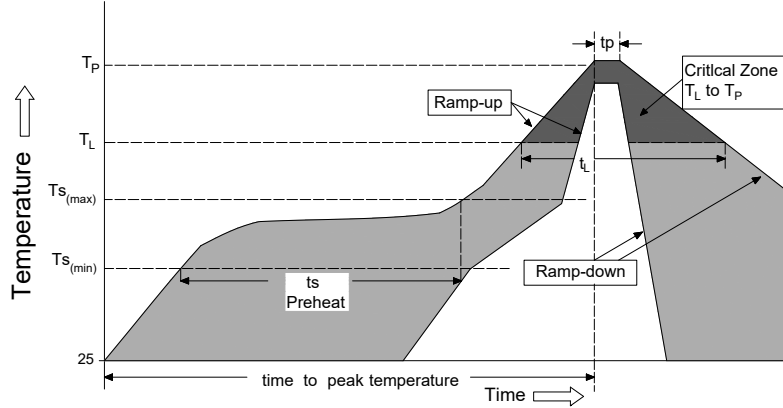
| Model | A | | B | | C | | D | | E | Marking |
|------------------|------|------|------|------|------|------|------|------|------|---------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | |
| DT-2920-500L | 6.73 | 7.98 | 4.80 | 5.44 | 0.35 | 0.85 | 0.30 | 2.50 | 0.25 | D5A |
| DT-2920-500/24L | 6.73 | 7.98 | 4.80 | 5.44 | 0.35 | 0.85 | 0.30 | 2.50 | 0.25 | D5A |
| DT-2920-600L | 6.73 | 7.98 | 4.80 | 5.44 | 0.35 | 0.85 | 0.30 | 2.50 | 0.25 | D6A |
| DT-2920-600/24L | 6.73 | 7.98 | 4.80 | 5.44 | 0.35 | 0.85 | 0.30 | 2.50 | 0.25 | D6A |
| DT-2920-700L | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.00 | 0.30 | 2.50 | 0.25 | D7A |
| DT-2920-700/24L | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.00 | 0.30 | 2.50 | 0.25 | D7A |
| DT-2920-800L | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.00 | 0.30 | 2.50 | 0.25 | D8A |
| DT-2920-800/24L | 6.73 | 7.98 | 4.80 | 5.44 | 0.60 | 1.00 | 0.30 | 2.50 | 0.25 | D8A |
| DT-2920-900L | 6.73 | 7.98 | 4.80 | 5.44 | 0.80 | 1.30 | 0.30 | 2.50 | 0.25 | D9A |
| DT-2920-900/24L | 6.73 | 7.98 | 4.80 | 5.44 | 0.80 | 1.30 | 0.30 | 2.50 | 0.25 | D9A |
| DT-2920-1000L | 6.73 | 7.98 | 4.80 | 5.44 | 0.80 | 1.30 | 0.30 | 2.50 | 0.25 | D10A |
| DT-2920-1000/24L | 6.73 | 7.98 | 4.80 | 5.44 | 0.80 | 1.30 | 0.30 | 2.50 | 0.25 | D10A |
| DT-2920-1100L | 6.73 | 7.98 | 4.80 | 5.44 | 1.00 | 1.50 | 0.30 | 2.50 | 0.25 | D11A |
| DT-2920-1100/24L | 6.73 | 7.98 | 4.80 | 5.44 | 1.00 | 1.50 | 0.30 | 2.50 | 0.25 | D11A |
| DT-2920-1200L | 6.73 | 7.98 | 4.80 | 5.44 | 1.00 | 1.50 | 0.30 | 2.50 | 0.25 | D12A |
| DT-2920-1200/24L | 6.73 | 7.98 | 4.80 | 5.44 | 1.00 | 1.50 | 0.30 | 2.50 | 0.25 | D12A |

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-2920-500L | 7.30 | 6.60 | 5.70 | 5.00 | 4.40 | 3.85 | 3.50 | 3.00 | 2.40 |
| DT-2920-500/24L | 7.30 | 6.60 | 5.70 | 5.00 | 4.40 | 3.85 | 3.50 | 3.00 | 2.40 |
| DT-2920-600L | 8.75 | 7.95 | 6.85 | 6.00 | 5.25 | 4.60 | 4.20 | 3.65 | 2.90 |
| DT-2920-600/24L | 8.75 | 7.95 | 6.85 | 6.00 | 5.25 | 4.60 | 4.20 | 3.65 | 2.90 |
| DT-2920-700L | 10.20 | 9.25 | 8.00 | 7.00 | 6.15 | 5.40 | 4.90 | 4.25 | 3.35 |
| DT-2920-700/24L | 10.20 | 9.25 | 8.00 | 7.00 | 6.15 | 5.40 | 4.90 | 4.25 | 3.35 |
| DT-2920-800L | 11.70 | 10.60 | 9.20 | 8.00 | 7.00 | 6.15 | 5.60 | 4.85 | 3.80 |
| DT-2920-800/24L | 11.70 | 10.60 | 9.20 | 8.00 | 7.00 | 6.15 | 5.60 | 4.85 | 3.80 |
| DT-2920-900L | 13.14 | 11.89 | 10.30 | 9.00 | 7.86 | 6.92 | 6.28 | 5.45 | 4.29 |
| DT-2920-900/24L | 13.14 | 11.89 | 10.30 | 9.00 | 7.86 | 6.92 | 6.28 | 5.45 | 4.29 |
| DT-2920-1000L | 14.60 | 13.21 | 11.45 | 10.00 | 8.74 | 7.68 | 6.97 | 6.05 | 4.76 |
| DT-2920-1000/24L | 14.60 | 13.21 | 11.45 | 10.00 | 8.74 | 7.68 | 6.97 | 6.05 | 4.76 |
| DT-2920-1100L | 16.06 | 14.53 | 12.59 | 11.00 | 9.61 | 8.45 | 7.67 | 6.66 | 5.24 |

| | | | | | | | | | |
|------------------|-------|-------|-------|-------|-------|------|------|------|------|
| DT-2920-1100/24L | 16.06 | 14.53 | 12.59 | 11.00 | 9.61 | 8.45 | 7.67 | 6.66 | 5.24 |
| DT-2920-1200L | 17.52 | 15.85 | 13.74 | 12.00 | 10.48 | 9.22 | 8.37 | 7.26 | 5.72 |
| DT-2920-1200/24L | 17.52 | 15.85 | 13.74 | 12.00 | 10.48 | 9.22 | 8.37 | 7.26 | 5.72 |

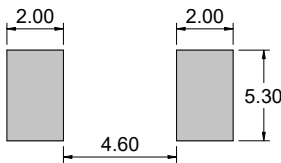
4. Soldering parameters



| 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

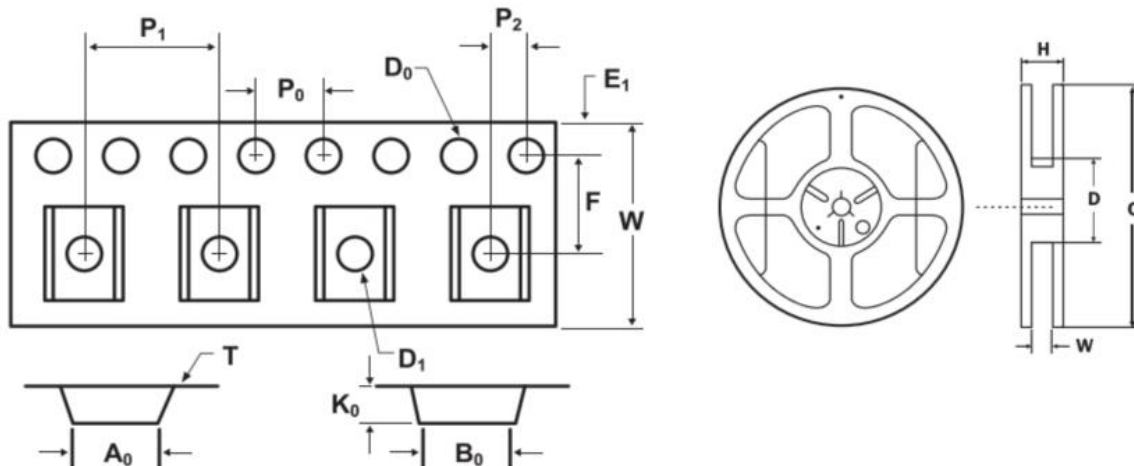
| | |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------|
| Operating Temperature | -40 °C to +85 °C |
| Maximum Device Surface Temperature in Tripped State | 125°C |
| Passive Aging | +85 °C, 1000 hours ; ±10 % 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

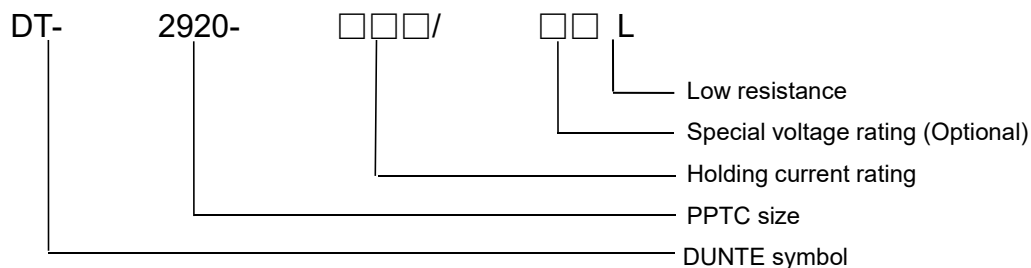
| No. | Test | Test Conditions | Accept/Reject Criteria |
|-----|-------------------|---------------------------------------------------------------|---------------------------------------------|
| 1 | R0 min | Resistance measurement at 25°C | $R_{0min} \leq R \leq R_{1max}$ |
| 2 | R1 max | Resistance 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 | 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 |

8. Tape and Reel Specifications & Packaging quantity per Reel

| Item | DT-2920-500L DT-2920-500/24L DT-2920-600L DT-2920-600/24L | DT-2920-700L DT-2920-700/24L DT-2920-800L DT-2920-800/24L DT-2920-900L DT-2920-900/24L DT-2920-1000L DT-2920-1000/24L | DT-2920-1100L DT-2920-1100/24L DT-2920-1200L DT-2920-1200/24L | REEL DIMENSIONS: EIA-481-1 (mm) | |
|---------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------|----------------------------|
| | | | | C | $\varnothing 178 \pm 1.0$ |
| | | | | D | $\varnothing 60.2 \pm 0.5$ |
| | | | | W | 17.0 ± 0.2 |
| | | | | H | 19.5 ± 1.0 |
| 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 | | |



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。