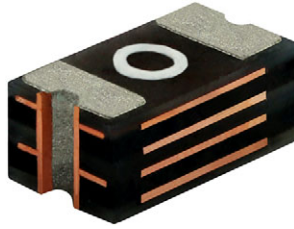


SMD 0603 Polymer PTCs



LINKS TO ADDITIONAL RESOURCES



| QUICK REFERENCE DATA | | |
|-------------------------------------------------------------------------------------|-------------|-----------------|
| PARAMETER ⁽¹⁾ | VALUE | UNIT |
| Hold current (I_{hold}) ⁽²⁾⁽³⁾ | 0.02 to 0.5 | A |
| Trip current (I_{trip}) ⁽²⁾⁽³⁾ | 0.06 to 1.0 | A |
| Maximum voltage ($V_{max.}$) ⁽²⁾⁽³⁾ | 6 to 60 | V _{DC} |
| Maximum current ($I_{max.}$) ⁽²⁾⁽³⁾ | 20 to 40 | A |
| Power dissipation (P_D typ.) ⁽³⁾ | 0.5 | W |
| Minimum initial resistance ($R_{min.}$) ⁽²⁾⁽³⁾ | 0.1 to 12 | Ω |
| Maximum resistance after tripping and 1 h cool down (R_1 max.) ⁽²⁾⁽³⁾ | 0.68 to 70 | Ω |
| Operating temperature | -40 to +85 | °C |
| Storage temperature | -40 to +85 | °C |
| Maximum surface temperature in tripped state | 125 | °C |

Notes

- (1) Definitions, measurements, and tests are made in accordance with standard IEC 62319-1 "Polymeric thermistors - Directly heated positive step function temperature coefficient"
- (2) Other values available on request
- (3) All the parameters are characterized at 25 °C still air

FEATURES

- Fast response to overcurrent
- Low resistance for minimal voltage drop
- Compact design and low profile
- Compatible with high temperature solders
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

Overcurrent protection in:

- USB ports
- HDMI source
- PC motherboards - plug and play
- Mobile phones - battery and port
- Mobile internet devices
- IC VCC
- Battery protection
- Home automation sensors

DESCRIPTION

These polymer-based thermistors have a positive temperature coefficient and are primarily intended for resettable overcurrent protection. The terminals are 100 % matte tin plated. The part is laser marked with an identification letter.

MOUNTING

Important mounting and handling instructions: see www.vishay.com/doc?29264

By soldering in any position.

Not intended for potting or sealing.

Maximum surface temperature in case of overload can reach 125 °C.

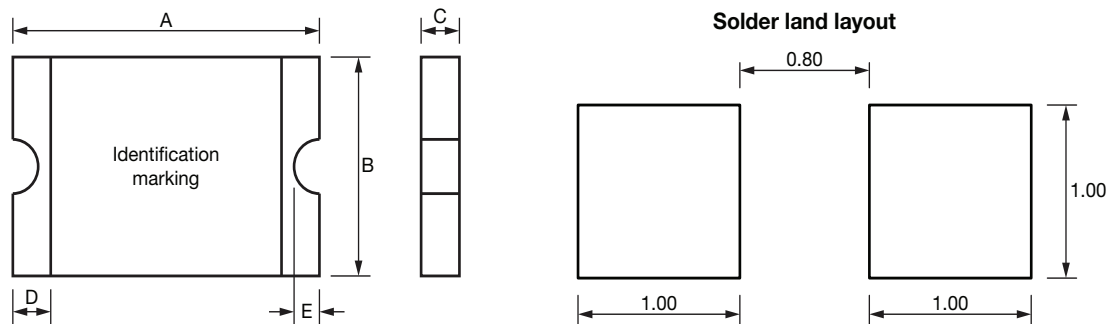
PACKAGING

Available in 8 mm tape on 178 mm reel containing 4000 pieces, sealed in a plastic bag.

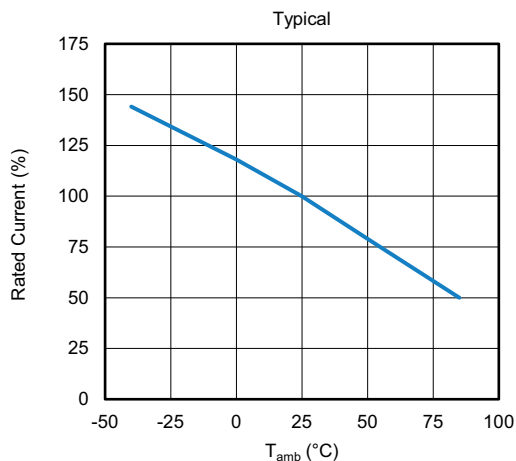
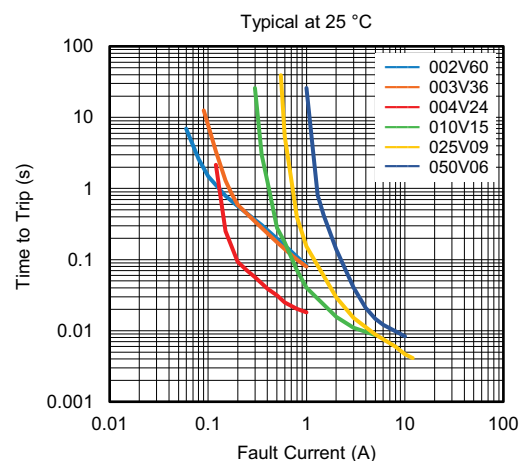
| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | | | |
|------------------------------------------|-------------------|-------------------|----------------------------------|-------------------|-------------------|-------------------|-------------|---------------------|-------------------|
| PART NUMBER | I_{hold} (A) | I_{trip} (A) | $V_{max.}$ (V _{DC}) | $I_{max.}$ (A) | P_D TYP. (W) | MAX. TIME TO TRIP | | RESISTANCE AT 25 °C | |
| | | | | | | CURRENT (A) | TIME (s) | $R_{min.}$ (Ω) | R_1 max. (Ω) |
| PPTC0603E3002V60 | 0.02 | 0.06 | 60 | 40 | 0.5 | 0.20 | 1.00 | 12 | 70 |
| PPTC0603E3003V36 | 0.03 | 0.09 | 36 | 40 | 0.5 | 0.20 | 1.00 | 6 | 50 |
| PPTC0603E3004V24 | 0.04 | 0.12 | 24 | 20 | 0.5 | 0.20 | 1.00 | 4 | 40 |
| PPTC0603E3010V15 | 0.10 | 0.30 | 15 | 40 | 0.5 | 0.50 | 1.00 | 0.9 | 6 |
| PPTC0603E3025V09 | 0.25 | 0.55 | 9 | 40 | 0.5 | 8.00 | 0.08 | 0.5 | 3 |
| PPTC0603E3050V06 | 0.50 | 1.00 | 6 | 40 | 0.5 | 8.00 | 0.10 | 0.1 | 0.68 |

PERFORMANCE

| ENVIRONMENTAL SPECIFICATIONS | |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------|
| Operating temperature | -40 °C to +85 °C |
| Storage condition | 10 °C to 35 °C, ≤ 70 % RH, without condensation |
| Maximum device surface temperature in tripped state | 125 °C |
| Passive aging | +85 °C, 1000 h ± 5 % typical resistance change |
| Humidity aging | +85 °C, 85 % RH, 1000 h ± 5 % typical resistance change |
| Thermal shock | MIL-STD-202 Method 107G +85 °C / -40 °C, 20 times -30 % typical resistance change |
| Solvent resistance | MIL-STD-202, Method 215 < ± 5 % resistance change |
| Vibration | MIL-STD-883C, Method 2007.1, Condition A < ± 5 % resistance change |
| Moisture sensitivity level | Level 1, J-STD-020C |

DIMENSIONS AND MARKING in millimeters


| COMPONENT DIMENSIONS in millimeters | | | | | | | | | | | |
|-------------------------------------|---------|------|------|------|------|------|------|------|------|------|------|
| PART NUMBER | MARKING | A | | B | | C | | D | | E | |
| | | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. | MIN. | MAX. |
| PPTC0603E3002V60 | B | 1.4 | 1.8 | 0.6 | 1 | 0.40 | 0.95 | 0.15 | 0.5 | - | 0.4 |
| PPTC0603E3003V36 | C | 1.4 | 1.8 | 0.6 | 1 | 0.40 | 0.95 | 0.15 | 0.5 | - | 0.4 |
| PPTC0603E3004V24 | D | 1.4 | 1.8 | 0.6 | 1 | 0.40 | 0.75 | 0.15 | 0.5 | - | 0.4 |
| PPTC0603E3010V15 | G | 1.4 | 1.8 | 0.6 | 1 | 0.40 | 0.75 | 0.15 | 0.5 | - | 0.4 |
| PPTC0603E3025V09 | L | 1.4 | 1.8 | 0.6 | 1 | 0.40 | 0.75 | 0.15 | 0.5 | - | 0.4 |
| PPTC0603E3050V06 | O | 1.4 | 1.8 | 0.6 | 1 | 0.75 | 0.95 | 0.15 | 0.5 | - | 0.4 |

THERMAL DERATING

TIME TO TRIP CURVE


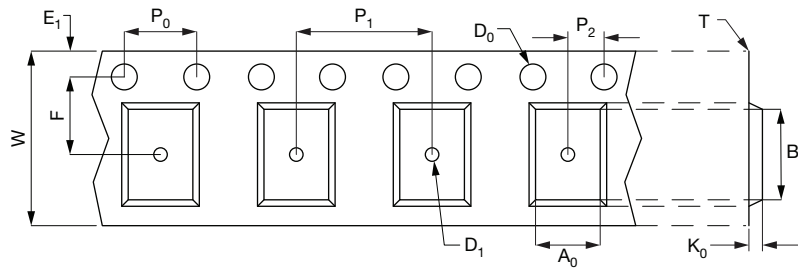
| RECOMMENDED HOLD CURRENT in Amperes | | | | | | | | | |
|--------------------------------------------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| PART NUMBER | -40 °C | -20 °C | 0 °C | 25 °C | 40 °C | 50 °C | 60 °C | 70 °C | 85 °C |
| PPTC0603E3002V60 | 0.030 | 0.027 | 0.024 | 0.020 | 0.017 | 0.016 | 0.014 | 0.013 | 0.010 |
| PPTC0603E3003V36 | 0.045 | 0.041 | 0.036 | 0.030 | 0.026 | 0.023 | 0.021 | 0.018 | 0.015 |
| PPTC0603E3004V24 | 0.052 | 0.048 | 0.044 | 0.040 | 0.032 | 0.028 | 0.024 | 0.02 | 0.012 |
| PPTC0603E3010V15 | 0.13 | 0.12 | 0.11 | 0.10 | 0.08 | 0.07 | 0.06 | 0.05 | 0.03 |
| PPTC0603E3025V09 | 0.32 | 0.29 | 0.27 | 0.25 | 0.21 | 0.18 | 0.16 | 0.14 | 0.10 |
| PPTC0603E3050V06 | 0.67 | 0.59 | 0.54 | 0.50 | 0.41 | 0.37 | 0.34 | 0.29 | 0.20 |

Note

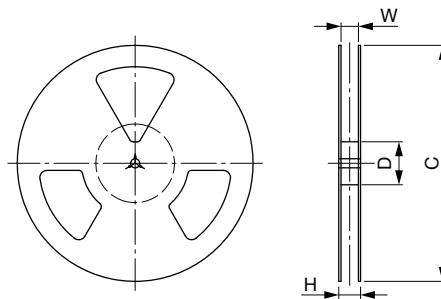
- Recommended hold currents prevail the thermal derating graph; hold and trip currents are depending on mounting

TAPE AND REEL DIMENSIONS

Taping on reel according to EIA-481.



| TAPE DIMENSIONS in millimeters | | | | | | | | | | | | |
|---------------------------------------|-------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|
| PART NUMBER | W | F | E ₁ | D ₀ | D ₁ | P ₀ | P ₁ | P ₂ | A ₀ | B ₀ | K ₀ | T |
| PPTC0603E3002V60 | 8 ± 0.30 | 3.5 ± 0.05 | 1.75 ± 0.10 | 1.55 ± 0.05 | 0.5 ± 0.10 | 4 ± 0.10 | 4 ± 0.10 | 2.0 ± 0.05 | 1.1 ± 0.10 | 1.92 ± 0.10 | 0.96 ± 0.10 | 0.2 ± 0.10 |
| PPTC0603E3003V36 | | | | | | | | | | | 0.96 ± 0.10 | |
| PPTC0603E3004V24 | | | | | | | | | | | 0.72 ± 0.10 | |
| PPTC0603E3010V15 | | | | | | | | | | | 0.72 ± 0.10 | |
| PPTC0603E3025V09 | | | | | | | | | | | 0.72 ± 0.10 | |
| PPTC0603E3050V06 | | | | | | | | | | | 0.96 ± 0.10 | |



| REEL DIMENSIONS in millimeters | | | |
|---------------------------------------|--------------|------------|-----------|
| C | D | H | W |
| ∅ 178 ± 1.0 | ∅ 60.2 ± 0.5 | 11.0 ± 0.5 | 9.0 ± 1.5 |



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