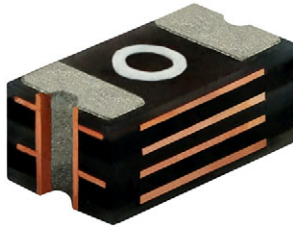


SMD 0603 Polymer PTCs



FEATURES

- Fast response to overcurrent
- Low resistance for minimal voltage drop
- Compact design and low profile
- Compatible with high temperature solders
- C-UL-US recognized under file E148885
- TÜV approved under file R 50719915
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES

SPICE
Models

3D
Models

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	$^{\circ}C$
Storage temperature	-40 to +85	$^{\circ}C$
Maximum surface temperature in tripped state	125	$^{\circ}C$

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 $^{\circ}C$ still air

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 $^{\circ}C$.

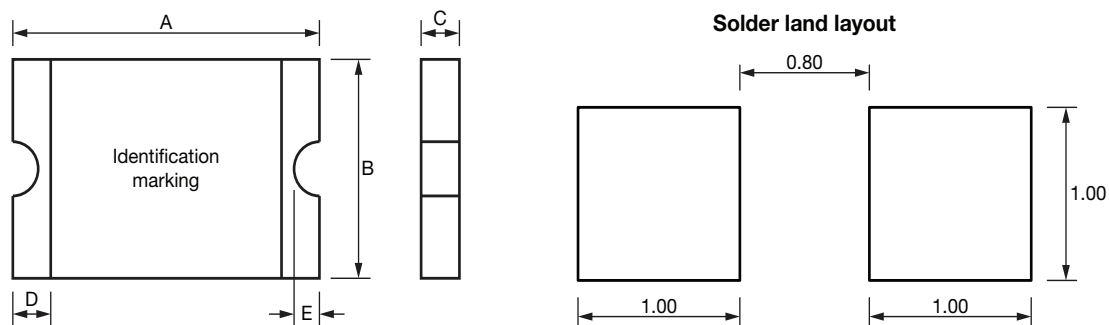
PACKAGING

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

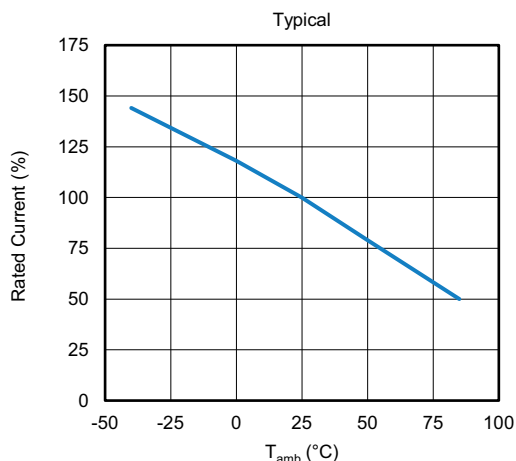
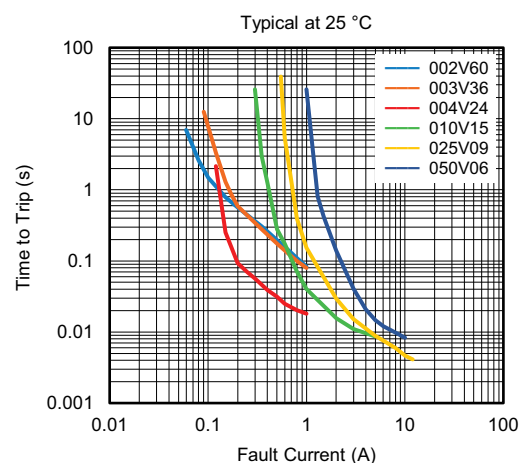
ELECTRICAL DATA AND ORDERING INFORMATION									
PART NUMBER	I_{hold} (A)	I_{trip} (A)	$V_{max.}$ (V_{DC})	$I_{max.}$ (A)	P_D TYP. (W)	MAX. TIME TO TRIP		RESISTANCE AT 25 $^{\circ}C$	
						CURRENT (A)	TIME (s)	$R_{min.}$ (Ω)	R_1 max. (Ω)
PPTC0603E3002V60	0.02	0.06	60	40	0.5	0.20	1.00	12	70
PPTC0603E3003V36	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


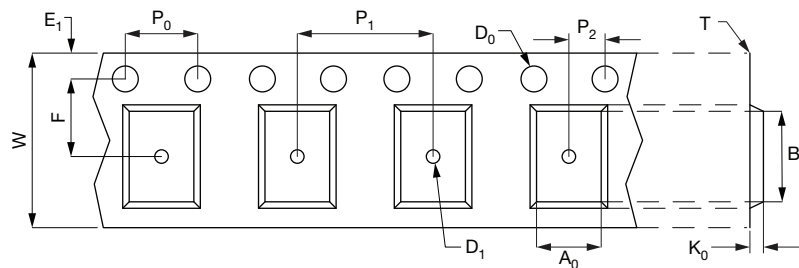
RECOMMENDED HOLD CURRENT in Amperes									
PART NUMBER	-40 °C	-20 °C	0 °C	25 °C	40 °C	50 °C	60 °C	70 °C	85 °C
PPTC0603E3002V60	0.030	0.027	0.024	0.020	0.017	0.016	0.014	0.013	0.010
PPTC0603E3003V36	0.045	0.041	0.036	0.030	0.026	0.023	0.021	0.018	0.015
PPTC0603E3004V24	0.052	0.048	0.044	0.040	0.032	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

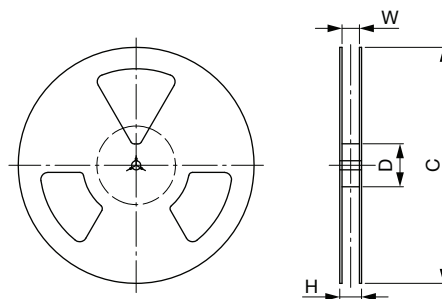
- Recommended hold currents prevail the thermal derating graph; hold and trip currents are depending on mounting

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
Ø 178 ± 1.0	Ø 60.2 ± 0.5	11.0 ± 0.5	9.0 ± 1.5



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