

SMD 1812 Polymer PTCs



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

QUICK REFERENCE DATA		
PARAMETER ⁽¹⁾	VALUE	UNIT
Hold current (I_{hold}) ⁽²⁾⁽³⁾	0.14 to 1.5	A
Trip current (I_{trip}) ⁽²⁾⁽³⁾	0.35 to 3	A
Maximum voltage ($V_{max.}$) ⁽²⁾⁽³⁾	12 to 60	V _{DC}
Maximum current ($I_{max.}$) ⁽²⁾⁽³⁾	10 to 100	A
Power dissipation (P_D typ.) ⁽³⁾	0.8	W
Minimum initial resistance ($R_{min.}$) ⁽²⁾⁽³⁾	0.04 to 1.5	Ω
Maximum resistance after tripping and 1 h cool down (R_1 max.) ⁽²⁾⁽³⁾	0.11 to 6	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

APPLICATIONS

Overcurrent protection in:

- USB ports
- HDMI source
- PC motherboards - plug and play
- Mobile phones - battery and port
- PDAs / digital cameras
- 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.

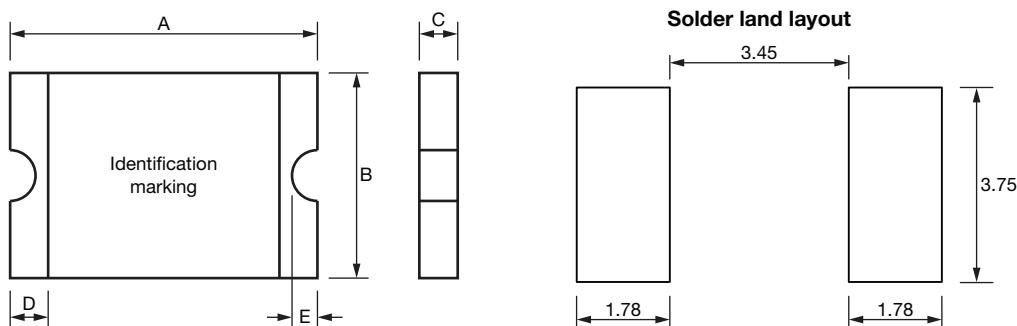
PACKAGING

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

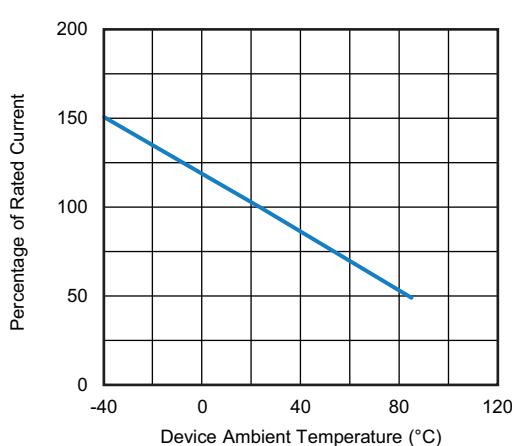
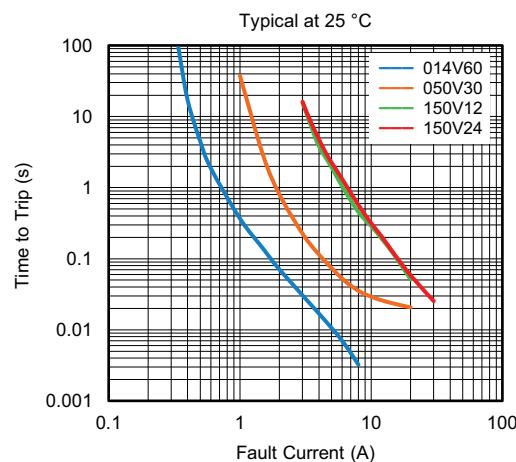
ELECTRICAL DATA AND ORDERING INFORMATION									
PART NUMBER	I_{hold} (A)	I_{trip} (A)	$V_{max.}$ (V _{DC})	$I_{max.}$ (A)	P_D TYP. (W)	MAX. TIME TO TRIP		RESISTANCE AT 25 °C	
						CURRENT (A)	TIME (s)	$R_{min.}$ (Ω)	R_1 max. (Ω)
PPTC1812E3014V60	0.14	0.34	60	10	0.8	1.50	0.15	1.500	6.000
PPTC1812E3050V30	0.50	1.00	30	100	0.8	8.00	0.15	0.150	1.000
PPTC1812E3150V12	1.50	3.00	12	100	0.8	8.00	0.50	0.040	0.110
PPTC1812E3150V24	1.50	3.00	24	20	0.8	8.00	1.50	0.040	0.120

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.								
PPTC1812E3014V60	I6	4.37	4.73	3.07	3.41	0.75	1.95	0.30	1.20	0.15	0.65
PPTC1812E3050V30	O3	4.37	4.73	3.07	3.41	0.50	1.00	0.30	1.20	0.15	0.65
PPTC1812E3150V12	T1	4.37	4.73	3.07	3.41	0.75	1.25	0.30	1.20	0.15	0.65
PPTC1812E3150V24	T3	4.37	4.73	3.07	3.41	0.80	1.80	0.30	1.20	0.15	0.65

THERMAL DERATING

TIME TO TRIP CURVE


RECOMMENDED HOLD CURRENT in Amperes

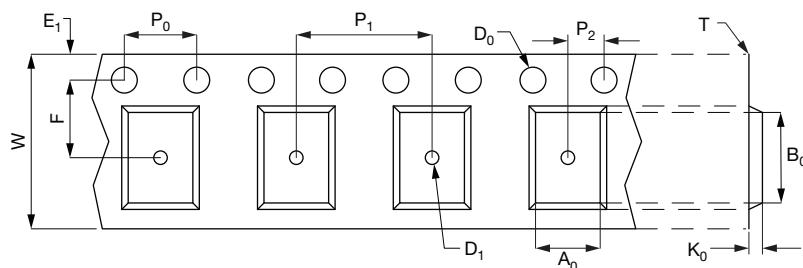
PART NUMBER	-40 °C	-20 °C	0 °C	25 °C	40 °C	50 °C	60 °C	70 °C	85 °C
PPTC1812E3014V60	0.23	0.19	0.17	0.14	0.12	0.10	0.09	0.08	0.06
PPTC1812E3050V30	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.29
PPTC1812E3150V12	2.04	1.88	1.68	1.50	1.25	1.10	1.00	0.80	0.60
PPTC1812E3150V24	2.05	1.87	1.67	1.50	1.25	1.08	0.95	0.77	0.60

Note

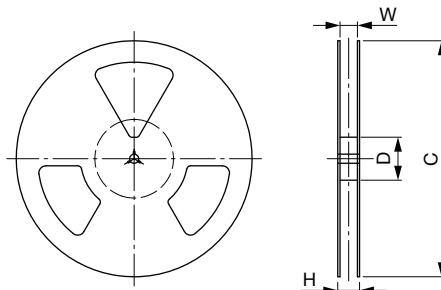
- Recommended hold currents prevail the thermal derating graph; hold and trip currents are depending on mounting

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	T	K ₀
PPTC1812E3014V60	12.00 ± 0.30	5.50 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.50 ± 0.10	4.00 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	3.50 ± 0.10	4.85 ± 0.10	0.25 ± 0.10	1.25 ± 0.10
PPTC1812E3050V30	12.00 ± 0.30	5.50 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.55 (min)	4.00 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	3.58 ± 0.10	4.93 ± 0.10	0.25 ± 0.10	0.87 ± 0.10
PPTC1812E3150V12	12.00 ± 0.30	5.50 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.50 ± 0.10	4.00 ± 0.10	8.00 ± 0.10	2.00 ± 0.05	3.50 ± 0.10	4.85 ± 0.10	0.25 ± 0.10	1.25 ± 0.10
PPTC1812E3150V24	12.00 ± 0.30	5.50 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.50 (min)	4.00 ± 0.08	8.00 ± 0.10	2.00 ± 0.05	3.58 ± 0.10	4.93 ± 0.10	0.25 ± 0.10	2.10 ± 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

PACKAGING QUANTITY

PART NUMBER	QUANTITY
PPTC1812E3014V60	1500
PPTC1812E3050V30	2000
PPTC1812E3150V12	1500
PPTC1812E3150V24	1000

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