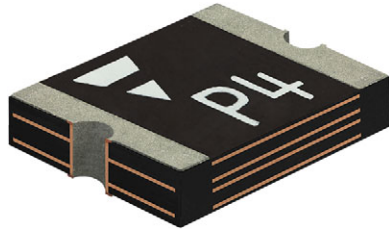


## SMD 1812 Polymer PTCs



### FEATURES

- Fast response to overcurrent
- Low resistance for minimal voltage drop
- Compact design and low profile
- Compatible with high temperature solders
- 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](http://www.vishay.com/doc?99912)



### LINKS TO ADDITIONAL RESOURCES



QUICK REFERENCE DATA		
PARAMETER <sup>(1)</sup>	VALUE	UNIT
Hold current ( $I_{hold}$ ) <sup>(2)(3)</sup>	0.14 to 2.6	A
Trip current ( $I_{trip}$ ) <sup>(2)(3)</sup>	0.34 to 5	A
Maximum voltage ( $V_{max.}$ ) <sup>(2)(3)</sup>	8 to 60	$V_{DC}$
Maximum current ( $I_{max.}$ ) <sup>(2)(3)</sup>	10 to 100	A
Power dissipation ( $P_D$ typ.) <sup>(3)</sup>	0.8 to 1.0	W
Minimum initial resistance ( $R_{min.}$ ) <sup>(2)(3)</sup>	0.015 to 1.5	$\Omega$
Maximum resistance after tripping and 1 h cool down ( $R_1$ max.) <sup>(2)(3)</sup>	0.047 to 6	$\Omega$
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](http://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, sealed in a plastic bag. Packing quantity per reel: see table.

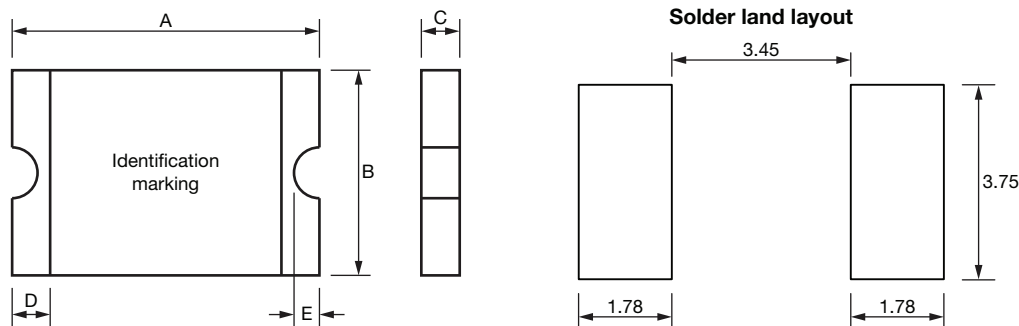
ELECTRICAL DATA AND ORDERING INFORMATION									
PART NUMBER	$I_{hold}$ (A)	$I_{trip}$ (A)	$V_{max.}$ ( $V_{DC}$ )	$I_{max.}$ (A)	$P_D$ TYP. (W)	MAX. TIME TO TRIP		RESISTANCE AT 25 $^{\circ}C$	
						CURRENT (A)	TIME (s)	$R_{min.}$ ( $\Omega$ )	$R_1$ max. ( $\Omega$ )
PPTC1812E3014V60	0.14	0.34	60	10	0.8	1.5	0.15	1.5	6.0
PPTC1812E3020V60	0.20	0.40	60	40	0.8	1.0	2.00	1.4	4.4
PPTC1812E3035V30	0.35	0.75	30	40	0.8	8.0	0.15	0.4	1.7
PPTC1812E3050V30	0.50	1.00	30	100	0.8	8.0	0.15	0.15	1.0
PPTC1812E3075V33	0.75	1.50	33	20	0.8	8.0	0.20	0.11	0.4
PPTC1812E3110V24	1.10	1.95	24	20	0.8	8.0	0.50	0.06	0.20
PPTC1812E3150V12	1.50	3.00	12	100	0.8	8.0	0.50	0.040	0.11
PPTC1812E3150V24	1.50	3.00	24	20	0.8	8.0	1.50	0.040	0.12
PPTC1812E3200V08	2.00	3.50	8	100	0.8	8.0	2.00	0.020	0.070
PPTC1812E3200V16	2.00	3.50	16	100	1.0	8.0	2.00	0.020	0.070
PPTC1812E3260V08	2.60	5.00	8	100	0.8	8.0	2.50	0.015	0.047



**PERFORMANCE**

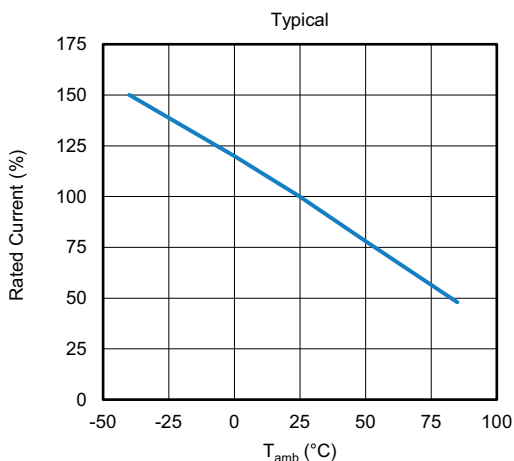
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature	-40 °C to +85 °C
Storage condition	10 °C to 35 °C, ≤ 70 % RH, without condensation
Maximum device surface temperature in tripped state	125 °C
Passive aging	+85 °C, 1000 h ± 5 % typical resistance change
Humidity aging	+85 °C, 85 % RH, 1000 h ± 5 % typical 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

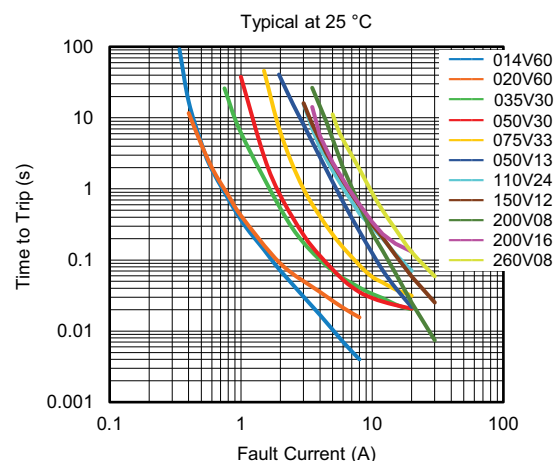


COMPONENT DIMENSIONS		in millimeters									
PART NUMBER	MARKING	A		B		C		D		E	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
PPTC1812E3014V60	I6	4.4	4.73	3.07	3.41	0.75	1.95	0.3	1.2	0.15	0.65
PPTC1812E3020V60	K6	4.4	4.73	3.07	3.41	0.75	1.25	0.3	1.2	0.15	0.65
PPTC1812E3035V30	N3	4.4	4.73	3.07	3.41	0.65	1.25	0.3	1.2	0.15	0.65
PPTC1812E3050V30	O3	4.4	4.73	3.07	3.41	0.50	1.00	0.3	1.2	0.15	0.65
PPTC1812E3075V33	P4	4.4	4.73	3.07	3.41	0.75	1.55	0.3	1.2	0.15	0.65
PPTC1812E3110V24	R3	4.4	4.73	3.07	3.41	0.55	1.07	0.3	1.2	0.15	0.65
PPTC1812E3150V12	T1	4.4	4.73	3.07	3.41	0.75	1.25	0.3	1.2	0.15	0.65
PPTC1812E3150V24	T3	4.4	4.73	3.07	3.41	0.80	1.80	0.3	1.2	0.15	0.65
PPTC1812E3200V08	X0	4.4	4.73	3.07	3.41	0.20	0.60	0.3	1.2	0.15	0.65
PPTC1812E3200V16	X2	4.4	4.73	3.07	3.41	0.80	1.20	0.3	1.2	0.15	0.65
PPTC1812E3260V08	Z0	4.4	4.73	3.07	3.41	0.50	1.00	0.3	1.2	0.15	0.65

**THERMAL DERATING**



**TIME TO TRIP CURVE**



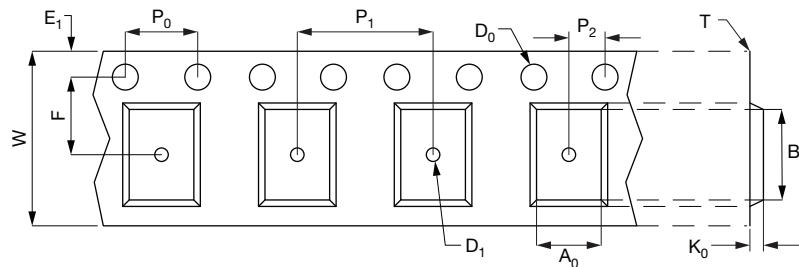
RECOMMENDED HOLD CURRENT in Amperes									
PART NUMBER	-40 °C	-20 °C	0 °C	25 °C	40 °C	50 °C	60 °C	70 °C	85 °C
PPTC1812E3014V60	0.23	0.19	0.17	0.14	0.12	0.10	0.090	0.080	0.060
PPTC1812E3020V60	0.29	0.26	0.23	0.20	0.17	0.15	0.14	0.12	0.10
PPTC1812E3035V30	0.50	0.45	0.40	0.35	0.30	0.26	0.24	0.20	0.16
PPTC1812E3050V30	0.77	0.68	0.59	0.50	0.44	0.40	0.37	0.33	0.29
PPTC1812E3075V33	1.10	1.00	0.88	0.75	0.66	0.60	0.56	0.47	0.36
PPTC1812E3110V24	1.55	1.40	1.25	1.10	0.93	0.83	0.73	0.63	0.50
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
PPTC1812E3200V08	2.60	2.44	2.22	2.00	1.78	1.67	1.50	1.45	1.29
PPTC1812E3200V16	2.60	2.44	2.22	2.00	1.78	1.67	1.50	1.45	1.29
PPTC1812E3260V08	3.40	3.16	3.00	2.60	2.30	2.150	2.00	1.85	1.63

**Note**

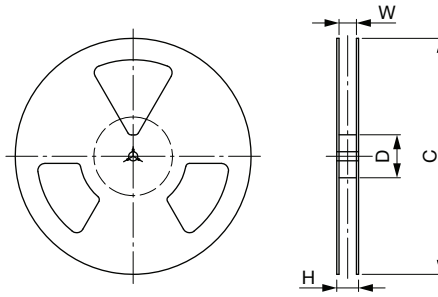
- Recommended hold currents prevail the thermal derating graph; hold and trip currents are depending on mounting

**TAPE AND REEL DIMENSIONS**

Taping on reel according to EIA-481.



TAPE DIMENSIONS in millimeters												
PART NUMBER	W	F	E <sub>1</sub>	D <sub>0</sub>	D <sub>1</sub>	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	A <sub>0</sub>	B <sub>0</sub>	K <sub>0</sub>	T
PPTC1812E3014V60	12.0 ± 0.3	5.5 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.50 min.	4 ± 0.10	8 ± 0.10	2.0 ± 0.05	3.50 ± 0.10	4.85 ± 0.10	1.25 ± 0.10	0.25 ± 0.10
PPTC1812E3020V60												
PPTC1812E3035V30												
PPTC1812E3050V30									3.58 ± 0.10	4.93 ± 0.10	0.87 ± 0.06	
PPTC1812E3075V33												
PPTC1812E3110V24												
PPTC1812E3150V12												
PPTC1812E3150V24												
PPTC1812E3200V08									3.58 ± 0.10	4.93 ± 0.10	2.10 ± 0.10	
PPTC1812E3200V16											0.87 ± 0.06	
PPTC1812E3260V08	3.50 ± 0.10	4.85 ± 0.10	1.25 ± 0.10									



<b>REEL DIMENSIONS</b> in millimeters			
C	D	H	W
Ø 178 ± 1.0	Ø 60.2 ± 0.5	11.0 ± 0.5	9.0 ± 1.5

<b>PACKAGING QUANTITY</b>	
PART NUMBER	QUANTITY
PPTC1812E3014V60	1500
PPTC1812E3020V60	1500
PPTC1812E3035V30	1500
PPTC1812E3050V30	2000
PPTC1812E3075V33	1500
PPTC1812E3110V24	1500
PPTC1812E3150V12	1500
PPTC1812E3150V24	1000
PPTC1812E3200V08	2000
PPTC1812E3200V16	1500
PPTC1812E3260V08	1500



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