SMD 1210 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

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

SPICE Models

3D Models

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

QUICK REFERENCE DATA

PARAMETER (1)	VALUE	UNIT
Hold current (I_{hold}) (2)(3)	0.05 to 1.5	A
Trip current (I_{trip}) (2)(3)	0.15 to 3	A
Maximum voltage ($V_{max.}$) (2)(3)	6 to 90	V_{DC}
Maximum current ($I_{max.}$) (2)(3)	10 to 100	A
Power dissipation (P_D typ.) (3)	0.6 to 1.5	W
Minimum initial resistance ($R_{min.}$) (2)(3)	0.040 to 3.6	Ω
Maximum resistance after tripping and 1 h cool down (R_1 max.) (2)(3)	0.11 to 50	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

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, sealed in a plastic bag. Packaging quantity per reel: see table.

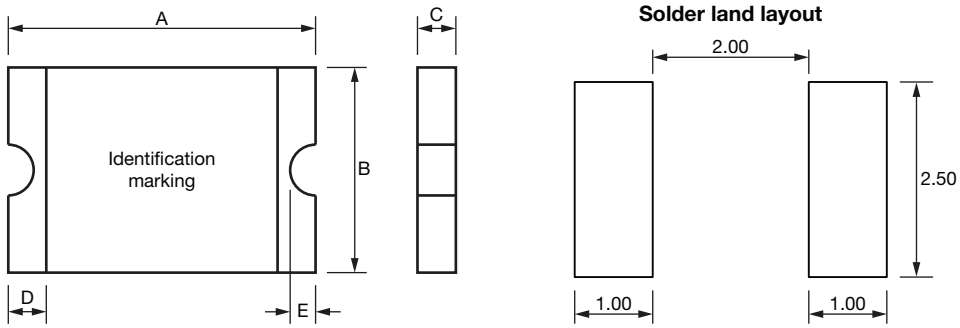
ELECTRICAL DATA AND ORDERING INFORMATION

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 °C	
						CURRENT (A)	TIME (s)	$R_{min.}$ (Ω)	$R_{1\ max.}$ (Ω)
PPTC1210E3005V30	0.05	0.15	30	10	0.6	0.25	1.5	3.6	50
PPTC1210E3005V90	0.05	0.15	90	10	1.5	8.0	0.2	3.6	50
PPTC1210E3010V30	0.10	0.30	30	10	0.6	0.5	1.50	1.6	15
PPTC1210E3010V90	0.10	0.25	90	10	1.5	8.0	0.30	1.5	15
PPTC1210E3035V30	0.35	0.70	30	40	0.6	8.0	0.20	0.32	13
PPTC1210E3050V13	0.50	1.00	13.2	100	0.6	8.0	0.05	0.25	0.90
PPTC1210E3050V30	0.50	1.00	30	40	0.6	8.0	0.15	0.22	0.90
PPTC1210E3075V24	0.75	1.50	24	100	0.6	8.0	0.10	0.13	0.40
PPTC1210E3110V16	1.10	2.20	16	100	0.6	8.0	0.10	0.060	0.21
PPTC1210E3150V06	1.50	3.00	6	100	0.8	8.0	0.30	0.040	0.11

PERFORMANCE

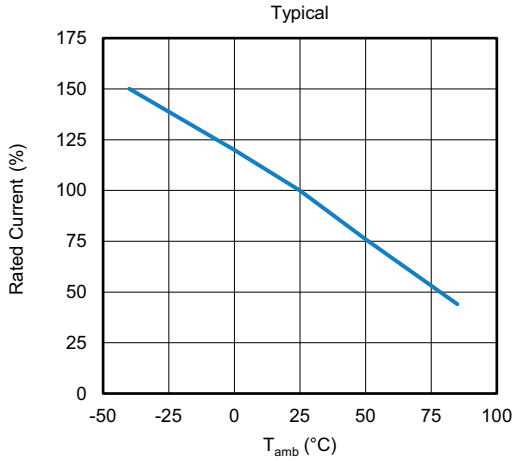
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature	-40 °C to +85 °C
Storage condition	10 °C to 35 °C, ≤ 70 % RH, without condensation
Maximum device surface temperature in tripped state	125 °C
Passive aging	+85 °C, 1000 h ± 5 % typical resistance change
Humidity aging	+85 °C, 85 % RH, 1000 h ± 5 % typical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

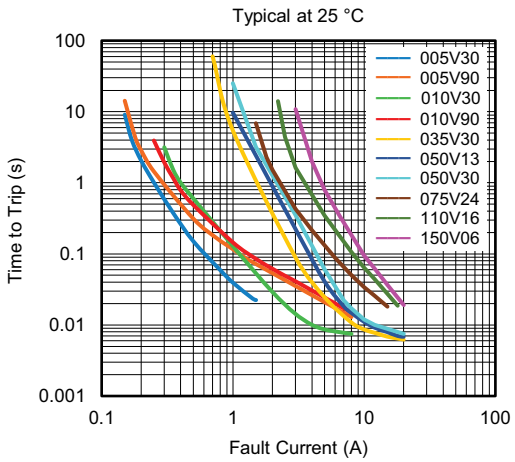


COMPONENT DIMENSIONS in millimeters											
PART NUMBER	MARKING	A		B		C		D		E	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
PPTC1210E3005V30	E3	3.0	3.43	2.35	2.8	0.75	1.25	0.25	0.75	0.1	0.5
PPTC1210E3005V90	E9	3.0	3.43	2.35	2.8	0.75	1.25	0.25	0.75	0.1	0.5
PPTC1210E3010V30	G3	3.0	3.43	2.35	2.8	0.75	1.25	0.25	0.75	0.1	0.5
PPTC1210E3010V90	G9	3.0	3.43	2.35	2.8	0.75	1.25	0.25	0.75	0.1	0.5
PPTC1210E3035V30	N3	3.0	3.43	2.35	2.8	0.75	1.25	0.25	0.75	0.1	0.5
PPTC1210E3050V13	O1	3.0	3.43	2.35	2.8	0.50	0.85	0.25	0.75	0.1	0.5
PPTC1210E3050V30	O3	3.0	3.43	2.35	2.8	0.75	1.25	0.25	0.75	0.1	0.5
PPTC1210E3075V24	P3	3.0	3.43	2.35	2.8	1.20	1.80	0.25	0.75	0.1	0.5
PPTC1210E3110V16	R2	3.0	3.43	2.35	2.8	0.75	1.25	0.25	0.75	0.1	0.5
PPTC1210E3150V06	T0	3.0	3.43	2.35	2.8	0.75	1.07	0.25	0.75	0.1	0.5

THERMAL DERATING



TIME TO TRIP CURVE



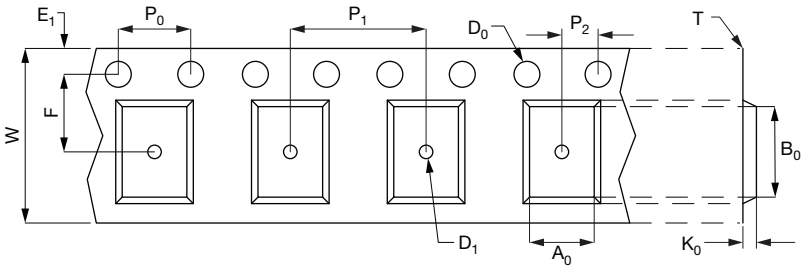
RECOMMENDED HOLD CURRENT in Amperes									
PART NUMBER	**-40 °C**	**-20 °C**	**0 °C**	**25 °C**	**40 °C**	**50 °C**	**60 °C**	**70 °C**	**85 °C**
PPTC1210E3005V30	0.080	0.070	0.060	0.050	0.040	0.040	0.030	0.030	0.020
PPTC1210E3005V90	0.078	0.070	0.060	0.050	0.044	0.038	0.034	0.029	0.023
PPTC1210E3010V30	0.16	0.14	0.12	0.10	0.080	0.070	0.060	0.050	0.050
PPTC1210E3010V90	0.16	0.14	0.121	0.10	0.084	0.075	0.066	0.057	0.043
PPTC1210E3035V30	0.47	0.45	0.4	0.35	0.33	0.28	0.24	0.21	0.18
PPTC1210E3050V13	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
PPTC1210E3050V30	0.76	0.67	0.58	0.50	0.43	0.40	0.36	0.32	0.28
PPTC1210E3075V24	1.00	0.97	0.86	0.75	0.64	0.59	0.54	0.48	0.40
PPTC1210E3110V16	1.60	1.42	1.26	1.10	0.94	0.86	0.80	0.70	0.58
PPTC1210E3150V06	2.30	2.02	1.76	1.50	1.24	1.11	1.00	0.85	0.65

Note

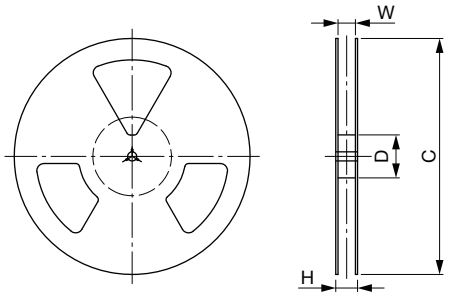
- Recommended hold currents prevail the thermal derating graph; hold and trip currents are depending on mounting

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**
PPTC1210E3005V30	8.00 ± 0.3	3.5 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.00 min.	4 ± 0.10	4 ± 0.10	2.0 ± 0.05	2.82 ± 0.10	3.50 ± 0.10	1.30 ± 0.10	0.20 ± 0.10
PPTC1210E3005V90												
PPTC1210E3010V30												
PPTC1210E3010V90												
PPTC1210E3035V30												
PPTC1210E3050V13										3.46 ± 0.10	1.00 ± 0.10	0.25 ± 0.10
PPTC1210E3050V30										3.50 ± 0.10	1.30 ± 0.10	0.20 ± 0.10
PPTC1210E3075V24									2.80 ± 0.10		1.60 ± 0.10	0.25 ± 0.10
PPTC1210E3110V16									2.82 ± 0.10		1.30 ± 0.10	0.20 ± 0.10
PPTC1210E3150V06												



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**
PPTC1210E3005V30	3000
PPTC1210E3005V90	3000
PPTC1210E3010V30	3000
PPTC1210E3010V90	3000
PPTC1210E3035V30	3000
PPTC1210E3050V13	4000
PPTC1210E3050V30	3000
PPTC1210E3075V24	2000
PPTC1210E3110V16	3000
PPTC1210E3150V06	3000

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