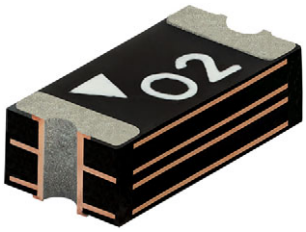
SMD 1206 Polymer PTCs



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

Pb-free

e3

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)	0.05 to 1.1	A
Trip current (I_{trip}) (2)(3)	0.15 to 2.2	A
Maximum voltage ($V_{max.}$) (2)(3)	8 to 60	V_{DC}
Maximum current ($I_{max.}$) (2)(3)	10 to 100	A
Power dissipation (P_D typ.) (3)	0.6 to 0.8	W
Minimum initial resistance ($R_{min.}$) (2)(3)	0.04 to 3.6	Ω
Maximum resistance after tripping and 1 h cool down (R_1 max.) (2)(3)	0.21 to 20	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
- 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, sealed in a plastic bag. Packaging quantity per reel: see table.

ELECTRICAL DATA AND ORDERING INFORMATION

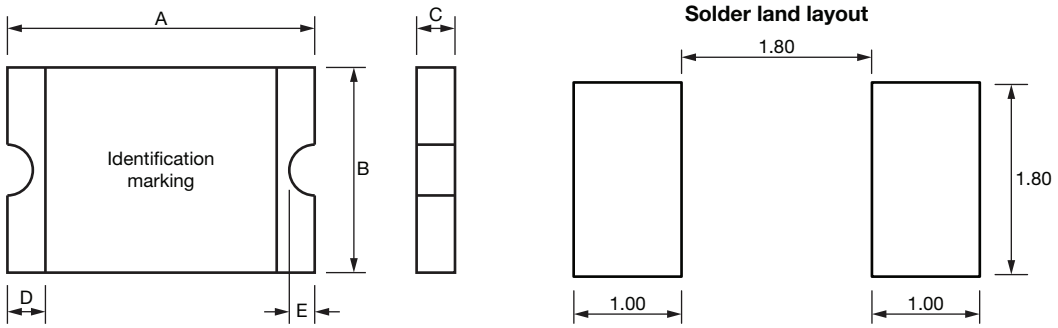
PART NUMBER	I_{hold} (A)	I_{trip} (A)	$V_{max.}$ (V_{DC})	$I_{max.}$ (A)	P_D TYP. (W)	MAX. TIME TO TRIP		RESISTANCE AT 25 °C	
						CURRENT (A)	TIME (s)	$R_{min.}$ (Ω)	$R_{1\ max.}$ (Ω)
PPTC1206E3005V60	0.05	0.15	60	10	0.6	0.25	1.5	3.60	20.0
PPTC1206E3010V60	0.10	0.25	60	10	0.6	0.50	1.5	1.50	10.0
PPTC1206E3012V30	0.13	0.29	30	100	0.6	1.0	0.20	1.50	6.0
PPTC1206E3020V24	0.20	0.42	24	100	0.6	8.0	0.10	0.65	2.6
PPTC1206E3020V30	0.20	0.42	30	100	0.6	8.0	0.10	0.65	2.6
PPTC1206E3035V16	0.35	0.75	16	100	0.6	8.0	0.10	0.30	1.20
PPTC1206E3035V30	0.35	0.75	30	100	0.6	8.0	0.10	0.30	1.20
PPTC1206E3050V15	0.50	1.00	15	100	0.6	8.0	0.10	0.15	0.75
PPTC1206E3075V16	0.75	1.50	16	100	0.6	8.0	0.20	0.09	0.29
PPTC1206E3110V08	1.10	2.20	8	100	0.8	8.0	0.10	0.04	0.21

For technical questions, contact: nlr@vishay.com

PERFORMANCE

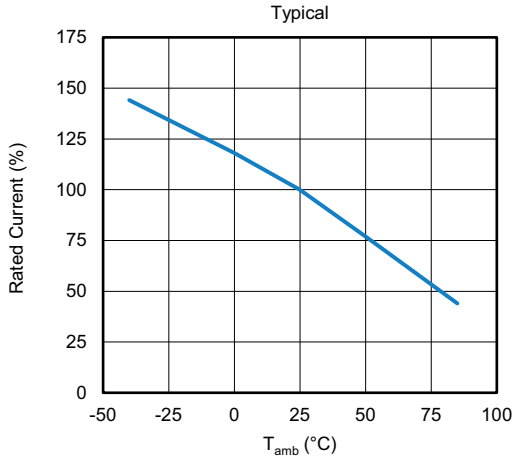
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature	-40 °C to +85 °C
Storage condition	10 °C to 35 °C, ≤ 70 % RH, without condensation
Maximum device surface temperature in tripped state	125 °C
Passive aging	+85 °C, 1000 h ± 5 % typical resistance change
Humidity aging	+85 °C, 85 % RH, 1000 h ± 5 % typical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

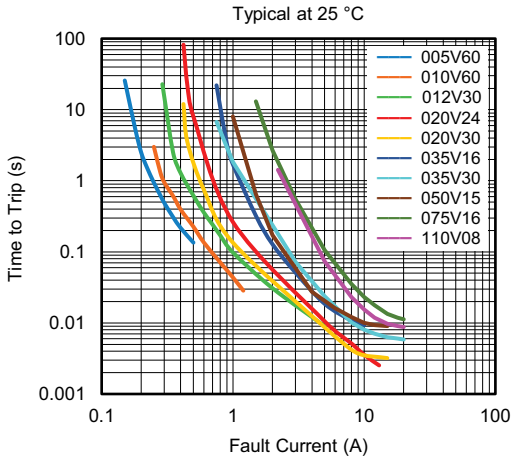


COMPONENT DIMENSIONS in millimeters											
PART NUMBER	MARKING	A		B		C		D		E	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
PPTC1206E3005V60	E6	3.0	3.4	1.5	1.8	0.65	1.25	0.25	0.75	0.05	0.45
PPTC1206E3010V60	G6	3.0	3.4	1.5	1.8	0.65	1.25	0.25	0.75	0.05	0.45
PPTC1206E3012V30	H3	3.0	3.4	1.5	1.8	0.65	1.45	0.25	0.75	0.05	0.45
PPTC1206E3020V24	K2	3.0	3.4	1.5	1.8	0.50	1.00	0.25	0.75	0.05	0.45
PPTC1206E3020V30	K3	3.0	3.4	1.5	1.8	0.50	1.00	0.25	0.75	0.05	0.45
PPTC1206E3035V16	N1	3.0	3.4	1.5	1.8	0.45	0.75	0.25	0.75	0.05	0.45
PPTC1206E3035V30	N3	3.0	3.4	1.5	1.8	0.50	1.00	0.25	0.75	0.05	0.45
PPTC1206E3050V15	O1	3.0	3.4	1.5	1.8	0.45	0.75	0.25	0.75	0.05	0.45
PPTC1206E3075V16	P2	3.0	3.4	1.5	1.8	0.75	1.25	0.25	0.75	0.05	0.45
PPTC1206E3110V08	R0	3.0	3.4	1.5	1.8	0.30	0.60	0.25	0.75	0.05	0.45

THERMAL DERATING



TIME TO TRIP CURVE



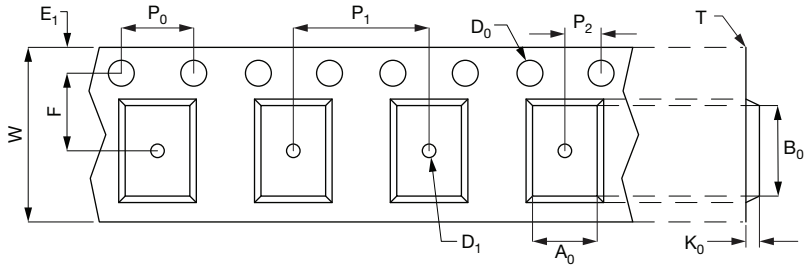
RECOMMENDED HOLD CURRENT in Amperes									
PART NUMBER	-40 °C	-20 °C	0 °C	25 °C	40 °C	50 °C	60 °C	70 °C	85 °C
PPTC1206E3005V60	0.076	0.068	0.06	0.050	0.043	0.039	0.034	0.03	0.023
PPTC1206E3010V60	0.156	0.139	0.12	0.10	0.083	0.074	0.065	0.056	0.042
PPTC1206E3012V30	0.18	0.16	0.14	0.13	0.100	0.090	0.08	0.07	0.05
PPTC1206E3020V24	0.28	0.25	0.23	0.20	0.170	0.150	0.14	0.12	0.09
PPTC1206E3020V30	0.28	0.25	0.23	0.20	0.170	0.150	0.14	0.12	0.09
PPTC1206E3035V16	0.50	0.45	0.40	0.35	0.300	0.270	0.24	0.21	0.15
PPTC1206E3035V30	0.50	0.45	0.40	0.35	0.300	0.270	0.24	0.21	0.15
PPTC1206E3050V15	0.71	0.64	0.57	0.50	0.420	0.390	0.35	0.31	0.25
PPTC1206E3075V16	1.14	1.01	0.88	0.75	0.650	0.590	0.54	0.49	0.41
PPTC1206E3110V08	1.64	1.46	1.30	1.10	0.920	0.830	0.80	0.65	0.52

Note

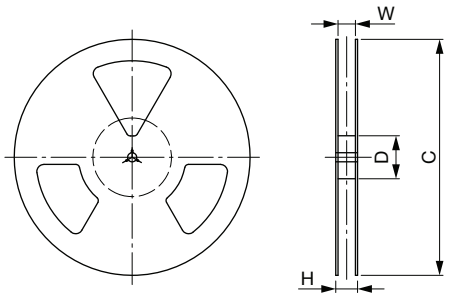
- Recommended hold currents prevail the thermal derating graph; hold and trip currents are depending on mounting

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
PPTC1206E3005V60	8.15 + 0.15 / - 0.3	3.5 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.00 ± 0.10	4 ± 0.10	4 ± 0.10	2.0 ± 0.05	1.92 ± 0.10	3.65 ± 0.10	1.30 ± 0.10	0.25 ± 0.10
PPTC1206E3010V60												
PPTC1206E3012V30												
PPTC1206E3020V24	8.20 + 0.10 / - 0.3								1.95 ± 0.10		0.87 ± 0.10	0.20 ± 0.10
PPTC1206E3020V30												
PPTC1206E3035V16												
PPTC1206E3035V30	8.15 + 0.15 / - 0.3								1.92 ± 0.10		1.30 ± 0.10	0.25 ± 0.10
PPTC1206E3050V15	8.20 + 0.10 / - 0.3								1.95 ± 0.10		0.87 ± 0.10	0.20 ± 0.10
PPTC1206E3075V16	8.15 + 0.15 / - 0.3								1.92 ± 0.10		1.30 ± 0.10	0.25 ± 0.10
PPTC1206E3110V08	8.20 + 0.10 / - 0.3								1.95 ± 0.10		0.87 ± 0.10	0.20 ± 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**
PPTC1206E3005V60	3000
PPTC1206E3010V60	3000
PPTC1206E3012V30	3000
PPTC1206E3020V24	4000
PPTC1206E3020V30	4000
PPTC1206E3035V16	4000
PPTC1206E3035V30	3000
PPTC1206E3050V15	4000
PPTC1206E3075V16	3000
PPTC1206E3110V08	4000

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.