

## 600 V / 1000 V PTC Thermistors for Overload Protection



### FEATURES

- Fast response time for rapid protection
- Automatic resetting once overload is removed
- Operates on DC or AC voltage
- UL approved types available (E148885)
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### APPLICATIONS

Over-temperature/over-load protection for metering, low current signal protection, digital signal protection against over-voltage

### DESCRIPTION

Test and measuring instruments, such as oscilloscopes and digital multimeters, can be easily damaged if excessive voltages are applied across their input terminals.

Simple and effective overload protection can be provided by connecting a high-voltage PTC thermistor in series with the instrument; see Typical Connection of the PTC Thermistor for Digital Multimeter Protection drawing. Under normal conditions, the resistance of the PTC thermistor is low, so the test voltage will be measured by the instrument. Under an overload condition, the PTC thermistor will switch to its high-resistance state, absorbing the overload current and protecting the instrument. When the overload is removed, the PTC thermistor will return to its low-resistance state, ready to resume its protective function.

### QUICK REFERENCE DATA

PARAMETER	VALUE	UNIT
Maximum rated voltage	600 to 1000	V <sub>RMS</sub>
Nominal holding current (Int)	10	mA
Resistance at 25 °C (R <sub>25</sub> )	400 to 1600	Ω
Tolerance on R <sub>25</sub> value	20 to 30	%
Maximum overload current I <sub>ol</sub>	0.5 to 2.0	A
Switching temperature	90 to 115	°C
Operating temperature range at rated voltage	-20 to 85	°C

### ELECTRICAL DATA AND ORDERING INFORMATION

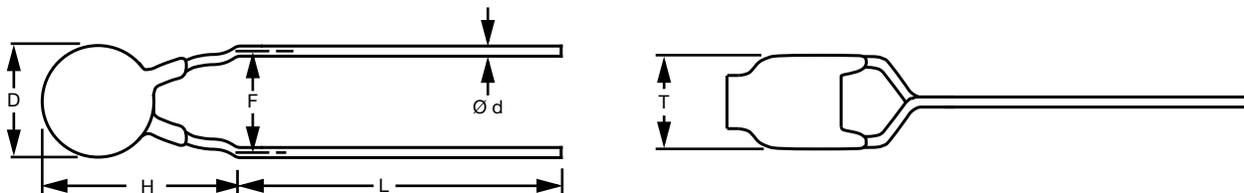
INT MAX. at 25 °C (mA)	IT MIN. at 25 °C (mA)	R <sub>25</sub> <sup>(2)</sup> (Ω)	MAXIMUM VOLTAGE <sup>(1)</sup> (V)	INSULATION VOLTAGE (V)	UL APPROVAL	ORDERING PART NUMBERS
10	20	1600 ± 300	600	-	UL	PTCCL05H100SBE
10	25	1500 ± 450	1000	-	-	PTCCL07H100VBE
10	50	400 ± 100	600	> 1000	UL	PTCCL10H010SBE

#### Notes

- (1) These PTCs can handle maximum voltage without series resistance  
 (2) Other resistance values and voltage levels on request

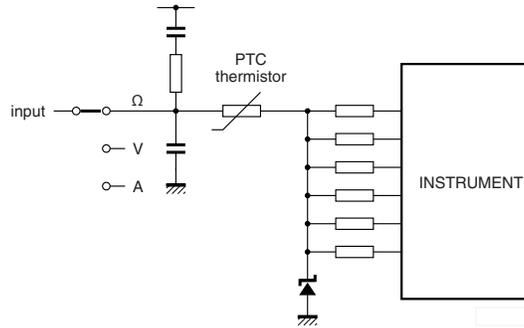
### COMPONENT DIMENSIONS in millimeters

#### PTC THERMISTORS IN BULK

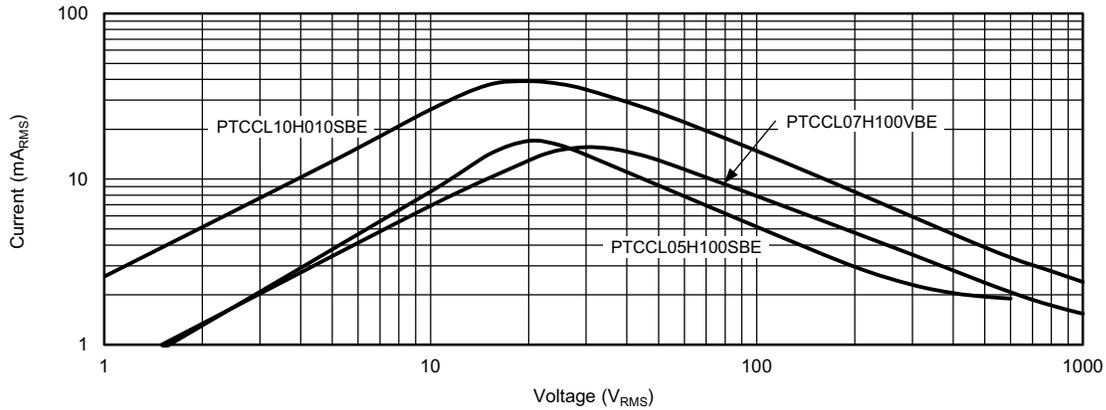


H MAX.	L	D MAX.	T MAX.	F	Ø d	MASS (g)	SPQ	PART NUMBER
10.4	20 ± 3	5	4.5	5.0	0.6	~ 0.5	500	PTCCL05H100SBE
12	20 ± 3	7	5.0	5.0	0.6	~ 0.60	250	PTCCL07H100VBE
13.5	3.1 ± 0.5	10	6.5	8.12	0.8	~ 1.8	500	PTCCL10H010SBE

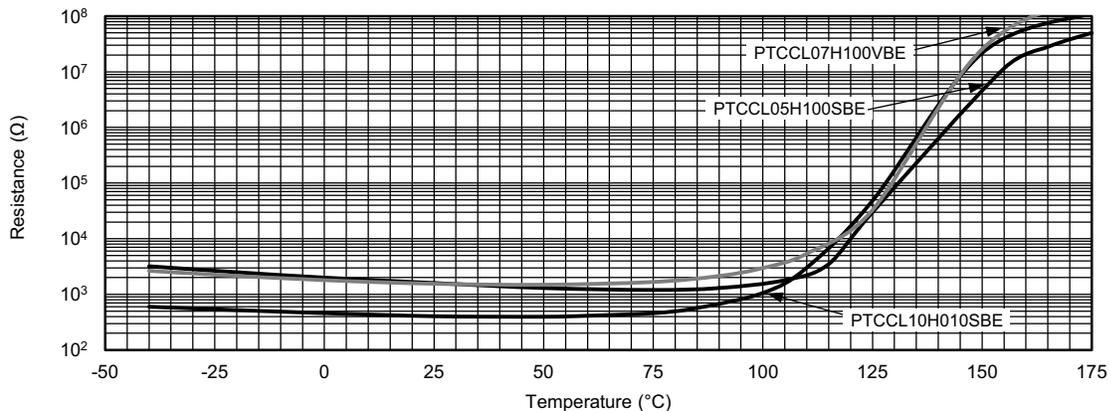
## TYPICAL CONNECTION OF THE PTC THERMISTOR FOR DIGITAL MULTIMETER PROTECTION



## TYPICAL CURRENT / VOLTAGE CHARACTERISTIC



## TYPICAL RESISTANCE / TEMPERATURE CHARACTERISTIC ( $\leq 5 V_{DC}$ )





## **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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.