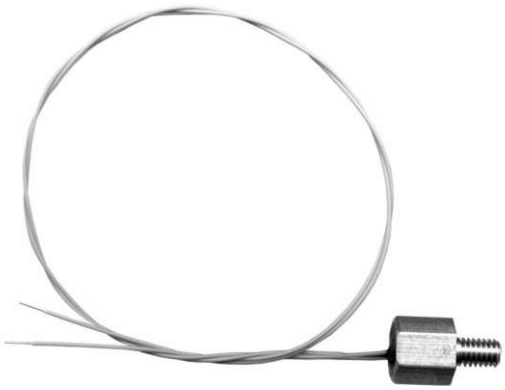
PTC Thermistors, Screw Type For Over-Temperature Protection



FEATURES

- Well-defined protection temperature levels with low thermal gradient between thermal body and sensing temperature
- Accurate resistance for ease of circuit design
- Excellent long term behavior (< 1 °C or 5 % after 1000 h at T_n + 15 °C)
- Wide range of protection temperatures (70 °C to 150 °C)
- No need to reset supply after overtemperature switch
- Small size and rugged
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

RoHS COMPLIANT

QUICK REFERENCE DATA

PARAMETER	VALUE	UNIT
Maximum resistance at 25 °C	100	Ω
Minimum resistance at (T_n + 15) °C	4000	Ω
Maximum voltage	30	V
Thermal time constant	≈ 8.0	s
Temperature range	- 40 to (T_n + 15)	°C
Min. dielectric withstanding voltage between leads-end and screw	500	V_{AC}
Weight	± 2.0	g
Climatic category	40/155/56	

APPLICATIONS

Over-temperature protection and control in:

- Industrial electronics
- Power supplies

DESCRIPTION

These positive temperature coefficient thermistors consist of a small ceramic chip reflow-soldered between two AWG#30 wires with PeeK insulation and potted inside a passivated aluminum screw head.

NOMINAL WORKING TEMPERATURES AND ORDERING INFORMATION

NOMINAL WORKING TEMPERATURE			CATALOG NUMBER 2381 671 .....
T_n (°C)	$R_{max.}$ at T_n - 5 °C (Ω)	$R_{min.}$ at T_n + 5 °C (Ω)	SCREW DEVICE
70	570	570	91302
80	550	1330	91303
90	550	1330	91304
100	550	1330	91305
110	550	1330	91306
120	550	1330	91207
130	550	1330	91309
140	550	1330	91312
150	550	1330	91314

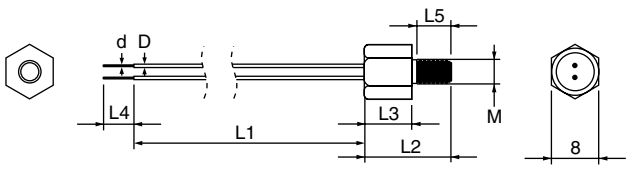
ELECTRICAL CHARACTERISTICS

PARAMETER	VALUES
Maximum resistance at 25 °C	100 Ω
Maximum resistance at (T_n - 5) °C	See Nominal Working Temperatures and Ordering Information table
Minimum resistance at (T_n + 5) °C	see Nominal Working Temperatures and Ordering Information table
Minimum resistance at (T_n + 15) °C	4000 Ω
Maximum voltage	30 V (AC or DC)

For technical questions, contact: nlr@vishay.com
Document Number: 29115
Revision: 18-Jun-09

CATALOG NUMBERS AND PACKAGING		
12NC	**SAP**	**SPQ**
2381 671 91302	PTCSSCWT071DBE	500
2381 671 91303	PTCSSCWT081DBE	500
2381 671 91304	PTCSSCW3T091DBE	500
2381 671 91305	PTCSSCWT101DBE	500
2381 671 91306	PTCSSCW3T111DBE	500
2381 671 91307	PTCSSCWT121DBE	500
2381 671 91309	PTCSSCWT131DBE	500
2381 671 91312	PTCSSCWT141DBE	500
2381 671 91314	PTCSSCWT151DBE	500

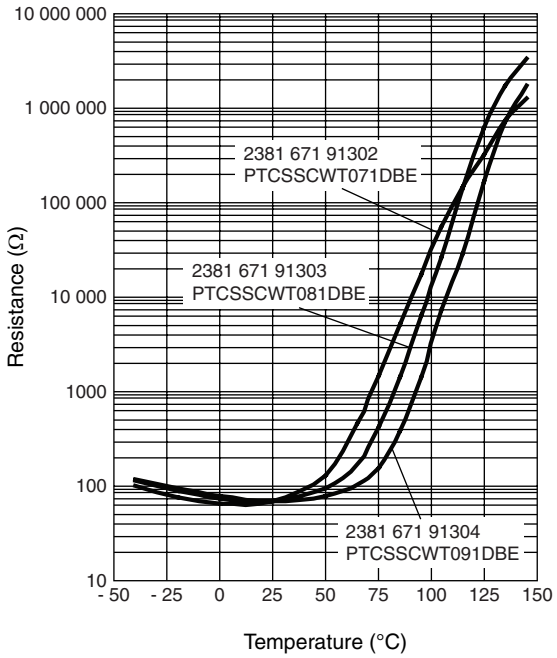
COMPONENT OUTLINES dimensions in millimeters

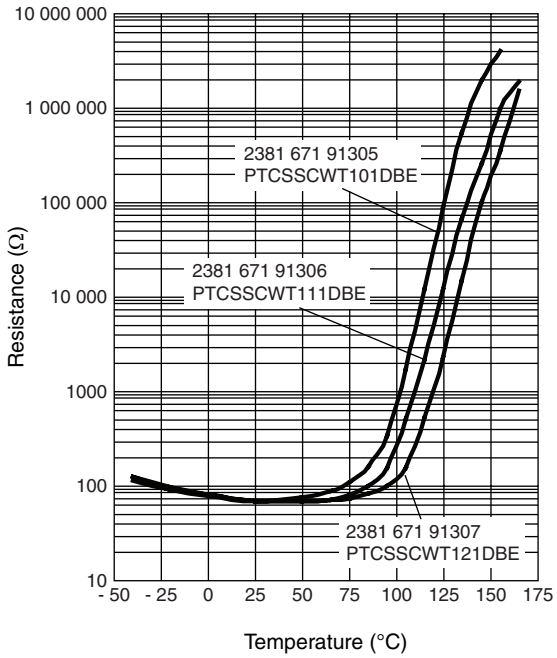


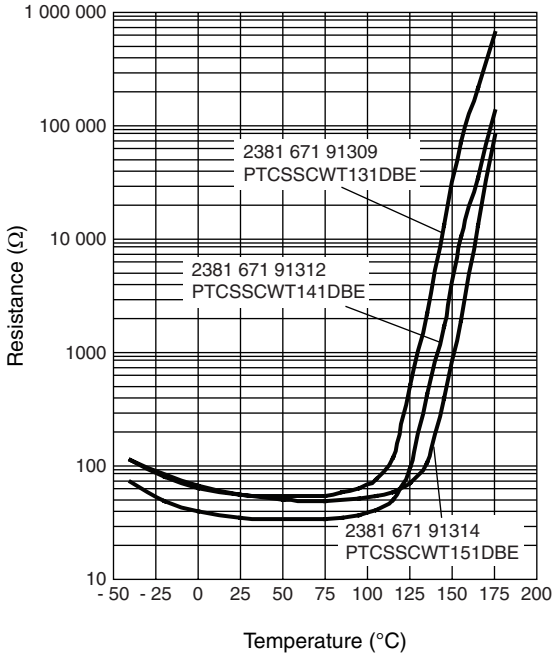
Component outline for 2381 671 91302 to 91314

L1	200 ± 20
L2	14.5
L3	8
L4	3
L5	5.5 (M4)
M	M4 - 0.70 - 6g (ISO)
d	0.254
D	0.56

TYPICAL RESISTANCE/TEMPERATURE CHARACTERISTIC







APPLICATION SPECIFIC DATA

Negative Temperature Coefficient (NTC) thermistors are well known for temperature sensing. What is not well known, however, is that Positive Temperature Coefficient (PTC) thermistors can be used for thermal protection. Although their operating principles are similar, the applications are very different; whereas NTC thermistors sense and measure temperature over a defined range, PTC thermistors switch at one particular temperature.

Just like thermostats they protect such equipment and components as motors, transformers, power transistors and thyristors against overtemperature. A PTC thermistor is less expensive than a thermostat, and its switch temperature can be more accurately specified. It is also smaller and easier to design-in to electronic circuitry.

So how does it work? The PTC thermistor is mounted in thermal contact with the equipment to be protected, and connected into the bridge arm of a comparator circuit, such as shown in Fig. 1. At normal temperature, the PTC thermistor resistance (R_p) is lower than R_s (see Fig. 2), so the comparator's output voltage V_O will be low. If an equipment overtemperature occurs, the PTC thermistor will quickly heat up to its trigger or nominal reference temperature T_n, whereupon its resistance will increase to a value much higher than R_s, causing V_O to switch to a high level sufficient to activate an alarm, relay or power shutdown circuit.

APPLICATION EXAMPLES

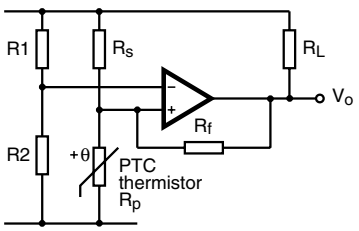


Fig. 1 Typical comparator circuit

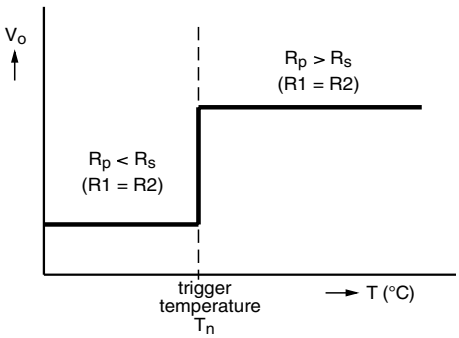


Fig. 2 Typical switch characteristic

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.