PTC Thermistors, Sleeve Type for Over-Temperature Protection

FEATURES

- Well-defined protection temperature levels
- 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
- Also available as triple sensor
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

e4
RoHS
COMPLIANT

APPLICATIONS

Over-temperature/over-load protection:

- Motor protection (thermal protection of winding)
- Industrial electronics
- Power supplies
- Electronic data processing

DESCRIPTION

These PTC thermistors consist of a small PTC ceramic chip soldered between 2 ETFE insulated silver plated copper wires, insulated by a thermal sleeve.

The are primarily intended for over-temperature sensing inside windings, coils, transformers and alike.

PACKAGING

The PTC thermistors are packed in BULK per 500 pcs.

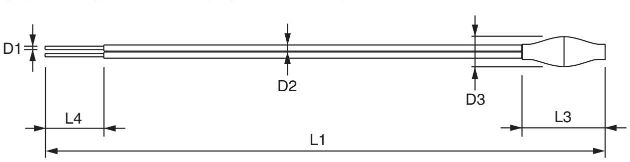
QUICK REFERENCE DATA

PARAMETER	VALUE	UNIT
Maximum resistance at 25 °C	100	Ω
Minimum resistance at (T_n + 15) °C	4000	Ω
Maximum (AC/DC) voltage	30	V
Thermal time constant	≈ 8.0	s
Temperature range	- 40 to (T_n + 15)	°C
Weight	≈ 2.0	g
Climatic category	40/125/56	- °C/+ °C/ days

NOMINAL WORKING TEMPERATURES AND ORDERING INFORMATION

NOMINAL WORKING TEMPERATURE			CATALOG AND ORDERING NUMBER	12NC REFRENCE NUMBER
T_n (°C)	$R_{max.}$ at T_n - 5 °C (Ω)	$R_{min.}$ at T_n + 5 °C (Ω)	SLEEVE DEVICE	2381 671 .....
70	570	570	PTCSSLVT071DBE	91402
80	550	1330	PTCSSLVT081DBE	91403
90	550	1330	PTCSSLVT091DBE	91404
100	550	1330	PTCSSLVT101DBE	91405
110	550	1330	PTCSSLVT111DBE	91406
120	550	1330	PTCSSLVT121DBE	91407
130	550	1330	PTCSSLVT131DBE	91409
140	550	1330	PTCSSLVT141DBE	91412
150	550	1330	PTCSSLVT151DBE	91414

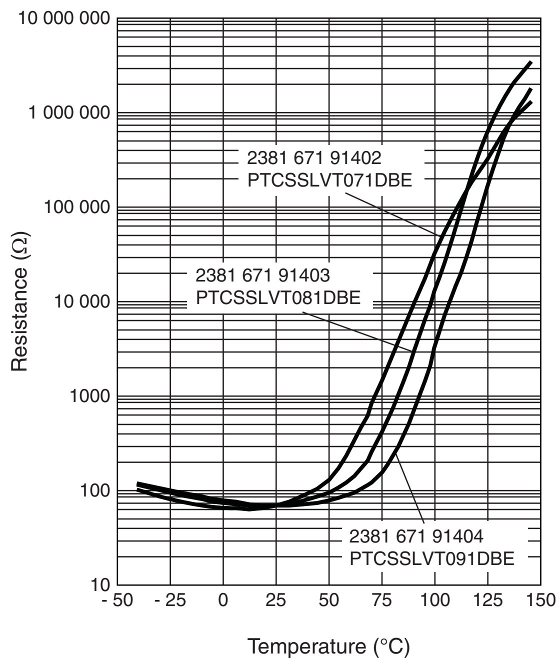
COMPONENT OUTLINES dimensions in millimeters

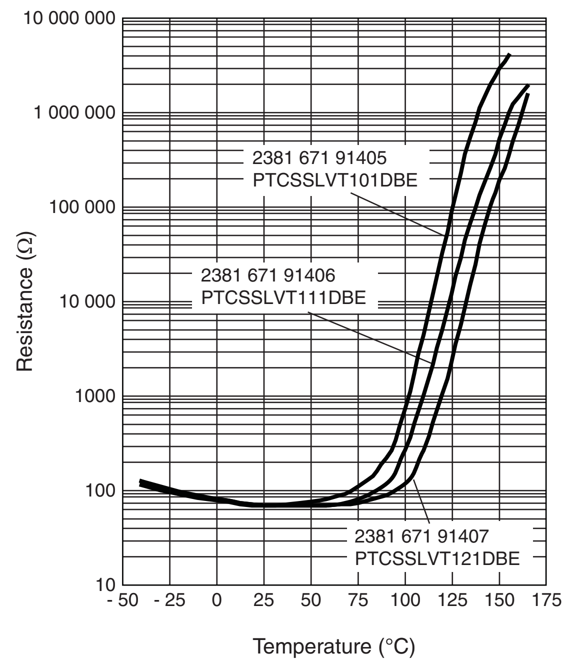


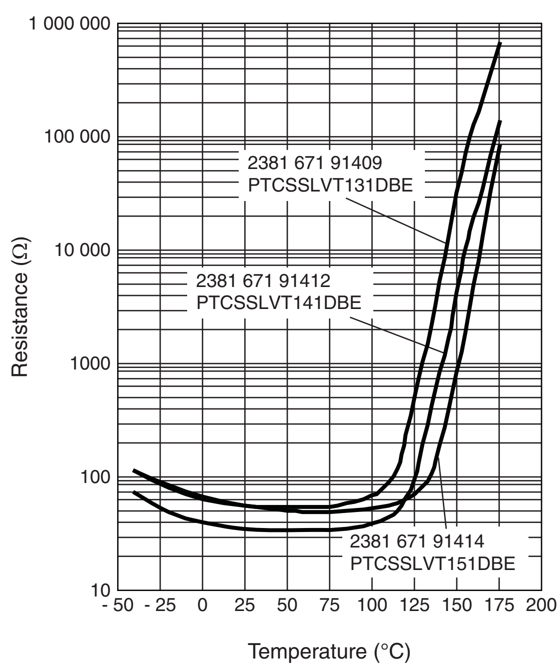
Component outline

L1	500 ± 20
L2	7 ± 2
L3	10 ± 3
D1	0.42
D2	0.7
D3	3 max.

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

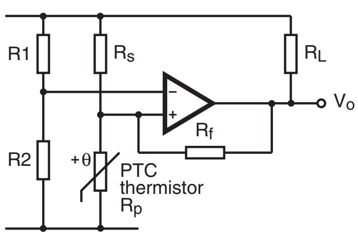


Fig. 1 Typical comparator circuit

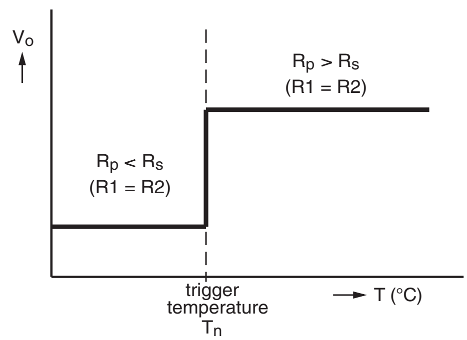
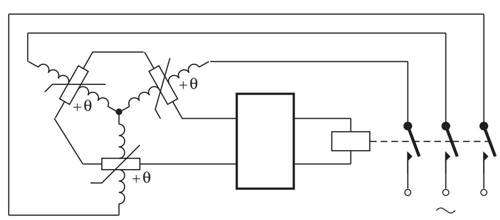


Fig. 2 Typical switch characteristic



As soon as one or more of the windings becomes too hot, the motor is switched off.

Fig. 3 Temperature protection of electric motors

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