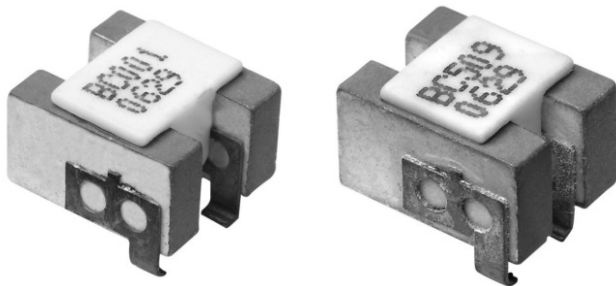


TWIN Vertical Surface Mount PTC Thermistors for Overload Protection



QUICK REFERENCE DATA

| PARAMETER | VALUE | UNIT |
|-----------------------|--------------|------|
| Maximum voltage (RMS) | 240 | V |
| Temperature range | - 40 to + 85 | °C |
| Climatic category | 40/125/56 | |
| Weight | ~ 1.3 | g |

DESCRIPTION

The component consists of a high-performance PTC ceramic disc mounted in a lead-frame for direct soldering onto a printed-circuit board (PCB) or substrate.

The ceramic is soldered to the leadframe by a local reflow process, during which the solder layer is melted to the metallized ceramic surface using a low residue flux.

MARKING

- All TWIN Vertical SMD PTC's are marked with the last 3-digits of the type number (BCxxx) and a date code (YYWW)

FEATURES

- Very small footprint, allowing to increase the number of lines per PCB
- Matched pairs in one component, significantly reducing the assembly time
- Narrow tracking between the 2 PTC's over a wide temperature range (matching at 85 °C: $\leq 2 \times$ matching at 25 °C)
- Limited height and weight, used on high speed pick-and-place circuit assembly
- Flat pick-up ceramic area for easy placement
- Small ceramics for faster response time
- Thermal coupled PTC's for enhanced protection
- Coated versions available on request
- Four spaced terminations for heat flow regulation and improved mechanical stability
- Small and large pitch available
- Compliant with the enhanced level requirements of ITU - K20-21-45 edition 2003
- Suitable for Pb-bearing and lead (Pb)-free reflow soldering
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

APPLICATIONS

- Telecom
 - Telecommunications infrastructure
 - PABX
 - Set-top box

MOUNTING

With a flat pick-up area = 30 mm² the PTC thermistors are suitable for processing on high speed automatic insertion equipment.

Typical soldering

235 °C, duration: 5 s (Pb-bearing)

245 °C, duration: 5 s (Lead (Pb)-free)

Resistance to soldering heat

260 °C, duration: 10 s max

ELECTRICAL DATA

| R ₂₅ ± 20 % (Ω) | MATCHING (Ω) | V _{MAX} (V _{rms}) | I _{nt} at | | | I _t (mA) | MAX. TRIP-TIME at 1 A (s) | I _{max} at V _{max} (A) | I _{res} (2 PCS POWERED) at V _{max} (mA) |
|----------------------------------|-----------------|---|--------------------|---------------|---------------|------------------------|------------------------------------|--|---|
| | | | 25 °C (mA) | 70 °C (mA) | 85 °C (mA) | | | | |
| 10 | 0.5 | 240 | 140 | 85 | 55 | 300 | 4.0 | 4.0 | 12.0 |
| 20 | 0.5 | 240 | 90 | 60 | 40 | 200 | 2.0 | 8.0 | 12.0 |
| 25 | 0.5 | 240 | 100 | 60 | 40 | 200 | 2.0 | 4.0 | 12.0 |
| 35 | 1.0 | 240 | 100 | 60 | 40 | 200 | 1.5 | 4.0 | 12.0 |
| 50 | 1.0 | 240 | 90 | 50 | 35 | 190 | 1.2 | 2.5 | 12.0 |

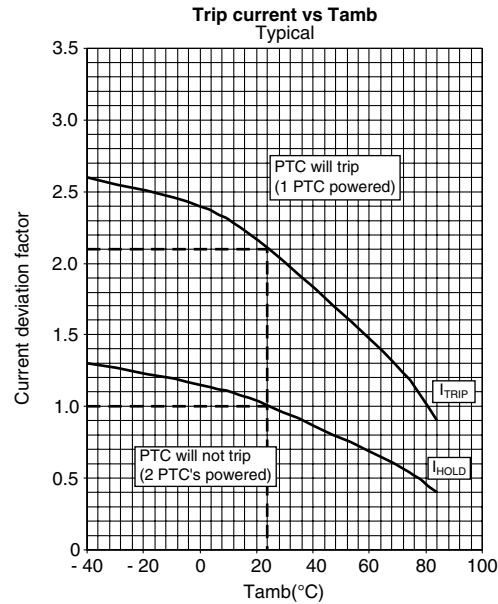
Note

- All data is measured at 25 °C unless otherwise specified.

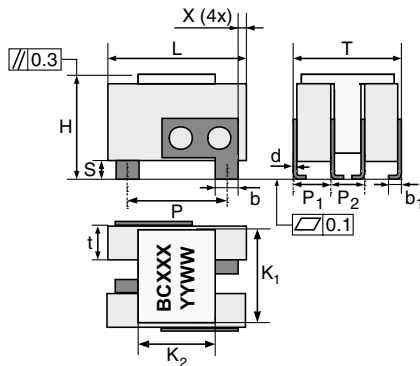
ORDERING INFORMATION

| $R_{25} \pm 20\%$ (Ω) | 12 NC | | SAP CODING | |
|-----------------------------------|----------------|----------------|----------------|-------------------|
| | SMALL PITCH | LARGE PITCH | SMALL PITCH | LARGE PITCH |
| 10 | 2381 673 61109 | 2381 673 62109 | PTCTT95R100GTE | PTCTT95R100GTELAR |
| 20 | 2381 673 61209 | 2381 673 62209 | PTCTT95R200GTE | PTCTT95R200GTELAR |
| 25 | 2381 673 61259 | 2381 673 62259 | PTCTT95R250GTE | PTCTT95R250GTELAR |
| 35 | 2381 673 61359 | 2381 673 62359 | PTCTT95R350GTE | PTCTT95R350GTELAR |
| 50 | 2381 673 61509 | 2381 673 62509 | PTCTT95R500GTE | PTCTT95R500GTELAR |

ELECTRICAL CHARACTERISTICS



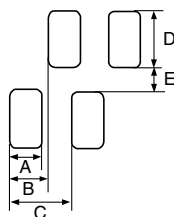
PTC OUTLINES



DIMENSIONS in millimeters

| | SMALL PITCH | LARGE PITCH |
|----------------|------------------|------------------|
| L | 9.0 ± 0.1 | 9.0 ± 0.1 |
| T | 7.2 ± 0.25 | 8.4 ± 0.25 |
| H | 6.9 ± 0.25 | 6.9 ± 0.25 |
| b | 1.5 ± 0.1 | 1.5 ± 0.1 |
| b ₁ | 0.9 ± 0.15 | 0.9 ± 0.15 |
| S | 1.25 ± 0.15 | 1.25 ± 0.15 |
| d | 0.22 ± 0.025 | 0.22 ± 0.025 |
| t | 2.3 ± 0.1 | 2.3 ± 0.1 |
| P | 6.5 ± 0.5 | 6.5 ± 0.5 |
| P ₁ | 2.55 ± 0.15 | 2.55 ± 0.15 |
| P ₂ | 2.2 ± 0.1 | 3.45 ± 0.15 |
| X | 0.5 ± 0.2 | 0.5 ± 0.2 |
| K ₁ | 6.0 ± 0.5 | 7.2 ± 0.5 |
| K ₂ | 5.0 ± 0.5 | 5.0 ± 0.5 |

FOOTPRINT



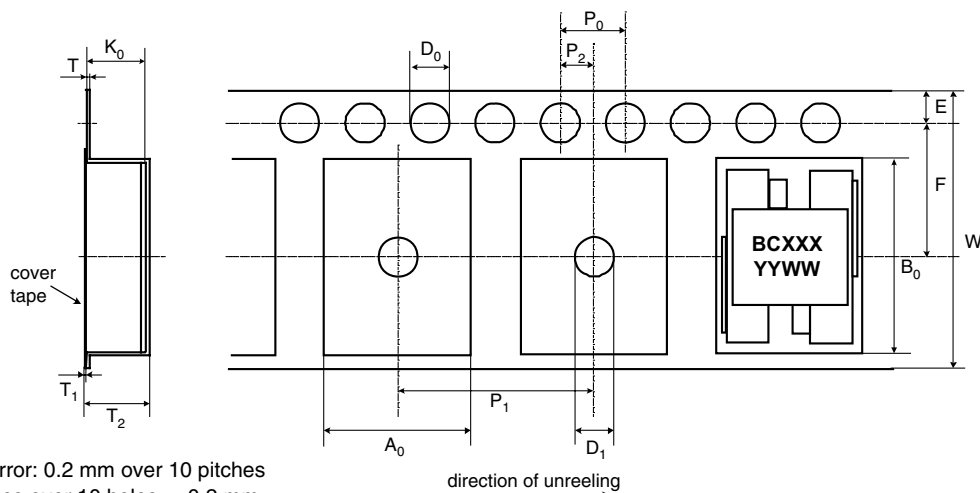
RECOMMENDED FOOTPRINT in millimeters

| | SMALL PITCH | LARGE PITCH |
|---|-------------|-------------|
| A | 2.0 | 2.0 |
| B | 2.4 | 2.4 |
| C | 3.8 | 5.0 |
| D | 3.8 | 4.0 |
| E | 2.7 | 1.4 |

PACKAGING**Tape specifications**

All tape and reel specifications are in accordance with IEC 60286-3. Carrier tape material is non-conductive polystyrene or polycarbonate.

Blister tape



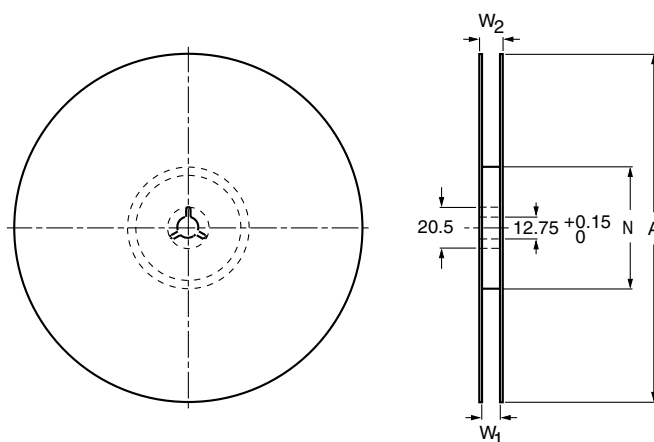
Cumulative pitch error: 0.2 mm over 10 pitches

Cumulative tolerance over 10 holes: ± 0.2 mm

| DIMENSIONS OF BLISTER TAPE in millimeters | | | | | |
|---|----------------|----------------|-------|----------------|----------------|
| | SMALL PITCH | LARGE PITCH | | SMALL PITCH | LARGE PITCH |
| A_0 | 7.2 ± 0.1 | 8.4 ± 0.1 | D_1 | 1.5 ± 0.1 | 1.5 ± 0.1 |
| B_0 | 9.3 ± 0.1 | 9.3 ± 0.1 | P_0 | 4.0 ± 0.1 | 4.0 ± 0.1 |
| K_0 | 7.2 ± 0.1 | 7.2 ± 0.1 | P_1 | 12.0 ± 0.1 | 12.0 ± 0.1 |
| W | 16.0 ± 0.3 | 16.0 ± 0.3 | P_2 | 2.0 ± 0.1 | 2.0 ± 0.1 |
| E | 1.75 ± 0.1 | 1.75 ± 0.1 | T | 0.5 ± 0.05 | 0.5 ± 0.05 |
| F | 7.5 ± 0.1 | 7.5 ± 0.1 | T_1 | 0.05 | 0.05 |
| D_0 | 1.5 ± 0.1 | 1.5 ± 0.1 | T_2 | 7.8 max | 7.8 max |

REEL SPECIFICATIONS in millimeters

Reel



| REEL DIMENSIONS in millimeters | | | | | |
|--------------------------------|------------|-----|----|-------|------------|
| UNITS PER REEL | TAPE WIDTH | A | N | W_1 | W_2 MAX. |
| 1000 | 16 | 380 | 64 | 16.4 | 20.4 |

Note

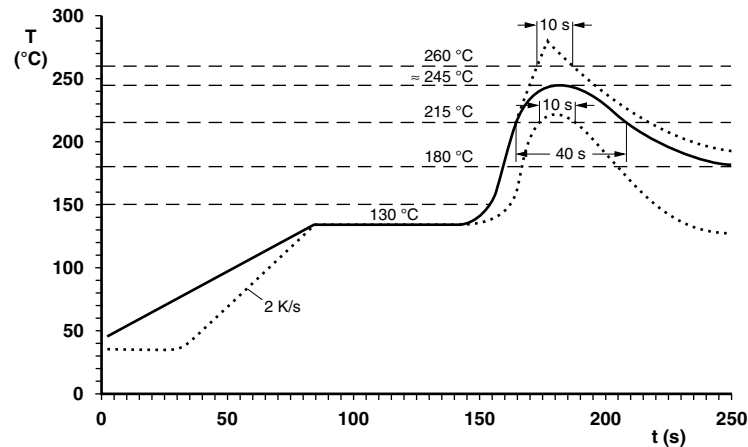
Reels are packed in sealed plastic bags for protection against high humidity and corrosive atmospheres.

SOLDERING CONDITIONS

This SMD thermistor is only suitable for reflow soldering, in accordance with “CECC 00802”. Soldering processes which can be used are reflow (infrared and convection heating) and vapour phase. The maximum temperature of 260 °C during 10 s should not be exceeded and no liquid flux should be allowed to reach the ceramic body.

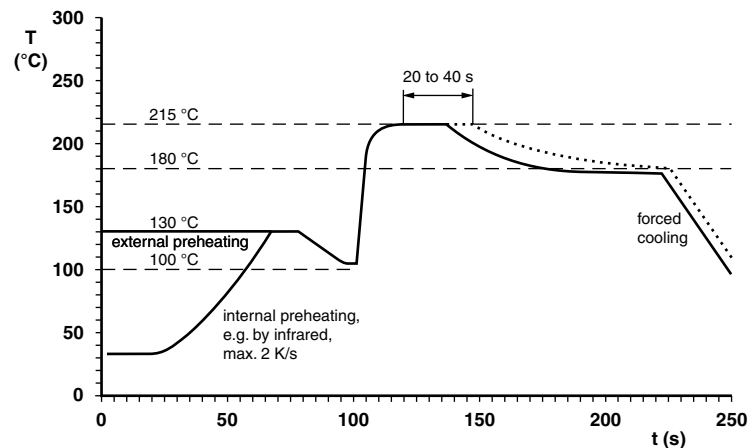
Typical examples of soldering processes that will provide reliable joints without damage, are shown below.

Reflow soldering



Typical values (solid line)
Process limits (dotted lines)

Vapour phase soldering



Typical values (solid line)
Process limits (dotted line)

HANDLING PRECAUTIONS

Because of the nature of PTC ceramic material the component should not be touched with bare hands, as the residue of perspiration can influence component behaviour at high temperatures.

Handling forces applied to the centre of the component should be limited to 20 N vertically and 5 N horizontally in non-soldered condition. These forces should not be exceeded during the handling, transportation and packaging of the soldered product.



Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.