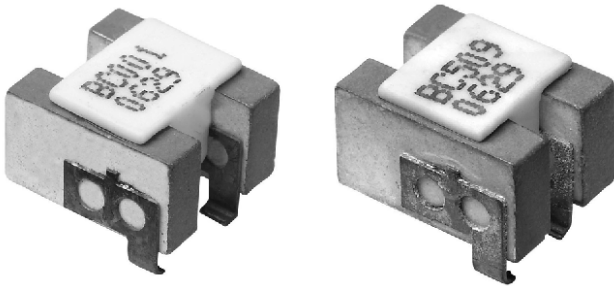


## TWIN Vertical SMD PTC Thermistors For Telecom Overload Protection


**RoHS**  
COMPLIANT

### 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
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

### 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)

### APPLICATIONS

Over-temperature/over-load protection:

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

### MOUNTING

With a flat pick-up area = 30 mm<sup>2</sup> 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

$R_{25}$ $\pm 20\%$ ( $\Omega$ )	MATCHING ( $\Omega$ )	$V_{max.}$ (V <sub>RMS</sub> )	$I_{nt}$ at			$I_t$ (mA)	MAX. TRIP-TIME at 1 A (s)	$I_{max.}$ at $V_{max.}$ (A)	$I_{res}$ (2 PIECES 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

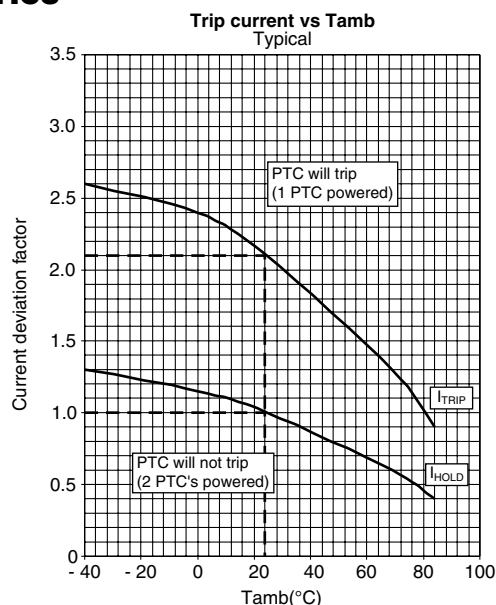
#### Note

(1) All data is measured at 25 °C unless otherwise specified

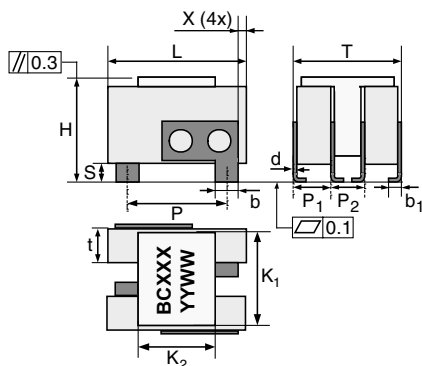
### ORDERING INFORMATION

$R_{25} \pm 20\%$ ( $\Omega$ )	12NC		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



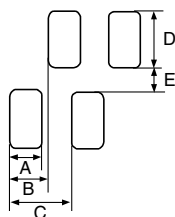
### PTC OUTLINES



#### DIMENSIONS in millimeters

	SMALL PITCH	LARGE PITCH
L	$9.0 \pm 0.1$	$9.0 \pm 0.1$
T	$7.2 \pm 0.25$	$8.4 \pm 0.25$
H	$6.9 \pm 0.25$	$6.9 \pm 0.25$
b	$1.5 \pm 0.1$	$1.5 \pm 0.1$
b <sub>1</sub>	$0.9 \pm 0.15$	$0.9 \pm 0.15$
S	$1.25 \pm 0.15$	$1.25 \pm 0.15$
d	$0.22 \pm 0.025$	$0.22 \pm 0.025$
t	$2.3 \pm 0.1$	$2.3 \pm 0.1$
P	$6.5 \pm 0.5$	$6.5 \pm 0.5$
P <sub>1</sub>	$2.55 \pm 0.15$	$2.55 \pm 0.15$
P <sub>2</sub>	$2.2 \pm 0.1$	$3.45 \pm 0.15$
X	$0.5 \pm 0.2$	$0.5 \pm 0.2$
K <sub>1</sub>	$6.0 \pm 0.5$	$7.2 \pm 0.5$
K <sub>2</sub>	$5.0 \pm 0.5$	$5.0 \pm 0.5$

### FOOTPRINT

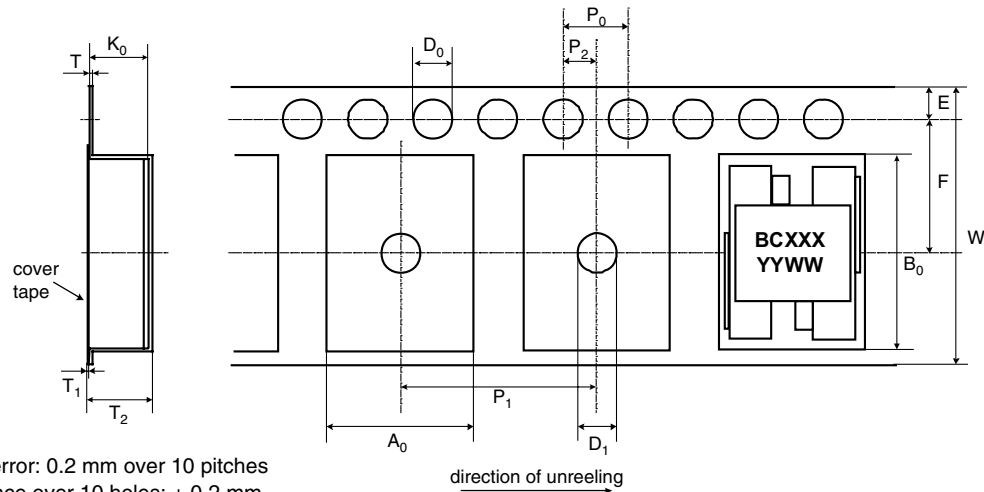


#### RECOMMENDED FOOTPRINT in millimeters

	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

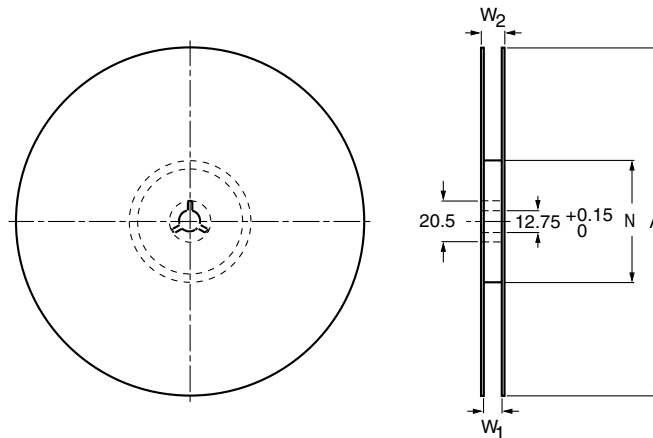
**PACKAGING****Tape specifications**

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:  $\pm 0.2$  mm

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

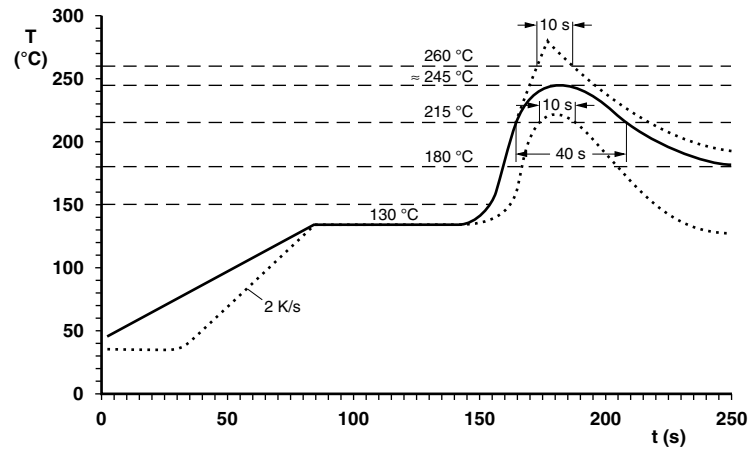
Reels are packed in sealed plastic bags for protection against high humidity and corrosive atmospheres.

## SOLDERING CONDITIONS

This SMD thermistor is only suitable for reflow soldering, in accordance with JEDEC J-STD-020. 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.

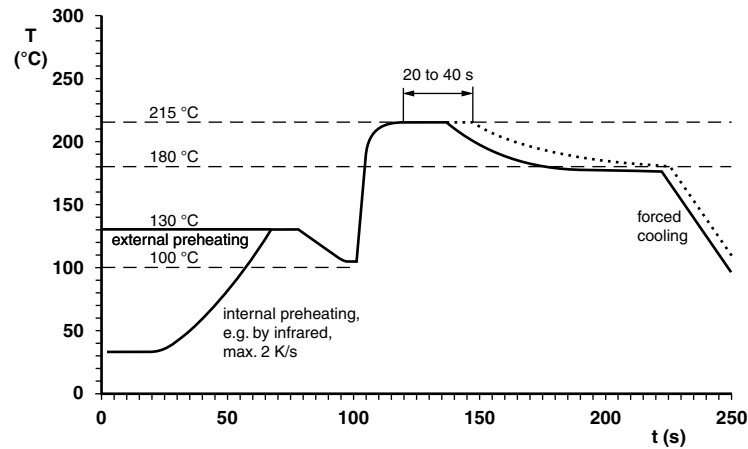
Typical examples of soldering processes that will provide reliable joints without damage, are shown below.

### 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

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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**