



## **PTC Thermistor**

### Overcurrent Protection

<b>Series/Type:</b>	<b>C0810-A0120-Axxx</b>
<b>Ordering code:</b>	<b>B59810C0120Axxx</b>
Date:	2008-02-28
Version:	b

**Applications**

- Overcurrent and short-circuit protection

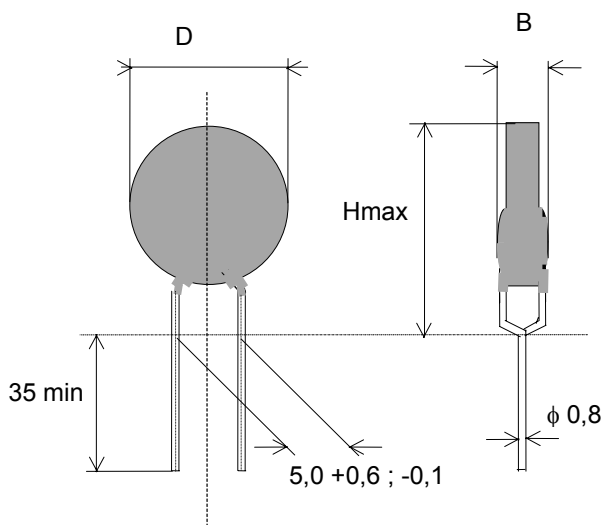
**Features**

- Coated thermistor disk
- Lead spacing 5.0 mm
- Manufacturer's logo, date code and type designation stamped on in white
- Terminals solderable in accordance with IEC 68-2-20, test ta, method 1
- High thermal stability
- UL approval (E69802)

**Delivery mode**

- Cardboard strips

**Dimensional drawing in mm**



$D_{max}$	26	mm
$B_{max}$	5	mm
$H_{max}$	29.5	mm

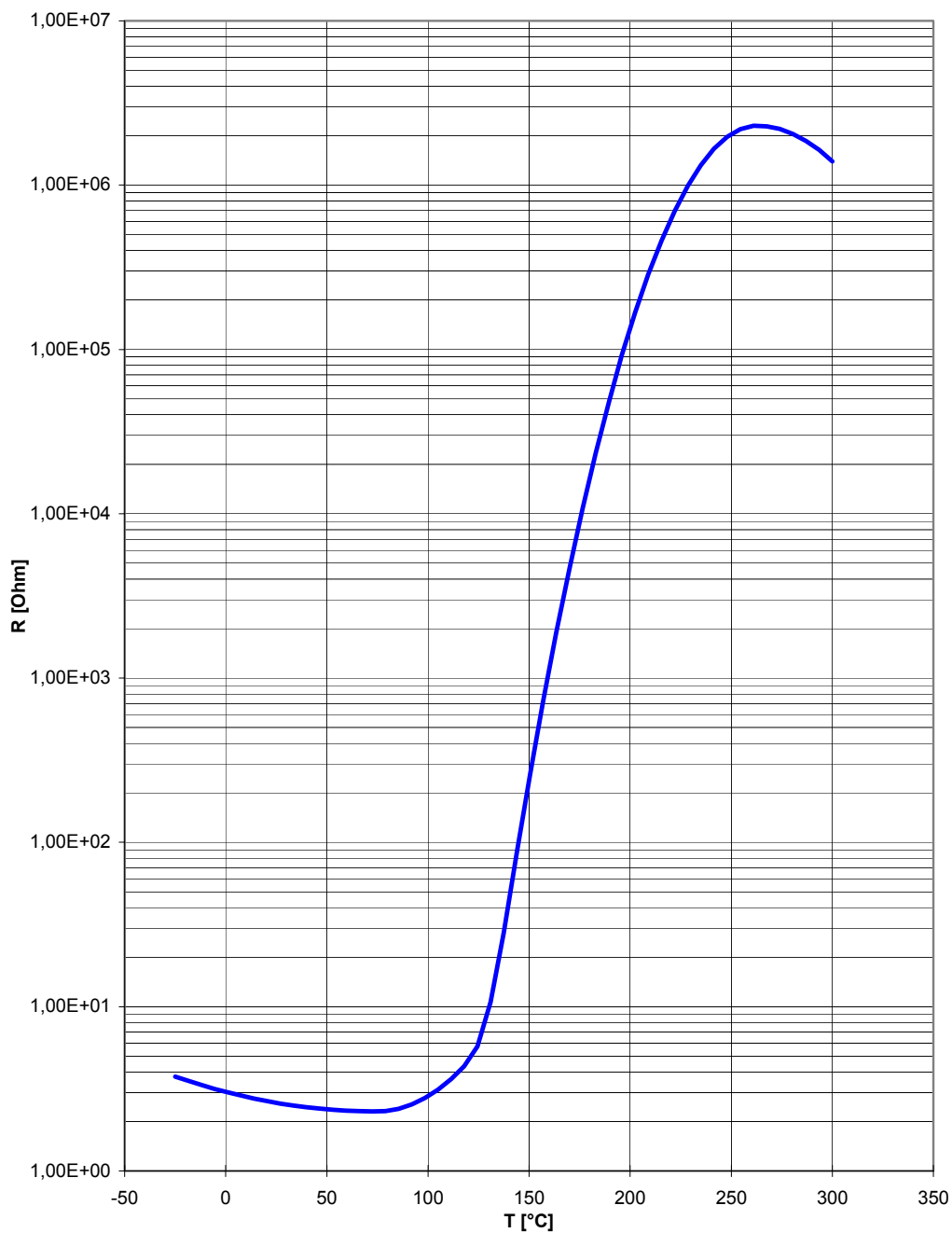
**General technical data**

Max. operating voltage	$V_{\max}$	265	$V_{\text{rms}}$
Rated voltage	$V_R$	120 , 230	$V_{\text{rms}}$
Rated resistance	$R_{25}$	2.6	$\Omega$
Resistance tolerance	$\Delta R$	$\pm 25$	%
Rated current	$I_N$	650	mA
Switching current	$I_S$	1300	mA
Maximal permissible switching current at $V_{\max}$	$I_{S\max}$	10	A
Residual current at $120V_{\text{rms}}$ (typ.) for information only	$I_{\text{res}}$	50	mA
Residual current at $265V_{\text{rms}}$ (typ.) for information only	$I_{\text{res}}$	25	mA
Switching time at $I_{S\max}$ and $V_{\max}$	$t_S$	<8	s
Reference temperature (typ.) for information only	$T_{\text{ref}}$	120	$^{\circ}\text{C}$
Operating temperature range ( $V= 0$ )	$T_{\text{op}}(0)$	-25/+125	$^{\circ}\text{C}$
Operating temperature range ( $V= V_{\max}$ )	$T_{\text{op}}(V_{\max})$	0/60	$^{\circ}\text{C}$

Specification for  $T_{\text{amb}}=25^{\circ}\text{C}$

Characteristics (typical)

Typ. RT-Curve



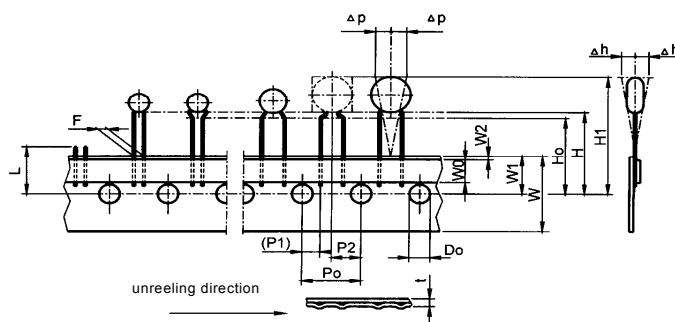
**Reliability data acc. to CECC 44 001 -001 (Extract)**

Clause number and test	Conditions of test	Performance Requirements
<i>Periodic inspection</i>		
Shock	IEC 68-2-27 Pulse shape: half-sine Acceleration: 490 m/s <sup>2</sup> Pulse duration: 11 ms 6 x 3 shocks Visual examination Zero-power resistance	$\left  \frac{\Delta R}{R} \right  \leq 5\%$
Climatic sequence - Dry heat - Damp heat, cyclic first cycle - Cold - Damp heat, cyclic remaining cycles	Low air pressure test not applicable	$\left  \frac{\Delta R}{R} \right  \leq 10\%$
Damp heat steady state	IEC 68-2-3 Test Ca, 21 days	$\left  \frac{\Delta R}{R} \right  \leq 10\%$

Clause number and test	Conditions of test	Performance Requirements
<i>Periodic inspection</i>		
Endurance at room temp. (cycling)	eff. length of terminations: 20-25mm (acc 4.22.1) 100 cycles U <sub>max</sub> , I <sub>mo</sub> , acc. detail specification	$\left  \frac{\Delta R}{R} \right  \leq 10\%$
Endurance at upper category temperature	Duration: 1000 h T = 125°C	$\left  \frac{\Delta R}{R} \right  \leq 10\%$
Endurance at maximum operating temperature and maximum voltage	eff. length of terminations: 20-25mm (acc to 4.22.3) Duration: 1000 h T = 60°C U <sub>max</sub> , acc. detail specification  Examination at 168h and 500h Zero-power resistance	$\left  \frac{\Delta R}{R} \right  \leq 25\%$

**TAPING AND PACKING :**

**Taping specification:**



**Dimensions an tolerances:**

Designation	Symbol	Nominal size [mm]	Tolerance [mm]	Remarks
Lead Spacing	F	5,0	+0,6/-0,1	
Pitch of holes	P0	12,7	±0,2	±1 mm/20 sprocket holes
Spacing hole center	P1	3,85	±0,7	
Slope of component	Δ h	0	±2,0	measured at top of component body
Slope of component	Δ p	0	±1,3	
Spacing hole center / bottom edge of component	H	18,0	+2,0/-0	
Spacing hole center / Niveau PTC TC	H0	16,0	±0,5	
Spacing hole center / upper edge of component	H1	32,2	max.	
carrier type width	W	18,0	±0,5	
hot adhesive tape width	W0	5,5	min.	peel-off force ≥ 5 N
position of holes	W1	9,0	+0,75/-0,5	
position of adhesive tape	W2	3,0	max.	
hole diameter	D0	4,0	±0,2	
tape thickness	t	0,9	max.	without wires
length of remaining wire after removal of component	L	11,0	max.	



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**Packing codes :**

The last two digits of the complete ordering code state the packing mode :

Packing		Ordering Code
Bulk packing	Bulk	B59810C0120A <b>070</b>
Reel packing	Tape	B59810C0120A <b>051</b>
AMMO packing	Tape	B59810C0120A <b>054</b>



## Cautions and warnings

### General

- EPCOS thermistors are designed for specific applications and should not be used for purposes not identified in our specifications, application notes and data books unless otherwise agreed with EPCOS during the design-in-phase.
- Ensure suitability of thermistor through reliability testing during the design-in phase. The thermistors should be evaluated taking into consideration worst-case conditions.

### Storage

- Store thermistors only in original packaging. Do not open the package before storage.
- Storage conditions in original packaging: storage temperature  $-25^{\circ}\text{C} \dots +45^{\circ}\text{C}$ , relative humidity  $\leq 75\%$  annual mean, maximum 95%, dew precipitation is inadmissible.
- Avoid contamination of thermistors surface during storage, handling and processing.
- Avoid storage of thermistor in harmful environment with effect on function on long-term operation (examples given under operation precautions).
- Use thermistor within 6 months after delivery.

### Handling

- PTCs must not be dropped. Chip-offs must not be caused during handling of PTCs.
- Components must not be touched with bare hands. Gloves are recommended.
- Avoid contamination of thermistor surface during handling.

### Soldering

- Use rosin-type flux or non-activated flux.
- Insufficient preheating may cause ceramic cracks.
- Rapid cooling by dipping in solvent is not recommended.
- Complete removal of flux is recommended.

### Mounting

- Electrode must not be scratched before/during/after in the mounting process.
- Contacts and housing used for assembly with thermistor have to be clean before mounting. Especially grease or oil must be removed.
- When PTC thermistors are encapsulated with sealing material, the precautions given in chapter "Mounting instructions", "Sealing and potting" must be observed.
- When the thermistor is mounted, there must not be any foreign body between the electrode of the thermistor and the clamping contact.
- The minimum force of the clamping contacts pressing against the PTC must be 10 N.
- During operation, the thermistor's surface temperature can be very high. Ensure that adjacent components are placed at a sufficient distance from the thermistor to allow for proper cooling at the thermistors.

- Ensure that adjacent materials are designed for operation at temperature comparable to the surface temperature of thermistor. Be sure that surrounding parts and materials can withstand this temperature.
- Avoid contamination of thermistor surface during processing.

### Operation

- Use thermistors only within the specified temperature operating range.
- Use thermistors only within the specified voltage and current ranges.
- Environmental conditions must not harm the thermistors. Use thermistors only in normal atmospheric conditions. Avoid use in deoxidizing gases (chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas etc), corrosive agents, humid or salty conditions. Contact with any liquids and solvents should be prevented.
- Be sure to provide an appropriate fail-safe function to prevent secondary product damage caused by abnormal function (e.g. use VDR for limitation of overvoltage condition).

## Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of passive electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of a passive electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of a passive electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as “hazardous”)**. Useful information on this will be found in our Material Data Sheets on the Internet ([www.epcos.com/material](http://www.epcos.com/material)). Should you have any more detailed questions, please contact our sales offices.
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