



PTC thermistors for telecom

Leadless disks,
round and square disks

Series/Type: **B59*****
Date: March 2006

Applications

- Overcurrent protection for telecom applications
 - suitable for MDF applications e.g. connectors etc.

Features

- Designed for combined usage of PTC and primary protection (e.g. gas arrester)
- Suitable for continuous connection to mains voltages of 110/230 VAC in tripped (high ohmic) condition
- Matching available with narrow resistance tolerance
- RoHS-compatible

Options

- Alternative tolerances and resistances on request

Delivery mode

- Round disks: packed in blister trays
- Square disks: bulk

General electrical data

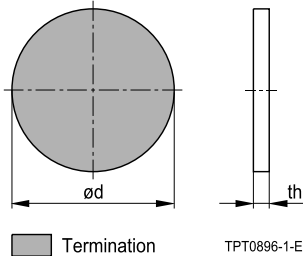
Max. operating voltage		$V_{\max}$	245	VAC
Operating temperature range	(V = 0)	T_{op}	-20/+125	°C
Operating temperature range	(V = 230 V)	T_{op}	0/+70	°C

Electrical specifications and ordering codes¹⁾

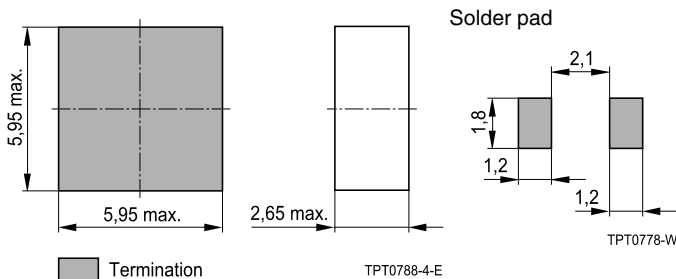
Type	R_R	ΔR_R	$R_{25, \text{match}}$	I_R @ 25 °C	I_R @ 70 °C	I_S @ 25 °C	$I_{S\max}$ @ 230 VAC	t_S (typ) @ $I_{S\max}$, 230 VAC	Ordering code
	Ω	%	Ω	mA	mA	mA	A	s	
Round disks, contacts for clamp connection									
A94	4.1	±10	±0.2	170	70	300	0.8	7.6	B59094A0080B110
A48	6	±10	±0.2	140	60	250	3.0	0.5	B59048A0080B110
A95	9.3	±10	±0.2	110	50	250	0.5	12	B59095A0080B110
A34	10	±15	No	140	95	300	1.0	2.0	B59034A0120B010
A12	12	±15	±0.25	90	40	200	1.5	0.4	B59012A0080B110
Round disks, contacts for solder connection									
A1037	10	±15	No	140	95	300	1.0	2.0	B59037A1120B010
A1037	10	±15	±0.5	140	95	300	1.0	2.0	B59037A1120B110
A1042	10	±15	±0.5	150	100	300	1.0	4.0	B59042A1120B110
A1610	10	±20	±0.1	150	100	350	10.0	0.06	B59610A1120B110
A1041	25	±15	±0.5	100	65	200	2.8	0.2	B59041A1120B110
A1044	35	±15	±0.5	90	55	180	2.8	1.15	B59044A1120B110
Square disks, contacts for solder / clamp connection									
R212	12	±15	No	120	50	300	1.5	0.7	B59212R0080B140

¹⁾ Variation of current and switching time with heat dissipation of mounting facility must be taken into account.

Dimensional drawing round disks



Dimensional drawings square disks



Dimensions in mm

Type	$\varnothing d_{\max}$	$th_{\max}$	Contacts
Round disks			
A1037	6.6	1.7	for solder connection
A1042	8.1	2.1	for solder connection
A1610	10.1	2.1	for solder connection
A1041	8.1	2.1	for solder connection
A48	7.9	2.7	for clamp connection
A34	6.5	1.7	for clamp connection
A12	5.95	2.15	for clamp connection
A1037	6.6	1.7	for solder connection
A95	7.8	2.6	for clamp connection
A1044	8.1	2.1	for solder connection
A94	7.8	2.1	for clamp connection
Square disks			
R212	5.95 x 5.95	2.65	for solder / clamp connection



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 $-25\text{ }^{\circ}\text{C} \dots +45\text{ }^{\circ}\text{C}$, 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 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 temperatures 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.
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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). Should you have any more detailed questions, please contact our sales offices.
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