# PTC thermistors for overcurrent protection

Leaded disks, uncoated,
380 to 1000 V

**Series/Type:** **B597****
Date: March 2006

### Applications

- Overcurrent and short-circuit protection

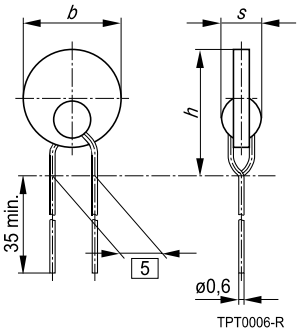
### Features

- Lead-free terminals
- Manufacturer's logo, date code and type designation stamped on in black
- UL approval to UL 1434 with $V_{max}$ = 420 V and $V_R$ = 380 V (file number E69802), except B758
- RoHS-compatible

### Delivery mode

- Cardboard strips (standard)
- Cardboard tape reeled or in Ammo pack on request

### Dimensional drawing




### Dimensions (mm)

| Type | $b_{max}$ | $h_{max}$ | $s_{max}$ |
|---|---|---|---|
| B750 | 12.5 | 16.5 | 7.0 |
| B751 | 12.5 | 16.5 | 7.0 |
| B752 | 12.5 | 16.5 | 7.0 |
| B753 | 12.5 | 16.5 | 7.0 |
| B754 | 12.5 | 16.5 | 7.0 |
| B755 | 12.5 | 16.5 | 7.0 |
| B758 | 12.5 | 16.5 | 7.0 |
| B770 | 8.5 | 12.0 | 7.0 |
| B771 | 8.5 | 12.0 | 7.0 |
| B772 | 8.5 | 12.0 | 7.0 |
| B773 | 8.5 | 12.0 | 7.0 |
| B774 | 8.5 | 12.0 | 7.0 |

### General technical data

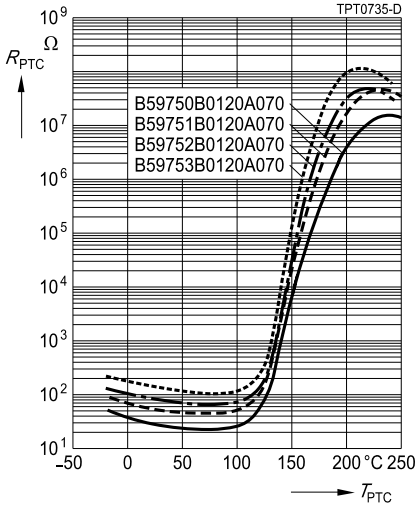
| | | | | |
|---|---|---|---|---|
| Switching cycles | | N | 100 | |
| Operating temperature range | (V = 0) | $T_{op}$ | −40/+125 | °C |
| Operating temperature range | (V = $V_{max}$) | $T_{op}$ | 0/+60 | °C |

## Electrical specifications and ordering codes

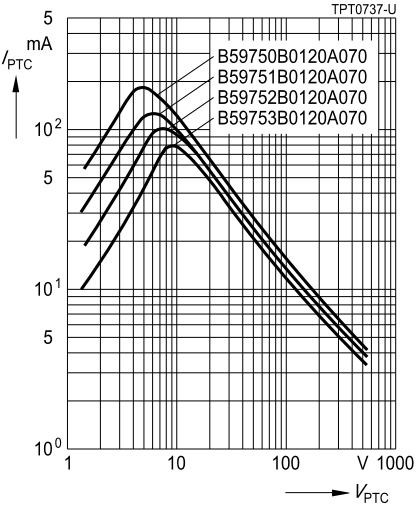
| Type | $I_R$ | $I_S$ | $I_{Smax}$ ($V = V_{max}$) | $t_s$ ($V_{max}$, $I_{Smax}$) | $I_r$ ($V = V_{max}$) typ. | $R_R$ | $R_{min}$ | Ordering code |
|---|---|---|---|---|---|---|---|---|
| | mA | mA | A | s | mA | Ω | Ω | |
| $V_{max}$ = 420 V , $V_R$ = 380 V , $T_{ref}$ = 120 °C , $\Delta R_R$ = ±25 % | | | | | | | | |
| B750 | 123 | 245 | 2.0 | < 6 | 4.0 | 25 | 13 | B59750B0120A070 |
| B751 | 87 | 173 | 2.0 | < 4 | 3.5 | 50 | 26 | B59751B0120A070 |
| B752 | 69 | 137 | 2.0 | < 4 | 3.5 | 80 | 42 | B59752B0120A070 |
| B753 | 56 | 112 | 2.0 | < 3 | 3.0 | 120 | 63 | B59753B0120A070 |
| B754 | 50 | 100 | 2.0 | < 3 | 3.0 | 150 | 68 | B59754B0120A070 |
| B770 | 64 | 127 | 1.4 | < 4 | 3.5 | 70 | 45 | B59770B0120A070 |
| B771 | 49 | 97 | 1.4 | < 3 | 2.5 | 120 | 76 | B59771B0120A070 |
| B772 | 43 | 86 | 1.4 | < 3 | 2.5 | 150 | 96 | B59772B0120A070 |
| $V_{max}$ = 550 V , $V_R$ = 500 V , $T_{ref}$ = 115 °C , $\Delta R_R$ = ±25 % | | | | | | | | |
| B755 | 28 | 55 | 1.4 | < 3 | 2.0 | 500 | 230 | B59755B0115A070 |
| B774 | 16 | 32 | 1.0 | < 2 | 1.5 | 1100 | 700 | B59774B0115A070 |
| $V_{max}$ = 550 V , $V_R$ = 500 V , $T_{ref}$ = 120 °C , $\Delta R_R$ = ±25 % | | | | | | | | |
| B773 | 24 | 48 | 1.0 | < 3 | 2.0 | 500 | 320 | B59773B0120A070 |
| $V_{max}$ = 1000 V , $V_R$ = 1000 V , $T_{ref}$ = 110 °C , $\Delta R_R$ = ±33 % | | | | | | | | |
| B758 | 8 | 17 | 0.5 | < 3 | 3.0 | 7500 | 3380 | B59758B0110A070 |

## Characteristics (typical)

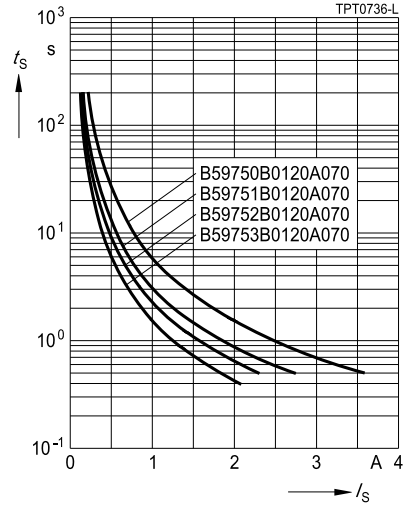
PTC resistance $R_{PTC}$ versus PTC temperature $T_{PTC}$ (measured at low signal voltage)



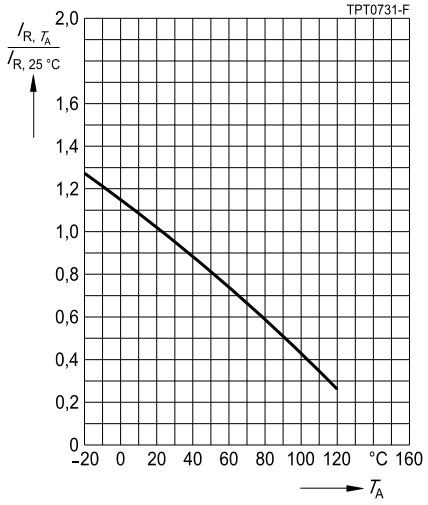

PTC current $I_{PTC}$ versus PTC voltage $V_{PTC}$ (measured at 25 °C in still air)




Switching time $t_S$ versus switching current $I_S$ (measured at 25 °C in still air)




Rated current $I_R$ versus ambient temperature $T_A$ (measured in still air)



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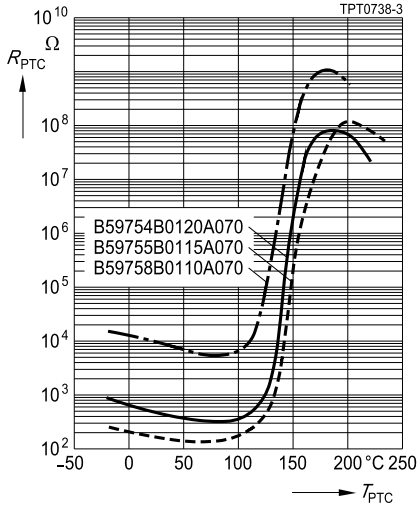


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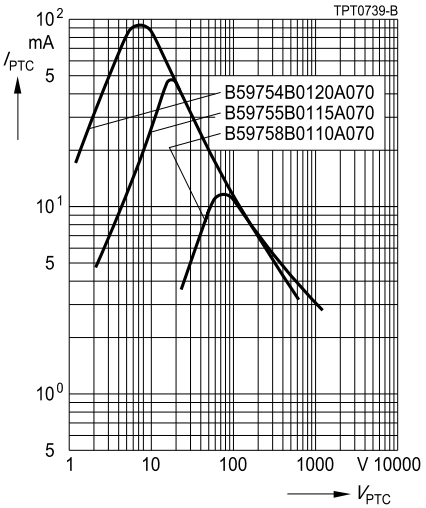


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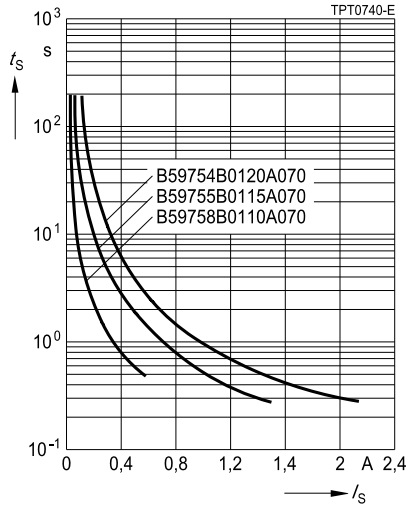
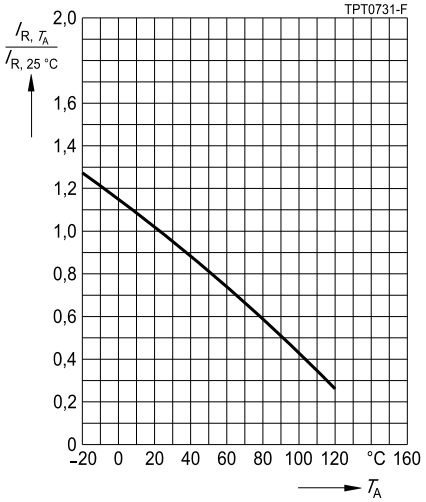



Rated current $I_R$ versus ambient temperature $T_A$ (measured in still air)



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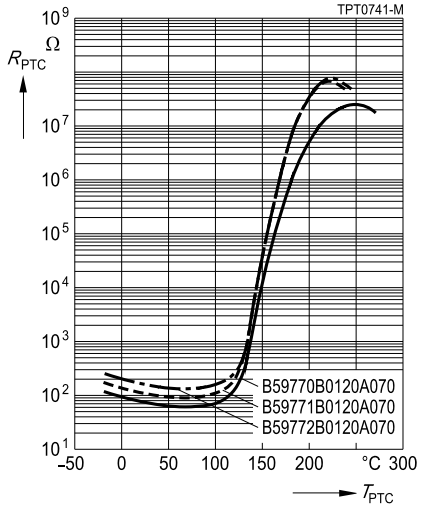
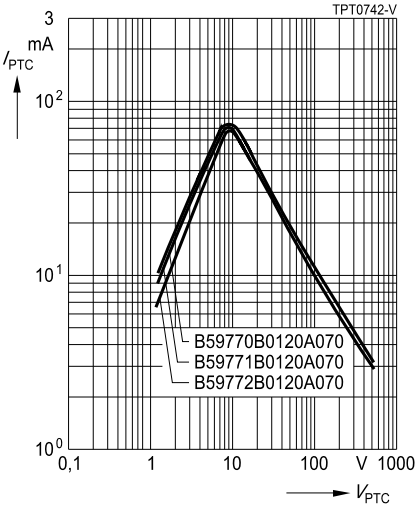
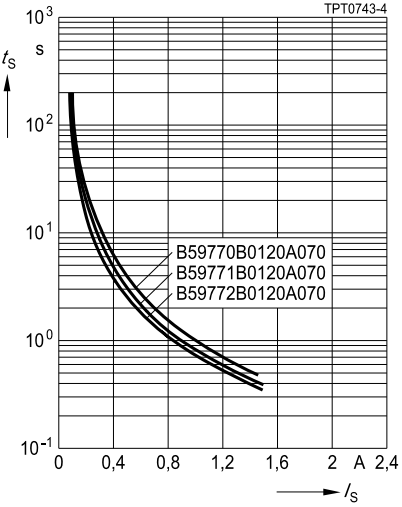
PTC resistance $R_{PTC}$ versus PTC temperature $T_{PTC}$ (measured at low signal voltage)



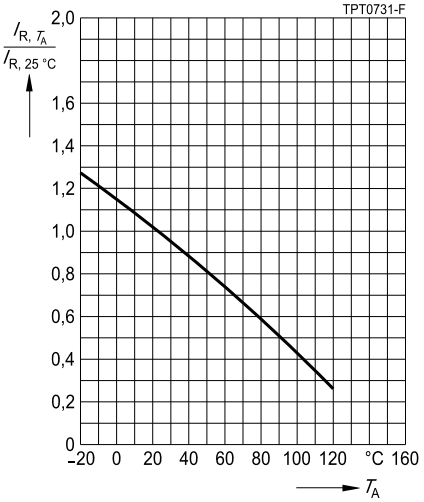

PTC current $I_{PTC}$ versus PTC voltage $V_{PTC}$ (measured at 25 °C in still air)




Switching time $t_S$ versus switching current $I_S$ (measured at 25 °C in still air)




Rated current $I_R$ versus ambient temperature $T_A$ (measured in still air)



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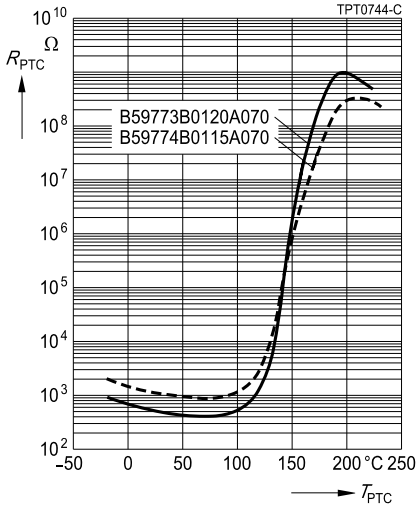
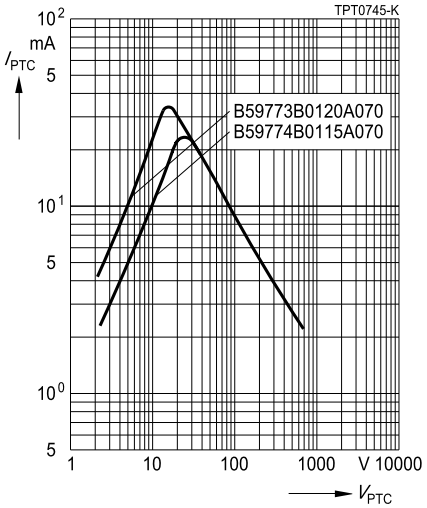
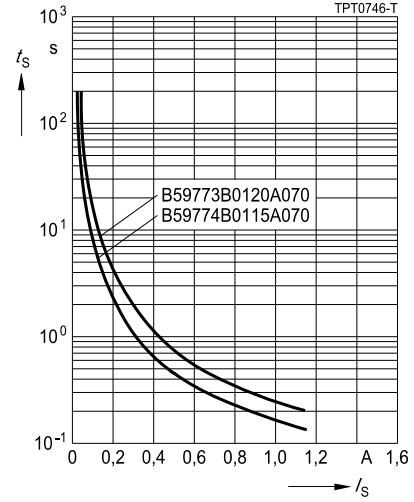


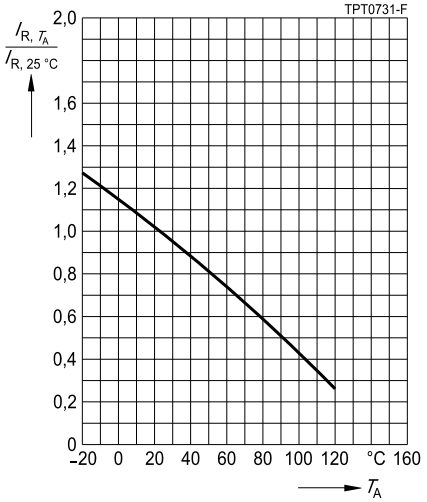

PTC current $I_{PTC}$ versus PTC voltage $V_{PTC}$ (measured at 25 °C in still air)




Switching time $t_S$ versus switching current $I_S$ (measured at 25 °C in still air)




Rated current $I_R$ versus ambient temperature $T_A$ (measured in still air)



## 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 °C ... +45 °C, relative humidity ≤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.
3. **The warnings, cautions and product-specific notes must be observed**.
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5. We constantly strive to improve our products. Consequently, **the products described in this publication may change from time to time**. The same is true of the corresponding product specifications. Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order.

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