



Sample Kit 2010



# **SMD PTC Thermistors**

for Limit Temperature Sensing  
Superior Series

# Features and applications for SMD PTC thermistors

## Features

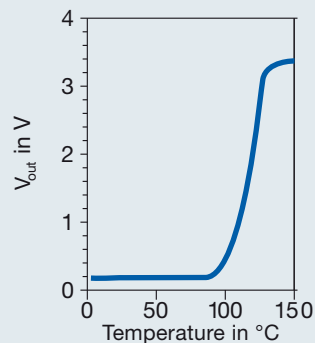
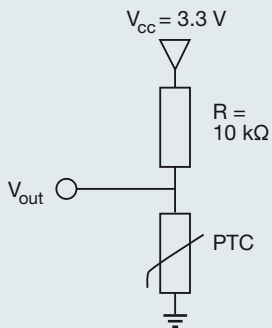
- Qualification based on AEC-Q200 rev. C
- Suitable for reflow and wave soldering (up to 280 °C)
- Fast and reliable response
- RoHS-compatible
- UL approval to UL1434 pending
- Lead-free tinned terminations

## Applications

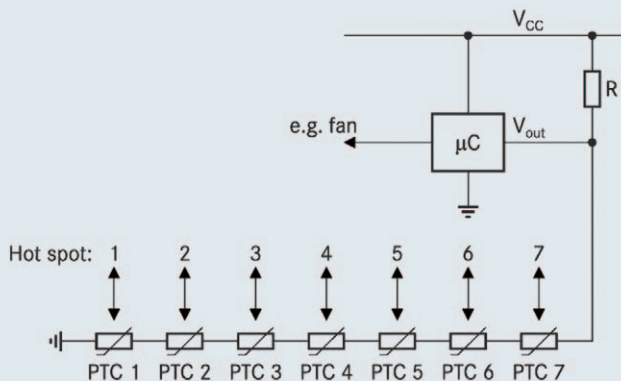
- Over-temperature protection of power components
- DC/DC converters
- SMPS, adapters
- Notebooks, game consoles
- Lighting: LED lights, dimmers, ballasts
- Automotive LED lighting
- Li-Ion battery pack protection
- Hifi amplifiers

## Application circuit examples

### Over-temperature detection circuit and its output voltage



### Example of over-temperature detection for multiple hot spots



# Components

|                   |                   |                   |                    |                    |                    |                    |  |  |
|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--|--|
| EIA 0402<br>75 °C | EIA 0402<br>85 °C | EIA 0402<br>95 °C | EIA 0402<br>105 °C | EIA 0402<br>115 °C | EIA 0402<br>125 °C | EIA 0402<br>135 °C |  |  |
|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--|--|

|                   |                   |                    |                    |                    |                    |                    |  |  |
|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|--|
| EIA 0603<br>85 °C | EIA 0603<br>95 °C | EIA 0603<br>105 °C | EIA 0603<br>115 °C | EIA 0603<br>125 °C | EIA 0603<br>135 °C | EIA 0603<br>145 °C |  |  |
|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|--|

|                   |                   |                   |                    |                    |                    |                    |  |  |
|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--|--|
| EIA 0805<br>70 °C | EIA 0805<br>80 °C | EIA 0805<br>90 °C | EIA 0805<br>100 °C | EIA 0805<br>110 °C | EIA 0805<br>120 °C | EIA 0805<br>130 °C |  |  |
|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--|--|

# Product range

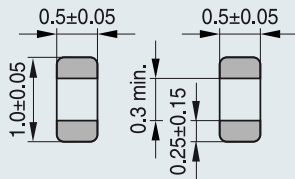
## Electrical specifications and ordering codes

| EIA case size                             | T <sub>sense,1</sub><br>(@ 4.7 kΩ)<br>[°C] | T <sub>sense,2</sub><br>(@ 47 kΩ)<br>[°C]        | R <sub>R</sub><br>(V ≤ V <sub>max</sub> )<br>[Ω] | ΔR <sub>R</sub><br>[%]                     | Ordering code                              |                                            |                 |
|-------------------------------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|-----------------|
| Superior series, case sizes 0402 and 0603 |                                            |                                                  |                                                  |                                            |                                            |                                            |                 |
| 0402                                      | 75 ±5                                      | –                                                | 470                                              | ±50                                        | B59421A0075A062                            |                                            |                 |
| 0402                                      | 85 ±5                                      | –                                                | 470                                              | ±50                                        | B59421A0085A062                            |                                            |                 |
| 0402                                      | 95 ±5                                      | –                                                | 470                                              | ±50                                        | B59421A0095A062                            |                                            |                 |
| 0402                                      | 105 ±5                                     | –                                                | 470                                              | ±50                                        | B59421A0105A062                            |                                            |                 |
| 0402                                      | 115 ±5                                     | –                                                | 470                                              | ±50                                        | B59421A0115A062                            |                                            |                 |
| 0402                                      | 125 ±5                                     | –                                                | 470                                              | ±50                                        | B59421A0125A062                            |                                            |                 |
| 0402                                      | 135 ±5                                     | –                                                | 470                                              | ±50                                        | B59421A0135A062                            |                                            |                 |
| 0603                                      | 85 ±5                                      | 100 ±7                                           | 470                                              | ±50                                        | B59641A0085A062                            |                                            |                 |
| 0603                                      | 95 ±5                                      | 110 ±7                                           | 470                                              | ±50                                        | B59641A0095A062                            |                                            |                 |
| 0603                                      | 105 ±5                                     | 120 ±7                                           | 470                                              | ±50                                        | B59641A0105A062                            |                                            |                 |
| 0603                                      | 115 ±5                                     | 130 ±7                                           | 470                                              | ±50                                        | B59641A0115A062                            |                                            |                 |
| 0603                                      | 125 ±5                                     | 140 ±7                                           | 470                                              | ±50                                        | B59641A0125A062                            |                                            |                 |
| 0603                                      | 135 ±5                                     | 150 ±7                                           | 470                                              | ±50                                        | B59641A0135A062                            |                                            |                 |
| 0603                                      | 145 ±5                                     | –                                                | 470                                              | ±50                                        | B59641A0145A062                            |                                            |                 |
| Superior series, case size 0805           |                                            |                                                  |                                                  |                                            |                                            |                                            |                 |
| EIA case size                             | T <sub>sense,1</sub><br>[°C]               | R <sub>R</sub><br>(V ≤ V <sub>max</sub> )<br>[Ω] | ΔR <sub>R</sub><br>[%]                           | R<br>(T <sub>sense,1</sub> – 5 °C)<br>[kΩ] | R<br>(T <sub>sense,1</sub> + 5 °C)<br>[kΩ] | R<br>(T <sub>sense,1</sub> +15 °C)<br>[kΩ] | Ordering code   |
| 0805                                      | 70                                         | 680                                              | ±50                                              | ≤ 5.7                                      | ≤ 5.7                                      | –                                          | B59721A0070A062 |
| 0805                                      | 80                                         | 680                                              | ±50                                              | ≤ 5.7                                      | ≤ 5.7                                      | –                                          | B59721A0080A062 |
| 0805                                      | 90                                         | 680                                              | ±50                                              | ≤ 5.5                                      | ≤ 13.3                                     | ≥ 40                                       | B59721A0090A062 |
| 0805                                      | 100                                        | 680                                              | ±50                                              | ≤ 5.5                                      | ≤ 13.3                                     | ≥ 40                                       | B59721A0100A062 |
| 0805                                      | 110                                        | 680                                              | ±50                                              | ≤ 5.5                                      | ≤ 13.3                                     | ≥ 40                                       | B59721A0110A062 |
| 0805                                      | 120                                        | 680                                              | ±50                                              | ≤ 5.5                                      | ≤ 13.3                                     | ≥ 40                                       | B59721A0120A062 |
| 0805                                      | 130                                        | 680                                              | ±50                                              | ≤ 5.5                                      | ≤ 13.3                                     | ≥ 40                                       | B59721A0130A062 |

**Important information:** 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. We expressly point out that these statements cannot be regarded as binding statements about the suitability of our products for a particular customer application. It is incumbent on the customer to check and decide whether a product is suitable for use in a particular application. This publication is only a brief product survey which may be changed from time to time. Our products are described in detail in our data sheets. The *Important notes* ([www.epcos.com/ImportantNotes](http://www.epcos.com/ImportantNotes)) and the product-specific *Cautions and warnings* must be observed. All relevant information is available through our sales offices.

## Dimensional drawings in mm

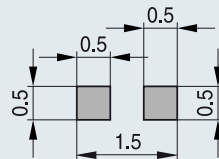
### EIA case size 0402



Termination

TPT0948-M-E

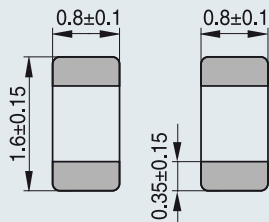
#### Solder pad



TPT0949-V

Recommended maximum dimensions

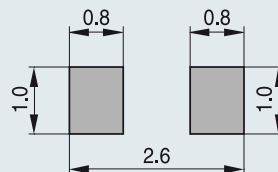
### EIA case size 0603



Termination

TPT0698-5-E

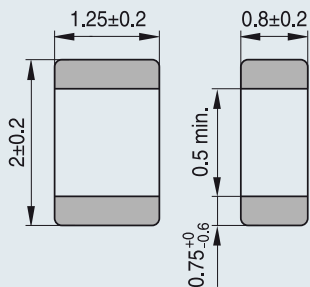
#### Solder pad



TPT0899-A

Recommended maximum dimensions

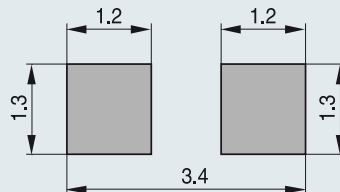
### EIA case size 0805



Termination

TPT0650-F-E

#### Solder pad



TPT0870-7

Recommended maximum dimensions

