



PTC Thermistors as heating elements

Rectangular, 800 V

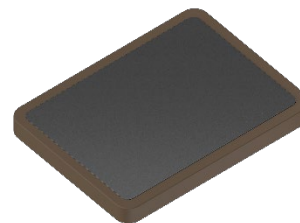
Series/Type:	R1801 B 180 A 10
Ordering code:	B59801R1180B010
Date:	2024-11-20
Version:	a

Application

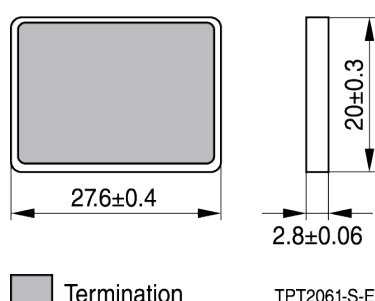
Cabin heating

Features

- Aluminum electrode
- Suitable for clamp contacting
- Self-regulating
- RoHS compatible



Dimensional drawings in mm



Flatness	0.05 max	mm
Freezone	0.1 min	mm
AL length	25.35 min	mm
AL width	18.05 min	mm
R (typical)	1.1	mm

Options

Other dimensions and ratings on request

General technical data

Breakdown voltage at $T_A = 25\text{ °C}$	V_{BD}	> 1200	V DC
Rated voltage	V_R	800	V DC
Maximum voltage	V_{max}	870	V DC
Minimal resistance at V_{max} ($T_a = 25\text{ °C}$)	$R_{min} @ V_{max}$	650	Ω
Tolerance of minimal resistance at V_{max} ($T_a = 25\text{ °C}$)	$\Delta R_{min} @ V_{max}$	-40/+50	%
Reference temperature	T_{ref}	180 ± 8	$^{\circ}\text{C}$
Surface temperature at V_R ($T_a = 25\text{ °C}$)	T_{surf}	215 ± 8	$^{\circ}\text{C}$
Temperature at minimal resistance	T_{Rmin}	145 ± 10	$^{\circ}\text{C}$
Metallization (not solderable)	Al	≥ 12	μm
Operating temperature range ($V = 0$)	T_{op}	-40 ... +200	$^{\circ}\text{C}$
Operating temperature range ($V = V_R$)	T_{op}	-40 ... +100	$^{\circ}\text{C}$

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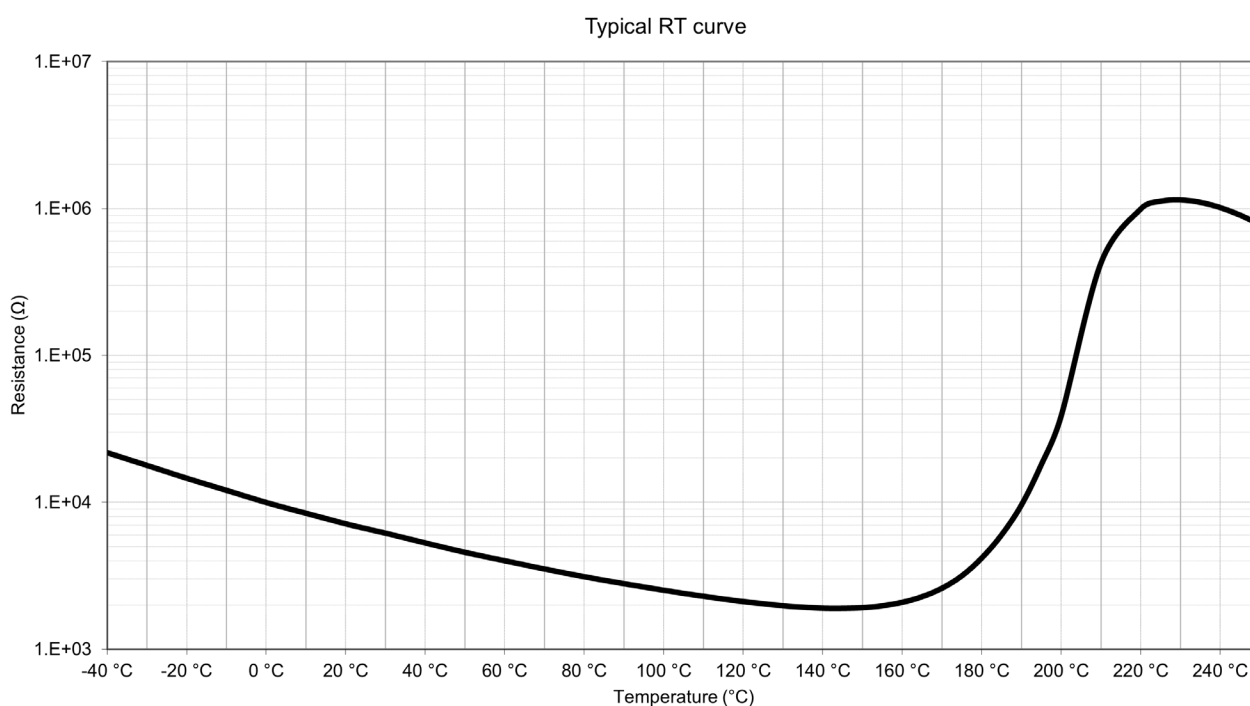
R1801 B 180 A 10

Test	Standard	Test conditions	$ \Delta R_{25}/R_{25} $
Electrical endurance, cycling	IEC 60738-1	Room temperature, V_{\max} Number of cycles: 10000	< 25%
Electrical endurance, constant	IEC 60738-1	Storage at V_{\max} and $T_{\text{op,max}}$ (@ V_R) Test duration: 1000 h	< 35%
Damp heat	IEC 60738-1	Temperature of air: 40 °C Relative humidity of air: 93% Duration: 56 days Test according to IEC 60068-2-78	< 25%

Delivery mode

Cardboard box

RT Characteristics – typical (measured at low voltage signal)



Cautions and warnings

General

- TDK Electronics 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 TDK Electronics during the design-in-phase.
- Ensure the suitability of the thermistors through reliability testing during the design-in phase. The thermistors should be evaluated taking into consideration worst-case conditions.

Storage

- Store the thermistors only in original packaging. Do not open the package prior to processing.
- Storage conditions in original packaging: storage temperature -25°C to +45°C, relative humidity < 75% annual mean, maximum 95%, dew precipitation is inadmissible.
- Avoid contamination of the surface of the thermistors during storage, handling, and processing.
- Avoid storing thermistors in a harmful environment, as this will otherwise affect their function in long-term operation (examples given under *Operation*).
- Use thermistor within the following period after delivery:
 - Through-hole devices (housed and leaded PTCs): 24 months
 - Motor protection sensors, glass-encapsulated sensors and probe assemblies: 24 months
 - Telecom pair and quattro protectors (TPP, TQP): 24 months
 - Leadless PTC thermistors for pressure contacting: 12 months
 - Leadless PTC thermistors for soldering: 6 months
 - SMDs in EIA sizes 3225 and 4032, and for PTCs with metal tags: 24 months
 - SMDs in EIA sizes 1210 and smaller: 12 months

Handling

- PTCs must not be dropped. Chip-offs must not be caused during handling of PTCs.
- The ceramic and metallization of the components must not be touched with bare hands. Suitable gloves are recommended.
- Avoid contamination of the 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.
- Standard PTC heaters are not suitable for soldering.

Mounting

- The electrode must not be scratched before/during/after the mounting process.
- Contacts and housing used for the assembly with the 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 the respective datasheet (chapters *Mounting instructions* and *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 pressure of the clamping contacts pressing against the PTC must be 50 kPa. In case the assembly is exposed to mechanical shock and/or vibration this force should be higher in order to avoid movement of the PTC during operation.
- During operation, the surface temperature of the thermistor can be very high. Ensure that adjacent components are placed at sufficient distance from the thermistor to allow for proper cooling at the thermistors.
- Ensure that any adjacent materials are designed to operate at a temperature comparable to the surface temperature of the thermistor. Ensure 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 under 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 avoided.
- For products with silver electrode: Prevent exposure to electrolytes such as water and moisture to reduce the risk of silver migration. 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).

This listing does not claim to be complete, but merely reflects the experience of TDK Electronics.

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Release 2024-02