



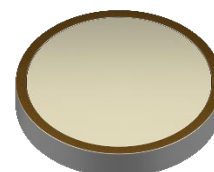
PTC thermistors

Motorstart applications

Series/Type:	A0598-A0090-A020
Ordering code:	B59598A0090A020
Date:	2024-08-30
Version:	2

Applications

Time delay in turning off the auxiliary winding of single-phase AC motors (e.g. refrigerator compressors)



Features

- Metallization: CrNi (sputtered) and Ag (screen-printed)
- Long-term reliability
- Suitable for clamp contacting
- Migration-free silver metallization
- Not suitable for soldering
- High thermal stability
- RoHS compatible

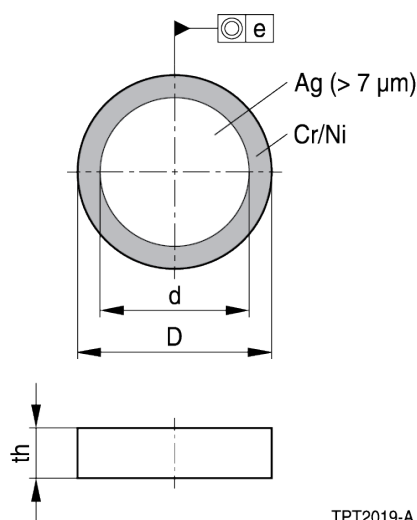
Delivery mode

Trays

Marking

Logo, type designation, date code (YY WW)

Dimensional drawing



D	16.0 ±0.2	mm
th	2.5 ±0.2	mm
d	14.2 ±0.3	mm
r	0.9 ±0.6	mm
e	< 0.5	mm

Metallization according to drawing

Ordering code

B59598A0090A020

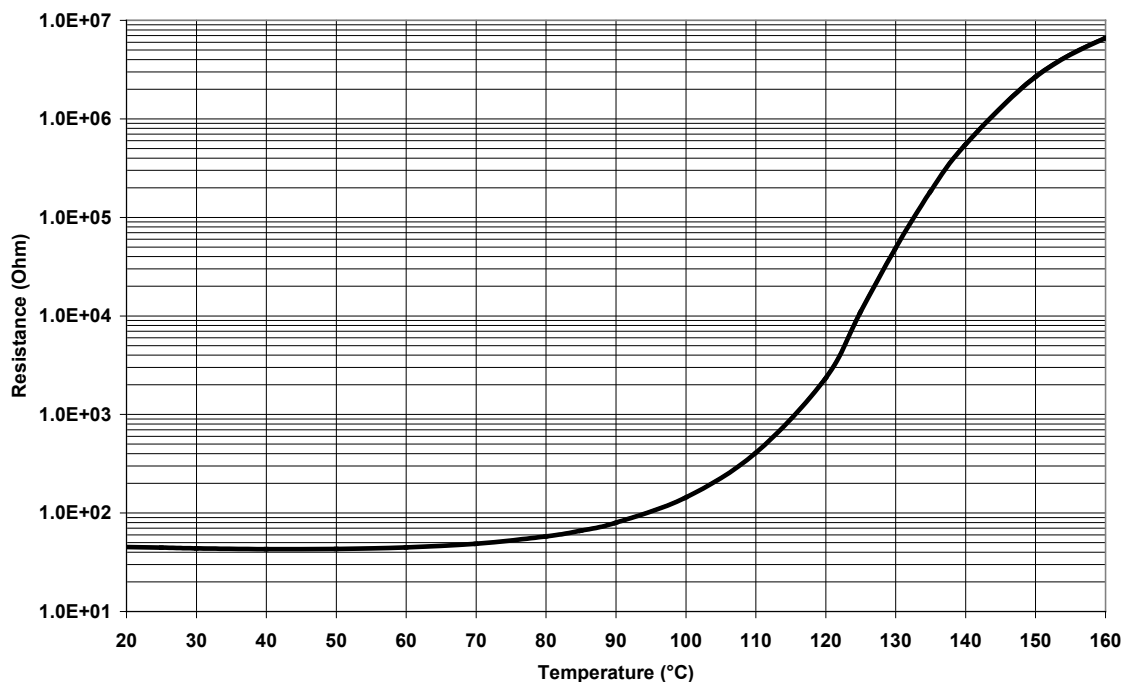
Electrical and thermal specification

Max. operating voltage	V_{\max}	350	V_{RMS}
Rated voltage	V_R	230	V_{RMS}
Breakdown voltage @ $T_{\text{amb}} = 80\text{ }^{\circ}\text{C}$ ¹⁾	V_{BD}	> 560	V_{RMS}
Max. current at V_{\max}	I_{\max}	5.0	A_{RMS}
Residual current, $V = 230\text{ }V_{\text{RMS}}$, soak time 10 min. ¹⁾	I_R	< 6.5	mA_{RMS}
Rated resistance (meas. current < 1 mA; $25 \pm 0.1\text{ }^{\circ}\text{C}$)	$R(25^{\circ}\text{C})$	$44.0 \pm 25\%$	Ω
Rated resistance (measured with sine shaped voltage V_p)	$R(25, 141V_p)$	$32.0 \pm 25\%$	Ω
Operating time, $R_L = 40\text{ }\Omega$, $V = 230\text{ }V_{\text{RMS}}$ ¹⁾	t_s	0.25 ... 0.40	s
Recovery time $V = 230\text{ }V_{\text{RMS}}$; soak time 10 min. ¹⁾	t_r	< 130	s
Reference temperature	T_{ref}	85 ... 95	$^{\circ}\text{C}$
Operating temperature range	T_{op}	-10 ... 80	$^{\circ}\text{C}$

All measurements done at $25 \pm 2\text{ }^{\circ}\text{C}$ unless otherwise stated

¹⁾ Measured in ACC Austria housing

R(T)-Curve (typ.)



Reliability

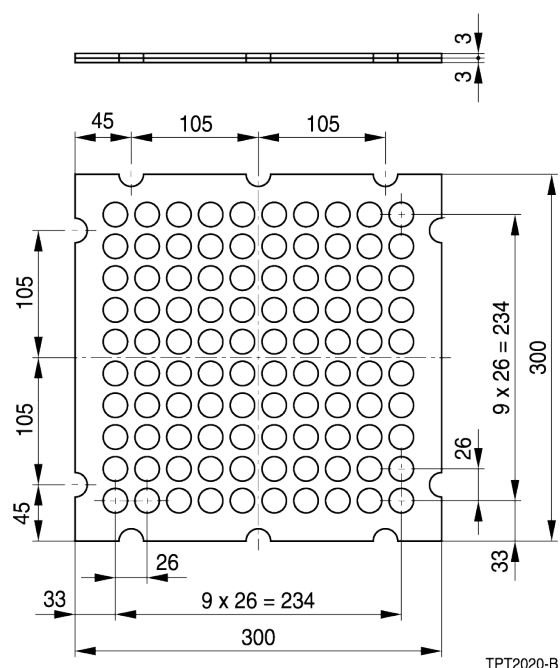
The component withstands reliability tests according to CECC 60738-1-3-003 (VDE related reliability tests).

Handling and mounting

Please refer to *Cautions and warnings*.

Packaging

PTCs are packed on carton trays (100 pieces each tray) according to the following drawing:



10 trays are stacked and put into an outer carton box which is sealed with a plastic foil.

Cautions and warnings

- 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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2. We also point out that **in individual cases, a malfunction of 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 an 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 an electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
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Important notes

8. The trade names EPCOS, CarXield, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, FilterCap, FormFit, InsuGate, LeaXield, MediPlas, MiniBlue, MiniCell, MKD, MKK, ModCap, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PiezoBrush, PlasmaBrush, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SurfIND, ThermoFuse, WindCap, XieldCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks.

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