ELECTRIC MOTOR PARTS & ACCESSORIES

PTC THERMISTORS

Thermistors Wire (Triple)

No.	Stock Code	Temperature (°C)	Lead Colour	Price/Set (RM)
1	TW080C	80°C	White / White	
2	TW090C	90°C	Green / Green	
3	TW100C	100°C	Red / Red	
4	TW110C	110°C	Red / Red	
5	TW120C	120°C	Black / Yellow	
6	TW130C	130°C	Blue / Yellow	
7	TW150C	150°C	Black / Yellow	
8	TW160C	160°C	Red / Blue / Yellow	
9	TW180C	180°C	White / Red	



* A PTC (Positive Temperature Coefficient) thermistor is a semiconductor of endowed, polycrystalline barium titanate ceramic, whose electrical resistance rapidly increases when a certain temperature is exceeded. The reproducible change of resistance vs. temperature is utilised to activate for example trip relays. The result is a defined temperature control of a variety of electrical equipment and used to switch off load current.
* Applications: PTC thermistors are mainly used as motor protection thermistors, which are set in the winding of electrical motors, generators and transformers.

THERMAL CUT OUTS

No.	Stock Code	Temperature (°C)	Type	Price/Set (RM)
1	TC0100C	100°C	NC	
2	TC0110C	110°C	NC	
3	TC0120C	120°C	NC	
4	TC0130C	130°C	NC	
5	TC0150C	150°C	NC	



* The main component of this device is a temperature influenced thermo bimetal disc with double contacts will open/close a circuit when the required response temperature is reached. When current goes through the bimetal disc, a combination of current and temperature sensitivity is achieved. Heat is transmitted from all sides via convection, radiation in gaseous or solid media. The rhomboid surface conducts heat directly onto the bimetal snap disc; therefore the device is also suitable as surface temperature detector.
* Applications: Suitable to be used as a controlling device for electrical applications that would require a controlled thermal condition.

PTC Thermistors

Description

PTC thermistors are temperature-sensitive ceramic semi-conductor resistors with a positive temperature coefficient. The PTC-sensors change their resistance dicontinously, when reaching the nominal temperature. In case of a variation in temperature within 10 K, changes in resistance occur, which are bigger than 1 kOhm. PTCs will be mounted on a releasing tool. When reaching the nominal temperature, the PTC switches off the motor by means of a relay. Thus PTC-sensors serve as sensors for boundary temperatures.

Typical fields for thermistors are:

windings of motors, generators or transformers
bearings
metrology and control engineering



Features

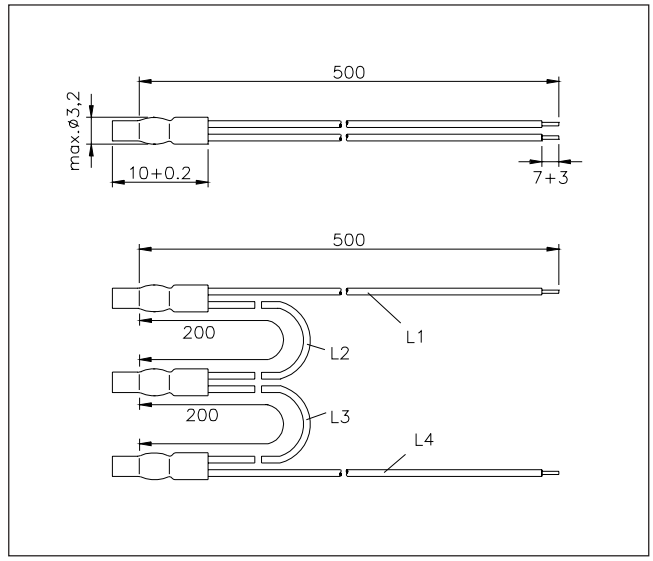
Characteristic curve according to DIN 44081 Miniature construction.
Protected against chemical and mechanical influences. Resistance at 25 °
Extended range of temperature (60°C - 190°C). 100% controlled productio..

Technical data

	Simple	Triple
Max.working voltage $U_{max.}$	25V	
Nominal temperature ϑ_{NAT}T	60°C à 190°C	
olerance $\alpha\beta\omega\upsilon\tau\ \vartheta_{NAT}$	± 5K	
Reproducability about ϑ_{NAT}	± 5K	
Resistance at 25°C	≤ 100 Ω	≤ 300 Ω
Resistance at ϑ_{NAT} - T	≤ 550 Ω	≤ 1650 Ω
Resistance at ϑ_{NAT} + T	≥ 1330Ω	≥ 3990 Ω
Resistance at ϑ_{NAT} + 15 K	≥ 4 kΩ	≥ 12 kΩ
Thermal reaction time	< 5 s	
insulation strength	2,5 kV	
Max. working temperature	200 °C	
ambient temperature	- 25°C à 200°C	

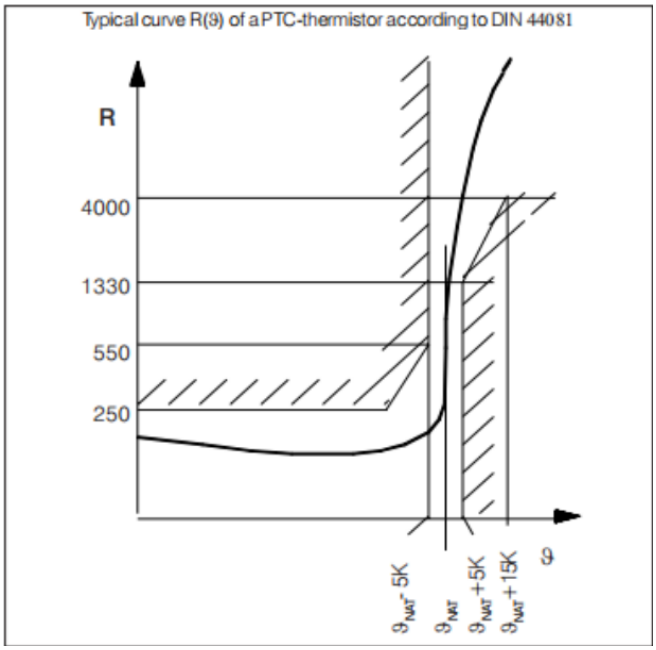
[1] Tension continue ≤ 2,5 V
[2] Tension continue ≤ 7,5 V

Dimensions (in mm)



Standard lead: FEP stranded wire, AWG 26 = 0,14 mm², colour according to the nominal temperature. Connecting lead: yellow

Resistance - temperature - characteristic curve



The characteristic curve points are no-load resistance values. Self-heating has to be avoided. If necessary, pulsating voltage has to be worked with. At temperatures below -20°C the PTC thermistor is able to accept resistance values exceeding 250 Ω.

Marking and order codes

TN	Colour	Simple	Triple
60	white/grey	MF1-E060	MF1-D060
70	white/brown	MF1-E070	MF1-D070
80	white/white	MF1-E080	MF1-D080
90	green/green	MF1-E090	MF1-D090
100	red/red	MF1-E100	MF1-D100
110	brown/brown	MF1-E110	MF1-D110
120	grey/grey	MF1-E120	MF1-D120
130	blue/blue	MF1-E130	MF1-D130
140	white/blue	MF1-E140	MF1-D140
145	white/black	MF1-E145	MF1-D145
150	black/black	MF1-E150	MF1-D150
155	blue/black	MF1-E155	MF1-D155
160	blue/red	MF1-E160	MF1-D160
170*	white/green	MF1-E170	MF1-D170
180*	white/red	MF1-E180	MF1-D180
190*	black/grey	MF1-E190	MF1-D190

* The resistance - temperature - characteristic curve varies slightly from the curve according to DIN

Thermal Cut Off

Technical specifications

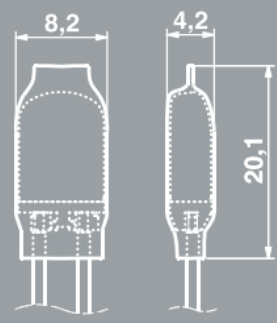
Specifications

Type	C1
Contact version	Normally closed (nc), snap action
Switching cycles	10.000 cycles
AC cos φ = 1,0	2,5 A/250 V
AC cos φ = 0,6	1,6 A/250 V
	0,5 A/500 V*
DC resistive	1,6 A/24 V*
	1,25 A/48 V*
Switching cycles	3.000 cycles
AC cos φ = 1,0	6,3 A/250 V*
Current sensitivity	high
Nominal switching temperature (NST)	in 5 K steps
Standard	70 °C ... 200 °C**
Approved	50 °C ... 180 °C
NST tolerance	± 5 K (code letter B)**
Reset temperature (RST)	40 K ± 15 K below NST (> 35 °C)
Resistance	< 150 mΩ
Contact bouncing time	< 1 ms
Pressure resistance	max 600 N*
Dielectric strength	2 kV
Ambient temperature	T180
Protection level	IP00**
Protection class	Suitable for use in devices of class I & II
Principle of operation at degree of contamination	Type B: clean Type C: normal

Versions

Version B

Switch insulated



Leads: stranded, solid

Approvals

Institute	Standard	Number
VDE	EN60730	40024298 40024280 C1
UL	UL60730	E326354 E173279
CQC	GB14536	CQC24002456456 CQC24002456455 CQC24002456445 CQC24002455659

Wires

Standard	
Type (Insulation) up to 150 °C: over 155 °C:	ISO F ISO H
Length	100 mm / 300 mm
Stripped length	5 mm
Cross section	0,25 mm² (C1, C4), 0,5 mm² (C8)
Operating voltage	450 V / 600 V

Alternative or UL listed wires on request.