



PTC thermistors as limit temperature sensors

Motor protection, single sensors

Series/Type: **B59100**

Sensors

Motor protection, single sensors

M1100

Applications

- Thermal protection of winding in electric motors
- Limit temperature monitoring

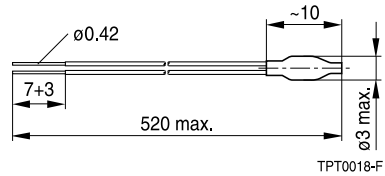
Features

- Thermistor pellet with insulating encapsulation
- Low-resistance type, steep R/T curve
- Silver-plated and Teflon-insulated AWG 26 litz wires
- Extremely fast response due to small dimensions
- Characteristics for sensing temperatures
 $T_{\text{sense}} = 90$ up to $160\text{ }^{\circ}\text{C}$ conform with DIN 44081
- Color coding of litz wires to DIN 44081
- UL approval to UL 1434 (file number E69802)
- RoHS-compatible

Delivery mode

- Bulk

Dimensional drawing



Dimensions in mm

General technical data

Max. operating voltage	$(T_A = 0 \dots 40\text{ }^{\circ}\text{C})$	V_{max}	30	V DC
Max. measuring voltage	$(T_A = -25\text{ }^{\circ}\text{C} \dots T_{\text{sense}} + 23\text{ K})$	$V_{\text{meas,max}}$	7.5	V DC
Rated resistance	$(V_{\text{PTC}} \leq 2.5\text{ V})$	R_R	≤ 100	Ω
Insulating test voltage		V_{ins}	2.5	kV AC
Thermal threshold time		t_a	< 3	s
Operating temperature range	$(V \leq V_{\text{meas,max}})$	T_{op}	$-25/ T_{\text{sense}} + 23$	$^{\circ}\text{C}$
Operating temperature range	$(V = V_{\text{max}})$	T_{op}	0/+40	$^{\circ}\text{C}$

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Electrical specifications and ordering codes

T_{sense} °C	R ($T_{\text{sense}} - \Delta T$) ($V_{\text{PTC}} \leq 2.5 \text{ V}$) Ω	R ($T_{\text{sense}} + \Delta T$) ($V_{\text{PTC}} \leq 2.5 \text{ V}$) Ω	R ($T_{\text{sense}} + 15 \text{ K}$) ($V_{\text{PTC}} \leq 7.5 \text{ V}$) Ω	R ($T_{\text{sense}} + 23 \text{ K}$) ($V_{\text{PTC}} \leq 2.5 \text{ V}$) Ω	Ordering code
$\Delta T = \pm 5 \text{ K}$					
60	≤ 570	≥ 570	-	$\geq 10 \text{ k}$	B59100M1060A070
70	≤ 570	≥ 570	-	$\geq 10 \text{ k}$	B59100M1070A070
80	≤ 570	≥ 570	-	$\geq 10 \text{ k}$	B59100M1080A070
90	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1090A070
100	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1100A070
110	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1110A070
120	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1120A070
130	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1130A070
140	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1140A070
145	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1145A070
150	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1150A070
155	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1155A070
160	≤ 550	≥ 1330	$\geq 4 \text{ k}$	-	B59100M1160A070
$\Delta T = \pm 7 \text{ K}$					
170	≤ 570	≥ 570	-	$\geq 10 \text{ k}$	B59100M1170A070
180	≤ 570	≥ 570	-	$\geq 10 \text{ k}$	B59100M1180A070

Color coding of litz wires (to DIN 44081)

T_{sense} °C	Color
60	white/grey
70	white/brown
80	white/white
90	green/green
100	red/red
110	brown/brown
120	grey/grey
130	blue/blue
140	white/blue
145	white/black
150	black/black
155	blue/black
160	blue/red
170	white/green
180	white/red

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Reliability data

Test	Standard	Test conditions	$ \Delta R_{25}/R_{25} $
Electrical endurance, cycling	IEC 60738-1	Room temperature, $I_{Smax}; V_{max}$ Number of cycles: 500 000	< 25%
Electrical endurance, constant	IEC 60738-1	Storage at $V_{max}/T_{op,max}$ (V_{max}) Test duration: 1000 h	< 25%
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	< 10%
Rapid change of temperature	IEC 60738-1	$T_1 = T_{op,min}$ (0 V), $T_2 = T_{op,max}$ (0 V) Number of cycles: 5 Test duration: 30 min Test according to IEC 60068-2-14, Test Na	< 25%
Vibration	IEC 60738-1	Frequency range: 10 to 55 Hz Displacement amplitude: 0.75 mm Test duration: 3×2 h Test according to IEC 60068-2-6, Test Fc	< 5%