

簡介

正溫度係數（PTC）熱敏電阻為半傳導陶瓷裝置，可於設計溫度下從低電阻狀態切換至高電阻狀態。PTC 用於避免靈敏的零件發生過電流情況。

應用

- 過電流保護
- 液位及空氣流動
- 過溫保護
- 電動馬達啟動
- 電弧抑制
- 消磁

特點

- 快速切換
- 無電氣雜訊
- 無限制壽命
- 可自我重設
- 無接點
- 自動操作

應用

過電流保護

PTC 熱敏電阻可用於以下的電路作為過電流保護器，有時可稱為可重設保險絲。熱敏電阻應經審慎地選擇，使得負載抽取的電流在正常操作條件下不會過高，而導致熱敏電阻自我發熱。但若發生過電壓情況時，通過熱敏電阻的電流上升的程度足以使焦耳熱量達到切換溫度。當過載情況移除後，熱敏電阻將會冷卻並重設至低電阻狀態。

液位及空氣流動

陶瓷 PTC 熱敏電阻在其與電驛線圈、 R_s 串聯及上圖顯示的電路時，可作為液位或空氣流動感測器。在兩種情況下，熱敏電阻的功率消耗足以使其溫度明顯增加。作為液位感測裝置使用時，浸入液體時由於消散常數（dissipation constant）改變使得熱敏電阻溫度下降，電阻也因此降低而使電驛線圈通電，而貯槽的閥門關閉。熱敏電阻及電路參數的選擇必須得以使電阻的改變足以避免電驛震動。類似的電路也因 PTC 熱敏電阻周圍空氣的移動，而使消散常數改變。

過溫保護

此應用與過電流保護非常類似，而其電路圖也如上所示。此類電路上，負載電阻為具有潛在過熱的裝置，而過敏電阻置於與負載保持緊密熱接觸的位置上。若負載開始「脫離」，熱敏電阻將切換至高電阻狀態並斷開電路。因斷路與短路將會以過溫情況出現，因此該電路為失效安全（fail safe）電路。

電動馬達啓動

許多單相電動馬達使用啓動器繞組，並備有手動開關。某些情況下，該開關並不方便或無法使用。以下電路圖顯示 PTC 熱敏電阻與電動馬達啓動器繞組串聯的使用。當馬達啓動時，由於焦耳熱量使得 PTC 開關達到高電阻狀態，而通過啓動器繞組的電流降至極低的位準。

電弧抑制

馬達或電磁等有感負載，當開啓時可引起開關發生電弧現象，此乃因電流通過電感時保持一定的傾向所致。當開關關閉後，電流提高，開關可被斷開，使電流流過熱敏電阻；而該熱敏電阻在初始狀態時保持在低電阻狀態。當熱敏電阻變熱並切換至高電阻狀態時，電流將會下降至可忽略的位準，最終將使所有橫跨熱敏電阻的供應電壓下降。

消磁

彩色電視機及電腦 CRT 均含有去磁化線圈，當電源開啓時便具有自動消磁的功用。線路上包含串聯連接的 PTC 熱敏電阻及置於跨接電力線兩端的線圈。PTC 的初始低電阻可容許大的突波電流，且當 PTC 發熱時，線圈電阻下降至極低的位準。切換 PTC 所需的時間將視熱敏電阻功率消耗的能力及其熱質量而定。



PTC Thermistor Style Designation

(A) () PTC A

1. **Coating Designation** (optional) _____
 D - Standard Epoxy Coating
 H - High Temperature Silicone coating
 No code - No coating
2. **Bare Disk Diameter** _____
 59 - 0.188" 58 - 0.219"
 60 - 0.250" 73 - 0.281"
 68 - 0.313" 61 - 0.375"
 71 - 0.438" 62 - 0.500"
 69 - 0.563" 64 - 0.625"
 63 - 0.688" 67 - 0.750"
 65 - 0.813" 76 - 0.875"
 66 - 1.000" 70 - 1.250"
3. **Lead Configuration** (optional) _____
 10 - Inside Kink, 20AWG
 11 - Outside Kink, 20AWG
 31 - Straight Leads, uncoated
 96 - Inside Kink, 18AWG
 97 - Outside Kink, 18AWG
 Other lead configurations available upon request
4. **Resistance Code**, two significant figures _____
 and a one digit multiplier
 (see Multiplier Code Table)
5. **Tolerance Code** (see Tolerance Code Table) _____
6. **Switch Temperature** (°C) _____
7. **Maximum Voltage**, DC or RMS, _____
 two significant figures and a one digit multiplier
 (see Multiplier Code Table)

Multiplier Code Table

0	1	2	3	4	5	6	7	8	9
10 ⁰	10 ¹	10 ²	10 ³	10 ⁴	10 ⁵	10 ⁶	10 ⁷	10 ²	10 ¹

Tolerance Code Table

F	G	H	J	K	L	M	N	Q
±1%	±2%	±3%	±5%	±10%	±15%	±20%	±25%	±30%

How to Order the PTC Thermistor Series

The following specification table provides a way to match the Maida style number to a thermistor that provides the necessary specifications for a specific application. Once the general style number is obtained, it will be necessary to determine the required lead configuration. Refer to the lead configuration table and add the required code to the Maida style number when ordering. Some custom lead configurations are available. Contact our engineering department for additional information.

The PTC Thermistors are available in bulk, ammo pack, and tape and reel packaging. Contact our engineering department for additional information.

PTC THERMISTOR SERIES



SPECIFICATIONS

Electrical Characteristics

Maida Style #	Maximum Voltage	R @ 25°C	Maximum No Switch Current	Minimum Must Switch Current	Heat Capacity	Dissipation Constant
	Volts	Ohms	Amps	Amps	Watt-sec °C	Watt °C
6431PTC808M120150	15	0.8	0.89	1.58	0.57	15
6931PTC109M120150	15	1	0.77	1.37	0.48	14
6231PTC159M120150	15	1.5	0.56	0.99	0.32	11
7131PTC209M120150	15	2	0.46	0.82	0.25	10
Separator						
6431PTC509M120500	50	5	0.36	0.63	0.85	15
7131PTC100M120590	50	10	0.21	0.37	0.38	10
6831PTC200M120500	50	20	0.13	0.23	0.21	8
Separator						
6431PTC709M120131	132	7	0.31	0.55	1.41	18
6931PTC100M120131	132	10	0.25	0.45	1.19	15
6131PTC250M120131	132	25	0.13	0.23	0.48	10
6031PTC500M120131	132	50	0.08	0.15	0.25	8
5831PTC101M120131	132	100	0.05	0.1	0.16	7
Separator						
7131PTC250M120261	265	25	0.14	0.25	0.94	12
6831PTC500M120261	265	50	0.09	0.16	0.53	9
5831PTC101M120261	265	100	0.06	0.1	0.24	8
Separator						
6131PTC500M120401	400	50	0.1	0.18	0.96	12
6031PTC101M120401	300	100	0.06	0.1	0.49	9

Maximum Voltage listed a either DC or 60 Hz AC

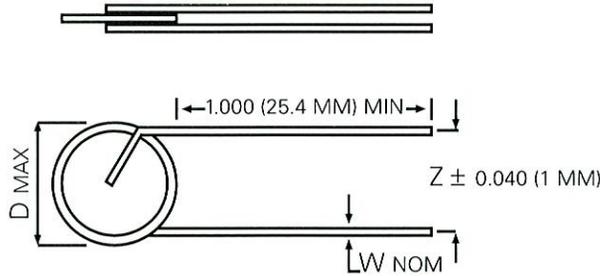
*The Maximum No Switch Temperature is the maximum amount of current that the device can carry without switching to its high resistance state. This parameter is determined at the maximum ambient temperature of 50°C.

*The Minimum Must Switch Temperature is the minimum amount of current required to Switch the device into its high resistance state. This parameter is determined at the minimum ambient temperature of 0°C.

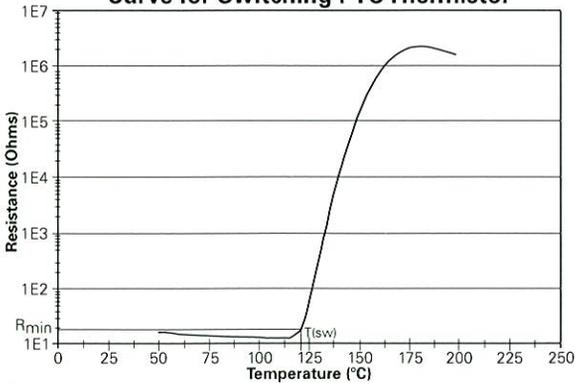
Physical Dimensions

Maximum Diameter	Lead Diameter
Inches	Inches
0.650	0.032
0.600	0.032
0.500	0.025
0.450	0.025
Separator	
0.650	0.032
0.450	0.025
0.350	0.025
Separator	
0.650	0.032
0.600	0.032
0.400	0.025
0.300	0.025
0.250	0.025
Separator	
0.450	0.025
0.350	0.025
0.250	0.025
Separator	
0.400	0.025
0.300	0.025

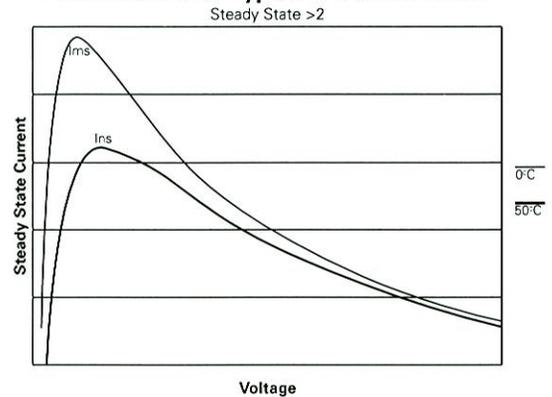
*lead spacings 0.300" standard, 0.200" and 0.250" available upon request.



Curve for Switching PTC Thermistor



Power Curve for Typical PTC Thermistor



For more information call us at (757) 723-0785 or e-mail us at: sales@maida.com