

CP Series PTC Thermistors CP 系列正温度系数热敏电阻 - For Over Current Protection 用于过流保护

GENERAL 概述

CP 系列 PTC 热敏电阻器作为被动元器件，可用于过流保护，抑制浪涌等，其特点是无触点、无噪音、无火花、自动保护、自动复原，可重复使用，并且符合美国 UL1434 标准安全性能要求。

CP Series is the new generation of components for over current protection. Its safety characteristics passed the testing and meet the requirements of UL1434. It can do protection and recovery automatically and repetitively without contacting spot, noise and spark.

CP 系列 PTC 热敏电阻器主要用于家用电器/适配器/充电器/电能表/万用表/通讯设备/微电机等设备的过流保护。如应用示例所示，当被保护电路处于正常状态时，流过 PTC 热敏电阻器 R_t 的电流小于其最大不动作电流 I_N ， R_t 处于低阻态，不会影响被保护电路正常工作；当被保护电路遇过流（电流大大超过其动作电流 I_T 令 R_t 急剧发热）等异常状况时， R_t 骤然跃入高阻态，使被保护电路避免受到损坏。当异常状况消失，温度、电流回复正常后， R_t 自动回复至低阻态，被保护电路亦回复至正常工作状态。

CP Series PTC Thermistor is designed specially for over current protection of the Ballast / CFL / Adaptor / Charger / Watt-hour Meter / Multimeter / Telecom / Micromotor etc, as show as the example of application. When the circuit protected is at normal state, current through the PTC thermistor will be lower than its Max. Non-operating Current (I_N). At this time R_t is at low-resistance state, and it won't affect the normal work of the circuit protected. While abnormal things (such as over current) happen, the current will be much higher than its Trip Current (I_T), and then R_t will change into high-resistance state very quickly. So the circuit protected will be at open state and non-damaged. After the abnormal things disappear and the temperature & the current recover to normal state, R_t will return to low-resistance state automatically and the circuit protected will recover to normal operating state.

CP 系列之选型主要考虑 R_t 的电流特性和 R_t 环境温度，其最大不动作电流 I_N 应适度大于被保护电路的额定工作电流，以能及时响应又不会误动作为准则。与此同时，应特别注意 R_t 之动作/不动作特性与工作环境温度密切相关， I_N 和 I_T 随工作环境温度 T_A 升高而降低，如图 II 所示。

R_t 's current characteristics is the most important thing to be considered when make a choice of CPseries. Its Max. Non-operating Current shall be reasonably higher than rated operating current through the circuit protected and the criterion is that R_t can respond in time and won't trip by mistake. Furthermore, another thing must be especially noticed is: R_t 's Max. Operating / Non-operating characteristics is closely correlative with the ambient temperature. I_T & I_N will decrease while the ambient temperature increases, as show as Figure II

EXAMPLE OF APPLICATION 应用示例

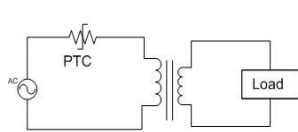


图 I -1 For Primary Coil
初级线圈保护

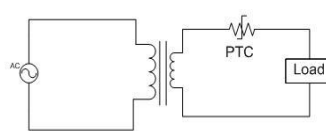


图 I -2 For Secondary Coil
次级线圈保护

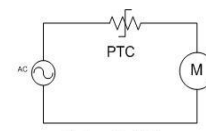


图 I -3 For Micromotor
微电机保护

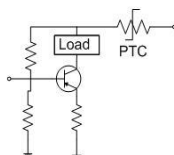


图 I -4 For Tr.
晶体管保护

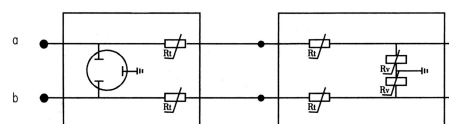


图 I -5 For Telecom
通讯设备保护

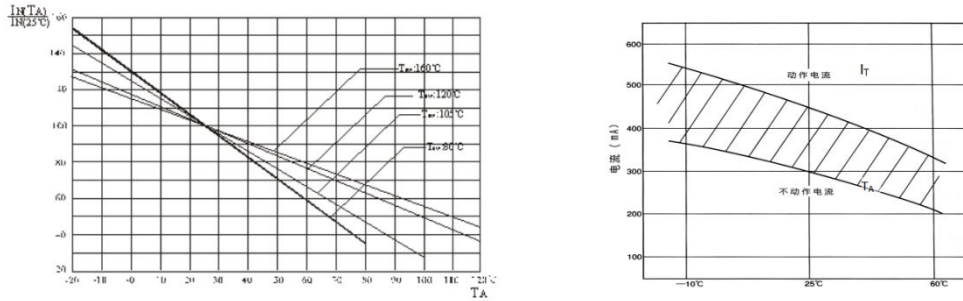
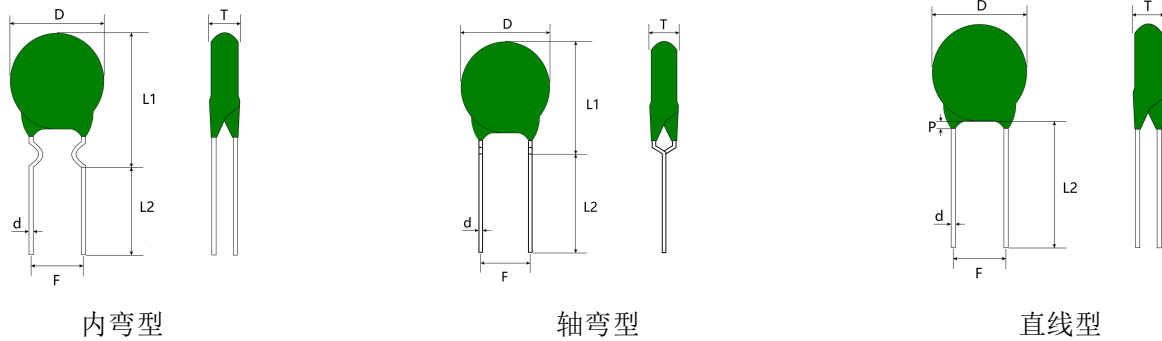


图 II Current Characteristics 电流特性

Product Outline Drawing 产品外形图



SPECIFICATION TABLE 规格表

CP Series (I)

For Over Current Protection of the Adaptor (Primary Coil) / Charger / Watt-hour Meter / Multimeter / Micromotor and Transistor etc.

主要用于变压器 (适配器) 初级线圈 / 充电器 / 电能表 / 数字万用表 / 微电机和晶体管过流保护

No. 序号	Part No. 产品编号	Curie Temp. 居里温度 (°C)	Rated Zero Power Resistance 额定零功率电阻 R_N (Ω)	Max. Non Operating Current 最大不动作电流 I_N (mA)	Trip Current at 25°C 动作电流 I_T (mA)	Max. Operating Vol. 最大工作电压 (V)	Max. Permissible Current at V_{Max} 最大工作电流 I_{Max} (A)	外形尺寸 Dimension (mm)			
								D_{Max}	T_{Max}	$d^{\pm 0.05}$	$F^{\pm 1}$
Max. Operating Vol. 最大工作电压 $V_{Max} = 24/36V_{AC}$; Curie Temp. 居里温度 $T_c = 95/120/125^\circ C$											
1	*CP152XY	75	150±25%	5	15	265	0.2	7.0	5.5	0.6	5.0
2	CP150V04M	95	15±25%	90	225	24	1.0	5.5	5.0	0.6	5.0
3	CP220V04M	95	22±25%	75	190	24	1.0	5.5	5.0	0.6	5.0
4	CP330V04M	95	33±25%	60	150	24	1.0	5.5	5.0	0.6	5.0
5	CP470V04P	120	47±25%	50	125	36	0.8	5.5	5.0	0.6	5.0
7	CP1R5V08P	125	1.5±25%	400	1100	24	3.0	10.5	4.0	0.6	5.0
Max. Operating Vol. 最大工作电压 $V_{Max} = 140V_{AC}$; Curie Temp. 居里温度 $T_c = 120^\circ C$											
8	CP6R8V10P	120	6.8±25%	200	550	140	1.2	12.5	5.5	0.6	5.0
9	CP8R2V10P	120	8.2±25%	180	500	140	1.2	12.5	5.5	0.6	5.0
10	CP6R8V13P	120	6.8±25%	220	605	140	1.8	15.5	5.5	0.6	5.0
11	CP8R2V13P	120	8.2±25%	200	550	140	1.8	15.5	5.5	0.6	5.0

No. 序号	Part No. 产品编号	Curie Temp. 居里温度(°C)	Rated Zero Power Resistance 额定零功率电阻 R_N (Ω)	Max. Non Operating Current at 60°C 最大不动作电流 I_N (mA)	Trip Current at 25°C 动作电流 I_T (mA)	Max. Operating Vol. 最大工作电压(V)	Max. Permissible Current at V_{Max} 最大工作电流 I_{Max} (A)	外形尺寸 Dimension (mm)			
								D_{Max}	T_{Max}	$d^{\pm 0.05}$	$F^{\pm 1}$
Max. Operating Vol. 最大工作电压 $V_{Max} = 265V_{AC}$; Curie Temp. 居里温度 $T_c = 83^\circ C/85^\circ C$											
12	CP251V03M	85	250±25%	10	40	265	0.2	5.0	5.0	0.5	5.0
13	CP401V03M	85	400±25%	8	32	265	0.2	5.0	5.0	0.5	5.0
14	CP471V03M	85	470±25%	7	27	265	0.2	5.0	5.0	0.5	5.0
15	CP681V03M	85	680±25%	6	24	265	0.2	5.0	5.0	0.5	5.0
16	*CP102XY	80	1000±50%	6	20	265	0.4	7.0	5.0	0.5	5.0
17	*CP202XY	80	2000±50%	6	18	265	0.1	7.0	5.0	0.5	5.0
18	CP222V03M	85	2200±25%	2	8	265	0.2	5.0	5.0	0.5	5.0
19	CP450X05M	85	30-60	25	120	265	0.4	6.5	5.0	0.6	5.0
20	CP500V05M	85	50±25%	25	120	265	0.4	6.5	5.0	0.6	5.0
21	CP700V05M	85	70±25%	20	100	265	0.4	6.5	5.0	0.6	5.0
22	CP101V05M	85	100±25%	20	80	265	0.4	6.5	5.0	0.6	5.0
23	CP700V07M	85	70±25%	25	100	265	0.8	8.5	5.0	0.6	5.0
24	CP101V07M	85	100±25%	20	90	265	0.8	8.5	5.0	0.6	5.0
25	CP251V07M	85	250±25%	15	60	265	0.8	8.5	5.0	0.6	5.0
26	CP471V07M	85	470±25%	10	40	265	0.8	8.5	5.0	0.6	5.0
27	CP220V08M	85	22±25%	55	220	280	1.0	10.5	5.0	0.6	5.0
28	CP330V08M	85	33±25%	45	180	280	1.0	10.5	5.0	0.6	5.0
29	CP390V08M	85	39±25%	40	160	280	1.0	10.5	5.0	0.6	5.0
30	CP400V08M	85	40±25%	40	160	280	1.0	10.5	5.0	0.6	5.0
31	CP500X08M	85	30~60	30	120	380	1.0	10.5	5.0	0.6	5.0
32	CP500V08M	85	50±25%	30	120	380	1.0	10.5	5.0	0.6	5.0
33	CP700V08M	85	70±25%	25	100	380	1.0	10.5	5.0	0.6	5.0
Max. Operating Vol. 最大工作电压 $V_{Max} = 265V_{AC}$; Curie Temp. 居里温度 $T_c = 115^\circ C$											
34	CP151V05P	115	150±25%	30	90	265	0.4	6.5	5.0	0.6	5.0
35	CP201V05P	115	200±25%	28	85	265	0.4	6.5	5.0	0.6	5.0
36	CP251V05P	115	250±25%	25	80	265	0.4	6.5	5.0	0.6	5.0
37	CP301X05P	115	200~400	22	80	265	0.4	6.5	5.0	0.6	5.0
38	CP401V05P	115	400±25%	18	80	265	0.4	6.5	5.0	0.6	5.0
39	*CP501XY	115	250~750	20	60	265	0.5	7.0	5.0	0.6	5.0
40	CP651X05P	115	500~800	15	55	265	0.3	6.5	5.0	0.6	5.0
41	CP751V05P	115	750±25%	14	50	265	0.4	6.5	5.0	0.6	5.0
42	CP851X05P	115	700~1.0K	13	45	265	0.25	6.5	5.0	0.6	5.0
43	CP102V05P	115	1000±25%	12	42	265	0.4	6.5	5.0	0.6	5.0

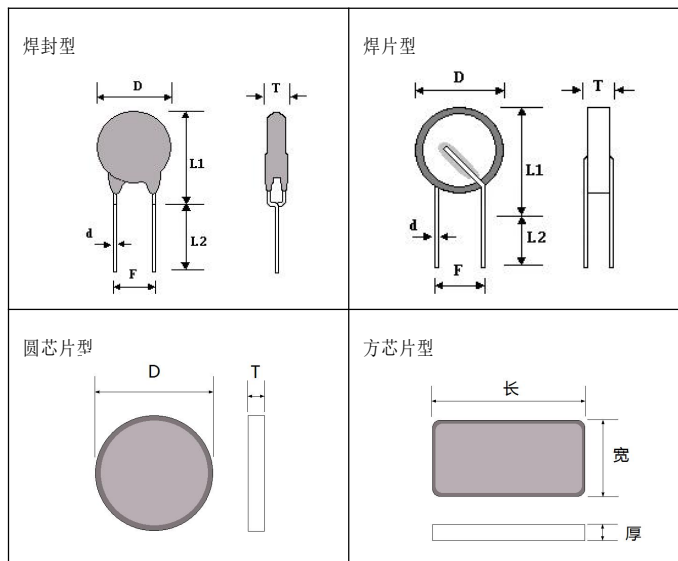
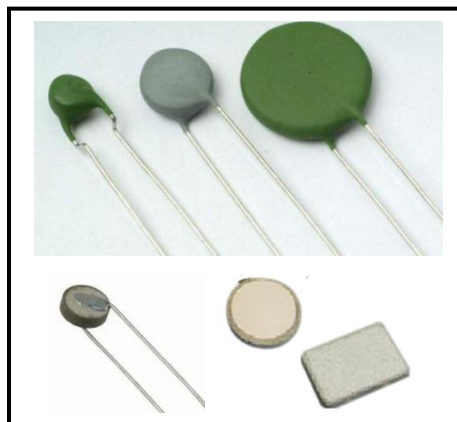
No. 序号	Part No. 产品编号	Curie Temp. 居里温度(°C)	Rated Zero Power Resistance 额定零功率电阻 R_N (Ω)	Max. Non Operating Current at 60°C 最大不动作电流 I_N (mA)	Trip Current at 25°C 动作电流 I_T (mA)	Max. Operating Vol. 最大工作电压(V)	Max. Permissible Current at V_{Max} 最大工作电流 I_{Max} (A)	外形尺寸 Dimension (mm)			
								D_{Max}	T_{Max}	$d^{+0.05}$	$F^{\pm 1}$
44	CP112X05P	115	900~1.2K	11	40	265	0.2	6.5	5.0	0.6	5.0
45	CP122X05P	115	1.0K~1.5K	10	30	265	0.2	6.5	5.0	0.6	5.0
46	CP350V07P	115	35±25%	65	180	265	0.8	8.5	5.0	0.6	5.0
47	CP550X07P	115	45~70	60	200	265	0.8	8.5	5.0	0.6	5.0
48	CP680X07P	115	55~88	60	200	265	0.8	8.5	5.0	0.6	5.0
49	CP820X07P	115	65~100	50	150	265	0.8	8.5	5.0	0.6	5.0
50	CP121X07P	115	90~160	40	120	265	0.8	8.5	5.0	0.6	5.0
51	CP201V07P	115	150~250	30	90	265	0.8	8.5	5.0	0.6	5.0
52	CP251V07P	115	150~250	23	90	265	0.8	8.5	5.0	0.6	5.0
53	CP351V07P	115	350±25%	18	72	265	0.8	8.5	5.0	0.6	5.0
Max. Operating Vol. 最大工作电压 $V_{Max} = 265V_{AC}$; Curie Temp. 居里温度 $T_c = 120^\circ C$											
54	CP560V04P	120	56±25%	40	110	265	0.3	5.5	5.0	0.6	5.0
55	CP700V04P	120	70±25%	35	100	265	0.3	5.5	5.0	0.6	5.0
56	CP121V04P	120	120±25%	25	85	265	0.3	5.5	5.0	0.6	5.0
57	*CP332XY	120	3.3K±50%	8	24	265	0.1	7	5.0	0.6	5.0
58	CP750V07P	120	75±25%	62	155	420	0.8	8.5	5.0	0.6	5.0
59	CP820V07P	120	82±25%	60	150	420	0.8	8.5	5.0	0.6	5.0
60	CP101V07P	120	100±25%	54	135	420	0.8	8.5	5.0	0.6	5.0
61	CP151V07P	120	150±25%	44	110	420	0.8	8.5	5.0	0.6	5.0
62	CP201V07P	120	200±25%	38	96	420	0.8	8.5	5.0	0.6	5.0
63	CP250V08P	120	25±25%	100	300	265	1.0	10.5	5.0	0.6	5.0
64	CP390V08P	120	39±25%	90	250	265	1.0	10.5	5.0	0.6	5.0
65	*CP820XY	120	82±50%	60	180	265	0.8	10.5	5.0	0.6	5.0
66	CP8R0V10P	120	8.0±25%	180	450	265	1.5	12.0	5.0	0.6	5.0
67	CP100V10P	120	10±25%	160	402	265	1.5	12.0	5.0	0.6	5.0
68	CP150V10P	120	15±25%	140	350	265	1.5	12.0	5.0	0.6	5.0
69	CP220V10P	120	22±25%	120	300	265	1.5	12.0	5.0	0.6	5.0
70	CP250V10P	120	25±25%	110	275	265	1.5	12.0	5.0	0.6	5.0
71	CP330V10P	120	33±25%	105	265	265	1.5	12.0	5.0	0.6	5.0
72	CP390V10P	120	39±25%	100	250	265	1.5	12.0	5.0	0.6	5.0
73	CP500V10P	120	50±25%	88	220	265	1.5	12.0	5.0	0.6	5.0
74	*CP100XY	120	10±50%	200	600	265	2.0	15.5	5.5	0.6	5.0
75	*CP150XY	120	15±50%	170	510	265	2.0	15.5	5.5	0.6	5.0
76	*CP200XY	120	20±50%	150	450	280	2.0	15.5	5.5	0.6	5.0
77	*CP250XY	120	25±50%	100	300	280	1.4	15.5	5.5	0.6	5.0
78	*CP270XY	120	27±50%	95	285	380	1.4	15.5	5.5	0.6	5.0
79	*CP300XY	120	30±50%	125	375	280	2.0	15.5	5.5	0.6	5.0
80	*CP400XY	135	40±50%	135	405	280	2.0	15.5	5.5	0.6	5.0
81	*CP470XY	135	47±50%	110	130	280	2.0	15.5	5.5	0.6	5.0
82	*CP500XY	120	50±50%	70	210	380	1.4	15.5	5.5	0.6	5.0

正温度系数热敏电阻

No. 序号	Part No. 产品编号	Curie Temp. 居里温度 (°C)	Rated Zero Power Resistance 额定零功率电阻 R_N (Ω)	Max. Non Operating Current at 60°C 最大不动作电流 I_N (mA)	Trip Current at 25°C 动作电流 I_T (mA)	Max. Operating Vol. 最大工作电压 (V)	Max. Permissible Current at V_{Max} 最大工作电流 I_{Max} (A)	外形尺寸 Dimension (mm)			
								D_{Max}	T_{Max}	$d^{\pm 0.05}$	$F^{\pm 1}$
83	*CP560XY	140	56±50%	100	300	400	2.0	15.5	5.5	0.6	5.0
84	*CP600XY	125	60±50%	90	270	340	2.0	15.5	5.5	0.6	5.0
85	*CP101XY	120	100±50%	50	150	265	1.4	15.5	5.5	0.6	5.0
86	*CP151XY	120	150±50%	40	120	265	1.4	15.5	5.5	0.6	5.0
87	*CP201XY	120	200±50%	75	225	265	1.5	15.5	5.5	0.6	5.0
88	CP3R3V19P	120	3.3±25%	450	1125	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5
89	CP4R7V19P	120	4.7±25%	370	925	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5
90	CP5R0V19P	120	5.0±25%	360	920	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5
91	CP6R8V19P	120	6.8±25%	310	790	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5
92	CP8R2V19P	120	8.2±25%	290	725	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5
93	CP100V19P	120	10±25%	250	625	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5
94	CP150V19P	120	15±25%	210	525	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5
95	CP220V19P	120	22±25%	170	440	265	4.0	21.5	5.5	0.6/0.8	5.0/7.5

CP Series (II)

For Over Current Protection of Telecom 主要用于通信设备过流保护



No. 序号	Part No. 产品编号	Rated Zero Power Resistance 额定零功率 电阻 $R_N@25^{\circ}\text{C}$	Max. Non Operating Current 最大不动作电流 I_N (mA)		Trip Current at 25°C 动作电流 I_T (mA)	Tripping time at max current 最大电流下 的动作时间 T(Set)	Max. Current 最大电流 I_{Max} (A)	Max. Voltage 最大电压 V_{Max} (V)	Dimension (mm) 外形尺寸			
			@ 25°C	@ 40°C					D_{Max}	T_{Max}	$d^{\pm 0.05}$	$F^{\pm 1}$
1	CP100M08M	10 Ω ±25%	150	120	300	0.55	3.0	250	10.0	5.0	0.6	5
2	CP120M07M	12 Ω ±25%	90	60	160	0.2	2.0	250	9	5.0	0.6	5
3	CP180M07N	18 Ω ±25%	135	110	270	0.18	3.0	250	8.5	5.0	0.6	5
4	*CP200M08B	20 Ω ±25%	110	70	200	0.3	3.0	250	10.5	5.0	0.6	5
5	CP350M07N	35 Ω ±25%	90	70	230	0.45	3.0	250	9	5.0	0.6	5
6	*CP350M07N	35 Ω ±25%	90	70	230	0.45	4.6	245	9	5.0	0.6	5
7	*CP500M08M	50 Ω ±25%	75	60	150	0.2	3.0	250	9.5	5.0	0.6	5
8	*CP500M08M	50 Ω ±25%	75	60	150	0.2	3.0	380	9.5	5.0	0.6	5
9	*CP550M08M	55 Ω ±25%	70	60	150	0.2	3.0	250	9.5	5.0	0.6	5
10	*CP550M08M	55 Ω ±25%	70	60	150	0.2	3.0	650	10.0	5.0	0.6	5
11	*CP350M07N	35 Ω ±25%	100	70	230	0.2	3.0	245	7.2	3.5	0.5	4.5
12	CP500M07N	50 Ω ±25%	90	60	180	0.15	4.5	250	7.2	3.5	0.5	4.5
13	CP350M06N	35 Ω ±25%	90	60	180	0.2	2.5	230	6.3	3.5	0.5	4.5
14	*CP500M08N	50 Ω ±25%	90	60	190	0.2	2.5	250	8.4	3.5	0.6	5.5
15	*CP250M07N	25 Ω ±25%	130	85	260	0.3	3.0	250	7.2	3.5	0.5	4.5
16	*CP350M07N	35 Ω ±25%	110	70	230	0.2	3.0	250	7.2	2.2	/	/

■ Other Characteristics 其它电性能参数:

Over Current Withstanding 耐工频电流能力: : 3Arms / 220Vrms 20 times (60s On, 300s Off)

Lighting Surges 耐冲击电流能力: : 10/310 μs 1.5KV 37.5A 10 times or 10/1000 μs 1.0KV 25A 30 times

Over Vol. Withstanding 耐工频电压能力: : 250Vrms / 3A / 15 min.

Inducted Vol. Withstanding 耐高压感应能力: : 650Vrms / 1.1A 20 times (1s On, 60s Off)

(For only the items with * 仅适用于标有*号品种)

CP Series (III)

PTC Thermistors 正温度系数热敏电阻器

- For Overcurrent Protection And Inrush Current limiting 用于过流保护和浪涌电流限制

Applications 应用

1. Inrush current limiter for smoothing and DC link capacitors

用于平滑和直流链路电容器的浪涌电流限制器

2. To replace high-power fixed resistors for capacitor charging

可取代大功率固定电阻器作电容器充电

3. Overcurrent and short circuit protection

过电流和短路保护



Features 特点

1. Automatic reset from protective trip mode

从保护跳闸模式自动复位

2. Protection against overcurrent situations

过流保护

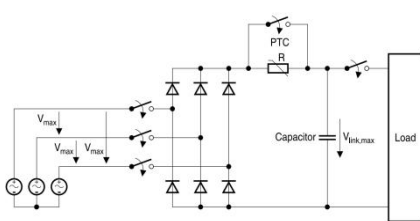
3. Space-saving

节省空间

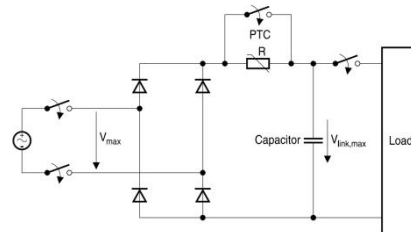
4. Various characteristics to meet a suitable resistance value

满足各种特性的合适电阻值

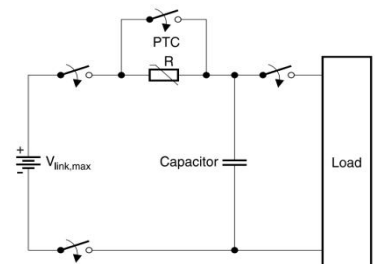
EXAMPLE OF APPLICATION 应用示例



Three phases circuit 三相电路

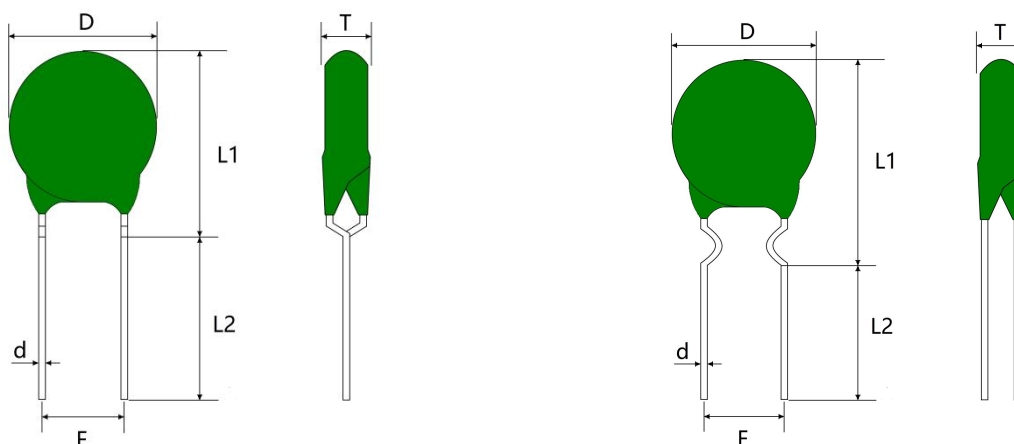


Single phase circuit 单相电路



DC circuit 直流电路

STRUCTURE AND SIZE 结构与尺寸



No. 序号	规格型号	D	T	L1	L2	d	F
		Max	Max	Max	±0.5	±0.06	±1.0
1	CP101V19PYCC2B4P0	22.0	6.5	26.0	4.0	0.8	7.5
2	CP201V19PYCC2B4P0	22.0	6.5	26.0	4.0	0.8	7.5
3	CP150V19PYCC2B3P5	22.0	6.5	26.0	3.5	0.8	7.5
4	CP680V19PYSC1B4P5	22.0	6.0	26.0	4.5	0.8	5.0
5	CP700V19PYSC2B3P5	22.0	6.0	26.0	3.5	0.8	7.5
6	CP121N16PYSC1B3P5	18.0	7.5	22.0	3.5	0.8	5.0
7	CP6R0V16FICC2E18P	18.0	7.5	22.0	18±1	0.8	7.5
8	CP560V14RYSC1A17P	16.0	7.0	21.5	17±1	0.8	5.0
9	CP470V14RYCC2A18P	16.0	7.0	21.5	18±1	0.8	7.5
10	CP470V14PYSB1A16P	16.0	6.0	21.5	16±1	0.8	7.5
11	CP200V14FYCC2A17P	16.0	7.0	21.5	17±1	0.8	7.5
12	CP200V14PYSB2B3P5	15.0	5.5	19.5	3.5	0.6	7.5
13	CP500V11PYSB1B3P5	13.5	7.0	18.0	3.5	0.6	5.0
14	CP500N10RYSB1B4P0	13.0	7.5	17.5	4.0	0.6	5.0
15	CP251V08PISB1A18P	8.5	5.0	13.0	18±1	0.6	5.0

ELECTRICAL CHARACTERISTICS 电气特性

No. 序号	Part No. 规格型号	25°C 零功率电阻 R25(Ω)	最大电压 Vmax (Vac)	居里温度 TC (°C)	热容量 Cth (J/K)	Max charge energy 最大充电能量 @60°C(J)
1	CP101V19PYCC2B4P0	100±25%	270	120	2.8	117
2	CP201V19PYCC2B4P0	200±25%	270	135	2.5	130
3	CP150V19PYCC2B3P5	15±25%	280	120	2.3	97
4	CP680V19PYSC1B4P5	68±25%	340	125	2.3	103
5	CP700V19PYSC2B3P5	70±25%	270	125	2.1	95
6	CP121N16PYSC1B3P5	120±30%	440	130	2.3	112
7	CP6R0V16FICC2E18P	6±25%	320	130	1.5	74
8	CP560V14RYSC1A17P	56±25%	380	140	1.5	84
9	CP470V14RYCC2A18P	47±25%	270	140	1.5	84
10	CP470V14PYSB1A16P	47±20%	270	120	1.2	50
11	CP200V14FYCC2A17P	20±25%	270	135	1.2	63
12	CP200V14PYSB2B3P5	20±25%	270	120	1.0	42
13	CP500V11PYSB1B3P5	50±25%	380	120	1.4	58
14	CP500N10RYSB1B4P0	50±30%	380	140	1.4	78
15	CP251V08PISB1A18P	250±25%	265	115	0.35	14