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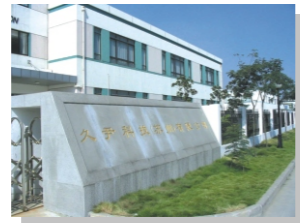
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# PTC THERMISTOR



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# PTC Thermistors

## QUALITY POLICY

品質政策

QUALITY RELIABLE & STABLE

CUSTOMER SECURE & DELIGHTFUL

品質穩定 客戶安心

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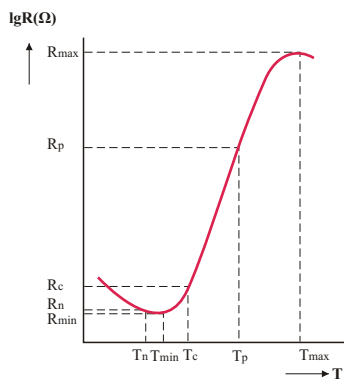
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**概述**

PTCR(Positive Temperature Coefficient of Resistance)是一種具有特高正溫度系數的熱敏電阻，主要構成是BaTiO<sub>3</sub>,BaTiO<sub>3</sub>陶瓷是一種典型的鐵電材料，常溫電阻率大於10<sup>12</sup> Ω·cm絕緣體，經過半導化摻雜以後顯示出強烈的PTC效應—常溫下電阻值很低，隨著溫度的升高，在居里點附近發生突變，產生幾個數量級的變化。這是因為在多晶BaTiO<sub>3</sub>半導體材料的晶粒邊界存在一個由表面態引起的勢壘層，在居里溫度下，高阻的晶界具有鐵電性，介電常數很大，勢壘高度很低，電子很容易穿透勢壘，相應的材料電阻率小。但在居里溫度以上時，高阻層發生晶格轉變，鐵電性消失，介電常數急劇減小，由於介電常數按居里-偉斯定律下降，所以勢壘隨之升高。隨著勢壘高度的急劇增高，電子難於越過勢壘，相應材料的電阻率急劇上升，宏觀上表現為材料的PTC 效應。由於PTC 熱敏電阻器這種特性，無論是工業電子設備還是家用電器產品中，熱敏電阻器都得到了廣泛的應用，其應用領域按PTC熱敏電阻三種基本電氣性能分類，其基本參數如圖1。

**General**

PTCR (Positive Temperature Coefficient of Resistance) is a kind of positive temperature coefficient thermistor, mainly made up of BaTiO<sub>3</sub> ceramics. BaTiO<sub>3</sub> ceramics is a kind of typical ferroelectric material with the resistivity of greater than 10<sup>12</sup> Ω·cm under normal temperature, through semi-conductor doping it has a strong PTC efficacy---it has extremely low resistance under normal temperature but it experiences a sudden and large mutation around curie temperature as ambient temperature rises. This is because a barrier layer induced by the surface state exists on the crystal particle border of the multicrystal BaTiO<sub>3</sub> semiconductor material. Under curie temperature, the high-resistance crystal boundary has ferroelectric characteristics with great dielectric constant and low potential barrier, electrons can easily penetrate the potential barrier and corresponding materials have low resistivity. When above Curie temperature, crystal lattice occurs at the high-resistance layer and the ferroelectric constant decreases quickly. The potential barrier increases because the dielectric constant drops in accordance with the Curie-Weiss Law. With the dramatic increase of the barrier height, it becomes difficult for electrons to pass potential barrier and the resistivity of the corresponding materials rises dramatically. This behaves as the PTC efficacy of the material in a macro manner. Due to this property, the PTC thermistor is widely used both on industrial electronic equipment and household appliances. The field of its application is classified in light of the three basic electric performances of the PTC thermistor. The fundamental parameters are as indicated in the following diagram (Fig.1).



PTC 熱敏電阻器-溫特性  
Resistance vs. Temperature

**Fig.1**

- Rn- Room temperature zero-power resistance  
室溫零功率電阻
- Rmin- Minimum zero-power resistance  
最小零功率電阻
- Tc- Switch temperature or Curie temperature  
開關溫度或居里溫度
- Rc- Switch resistance value Rc=2Rmin  
開關電阻
- Rmax- Maximum resistance  
最大電阻
- Tp- Poise point temperature  
平衡點溫度
- β- Lift-drag ratio β=lgRmax/Rmin  
升阻比

**常用術語**

額定零功率電阻值 (Rn)	在25°C條件下，採用足夠低的功耗所測得的熱敏電阻直流電阻值。
最大工作電壓 (Vmax)	在規定的最高環境溫度下，PTC熱敏電阻器能持續承受的最大額定電壓。
最大電流 (Imax)	指在最大額定電壓下，允許通過PTC熱敏電阻器的最大電流(有效值)。
開關溫度 (Tc)	當PTC熱敏電阻器的阻值升至2倍最小電阻值(Rmin)對應的溫度就是開關溫度，也稱居里溫度。
不動作電流 (Int)	不動作電流即額定電流或保持電流，指在規定的時間和溫度條件下，不導致PTC熱敏電阻器呈現高阻態的最大電流值。
動作電流 (It)	使PTC熱敏電阻器阻值呈階躍型增加時的最小電流值。
最大電壓下的溫度範圍	PTC熱敏電阻器在最大電壓下仍能連續工作的環境溫度範圍，一般為-10°C to +70°C。
電阻溫度系數 (α <sub>r</sub> )	電阻溫度系數是指過Tc和Tp兩點割線的斜率。 $\alpha_r = (\ln R_p - \ln R_c) \cdot 100 / (T_p - T_c) (\% / ^\circ C)$
耗散系數 (δ)	PTC熱敏電阻器中功率耗散的變化量與元件相應溫度變化量之比，稱為耗散系數 (in mW / °C) $\delta = P / (T - T_r)$ 式中: p-散功率; T-電阻體溫度 Tr-室溫

**Common Glossary**

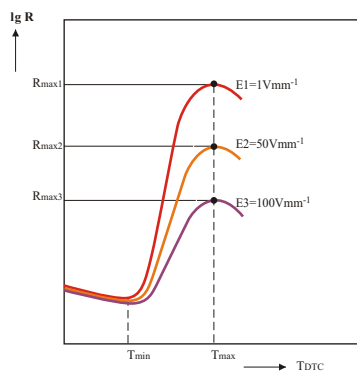
Rated Zero-power Resistance (Rn)	DC resistance value of the thermistor measured at 25°C by adopting sufficiently low power consumption.
Maximum Operating Voltage (Vmax)	The maximum rated voltage the PTC thermistor can continuously endure at stipulated maximum ambient temperature
Maximum Current (Imax)	The maximum current (effective value) through the PTC thermistor under max. rated voltage. Exceeding this current may result in damage to the PTC components.
Switch Temperature (Tc)	The temperature at which the resistance value of the PTC thermistor increases to twice Rmin , also called Curie temperature.
Non-trip Current (Int)	Rated current or holding current, at stipulated ambient temperature , this is the maximum current value that doesn't trip the PTC to the high resistance state. Under these conditions, PTC performs as a fixed resistor.
Trip Current (It)	The minimum current value that will cause the PTC to trip to the protective high resistance state.
Operating Temperature Range	The ambient temperature range in which PTC can be used when the maximum voltage is applied. Range is -10°C to +70°C.
Temperature Coefficient of Resistance (α <sub>r</sub> )	The Temperature coefficient is calculated from the linear range at the steepest portion of resistance(Tb-Tp) as illustrated in Fig.1. $\alpha_r = (\ln R_p - \ln R_c) \cdot 100 / (T_p - T_c) (\% / ^\circ C)$
Dissipation Factor(δ)	The ratio power dissipation change to temperature change of PTC thermistor (in mW / °C). $\delta = P / (T - T_r)$ Where P = dissipation power T = thermistor body temperature Tr = room temperature

**電阻-溫度特性**

電阻-溫度特性是指在規定電壓下，熱敏電阻的零功率電阻與電阻體溫度之間的關係(圖1)零功率電阻測量應在超級恆溫槽中進行，通常使用脈沖電壓，對脈衝電源均要求輸出阻抗低，輸出幅值穩定。測量電流引起的PTC熱敏電阻器溫升，應控制在可以忽略的範圍。圖2為不同電壓及頻率下的電阻-溫度特性曲線，從圖中可以看出，同一溫度下的電阻值，隨測試電壓及電壓頻率的增加而明顯下降。

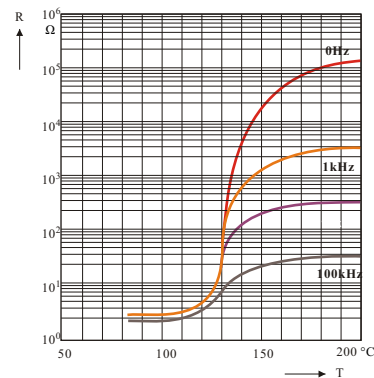
**Resistance-temperature Characteristic**

Resistance-temperature characteristic means the relation of zero-power resistance of PTC thermistor to PTC thermistor body temperature under a specified voltage as shown in Fig.1. Zero-power resistance should be measured in super slot by using pulse power supply with low output impedance and stable output amplitude. Temperature rise of PTC thermistor induced by measuring current should be so limited that it could be ignored. Shown in Fig.2 are resistance-temperature characteristic curves for various voltages and frequencies. As shown in Fig.2, at the same temperature resistance value decreases dramatically as measuring voltage and voltage frequency increases.



不同電壓下的電阻-溫度特性曲線  
Resistance-temperature curve for various voltages

**Fig.1**



不同頻率下的電阻-溫度特性曲線  
Resistance-temperature curve for various frequencies

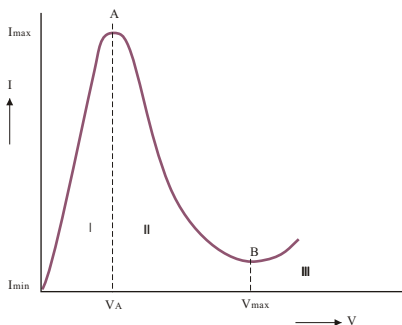
**Fig.2**

**電壓-電流特性**

電壓-電流特性一般是指在25°C,的靜止空氣中，加在熱敏電阻器兩引出端的電壓與達到熱平衡穩定條件下的電流之間的關係，即PTC熱敏電阻器在實際工作狀態下的電壓電流特性(圖3)。I為不動作區或線性區，II為躍變區，III為擊穿區。測量電壓-電流特性曲線時，應盡量保持環境溫度不變，且電流值應在電阻體溫度平衡後讀取，其測量電路如圖5示。圖4為同一PTC熱敏電阻在不同溫度下的電壓-電流特性曲線。

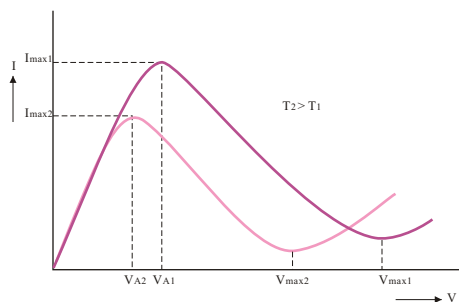
**Voltage-Current characteristic**

Voltage-Current characteristic normally means the relation of voltage across PTC thermistor to current under stable condition with thermal balance in static air of 25°C, that is, voltage-current characteristic of PTC thermistor in actual operating state as shown in Fig.3. I is non-operating area or linear area, II is jumping area and III is breakdown area. When measuring the characteristic, ambient temperature should be kept constant as far as possible and current readings should be taken after thermistor body temperature is balanced, and measuring circuit is shown in Fig.5. Shown in Fig.4 are voltage-current characteristic curves for various ambient temperatures of PTC thermistor.



PTC 熱敏電阻器-電壓-電流特性曲線  
Voltage-current characteristic curve

**Fig.3**



不同溫度下的電壓-電流特性曲線  
Voltage-current characteristic curve for various ambient temperatures

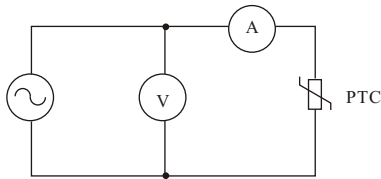
**Fig.4**

**電流-時間特性**

電流-時間特性是指熱敏電阻器在施加電壓過程中，電流隨時間變化的特性(圖7) 電流-時間特性通常採用記憶示波器進行測量，基本電路如圖6。

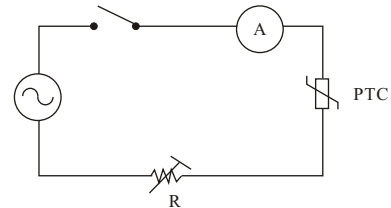
**Current-time Characteristic**

Current-time characteristic means current change characteristic vs. time (as shown in Fig.7). It is normally measured with memory oscilloscope by using measuring circuit as shown in Fig.6.



電壓-電流特性測量原理  
Measuring circuit of voltage-current characteristic

**Fig.5**

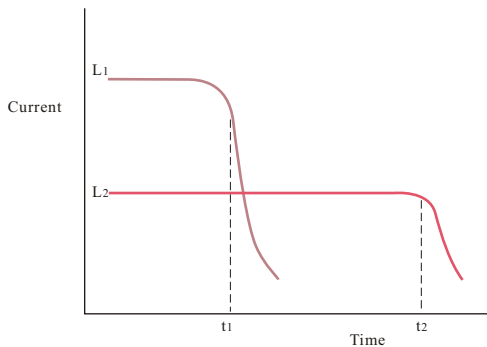


電流-時間特性測量原理  
Measuring circuit of current-time characteristic

**Fig.6**

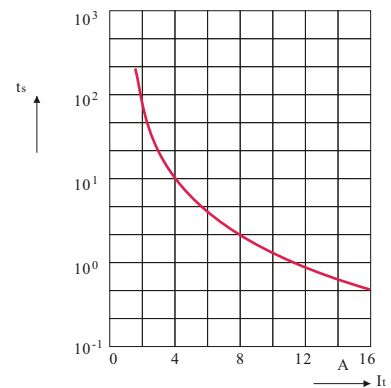
圖8為動作電流-動作時間關係曲線，從圖中可以看出，PTC熱敏電阻器的動作時間隨起始電流的增大而急劇下降。此外，動作時間還與電阻溫度系數、外加電壓、熱敏電阻的熱容量有關。

Shown in Fig.8 is relation curve of operating current to operating time. Operating time of PTC thermistor decreases dramatically as initial current increases. Furthermore the operating time is in relation to resistance temperature coefficient, applied voltage and heat capacity of PTC thermistor.



電流-時間特性  
Current-time characteristic curve of PTC thermistor

**Fig.7**



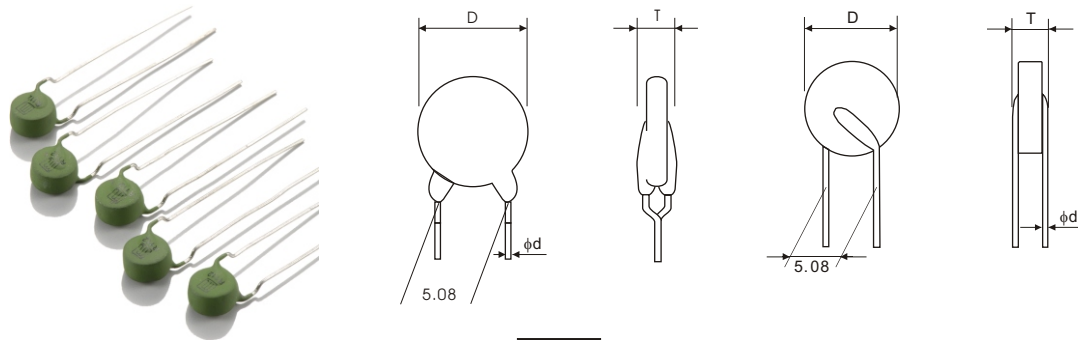
動作電流-動作時間關係曲線  
Operating current vs. Operating time

**Fig.8**

**JCP1 Series**

用於通用線路過載保護  
for Overload Protection Of General Circuit

Unit:mm



**Fig.1**

**概述** ■ JCP1系列PTC熱敏電阻器是一種對異常溫度及異常電流自動保護、自動恢復的保護元件，俗稱“自復保險絲” “萬次保險絲”。

**DESCRIPTION** ■ JCP1 series of PTC thermistor are protective components which automatically protect and restore from abnormal temperature and current, also called "auto restore fuse" and "ten-thousand-time fuse".

**應用原理** ■ 其原理如圖2所示:當電路處於正常狀態時，通過PTC的電流小於額定電流，PTC處於常態，阻值很小，不會影響被保護電路的正常工作。當電路出現故障，電流大大超過額定電流時，PTC陡然發熱，呈高阻態，使電路處於相對“斷開”狀態，從而保護電路不受破壞。當故障排除後，PTC亦自動回復至低阻態，電路恢復正常工作。

選用PTC熱敏電阻器作為過載保護元件，首先確認線路最大正常工作電流（就是PTC熱敏電阻器的不動作電流）和PTC熱敏電阻器安裝位置（正常工作時）最高環境溫度、其次是保護電流（就是PTC熱敏電阻器的動作電流）、最大工作電壓、額定零功率電阻，同時也應考慮元件的外形尺寸等因素。

如圖3所示:使用環境溫度，不動作電流及動作電流三者之間的關係。動作電流通常是不動作電流的2-3倍，隨著工作溫度的上升，不動作電流和動作電流都會相應減小。

**OPERATING PRINCIPLE** ■ The operating principle is as indicated in the following figures. When a circuit is in the normal status, the current through PTC is lower than the rated current and PTC is in the normal state with small resistance value, which will not affect the normal operation of the protected circuit. In case of some trouble in the circuit and the current is greater than the rated current, the PTC will become hot quickly and present a high resistance state, which sets the circuit relatively "off" to protect the circuit from damage. After the trouble is removed, PTC will automatically restore its low resistance state and the circuit will resume normal operation.

In selecting PTC thermistor as overload protection component, first, make sure of the maximum operating current in the circuit ( non-trip current of PTC thermistor ), and maximum ambient temperature in installation position, second, protective current ( trip current of PTC thermistor ), maximum operating voltage, rated zero power resistance, and also the outlook and dimension should be also taken into consideration.

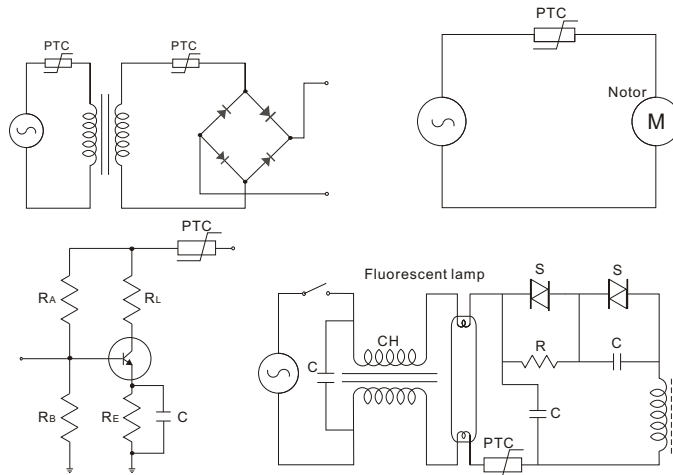
Relation between operating temperature, operating current and non-operating current is as shown in Fig.3. Operating current is normally 2~3 times non-operating current, and both of the currents will be reduced as operating temperature increases.

**產品應用**

■ 用於通用線路過流、過載保護、例如變壓器、微電機、開關電源、充電器、適配器、儀器、儀表、電子線圈、控制面板、家用電器、空調、微波爐等的過流、過載、短路保護。

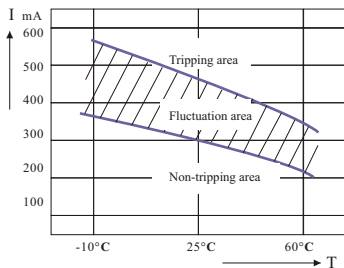
**APPLICATION**

■ Applied in the overload overcurrent and short circuit protection of general circuit, e.g. transformers, micro motor, switches, switch power, battery charger, adaptor, meter, apparatus, electronic coils, control panels, home appliance, air conditioner, microwave oven, automotive electron, etc.



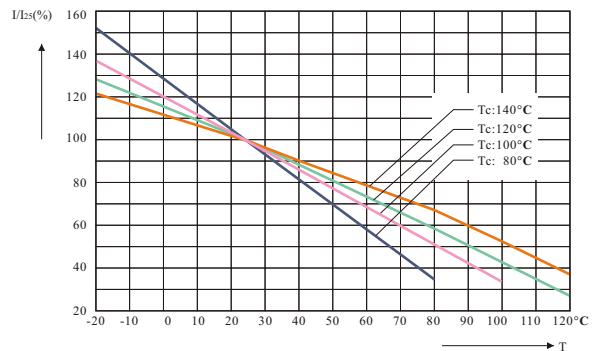
應用實例  
Examples of application

Fig.2



電流-環境溫度的關係曲線  
Current versus ambient temperature

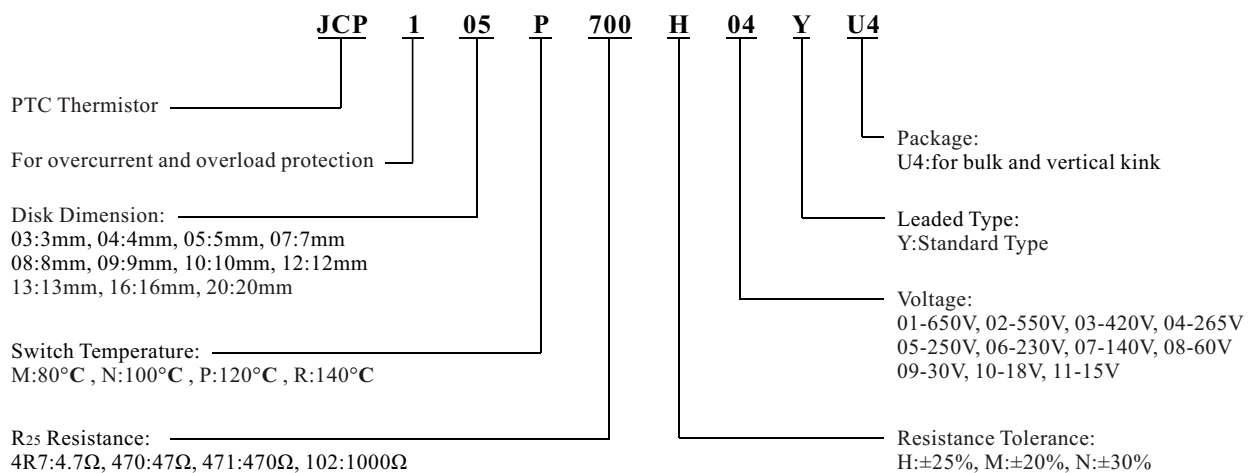
Fig.3



不同居里溫度產品不動作電流與環境溫度的依賴關係  
of different Curie temperature product  
non-trip current versus ambient temperature

Fig.4

**Ordering Code**



**SPEC. Table**  
V<sub>max</sub>=250/265V

Part Number	Resistance @25°C R <sub>25</sub> (Ω) ±25% or ±20%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Max. operating voltage V <sub>max</sub> (V)	Max. current I <sub>max</sub> (A)	Switch Temperature T <sub>c</sub> (°C)	Dimensions (mm)		
		@ 25°C	@ 60°C					D <sub>max</sub>	T <sub>max</sub>	Φd
JCP120P2R6H04YU4	2.6	650	500	1300	265	4.3	120(P)	22.0	5.0	0.6
JCP120P3R7H04YU4	3.7	530	430	1050	265	4.3	120(P)	22.0	5.0	0.6
JCP120P5R0H04YU4	5.0	480	370	970	265	4.3	120(P)	22.0	5.0	0.6
JCP116P5R0H04YU4	5.0	420	320	840	265	3.1	120(P)	17.5	5.0	0.6
JCP116P6R0H04YU4	6.0	390	300	780	265	3.1	120(P)	17.5	5.0	0.6
JCP116P7R0H04YU4	7.0	350	280	700	265	3.1	120(P)	17.5	5.0	0.6
JCP113P100H04YU4	10	280	200	600	265	1.8	120(P)	14.0	5.0	0.6
JCP113P120H04YU4	12	270	180	540	265	1.8	120(P)	14.0	5.0	0.6
JCP113P150H04YU4	15	240	160	500	265	1.8	120(P)	14.0	5.0	0.6
JCP113P500H04YU4	50	130	100	200	265	1.8	120(P)	14.0	5.0	0.6
JCP112P7R0H04YU4	7.0	330	270	660	265	1.8	120(P)	14.0	5.5	0.6
JCP112P7R0H04YU4	7.0	320	250	640	265	1.8	120(P)	14.0	5.5	0.6
JCP112P8R0H04YU4	8.0	300	230	600	265	1.8	120(P)	14.0	5.0	0.6
JCP112P9R0H04YU4	9.0	290	220	580	265	1.8	120(P)	14.0	5.0	0.6
JCP112P100H04YU4	10	250	200	500	265	1.8	120(P)	14.0	5.0	0.6
JCP112P120H04YU4	12	240	180	480	265	1.8	120(P)	14.0	5.0	0.6
JCP112P150H04YU4	15	200	160	400	265	1.8	120(P)	14.0	5.0	0.6
JCP112P270M04YU4	27	120	90	350	270	1.8	120(P)	13.0	5.0	0.6
JCP110P120H04YU4	12	210	160	420	265	1.2	120(P)	11.0	5.0	0.6
JCP110P150H04YU4	15	180	140	350	265	1.2	120(P)	11.0	5.0	0.6
JCP110P180H04YU4	18	170	125	340	265	1.2	120(P)	11.0	5.0	0.6
JCP110P390H04YU4	39	130	100	250	265	1.2	120(P)	11.0	5.0	0.6
JCP108P150H05YU4	15	150	120	300	250	0.8	120(P)	9.0	5.0	0.6
JCP108P220H05YU4	22	135	110	270	250	0.8	120(P)	9.0	5.0	0.6
JCP108P250H04YU4	25	130	100	250	265	0.8	120(P)	9.0	5.0	0.6
JCP108P350H04YU4	35	115	90	225	265	0.8	120(P)	9.0	5.0	0.6
JCP108P330M04YU4	33	110	90	240	270	0.8	120(P)	9.0	5.0	0.6
JCP108P390M04YU4	39	105	70	200	270	0.8	120(P)	9.0	5.0	0.6
JCP108P450H04YU4	45	105	80	200	265	0.8	120(P)	9.0	5.0	0.6
JCP108P550H04YU4	55	90	70	180	265	0.8	120(P)	9.0	5.0	0.6
JCP108P700H04YU4	70	75	60	150	265	0.8	120(P)	9.0	5.0	0.6
JCP107P820H04YU4	82	70	50	140	265	0.6	120(P)	8.0	5.0	0.6
JCP107P560H04YU4	56	90	60	175	265	0.6	120(P)	8.0	5.0	0.6
JCP106P330H05YU4	33	110	85	200	250	0.4	120(P)	7.0	4.5	0.6
JCP105P700H04YU4	70	65	50	130	265	0.3	120(P)	6.5	5.0	0.6
JCP105P850H04YU4	85	60	45	120	265	0.6	120(P)	6.5	5.0	0.6
JCP105P121H04YU4	120	45	35	90	265	0.3	120(P)	6.5	5.0	0.6
JCP105P181H04YU4	180	40	30	80	265	0.5	120(P)	6.5	5.0	0.6
JCP104P700H05YU4	70	50	40	100	250	0.2	120(P)	5.5	5.0	0.6
JCP104P121H04YU4	120	40	30	80	265	0.2	120(P)	5.5	5.0	0.6
JCP103P151H05YU4	150	40	30	75	250	0.2	120(P)	4.5	5.0	0.5
JCP103P221H04YU4	220	30	24	60	265	0.2	120(P)	4.5	5.0	0.5
JCP112N120H04YU4	12	200	140	400	265	1.8	100(N)	13.0	5.0	0.6
JCP112N100H04YU4	10	220	180	440	265	1.8	100(N)	13.0	5.0	0.6
JCP112N8R0H04YU4	8.0	250	200	500	265	1.8	100(N)	13.0	5.0	0.6
JCP110N120H05YU4	12	180	130	350	250	1.2	100(N)	11.0	5.0	0.6
JCP110N120H05YU4	12	210	160	420	250	1.2	100(N)	12.0	5.0	0.6
JCP110N150H04YU4	15	175	120	320	265	1.2	100(N)	11.0	5.0	0.6
JCP110N180H04YU4	18	145	110	320	265	1.2	100(N)	11.0	5.0	0.6
JCP110N220H05YU4	22	140	100	260	250	1.2	100(N)	11.0	5.0	0.6
JCP110N270H04YU4	27	120	90	240	265	1.2	100(N)	11.0	5.0	0.6
JCP108N250H04YU4	25	110	80	230	265	1.0	100(N)	9.0	5.0	0.6
JCP108N350H04YU4	35	95	70	190	265	1.0	100(N)	9.0	5.0	0.6
JCP108N450H04YU4	45	85	55	170	265	1.0	100(N)	9.0	5.0	0.6

Vmax=250/265V

Part Number	Resistance @25°C R25(Ω) ±25%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Max. operating voltage Vmax (V)	Max. current Imax (A)	Switch Temperature Tc (°C)	Dimensions (mm)		
		@ 25°C	@ 60°C					Dmax	Tmax	Φd
JCP107N220H05YU4	22	120	80	210	250	0.5	100(N)	8.0	5.0	0.5
JCP107N350H04YU4	35	95	70	190	265	0.5	100(N)	8.0	5.0	0.5
JCP107N500H04YU4	50	85	60	170	265	0.5	100(N)	8.0	5.0	0.5
JCP107N600H04YU4	60	80	50	160	265	0.5	100(N)	8.0	5.0	0.5
JCP105N820H04YU4	82	55	40	105	265	0.3	100(N)	6.5	5.0	0.6
JCP105N101H04YU4	100	50	35	100	265	0.3	100(N)	6.5	5.0	0.6
JCP105N121H04YU4	120	45	32	90	265	0.3	100(N)	6.5	5.0	0.6
JCP105N151H04YU4	150	38	30	80	265	0.3	100(N)	6.5	5.0	0.6
JCP105N201H04YU4	200	30	25	65	265	0.3	100(N)	6.5	5.0	0.6
JCP105N301H04YU4	300	27	20	55	265	0.3	100(N)	6.5	5.0	0.6
JCP105N601H04YU4	600	20	12	40	265	0.2	100(N)	6.5	5.0	0.6
JCP104N151H04YU4	150	36	28	80	265	0.3	100(N)	5.5	5.0	0.6
JCP103N101H05YU4	100	40	30	80	250	0.2	100(N)	4.5	5.0	0.5
JCP103N700H05YU4	70	45	35	90	250	0.1	100(N)	4.5	5.0	0.5
JCP108M120H05YU4	12	120	70	220	250	0.8	80(M)	9.0	5.0	0.6
JCP108M150H04YU4	15	100	60	200	250	0.8	80(M)	9.0	5.0	0.6
JCP108M250H04YU4	25	90	50	180	265	0.8	80(M)	9.0	5.0	0.6
JCP108M350H04YU4	35	80	45	160	265	0.8	80(M)	9.0	5.0	0.6
JCP108M400H04YU4	40	75	40	150	265	0.8	80(M)	9.0	5.0	0.6
JCP108M500H04YU4	50	60	35	120	265	0.8	80(M)	9.0	5.0	0.6
JCP107M101H04YU4	100	40	25	80	265	0.6	80(M)	8.0	5.0	0.6
JCP105M700H05YU4	70	50	30	100	250	0.3	80(M)	6.5	5.0	0.6
JCP105M121H04YU4	120	30	20	60	265	0.3	80(M)	6.5	5.0	0.6
JCP103M101H05YU4	100	25	18	55	250	0.2	80(M)	4.5	5.0	0.5

Vmax=140V

Part Number	Resistance @25°C R25(Ω) ±25%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Max. operating voltage Vmax (V)	Max. current Imax (A)	Switch Temperature Tc (°C)	Dimensions (mm)		
		@ 25°C	@ 60°C					Dmax	Tmax	Φd
JCP120P1R5H07YU4	1.5	850	680	1700	140	4.3	120(P)	22.0	5.0	0.6
JCP120P2R6H07YU4	2.6	650	500	1300	140	4.3	120(P)	22.0	5.0	0.6
JCP116P4R7H07YU4	4.7	425	330	850	140	3.1	120(P)	17.5	5.0	0.6
JCP116P5R6H07YU4	5.6	400	310	800	140	3.1	120(P)	17.5	5.0	0.6
JCP113P6R8H07YU4	6.8	325	250	650	140	1.8	120(P)	14.0	5.0	0.6
JCP112P5R6H07YU4	5.6	325	250	650	140	1.8	120(P)	13.5	5.0	0.6
JCP112P6R8H07YU4	6.8	300	230	600	140	1.8	120(P)	13.5	5.0	0.6
JCP110P6R8H07YU4	6.8	275	200	550	140	1.2	120(P)	11.0	5.0	0.6
JCP110P100H07YU4	10.0	225	170	450	140	1.2	120(P)	11.0	5.0	0.6
JCP108P150H07YU4	15.0	150	120	300	140	0.8	120(P)	9.0	5.0	0.6
JCP108P220H07YU4	22.0	135	110	270	140	0.8	120(P)	9.0	5.0	0.6
JCP106P250H07YU4	25.0	125	90	250	140	0.5	120(P)	7.0	5.0	0.6
JCP105P330H07YU4	33	90	70	175	140	0.3	120(P)	6.5	5.0	0.6
JCP116R2R1H07YU4	2.1	710	570	1420	140	3.1	140(R)	17.5	5.0	0.6
JCP113R3R8H07YU4	3.8	500	400	1000	140	1.8	140(R)	14.0	5.0	0.6
JCP113R3R5H07YU4	3.5	530	420	1100	140	1.8	140(R)	14.0	5.0	0.6
JCP110R6R7H07YU4	6.7	300	230	600	140	1.2	140(R)	11.0	5.0	0.6
JCP110R100H07YU4	10.0	250	200	500	140	1.2	140(R)	11.0	5.0	0.6
JCP110R150H07YU4	15.0	210	170	420	140	1.2	140(R)	11.0	5.0	0.6
JCP108R120H07YU4	12.0	200	160	400	140	0.6	140(R)	9.0	5.0	0.6

Vmax=30/60V

Part Number	Resistance @25°C R25(Ω) ±25%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Max. operating voltage Vmax (V)	Max. current Imax (A)	Switch Temperature Tc (°C)	Dimensions (mm)			
		@ 25°C	@ 60°C					Dmax	Tmax	Φd	
JCP110R1R8H09YU4	1.8	650	550	1300	30	4.3	150(R)	11.0	4.0	0.6	
JCP108R1R8H09YU4	1.8	600	500	1100	30	3.0		9.0	4.0	0.6	
JCP112P0R7H09YU4	0.7	950	750	1900	30	5.5		13.5	4.0	0.6	
JCP112P0R8H09YU4	0.8	900	720	1800	30	5.5	120(P)	13.5	4.0	0.6	
JCP112P1R0H09YU4	1.0	800	620	1600	30	5.5		13.5	4.0	0.6	
JCP112P1R2H09YU4	1.2	750	600	1500	30	5.5		13.5	4.0	0.6	
JCP112P1R8H09YU4	1.8	500	430	1000	30	5.5		13.5	4.0	0.6	
JCP110P2R7H09YU4	2.7	450	320	900	30	4.3		11.0	4.0	0.6	
JCP110P5R0H09YU4	5.0	350	260	700	30	4.3		11.0	4.0	0.6	
JCP108P1R8H09YU4	1.8	550	450	1000	30	3.0		9.0	4.0	0.6	
JCP108P4R2H09YU4	4.2	280	230	560	30	3.0		9.0	4.0	0.6	
JCP105P100H09YU4	10.0	170	140	340	30	1.0		6.5	4.0	0.6	
JCP108M1R5H09YU4	1.5	350	210	700	30	3.0		80(M)	9.0	4.0	0.6
JCP108M1R8H09YU4	1.8	300	160	600	30	3.0			9.0	4.0	0.6
JCP116P2R3H08YU4	2.3	550	450	1100	60	8.0	120(P)	17.5	4.0	0.6	
JCP112P3R7H08YU4	3.7	380	320	750	60	5.5		13.5	4.0	0.6	
JCP110P5R6H08YU4	5.6	300	250	600	60	4.3		11.0	4.0	0.6	
JCP108P9R4H08YU4	9.4	180	150	360	60	3.0		9.0	4.0	0.6	
JCP105P250H08YU4	25.0	100	85	200	60	1.0		6.5	4.0	0.6	
JCP103P550H08YU4	55.0	60	50	120	60	0.7		4.5	4.0	0.5	
JCP108M4R7H08YU4	4.7	180	120	360	60	3.0		80(M)	9.0	4.0	0.6

Vmax=15/18V

Part Number	Resistance @25°C R25(Ω) ±25%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Max. operating voltage Vmax (V)	Max. current Imax (A)	Switch Temperature Tc (°C)	Dimensions (mm)		
		@ 25°C	@ 60°C					Dmax	Tmax	Φd
JCP110R1R2H11YU4	1.2	850	700	1550	15	4.3	150(R)	11.0	4.0	0.6
JCP108R1R0H11YU4	1.0	850	700	1500	15	3.0		9.0	4.0	0.6
JCP108R1R8H11YU4	1.8	600	500	1100	15	3.0		9.0	4.0	0.6
JCP107R1R0H11YU4	1.0	750	600	1350	15	2.5		8.0	4.0	0.6
JCP107R1R2H11YU4	1.2	650	550	1200	15	2.5		8.0	4.0	0.6
JCP105R4R6H11YU4	4.6	350	300	680	15	1.0		6.5	4.0	0.6
JCP103R130H11YU4	13.0	180	150	350	15	0.7		4.5	4.0	0.5
JCP108P1R8H11YU4	1.8	550	450	1000	15	3.0		9.0	4.0	0.6
JCP112R0R8H10YU4	0.8	1000	850	2000	18	5.5	150(R)	13.5	4.0	0.6
JCP110P1R2H10YU4	1.2	700	600	1400	18	4.3	120(P)	11.0	4.0	0.6
JCP108P1R0H10YU4	1.0	650	550	1200	18	3.0		9.0	4.0	0.6
JCP107P1R8H10YU4	1.8	500	400	900	18	3.0		8.0	4.0	0.6
JCP105P4R6H10YU4	4.6	300	250	580	18	1.0		6.5	4.0	0.6
JCP103P130H10YU4	13.0	145	120	280	18	0.7		4.5	4.0	0.5
JCP108M1R0H10YU4	1.0	450	300	850	18	3.0		80(M)	9.0	4.0
JCP108M1R5H10YU4	1.5	350	210	700	18	3.0	9.0		4.0	0.6
JCP108M1R8H10YU4	1.8	300	160	600	18	3.0	9.0		4.0	0.6

Opvercurrent and overload protection for meter and instrument  
 Vmax=265V/420V/550V

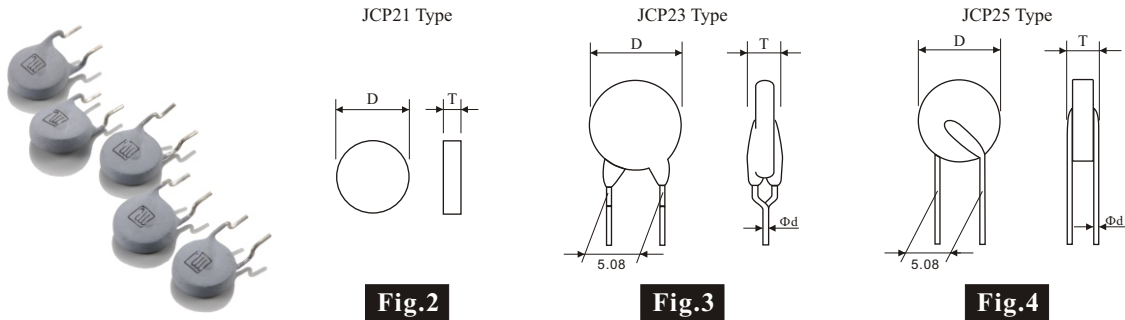
Part Number	Resistance @25°C R25(Ω) ±25% or ±30%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Max. operating voltage Vmax (V)	Max. current Imax (A)	Switch Temperature Tc (°C)	Dimensions (mm)		
		@ 25°C	@ 60°C					Dmax	Tmax	Φd
JCP103M151H04YU4	150	22	15	45	265	0.2	80(M)	4.5	5.0	0.5
JCP103M102H04YU4	1000	8	5	15	265	0.1		4.5	5.0	0.5
JCP103M152H04YU4	1500	7	4	10	265	0.1		4.5	5.0	0.5
JCP104M251H04YU4	250	20	10	40	265	0.3		5.5	5.0	0.6
JCP104M351H04YU4	350	15	8	30	265	0.3		5.5	5.0	0.6
JCP105M450H04YU4	45	40	25	80	265	0.8		6.5	5.0	0.6
JCP105M251H04YU4	250	25	15	45	265	0.3		6.5	5.0	0.6
JCP105M601H03YU4	600	15	7	30	420	0.2		6.5	5.0	0.6
JCP105M102H03YU4	1000	10	6	25	420	0.1		6.5	5.0	0.6
JCP105M152H03YU4	1500	8	5	18	420	0.1		6.5	5.0	0.6
JCP105M232N03YU4	2300	7	3	14	420	0.1		6.5	5.0	0.6
JCP105M312N03YU4	3100	4	2	12	420	0.1		6.5	5.0	0.6
JCP107M200H04YU4	20	80	50	170	265	0.6		8.0	5.0	0.6
JCP107M250H04YU4	25	70	40	150	265	0.6		8.0	5.0	0.6
JCP107M101H04YU4	100	40	25	80	265	0.6		8.0	5.0	0.6
JCP107M151H04YU4	150	35	20	70	265	0.6		8.0	5.0	0.6
JCP107M201H04YU4	200	25	15	50	265	0.5		8.0	5.0	0.6
JCP107M112H02YU4	1100	15	10	30	550	0.5		8.0	5.0	0.6
JCP109M450N04YU4	45	60	30	120	265	1.0		10.0	5.0	0.6
JCP109M500H03YU4	50	75	45	150	420	1.0		10.0	5.0	0.6
JCP109M600H03YU4	60	65	40	130	420	1.0		10.0	5.0	0.6
JCP109M700H03YU4	70	60	35	110	420	1.0		10.0	5.0	0.6
JCP109M151H04YU4	150	45	25	90	265	1.0		10.0	5.0	0.6
JCP110M250H04YU4	25	50	40	120	265	1.5		11.0	5.0	0.6
JCP103N401N04YU4	400	20	12	40	265	0.2	100(N)	4.5	5.0	0.5
JCP103N301H04YU4	300	25	15	50	265	0.2		4.5	5.0	0.5
JCP103N151H04YU4	150	30	25	60	265	0.2		4.5	5.0	0.5
JCP105N601H03YU4	600	20	12	40	420	0.2		6.5	5.0	0.6
JCP105N102H03YU4	1000	15	10	30	420	0.2		6.5	5.0	0.6
JCP105N152H02YU4	1500	12	7	21	550	0.1		6.5	5.0	0.6
JCP107N151H04YU4	150	35	25	80	265	0.2		8.0	5.0	0.6
JCP105P390H05YU4	39	80	65	160	250	0.2		120(P)	6.5	5.0
JCP105P700H04YU4	70	65	50	130	265	0.3	6.5		5.0	0.6
JCP105P601N03YU4	600	20	12	40	420	0.2	6.5		5.0	0.6
JCP105P751H03YU4	750	18	10	30	420	0.2	6.5		5.0	0.6
JCP105P152H02YU4	1500	15	9	24	550	0.1	6.5		5.0	0.6
JCP107P501H03YU4	500	20	15	50	265	0.6	8.0		5.0	0.6
JCP108P700N03YU4	70	65	50	125	420	1.4	9.0		5.0	0.6
JCP108P121N03YU4	120	49	40	98	420	1.4	9.0		5.0	0.6
JCP108P151N03YU4	150	43	35	86	420	1.4	9.0		5.0	0.6
JCP108P501N03YU4	500	24	19	48	420	1.4	9.0		6.0	0.6
JCP112P200H03YU4	20	160	120	350	420	1.5	14.0		5.0	0.6
JCP113P180H04YU4	18	220	140	450	265	1.8	14.0		5.0	0.6

Note: 1.R25 resistance tolerance can be selected upon customer's requirement.  
 2.Leaded form can be selected.  
 3.Packing can be made upon customer's requirement.

**JCP2 Series**

用於通訊設備過載保護  
for Overload Protection In Telecom

Unit:mm



**概述**

■ 隨著通訊設備技術的不斷進步，對交換和用戶設備的保護要求也大大提高了。用PTC熱敏電阻器保護電話線路，主要針對以下原因引起的過電流現象：

- 直接雷擊或者鄰近電話線路設備的雷擊引起的浪涌電流；
- 鄰近的電力線路或者鐵路系統故障時引起的交流感應電壓；
- 電話線路與電力線路搭接。

通常每一條電話線都串聯一個PTC熱敏電阻，參見圖1，即使有初級保護(通常是一個氣體放電管)，PTC熱敏電阻也必須滿足嚴格的要求。由於會出現高達2千伏的電壓脈沖，為了耐受短期的感應電壓，PTC熱敏電阻必須有高耐壓能力。如果線路中有初級保護，PTC熱敏電阻耐壓220V to 300V就足夠了，線路中沒有初級保護，PTC熱敏電阻耐壓必須在600V以上。久尹公司能生產一系列滿足上述要求的PTC熱敏電阻器。

**DESCRIPTION**

■ Advanced developments in telephony equipment in recent years have radically altered the protection requirements for both exchange and subscriber equipment. The PTC thermistor must protect the telephone line circuit against overcurrent, which may be caused by the following examples:

- Surges due to lightning strikes on or near to the line plant.
- Short-term induction of alternating voltage from adjacent power lines or railway systems, usually caused when these lines or systems occur faults.
- Direct contact between telephone lines and power lines.

To provide good protection under such conditions a PTC thermistor is connected in series with each line, usually as secondary protection; see Fig.1. However, even with primary line protection (usually a gas discharge tube), the PTC thermistor must fulfill severe requirements.

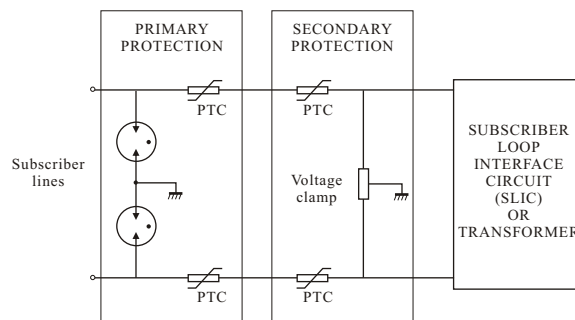
Surge pulses of up to 2 KV can occur and in order to withstand short-term power induction the PTC thermistor must withstand high voltages. If the line has primary protection, a 220V to 300V PTC thermistor is adequate. Without primary protection, 600V PTC device is necessary. JOYIN manufactures a series of PTC thermistor fulfilling both requirements.

**產品應用**

■ 用於程控交換機、總配線架、保安單元、電話機及用戶終端設備的過流保護。

**APPLICATION**

■ They provide reversible, self-resetting protection against overcurrents in central offices, PBXs, remote xDSL exchanges, security unit and outdoor telephone.



應用實例  
Examples of application

Fig.1

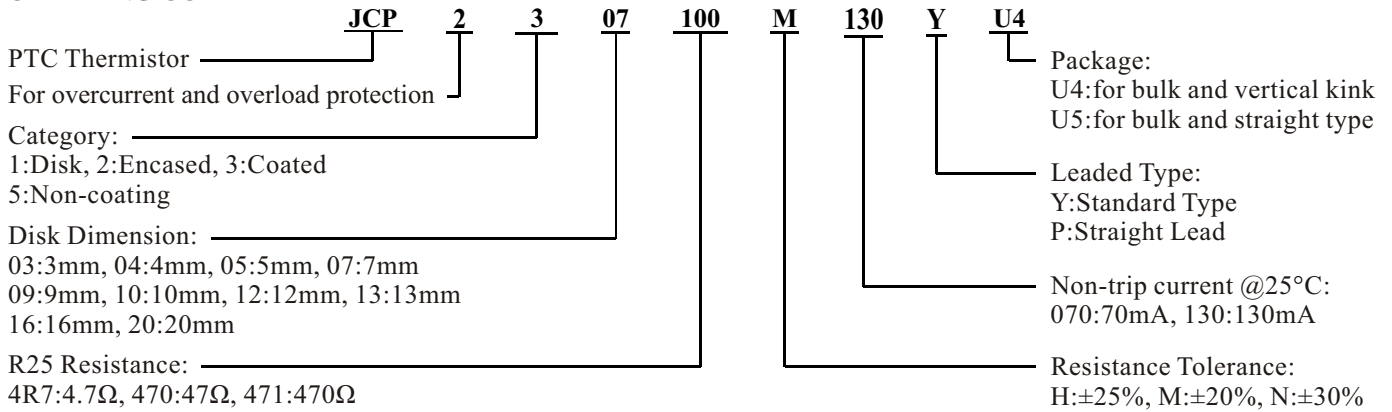
**主要性能**

- 額定電阻值(Rn) 環境溫度範圍:  $25 \pm 2^{\circ}\text{C}$  , 在規定的允許偏差內。
- 不動作特性 環境溫度範圍:  $40 \pm 2^{\circ}\text{C}$  , 在靜止空氣中放置30min, 電源電壓 $60\text{V}_{\text{DC}}$  , 通以最大不動作電流, 持續時間60min, 要求在測試過程中自身電阻變化率  $(\text{R}-\text{Rn})/\text{Rn} \leq 50\%$  。
- 過流動作特性 PTC 熱敏電阻器的動作電流與動作時間之間的關係。
- 耐工頻電壓能力 電源電壓 $230\text{V}_{\text{rms}}$  , / $250\text{V}_{\text{rms}}$  , 通以最大電流, 通電時間30min, 恢復4小時後復測額定零功率電阻值, 要求  $\Delta\text{R}/\text{Rn} \leq 20\%$  。
- 耐工頻電流能力 電源電壓 $220\text{V}_{\text{rms}}$  , 通以最大電流, 通電時間60S, 斷電時間600S, 循環次數: 20次, 恢復4小時後復測額定零功率電阻值, 要求  $\Delta\text{R}/\text{Rn} \leq 20\%$  。
- 耐沖擊電流能力 短路電流波形:  $10/1000\mu\text{s}$  , 最小開路電壓:  $1.0\text{KV}$  , 短路電流峰值:  $25\text{A}$  , 間隔時間3min, 循環次數30次, 恢復4小時後復測額定零功率電阻值, 要求  $\Delta\text{R}/\text{Rn} \leq 20\%$  。
- 耐感應電壓能力 (耐電壓600V以上的需測試此項目) 電源電壓 $650\text{V}_{\text{rms}}$  , 起始電流 $1.1\text{A}$  , 通電時間2S, 斷電時間600S, 循環次數: 10次, 恢復4小時後復測額定零功率電阻值, 要求  $\Delta\text{R}/\text{Rn} \leq 20\%$  。
- 失效模式 I . 電源電壓 $250\text{V}_{\text{rms}}$  , 起始電流 $10\text{A}$  。  
II . 電源電壓 $600\text{V}_{\text{rms}}$  , 起始電流 $15\text{A}$  。  
III . 電源電壓 $650\text{V}_{\text{rms}}$  , 起始電流 $10\text{A}$  。  
通電時間30min。允許開路或高阻態; 不允許出現低阻態或起明火。
- 恢復時間 恢復到兩倍額定電阻值(Rn) 的時間。 要求小於60S。

**ELECTRONICS  
FEATURE**

- Resistance at  $25^{\circ}\text{C}$  (Rn) Operating temperature range:  $25 \pm 2^{\circ}\text{C}$  , Within the allowable tolerance.
- Non-operating characteristic Operating temperature range:  $40 \pm 2^{\circ}\text{C}$  , In static air for 30 minutes. Max. Voltage:  $60\text{V}_{\text{DC}}$  . Non-trip current. Energized time: 60min.  $(\text{R}-\text{Rn})/\text{Rn} \leq 50\%$
- Over-current operating characteristic Relation between trip current and trip time of PTC Thermistor.
- Over voltage withstanding Voltage of power supply:  $230\text{V}_{\text{rms}}$  , / $250\text{V}_{\text{rms}}$  , apply Maximum Current, Energized time: 30min. Restore time in room temperature is 4 hours, then test the Rn.  $\Delta\text{R}/\text{Rn} \leq 20\%$  .
- Over current withstanding Max. Voltage of supply:  $220\text{V}_{\text{rms}}$  , apply maximum current. ON 60S, OFF 600S, Cycle: 30 times, Restore time in room temperature is 4 hours, then re-test the Rn.  $\Delta\text{R}/\text{Rn} \leq 20\%$  .
- Surge current withstanding Current waves:  $10/1000\mu\text{s}$  , Min. Opening circuit Voltage  $1.0\text{KV}$  , Peak current:  $25\text{A}$  , Interval: 3min, Cycle: 30 times, Restore time in room temperature is 4 hours, then re-test the Rn.  $\Delta\text{R}/\text{Rn} \leq 20\%$  .
- Induction voltage withstanding (Only for maximum voltage more than 600V) Max. voltage of supply:  $650\text{V}_{\text{rms}}$  , Initial current:  $1.1\text{A}$  ., ON 2S, OFF 600S, Cycle: 10 times, Restore time in room temperature is 4 hours then re-test the Rn.  $\Delta\text{R}/\text{Rn} \leq 20\%$  .
- Fail Model I . Voltage of power supply:  $250\text{V}_{\text{rms}}$  . Initial current:  $10\text{Arms}$  .  
II . Voltage of power supply:  $600\text{V}_{\text{rms}}$  . Initial current:  $15\text{Arms}$  .  
III . Voltage of power supply:  $650\text{V}_{\text{rms}}$  . Initial current:  $10\text{Arms}$  .  
Energized time: 30min. High resistance or open circuit is allowable.  
Low resistance state or firing is not allowed.
- Restore time The necessary time of a PTC to return to twice of  $\text{Rn} \leq 60\text{S}$  .

**ORDERING CODE**



**SPEC. Table**

Overcurrent and overload protection for telecom exchange equipment

Part Number	Resistance @25°C R25(Ω) ±20%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Tripping time at max current t(Sec)	Max. current Imax (A)	Max. Voltage Vmax (V)	Fail model	Dimensions (mm)		
		@ 25°C	@ 60°C						Dmax	Tmax	Φd
JCP2308100M150YU4	10	150	130	280	<0.3	3.0	250	250V/10A	8.0	4.0	0.6
JCP2307100M130YU4	10	130	100	260	<0.2	3.0	250	250V/10A	7.5	4.0	0.6
JCP2309120M130YU4	12	130	100	260	<0.3	2.0	250	250V/10A	9.0	5.0	0.6
JCP2309120M090YU4	12	90	60	160	<0.2	2.0	250	250V/10A	9.0	5.0	0.6
JCP2309200M100YU4	20	100	80	200	<0.2	3.0	250	250V/10A	9.0	4.0	0.6
JCP2309350M090YU4	35	90	75	180	<0.2	3.0	250	250V/5A	9.0	5.0	0.6
JCP2309400M080YU4	40	80	70	160	<0.2	3.0	250	250V/5A	9.0	5.0	0.6
JCP2309500M070YU4	50	70	60	150	<0.2	3.0	250	250V/5A	9.5	5.0	0.6
JCP2309500M075YU4	50	75	60	150	<0.2	3.0	650	650V/10A	9.5	5.0	0.6
JCP2309550M070YU4	55	70	60	150	<0.2	3.0	650	650V/10A	9.5	5.0	0.6
JCP25109R0M160YU4	9	160	130	330	<0.8	3.0	250	250V/10A	10.5	4.5	0.6
JCP2507250M100YU4	25	100	80	220	<0.2	3.0	250	250V/10A	6.6	4.0	0.6
JCP2508250M120YU4	25	120	100	300	<0.4	3.0	250	250V/10A	8.2	4.0	0.6

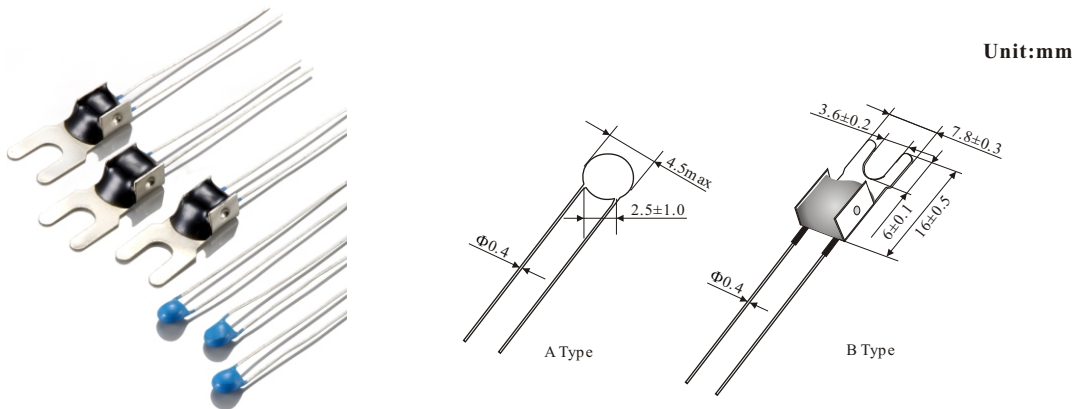
Overload protection for telecom main distribution frame (MDF)

Part Number	Resistance @25°C R25(Ω) ±20%	Non-trip current Int (mA)		Trip current @ 25°C It (mA)	Tripping time at max current t(Sec)	Max. Current Imax (A)	Max. Voltage Vmax (V)	Dimensions (mm)		
		@ 25°C	@ 40°C					Dmax	Tmax	Φd
JCP2107100M150YU4	10	150	130	350	<4.0	3	230	6.6	1.5	/
JCP2105180M110YU4	18	110	90	220	<0.15	3	250	5.5	1.5	/
JCP2105180M125YU4	18	125	110	250	<0.18	3	250	5.5	2.0	/
JCP2106180M130YU4	18	130	110	260	<0.18	3	250	6.2	2.0	/
JCP2107180M135YU4	18	135	110	270	<0.2	3	250	6.6	2.0	/
JCP2106200M085YU4	20	85	70	170	<0.18	3	250	6.2	2.0	/
JCP2105250M055YU4	25	55	45	110	<0.4	2	230	5.3	4.0	0.6
JCP2105250M060YU4	25	60	50	120	<0.4	2	230	5.3	4.0	0.6
JCP2105250M085YU4	2	85	75	170	<0.7	2	230	5.3	4.0	0.6
JCP2505250M055YU4	25	55	45	110	<0.4	1	230	5.3	4.0	0.6
JCP2505250M060YU4	2	60	50	120	<0.4	1	230	5.3	4.0	0.6
JCP2505250M085YU4	2	85	75	170	<0.7	1	230	5.3	4.0	0.6
JCP2507200M145YU4	20	145	100	250	<0.2	3	250	6.6	4.0	0.6
JCP2507100M130YU4	10	130	110	260	<4.0	1	230	6.6	4.0	0.6
JCP2508100M150YU4	10	150	135	300	<7.0	1	230	8.2	4.0	0.6
JCP2505180M125YU4	18	125	110	250	<1.0	1	230	5.5	4.0	0.6
JCP2307180M135YU4	18	135	110	270	<0.2	3	250	7.5	4.5	0.6
JCP2309180M110YU4	18	110	90	220	<0.2	3	250	9.0	4.5	0.6
JCP2309200M100YU4	20	100	80	200	<0.2	3	250	9.0	4.5	0.6
JCP2309250M090YU4	25	90	70	180	<0.2	3	250	9.0	4.5	0.6

Note: 1. R25 resistance tolerance and resistance matching can be selected upon customer's requirement.  
 2. Packing can be selected upon customer's requirement.

**JCP3 Series**

用於過熱保護  
for Thermal Protection



**Fig.1**

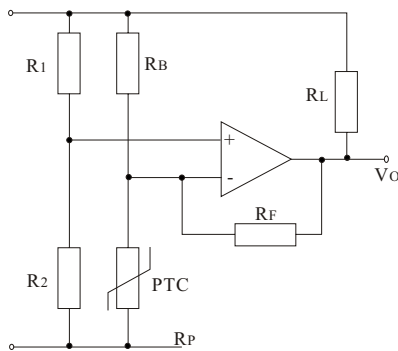
**概述** ■ JCP3 系列用作溫度傳感器，具有尺寸小、熱容量低的優點，能有效地顯示開關電源中功率器件的過熱狀況。

**DESCRIPTION** ■ JCP3 series as a temperature indicator is small in size and little in calorific capacity. It is so useful for indicating any overheating of power transistors and thyristors in the power sources.

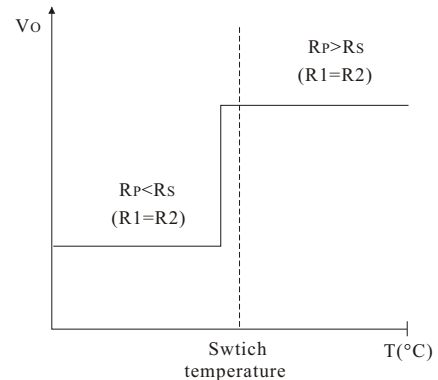
**應用原理** ■ 如圖2，在正常環境溫度下，PTC熱敏電阻器阻值 $R_p$ 小於 $R_s$ ，輸出電壓較低，當環境溫度超過設定溫度時，PTC熱敏電阻器阻值 $R_p$ 快速上升超過 $R_s$ ，從而導致 $V_o$ 增加到足夠高的電壓而動作(圖3)。

**OPERATING PRINCIPLE** ■ As in Fig. 2, in normal ambient temperature, PTC thermistor resistance  $R_p < R_s$ , lower output voltage. When ambient temperature exceeds set temperature, PTC thermistor resistance  $R_p$  increases rapidly, and exceeds  $R_s$ , and leads  $V_o$  increases to high enough voltage, and cause tripping.in Fig.3

應用實例  
Examples of applications

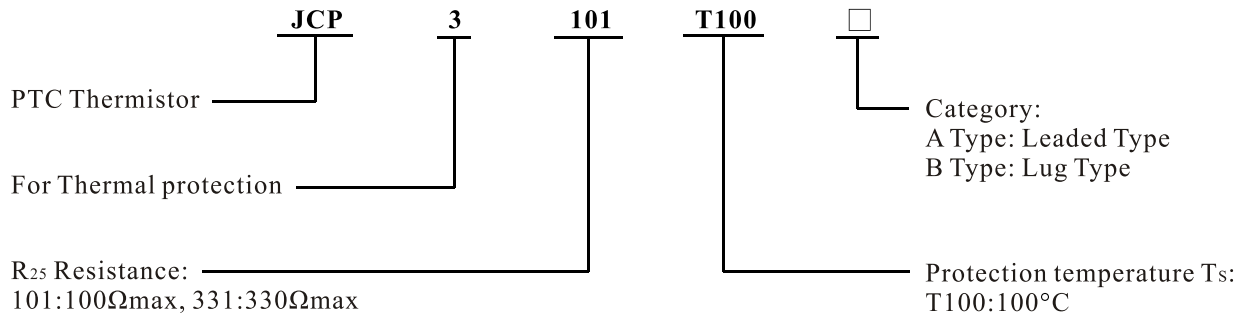


**Fig.2**



**Fig.3**

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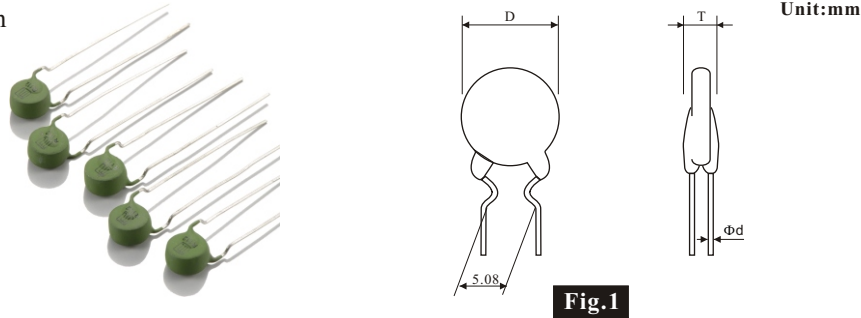
**SPEC. Table**

Part Number	Max.Voltage V <sub>max</sub> (V)	Protection Temperature T <sub>s</sub> (°C)	Resistance @25°C R <sub>25</sub> (Ω)	Resistance @T <sub>s</sub> -15°C R <sub>s-15</sub> (Ω)	Resistance @ Protection Temperature R <sub>s</sub> (Ω)	Max.current I <sub>max</sub> (A)
JCP3101T60 □	30	60	≦ 100	≦ 330	≧ 470	100
JCP3101T70 □	30	70	≦ 100	≦ 330	≧ 470	100
JCP3101T80 □	30	80	≦ 100	≦ 330	≧ 470	100
JCP3101T90 □	30	90	≦ 100	≦ 330	≧ 470	100
JCP3101T100 □	30	100	≦ 100	≦ 330	≧ 470	100
JCP3101T110 □	30	110	≦ 100	≦ 330	≧ 470	100
JCP3101T120 □	30	120	≦ 100	≦ 330	≧ 470	100
JCP3101T130 □	30	130	≦ 100	≦ 330	≧ 470	100
JCP3331T60 □	30	60	≦ 330	≦ 1500	≧ 2200	100
JCP3331T70 □	30	70	≦ 330	≦ 1500	≧ 2200	100
JCP3331T80 □	30	80	≦ 330	≦ 1500	≧ 2200	100
JCP3331T90 □	30	90	≦ 330	≦ 1500	≧ 2200	100
JCP3331T100 □	30	100	≦ 330	≦ 1500	≧ 2200	100
JCP3331T110 □	30	110	≦ 330	≦ 1500	≧ 2200	100
JCP3331T120 □	30	120	≦ 330	≦ 1500	≧ 2200	100
JCP3331T130 □	30	130	≦ 330	≦ 1500	≧ 2200	100

□ = A: Leded Type  
B: Lug Type

**JCP3 Series**

用於節能燈/電子鎮流器延遲啟動  
for Thermal Protection



**概述** ■ JCP4 系列PTC熱敏電阻器應用於各種熒光燈電子鎮流器，電子節能燈中，不必改動線路將產品直接跨接在燈管的諧振電容兩端，可以改變電子鎮流器，電子節能燈的硬啟動為預熱啟動，燈絲的預熱時間達0.4-2.0秒，可延長燈管壽命4倍以上。

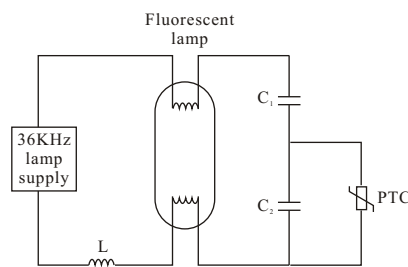
**DESCRIPTION** ■ JCP4 series of PTC Thermistor are applicable to various types of fluorescent lamp, electronic ballast and electronic energy-saving lamp. The PTC can be connected across the lamp resonator without changing the circuits. It can change hard start of the ballast and electronic energy-saving lamp to preheated start and the preheating time of the filament can come up to 0.4-2 seconds, which will extend the service life of the fluorescent tube by over 4 times.

**應用原理** ■ 應用PTC熱敏電阻實現預熱啟動如圖2所示:剛接通開關時， $R_t$ 處於常溫態，其阻值遠遠低於  $C_2$  阻值，電流通過  $C_1$ ， $R_t$ 形成迴路預熱燈絲。約0.4~2.0秒後， $R_t$ 焦耳熱溫度超過開關溫度  $T_c$  躍入高阻態，其阻值遠遠高於  $C_2$  阻抗，電流通過  $C_1$ 、 $C_2$ 形成迴路導致L諧振，產生高壓點亮燈管。對某一特定的電子鎮流器、電子節能燈而言，所選用的PTC阻值越大、體積越小、開關溫度越低，其功耗就越小、預熱時間亦越短；反之功耗就越大，預熱時間亦越長。

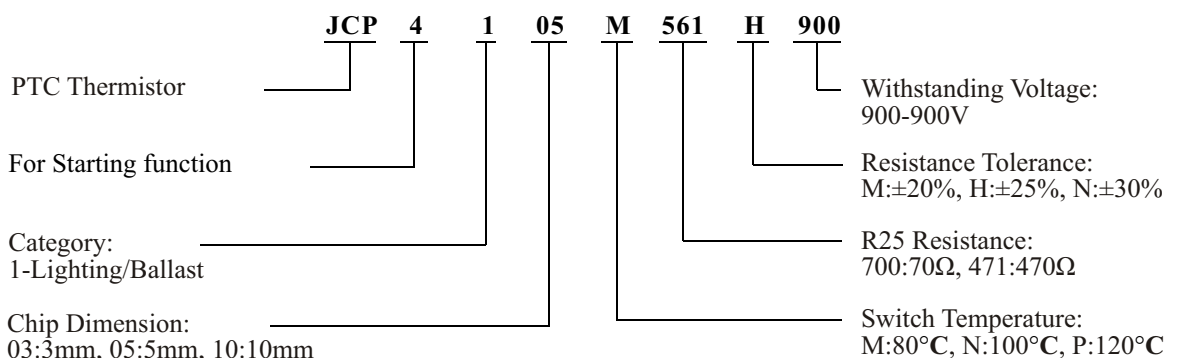
**OPERATING PRINCIPLE** ■ The application of the PTC thermistor to achieve preheated start is as follows: Immediately after power is switched on,  $R_t$  is in normal temperature state and its resistance is far lower than the  $C_2$  resistance. The current through  $C_1$  and  $R_t$  forms a return circuit to preheat the filament. After about 0.4-2 seconds,  $R_t$  joule heat temperature exceeds Curie point  $T_c$  and skips into high resistance state of far higher than  $C_2$  resistance. The current passes through  $C_1$  and  $C_2$  to form a return circuit, which causes L resonance and produces high voltage to light the fluorescent tube.

■ To a certain electronic ballast, energy saving lights, higher PTC thermistor resistance, smaller PTC ceramic body dimension, lower switch temperature, will lead to its lower power consumption, shorter preheating time, conversely, larger power consumption, longer preheating time.

應用實例  
Examples of applications



**ORDERING CODE**



SPEC. Table

Part Number	Switch Temperature Tc (°C)	Resistance @25°C R25(Ω)	With standing Voltage VAC(V)	Max. current Imax (A)	Dimensions (mm)		
					Dmax	Tmax	Φd
JCP4103M151H500	80 (M)	150 ± 25%	500	200	4.5	5.0	0.5
JCP4103M271N650	80 (M)	270 ± 30%	650	200	4.5	5.0	0.5
JCP4103M391N650	80 (M)	390 ± 30%	650	200	4.5	5.0	0.5
JCP4103M681N800	80 (M)	680 ± 30%	800	200	4.5	5.0	0.5
JCP4103M102N800	80 (M)	1000 ± 30%	800	200	4.5	5.0	0.5
JCP4103M152N800	80 (M)	1500 ± 30%	800	100	4.5	5.0	0.5
JCP4103M222N900	80 (M)	2200 ± 30%	900	100	4.5	5.0	0.5
JCP4103M332N900	80 (M)	3300 ± 30%	900	100	4.5	5.0	0.5
JCP4103M472N900	80 (M)	4700 ± 30%	900	100	4.5	5.0	0.5
JCP4104M820H500	80 (M)	82 ± 25%	500	300	5.5	5.0	0.6
JCP4104M101H500	80 (M)	100 ± 25%	500	300	5.5	5.0	0.6
JCP4104M151N500	80 (M)	150 ± 30%	500	300	5.5	5.0	0.6
JCP4104M221N650	80 (M)	220 ± 30%	650	300	5.5	5.0	0.6
JCP4104M391N650	80 (M)	390 ± 30%	650	300	5.5	5.0	0.6
JCP4104M561N800	80 (M)	560 ± 30%	800	300	5.5	5.0	0.6
JCP4104M681N800	80 (M)	680 ± 30%	800	300	5.5	5.0	0.6
JCP4104M102N800	80 (M)	1000 ± 30%	800	200	5.5	5.0	0.6
JCP4104M152N900	80 (M)	1500 ± 30%	900	100	5.5	5.0	0.6
JCP4104M222N900	80 (M)	2200 ± 30%	900	100	5.5	5.0	0.6
JCP4104M332N900	80 (M)	3300 ± 30%	900	100	5.5	5.0	0.6
JCP4105M101N500	80 (M)	100 ± 30%	500	400	6.5	5.0	0.6
JCP4105M151N650	80 (M)	150 ± 30%	650	400	6.5	5.0	0.6
JCP4105M271N800	80 (M)	270 ± 30%	800	400	6.5	5.0	0.6
JCP4105M391N800	80 (M)	390 ± 30%	800	400	6.5	5.0	0.6
JCP4105M561N900	80 (M)	560 ± 30%	900	300	6.5	5.0	0.6
JCP4105M102N900	80 (M)	1000 ± 30%	900	200	6.5	5.0	0.6
JCP4105M152N900	80 (M)	1500 ± 30%	900	100	6.5	5.0	0.6
JCP4105M222N900	80 (M)	2200 ± 30%	900	100	6.5	5.0	0.6
JCP4106M101H650	80 (M)	100 ± 25%	650	600	7.5	5.0	0.6
JCP4106M121H650	80 (M)	120 ± 25%	650	600	7.5	5.0	0.6
JCP4106M151H800	80 (M)	150 ± 25%	800	600	7.5	5.0	0.6
JCP4106M201H900	80 (M)	200 ± 25%	900	600	7.5	5.0	0.6
JCP4107M700N650	80 (M)	70 ± 30%	650	600	8.0	5.0	0.6
JCP4107M101N650	80 (M)	100 ± 30%	650	600	8.0	5.0	0.6
JCP4107M151N800	80 (M)	150 ± 30%	800	600	8.0	5.0	0.6
JCP4107M221N800	80 (M)	220 ± 30%	800	600	8.0	5.0	0.6
JCP4107M271N800	80 (M)	270 ± 30%	800	600	8.0	5.0	0.6
JCP4107M391N900	80 (M)	390 ± 30%	900	500	8.0	5.0	0.6
JCP4107M561N900	80 (M)	560 ± 30%	900	400	8.0	5.0	0.6
JCP4107M681N900	80 (M)	680 ± 30%	900	300	8.0	5.0	0.6
JCP4107M102N900	80 (M)	1000 ± 30%	900	300	8.0	5.0	0.6
JCP4109M750H900	80 (M)	75 ± 25%	900	1000	10.0	5.0	0.6
JCP4109M101H900	80 (M)	100 ± 25%	900	1000	10.0	5.0	0.6
JCP4109M151H1000	80 (M)	150 ± 25%	1000	1000	10.0	5.0	0.6
JCP4109M201H1000	80 (M)	200 ± 25%	1000	1000	10.0	5.0	0.6
JCP4103N151H420	100 (N)	150 ± 25%	420	200	4.5	5.0	0.5
JCP4103N181N500	100 (N)	175 ± 30%	500	200	4.5	5.0	0.5
JCP4103N231N500	100 (N)	225 ± 30%	500	200	4.5	5.0	0.5
JCP4103N391N650	100 (N)	390 ± 30%	650	200	4.5	5.0	0.5
JCP4103N561N650	100 (N)	560 ± 30%	650	200	4.5	5.0	0.5
JCP4103N681N650	100 (N)	680 ± 30%	650	200	4.5	5.0	0.5
JCP4103N102N800	100 (N)	1000 ± 30%	800	200	4.5	5.0	0.5
JCP4103N152N800	100 (N)	1500 ± 30%	800	100	4.5	5.0	0.5
JCP4104N101N420	100 (N)	100 ± 30%	420	300	5.5	5.0	0.6
JCP4104N151H500	100 (N)	150 ± 25%	500	300	5.5	5.0	0.6
JCP4104N181H500	100 (N)	175 ± 25%	500	300	5.5	5.0	0.6

Part Number	Switch Temperature Tc (°C)	Resistance @ 25°C R <sub>25</sub> (Ω)	With standing Voltage V <sub>AC</sub> (V)	Max. current I <sub>max</sub> (A)	Dimensions (mm)		
					Dmax	Tmax	Φd
JCP4104N231H500	100 (N)	225 ± 25%	500	300	5.5	5.0	0.6
JCP4104N301N650	100 (N)	300 ± 30%	650	300	5.5	5.0	0.6
JCP4104N391N650	100 (N)	390 ± 30%	650	300	5.5	5.0	0.6
JCP4104N601N800	100 (N)	600 ± 30%	800	300	5.5	5.0	0.6
JCP4104N851N800	100 (N)	850 ± 30%	800	200	5.5	5.0	0.6
JCP4105N101N500	100 (N)	100 ± 30%	500	400	6.5	5.0	0.6
JCP4105N151N650	100 (N)	150 ± 30%	650	400	6.5	5.0	0.6
JCP4105N221N650	100 (N)	220 ± 30%	650	400	6.5	5.0	0.6
JCP4105N301H800	100 (N)	300 ± 25%	800	400	6.5	5.0	0.6
JCP4105N391N800	100 (N)	390 ± 30%	800	400	6.5	5.0	0.6
JCP4105N561N800	100 (N)	560 ± 30%	800	300	6.5	5.0	0.6
JCP4105N681N900	100 (N)	680 ± 30%	900	300	6.5	5.0	0.6
JCP4105N851N900	100 (N)	850 ± 30%	900	200	6.5	5.0	0.6
JCP4105N102N900	100 (N)	1000 ± 30%	900	200	6.5	5.0	0.6
JCP4105N272N900	100 (N)	2700 ± 30%	900	200	6.5	5.0	0.6
JCP4105N332N900	100 (N)	3300 ± 30%	900	100	6.5	5.0	0.6
JCP4105N472N900	100 (N)	4700 ± 30%	900	100	6.5	5.0	0.6
JCP4107N700N650	100 (N)	70 ± 30%	650	600	8.0	5.0	0.6
JCP4107N101N650	100 (N)	100 ± 30%	650	600	8.0	5.0	0.6
JCP4107N151N800	100 (N)	150 ± 30%	800	600	8.0	5.0	0.6
JCP4107N221N800	100 (N)	220 ± 30%	800	600	8.0	5.0	0.6
JCP4107N271N800	100 (N)	270 ± 30%	800	600	8.0	5.0	0.6
JCP4107N331N800	100 (N)	330 ± 30%	800	600	8.0	5.0	0.6
JCP4107N391N900	100 (N)	390 ± 30%	900	500	8.0	5.0	0.6
JCP4107N561N900	100 (N)	560 ± 30%	900	400	8.0	5.0	0.6
JCP4103P151N420	120 (P)	150 ± 30%	420	200	4.5	5.0	0.5
JCP4103P181N420	120 (P)	175 ± 30%	420	200	4.5	5.0	0.5
JCP4103P271N500	120 (P)	270 ± 30%	500	200	4.5	5.0	0.5
JCP4103P331N500	120 (P)	330 ± 30%	500	200	4.5	5.0	0.5
JCP4103P391N650	120 (P)	390 ± 30%	650	200	4.5	5.0	0.5
JCP4103P561N650	120 (P)	560 ± 30%	650	200	4.5	5.0	0.5
JCP4103P681N650	120 (P)	680 ± 30%	650	200	4.5	5.0	0.5
JCP4103P102N650	120 (P)	1000 ± 30%	650	200	4.5	5.0	0.5
JCP4105P101N500	120 (P)	100 ± 30%	500	400	6.5	5.0	0.6
JCP4105P151N500	120 (P)	150 ± 30%	500	400	6.5	5.0	0.6
JCP4105P181N650	120 (P)	175 ± 30%	650	400	6.5	5.0	0.6
JCP4105P221N650	120 (P)	220 ± 30%	650	400	6.5	5.0	0.6
JCP4105P301N650	120 (P)	300 ± 30%	650	400	6.5	5.0	0.6
JCP4105P391N650	120 (P)	390 ± 30%	650	400	6.5	5.0	0.6
JCP4105P561N800	120 (P)	560 ± 30%	800	300	6.5	5.0	0.6
JCP4105P681N800	120 (P)	680 ± 30%	800	300	6.5	5.0	0.6
JCP4105P102N800	120 (P)	1000 ± 30%	800	200	6.5	5.0	0.6

- Note :
1. The lead wire (side bending, inside bending, straight) can be made upon customer's requirement.
  2. R<sub>25</sub> resistance tolerance can be selected upon customer's requirement.
  3. Packing can be made upon customer's requirement.

# MEMO

