

ZMZ12(A/B/C) Series

PTC THERMISTORS 正溫度系數熱敏電阻器

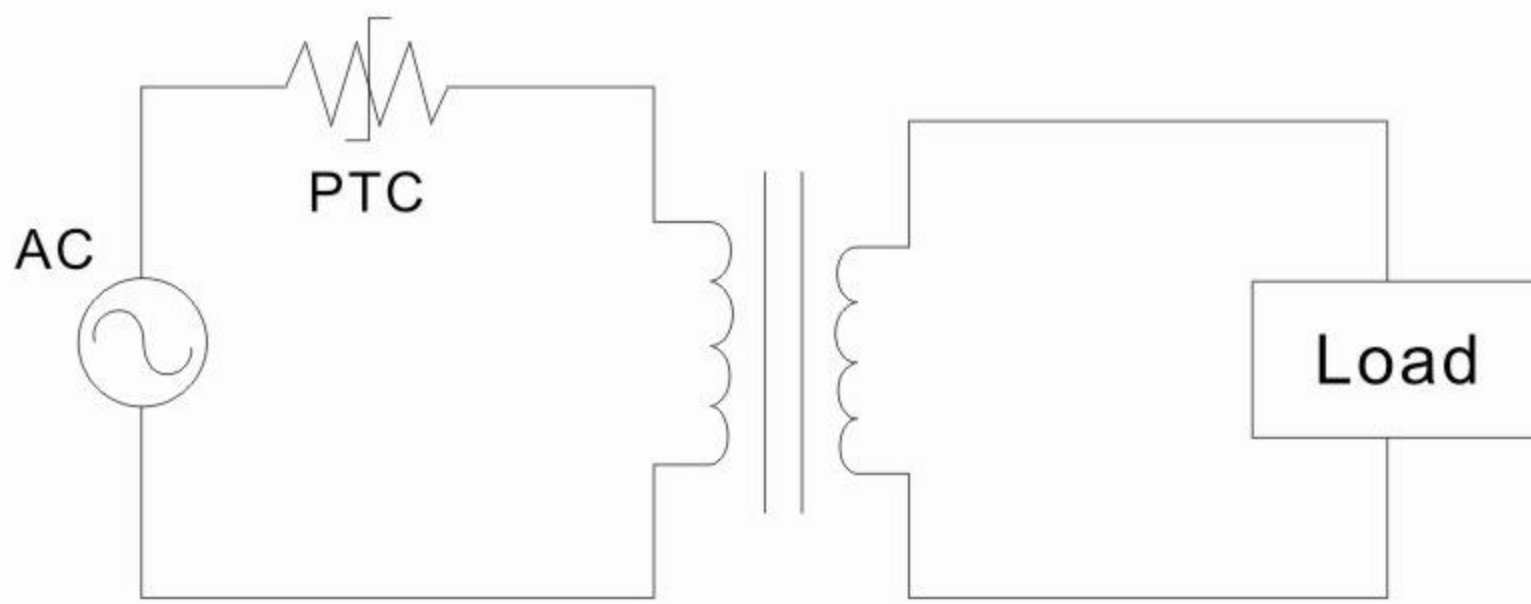
用于過流保護 -For over current protection

產品特點FEATURES

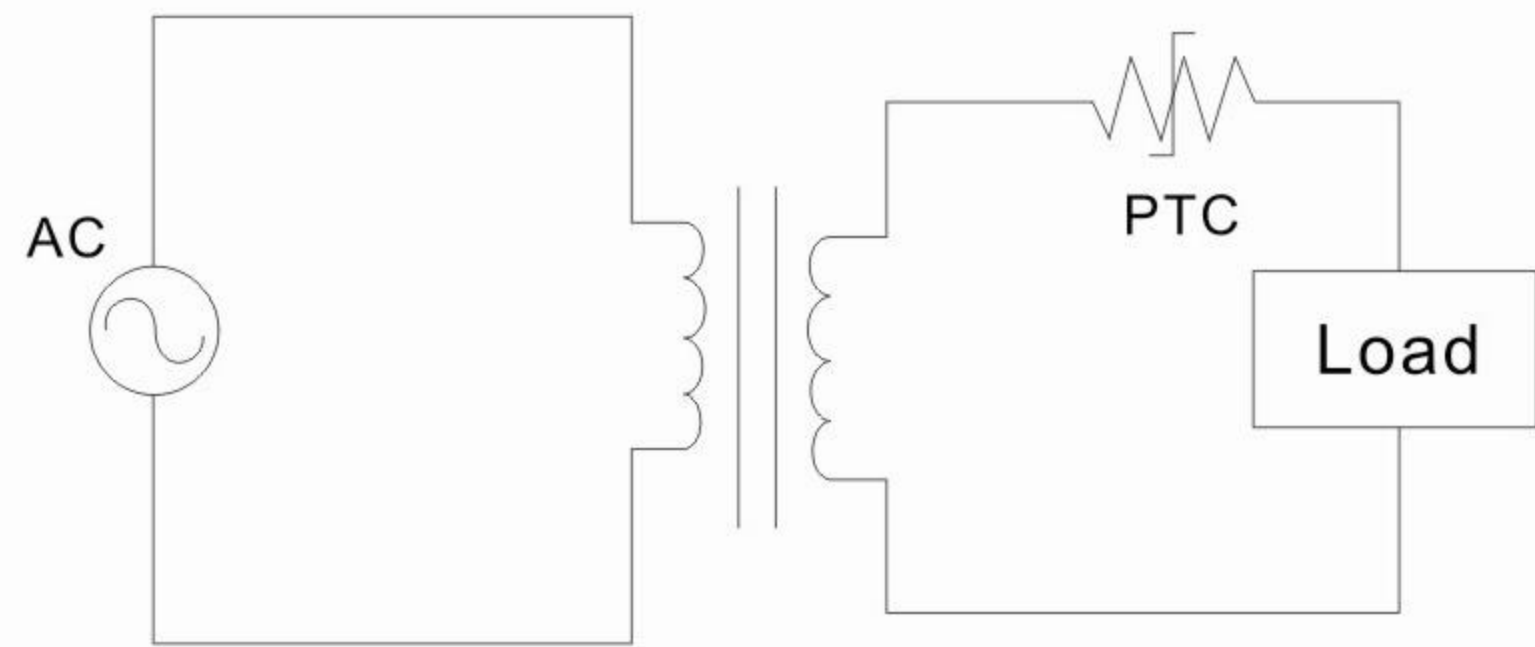
- ZMZ12(A/B/C) 系列PTC熱敏電阻器系新一代過流保護器件，其特點是無觸點、無噪音、無火花、自動保護、自動復原，可重複使用。
- ZMZ12(A/B/C) 系列PTC熱敏電阻器主要用于電子鎮流器/節能燈/適配器/充電器/電度表/萬用表/通訊設備/微電機等過流保護，如應用示例所示。當被保護電路處於正常狀態時，流過PTC熱敏電阻器 R_t 的電流小于其最大不動作電流 I_N ， R_t 處於低阻態，不會影響被保護電路正常工作；當被保護電路遇過流（電流大大超過其動作電流 I_N 令 R_t 急劇發熱）等異常狀況時， R_t 驟然躍入高阻態，使被保護電路避免受到損壞。當異常狀況消失，溫度、電流恢復正常後， R_t 自動恢復至低阻態，被保護電路亦恢復至正常工作狀態。
- ZMZ12(A/B/C) 系列之選型主要考慮 R_t 的電流特性，其最大不動作電流 I_N 應適度大于被保護電路的額定工作電流，以能及時響應又不會誤動作為準則。與此同時，應特別注意 R_t 之動作/不動作特性與工作環境溫度密切相關， I_N 和 I_T 隨工作環境溫度 T_A 升高而降低，如圖II所示。

- ZMZ12(A/B/C) series is the new generation of components for over current protection. It can do protection and recovery automatically and repetitively without contacting spot, noise and spark.
- ZMZ12(A/B/C) 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.
- R_t 's current characteristic is the most important thing to be considered when make a choice of ZMZ12(A/B/C) series. Its Max. Non-operating Current shall be reasonably higher than rated operating current through the 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 increase, as show as Figure II.

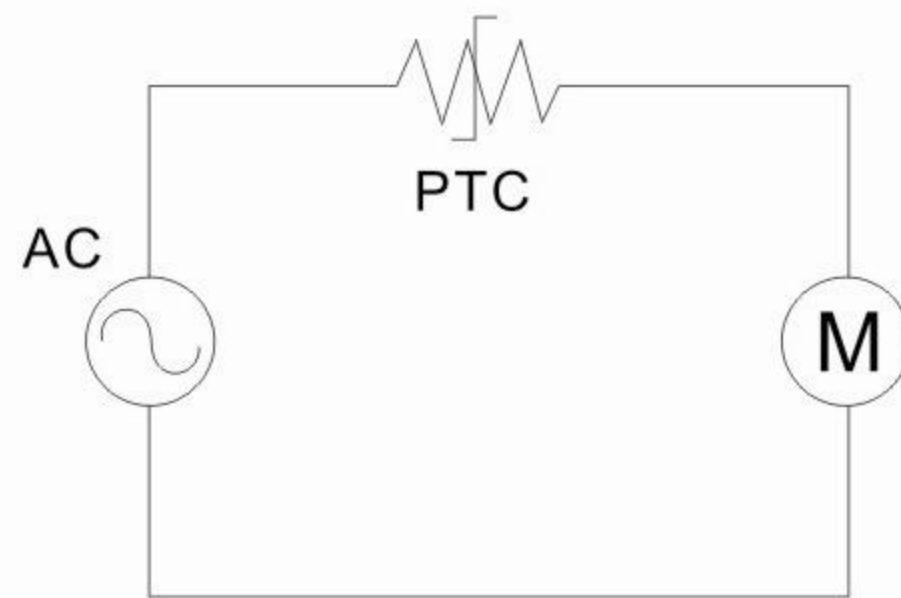
應用示例 EXAMPLE OF APPLICATION



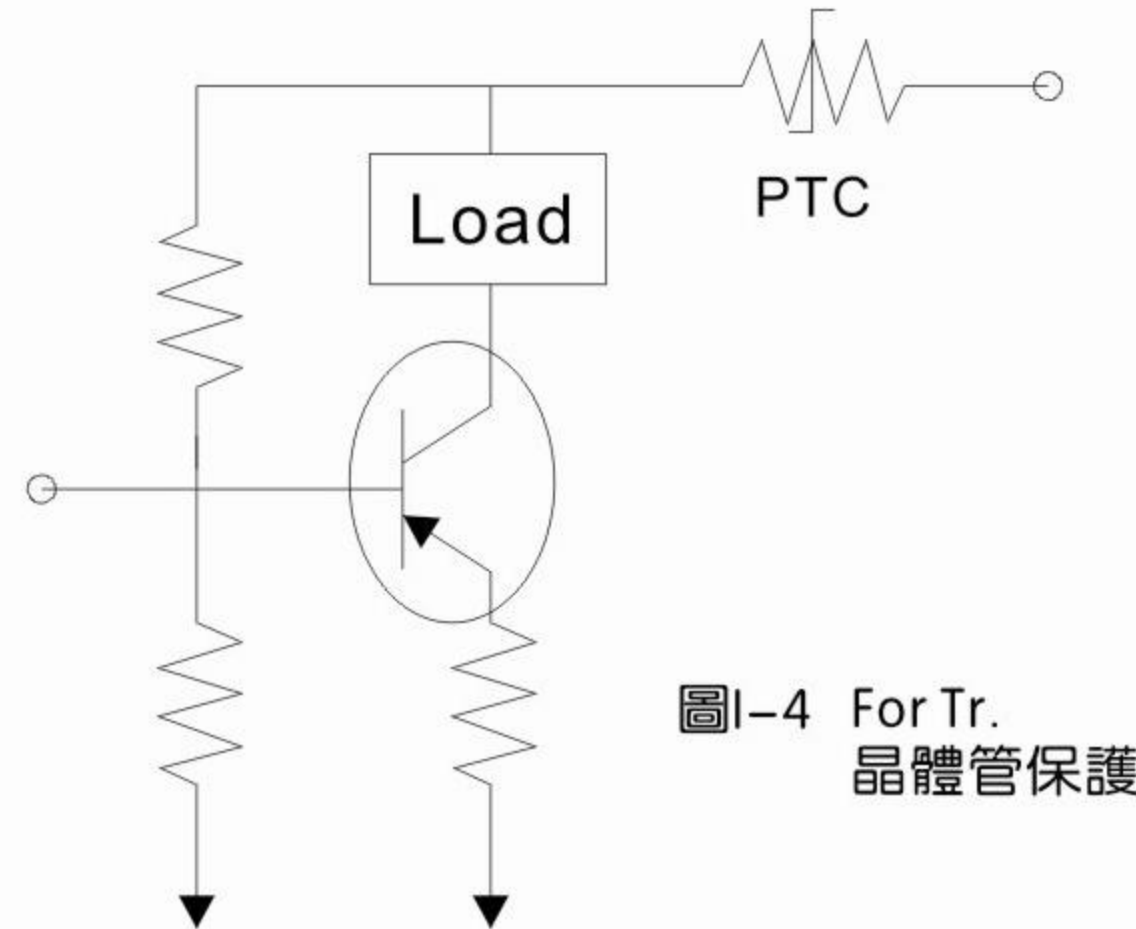
圖I-1 For Primary Coil
初級繞圈保護



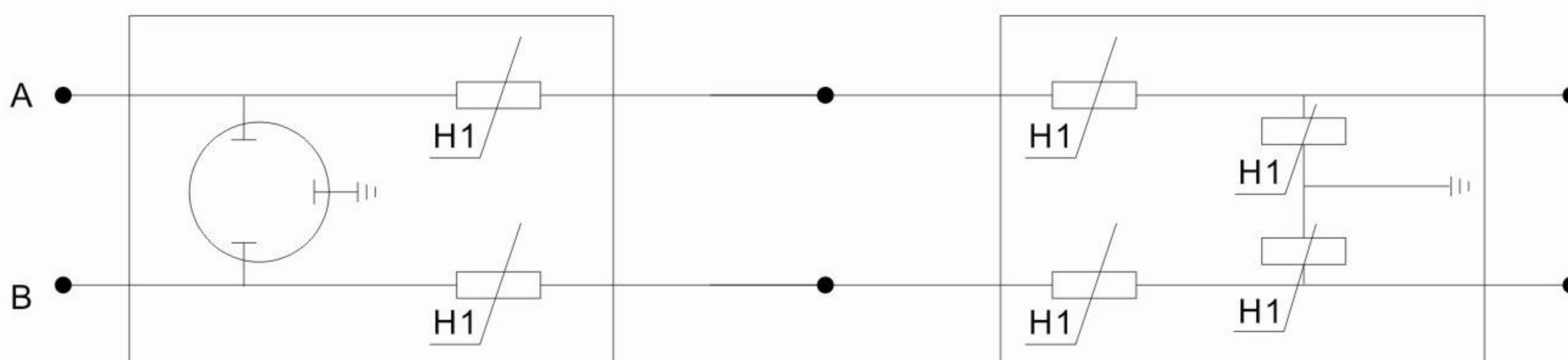
圖I-2 For Secondary Coil
次級繞圈保護



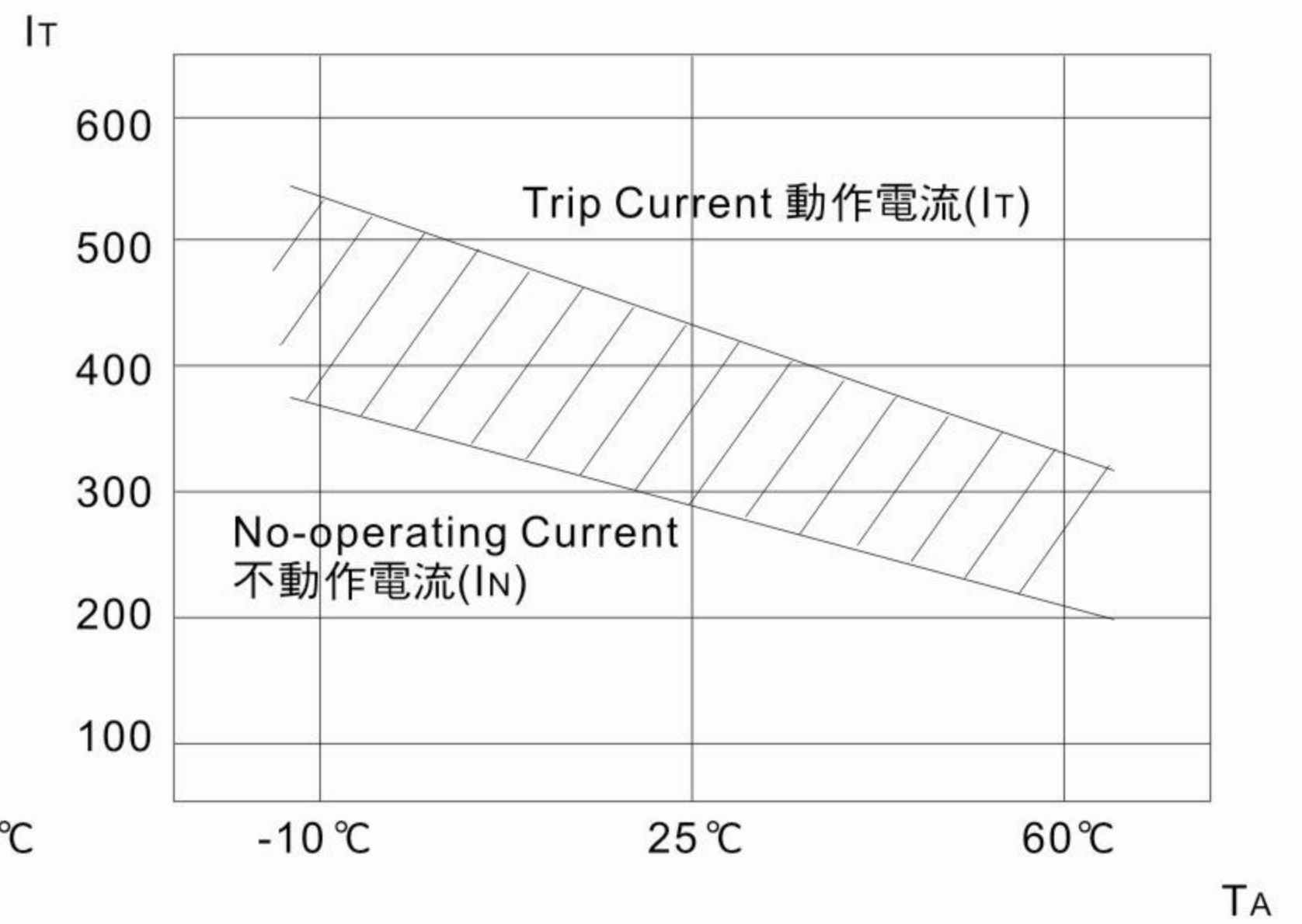
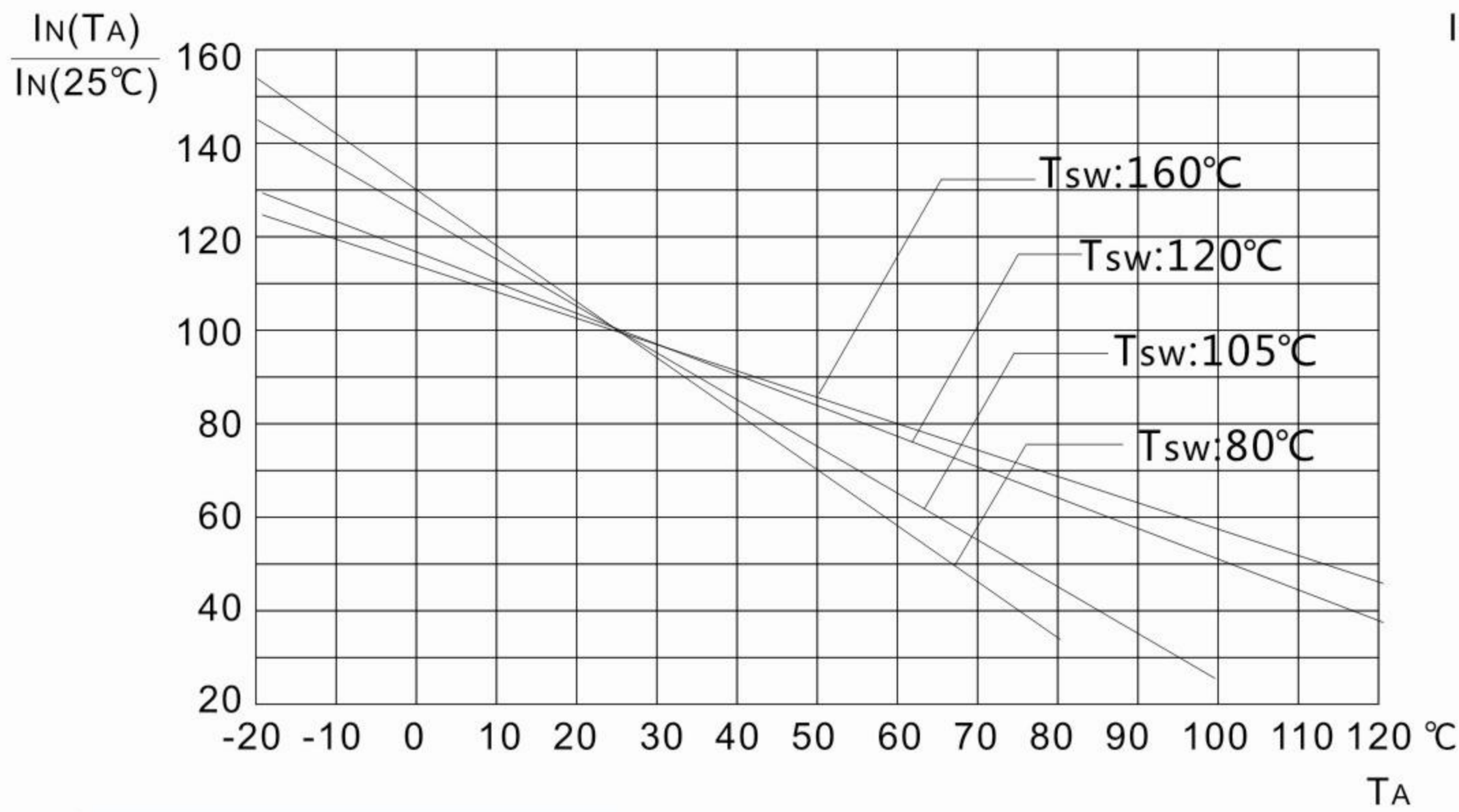
圖I-3 For Micromotor
微電機保護



圖I-4 For Tr.
晶體管保護



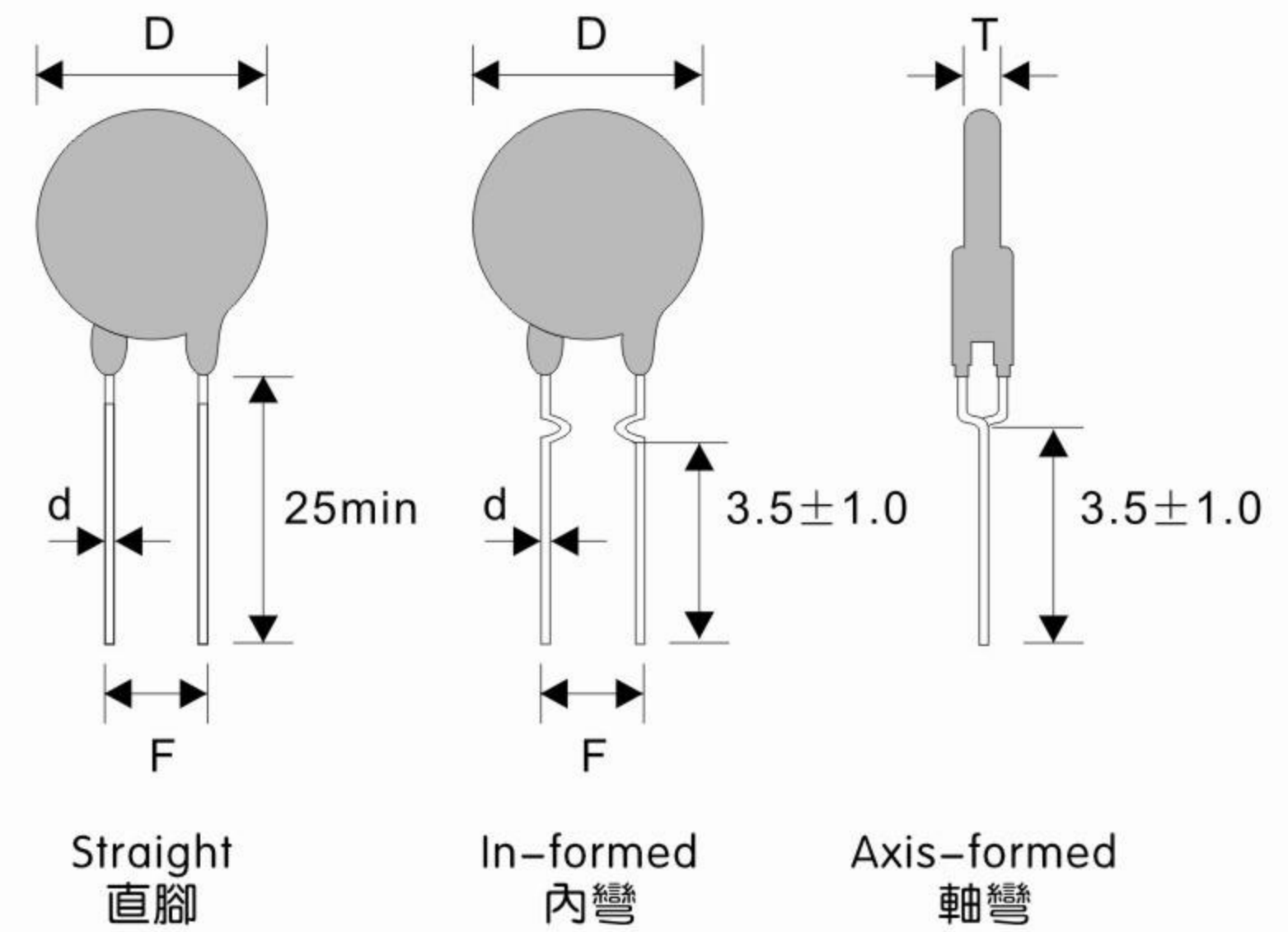
圖I-5 For Telecom
通訊設備保護



HOW TO ORDER

ZMZ12(A/B/C) 1R0 M S 651 B N

- 系列Series: ZMZ12(A/B/C)
- 額定零功率電阻
Rated zero power resistance: 1R0=1.0Ω, 82R=82Ω, 4R7=4.7Ω, R22=0.22Ω, R06=0.06Ω.
- 阻值誤差
Tolerance of Resistance: (M=±20%, N=±30%, K=±10%, J=±5%, V=±25%, X=else 其他)
- 腳型Lead Type:
I=In formed 內彎, S=Straight 直腳
A=Axis formed 軸彎,
D=Disk(No leads)芯片型 (無腳)
- 最大不動作電流
Max. Non operating Current:
651=650mA, 602=6000mA
- 包裝Packing: B-Bulk散裝,
A=Ammo盒裝, R=Reel捲裝
- N: 符合ROHS要求
N=Compliance with ROHS directive



規格 Specifications

ZMZ12A

For over current protection of the adaptor (primary coil)/charger/watt-hour meter/multimeter/micromotor and transistor etc.
主要用于變壓器 (適配器) 初級繞圈/充電器/電能表/數字萬用表/微電機和晶體管過流保護

| No. 序號 | Max. Non Operating Current at 60°C 最大不動作電流 I_N (mA) | Trip Current at 25°C 動作電流 I_T (mA) | Rated zero-power resistance 額定零功率電阻 R_N (Ω) | Max. Permissible Current at V_{MAX} 最大不動作電流 I_{MAX} (A) | Dimensions 外形尺寸 (mm) | | | |
|--|--|---|--|--|----------------------|------|--------|--------|
| | | | | | Dmax | Tmax | d ±0.1 | F ±1.0 |
| Max. Operating Vol. 最大工作電壓 $V_{max}=265\text{VAC}$; Curie Temp. 居里溫度 $T_C=80^\circ\text{C} \pm 7^\circ\text{C}$ | | | | | | | | |
| 01 | 2 | 8 | 2200±20% | 0.25 | 4.5 | 4.5 | 0.5 | 5.0 |
| 02 | 3 | 12 | 1500±20% | | | | | |
| 03 | 4 | 16 | 1000±20% | | | | | |
| 04 | 5 | 20 | 680±20% | | | | | |
| 05 | 6 | 24 | 470±20% | | | | | |
| 06 | 25 | 100 | 150±20% | 1.00 | 8.5 | 4.5 | 0.6 | 5.0 |
| 07 | 30 | 120 | 120±20% | | | | | |
| 08 | 35 | 140 | 100±20% | | | | | |
| 09 | 40 | 160 | 82±20% | | | | | |
| 10 | 45 | 180 | 68±20% | | | | | |

規格 Specifications

ZMZ12A

For over current protection of the adaptor (primary coil)/charger/watt-hour meter/multimeter/micromotor and transistor etc.
 主要用于變壓器（適配器）初級繞圈/充電器/電能表/數字萬用表/微電機和晶體管過流保護

| No. 序號 | Max. Non Operating Current at 60°C 最大 不動作電流 I _N (mA) | Trip Current at 25°C 動作電流 I _T (mA) | Rated zero-power resistance 額定 零功率電阻 R _N (Ω) | Max. Permissible Current at V _{MAX} 最大 不動作電流 I _{MAX} (A) | Dimensions 外形尺寸 (mm) | | | | | | | | |
|---|--|--|--|---|----------------------------|------------------|-------------------|-------------------|------|-----|-----|-----|-----|
| | | | | | D _{max} | T _{max} | d ^{±0.1} | F ^{±1.0} | | | | | |
| 11 | 65 | 260 | 25±20% | 1.00 | 8.5 | 4.5 | 0.6 | 5.0 | | | | | |
| Max. Operating Vol. 最大工作電壓 V _{max} =265VAC; Curie Temp. 居裏溫度 T _c =105°C ± 7°C | | | | | | | | | | | | | |
| 12 | 20 | 50 | 220±20% | 0.25 | 4.5 | 4.5 | 0.5 | 5.0 | | | | | |
| 13 | 25 | 65 | 150±20% | | | | | | | | | | |
| 14 | 30 | 75 | 100±20% | | | | | | | | | | |
| 15 | 25 | 65 | 220±20% | | | | | | | | | | |
| 16 | 30 | 75 | 150±20% | 0.30 | 5.5 | 4.5 | 0.6 | 5.0 | | | | | |
| 17 | 35 | 88 | 120±20% | | | | | | | | | | |
| 18 | 40 | 100 | 100±20% | | | | | | | | | | |
| 19 | 45 | 115 | 75±20% | | | | | | | | | | |
| 20 | 50 | 125 | 68±20% | | | | | | | | | | |
| 21 | 55 | 138 | 47±20% | | | | | | | | | | |
| 22 | 25 | 65 | 220±20% | 0.40 | 6.5 | 4.5 | 0.6 | 5.0 | | | | | |
| 23 | 35 | 88 | 150±20% | | | | | | | | | | |
| 24 | 45 | 115 | 100±20% | | | | | | | | | | |
| 25 | 55 | 138 | 68±20% | | | | | | | | | | |
| 26 | 50 | 125 | 120±20% | | | | | | | | | | |
| 27 | 55 | 138 | 100±20% | | | | | | | | | | |
| 28 | 60 | 150 | 82±20% | 1.00 | 8.5 | 4.5 | 0.6 | 5.0 | | | | | |
| 29 | 75 | 188 | 62±20% | | | | | | | | | | |
| 30 | 85 | 213 | 39±20% | | | | | | | | | | |
| 31 | 100 | 250 | 22±20% | | | | | | | | | | |
| 32 | 120 | 300 | 22±20% | | | | | | | | | | |
| 33 | 130 | 325 | 15±20% | | | | | | | | | | |
| 34 | 140 | 350 | 10±20% | 1.60 | 11.5 | 4.5 | 0.6 | 5.0 | | | | | |
| 35 | 150 | 375 | 8.2±20% | | | | | | | | | | |
| 36 | 150 | 375 | 18±20% | | | | | | | | | | |
| 37 | 160 | 400 | 15±20% | | | | | | | | | | |
| 38 | 170 | 425 | 12±20% | | | | | | | | | | |
| 39 | 180 | 450 | 10±20% | | | | | | | | | | |
| 40 | 200 | 500 | 6.8±20% | 2.50 | 14.5 | 5.0 | 0.6 | 7.5 | | | | | |
| Max. Operating Vol. 最大工作電壓 V _{max} =265VAC; Curie Temp. 居裏溫度 T _c =120°C ± 7°C | | | | | | | | | | | | | |
| 41 | 40 | 80 | 100±20% | | | | | | 0.30 | 5.5 | 4.5 | 0.6 | 5.0 |
| 42 | 45 | 90 | 75±20% | | | | | | | | | | |
| 43 | 50 | 100 | 62±20% | | | | | | | | | | |
| 44 | 40 | 80 | 150±20% | | | | | | | | | | |
| 45 | 50 | 100 | 100±20% | 0.40 | 6.5 | 5.0 | 0.6 | 5.0 | | | | | |
| 46 | 60 | 120 | 68±20% | | | | | | | | | | |
| 47 | 90 | 180 | 47±20% | | | | | | | | | | |
| 48 | 100 | 200 | 39±20% | | | | | | | | | | |
| 49 | 110 | 220 | 33±20% | 1.60 | 11.5 | 5.0 | 0.6 | 5.0 | | | | | |
| 50 | 130 | 260 | 22±20% | | | | | | | | | | |
| 51 | 145 | 290 | 15±20% | | | | | | | | | | |
| 52 | 160 | 320 | 10±20% | | | | | | | | | | |
| 53 | 170 | 340 | 8.2±20% | | | | | | | | | | |
| 54 | 180 | 360 | 22±20% | | | | | | | | | | |
| 55 | 200 | 400 | 15±20% | 2.50 | 14.5 | 5.0 | 0.6 | 7.5 | | | | | |
| 56 | 220 | 440 | 10±20% | | | | | | | | | | |
| 57 | 240 | 480 | 8.2±20% | | | | | | | | | | |
| 58 | 260 | 520 | 6.8±20% | | | | | | | | | | |

規格 Specifications

ZMZ12B 主要用于通信設備過流保護 -For over current protection of Telecom.

| No. 序號 | Part No. 產品編號 | Rated zero-power resistance 額定 零功率電阻 RN(25°C ± 2°C) | Max. Non Operating Current at 60°C 最大 不動作電流 IN(40°C ± 2°C) | Max.Operating Time(s) 最大動作時間 | | | | Dimensions外形尺寸 (mm) | | | |
|--|------------------|--|---|---------------------------------|-----------------|--------------------|-------------------|------------------------|------|--------|--------|
| | | | | 3A ~ 0.5A | 1A ~ 0.5A | 0.5A ~ 0.15A | 0.2A ~ 0.1A | Dmax | Tmax | d ±0.1 | F ±1.0 |
| Max.Operating Vol.最大工作電壓 V _{max} =265VAC; | | | | | | | | | | | |
| 01 | ZMZ12B12RM900 | 12Ω ± 20% | 90mA | 0.3 | 1.2 | 20 | 50 | 9 | 4.5 | 0.6 | 5 |
| 02 | ZMZ12B15RM700 | 15Ω ± 20% | 70mA | 0.2 | 1.0 | 12 | 20 | 9 | 4.5 | 0.6 | 5 |
| 03 | ZMZ12B18RM111 | 18Ω ± 20% | 110mA | 0.2 | 1.4 | 15 | 30 | 8 | 2.5 | 0.6 | 5 |
| 04 | ZMZ12B20RM700 | 20Ω ± 20% | 70mA | 0.2 | 1.0 | 12 | 20 | 9 | 4.5 | 0.6 | 5 |
| 05 | ZMZ12B35RM600 | 35Ω ± 20% | 60mA | 0.2 | 0.8 | 4 | 15 | 9 | 4.5 | 0.6 | 5 |
| 06 | ZMZ12B50RM600 | 50Ω ± 20% | 60mA | 0.1 | 0.8 | 3 | 15 | 11 | 4.5 | 0.6 | 5 |
| 07 | ZMZ12B55RM600 | 55Ω ± 20% | 60mA | 0.1 | 0.5 | 2 | 15 | 11 | 4.5 | 0.6 | 5 |
| 08 | ZMZ12B101M500 | 100Ω ± 20% | 50mA | 0.1 | 0.5 | 2 | 8 | 9 | 4.5 | 0.6 | 5 |

Other Characteristics 其他電性能參數:

Over Current Withstanding 耐工頻電流能力: 3arms/220vrms 20times(60s On,300s Off)

Lighting Surges 耐衝擊電流能力: 10/310us 1.5kv 37.5a 10times Or 10/1000us 1.0kv 25a 30times

Over Vol.withstanding 耐工頻電壓能力: 250vrms/3a/15min

Inducted Vol.withstanding 耐高壓感應能力: 650vrms/1.1a 20times(1s On,60s Off)(for Only The Items With *僅適用於標有*號品種)

ZMZ12C For over current protection of the Electronics Ballast/CFL/Adaptor(second coil)etc. 主要用于電子鎮流器/節能燈和變壓器(適配器)次級繞圈過流保護

| No. 序號 | Part No. 產品編號 | Max. Non Operating Current at 60°C 最大 不動作電流 IN(mA) | Trip Current at 25°C 動作電流 I _T (mA) | Rated zero-power resistance 額定 零功率電阻 RN(Ω) | Max. Permissible Current at V _{MAX} 最大 不動作電流 I _{MAX} (A) | Dimensions 外形尺寸 (mm) | | | | | | |
|---|------------------|---|--|---|---|----------------------------|------|--------|--------|-----|--|--|
| | | | | | | Dmax | Tmax | d ±0.1 | F ±1.0 | | | |
| Max.Operating Vol.最大工作電壓 V _{max} =15VAC; | | | | | | | | | | | | |
| 1 | ZMZ12C1R0M651 | 650 | 1250 | 25±20% | 2.5 | 8.0 | 3.5 | 0.6 | 5.0 | | | |
| 2 | ZMZ12C4R6V251 | 250 | 500 | 220±20% | 1.0 | 6.0 | 3.5 | 0.6 | 5.0 | | | |
| 3 | ZMZ12C13RV151 | 150 | 300 | 150±20% | 0.7 | 4.5 | 3.5 | 0.5 | 5.0 | | | |
| Max.Operating Vol.最大工作電壓 V _{max} =30VAC; | | | | | | | | | | | | |
| 4 | ZMZ12CR17X901 | 900 | 1800 | 220±20% | 40 | 7.5 | 4.5 | 0.5 | 5.0 | | | |
| 5 | ZMZ12CR10X132 | 1300 | 1500 | 150±20% | | 9.0 | 4.5 | 0.5 | 5.0 | | | |
| 6 | ZMZ12CR07X182 | 1800 | 2700 | 120±20% | | 10.5 | 4.5 | 0.5 | 5.0 | | | |
| 7 | ZMZ12CR05X252 | 2500 | 5000 | 100±20% | | 11.5 | 4.5 | 0.5 | 5.0 | | | |
| 8 | ZMZ12CR03X402 | 4000 | 8000 | 75±20% | | 14.0 | 4.5 | 0.8 | 5.0 | | | |
| 9 | ZMZ12CR02X602 | 6000 | 12000 | 68±20% | | 16.5 | 4.5 | 0.8 | 10.0 | | | |
| 10 | ZMZ12CR01X802 | 8000 | 16000 | 47±20% | | 22.0 | 4.5 | 0.8 | 10.0 | | | |
| Max.Operating Vol.最大工作電壓 V _{max} =60VAC; | | | | | | | | | | | | |
| 11 | ZMZ12C4R7X101 | 100 | 200 | 150±20% | | 40 | 7.5 | 4.5 | 0.5 | 5.0 | | |
| 12 | ZMZ12C2R2X201 | 200 | 400 | 100±20% | | | 7.5 | 4.5 | 0.5 | 5.0 | | |
| 13 | ZMZ12C1R2X301 | 300 | 600 | 68±20% | 7.5 | | 4.5 | 0.5 | 5.0 | | | |
| 14 | ZMZ12CR68X501 | 500 | 1000 | 120±20% | 9.0 | | 4.5 | 0.5 | 5.0 | | | |
| 15 | ZMZ12CR33X751 | 750 | 1500 | 100±20% | 9.5 | | 4.5 | 0.5 | 5.0 | | | |
| 16 | ZMZ12CR22X112 | 1100 | 2200 | 82±20% | 13.0 | | 4.5 | 0.8 | 5.0 | | | |
| 17 | ZMZ12CR15X132 | 1300 | 1700 | 62±20% | 16.0 | | 4.5 | 0.8 | 5.0 | | | |
| 18 | ZMZ12CR11X182 | 1800 | 3700 | 39±20% | 17.5 | | 4.5 | 0.8 | 5.0 | | | |
| 19 | ZMZ12CR08X252 | 2500 | 5000 | 22±20% | 21.0 | | 4.5 | 0.8 | 10.0 | | | |
| 20 | ZMZ12CR05X372 | 3700 | 7500 | 22±20% | 27.5 | | 4.5 | 0.8 | 10.0 | | | |
| Max.Operating Vol.最大工作電壓 V _{max} =90VAC; | | | | | | | | | | | | |
| 21 | ZMZ12C2R2X151 | 150 | 300 | 10±20% | 20 | 6.0 | 4.5 | 0.6 | 5.0 | | | |
| 22 | ZMZ12C1R8X201 | 200 | 400 | 8.2±20% | | 6.0 | 4.5 | 0.6 | 5.0 | | | |
| 23 | ZMZ12C1R5X251 | 250 | 500 | 18±20% | | 7.0 | 4.5 | 0.6 | 5.0 | | | |
| 24 | ZMZ12CR82X351 | 350 | 700 | 15±20% | | 8.5 | 4.5 | 0.6 | 5.0 | | | |
| 25 | ZMZ12CR68X551 | 550 | 1100 | 12±20% | | 10.5 | 4.5 | 0.6 | 5.0 | | | |
| 26 | ZMZ12CR47X751 | 750 | 1500 | 10±20% | | 12.0 | 4.5 | 0.6 | 5.0 | | | |
| 27 | ZMZ12CR33X901 | 900 | 1800 | 6.8±20% | | 13.5 | 4.5 | 0.6 | 5.0 | | | |