

客戶名稱 CUSTOMERS:			
日期 DATE:			
產品名稱 PRODUCT:	Flameproof Metal Plate Resistors (MPR Series) 金屬板電阻器		
物料代號 PART NO.:	Customer		版本 REV.:
	Queen Mao	MPR□□□□-□□□-□□□□R□	V11.04

# 規格承認書 APPROVAL SHEET



客戶承認簽印 CUSTOMER APPROVED BY	核准 APPROVE	主管 CHIEF	承辦 RESPONSIBLE
APPROVED NO.:	ECN.:	/	/
MODEL:		/	/
CUSTOMER P/N:		/	/



昆 貿 電 子 股 份 有 限 公 司  
**QUEEN MAO ELECTRONIC CO., LTD.**

22178 新 北 市 汐 止 區 大 安 街 56 巷 35 號  
 No. 35, LANE 56, DA'AN STREET, XIZHI DISTRICT, NEW TAIPEI CITY 22178, TAIWAN (R.O.C.)

TEL: 886-2-8648-5566 FAX: 886-2-8648-0538

E-mail: [service@queenmao.com.tw](mailto:service@queenmao.com.tw)

URL: <http://www.queenmao.com.tw>



1. 一般事項 General

1.1 適用範圍 Scope

本承認書適用於[金屬板電阻器]。

This specification covers Flameproof Metal Plate Resistors.

1.2 品質 Quality

本電阻器的製造係經高品質管理程序，並具有高信賴性的品質保證，且符合 RoHS 和無鹵要求。

The resistor is manufactured by highly quality-controlled process and guaranteed high reliability, it meets RoHS & Halogen-Free requirement.

1.3 標準試驗狀態 Standard measuring conditions

溫度 20±2°C、濕度 65±5%。

但在溫度 5~35°C、濕度 45~85%之情況下，仍可給予判定。

Temperature 20±2°C, Humidity 65±5%.

Being no doubt about the judgment, measurements can be made within the following Temperature 5~35°C, Humidity 45~85%.

1.4 形名 (例) Type designation (example)

依使用種類、額定電力、電阻值容許差、公稱電阻值而區別，其構造如下：

The type designation shall be in the following form and as specified.

MPR	5W	-	-	0.15R	J
種類 Type	額定電力 Rated power	形狀 Form		公稱電阻值 Nominal resistance value	電阻值容許差 Resistance tolerance
	2W	Blank	Straight Style	E-12 Series	K ±10%
	3W	F	Forming Style	E-24 Series	J ±5%
	5W				
	10W				
	2W+2W				
	3W+3W				
	5W+5W				
	7W+7W				

Examples

記號 Code	電阻值 Resistance value
0R12	0.12Ω
1R2	1.2Ω



1.5 額定電力 Rated power

額定電力係適應在周圍溫度 70°C 可以連續負載的最大電力，如表-1；但周圍溫度如超過 70°C 時之額定電力則依圖一的電力輕減曲線實施。

Rated power is maximum power which can be continuously loaded at specified ambient temperature 70°C, however when the ambient temperature exceeds 70°C, rated power should be determined from the derating curve of Fig.1.

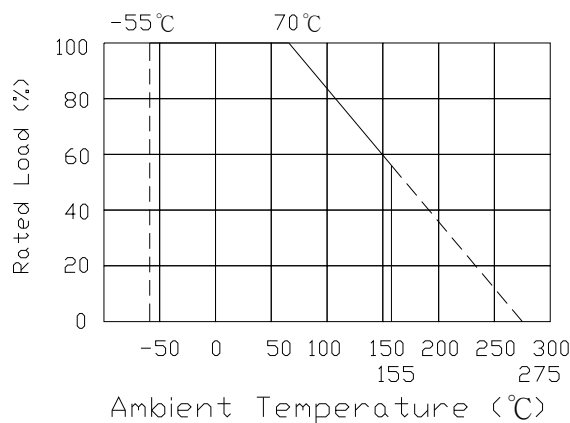
表-1 Table-1

額定電力 Rated power	最高使用電壓 Maximum working voltage	最高過負荷電壓 Maximum overload voltage	電阻值範圍 Resistance range (Ω)	使用溫度範圍 Operating temperature range
2W	$E = \sqrt{P \cdot R}$	$E = \sqrt{P \cdot R \cdot 10}$	0.01 ~ 0.68	-55°C ~ 155°C
3W			0.01 ~ 0.68	
5W			0.01 ~ 1.0	
10W			0.05 ~ 1.0	
2W+2W			0.05, 0.1 0.22 ~ 0.56	
3W+3W				
5W+5W				
7W+7W				

Note: Special resistance range max.10Ω, but character is not guaranteed.

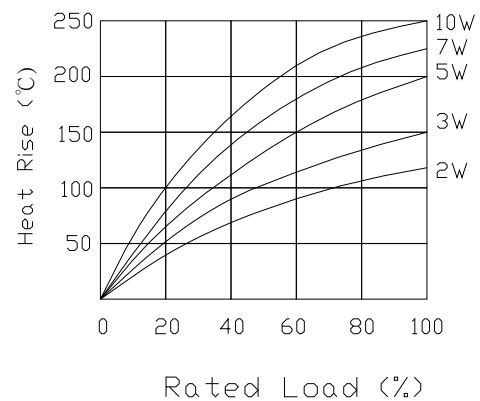
圖一 電力輕減曲線

Figure 1 Power derating curve



圖二 表面溫度上昇

Figure 2 Surface temperature rise





1.6 額定電壓 Rated voltage

額定電壓係指對應於額定電力的直流或交流（商用頻率之有效值）的電壓，由下式求得。

The rated voltage shall be the D.C. or A.C. (R.M.S. at power frequency) voltage which corresponds the rated power and the value of which is calculated from the formula below.

$$E = \sqrt{P \cdot R}$$

Where E：額定電壓 Rated voltage (V)

P：額定電力 Rated power (W)

R：公稱電阻值 Norminal resistance ( $\Omega$ )

1.7 公稱電阻值 Nominal resistance values

公稱電阻值係按表-2 之數乘以  $10^n$  (n 為整數) 之數值，其單位為歐姆 ( $\Omega$ )。

公稱電阻值之範圍則按表-1 所示。

The nominal resistance values shall be the numerical values given in Table-2 multiplied by  $10^n$  (n is an integer) in the unit of ohm ( $\Omega$ ).

The minimum resistance and maximum resistance shall be as given in Table-1.

表-2 電阻值有效數字的標準 Table-2 Standard nominal resistance values

系列名 Name of series	標準公稱電阻值 (為有效數字，單位省略) Standard nominal resistance values (significant figures with the unit omitted)
E-12	1.0, 1.2, 1.5, 1.8, 2.2, 2.7, 3.3, 3.9, 4.7, 5.6, 6.8, 8.2
E-24	1.0, 1.1, 1.2, 1.3, 1.5, 1.6, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0 3.3, 3.6, 3.9, 4.3, 4.7, 5.1, 5.6, 6.2, 6.8, 7.5, 8.2, 9.1



2. 構造 Construction

2.1 外形寸法 External dimensions

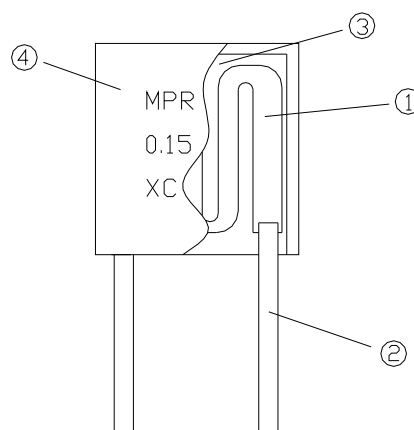
參照本仕様書の「4. 外形寸法」。

The dimensions shall be satisfied with 「4. External dimensions」.

2.2 構造圖 Structure diagram

MPR 系列之金屬板電阻器係按下表的材料而構成：

The construction of resistor (MPR series) shall be as follows：



號碼 No.	構造名稱 Item	內容 Material
1	電阻體 Resistance element	電阻體的成份係使用具耐熱性之銅鎳合金, 鎳鉻合金或鐵鉻合金抵抗板。 The resistor element consists of heat resistant plate of Copper-Nickel, Nickel-Chrome or Iron-Chrome.
2	導線 Lead wire	焊錫或鍍錫的鐵線。 Soldered or tinned annealed iron wire.
3	充填材料 Enclosing material	使用特殊不燃性耐熱水泥塗料。 Special non-flame cement.
4	瓷殼 Ceramic case	使用高熱傳導性瓷殼。 High thermal conductive ceramic case.

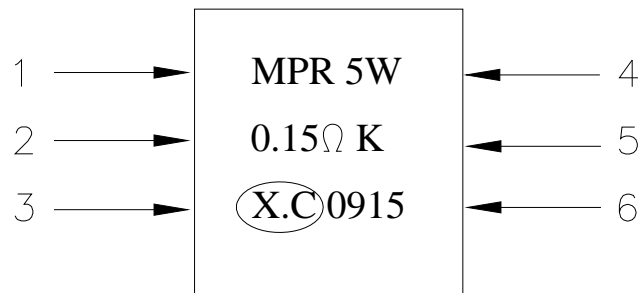


2.3 表示 Indication

此標誌能夠承受自然及電子退化的要求，它是永久的標誌。

The stamp shall resist physical or electrical deterioration, it is permanent marking.

Example :



- 1 種類 Type
- 2 電阻值 Resistance
- 3 製造者名 Manufacturer
- 4 功 率 Rated power
- 5 電阻值容許差 Resistance tolerance
- 6 製造日期 Manufacturing date

如何判讀製造日期。

How to read the manufacturing date.

例 Example :

09 15  
A B

- A : 表示年份為 2009 年。  
Represents the year 2009.
- B : 表示週期為第 15 週。  
Represents the 15<sup>th</sup> week.



3. 特性 Characteristics

表-3 Table-3

項目 Item	規格值 Performance	試驗方法 (依據 JIS C 5202) Test methods (Conform to JIS C 5202)
直流電阻值 DC Resistance	DC Resistance value must be within the specified tolerance.	Test voltage-Not more than 1 percent of rated wattage.
溫度係數 Temperature coefficient	within $\pm 350\text{PPM}/^\circ\text{C}$	Comply with 5.2 $\frac{R_1 - R_0}{R_0(T_1 - T_0)} \times 10^6 \text{ (PPM}/^\circ\text{C)}$ R <sub>0</sub> : Resistance value at room temp. (T <sub>0</sub> ). R <sub>1</sub> : Resistance value at room temp. plus 100°C (T <sub>1</sub> ).
短時間過負荷 Short time overload	within $\pm(2\%+0.05\Omega)$ No evidence of arcing, or charring.	Comply with 5.5 10 times of rated wattage for 5 seconds
絕緣抵抗 Insulation resistance	10 <sup>3</sup> MΩ or more	Comply with 5.6 V-block method Resistor shall be tested at DC potential respectively for 60 seconds.
耐電壓 Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation breakdown.	Comply with 5.7 AC500V, V-block method Resistor shall be tested at AC potential respectively for 60 seconds.
端子強度 Terminal strength	No evidence of mechanical damage.	Comply with 6.1 Tensile strength: 4.5kg, for 30 seconds. Bending strength: Bent 90°, 4.5kg, 3 times.
耐振性 Resistance to vibration	No evidence of mechanical damage.	Comply with 6.3 Amplitude : 1/6mm, frequency 10-55 Hz, swing time : 1min. for 2hr. to X, Y, Z each other directions.



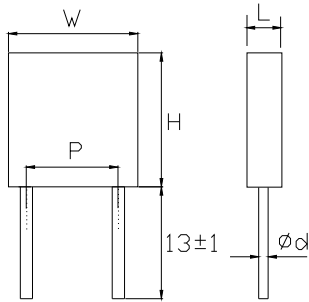
項目 Item	規格值 Performance	試驗方法 (依據 JIS C 5202) Test methods (Conform to JIS C 5202)
焊錫耐熱性 Resistance to soldering heat	within $\pm(2\%+0.05\Omega)$ No evidence of mechanical damage.	Comply with 6.4 350 $\pm$ 10 $^{\circ}$ C, 3 $\pm$ 0.5s or 260 $\pm$ 5 $^{\circ}$ C, 10 $\pm$ 1s, After test leave for 3hr.
焊錫附着性 Solderability	Covered with new solder by 95% at least.	Comply with 6.5 Test temperature of solder: 245 $\pm$ 5 $^{\circ}$ C Dipping time in solder: 5 $\pm$ 0.5s
耐溶劑性 Resistance to solvent	No visible damage to protective coating and marking.	Comply with 6.9 After immersing the sample in I.P.A for 60 sec. $\pm$ 10sec., the resistor surface should be rubbed with absorbent cotton for 10 times.
溫度循環 Temperature cycle	within $\pm(2\%+0.05\Omega)$ No evidence of mechanical damage.	Comply with 7.4 Low side : -55 $\pm$ 3 $^{\circ}$ C/30min, Room temp. : 2 to 3min High side : +155 $\pm$ 2 $^{\circ}$ C/30min, Room temp. : 2 to 3min 5 cycles
耐濕負荷壽命 Load life in humidity	within $\pm(3\%+0.05\Omega)$	Comply with 7.9 40 $\pm$ 2 $^{\circ}$ C, 90 to 95%RH, 1000h Rated voltage x 1/10 (90 min ON, 30 min OFF)
負荷壽命 Load life	within $\pm(5\%+0.05\Omega)$	Comply with 7.10 70 $\pm$ 3 $^{\circ}$ C, 1000h Rated voltage (90 min ON, 30 min OFF)
難燃性 Flammability	No evidence of flame.	Comply with 7.12.3.2 AC voltage of 4,8,16 and 32 times the power rating shall be applied for 1 min.each time until discknnection occurs(or the change rate is 100 times more than the one before test). However the applied voltage shall not exceed the value of 4 times of the maximum operating voltage
高溫貯藏 High temperature storage	No evidence of mechanical damage.	Storage for 2 hours, 275 $^{\circ}$ C



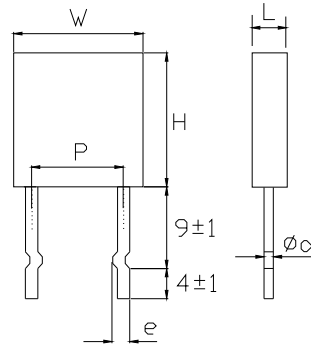


4. 外形寸法 External dimensions

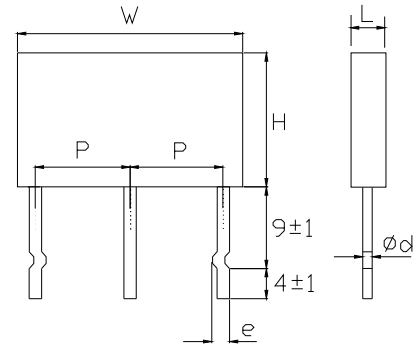
Single Straight Style



Single Forming Style



Twin Style (xW+xW)



額定電力 Power Rating	尺 寸 Dimensions (mm)					
	W	L±1	H	P±1	d±0.1	e±0.5
2W	13.0±1.0	4.0	8.5±1.0	9.0	0.7	2.0
3W	14.0±1.0	5.0	13.0±1.0	9.0	0.7	2.0
5W	14.0±1.0	5.0	18.0±1.0	9.0	0.7	2.0
10W	26.0±1.5	5.0	17.0±1.5	20.0	0.7	2.0
2W+2W	26.0±1.5	5.0	9.5±1.5	10.0	0.7	2.0
3W+3W	26.0±1.5	5.0	13.0±1.5	10.0	0.7	2.0
5W+5W	26.0±1.5	5.0	17.0±1.5	10.0	0.7	2.0
7W+7W	26.0±1.5	5.0	20.0±1.8	10.0	0.7	2.0