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1. 適用範圍 Specification

1-1 本承認書僅適用本公司生產之各種碳膜固定電阻器（ 1/8W、1/6W、1/4W、1/2W、1W、2W、3W)及其小型化之成品規格。

The specification is only suitable for Carbon Film Fixed Resistors(1/8W、1/6W、1/4W、1/2W、1W、2W、3W)and there are small size manufactured by SHI MENG ELECTRONIC CO., LTD.

1-2 參考標準 Applicable specification

本承認書參考《JIS C5202-1990》和《GB/T 5729-2003/IEC 60115-1:2001》

The specification Applicable specification《JIS C5202-1990》and《GB/T 5729-2003/IEC 60115-1:2001》

2. 特性 Feature

2-1 高品質、低成本 High quality performance、Great economy

2-2 適用自動化插件 Automatically insertable

3. 品名 Part Number

依據其種類，分別注明額定功率、容許差、公稱電阻值和形狀。

According the Resistors type, To mark the Rated power, Tolerance, Resistance value, and forming type.

例(e.g)：	CF	1/4W	J(±5%)	100Ω	T52
	種類	額定功率	容許差	阻值	形狀
	Type	Rated power	Tolerance	Resistance	Forming

4. 結構圖 Construction

a) 鍍錫銅導線或鍍錫銅包鋼線 Tinned copper lead wire or CP lead wire

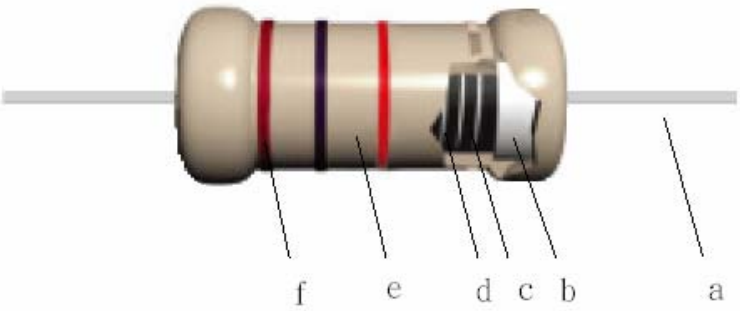
b) 鍍錫鐵帽 Tin-plated steel caps

c) 高穩定性導電膜 High stability Electric conduction film

d) 高熱傳導瓷棒 High heat exchanged ceramic base

e) 環氧樹脂塗料 Epoxy resin coating

f) 色環標示 Color ring Mark



5. 術語 Glossary

5-1 種類 Type

以大寫英文字母“CF”表示為碳膜固定電阻器。

Carbon Film Fixed Resistors are marked with “CF” 。

5-2 標稱阻值 Rated resistance

Unit: Ω、KΩ(10^3Ω)、MΩ(10^6Ω)等。

5-3 電阻值容許差 Resistance tolerance:

F(±1%)、G (±2%) and J(±5%)

5-4 額定功率：在 70℃環境溫度下進行 70℃耐久性試驗，而且阻值變化不超過該試驗的允許值時所允許的最大功率

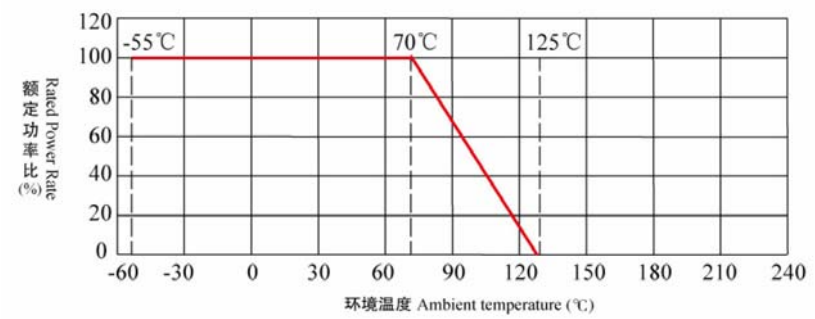
Rated power：At 70 ℃ to 70 ℃ ambient temperature durability test, and the change in resistance does not exceed the value of the test allows the maximum power allowed

5-4-1 以“W”代表額定電功率，如加一英文字母“S”即表示小型化，例 1/4WS，即表示額定功率為 1/4W 之小型化

The “W” is the rated power, such as adding a letter "S" means that small, for example 1/4WS, that means a power rating of 1/4W the small Size

5-4-2 額定功率系適應在周圍溫度 70℃可以連續負載的最大功率,但周圍溫度如超過 70℃時之額定電力則依圖的降功率曲線實施。

Rated power is maximum power which can be continuously loaded at specified ambient temperature 70℃, however when the ambient temperature exceeds 70℃,rated power should be determined form the derating curve



5-5 額定電壓：用標稱阻值和額定功率乘積的平方根計算出來的直流電壓或交流電壓有效值。由於電阻器的尺寸和結構上的原因，在超過一定的高阻值時不允許施加額定電壓，而是應施加最高使用電壓。

Rated voltage: The nominal resistance and power rating calculated by the square root of the product of DC voltage or AC rms voltage. As the resistor size and structural reasons, the high resistance when more than a certain rated voltage is not allowed, but the maximum operating voltage should be applied.

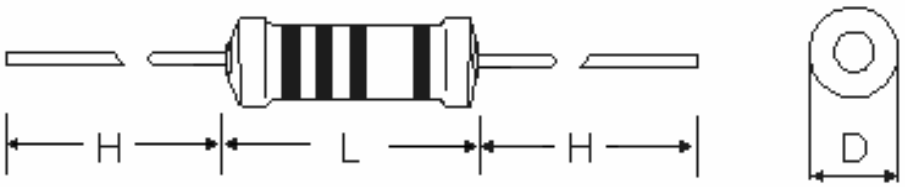
5-6 最高使用電壓：可以連續施加在電阻值兩個引出端上的最大直流或交流電壓有效值，當電阻的額定電壓計算出來大於最高使用電壓時，只能對電阻施加最高使用電壓。

Max continuous working voltage: resistance can be continuously applied to the two terminals on the largest DC voltage or AC rms voltage, when the resistance is greater than the maximum rated voltage is calculated using the voltage, use only the highest voltage applied to the resistance

5-7 電阻溫度係數：兩個規定溫度之間的阻值相對變化除以產生這個變化的溫度之差，主要用來衡量電阻值隨溫度變化而變化的特性

Temperature coefficient of resistance: the resistance between the two provisions relative changes in temperature produce this change by dividing the temperature difference is mainly used to measure the resistance changes with temperature characteristics

6. 尺寸 Dimension

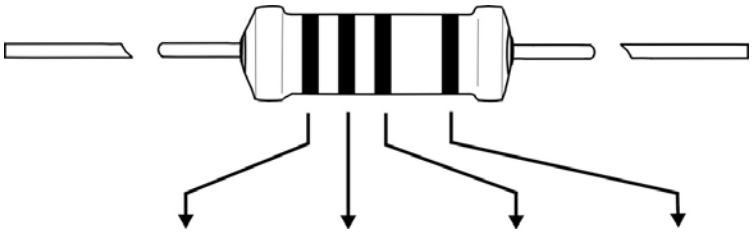


Unit: mm

Type \ Size	L±0.5	D±0.5	H±3	d±0.06	Resistance range	Tolerance
1/6W 1/8W 1/4WS	3.5	1.7	27	0.40	0Ω~15MΩ	±5% ±2%
1/4W 1/2WS	6.5	2.4	27	0.43	0Ω~22MΩ	
1/2W 1WS	9.2	3.3	26	0.50	0Ω~22MΩ	
1W 2WS	11	4.5	22/28/35	0.65	0.1Ω~22MΩ	
2W 3WS	15	5.0	34	0.75	0.1Ω~22MΩ	
3W 5WS	18	6.0	33	0.75	0.1Ω~22MΩ	

注：①引線根部腳漆長度小於1.5mm
Lead paint the roots of the foot length is less than 1.5mm
②0Ω阻值範圍為<50mΩ
0Ω Resistance Value <50mΩ
③特殊要求如面漆不燃性，色碼耐溶劑清洗，可按客戶要求製作。
Special requirements such as non-flammable paint, color-coded cleaning solvent, according to customer requirements

7. 色碼 Explanation of color



顏色 Color	第一位數 1ND band	第二位數 2ND band	倍數 Multiple	容許差% Tolerance
Black 黑	0	0	10^0	
Brawn 棕	1	1	10^1	
Red 紅	2	2	10^2	G(±2%)
Orange 橙	3	3	10^3	
Yellow 黃	4	4	10^4	
Green 綠	5	5	10^5	
Blue 藍	6	6	10^6	
Violet 紫	7	7	10^7	
Gray 灰	8	8	10^8	
White 白	9	9	10^9	
Gold 金			10^{-1}	J(±5%)
Silver 銀			10^{-2}	

注：0Ω用一道黑色表示 Notice: 0Ω mark with one Black color

8. 電氣特性 Characteristics

Item	Size					
額定功率 Rated power	1/8W 1/6W 1/4WS	1/4W 1/2WS	1/2W 1WS	1W 2WS	2W 3WS	3W 5WS
最高使用電壓 Max continuous working voltage	200V	250V	350V	350V	500V	500V
最高過負荷電壓 Max overload voltage	400V	500V	700V	700V	1000V	1000V
耐絕緣電壓 Insulation resistance voltage	300V	350V	500V	500V	700V	700V
使用溫度範圍 Operating temp range	-55℃ ~ +125℃					

Note:額定電壓 rated voltage=$\sqrt{\text{功率 power}*\text{阻值 resistance value}}$

當計算得出的額定電壓大於最高使用電壓，使用時取兩者較小者

When the calculated rated voltage greater than the maximum operating voltage, whichever is the lesser of use

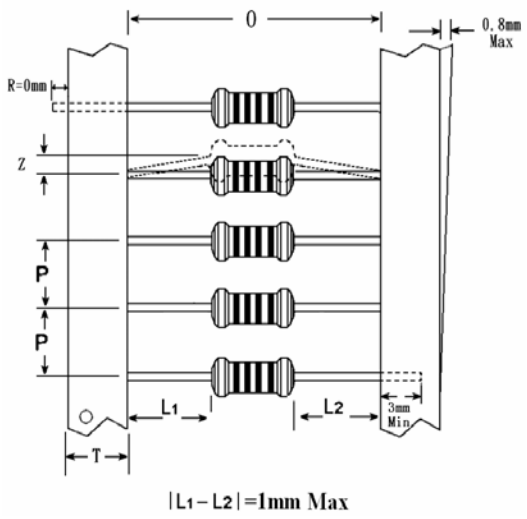
9. 性能 Performance

特性項 Characteristics	規格值 Specifications	測試方法 Test methods
溫度係數 T.C.R	+350 ～ -1500 PPM/℃	$\frac{R2-R1}{R1*(T2-T1)}*10^6$(PPM)/ ℃ R1:常溫(T1)阻抗值. Resistance value at room temperature (T1). R2:常溫+100℃(T2)阻抗值. Resistance value at room temperature+100℃.
溫度壽命 Load life	阻抗值變化±(5%R+0.05Ω)，機械特性不可有損傷. Resistance change rate±(5%R+0.05Ω) MAX. With no evidence of mechanical damage.	溫度 70±2℃,恆溫箱中,加額定電壓測試 1.5 小時停止 0.5 小時,連續 1000 小時. Resistance change after 1000hrs operating at rated voltage with duty cycle of 1.5hrs ON 0.5hrs OFF at 70℃±2℃.
短時間過負荷 Short time over load	±(1%R+0.05Ω)	額定電壓*2.5 倍或最高過負荷電壓（取小者）,測試 5 秒 2.5 times the rated voltage or maximum overload voltage (whichever is less), testing 5 seconds
絕緣阻抗 Insulation resistance	1000MΩ以上 1000MΩ or more	將待測物置於 V 型槽 V-block
耐絕緣電壓 Electric withstanding voltage	阻抗值變化 ±(0.5%R+0.05Ω)塗裝不可燒損,絕緣不可破壞. Resistance change ±(0.5%R±0.05Ω).No evidence of flashover mechanical damage, Arcing or insulation breakdown.	電阻兩端導線置於金屬 V 型槽上,依特性表之電壓規定印加 60 秒. Resistance shall be clamped in the trough of a 90 metallic v-block and shall be test at specified in the above list for 60 seconds.

<table>
<tr><td rowspan="5">溫度循環
Temperature cycling</td><td rowspan="5">阻抗值變化 ±(1%R+0.05Ω)以內, 機械特性不可有損傷.
Resistance change is ±(1%R+0.05Ω)MAX. With no evidence of mechanical damage.</td><td colspan="3">依下表所規定之溫度連續 5 次</td></tr>
<tr><td>步驟
Step</td><td>溫度
Temperature</td><td>放置時間
Time (MIN)</td></tr>
<tr><td>1</td><td>-25℃±3℃</td><td>30</td></tr>
<tr><td>2</td><td>Room temp</td><td>10-15</td></tr>
<tr><td>3</td><td>85℃±2℃</td><td>30</td></tr>
<tr><td>4</td><td>Room temp</td><td>10-15</td></tr>
<tr><td rowspan="4">耐熱性
Resistance to soldering heat</td><td rowspan="4">阻抗值變化 ±(1%R+0.05Ω).以內,機械特性不可有損傷.
Resistance change is ±(1%R+0.05Ω).MAX. With no evidence of mechanical damage.</td><td colspan="2">將電阻兩端導線浸入錫爐約 3.2 到 4.8mm
依下表規定實施</td></tr>
<tr><td>Temperature</td><td>Dip time</td></tr>
<tr><td>350℃±10℃</td><td>3±0.5 sec</td></tr>
<tr><td>260℃±5℃</td><td>10±1 sec</td></tr>
<tr><td>焊錫性
Solder ability</td><td>百分之 95 覆蓋於導線上
95% coverage minimum</td><td colspan="2">錫爐溫度:260±5℃
浸錫時間:3±0.5 sec
Test temperatures of solder260±5℃
Dwell time in solder:3±0.5 sec</td></tr>
<tr><td>接頭強度
Join intensity</td><td>接點不得有脫落情形
No terminal wire loosening and breakage shall occur.</td><td colspan="2">夾住導線焊接端,並向外翻轉 90 度以上
Bending strength load 90^0 reciprocation twice</td></tr>
</table>

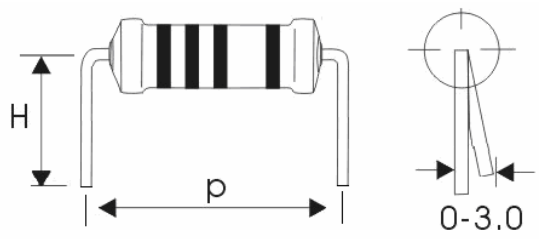
10. 成型方式 Forming type

10-1 Tape packing



STYLE	TYPE	0	|L1-L2|	P	T	Z	最小包裝數
T-26	1/8W 1/6W 1/4WS	$26^{+1.5}_{-0}$	1max	5±0.5	5±1	1max	5000pcs
	1/4W 1/2WS	$26^{+1.5}_{-0}$	1max	5±0.5	5±1	1max	5000pcs
T-52	1/8W 1/6W 1/4WS	52±1	1max	5±0.2	5±1	1max	5000pcs
	1/4W 1/2WS	52±1	1max	5±0.2	5±1	1max	5000pcs
	1/2W 1WS	52±1	1max	5±0.2	5±1	1max	2000pcs
	1W 2WS	52±1	1max	5±0.2	5±1	1max	1000pcs
T-63	1W 2WS	63±2	1max	5±0.5	5±1	2max	1000pcs
T-73	1W 2WS	73±2	1max	5±0.5	5±1	2max	1000pcs
	2W 3WS	73±2	1max	5±0.5	5±1	2max	1000pcs
	3W 5WS	73±2	1max	10±0.5	5±1	2max	500pcs

10-2 M-Type

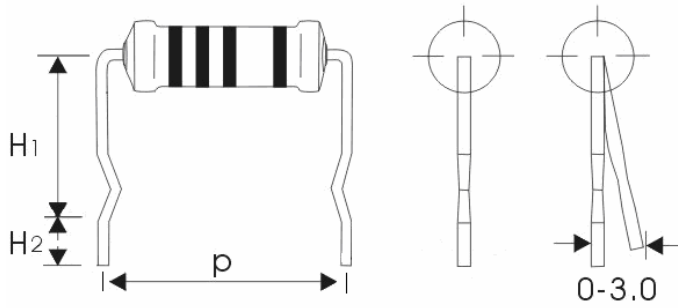


TYPE	P±0.5	H±0.5
1/8W 1/6W 1/4WS	5	4/6/8/10
1/4W 1/2WS	10	4/6/8/10
1/2W 1WS	12.5	4/6/8/10
1W 2WS	15	10
2W 3WS	20	10
3W 5WS	25	10

可依客戶所需求尺寸加工製造

It can be man fractured according to the dimension that required by customers

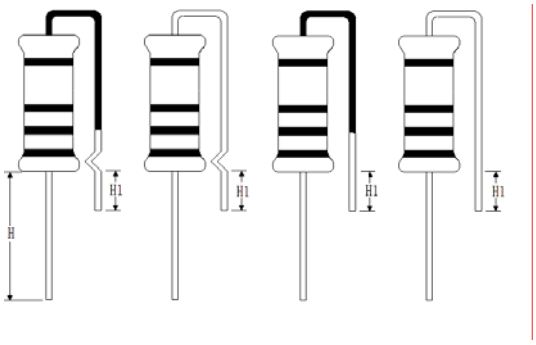
10-3 MK-Type



TYPE	H1±0.5	H2±1
1/4W 1/2WS	5/8/13	4/6
1/2W 1WS	5/8/13	4/6
1W 2WS	5/8/13	4/6
2W 3WS	5/8/13	4/6
3W 5WS	5/8/13	4/6

注： 1/4W 最小腳距為 8mm、1/2W 最小腳距為 12.5mm
1W 最小腳距為 15mm、2W 最小腳距為 20mm
3W 最小腳距為 23mm。

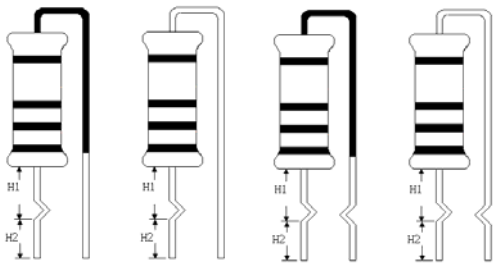
10-4 F-Type



TYPE	H±3	H1±1
1/8W 1/6W 1/4WS	27 Max	4/6/8/10
1/4W 1/2WS	26 Max	4/6/8/10
1/2W 1WS	24 Max	4/6/8/10
1W 2WS	22/28 Max	4/6/8/10
2W 3WS	32 Max	4/6/8/10
3W 5WS	32 Max	4/6/8/10

"H1" "H" 部份可剪，但長度不得小於 3.5mm
"H1" "H" part can be cut, but can' t be small than3.5mm

10-5 F-Type 直腳打 K（單雙）



TYPE	H1±0.5	H2±1
1/2W 1WS	4/5/6	4/6
1W 2WS	4/5/6	4/6
2W 3WS	4/5/6	4/6
3W 5WS	4/5/6	4/6

11. 訂貨方式 How To Order

如: 碳膜固定電阻器 1/2W T52 ±5% 10Ω

Example: CF 1/2W T52 ±5% 10Ω

1	C F	0 0 2	T 5 2	J	0 1 0 0	C P
(1)	(2)	(3)	(4)	(5)	(6)	(7)

代碼 Code	類別 Type
1	Product

代碼 Code	瓦特數 Wattage
008	1/8W
006	1/6W
004	1/4W
002	1/2W
010	1W
020	2W
030	3W

代碼 Code	含義 meaning
T	Tape / Box
P	Bulk/ Box
Size	
---	Normal size
s	Small size
ss	Super small size
Extent	
26	Tape width 26mm
52	Tape width 52mm
63	Tape width 63mm
73	Tape width 73mm
Molding Size	
M12510	M 型 12.5*10mm
M200130k	M 型打 Kin 20*13mm
F00	立式成型，不剪腳
F08	立式成型，剪腳 8mm
F08U	立式涂腳漆成型，剪腳 8mm
F08K1U	立式涂腳漆打 KIN 成型，剪腳 8mm
尺寸方面不一一描述，以此類推	

阻值	Ex.	誤差 ±2% ±5%
低阻兩位小數Ω	0.15Ω	R150
個位Ω	1Ω	0109
十位Ω	10Ω	0100
百位Ω	100Ω	0101
個位 K	1K	0102
十位 K	10K	0103
百位 K	100K	0104
個位 M	1M	0105
十位 M	10M	0106

代碼 Code	產品類別 Type
CF	碳膜固定電阻器 Carbon film fixed resistors

代碼 Code	容許差 tolerance
G	±2%
J	±5%

代碼 Code	含義 meaning
---	不標注為銅引腳
CP	CP 線引腳