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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繞線電阻及無感型繞線電阻器 (1/4W、1/2W、1W、2W、3W、5W、6W) 及其小型化之成品規格。

The specification is only suitable for Wire Wound Resistors and non-inductive Wire Wound Resistors (1/4W、1/2W、1W、2W、3W、5W、6W) 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 低噪音係數. Low noise

2-2 耐高溫. High temperature resistant

2-3 能承受大電流負荷 Can withstand the high current load

2-4 可以製作無感型產品，滿足高頻線路使用.

Can make no sense-based products, meet the high-frequency line to use.

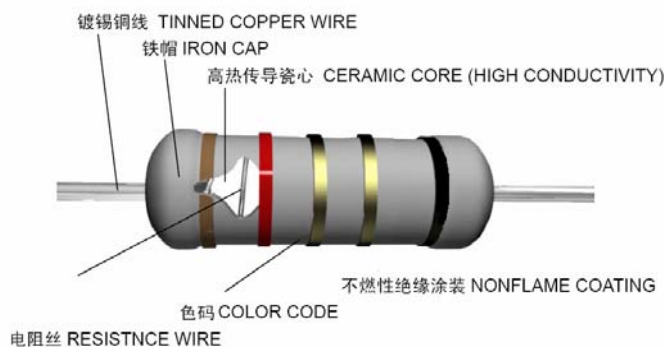
3. 品名 Part Number

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)：	KN	1/2W	J(±5%)	10Ω	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



無感內部結構



有感內部結構



5. 術語 Glossary

5-1 種類 Type

以大寫英文字母 “KN” 表示為繞線電阻器；以大寫英文字母 “NKN” 表示為無感繞線電阻器。

Wire Wound Resistors are marked with “KN”, Wire Wound Resistors Manufactured are marked with “NKN”

5-2 標稱阻值 Rated resistance

Unit: $m\Omega(10^{-3}\Omega)$ 、 Ω 、 $K\Omega(10^3\Omega)$ 等

5-3 電阻值容許差 Resistance tolerance:

J($\pm 5\%$)、G($\pm 2\%$)、F($\pm 1\%$)

5-4 額定功率：在 70°C 環境溫度下進行 70°C 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

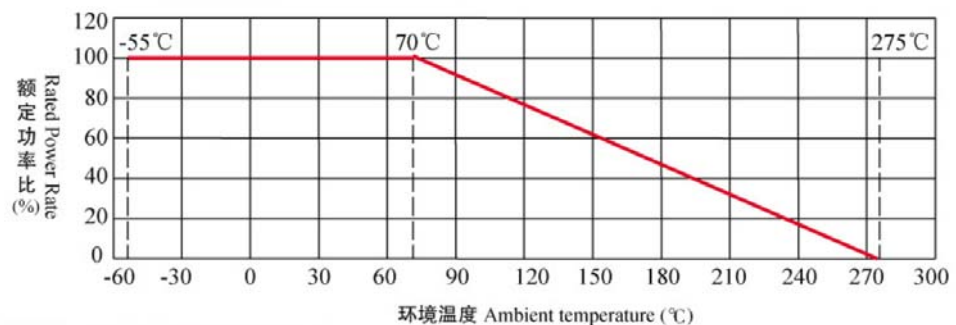
Rated power: At 70 °C to 70 °C ambient temperature durability test, and the change in resistance does not exceed the value of the test allows the maximum power allowed

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 1WS，即表示額定功率為 1W 之小型化

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

5-4-2 額定功率系適應在周圍溫度 70°C 可以連續負載的最大功率，但周圍溫度如超過 70°C 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°C, however when the ambient temperature exceeds 70°C, rated power should be determined from 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。

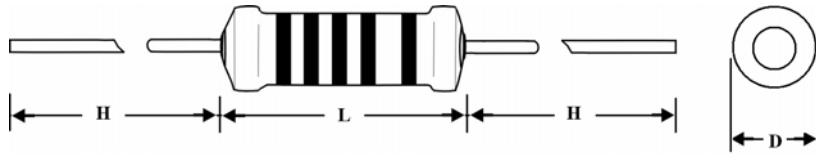
Max continuous working voltage: resistance can be continuously applied to the two terminals on the largest DC voltage or AC rms voltage, when the resistance is greater than the maximum rated voltage is calculated using the voltage, use only the highest voltage applied to the resistance

5-7 電阻溫度係數 (TCR)：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 (TCR): the resistance between the two provisions relative changes in temperature produces this change by dividing the temperature difference is mainly used to measure the resistance changes with temperature characteristics



6. 尺寸 Dimension



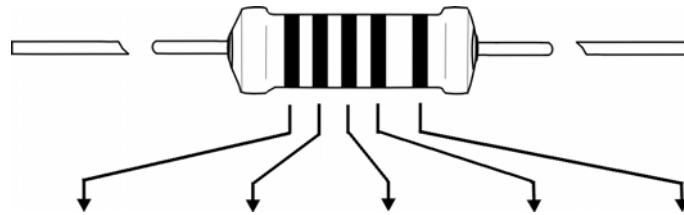
Unit: mm

Type \ Size	L±0.5	D±0.6	H±3	d±0.06	Resistance range	Tolerance
1/4W 1/2WS	6.5	2.4	27	0.43	0.5Ω~50Ω	F: ±1% G: ±2% J: ±5%
1/2W 1WS	9.2	3.3	26	0.50	0.05Ω~100Ω	
1W 2WS	11	4.5	22/28/35	0.65	0.01Ω~200Ω	
2W 3WS	15	5.0	34	0.75	0.01Ω~500Ω	
3W 5WS	18	6.0	33	0.75	0.01Ω~1KΩ	
5W 6W	25	8.0	35	0.75	0.01Ω~5KΩ	

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

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	區分環 Special logo
Black 黑	0	0	10 ⁰		表示有感繞線電阻
Brawn 棕	1	1	10 ¹	F(±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		表示無感繞線電阻
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：繞線電阻正常產品色碼用五道色碼標示，前三道表示阻值，第四道表示誤差，第五道表示產品之間的區分標誌環，有感電阻用黑色，無感電阻用綠色。對於超低阻值產品，本體標示無法依照普通產品上色碼時，區分標誌環省略。例如 KN ±5%產品：

- 1Ω—棕黑金金黑 0.1Ω—棕黑銀金黑 0.01—黑棕銀金黑(最後一道黑色區分環省略)
- 6.8Ω—藍灰金金黑 0.68Ω—藍灰銀金黑 0.068—黑藍灰銀金(最後一道黑色區分環省略)



8. 電氣特性 Characteristics

Item	Size					
額定功率 Rated power	1/4W 1/2WS	1/2W 1WS	1W 2WS	2W 3WS	3W 5WS	5W 6W
最高使用電壓 Max continuous working voltage	150V	150V	150V	250V	350V	500V
最高過負荷電壓 Max overload voltage	300V	400V	400V	400V	600V	600V
耐絕緣電壓 Insulation resistance voltage	250V	250V	250V	350V	500V	750V
使用溫度範圍 Operating temp range	-55°C ~ +275°C					

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

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	±300PPM/°C	$\frac{R2-R1}{R1} \times 10^6 \text{ (PPM) / } ^\circ\text{C}$ R1: 常溫(T1)阻抗值. Resistance value at room temperature (T1). R2: 常溫+100°C (T2)阻抗值. Resistance value at room temperature+100°C.
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°C, 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°C±2°C.
短時間過負荷 Short time over load	±(2%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.



繞線電阻器

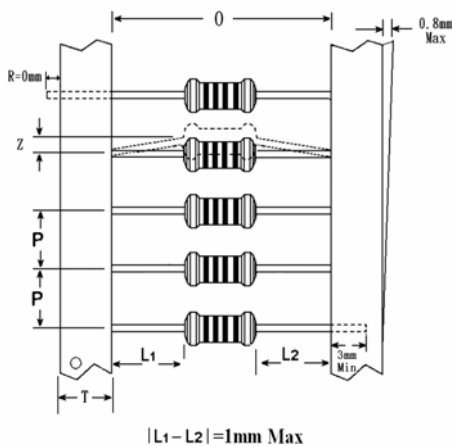
Wire Wound Resistors

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

10. 成型方式 Forming type

10-1 Tape packing

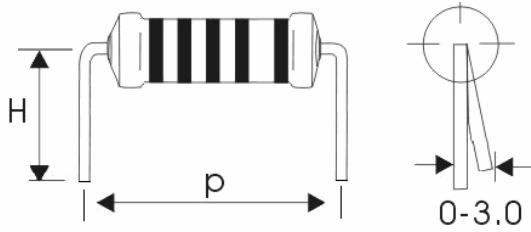
Unit: mm



STYLE	TYPE	0	L1-L2	P	T	Z	最小包裝數
T-52	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

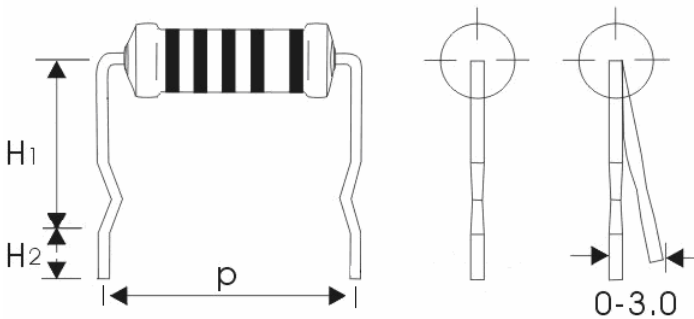


TYPE	P±0.5	H±0.5
1/4W 1/2WS	10	4/6/8/10
1/2W 1WS	12.5	4/6/8/10
1W 2WS	15	10
2W 3WS	20	10
3W 5WS	25	10

可依客戶所需求尺寸加工製造

It can be manufactured according to the dimension that required by customers

10-3 MK-Type



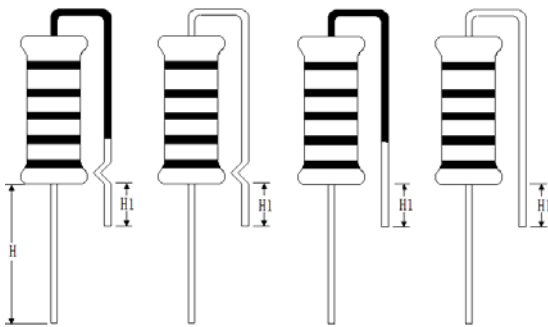
TYPE	H1±0.5	H2±1
1/4W 1/2WS 1WSS	5/8/13	4/6
1/2W 1WS 2WSS	5/8/13	4/6
1W 2WS	5/8/13	4/6
2W 3WS	5/8/13	4/6
3W 5WS	5/8/13	4/6

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

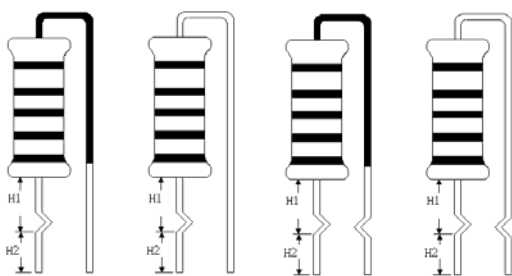


TYPE	H±3	H1±1
1/4W 1/2WS 1WSS	26 Max	4/6/8/10
1/2W 1WS 2WSS	24 Max	4/6/8/10
1W 2WS	22/28 Max	4/6/8/10
2W 3WS	32 Max	4/6/8/10
3W 5WS	32 Max	4/6/8/10

“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 than 3.5mm

10-5 F-Type 直腳打 K (單雙)



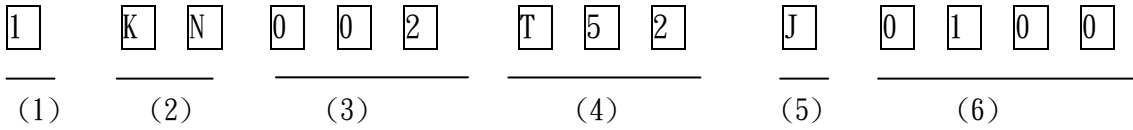
TYPE	H1±0.5	H2±1
1/2W 1WS 2WSS	4/5/6	4/6
1W 2WS	4/5/6	4/6
2W 3WS	4/5/6	4/6
3W 5WS	4/5/6	4/6



11. 訂貨方式 How To Order

如：繞線電阻器 1/2W T52 ±5% 10Ω

Example: KN 1/2W T52 ±5% 10Ω



代碼 Code	類別 Type
1	Product

代碼 Code	瓦特數 Wattage
006	1/6W
004	1/4W
002	1/2W
010	1W
020	2W
030	3W
050	5W
060	6W

代碼 Code	含義 meaning
T	Tape / Box
P	Bulk/ Box
Size	
---	Normal size
s	Small size
ss	Super small size
Extent	
52	Tape width 52mm
63	Tape width 63mm
73	Tape width 73mm
Molding Size	
M12510	M 型 12.5*10mm
Mk200130	M 型打 Kin 20*13mm
F00	立式成型，不剪腳
F08	立式成型，剪腳 8mm
F08U	立式塗腳漆成型，剪腳 8mm
F08K1U	立式塗腳漆打 KIN 成型，剪腳 8mm
尺寸方面不一描述，以此類推	

阻值	Ex.	標示 Mark
低阻兩位 小數Ω	0.05Ω	R05
低阻兩位 小數Ω	0.15Ω	0158
個位Ω	1Ω	0109
十位Ω	10Ω	0100
百位Ω	100Ω	0101
個位K	1K	0102

以此類推

代碼 Code	產品類別 Type
KN	有感繞線電阻
NKN	無感繞線電阻

代碼 Code	容許差 tolerance
F	±1%
G	±2%
J	±5%