

KNP 绕线电阻规格承認書

1.適用範圍 Applicable Scope

本承認書適用繞線型固定電阻器。

2.形名 Part Number

依據其種類、額定電力、端子型狀、特性、公稱電阻值及容許誤差等分別注明。

It is composed by Type, Rated Wattage, Terminal Form, Characteristic, and Nominal Resistance and Tolerance.e.g.

KNP	10W	P(M.F)	T-2($\pm 350\text{PPM}/^{\circ}\text{C}$)	Ω	J($\pm 5\%$)
種類	額定電力	端子形狀	特性	公稱電阻值	容差
Type	Rate Wattage	Terminal Form	Characteristic	Nominal Resistance	Tolerance

2-1.種類 Type

① 不燃性塗裝型繞線有感電阻器以 KNP 表示之。

Wire Wound Resistor is called “KNP”

② 不燃性塗裝型繞線无感電阻器以 NKNP 表示之。

Wire Wound Resistor is called “NKNP”

2-2.額定電力 Rated Wattage

額定電力(W)以數字表示，如 1/2W、1W、2W、_____40W。

Shown by “W”、such as 1/2W、1W、2W、_____40W。

2-3.端子形狀 Terminal Form

視端子區分為 P 形、M 形、F 形。

Upon the shape of terminal, it has P Form and M form , F form

2-4.特性 Characteristic

溫度系數以 “T” 表示之,如:

Temperature Coefficient is its character represented by “T”, such as:

$\pm 350\text{PPM}/^{\circ}\text{C}$

2-5.公稱電阻值 Nominal Resistance:

Ω ,K Ω 為單位,依據 JIS-C6402 為適用原則(E-24 Series)。

Ω ,K Ω are its unit which is in accordance with JIS-C6402(E-24)series.

2-6.電阻值及容許誤差 Tolerance

在室溫中依檢測器測量,應在指定電阻值之容許誤差以內。

It is measured by Bridge-method at room temperature and expressed by a capital letter.

F $\pm 1\%$ G $\pm 2\%$ J $\pm 5\%$ K $\pm 10\%$

3.額定功率 Rated power

額定電力是周圍溫度 40 $^{\circ}\text{C}$ (3W 以上), 70 $^{\circ}\text{C}$ (2W 以下) 以下可連續使用之負載電力最大值數,且應使機械性能與電氣性能滿足。又周圍溫度超越上記溫度時,依造圖一之電力輕減曲線而定。

Rated power is the value of Max load voltage specified at the ambient temperature of 70 $^{\circ}\text{C}$ and shall meet the functions of electrical and mechanical performance. When the ambient temp.surpasses above Mentioned temperature. The value declines as following

降功耗曲线
DERATING CURVE:

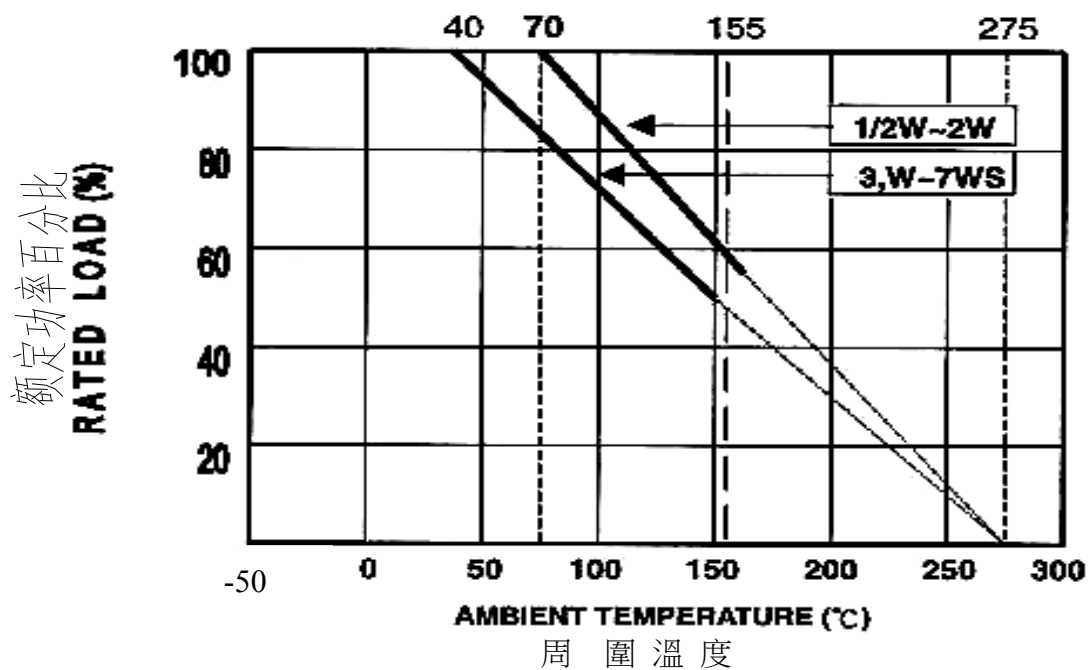


圖 1: 負載減輕曲線

3-1.額定電壓 Rated Voltage

依公式 $E=\sqrt{PR}$ 求出連續使用額定電壓,如額定電壓超出最高使用電壓,則以最高使用電壓為連續使用額定電壓

It is calculated as the following formula $E=\sqrt{PR}$

However, in case the voltage calculated exceeds the maximum load voltage, such the maximum load. Voltage shall be regarded as its rated voltage, means whichever less.

E=連續使用額定電壓 E=Rated Continuous Working Voltage(V)
P=額定功率 P=Rated Power(W)
R=公稱電阻值 R=Nominal Resistance Value(Ω)

3-2 定格

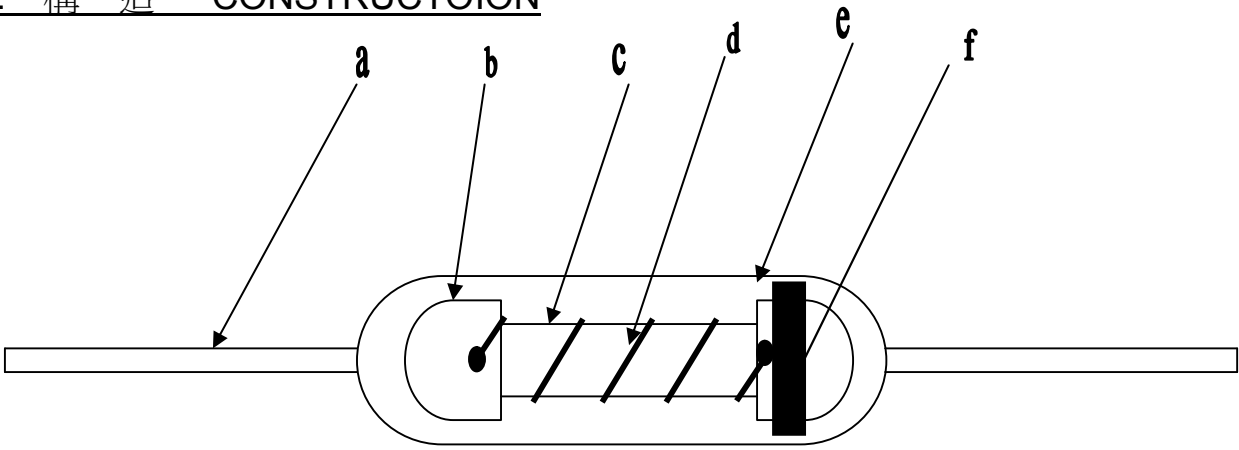
額定電力	最高使用電壓	最高使用負荷電壓	絕緣抗壓
1/4W	300V	600V	300V
1/2W 1/2WS	300V	600V	300V
1W/1WS	400V	700V	350V
2W/2WS	400V	700V	500V
3WS/3W	600V	800V	500V
5WS	600V	1000V	500V

3-3 備注

- 1. K N P 阻抗範圍 0.01 Ω -1K Ω (N K N P 則為 0.01 Ω -100 Ω).
- 2. 無感繞線電阻(N K N P)的特性說明:

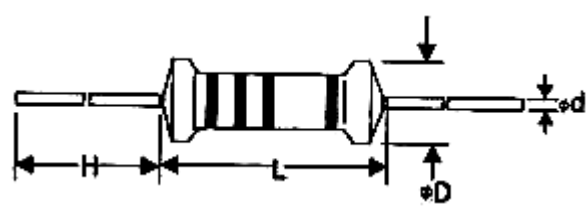
本項產品可減少各種電子回路的雜訊或瞬間突破,如用在交換式電源供應器或不斷電設備之電流感應器(Current Sensory)或突破吸收部分(Snubbed)時,可將雜訊干擾降至最低限度,提高振頻率或縮小前產品的體積,節省材料費用,並可防止振蕩,且突破降低自然可減少電磁波之干擾。

4. 構造 CONSTRUCTOION



- a. 鍍錫銅線
- b. 鍍錫鐵帽
- c. 瓷棒
- d. 高穩定性鎳鉻合金線原材料
- e. 有機矽樹脂
- f. 色碼

5. 定格及尺寸 SPECIFICATIONS



額定電力 POWER RATING	尺寸 DIMENSION(mm)					阻值範圍 RESISTANCE RANGE
	L	D	H	d ±0.1	DIELECTRIC WITHSTANDING	
1/2W/1WS	9.5 ±0.5	3.2 ±0.5	26 ±2.0	0.56	300	0.01Ω-100Ω
1W/2WS	11.5 ±1.0	4.5 ±0.5	35 ±1.0	0.65	350	0.01Ω-360Ω
2W/3WS	15.5 ±1.0	5.0 ±0.5	33 ±1.0	0.75	500	0.01Ω-470Ω
3W/5WS	17.0 ±1.0	6.5 ±0.5	32 ±1.0	0.75	500	0.01Ω-1KΩ
5W/7WS	24.0 ±1.0	8.5 ±0.5	28 ±3.0	0.75	700	0.01Ω-1KΩ
10W	53.0 ±1.0	8.5 ±1.0	38±1.0	0.75	700	0.01Ω-1KΩ

6.機械性能 Mechanical Performance

- 6-1.端子彎曲強度 Terminal Bend
一手持電阻體,另一手將端子彎曲 90°後,恢復原位,繼續再向反方向彎曲 90°,如此三次

而接頭不可脫落或折斷。

The terminal shall withstand 4 bends of 90° rotation without any breakage or damage, when the Resistor is fixed in vertical position.

6-2. 端子拉力強度 Terminal Tensile

將電阻本體一端固定,另一端向電阻體軸方向,慢慢加重至 2.5Kg 後,保持 10 秒鐘,本體不得脫落或鬆動。

Fixing the resistor body, a static load of 2.5Kg is to be gradually applied into the terminal for 10seconds without causing any looseness and fall.

6-3. 扭轉強度 Twist Withstand

自電阻體起約 6mm 處之端子線,以約 0.8mm 曲率半徑彎曲 90°,其次由彎曲處向端子線先端 1.2±0.4mm 處夾定端子引出軸,為回轉軸,以約 5 秒時間沿面回軸 360°再逆轉 360°,如此施行回逆轉 2 次,不可發生折斷及鬆動現象。

To bend the lead wire at the point of about 6mm from resistor body to 90°, then catch the wire at 1.2±0.4mm apart from the bend point end and turn it (clockwise) by 360 degrees Perpendicular to the resistor axis at speed of sane 5 seconds per turn, and do the same Counterclockwise again which constitute a whole turn. Repeat the turn for 2 times without Causing any break and looseness.

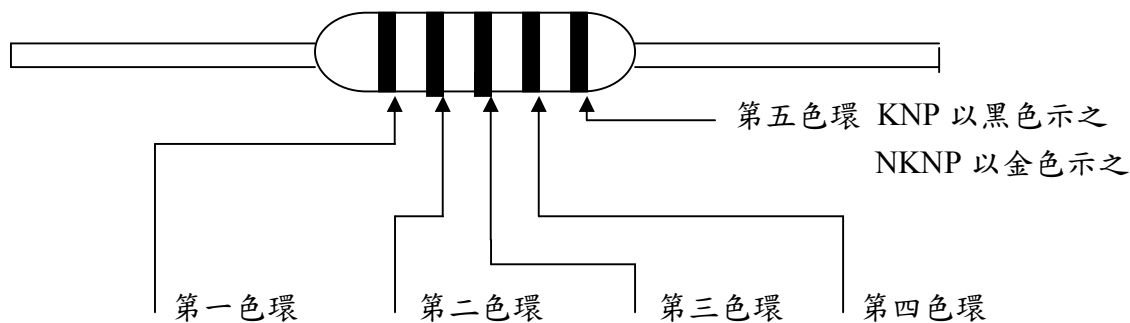
7. 使用溫度: Operating Temperature Range

-50℃ ~ 155℃ 以內

8. 電氣特性 ELECTRICAL PERFORMANCE

項目 ITEM	規格值 SPECIFICATIONS	試驗方法 TEST METHODS (JIS-C-5202)
電阻值 DC RESISTANCE	須在規定之 R 值的容許差內 ALLOWED UNDER R RATE TOLERANCE	JIS-C-5202 5.1 電阻值量測點為:兩導線 各距焊點 10±1mm 處
短時間過負載 SHORT TIME OVER LOAD	±(2%+0.05Ω)以內 ±(2%+0.05Ω)LESS THAN	JIS-C-5202 5.5 定格電壓*3 倍 測試 5 秒 PERMANENT RESISTANCE CHANGE AFTER THE APPLICATION OF A POTENTIAL OF 2.5 TIME RCWV FOR 5 SECONDS
耐電壓 DIELECTRIC WITHSTANDING VOLTAGE	塗裝不可損壞, 絕緣不可破壞 NO EVIDENCE OF FLASHOVER MECHANICAL DAMAGE ARCTIN OR INSULATION BREAKDOWN	JIS-C-5202 5.7 電阻兩端導線置於 V 型, 槽上依特性表之電壓規定加壓 60 秒 RESISTORS SHALL BE CLAMPED IN V-BLOCK AND SHALL BE TEST AT SPECIFIED IN THE ABOVE LIST FOR 60 SECONDS
焊錫附著性 ADHESION OF SOLDERABILITY	端子表面積 3/4 以新焊錫所 覆蓋為原則 3/4 SURFACE OF TERMINAL COVERED BY SOLDER	按 JIS-C-5202 6.5 條件:侵入 260±5℃ 的 錫爐 5±0.5 秒 (sec)
焊錫耐熱性	± (1.0% + 0.05Ω)以內	按 JIS-C-5202 7.2 條件試驗溫度:300℃ ±5℃ 試驗時間:3 ± 0.5 秒

9. 色碼表示 Color Coding



Color 顏色	第一條 1 the significant	第二條 2 nd significant	倍數 Multiplier	誤差 Torrance
Silver 銀			0.01	±10%(K)
Golden 金			0.1	±5%(J)
Black 黑	0	0	1	
Brown 棕	1	1	10	±1%(F)
Red 紅	2	2	100	±2%(G)
Pink 橙	3	3	1K	
Yellow 黃	4	4	10K	
Green 綠	5	5	100K	±0.5%(D)
Blue 藍	6	6	1M	±0.25%(C)
Purple 紫	7	7	10M	±0.1%(B)
Grey 灰	8	8		
White 白	9	9		

注:Note 本體漆: 一般塗灰色不燃性漆。 Body coating Gray.
小型化塗粉紅色或塗綠色 (客户要求)

10. 注意事項 REQUIREMENTS IN USE

- 濕氣會使電極之焊錫劣質化,保持場所在溫度 40℃ 以下,濕度 70%以下。
IN THE HIGH HUMIDITY SITUATION, IT WILL MAKE THE SOLDER ABILITY WORST. PLEASE PRESERVE THE RESISTORS IN 40℃ ,70 RH BELOW
- 儘量不要打開最小包裝。
PLEASE DON'T OPEN THE MINE PACKAGE WHEN YOU PRESERVE IT
- 周圍溫度高時,按照負荷減輕曲線圖減少使規定用電力。
WHEN IN THE HIGH TEMPERATURE SITUATION, PLEASE ACCORD TO THE PICTURE OF "POWER DERATING CURVE" REDUCE THE USE OF POWER RATING
- 儘量不要將多個電阻並列或直列連結,而以大電壓或大電流使用。
YOU SHOULD AVOID THE CONNECTOR OF RESISATNCE REPLACED BY LATGE VOLTAGE AND POWER
- 由於特殊塗料之故,對外部衝極力較弱,故注意各種裝置時避免塗料破壞。
DUE TO ITS SPECIAT MATERIAL OF PAINT, YOU MUST BE CAREFUL TO TIS WEAK APPEARANCE
- 由于特殊塗料之故,洗淨後,外塗層多少會弱化,然後自然放置後可復元其強度,所以洗淨後 20 分

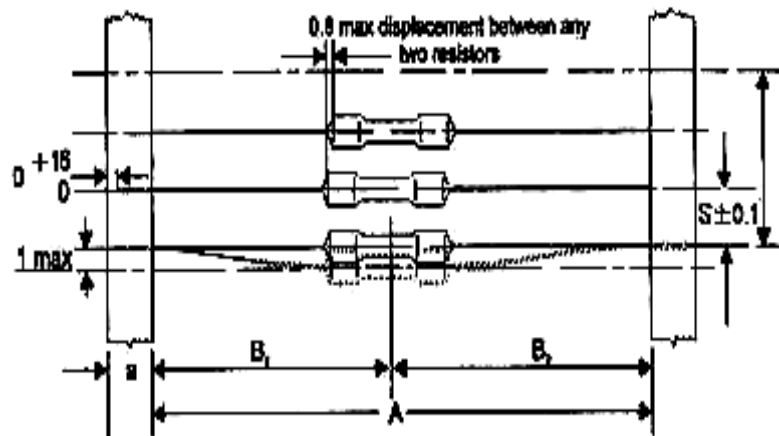
鐘內不要有任何物品接觸電阻塗層。

AFTER CLEANING THE BODY, IT WILL MAKE THE FILM WEAKER. BUT IF YOU LET IT NATURE DRY WITHOUT TOUCHING OR PAINTING

ANYTHING, THE RESISTORS WILL RECOVER ITS STRENGTH BY 20 MINUTES

7. 電阻器為發熱性零件，所以電阻間不應相互堆積或接近其它發熱零件組合成,而防礙其散熱性。
THE RESISTORS ARE REQUESTED NOT TO PLACE BY THE OTHER HEATING ACCESSORIE, WHICH WILL OBSTRUCT THEIR HEAT DISSIPATION

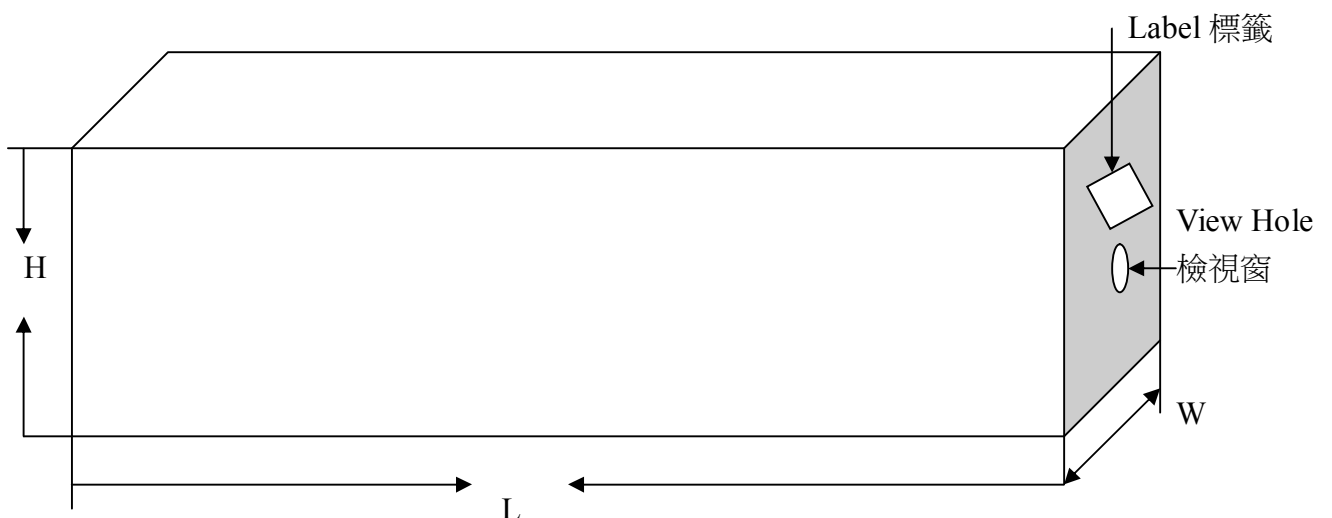
11. 帶狀尺寸 Type dimensions



STYLE		尺寸 DIMENSIONS(mm)			
Normal	Miniature	a	A	B1-B2	S(Spacing)
TYPE-1/4W	TYPE1/2WS	6 ± 0.5	52.5 ± 1.5	1.2	5
			26.0 ± 1.5	1.0	
TYPE-1/2W	TYPE1WS	6 ± 0.5	52.5 ± 1.5	1.2	5
TYPE1W	TYPE2WS	6 ± 0.5	73.0 ± 1.5	1.5	5
TYPE2W	TYPE3WS	6 ± 0.5	73.0 ± 1.5	1.5	10
TYPE3W	TYPE5WS	6 ± 0.5	73.0 ± 1.5	1.5	10
TYPE5W		6 ± 0.5	73.0 ± 1.5	1.5	10

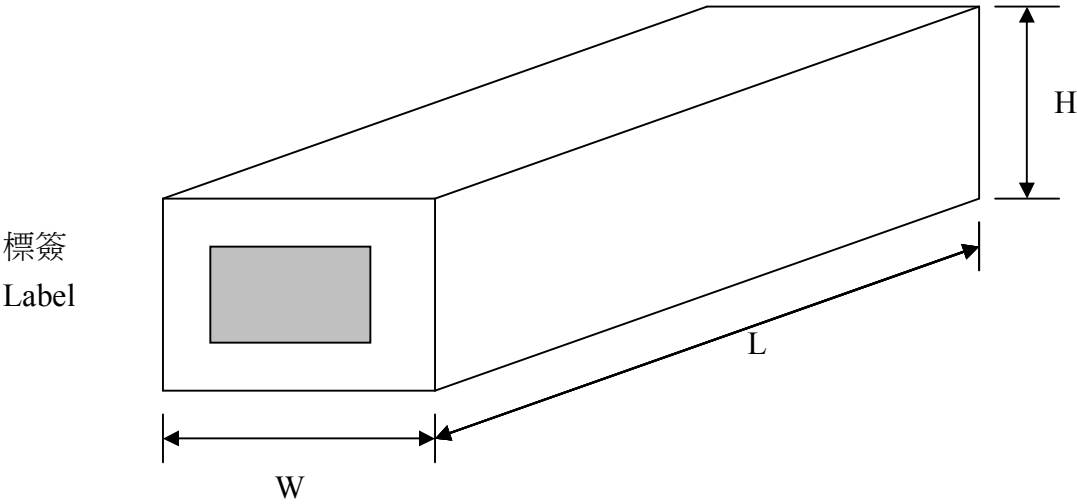
12. 包裝 Packing

12-1 帶式包裝 Taping Type



TYPE 规格	WATTS 瓦特数	W(mm)	H(mm)	L(mm)	Q'TY(pcs)
T-52	1/2W/ 1WS	73	57	255	1000
T-70	1W/ 2WS	92	83	267	1000
	2WS/ 3WS	92	100	267	1000
	3W/5WS	92	83	267	500
	5W	92	83	267	500

12-2. 散裝 Bulk

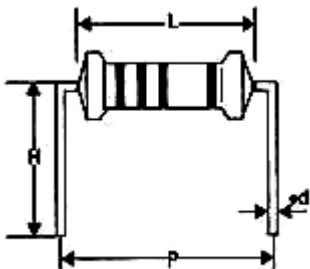


WATTS 瓦特数		TYPE 形状	L(mm)	W(mm)	H(mm)	POLY BOG	BOX(pcs)
		MOLDING 成型					
1/2W	1WS	P	250	140	67	500	5000
		MOLDING 成型					
1W	2WS	P	250	140	67	200	2000
		MOLDING 成型					
2W	3WS	P	250	140	67	200	1000
		MOLDING 成型					
3W/5WS		P	250	140	67	100	1000
		MOLDING 成型					
5W		P	250	140	67	100	1000
		MOLDING 成型					

13.成型加工尺寸

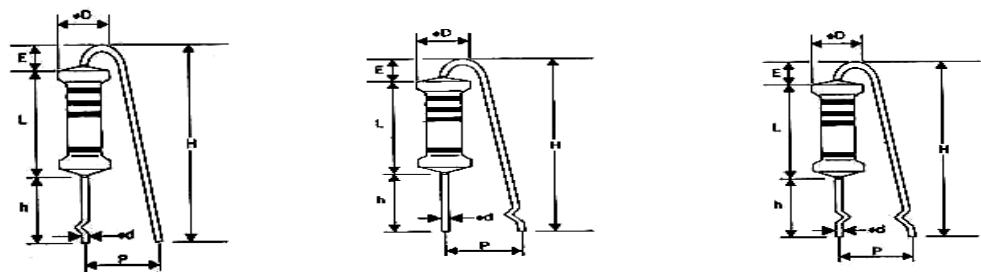
OTHER DIMENSION

13-1. M-Type 成型



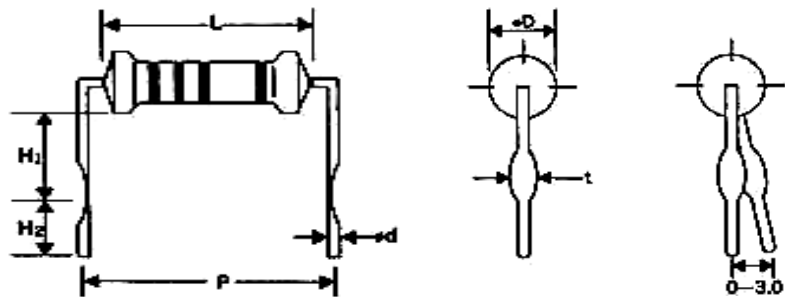
WATTS 瓦特数	尺寸 DIMENSIONS (mm)				
	L	P±1.0	D	d±0.05	H±1.0
1/4W/1/2WS	6.0±0.5	10	2.3±0.3	0.40	10
1/2W/1WS	9.0±0.5	12.5	3.2±0.3	0.56	10
1W/2WS	11.0±1.0	15	4.5±0.5	0.65	12.5
2W/3WS	15.0±1.0	20	5.0±0.5	0.75	15.0
3W/5WS	17.0±1.0	23	6.0±0.5	0.75	15.0
5W	24.0±1.0	33	8.0±1.0	0.75	15.0

13-2.FK1-FK2-FKK Type 成型



WATTS 瓦特数	尺寸 DIMENSIONS(mm)						
	L	P±1.0	D	d±0.05	h+1/-0	H±1.0	E _{max}
1/2W/1WS	9.0±0.5	6	3.2±0.3	0.56	5	18	3.5
1W/2WS	11.0±1.0	6	4.0±0.5	0.65	5	20	3.5
2W/3WS	15.0±1.0	6	5.0±0.5	0.75	5	25	3.5
3W	17.0±1.0	6	6.0±0.5	0.75	5	30	3.5

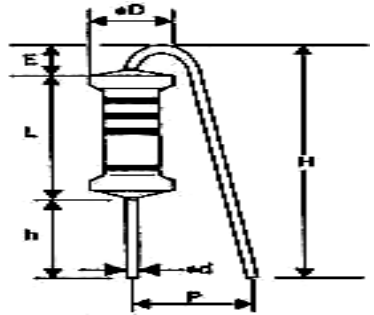
13-3. MB-Type 成型



WATTS	DIMENSIONS (mm)						
	L	P±1.0	D	d±0.05	H1±1.0	H2±1.0	t±0.2
1/2W/1WS	9.0±0.5	12.5	3.2±0.3	0.56	6.0	5.0	1.0
1W/2WS	11.0±1.0	15	4.0±0.5	0.65	6.0	5.0	1.3

2W/3WS	15.0±1.0	20	5.0±0.5	0.75	10.0	5.0	1.3
3W/5WS	17.0±1.0	23	6.0±0.5	0.75	10.0	5.0	1.3
5W	24.0±1.0	33	8.0±0.5	0.75	10.0	5.0	1.3

13-4. F-Type 成型



WATTS	DIMENSIONS (mm)						
	L	P±1.0	D	d±0.05	h±1.0	H±1.0	E _{max}
1/4W/1/2WS	6.0±0.5	6	2.3±0.3	0.40	5.0	14	3
1/2W/1WS	9.0±0.5	6	3.2±0.3	0.56	5.0	18	3.5
1W/2WS	11.0±1.0	6	4.0±0.5	0.65	5.0	20	3.5
2W/3WS	15.0±1.0	6	5.0±0.5	0.75	5.0	25	3.5
3W/5WS	17.0±1.0	6	6.0±0.5	0.75	5.0	30	3.5