

客 戶:

(CUSTOMER)

發行日期:

PUBLISH DATE

年

year

月

month

日

day

# 承 認 書

## (APPROVAL SHEET)

名 稱: 金屬皮膜固定(精密)電阻器

(DESCRIPTION) Metal Film Fixed Resistor

貴公司料號碼: \_\_\_\_\_

(CUSTOMER TYPE NO)

承認 APPROVED BY

千 志 電 子 (深 圳) 有 限 公 司  
CHIAN CHIA ELECTRONIC(SHENZHEN)CO.,LTD

千 志 電 子 科 技 (湖 北) 有 限 公 司  
CHIAN CHIA ELECTRONIC(HU BEI)CO.,LTD

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|                      |                                                                     |                        |                                  |            |      |
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| 公司名稱<br>Company Name | 千 志 電 子 科 技 ( 湖 北 ) 有 限 公 司<br>CHIAN CHIA ELECTRONIC(HU BEI)CO.,LTD |                        |                                  |            |      |
| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                          |                        |                                  |            |      |
| 版 本<br>Version       | A/0 版                                                               | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-1 |

## 1. 一般事項 General

### 1.1 適用 Scope

本承認書適用於 千志電子科技（湖北）有限公司 製造之[金屬皮膜固定電阻器]，符合環境關聯物質要求之 RoHS 測試。

This specification is available for **Metal** Film Fixed Resistor manufactured by CHIAN CHIA ELECTRONIC(HU BEI)CO.,LTD, it accords with RoHS test of Environment related substance requirement.

### 1.2 形名(例) Type designation (example)

依使用種類、額定電力、公稱電阻值、容許誤差及型狀而區別,其構造如下。

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

| MF          | 1/4 W                 | 10K                                  | J                                  | T52            |
|-------------|-----------------------|--------------------------------------|------------------------------------|----------------|
| 種 類<br>Type | 額定電力<br>Rated power   | 公稱電阻值<br>Nominal resistance<br>value | 電阻值容許誤差<br>Resistance<br>tolerance | 形狀<br>Form     |
|             | 標準 小型<br>Normal Small | E-24 Series                          | J ±5%                              | P 型 P Type     |
|             | 1/8W 1/4WS            | E-96 Series                          | G ±2%                              | M 型 M Type     |
|             | 1/4W 1/2WS            |                                      | F ± 1%                             | MB 型 MB Type   |
|             | 1/2W 1WS              |                                      | D ±0.5%                            | FK1 型 FK1Type  |
|             | 1W 2WS                |                                      |                                    | FK2 型 FK2 Type |
|             | 2W 3WS                |                                      |                                    | FKK 型 FKK Type |
|             | 3W 5WS                |                                      |                                    |                |
|             | 5W                    |                                      |                                    |                |

### 1.3 額定電力 Rated power

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

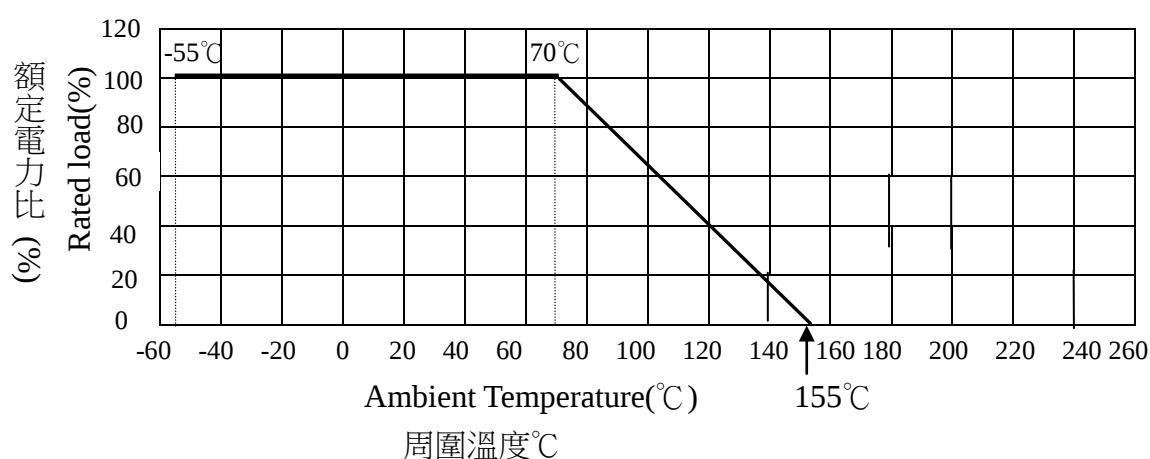
Rated power is maximum power which can be continuously loaded at specified ambient temperature 70℃,as Table-1;however when the ambient temperature exceeds 70℃,rated power should be determined from the derating curve of Fig.1.

|                      |                                                                     |                        |                                  |            |      |
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                          |                        |                                  |            |      |
| 版 本<br>Version       | A/0 版                                                               | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-2 |

表-1 Table-1

| 種類<br>Type  | 定格電力<br>Rated power | 最高使用電壓<br>Maximum working voltage | 最高過負荷電壓<br>Maximum overload voltage | 絕緣耐電壓<br>Dielectric withstanding voltage | 阻值範圍(Ω)<br>Resistance Range(Ω) |
|-------------|---------------------|-----------------------------------|-------------------------------------|------------------------------------------|--------------------------------|
| Normal size | MF1/8W              | 0.125W                            | 150V                                | 300V                                     | 1Ω ~1MΩ                        |
|             | MF1/4W              | 0.25W                             | 250V                                | 500V                                     | 1Ω ~10MΩ                       |
|             | MF1/2W              | 0.5W                              | 300V                                | 700V                                     | 1Ω ~10MΩ                       |
|             | MF1W                | 1W                                | 350V                                | 800V                                     | 1Ω ~10MΩ                       |
|             | MF2W                | 2W                                | 500V                                | 800V                                     | 1Ω ~10MΩ                       |
|             | MF3W                | 3W                                | 500V                                | 800V                                     | 1Ω ~10MΩ                       |
|             | MF5W                | 5W                                | 500V                                | 1000V                                    | 1Ω ~10MΩ                       |
| Small size  | MF1/4WS             | 0.25W                             | 150V                                | 300V                                     | 1Ω ~10MΩ                       |
|             | MF1/2WS             | 0.5W                              | 250V                                | 700V                                     | 1Ω ~10MΩ                       |
|             | MF1WS               | 1W                                | 300V                                | 800V                                     | 1Ω ~10MΩ                       |
|             | MF2WS               | 2W                                | 350V                                | 800V                                     | 1Ω ~10MΩ                       |
|             | MF3WS               | 3W                                | 500V                                | 1000V                                    | 1Ω ~10MΩ                       |
|             | MF5WS               | 5W                                | 500V                                | 1000V                                    | 1Ω ~10MΩ                       |

圖一 電力遞減曲線 Figure 1 Power derating curve



#### 1.4 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.

|                                                                                                                                                                                                                                                            |                            |                                                                                                              |                                  |            |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------------|------------|------|
| 公司名稱<br>Company Name                                                                                                                                                                                                                                       |                            | 千 志 電 子 科 技 ( 湖 北 ) 有 限 公 司<br>CHIAN CHIA ELECTRONIC(HU BEI)CO.,LTD                                          |                                  |            |      |
| 品 名<br>Product Name                                                                                                                                                                                                                                        |                            | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                                                                   |                                  |            |      |
| 版 本<br>Version                                                                                                                                                                                                                                             | A/0 版                      | 制定日期<br>Enactment Date                                                                                       | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-3 |
| $E = \sqrt{P \times R}$ <div>           Where    E: 定格電壓    Rated voltage(V)<br/>                     P: 定格電力    Rated power(W)<br/>                     R: 公稱電阻值    Nominal resistance(Ω)         </div> 使用溫度    Operating Temperature Range:-55℃ ~ +155℃ |                            |                                                                                                              |                                  |            |      |
| <b>2. 構造    Construction</b>                                                                                                                                                                                                                               |                            |                                                                                                              |                                  |            |      |
| 2.1 外形尺寸    External dimensions<br>參照本承認書的 [5. 外形尺寸]。<br>The dimensions shall be satisfied with [5. External dimensions].                                                                                                                                  |                            |                                                                                                              |                                  |            |      |
| 2.2 構造圖    Structure diagram<br>MF 系列之金屬皮膜固定電阻器係按下表的材料而構成:<br>The construction of resistor (MF series) shall be as follows:                                                                                                                                |                            |                                                                                                              |                                  |            |      |
|                                                                                                                                                                                                                                                            |                            |                                                                                                              |                                  |            |      |
| 號碼<br>NO                                                                                                                                                                                                                                                   | 構造名稱<br>Item               | 內 容<br>Material                                                                                              |                                  |            |      |
| 1                                                                                                                                                                                                                                                          | 基體磁器<br>Ceramic core       | 使用高含鋁量的磁器棒。<br>High alumina ceramic is used.                                                                 |                                  |            |      |
| 2                                                                                                                                                                                                                                                          | 電阻體<br>Resistor element    | 電阻體的成份係使用金屬皮膜。<br>The resistors element shall consist of metal film.                                         |                                  |            |      |
| 3                                                                                                                                                                                                                                                          | 端子<br>Terminal             | 鐵帽<br>Tinned iron cap.                                                                                       |                                  |            |      |
| 4                                                                                                                                                                                                                                                          | 連接<br>Connection           | 導線對鐵帽須以電氣熔接。<br>The lead wire, which is plated with solder, shall be mounted to the caps by welding process. |                                  |            |      |
| 5                                                                                                                                                                                                                                                          | 導線<br>Lead wire            | 焊錫或鍍錫的導線。<br>Soldered or tinned annealed wire.                                                               |                                  |            |      |
| 6                                                                                                                                                                                                                                                          | 下塗塗裝<br>Undercoat painting | 電氣絕緣漆。<br>Electric insulation resin.                                                                         |                                  |            |      |
| 7                                                                                                                                                                                                                                                          | 上塗塗裝<br>Finishing painting | 使用環氧樹脂塗料。<br>Epoxy resin is used.                                                                            |                                  |            |      |
| 8                                                                                                                                                                                                                                                          | 表示<br>Indication           | 色碼。<br>Color code.                                                                                           |                                  |            |      |

|                                                                                                                                                      |                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
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| 公司名稱<br>Company Name                                                                                                                                 |                                                                                               | 千 志 電 子 科 技 ( 湖 北 ) 有 限 公 司<br>CHIAN CHIA ELECTRONIC(HU BEI)CO.,LTD |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 品 名<br>Product Name                                                                                                                                  |                                                                                               | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                          |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 版 本<br>Version                                                                                                                                       | A/0 版                                                                                         | 制定日期<br>Enactment Date                                              | 2016 年 05 月 30 日<br>May 30, 2016                                                                                                                                                                                                                                                                                                                            | 頁數<br>Page | 13-4            |
| 2.3 鐵帽端子 Terminal caps<br>鐵帽端子須確實地連接(電氣的及機械的)於電阻體上。<br>The caps shall be securely connected with the resistor element electrically and mechanically. |                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 2.4 外裝色澤 Resistor body color                                                                                                                         |                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 表-2 Table-2                                                                                                                                          |                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 普通型 Normal size                                                                                                                                      |                                                                                               |                                                                     | 小型化 Small size                                                                                                                                                                                                                                                                                                                                              |            |                 |
| 種類 Type                                                                                                                                              |                                                                                               | 顏色 Color                                                            | 種類 Type                                                                                                                                                                                                                                                                                                                                                     |            | 顏色 Color        |
| MF1/8W,MF1/4W,<br>MF1/2W,MF1W,<br>MF2W,MF3W,<br>MF5W                                                                                                 |                                                                                               | 淺藍色<br>Sky blue                                                     | MF1/4WS , MF1/2WS,<br>MF1WS, MF2WS,<br>MF3WS, 5WS                                                                                                                                                                                                                                                                                                           |            | 淺藍色<br>Sky blue |
| 2.5 表示 Indication<br>參照本承認書的 [4. 表示]。<br>The indication shall be satisfied with [4. Indication].                                                     |                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 3. 特性 Characteristics                                                                                                                                |                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 表-3 Table-3                                                                                                                                          |                                                                                               |                                                                     |                                                                                                                                                                                                                                                                                                                                                             |            |                 |
| 項 目<br>Item                                                                                                                                          | 規格值<br>Performance                                                                            |                                                                     | 試驗方法(依據 JIS C 5202)<br>Test methods(Conform to JIS C 5202)                                                                                                                                                                                                                                                                                                  |            |                 |
| 溫度係數<br>Temperature<br>Coefficient                                                                                                                   | ±100PPM/℃ 以內。<br>Within ±100PPM/℃ .                                                           |                                                                     | 5.2 項參照 Comply with 5.2<br>$\frac{R_1-R_0}{R_0(T_1-T_0)} \times 10^6(\text{PPM}/^{\circ}\text{C})$<br>R <sub>0</sub> :室溫(T <sub>0</sub> )所測量之電阻值。<br>R <sub>1</sub> :室溫+100℃(T <sub>1</sub> )後所測量之電阻值。<br>R <sub>0</sub> :Resistance value at room temp.( T <sub>0</sub> ).<br>R <sub>1</sub> :Resistance value at room temp.plus 100℃<br>(T <sub>1</sub> ) |            |                 |
| 短時間過負荷<br>Short time<br>overload                                                                                                                     | ±(0.5%+0.05Ω )以內。<br>不得有機械的損傷。<br>Within ±(0.5%+0.05Ω ).<br>No evidence of mechanical damage. |                                                                     | 5.5 項參照 Comply with 5.5<br>額定電壓×2.5 倍,5 秒。<br>不可超過最高過負荷電壓(見表-1)<br>Rated voltage×2.5 times,5s<br>But not to exceed maximum overload<br>voltage.(See table-1)                                                                                                                                                                                                |            |                 |

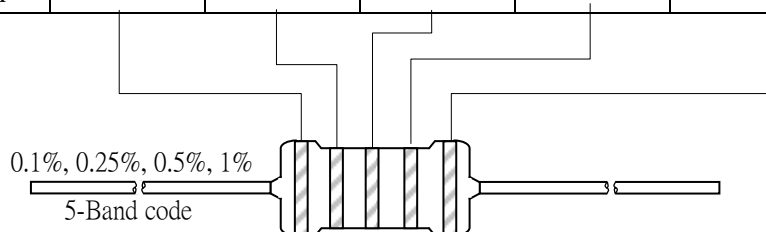
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                  |                                                                                                                                                                                                 |                                  |                                |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------|----------------|
| 公司名稱<br>Company Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                  | 千 志 電 子 科 技 ( 湖 北 ) 有 限 公 司<br>CHIAN CHIA ELECTRONIC(HU BEI)CO.,LTD                                                                                                                             |                                  |                                |                |
| 品 名<br>Product Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                                                                                                                                                      |                                  |                                |                |
| 版 本<br>Version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | A/0 版                                                                                            | 制定日期<br>Enactment Date                                                                                                                                                                          | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page                     | 13-5           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                  |                                                                                                                                                                                                 |                                  |                                |                |
| 項 目<br>Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 規格值<br>Performance                                                                               | 試驗方法(依據 JIS C 5202)<br>Test methods(Conform to JIS C 5202)                                                                                                                                      |                                  |                                |                |
| 絕緣電阻<br>Insulation Resistance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10 <sup>4</sup> MΩ 以上。<br>10 <sup>4</sup> MΩ or more.                                            | 5.6 項參照 Comply with 5.6<br>置於 V 型槽方法。<br>施加直流電壓 500V 60 秒。<br>V-block method<br>Resistor shall be tested at DC 500V for 60 seconds.                                                             |                                  |                                |                |
| 耐電壓<br>Dielectric Withstanding Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 無電弧放電、燒損及絕緣破壞等異狀。<br>No evidence of flashover mechanical damage, arcing or insulation breakdown. | 5.7 項參照 Comply with 5.7<br>常壓,置於 V 型槽方法。<br>施加個別規定之交流電壓 60 秒。(見表-1)<br>Constant pressure, V-block method<br>Resistor shall be tested at AC potential respectively for 60 seconds. (See table-1) |                                  |                                |                |
| 端子強度<br>Terminal strength                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 端子不得斷裂及鬆弛。<br>No evidence of mechanical damage.                                                  | 6.1 項參照 Comply with 6.1                                                                                                                                                                         |                                  |                                |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                  | 引張強度<br>Tensile strength                                                                                                                                                                        | 線徑 mm<br>Diameter                | 引張力<br>Tensile force<br>N(kgf) | 時 間<br>Time    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                  |                                                                                                                                                                                                 | Φ 0.38mm~0.50mm                  | 5(0.51)                        | 10±1<br>second |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                  |                                                                                                                                                                                                 | Φ 0.50mm~0.68 mm                 | 10(1.02)                       |                |
| 扭轉強度：自電阻體起約 6mm~6.5mm 處之端子線,以約 0.75mm 曲率半徑彎曲 90 度,其次由彎曲處向端子線先端 1.2±0.4mm 處挾定端子引出軸,作回轉軸,以約 5 秒時間沿直面回轉 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。<br>Torsion strength : To bend the lead wire at the point of about 6mm~6.5mm from resistor body. about 0.75mm curvature radii 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 same 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. |                                                                                                  |                                                                                                                                                                                                 |                                  |                                |                |

|                                       |                                                                                                                 |                                                                                                                                                                                                                                                              |                                  |            |      |
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| 品 名<br>Product Name                   | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                                                                      |                                                                                                                                                                                                                                                              |                                  |            |      |
| 版 本<br>Version                        | A/0 版                                                                                                           | 制定日期<br>Enactment Date                                                                                                                                                                                                                                       | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-6 |
| 項 目<br>Item                           | 規格值<br>Performance                                                                                              | 試驗方法(依據 JIS C 5202)<br>Test methods(Conform to JIS C 5202)                                                                                                                                                                                                   |                                  |            |      |
| 焊錫耐熱性<br>Resistance to soldering heat | $\pm(0.5\%+0.05\Omega)$ 以內。<br>不得有機械的損傷。<br>Within $\pm(0.5\%+0.05\Omega)$<br>No evidence of mechanical damage. | 6.4 項參照 Comply with 6.4<br>350 $\pm$ 10 $^{\circ}$ C, 3 $\pm$ 1.0 秒, 試驗後放置半小時。<br>350 $\pm$ 10 $^{\circ}$ C, 3 $\pm$ 1.0s<br>After test leave for 0.5h.                                                                                                      |                                  |            |      |
| 焊錫附著性<br>Solderability                | 導線至少 95% 以上新錫覆蓋。<br>Covered with new solder by 95% at least.                                                    | 6.5 項參照 Comply with 6.5<br>焊錫溫度: 255 $\pm$ 5 $^{\circ}$ C。<br>浸錫時間: 3 $\pm$ 1.0 秒。<br>Test temperature of solder: 255 $\pm$ 5 $^{\circ}$ C<br>Dipping time in solder: 3 $\pm$ 1.0 s                                                                          |                                  |            |      |
| 耐溶劑性<br>Resistance to solvent         | 塗裝及色碼不得脫落。<br>No deterioration of protective coating and markings.                                              | 6.9 項參照 Comply with 6.9<br>放入酒精溶劑之超音波機內, 保持 3 分鐘。<br>Specimens shall be immersed in a bath of isoproalcohol completely for 3 minutes with ultrasonic.                                                                                                        |                                  |            |      |
| 溫度循環<br>Temperature cycle             | $\pm(1\%+0.05\Omega)$ 以內。<br>不得有機械的損傷。<br>Within $\pm(1\%+0.05\Omega)$<br>No evidence of mechanical damage.     | 7.4 項參照 Comply with 7.4<br>低溫側: -55 $^{\circ}$ C/30 分, 室溫: 10~15 分鐘<br>高溫側: +80 $^{\circ}$ C/30 分, 室溫: 10~15 分鐘<br>5 回<br>Low side: -55 $^{\circ}$ C/30min, Room temp.: 10 to 15min<br>High side: 80 $^{\circ}$ C/30min, Room temp.: 10 to 15min<br>5 cycles |                                  |            |      |
| 耐濕負荷壽命<br>Load life in humidity       | $\pm(2\%+0.05\Omega)$ 以內。<br>Within $\pm(2\%+0.05\Omega)$                                                       | 7.9 項參照 Comply with 7.9<br>40 $\pm$ 2 $^{\circ}$ C, 濕度 90~95%, 1000 小時<br>定格電壓(90 分鐘 ON, 30 分鐘 OFF)<br>40 $\pm$ 2 $^{\circ}$ C, 90 to 95%RH, 1000h<br>Rated voltage (90 min ON, 30 min OFF)                                                                  |                                  |            |      |
| 負荷壽命<br>Load life                     | $\pm(2\%+0.05\Omega)$ 以內。<br>Within $\pm(2\%+0.05\Omega)$                                                       | 7.10 項參照 Comply with 7.10<br>70 $\pm$ 3 $^{\circ}$ C, 1000 小時<br>定格電壓(90 分鐘 ON, 30 分鐘 OFF)<br>70 $\pm$ 3 $^{\circ}$ C, 1000h<br>Rated voltage (90 min ON, 30 min OFF)                                                                                        |                                  |            |      |

|                      |                                                                     |                        |                                  |            |      |
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                          |                        |                                  |            |      |
| 版 本<br>Version       | A/0 版                                                               | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-7 |

4. 表示 Indication  
色碼 Color Code

| 顏色 Color | 第 1 數字<br>1 <sup>st</sup> figure | 第 2 數字<br>2 <sup>nd</sup> figure | 第 3 數字<br>3 <sup>RD</sup> figure | 倍 率<br>Multiplier | 誤差率<br>Tolerance |
|----------|----------------------------------|----------------------------------|----------------------------------|-------------------|------------------|
| 黑 Black  | 0                                | 0                                | 0                                | $10^0$            |                  |
| 棕 Brown  | 1                                | 1                                | 1                                | $10^1$            | ±1% (F)          |
| 紅 Red    | 2                                | 2                                | 2                                | $10^2$            | ±2% (G)          |
| 橙 Orange | 3                                | 3                                | 3                                | $10^3$            |                  |
| 黃 Yellow | 4                                | 4                                | 4                                | $10^4$            |                  |
| 綠 Green  | 5                                | 5                                | 5                                | $10^5$            | ±0.5% (D)        |
| 藍 Blue   | 6                                | 6                                | 6                                | $10^6$            | ±0.25% (C)       |
| 紫 Violet | 7                                | 7                                | 7                                | $10^7$            | ±0.1% (B)        |
| 灰 Gray   | 8                                | 8                                | 8                                |                   | ±0.05% (A)       |
| 白 White  | 9                                | 9                                | 9                                |                   |                  |
| 金 Gold   |                                  |                                  |                                  | $10^{-1}$         | ±5% (J)          |
| 銀 Silver |                                  |                                  |                                  | $10^{-2}$         |                  |
| 無 Plain  |                                  |                                  |                                  |                   |                  |

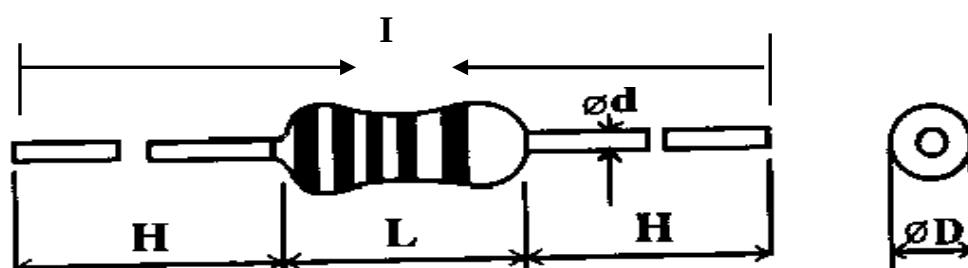


|                      |                                                                   |                        |                                  |            |      |
|----------------------|-------------------------------------------------------------------|------------------------|----------------------------------|------------|------|
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                        |                        |                                  |            |      |
| 版 本<br>Version       | A/0 版                                                             | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-8 |

## 5. 外形寸法 External dimensions

### 5.1 散裝 P 型 P type

P Type



單位：mm

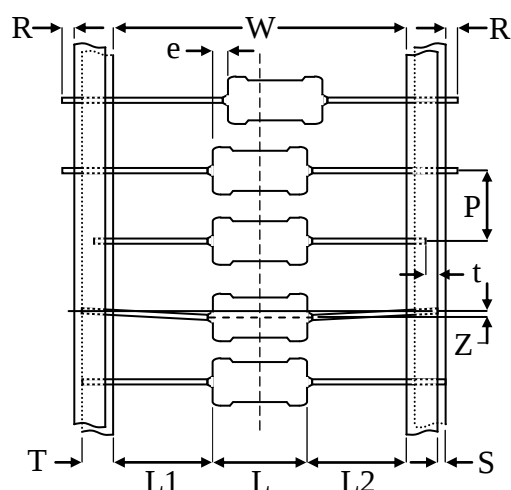
Unit：mm

| 種 類 Type           |                   | 尺 寸 Dimensions |       |         |          |       |
|--------------------|-------------------|----------------|-------|---------|----------|-------|
| 普通型<br>Normal Size | 小型化<br>Small Size | I±2.0          | L±1.0 | ψ D     | ψ d±0.05 | H±2.0 |
| MF1/8W             | MF1/4WS           | 60             | 3.2   | 1.8±0.5 | 0.40     | 27    |
| MF1/4W             | MF1/2WS           | 60             | 6.5   | 2.3±0.5 | 0.43     | 26    |
| MF1/2W             | MF1WS             | 60             | 9.0   | 3.2±0.5 | 0.50     | 26    |
| MF1W               | MF2WS             | 60             | 11.5  | 4.5±1.0 | 0.68     | 25    |
|                    |                   | 73             | 11.5  | 4.5±1.0 | 0.68     | 31    |
| MF2W               | MF3WS             | 60             | 15.5  | 5.0±1.0 | 0.68     | 23    |
|                    |                   | 81             | 15.5  | 5.0±1.0 | 0.68     | 33    |
| MF3W               | MF5WS             | 94             | 17.5  | 6.0±1.0 | 0.68     | 38    |
| MF5W               |                   | 94             | 24.5  | 8.0±1.0 | 0.68     | 35    |

|                      |                                                                     |                        |                                  |            |      |
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                          |                        |                                  |            |      |
| 版 本<br>Version       | A/0 版                                                               | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-9 |

## 5.2 帶裝 Axial Lead Taping

Txx Type



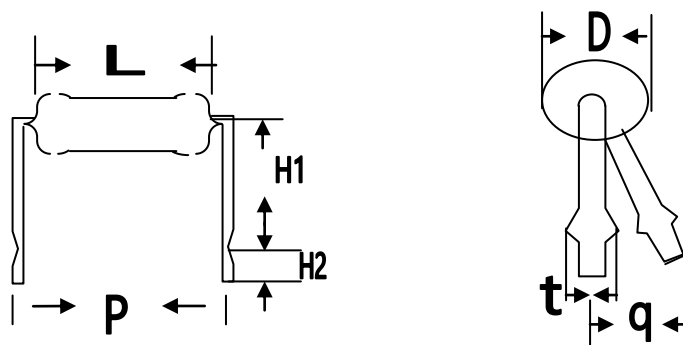
單位：mm  
Unit：mm

| 種類 Type            |                   | 帶狀<br>Taping | 尺 寸 Dimensions |                                |        |               |       |           |           |           |           |           |
|--------------------|-------------------|--------------|----------------|--------------------------------|--------|---------------|-------|-----------|-----------|-----------|-----------|-----------|
| 普通型<br>Normal Size | 小型化<br>Small Size |              | L              | W                              | P      | L1-L2<br>Max. | T     | Z<br>Max. | R<br>Max. | t<br>Max. | e<br>Max. | S<br>Max. |
| MF1/8W             | MF1/4WS           | T26          | 3.2±0.5        | 26 <sup>+1</sup> <sub>-0</sub> | 5±0.5  | 0.5           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
|                    |                   | T52          | 3.2±0.5        | 52±1.0                         | 5±0.5  | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
| MF1/4W             | MF1/2WS           | T26          | 6.5±0.5        | 26 <sup>+1</sup> <sub>-0</sub> | 5±0.5  | 0.5           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
|                    |                   | T52          | 6.5±0.5        | 52±1.0                         | 5±0.5  | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
| MF1/2W             | MF1WS             | T52          | 9.0±1.0        | 52±1.0                         | 5±0.5  | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
| MF1W               | MF2WS             | T52          | 11.5±1.0       | 52±1.0                         | 5±0.5  | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
|                    |                   | T65          | 11.5±1.0       | 65±1.0                         | 5±0.5  | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
| MF2W               | MF3WS             | T52          | 15.5±1.0       | 52±1.0                         | 10±0.5 | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
|                    |                   | T73          | 15.5±1.0       | 73±1.0                         | 10±0.5 | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
| MF3W               | MF5WS             | T84          | 17.5±1.5       | 84±1.0                         | 10±0.5 | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |
| MF5W               |                   | T84          | 24.5±1.5       | 84±1.0                         | 10±0.5 | 1.0           | 6±0.5 | 1.2       | 0         | 3.0       | 0.6       | 0.5       |

|                      |                                                                   |                        |                                  |            |       |
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                        |                        |                                  |            |       |
| 版 本<br>Version       | A/0 版                                                             | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-10 |

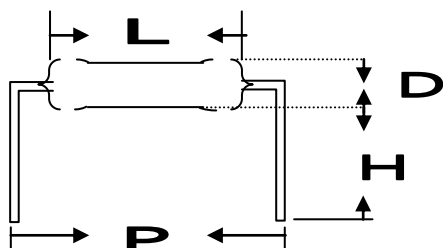
### 5.3 MB 型&M 型& MK 型 MB Type &M Type& MK Type

#### MB

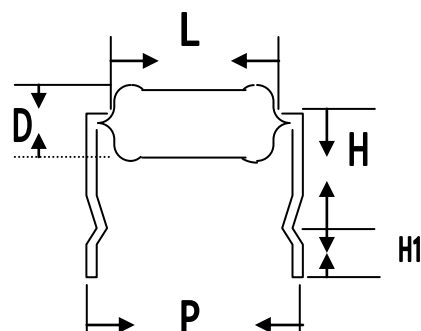


| 瓦特數<br>Watts | 尺寸 Dimensions (mm) |       |         |        |        |        |      |
|--------------|--------------------|-------|---------|--------|--------|--------|------|
|              | D                  | L±1.0 | P±1.0   | H1±1.0 | H2±0.5 | t±0.15 | qMax |
| 1/2w,1ws     | 3.2±0.5            | 9.0   | 12.5/15 | 10.5   | 4.5    | 1.2    | 3    |
| 1w,2ws       | 4.5±1.0            | 11.5  | 15      | 10.5   | 4.5    | 1.25   | 3    |
| 2w,3ws       | 5.0±1.0            | 15.5  | 20      | 10.5   | 4.5    | 1.25   | 3    |
| 3W5WS        | 6.0±1.0            | 17.5  | 25      | 10.5   | 4.5    | 1.25   | 3    |
| 5W           | 8.0±1.0            | 24.5  | 30      | 10.5   | 4.5    | 1.25   | 3    |

#### M



#### MK



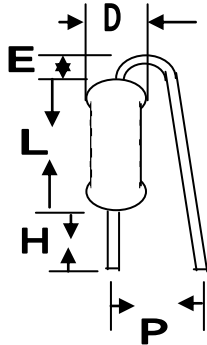
| 瓦特數<br>Watts | 尺寸 Dimensions (mm) |          |         |       |
|--------------|--------------------|----------|---------|-------|
|              | Φ D                | L        | P±1.0   | H±1.0 |
| 1/8w,1/6w    | 1.8±0.3            | 3.2±0.5  | 6       | 8     |
| 1/4w,1/2ws   | 2.3±0.5            | 6.5±0.5  | 10      | 8     |
| 1/2w,1ws     | 3.5±0.5            | 9.0±1.0  | 12.5/15 | 10    |
| 1w,2ws       | 4.5±1.0            | 11.5±1.0 | 15      | 10    |
| 2w,3ws       | 5.0±1.0            | 15.5±1.0 | 20      | 10    |
| 3w           | 6.0±1.0            | 17.5±1.0 | 25      | 10    |
| 5w           | 8.0±1.0            | 24.5±1.0 | 30      | 10    |

| 瓦特數<br>Watts | 尺寸 Dimensions (mm) |       |       |       |        |
|--------------|--------------------|-------|-------|-------|--------|
|              | D                  | L±1.0 | P±1.0 | H±1.0 | H1±1.0 |
| 1/2w,1ws     | 3.2±0.5            | 9.0   | 12.5  | 10    | 4.5    |
| 1w,2ws       | 4.5±1.0            | 11.5  | 15    | 10    | 4.5    |
| 2w,3ws       | 5.0±1.0            | 15.50 | 20    | 10    | 4.5    |
| 3W5WS        | 6.0±1.0            | 17.5  | 25    | 10    | 4.5    |

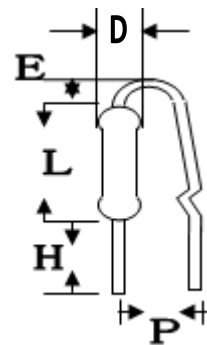
|                      |                                                                   |                        |                                  |            |       |
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                        |                        |                                  |            |       |
| 版 本<br>Version       | A/0 版                                                             | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-11 |

5.4 F 型&FK2 型& FKK 型 F Type &FK2Type&FKK Type

**F**



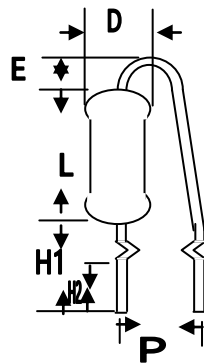
**FK2**



| 瓦特數<br>Watts | 尺寸 Dimensions (mm) |       |       |       |       |
|--------------|--------------------|-------|-------|-------|-------|
|              | φD                 | L±1.0 | P±2.0 | E Max | H±1.0 |
| 1/2w,1ws     | 3.2±0.5            | 9.0   | 6     | 3.5   | 5-8   |
| 1w,2ws       | 4.5±1.0            | 11.5  | 8     | 3.5   | 5-8   |
| 2w,3ws       | 5.0±1.0            | 15.5  | 8     | 3.5   | 5-8   |
| 3w           | 6.0±1.0            | 17.5  | 8     | 3.5   | 5-8   |

| 瓦特數<br>Watts | 尺寸 Dimensions (mm) |       |       |       |       |
|--------------|--------------------|-------|-------|-------|-------|
|              | φD                 | L±1.0 | P±2.0 | E Max | H±1.0 |
| 1/2w,1ws     | 3.2±0.5            | 9.0   | 6     | 3.5   | 5-8   |
| 1w,2ws       | 4.5±1.0            | 11.5  | 8     | 3.5   | 5-8   |
| 2w,3ws       | 5.0±1.0            | 15.5  | 8     | 3.5   | 5-8   |
| 3w           | 6.0±1.0            | 17.5  | 8     | 3.5   | 5-8   |

**FKK**



| 瓦特數<br>Watts | 尺寸 Dimensions(mm) |       |       |       |        |        |
|--------------|-------------------|-------|-------|-------|--------|--------|
|              | φD                | L±1.0 | P±1.0 | E Max | H1±1.0 | H2±1.0 |
| 1/2w,1ws     | 3.2±0.5           | 9.0   | 5-7   | 3.5   | 8      | 4.5    |
| 1w,2ws       | 4.5±1.0           | 11.5  | 5-9   | 3.5   | 8      | 4.5    |
| 2w,3ws       | 5.0±1.0           | 15.5  | 5-9   | 3.5   | 8      | 4.5    |
| 3w           | 6.0±1.0           | 17.5  | 5-10  | 3.5   | 8      | 4.5    |

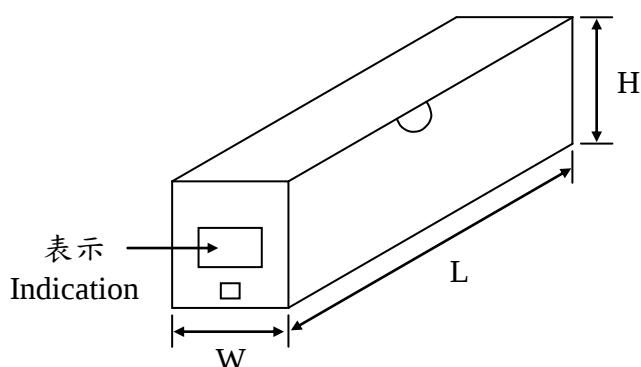
|                      |                                                                   |                        |                                  |            |       |
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                        |                        |                                  |            |       |
| 版 本<br>Version       | A/0 版                                                             | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-12 |

## 6 包裝 Package

6.1 帶裝品包裝 Tape in box packing (Ammo packing)

6.1.1 表示項目 Indication

- (1) 客戶品號 Customer Part No.
- (2) 製造品號 Manufacturer Part No.
- (3) 數 量 Quantity
- (4) 製造者名 Manufacturer



6.1.2 包裝盒尺寸和數量

Packing box size and quantity

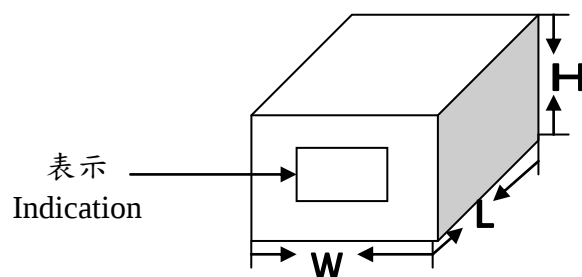
| 種 類 Type           |                   | 形 狀<br>Form | 包裝數量<br>Quantity | 尺寸 Dimensions<br>(mm) |     |     |
|--------------------|-------------------|-------------|------------------|-----------------------|-----|-----|
| 普通型<br>Normal Size | 小型化<br>Small Size |             |                  | L                     | W   | H   |
| MF1/8W             | MF1/4WS           | T26         | 5000 PCS         | 260                   | 50  | 67  |
|                    |                   | T52         | 5000 PCS         | 260                   | 80  | 72  |
| MF1/4W             | MF1/2WS           | T26         | 5000 PCS         | 260                   | 50  | 100 |
|                    |                   | T52         | 5000 PCS         | 260                   | 80  | 100 |
| MF1/2W             | MF1WS             | T52         | 2000 PCS         | 260                   | 80  | 85  |
| MF1W               | MF2WS             | T52         | 1000 PCS         | 260                   | 80  | 85  |
|                    |                   | T65         | 1000 PCS         | 260                   | 85  | 92  |
| MF2W               | MF3WS             | T52         | 1000 PCS         | 260                   | 80  | 100 |
|                    |                   | T73         | 1000 PCS         | 260                   | 95  | 92  |
| MF3W               | MF5WS             | T84         | 500PCS           | 260                   | 110 | 75  |
| MF5W               |                   | T84         | 250PCS           | 260                   | 110 | 75  |

|                      |                                                                   |                        |                                  |            |       |
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| 品 名<br>Product Name  | 金屬皮膜固定(精密)電阻器<br>Metal Film Fixed Resistor                        |                        |                                  |            |       |
| 版 本<br>Version       | A/0 版                                                             | 制定日期<br>Enactment Date | 2016 年 05 月 30 日<br>May 30, 2016 | 頁數<br>Page | 13-13 |

6.2 散裝品包裝 Tape in box Bulk (Ammo Bulk)

6.2.1 表示項目 Indication

- (5) 客戶品號 Customer Part No.
- (6) 製造品號 Manufacturer Part No.
- (7) 數 量 Quantity
- (8) 製造者名 Manufacturer



6.2.2 包裝盒尺寸和數量

Packing box size and quantity

| 種 類 Type           |                   | 形 狀<br>Form | 包裝數量<br>Quantity | 尺寸 Dimensions (mm) |     |    |
|--------------------|-------------------|-------------|------------------|--------------------|-----|----|
| 普通型<br>Normal Size | 小型化<br>Small Size |             |                  | L                  | W   | H  |
| MF1/8W             | MF1/4WS           | P           | 10000 PCS        | 240                | 140 | 76 |
|                    |                   | 成型 Moulding | 10000 PCS        | 240                | 140 | 76 |
| MF1/4W             | MF1/2WS           | P           | 10000 PCS        | 240                | 140 | 76 |
|                    |                   | 成型 Moulding | 10000 PCS        | 240                | 140 | 76 |
| MF1/2W             | MF1WS             | P           | 5000 PCS         | 240                | 140 | 76 |
|                    |                   | 成型 Moulding | 5000 PCS         | 240                | 140 | 76 |
| MF1W               | MF2WS             | P           | 2000 PCS         | 240                | 140 | 76 |
|                    |                   | 成型 Moulding | 2000 PCS         | 240                | 140 | 76 |
| MF2W               | MF3WS             | P           | 2000 PCS         | 240                | 140 | 76 |
|                    |                   | 成型 Moulding | 2000 PCS         | 240                | 140 | 76 |
| MF3W               | MF5WS             | P           | 1000PCS          | 240                | 140 | 76 |
|                    |                   | 成型 Moulding | 1000PCS          | 240                | 140 | 76 |
| MF5W               |                   | P           | 400PCS           | 240                | 140 | 76 |
|                    |                   | 成型 Moulding | 400PCS           | 240                | 140 | 76 |

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