

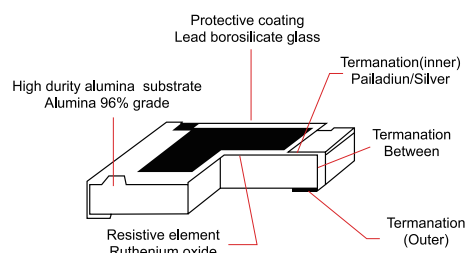
## 車載抗硫化高功率晶片電阻器



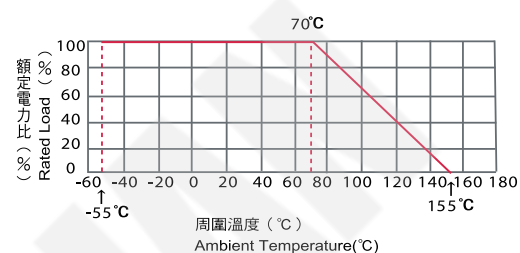
## 特點 Features

- ☐ 高功率和抗硫化  
High power and Sulfuration-Resistant
- ☐ 適用無鉛回流焊及波峰焊制程  
Suit for reflow and wave soldering
- ☐ 符合車載 AEC-Q200 標準  
Comply with the relevant provisions of AEC-Q200
- ☐ 符合 RoHS2.0 標準和 REACH 標準  
RoHS2.0 compliant and REACH compliant

## 結構圖 Construction



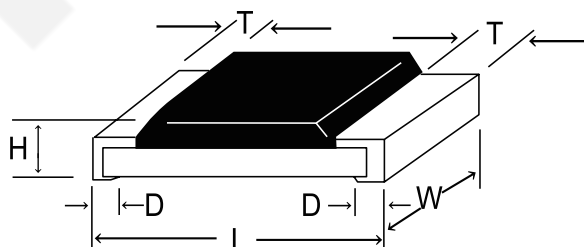
## 負載遞減曲線 Power Derating Curve



## 規格 Specifications

| 型式<br>Type  | 0402                     | 0603                      | 0805                      | 1206                      | 1210                      | 2010                      | 2512                      |
|---|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 定格電力<br>Rated power   | 1/10W                    | 1/8W                      | 1/4W                      | 1/2W                      | 3/4W                      | 1W                        | 2W                        |
| 最高使用電壓<br>Maximum Working Voltage                                     | 50V                      | 75V                       | 150V                      | 200V                      | 200V                      | 200V                      | 200V                      |
| 最高過負荷電壓<br>Maximum Overload Voltage                                   | 100V                     | 100V                      | 300V                      | 400V                      | 400V                      | 400V                      | 400V                      |
| 耐電壓<br>Dielectric Withstanding Voltage                                | 50V                      | 100V                      | 300V                      | 500V                      | 500V                      | 500V                      | 500V                      |
| 阻值範圍<br>Resistance Range<br>$\pm 0.5\%$ $\pm 1\%$ $\pm 2\%$ $\pm 5\%$ | 0 $\Omega$ 1~1M $\Omega$ | 0 $\Omega$ 1~10M $\Omega$ | 0 $\Omega$ 1~10M $\Omega$ | 0 $\Omega$ 1~51M $\Omega$ | 0 $\Omega$ 1~51M $\Omega$ | 0 $\Omega$ 1~51M $\Omega$ | 0 $\Omega$ 1~51M $\Omega$ |

## 尺寸 Dimension

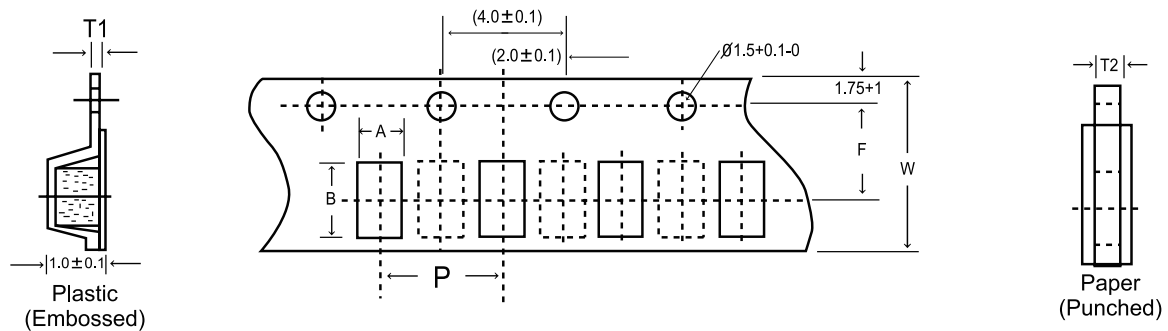


單位 Unit : mm

| 型式<br>Type | 0402            | 0603           | 0805            | 1206           | 1210           | 2010           | 2512           |
|------------|-----------------|----------------|-----------------|----------------|----------------|----------------|----------------|
| L          | 1.0 $\pm$ 0.1   | 1.6 $\pm$ 0.1  | 2.0 $\pm$ 0.15  | 3.1 $\pm$ 0.15 | 3.1 $\pm$ 0.1  | 5.0 $\pm$ 0.15 | 6.35 $\pm$ 0.2 |
| W          | 0.5 $\pm$ 0.05  | 0.8 $\pm$ 0.15 | 1.25 $\pm$ 0.15 | 1.6 $\pm$ 0.15 | 2.6 $\pm$ 0.15 | 2.5 $\pm$ 0.15 | 3.2 $\pm$ 0.15 |
| H          | 0.35 $\pm$ 0.05 | 0.45 $\pm$ 0.1 | 0.55 $\pm$ 0.1  | 0.55 $\pm$ 0.1 | 0.55 $\pm$ 0.1 | 0.55 $\pm$ 0.1 | 0.55 $\pm$ 0.1 |
| T          | 0.2 $\pm$ 0.1   | 0.3 $\pm$ 0.15 | 0.4 $\pm$ 0.2   | 0.45 $\pm$ 0.2 | 0.5 $\pm$ 0.2  | 0.6 $\pm$ 0.2  | 0.6 $\pm$ 0.2  |
| D          | 0.25 $\pm$ 0.1  | 0.3 $\pm$ 0.2  | 0.4 $\pm$ 0.2   | 0.5 $\pm$ 0.20 | 0.5 $\pm$ 0.20 | 0.6 $\pm$ 0.2  | 0.6 $\pm$ 0.2  |

## 車載抗硫化高功率晶片電阻器

## 紙帶尺寸 Tape Specification

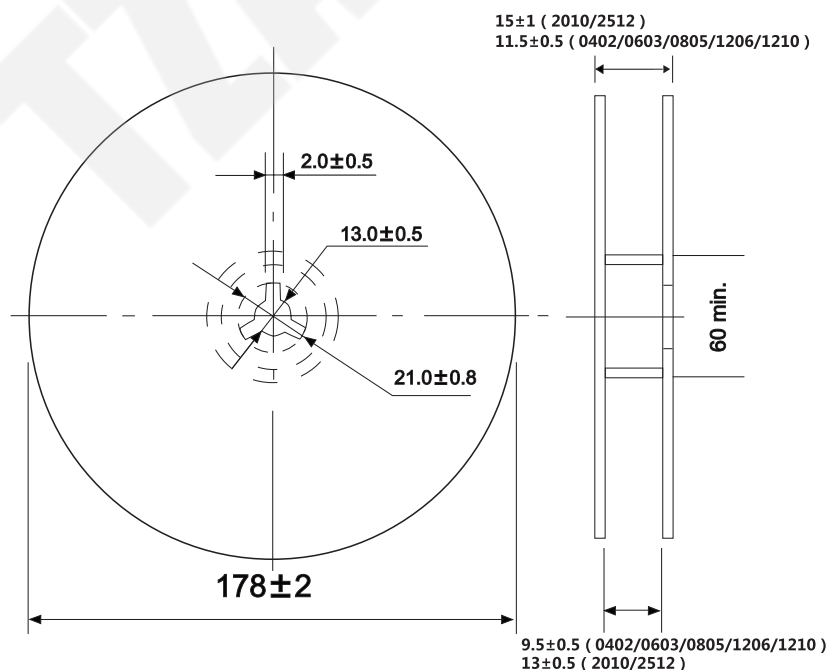


單位 Unit : mm

| 型式<br>Type | 0402           | 0603           | 0805           | 1206           | 1210           | 2010           | 2512           |
|------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| A          | $0.65 \pm 0.1$ | $1.10 \pm 0.1$ | $1.65 \pm 0.2$ | $2.0 \pm 0.2$  | $2.8 \pm 0.2$  | $2.9 \pm 0.2$  | $3.6 \pm 0.2$  |
| B          | $1.15 \pm 0.1$ | $1.9 \pm 0.1$  | $2.4 \pm 0.2$  | $3.6 \pm 0.2$  | $3.5 \pm 0.2$  | $5.5 \pm 0.2$  | $6.9 \pm 0.2$  |
| W          | $8.0 \pm 0.2$  | $8.0 \pm 0.2$  | $8.0 \pm 0.2$  | $8.0 \pm 0.2$  | $8.0 \pm 0.2$  | $12.0 \pm 0.1$ | $12.0 \pm 0.1$ |
| F          | $3.5 \pm 0.05$ | $3.5 \pm 0.05$ | $3.5 \pm 0.05$ | $3.5 \pm 0.05$ | $3.5 \pm 0.05$ | $5.5 \pm 0.5$  | $5.5 \pm 0.5$  |
| T1         | -----          | -----          | -----          | -----          | -----          | $0.2 \pm 0.05$ | $0.2 \pm 0.05$ |
| T2         | $0.45 \pm 0.1$ | $0.6 \pm 0.1$  | $0.75 \pm 0.1$ | $0.75 \pm 0.1$ | $0.75 \pm 0.1$ | $1.0 \pm 0.1$  | $1.0 \pm 0.1$  |
| P          | $2.0 \pm 0.05$ | $4.0 \pm 0.05$ | $4.0 \pm 0.05$ | $4.0 \pm 0.05$ | $4.0 \pm 0.05$ | $4.0 \pm 0.05$ | $4.0 \pm 0.05$ |

## 塑膠圓盤尺寸 Reel Dimensions

單位 Unit : mm



## 車載抗硫化高功率晶片電阻器

## 品名構成 Product Identification

SSCH  
↓  
種類  
Type

0805  
↓  
額定功率  
Rated power

|      |      |      |      |
|------|------|------|------|
| 0402 | 0603 | 0805 | 1206 |
| 1210 | 2010 | 2512 |      |

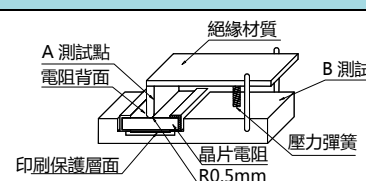
100R  
↓  
公稱電阻值  
Nominal resistance

|                |                |                |
|----------------|----------------|----------------|
| E-24<br>Series | E-48<br>Series | E-96<br>Series |
|----------------|----------------|----------------|

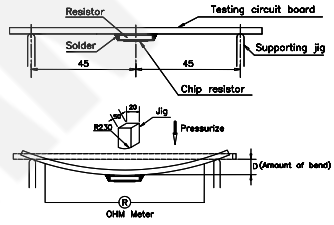
F  
↓  
電阻值容許誤差  
Resistance tolerance

|     |     |     |
|-----|-----|-----|
| F   | G   | J   |
| ±1% | ±2% | ±5% |

## 特性 Characteristics

| 特性項目<br>Item                           | 規格值<br>Performance  | 試驗方法(依據 JIS C 5201-1 或 AEC-Q200 Rev D)<br>Test methods(Conform to JIS C 5201-1 or AEC-Q200 Rev D)  |
|--|---|--|
| 溫度係數<br>Temperature Coefficients       | $\pm 0.5\%, \pm 1\%, \pm 2\%, \pm 5\%$ :<br>$0\Omega \leq R < 1\Omega: \pm 400\text{PPM}/^\circ\text{C}$<br>$\pm 0.5\%, \pm 1\%, \pm 2\%, \pm 5\%$ :<br>$1\Omega \leq R \leq 10\Omega: \pm 200\text{PPM}/^\circ\text{C}$<br>$\pm 0.5\%, \pm 1\%, \pm 2\%, \pm 5\%$ :<br>$10\Omega < R \leq 10\text{M}\Omega: \pm 100\text{PPM}/^\circ\text{C}$<br>0R: 50m $\Omega$ 以下 | JIS C 5201-1<br>4.8 項參照 Comply with 4.8<br>$\frac{R_1 - R_0}{R_0(T_1 - T_0)} \times 10^6 (\text{PPM}/^\circ\text{C})$<br>$R_0$ : 室溫( $T_0$ )所測量之電阻值。<br>$R_1$ : 室溫+100 $^\circ\text{C}$ ( $T_1$ )後所測量之電阻值。<br>$R_0$ : Resistance value at room temp( $T_0$ ).<br>$R_1$ : Resistance value at room temp plus 100 $^\circ\text{C}$ ( $T_1$ ).  |
| 短時間過負荷<br>Short Time Overload          | $\pm 5\% : \pm (2\% + 0.1\Omega)$<br>$\pm 1\% : \pm (1\% + 0.05\Omega)$<br>0R: 50m $\Omega$ 以下。<br>0R: 50m $\Omega$ or less.<br>不得有機械的損傷。<br>No evidence of mechanical damage.  | JIS C 5201-1<br>4.13 項參照 Comply with 4.13<br>額定電壓 $\times 2.5$ 倍 5 秒，<br>不可超過最高過負荷電壓。<br>Rated voltage $\times 2.5$ times 5s,<br>But not to exceed maximum overload voltage.   |
| 耐濕負荷壽命<br>Load Life in Humidity        | $\pm 1\% : \pm (1.0\% + 0.05\Omega)$ 以內。<br>$\pm 5\% : \pm (3.0\% + 0.10\Omega)$ 以內。<br>0R: 50m $\Omega$ 以下。<br>Within 1%: $\pm (1.0\% + 0.05\Omega)$ .<br>Within 5%: $\pm (3.0\% + 0.10\Omega)$ .<br>0R: 50m $\Omega$ or less.   | AEC-Q200-REV C-Test 6<br>MIL-STD-202 Method 106<br>JIS C 5201-1<br>4.24 項參照 Comply with 4.24<br>40 $\pm 2^\circ\text{C}$ , 濕度 90~95%, 1000 小時<br>定格電壓(90 分鐘 ON, 30 分鐘 OFF).<br>40 $\pm 2^\circ\text{C}$ , 90 to 95%RH, 1000h<br>Rated voltage (90 min ON, 30 min OFF).   |
| 絕緣電阻<br>Insulation Resistance          | $10^3\text{M}\Omega$ 以上。<br>$10^3\text{M}\Omega$ or more.   | JIS C 5201-1<br>4.6 項參照 Comply with 4.6<br>施加直流電壓 100V 60 秒。<br>Resistor shall be tested at<br>DC 100V for 60 Seconds. <div>  <p>A 測試點<br/>電阻背面<br/>絕緣材質<br/>B 測試點<br/>壓力彈簧<br/>晶片電阻<br/>印刷保護層面<br/>R0.5mm</p> </div>   |
| 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<br>damage, arcing or insulation breakdown.   | JIS C 5201-1<br>4.7 項參照 Comply with 4.7<br>施加個別規定之交流電壓 60 秒。<br>Resistor shall be tested at AC<br>potential respectively for 60 seconds.   |
| 溫度循環<br>Temperature Cycle              | $\pm (1\% + 0.05\Omega)$ 以內。<br>0R: 50m $\Omega$ 以下<br>不得有機械的損傷。<br>Within $\pm (1\% + 0.05\Omega)$<br>0R: 50m $\Omega$ or less.<br>No evidence of mechanical damage.   | AEC-Q200-REV D-Test 4<br>參照 JESD22 JA-104 項規定<br>1000 個循環 (-55 $^\circ\text{C}$ 到 +125 $^\circ\text{C}$ ).<br>試驗結束後 24 $\pm 4$ 小時內進行測試。<br>每個溫度的停留時間不超過 30 分鐘。<br>轉換時間不超過 1 分鐘。<br>Reference JESD22 Method JA-104<br>1000 Cycles(-55 $^\circ\text{C}$ to +125 $^\circ\text{C}$ )<br>Measurement at 24 $\pm 4$ hours after test conclusion.<br>30min maximum dwell time at each temperature extreme.<br>1 min. maximum transition time. |
| 負荷壽命<br>Load Life                      | $\pm 1\% : \pm (1.0\% + 0.05\Omega)$ 以內。<br>$\pm 5\% : \pm (3.0\% + 0.10\Omega)$ 以內。<br>Within 1%: $\pm (1.0\% + 0.05\Omega)$ .<br>Within 5%: $\pm (3.0\% + 0.10\Omega)$ .  | AEC-Q200-REV D-Test 8<br>MIL-STD-202 Method 108<br>JIS C 5201-1<br>4.25.1 項參照 Comply with 4.25.1<br>70 $\pm 3^\circ\text{C}$ , 1000 小時<br>定格電壓(90 分鐘 ON, 30 分鐘 OFF)<br>70 $\pm 3^\circ\text{C}$ , 1000h<br>Rated voltage (90 min ON, 30 min OFF)   |
| 溶劑抵抗<br>Resistance to Solvents         | 字碼和保護層不能分離<br>Marking and protective layer Cannot be<br>detached  | AEC-Q200-REV D-Test 12<br>MIL-STD-202 Method 215<br>a:Isopropyl Alcohol : Mineral Spirits= 1 : 3<br>b:Terpene Defluxer (Bioact EC-7R)<br>c:Deionized water : Propylene Glycol Monomethyl Ether :<br>monoethanolamine =42 : 1 : 1   |

## 車載抗硫化高功率晶片電阻器

|                                       |  |  |
|---------------------------------------|--|--|
| 機械衝擊<br>Mechanical Shock              | $\pm(1\% + 0.1\Omega)$<br>0 $\Omega$ : 50m $\Omega$ or less  | AEC-Q200-REV D-Test 13<br>MIL-STD-202-213<br>Wave Form : Tolerance for half sine shock<br>Pulse : Peak value is 100g' s. Normal duration(D) is 6(ms)   |
| 震動<br>Vibration                       | $\pm(1\% + 0.1\Omega)$<br>0 $\Omega$ : 50m $\Omega$ or less  | AEC-Q200-REV D-Test 14<br>參照 MIL-STD-202 204 項規定<br>5 g's 的力 20 分鐘, 三個方向每個方向 12 個循環。<br>注意: 使用 8" X 5" 印刷線路板, .031" 厚, 在長的一邊有 7 個固定點, 在對面的邊的角有 2 個固定點。產品在距離固定點 2" 內安裝。<br>測試頻率從 10~2000 赫茲。<br>MIL-STD-202 Method 204<br>5 g's for 20min, 12 cycles each of 3 orientations.<br>Note : Use 8" X 5" PCB .031" thick 7 secure points on one long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10~2000Hz. |
| 熱衝擊<br>Thermal Shock                  | $\pm(1\% + 0.1\Omega)$<br>0 $\Omega$ : 50m $\Omega$ or less  | AEC-Q200-REV D-Test 16<br>MIL-STD-202 Method 107<br>-55°C/+155°C. Note: Number of cycles required : 300cycles,<br>Maximum transfer time : 20seconds,<br>Dwell time : 15 minutes. Air-Air.  |
| 彎折性<br>Bending Strength               | 0.5%,1% : $\pm(0.5\% + 0.05\Omega)$<br>2%.5% : $\pm(1\% + 0.1\Omega)$<br>0 $\Omega$ : 50m $\Omega$ or less   | AEC-Q200-REV D-Test 21<br>3mm deflection(0402~1210)<br>2mm deflection(2010~2512)<br>參照 AEC Q200-005<br>至少 60 秒的支撐時間。<br>Reference AEC Q200-005<br>60 sec minimum holding time<br>  |
| 靜電放電<br>ESD                           | $\pm(1\% + 0.1\Omega)$<br>0 $\Omega$ : 50m $\Omega$ or less  | AEC-Q200-REV D-Test 17<br>DIS10605<br>verify the voltage setting at 500V   |
| 焊錫附著性<br>Solderability                | 電極至少 95%以上新錫覆蓋。<br>Electrode with new solder by 95% at least.  | JIS C 5201-1<br>4.17 項參照 Comply with 4.17<br>焊錫溫度 : 245 $\pm$ 5°C<br>浸錫時間 : 3~5 秒<br>Test temperature of solder : 245 $\pm$ 5°C<br>Dipping time in solder : 3~5 seconds  |
| 可焊性<br>Solder Ability                 | 0.5%,1% : $\pm(0.5\% + 0.05\Omega)$<br>2%.5% : $\pm(1\% + 0.1\Omega)$<br>0 $\Omega$ : 50m $\Omega$ or less   | AEC-Q200-REV D-Test 18<br>J-STD-002<br>Condition B :<br>Immerse the specimens in and eutectic solder at 260 $\pm$ 5°C for 10 $\pm$ 1S .  |
| 焊錫耐熱性<br>Resistance to Soldering Heat | $\pm(1\%+0.05\Omega)$ 以內。<br>0R : 50m $\Omega$ 以下。<br>不得有機械的損傷。<br>Within $\pm(1\%+0.05\Omega)$ .<br>0R : Less than 50m $\Omega$ .<br>No evidence of mechanical damage.              | JIS C 5201-1<br>4.18 項參照 Comply with 4.18<br>260 $\pm$ 5°C, 10 $\pm$ 1.0 秒, 試驗後放置半小時。<br>260 $\pm$ 5°C, 10 $\pm$ 1.0 seconds, After test leave for 0.5h.   |
| 電烙鐵試驗<br>Electric Iron Test           | 阻值範圍 : $\geq 1\Omega$<br>$\Delta R\% = \pm(1.0\%+0.05\Omega)$ 電極外觀無異常, 無側導脫落。<br>$\Delta R\% = \pm(1.0\%+0.05\Omega)$ No evidence of electrode damage, No sides conductive peel off. | 加熱溫度 : 350°C $\pm$ 5°C,<br>電烙鐵加熱時間 3+1/-0 秒,<br>取電烙鐵加熱於電極兩端后,<br>取出靜置 60 分鐘以上, 再量測其阻值變化率。<br>Preheating temperature : 350°C $\pm$ 5°C<br>Electric iron preheating time : 3+1/-0sec<br>Preheat the electric iron on electrode termination, as after that step place the iron over 60mins and measure its resistance rate.   |
| 抗硫化性能<br>Sulfuration-Resistant        | 電阻無開路<br>Without electrical open   | 在 H2S 濃度:100ppm, 溫度:50~60°C, 濕度:90%RH 氣氛的試驗箱下放置 96H。<br>Resistor should be exposed at a test chamber with concentration of H2S:100ppm temperature of 50~60°C, humidity of 90%RH for 96hours.   |