AS Series
Anti-surge Thick Film Chip Resistors

FEATURES
• Small size and light weight
• Suitable for both wave and reflow soldering
• Can withstand high surge
• Reduction of assembly costs

SERIES SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type</th>
<th>Power Rating at 70°C</th>
<th>Max Working Voltage</th>
<th>Max Overload Voltage</th>
<th>Dielectric Withstanding Voltage</th>
<th>Resistance Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS08 (0805)</td>
<td>0.33W</td>
<td>150V</td>
<td>300V</td>
<td>500V</td>
<td>1Ω~10MΩ</td>
</tr>
<tr>
<td>AS12 (1206)</td>
<td>0.5W</td>
<td>200V</td>
<td>400V</td>
<td>500V</td>
<td>1Ω~10MΩ</td>
</tr>
<tr>
<td>AS25 (2512)</td>
<td>1.5W</td>
<td>500V</td>
<td>500V</td>
<td>500V</td>
<td>1Ω~20MΩ</td>
</tr>
</tbody>
</table>

CHARACTERISTICS

Test Methods (JIS C 5201-1)

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Test Conditions</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Coefficient</td>
<td>1Ω-10Ω: ≤ ±400 PPM/°C (±200 PPM can be provided on a case to case basis) 11Ω-10MΩ: ≤ ±100 PPM/°C</td>
<td></td>
</tr>
<tr>
<td>Short Time Overload</td>
<td>±(1.0% + 0.1Ω) max.</td>
<td>Permanent ΔR after the application of a potential of 2.5 times RCWV for 5 sec.</td>
</tr>
<tr>
<td>Terminal Bending</td>
<td>±(1.0% + 0.05Ω) max.</td>
<td>Twist of Test Board: Y/X = 3/90 mm for 60 sec.</td>
</tr>
<tr>
<td>Soldering Heat</td>
<td>±(1.0% + 0.05Ω) max.</td>
<td>260°C±3°C for 10 ±1 sec.</td>
</tr>
<tr>
<td>Single Pulse</td>
<td>±(1.0% + 0.1Ω) max.</td>
<td>See graph on next page.</td>
</tr>
<tr>
<td>Humidity</td>
<td>±(3.0% + 0.1Ω) max.</td>
<td>Temporary ΔR after 240 hr. at 40 ±2°C and 90-95% relative humidity</td>
</tr>
<tr>
<td>Load Life in Humidity</td>
<td>±(3.0% + 0.1Ω) max.</td>
<td>ΔR after 1,000 hr. (1.5 hr. &quot;on&quot;, 0.5 hr. &quot;off&quot;) at RCWV at 40 ±2°C and 90-95% relative humidity</td>
</tr>
<tr>
<td>Load Life</td>
<td>±(3.0% + 0.1Ω) max.</td>
<td>ΔR change after 1,000 hr. operating at RCWV, with duty cycle of (1.5 hours&quot;on&quot;, 0.5 hour&quot;off&quot;) at 70°C ±2°C ambient</td>
</tr>
<tr>
<td>Solderability</td>
<td>Min. 95% coverage</td>
<td>Wave Solder: 245°C ±3°C for 2-3 sec.</td>
</tr>
<tr>
<td>Temperature Cycling</td>
<td>±(1.0% + 0.05Ω) max.</td>
<td>ΔR after 5 cycles: -55°C ±3°C 30 min. Room temp. 10-15 min. +155°C ±2°C 30 min. 4 Room temp. 10-15 min.</td>
</tr>
<tr>
<td>Dielectric withstanding voltage</td>
<td>No evidence of flashover, mechanical damage, arcing or insulation breakdown</td>
<td>Clamped in the trough of a 90°C metallic v-block at specified AC potential 60-70 sec.</td>
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</table>

Derating

Solderability

Min. 95% coverage Wave Solder: 245°C ±3°C for 2-3 sec.

Temperature Cycling

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### Characteristics

**AS Series**

**Anti-surge Thick Film Chip Resistors**

#### Pulse Curve

![Pulse Curve Graph]

#### Lightning Surge

![Lightning Surge Graph]

### Dimensions

<table>
<thead>
<tr>
<th>Series</th>
<th>L (mm)</th>
<th>W (mm)</th>
<th>H (mm)</th>
<th>a (mm)</th>
<th>b (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS08</td>
<td>2.00 ±0.15</td>
<td>1.25 +0.15/-0.10</td>
<td>0.55 ±0.10</td>
<td>0.40 ±0.20</td>
<td>0.40 ±0.20</td>
</tr>
<tr>
<td>AS12</td>
<td>3.10 ±0.15</td>
<td>1.55 +0.15/-0.10</td>
<td>0.55 ±0.10</td>
<td>0.45 ±0.20</td>
<td>0.45 ±0.20</td>
</tr>
<tr>
<td>AS25</td>
<td>6.35 ±0.10</td>
<td>3.10 +0.15</td>
<td>0.55 ±0.10</td>
<td>0.60 ±0.25</td>
<td>0.50 ±0.20</td>
</tr>
</tbody>
</table>

### Tape and Reel

- **Paper**
  - AS08: 5,000 pcs.
  - AS12: 5,000 pcs.
  - AS25: 4,000 pcs.

- **Embossed**
  - AS08: 3,500 pcs.
  - AS12: 6,700 pcs.
  - AS25: 10,000 pcs.

### Land Pattern

- **Series**
  - AS08: A 1.3 B 1.2 C 1.0
  - AS12: A 1.8 B 1.2 C 2.2
  - AS25: A 3.0 B 2.5 C 4.0

### Ordering Information

**AS08J1004ET**

- **Series**
  - AS08 = 0805
  - AS12 = 1206
  - AS25 = 2512

- **Tolerance**
  - J = 5% standard for E24 values

- **Ohms**
  - First 3 digits are significant; 4th digit is multiplier. Values below 100 ohms use "R" as a decimal holder.
  - examples: 1001 = 1000 ohms
  - 1502 = 15000 ohms

- **TCR**
  - T = tape and reel; 0805 and 1206 paper tape; 2512 embossed tape.

#### Standard Part Numbers

- **0805**
  - AS08J1R00ET
  - AS08J10R0ET
  - AS08J11R0ET
  - AS08J12R0ET
  - AS08J13R0ET
  - AS08J14R0ET

- **1206**
  - AS12J1R00ET
  - AS12J10R0ET
  - AS12J11R0ET
  - AS12J12R0ET
  - AS12J13R0ET
  - AS12J14R0ET

- **2512**
  - AS25J1R00ET
  - AS25J12R0ET
  - AS25J13R0ET
  - AS25J14R0ET