

# AP5025 8Watt Current Sense Chip Resistors



A very high power current sense chip resistor capable of dissipating a stunning 8 watts with recommended thermal management architecture on the PCB. Measuring just 12.8mm by 6.4mm the chip has excellent pulse/surge performance.



- Power Dissipation 8 watts with 700 micron PCB thermal Pad
- Value Range R0005 to R01
- Tolerance Options  $\pm 1\%$  or  $\pm 5\%$
- TCR Options  $\pm 30\text{ppm}/^\circ\text{C}$
- Maximum Voltage  $\sqrt{\text{P.R.}}$
- Dielectric Strength 5KVac
- Special Features An increase of  $15^\circ\text{C}$  or so in reflow temperature is required due to heat dissipation potential. Please request mounting guide  
RoHS Compliant

## Characteristics

|                          | AP 5025 Specifications                      | Test Conditions   |
|--------------------------|---|---|
| Resistance Values        | R0005, R001, R002, R003, R004, R005, R010   |   |
| TCR                      | $\pm 50\text{ppm}/^\circ\text{C}$           | Measured $\pm 30\text{ppm}/^\circ\text{C}$                                    |
| Tolerance                | $\pm 1.0\%(F)$ , $\pm 5.0\%(J)$             |   |
| Power Rating             | 8W  | Attached  |
| Current Rating           | 90A   | At $1\text{m}\Omega$  |
| Maximum Current          | 126A  | 2.5 seconds one time  |
| Series Inductance        | 5nH   |   |
| Operating Temperature    | $-55^\circ\text{C}$ to $175^\circ\text{C}$  |   |
| Storage Temperature      | $-55^\circ\text{C}$ to $175^\circ\text{C}$  |   |
| Short Time Overload      | $\Delta R \pm (0.5\% + 0.5\text{m}\Omega)$  | Maximum current, 2.5 seconds  |
| Low Temperature Storage  | $\Delta R \pm (0.5\% + 0.5\text{m}\Omega)$  | $-55^\circ\text{C}$ , 24 hours  |
| High Temperature Storage | $\Delta R \pm (1.0\% + 0.5\text{m}\Omega)$  | $+175^\circ\text{C}$ , 1000 hours   |
| Heat Shock               | $\Delta R \pm (0.5\% + 0.5\text{m}\Omega)$  | $-55^\circ\text{C}$ to $+125^\circ\text{C}$ , 20min. Interval, 5min. 5 cycles |
| Vibration                | $\Delta R \pm (0.5\% + 0.5\text{m}\Omega)$  | 10-2000 Hz, 1.5mm/20gr, 2 hours   |
| Soldering Heat           | $\Delta R \pm (0.25\% + 0.5\text{m}\Omega)$ | $260^\circ\text{C} \pm 5^\circ\text{C}$ , $10 \pm 1$ second                   |
| Solderability            | 90%/terminal surface                        |   |
| Humidity                 | $\Delta R \pm (0.5\% + 0.1\text{m}\Omega)$  | $85^\circ\text{C}$ , 85% RH, dc0, 1W, 1000 hours                              |
| Load Life                | $\Delta R \pm (0.5\% + 0.1\text{m}\Omega)$  | $25^\circ\text{C}$ , dc rated power, 90 min ON, 30min OFF, 1000 hours         |

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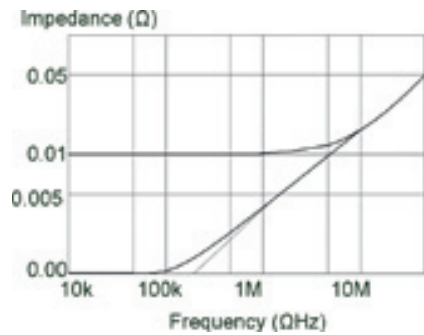
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It is the responsibility of the customer to ensure that the component selected from our range is suitable for the intended application. If in doubt please ask Arcol.

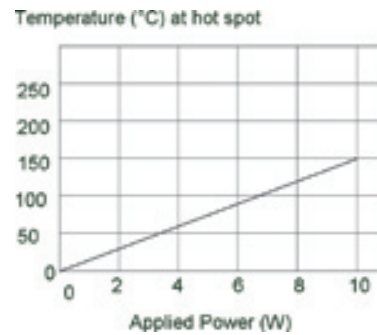
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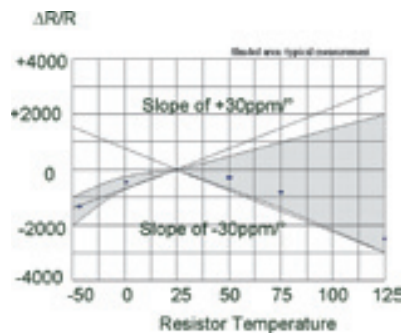
## Frequency Characteristics



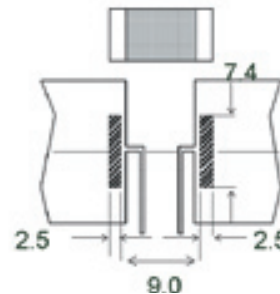
## Temperature Rise



## TCR Curves



## Recommended Foot Print in mm



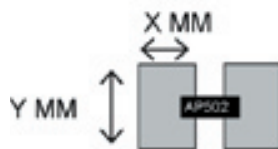
### Soldering Recommendation

Due to the enhanced heat dissipation properties of the AP5025, the temperature profile during reflow soldering will need to be increased by 10 to 20°C.

### Custom Designs

Alternative widths and lengths are available, please contact factory for details.

## FR4 Thermal PCB Characterisation



| Pad Dimensions<br>(x,y mm) | P 90°C, 70µm (W) | P 90°C, 35µm (W) |
|----------------------------|------------------|------------------|
| 60, 45                     | 5.8              | 4.6              |
| 50, 45                     | 5.4              | 4.3              |
| 40, 40                     | 4.2              | 4.1              |
| 30, 30                     | 3.5              | 2.8              |
| 20, 20                     | 2.9              | 2.7              |
| 10, 10                     | 2.4              | 2.5              |

Notes: Characterisation carried out using 70µm and 35µm. PCB copper pad weights, with the temperature of 90°C used as a maximum reference on the PCB.

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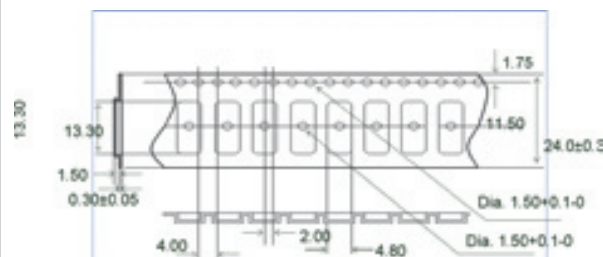
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## Ordering Procedure

Standard resistor: Series, Resistance, Tolerance  
e.g AP5025 R01 J

## Packaging (dimensions in mm)



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