Features
- RoHS compliant*
- Medium profile offers increased power handling
- Wide assortment of pin packages enhances design flexibility
- Ammo-pak packaging available

Recommended for rosin flux and solvent clean or no clean flux processes
- Marking on contrasting background for permanent identification

4600M Series - Thick Film Conformal SIPs

Product Characteristics

**Resistance Range**
- 10 ohms to 10 megarms

**Maximum Operating Voltage**
- 100 V

**Temperature Coefficient of Resistance**
- 50 Ω to 2.2 megarms: ±100 ppm/°C
- below 50 Ω: ±250 ppm/°C
- above 2.2 megarms: ±250 ppm/°C

**TCR Tracking**
- 50 ppm/°C above 2.2 megarms
- ±250 ppm/°C below 50 ohms

**Dielectric Withstanding Voltage**
- 10,000 megohms minimum

**Insulation Resistance**
- 100 Ω above 2.2 megohms
- ±250 ppm/°C below 50 ohms

**Resistor Tolerance**
- See circuits

**Thermal Shock**
- ±0.25%

**Terminal Strength**
- ±0.50%

**Resistance to Soldering Heat**
- ±2.00%

**Moisture Resistance**
- ±2.00%

**Load Life**
- ±2.00%

**Short Time Overload**
- ±0.25%

**Environment Characteristics**

**TESTS PER MIL-STD-202**
- **ΔR MAX.**
- Short Time Overload: ±0.25 %
- Load Life: ±2.00 %
- Moisture Resistance: ±0.50 %
- Insulation Resistance: ±0.50 %
- Terminal Strength: ±0.25 %
- Thermal Shock: ±0.25 %

**Physical Characteristics**
- Flammability: Conforms to UL94V-0
- Body Material: Epoxy resin
- Standard Packaging: Bulk, Ammo-pak available

**Product Dimensions**

**How To Order**
- 46 06 M - 101 - 222 __ LF

**Electrical Configuration**
- 101 = Bussed
- 102 = Isolated
- 104 = Dual Terminator
- AP1 = Bussed Ammo**
- AP2 = Isolated Ammo**
- AP4 = Dual Ammo**

**Resistance Code**
- First 2 digits are significant
- Third digit represents the number of zeros to follow
- Blank = ±2 % (see "Resistance Tolerance" on next page for resistance range)
- F = ±1 % (100 ohms - 5 megarms)

**Terminations**
- All electrical configurations EXCEPT 104 & AP4;
- LF = Sn/Ag/Cu-plated (RoHS compliant)
- ONLY electrical configurations 104 & AP4;
- L = Sn/Ag/Cu-plated (RoHS compliant)

Consult factory for other available options.
**Available for packages with 10 pins or less.

---

**4600M Series - Thick Film Conformal SIPs**

**Package Power Temp. Derating Curve**

**Package Power Ratings (Watts)**

- **Ambient Temp. 70 °C**
- **Ambient Temp. 70 °C**

<table>
<thead>
<tr>
<th>Pkg.</th>
<th>4604M</th>
<th>4605M</th>
<th>4606M</th>
<th>4607M</th>
<th>4608M</th>
<th>4609M</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.60</td>
<td>0.75</td>
<td>0.90</td>
<td>1.05</td>
<td>1.20</td>
<td>1.35</td>
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<tr>
<td>4610M</td>
<td>1.50</td>
<td>1.65</td>
<td>1.80</td>
<td>1.95</td>
<td>2.10</td>
<td></td>
</tr>
</tbody>
</table>

**Typical Part Marking**

- Represents total content. Layout may vary.

**Part Number**
- 4606M-101-RC
- 4608M-102-RC
- 4610M-104-RC

**RC** = ohmic value, 3-digit resistance code.

**For Standard Values Used in Capacitors, Inductors, and Resistors, click here.**

---

**WARNING** Cancer and Reproductive Harm

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For information on specific applications, download Bourns’ application notes:
- DRAM Applications
- Dual Terminator Resistor Networks
- R/2R Ladder Networks
- SCSI Applications

**4600M Series - Thick Film Conformal SIPs**

**Isolated Resistor (102 Circuit)**
Model 4600M-102-RC
4, 6, 8, 10 Pin

These models incorporate 2 to 7 isolated thick-film resistors of equal value, each connected between two pins.

**Resistance Tolerance**
- 10 ohms to 49 ohms: ±1 ohm
- 50 ohms to 5 megohms: ±2 %*
- Above 5 megohms: ±5 %

**Power Rating per Resistor**
- At 70 °C: 0.40 watt

**Power Temperature Derating Curve**

---

**Bussed Resistor (101 Circuit)**
Model 4600M-101-RC
4 through 14 Pin

These models incorporate 3 to 13 thick-film resistors of equal value, each connected between a common bus (pin 1) and a separate pin.

**Resistance Tolerance**
- 10 ohms to 49 ohms: ±1 ohm
- 50 ohms to 5 megohms: ±2 %*
- Above 5 megohms: ±5 %

**Power Rating per Resistor**
- At 70 °C: 0.25 watt

**Power Temperature Derating Curve**

---

**Dual Terminator (104 Circuit)**
Model 4600M-104-R1/R2
4 through 14 Pin

The 4608M-104 (shown above) is an 8-pin configuration and terminates 6 lines. Pins 1 and 8 are common for ground and power, respectively. Twelve thick-film resistors are paired in series between the common lines (pins 1 and 8).

**Resistance Tolerance**
- Below 100 ohms: ±2 ohms
- 100 ohms to 5 megohms: ±2 %*
- Above 5 megohms: ±5 %

**Power Rating per Resistor**
- At 70 °C: 0.25 watt

**Power Temperature Derating Curve**

---

**Popular Resistance Values (101, 102 Circuits)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
<td>180</td>
<td>181</td>
<td>1,800</td>
<td>182</td>
<td>15,000</td>
<td>153</td>
<td>120,000</td>
<td>124</td>
</tr>
<tr>
<td>22</td>
<td>220</td>
<td>221</td>
<td>2,000</td>
<td>202</td>
<td>18,000</td>
<td>183</td>
<td>150,000</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>270</td>
<td>271</td>
<td>2,200</td>
<td>222</td>
<td>20,000</td>
<td>203</td>
<td>180,000</td>
<td>184</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>330</td>
<td>331</td>
<td>2,700</td>
<td>272</td>
<td>22,000</td>
<td>223</td>
<td>220,000</td>
<td>224</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>390</td>
<td>391</td>
<td>3,300</td>
<td>332</td>
<td>27,000</td>
<td>273</td>
<td>270,000</td>
<td>274</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>470</td>
<td>471</td>
<td>3,900</td>
<td>392</td>
<td>33,000</td>
<td>333</td>
<td>330,000</td>
<td>334</td>
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<tr>
<td>56</td>
<td>560</td>
<td>561</td>
<td>4,700</td>
<td>472</td>
<td>39,000</td>
<td>393</td>
<td>390,000</td>
<td>394</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>680</td>
<td>681</td>
<td>5,600</td>
<td>562</td>
<td>47,000</td>
<td>473</td>
<td>470,000</td>
<td>474</td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>820</td>
<td>821</td>
<td>6,800</td>
<td>682</td>
<td>56,000</td>
<td>563</td>
<td>560,000</td>
<td>564</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>101</td>
<td>1,000</td>
<td>102</td>
<td>8,200</td>
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<td>683</td>
<td>680,000</td>
<td>684</td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>121</td>
<td>1,200</td>
<td>122</td>
<td>10,000</td>
<td>82,000</td>
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<tr>
<td>150</td>
<td>151</td>
<td>1,500</td>
<td>152</td>
<td>12,000</td>
<td>103</td>
<td>100,000</td>
<td>104</td>
<td>1,000,000</td>
<td>105</td>
</tr>
</tbody>
</table>

* ±1 % tolerance is available by adding suffix code “F” after the resistance code.
* **Non-standard values available, within resistance range.

---

**Popular Resistance Values (104 Circuit)**

<table>
<thead>
<tr>
<th>Resistance</th>
<th>Ohms</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>160</td>
<td>240</td>
</tr>
<tr>
<td>R2</td>
<td>181</td>
<td>391</td>
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<tr>
<td>R1</td>
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<td>271</td>
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<td>R2</td>
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<td>R1</td>
<td>3,000</td>
<td>622</td>
</tr>
<tr>
<td>R2</td>
<td>4,700</td>
<td>622</td>
</tr>
</tbody>
</table>

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