**Features**

- RoHS compliant*
- Low profile is compatible with DIPs
- Wide assortment of pin packages enhances design flexibility
- Ammo-pak packaging available
- Recommended for rosin flux and solvent clean or no clean flux processes

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**4600X Series - Thick Film Conformal SIPS**

**Product Characteristics**

<table>
<thead>
<tr>
<th>Resistance Range</th>
<th>Maximum Operating Voltage</th>
<th>Temperature Coefficient of Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 ohms to 10 megohms</td>
<td>100 V</td>
<td>$\pm 100 \text{ ppm/°C}$</td>
</tr>
<tr>
<td>50 Ω to 2.2 megohms</td>
<td>$\pm 250 \text{ ppm/°C}$</td>
<td></td>
</tr>
<tr>
<td>below 50 Ω</td>
<td>$\pm 250 \text{ ppm/°C}$</td>
<td></td>
</tr>
<tr>
<td>above 2.2 megohms</td>
<td>$\pm 50 \text{ ppm/°C}$</td>
<td></td>
</tr>
</tbody>
</table>

**Resistance Tolerance**

- See circuits
- Above 2.2 megohms: $\pm 250 \text{ ppm/°C}$
- Below 50 ohms: $\pm 100 \text{ ppm/°C}$

**Environmental Characteristics**

- Tests per MIL-STD-202
- Short Time Overload: $\pm 0.25 \%$
- Load Life: $\pm 1.00 \%$
- Moisture Resistance: $\pm 0.50 \%$
- Resistance to Soldering Heat: $\pm 0.50 \%$
- Terminal Strength: $\pm 0.25 \%$
- Thermal Shock: $\pm 0.25 \%$
- Resistance to Soldering Heat: $\pm 0.50 \%$
- Moisture Resistance: $\pm 0.50 \%$
- Resistance to Soldering Heat: $\pm 0.50 \%$
- Terminal Strength: $\pm 0.25 \%$
- Thermal Shock: $\pm 0.25 \%$

**Physical Characteristics**

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

**How To Order**

4606X - 101 - 222 LF

**Typical Part Marking**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>4606X-101-RC</td>
<td>6X-1-RC</td>
</tr>
<tr>
<td>4608X-102-RC</td>
<td>8X-2-RC</td>
</tr>
<tr>
<td>4610X-104-RC</td>
<td>10X-4-RC</td>
</tr>
</tbody>
</table>

RC = ohmic value, 3-digit resistance code.

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**WARNING** Cancer and Reproductive Harm

www.P65Warnings.ca.gov

*Consult factory for other available options.
4600X Series - Thick Film Conformal SIPs

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

Isolated Resistors (102 Circuit)
Model 4600X-102-RC
4, 6, 8, 10, 12, 14 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 .............................0.30 watt

Power Temperature Derating Curve

Bussed Resistors (101 Circuit)
Model 4600X-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 .............................0.20 watt

Power Temperature Derating Curve

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

The 4608X-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 .............................0.20 watt

Power Temperature Derating Curve

Popular Resistance Values (101, 102 Circuits)**

<table>
<thead>
<tr>
<th>Ohms</th>
<th>Code</th>
<th>Ohms</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>100</td>
<td>180</td>
<td>181</td>
</tr>
<tr>
<td>22</td>
<td>220</td>
<td>221</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>270</td>
<td>271</td>
<td>2.200</td>
</tr>
<tr>
<td>33</td>
<td>330</td>
<td>331</td>
<td>2.700</td>
</tr>
<tr>
<td>39</td>
<td>390</td>
<td>391</td>
<td>3.300</td>
</tr>
<tr>
<td>47</td>
<td>470</td>
<td>471</td>
<td>3.900</td>
</tr>
<tr>
<td>56</td>
<td>560</td>
<td>561</td>
<td>4.700</td>
</tr>
<tr>
<td>68</td>
<td>680</td>
<td>681</td>
<td>5.600</td>
</tr>
<tr>
<td>82</td>
<td>820</td>
<td>821</td>
<td>6.800</td>
</tr>
<tr>
<td>100</td>
<td>101</td>
<td>102</td>
<td>8.200</td>
</tr>
<tr>
<td>120</td>
<td>121</td>
<td>122</td>
<td>10.000</td>
</tr>
<tr>
<td>150</td>
<td>151</td>
<td>152</td>
<td>12.000</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>180</td>
<td>390</td>
</tr>
<tr>
<td>R1</td>
<td>220</td>
<td>270</td>
</tr>
<tr>
<td>R2</td>
<td>330</td>
<td>331</td>
</tr>
<tr>
<td>R1</td>
<td>470</td>
<td>391</td>
</tr>
<tr>
<td>R2</td>
<td>300</td>
<td>622</td>
</tr>
</tbody>
</table>

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