KYOCERA AVX’s new Q-Bridge Thermal Conductor is manufactured with the highest quality materials for reliable and repeatable performance providing a cost effective thermal management solution. These devices are constructed with Aluminum Nitride (AlN) or Beryllium Oxide (BeO) and are available in standard EIA form factors. Q-Bridge provides the designer with the ability to manage thermal conditions by directing heat to a thermal ground plane, heat sink or any other specific thermal point of interest. The inherently low capacitance makes this device virtually transparent at RF/microwave frequencies. This device has the added benefit of offering additional layers of protection to adjacent components from hot spot thermal loads. Q-Bridge provides the benefit of increased overall circuit reliability. KYOCERA AVX’s Q-Bridge is manufactured using one-piece construction, providing a RoHS compliant SMT package that is fully compatible with high speed automated pick-and-place processing. It is available in multiple different EIA case sizes. Custom configurations are also available.

**APPLICATIONS**
- High Thermal Conductivity
- Low Thermal Resistance
- Low Capacitance
- Increases Circuit Reliability

**FEATURES**
- GaN Power Amplifiers
- High RF Power Amplifiers
- Filters
- Synthesizers

**FUNCTIONAL APPLICATIONS**
- Between active device and adjacent ground planes
- Specific contact pad to case
- Contact pad to contact pad

**Q-BRIDGE THERMAL TESTS INDICATE THE HEAT DISSIPATION OUTCOMES**

- **123°C**
  - Resistor without any added heat removal, power output 841mW

- **106°C**
  - Resistor with added metal heat sink, power output 841mW

- **78°C**
  - Resistor with added 2010 Q-Bridge, power output 841mW

**GENERAL DESCRIPTION**

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## Q-Bridge Thermal Conductor

### Mechanical Configurations

![Diagram of Q-Bridge configurations: Edge Wrap, No Wrap, Partial Wrap](image)

### Termination Materials

<table>
<thead>
<tr>
<th>Termination Code</th>
<th>Termination Materials</th>
<th>RoHS Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Tin plated over Nickel over Silver Platinum</td>
<td><img src="image" alt="RoHS Compliant" /></td>
</tr>
<tr>
<td>Y</td>
<td>Silver Platinum Non-Magnetic Termination</td>
<td><img src="image" alt="RoHS Compliant" /></td>
</tr>
<tr>
<td>S</td>
<td>Silver over Magnetic Termination</td>
<td><img src="image" alt="RoHS Compliant" /></td>
</tr>
<tr>
<td>J*</td>
<td>60Sn/40Pb Solder Plated over Nickel over Silver Platinum</td>
<td><img src="image" alt="Not RoHS Compliant" /></td>
</tr>
</tbody>
</table>

* Not RoHS Compliant - Consult factory for other termination options e.g., tin plate and solder plate

### Style

- **W** = Edge Wrap
- **E** = No Wrap

### Packaging

- **T** = 1000 pcs., 7" reel
- **T\500** = 500 pcs., 7" reel
- **C** = Matrix Tray

### Typical Characteristics

<table>
<thead>
<tr>
<th>Case Size</th>
<th>Length (L)</th>
<th>Width (W)</th>
<th>Thickness (T)</th>
<th>Terminal</th>
<th>Voltage Rating (V)</th>
<th>Thermal Resistance (°C/W)</th>
<th>Thermal Conductivity (mW/°C)</th>
<th>Available Configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>0302</td>
<td>0.030 ± 002 (77.7 ± 0.051)</td>
<td>0.020 ± 002 (0.511 ± 0.051)</td>
<td>0.02 (0.51 ± 0.05)</td>
<td>0.01 (0.25)</td>
<td>100</td>
<td>19</td>
<td>12</td>
<td>53</td>
</tr>
<tr>
<td>0402</td>
<td>0.040 ± 002 (1.02 ± 0.051)</td>
<td>0.020 ± 002 (0.511 ± 0.051)</td>
<td>0.02 (0.51 ± 0.05)</td>
<td>0.01 (0.25)</td>
<td>200</td>
<td>25</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>0505</td>
<td>0.050 ± 002 (1.27 ± 0.051)</td>
<td>0.050 ± 002 (1.27 ± 0.051)</td>
<td>25 (0.64 ± 0.05)</td>
<td>0.015 (0.38)</td>
<td>250</td>
<td>10</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>0603</td>
<td>0.060 ± 002 (1.52 ± 0.051)</td>
<td>0.060 ± 002 (1.52 ± 0.051)</td>
<td>0.025 (0.64 ± 0.05)</td>
<td>0.015 (0.38)</td>
<td>250</td>
<td>20</td>
<td>13</td>
<td>50</td>
</tr>
<tr>
<td>0805</td>
<td>0.080 ± 002 (2.03 ± 0.051)</td>
<td>0.080 ± 002 (2.03 ± 0.051)</td>
<td>0.04 (1.02 ± 0.05)</td>
<td>0.02 (0.51)</td>
<td>250</td>
<td>10</td>
<td>7</td>
<td>100</td>
</tr>
<tr>
<td>1005</td>
<td>0.100 ± 002 (2.54 ± 0.051)</td>
<td>0.100 ± 002 (2.54 ± 0.051)</td>
<td>0.04 (1.02 ± 0.05)</td>
<td>0.02 (0.51)</td>
<td>500</td>
<td>13</td>
<td>8</td>
<td>77</td>
</tr>
<tr>
<td>1020</td>
<td>0.100 ± 002 (2.54 ± 0.051)</td>
<td>0.200 ± 002 (5.08 ± 0.051)</td>
<td>0.04 (1.02 ± 0.05)</td>
<td>0.02 (0.51)</td>
<td>500</td>
<td>3</td>
<td>2</td>
<td>320</td>
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<tr>
<td>1111</td>
<td>0.110 ± 002 (2.79 ± 0.051)</td>
<td>0.110 ± 002 (2.79 ± 0.051)</td>
<td>0.04 (1.02 ± 0.05)</td>
<td>0.02 (0.51)</td>
<td>500</td>
<td>7</td>
<td>4</td>
<td>153</td>
</tr>
<tr>
<td>2010</td>
<td>0.195 ± 010 (4.95 ± 0.254)</td>
<td>0.955 ± 010 (2.41 ± 0.254)</td>
<td>0.06 (1.52 ± 0.05)</td>
<td>0.03 (0.77)</td>
<td>2000</td>
<td>10</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>2525</td>
<td>0.240 ± 010 (6.10 ± 0.254)</td>
<td>0.250 ± 010 (6.35 ± 0.254)</td>
<td>0.06 (1.52 ± 0.05)</td>
<td>0.04 (1.02)</td>
<td>3000</td>
<td>4</td>
<td>3</td>
<td>240</td>
</tr>
<tr>
<td>3725</td>
<td>0.370 ± 010 (9.40 ± 0.254)</td>
<td>0.245 ± 010 (6.22 ± 0.254)</td>
<td>0.06 (1.52 ± 0.05)</td>
<td>0.05 (1.27)</td>
<td>4000</td>
<td>6</td>
<td>4</td>
<td>160</td>
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<tr>
<td>3737</td>
<td>0.365 ± 010 (9.27 ± 0.254)</td>
<td>0.375 ± 010 (9.53 ± 0.254)</td>
<td>0.06 (1.52 ± 0.05)</td>
<td>0.05 (1.27)</td>
<td>4000</td>
<td>4</td>
<td>3</td>
<td>240</td>
</tr>
</tbody>
</table>

#### Notes:
- The above part number refers to a Q-Bridge, (EIA case size 0603), Aluminum Nitride Substrate, Thickness 25 mils., Style W, Y Termination (Silver Platinum Non-Magnetic Termination), with Tape and Reel Packaging.