<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>MiniBoard Standard</th>
<th>Production</th>
<th>MiniBoard Pro</th>
<th>Proto Pro</th>
<th>Production 4 Layer</th>
<th>Miniboard Pro 4 Layer</th>
<th>Proto Pro 4 Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity Layers</strong></td>
<td>1 and up</td>
<td>3</td>
<td>2 and up</td>
<td>3</td>
<td>4</td>
<td>2 and up</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Lead Time</strong></td>
<td>1, 2, 5 Day</td>
<td>1 Day</td>
<td>1, 2, 5 Day</td>
<td>2 Day</td>
<td>2 Days</td>
<td>2, 3, 5 Day</td>
<td>3 Day</td>
<td>3 Day</td>
</tr>
<tr>
<td><strong>Maximum Board Size</strong></td>
<td>The maximum board size we manufacture is 12 x 14 inches.</td>
<td>Boards are cut in a rectangle 3.8 x 2.5 inches.</td>
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<td>Boards are cut in a rectangle 3.8 x 2.5 inches.</td>
<td>The board size must fit in a rectangle that is 21 square inches or smaller, and the longest dimension cannot exceed 12 inches.</td>
<td></td>
</tr>
<tr>
<td><strong>Minimum Board Size</strong></td>
<td>Minimum dimension in height or width is 0.35 inches. Total board area must be greater than 0.4 square-inches. (i.e. smallest square board we can make is 0.64 x 0.64 inches)</td>
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<td></td>
</tr>
<tr>
<td><strong>Panelize Multiple Boards</strong></td>
<td>Multiple circuits can be pasted together on a single board, but we do not cut them apart. The perimeter of a board cannot include long slots as they can cause manufacturing problems. We are not responsible for any defects that are a result of routing multiple circuits on a single board.</td>
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<td>We do not recommend that users cut apart 4 layer boards because this can result in shorts between the inner layers.</td>
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<td></td>
</tr>
<tr>
<td><strong>Minimum Trace and Space</strong></td>
<td>Etching resolution: 0.006&quot; minimum trace width, 0.006&quot; minimum space width.</td>
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<td>Etching resolution: 0.006&quot; minimum trace width, 0.006&quot; minimum space width.</td>
<td></td>
</tr>
<tr>
<td><strong>Inner Layers</strong></td>
<td>No Inner Layers</td>
<td>No Inner Layers</td>
<td>No Inner Layers</td>
<td>No Inner Layers</td>
<td>No Inner Layers</td>
<td>The two inner layers are solid copper planes. Through-hole pads can either be connected to or isolated from these copper planes. The planes are inset 0.025&quot; from edge of the board.</td>
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</tr>
<tr>
<td><strong>Solder Mask</strong></td>
<td>None</td>
<td>None</td>
<td>Top and Bottom</td>
<td>Top and Bottom</td>
<td>Top and Bottom</td>
<td>Top and Bottom</td>
<td>Top and Bottom</td>
<td>Top and Bottom</td>
</tr>
<tr>
<td><strong>Silk Screen</strong></td>
<td>None</td>
<td>None</td>
<td>Top</td>
<td>Top</td>
<td>Top</td>
<td>Top</td>
<td>Top</td>
<td>Top</td>
</tr>
<tr>
<td>Surface Finish</td>
<td>Standard</td>
<td>MiniBoard Standard</td>
<td>Production</td>
<td>MiniBoard Pro</td>
<td>Proto Pro</td>
<td>Production 4 Layer</td>
<td>MiniBoard Pro 4 Layer</td>
<td>Proto Pro 4 Layer</td>
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</tr>
<tr>
<td>Solder Mask Pad Tolerance</td>
<td>No Soldermask Layer</td>
<td>No Soldermask Layer</td>
<td>Pads on the solder mask layers are grown by 0.003&quot; on all sides. As a result, very fine pitch surface mount components may not include any solder mask between the pins.</td>
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<tr>
<td>Material</td>
<td>Our 2 layer laminate is .059&quot; FR-4 epoxy glass which includes .0007&quot; copper on each side (industry standard 1/2 ounce copper base). We plate an additional .001&quot; copper on the surface after drilling and imaging, resulting in a copper thickness on the surface of .00017&quot;.,</td>
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<td>Our 4 layer laminate is constructed as a .059&quot; FR-4 package, which includes .0007&quot; starting copper on layers 1 and 4 (industry standard 1/2 ounce copper base). We plate an additional .001&quot; copper on the surface after drilling and imaging, resulting in a copper thickness on the surface of .00017&quot;.,</td>
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</tr>
<tr>
<td>Dielectric Constant (DK)</td>
<td>The dielectric constant of our FR-4 laminate ranges from 4.2 to 5.0.</td>
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</tr>
<tr>
<td>Plated Holes</td>
<td>Standard</td>
<td>MiniBoard Standard</td>
<td>Production</td>
<td>MiniBoard Pro</td>
<td>Proto Pro</td>
<td>Production 4 Layer</td>
<td>MiniBoard Pro 4 Layer</td>
<td>Proto Pro 4 Layer</td>
</tr>
<tr>
<td>-------------</td>
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</tr>
<tr>
<td>Boards are manufactured double-sided with all holes plated-through.</td>
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<td>Boards are manufactured double-sided with all holes plated-through.</td>
<td>Boards are manufactured with 4 copper layers and all holes plated-through.</td>
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<td>Boards are manufactured with 4 copper layers and all holes plated-through.</td>
<td></td>
</tr>
</tbody>
</table>

**Maximum Hole Count**
- No maximum count.
- No maximum count.
- No maximum count.
- No maximum count.
- The maximum number of holes allowed in a MiniBoard is 350.
- The maximum number of holes allowed in a MiniBoard is 350.
- The maximum number of holes allowed in a ProtoPro is 650.
- The maximum number of holes allowed in a ProtoPro is 650.

**Holes**
- Twenty-three hole sizes are available: 0.014", 0.020", 0.025", 0.029", 0.033", 0.035", 0.040", 0.043", 0.046", 0.052", 0.061", 0.067", 0.079", 0.088", 0.093", 0.100", 0.110", 0.125", 0.141", 0.150", 0.167", 0.192", 0.251".
- Hole sizes other than those listed are not offered.
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- Hole sizes other than those listed are not offered.

**Temperature**
- The maximum operating temperature is 125 degrees C.
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**Hole Tolerance**
- These sizes are the finished hole diameters after plating. The 0.014" hole may be filled with solder and can only be used as via. The tolerance for the 0.020" hole is +0.003"/-0.005. The tolerance for the other hole sizes is +/-0.004".
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**Hole Location Tolerance**
- Our hole location tolerance is +/-0.005". As such, the tolerance between two holes would be +/-0.010".
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**Minimum Hole Distance**
- A minimum of 0.021" space must remain between adjacent holes. For example, the center-to-center distance between two pads with 0.020" holes must be 0.041" or greater.
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**Internal Slots and Cutouts**
- None
- None
- None
- None
- None
- None
- None
<table>
<thead>
<tr>
<th>Perimeter Routing</th>
<th>Standard MiniBoard Standard</th>
<th>Production MiniBoard Pro</th>
<th>Proto Pro 4 Layer</th>
<th>Production MiniBoard Pro 4 Layer</th>
<th>Proto Pro 4 Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>The edges of the board are cut with an accuracy of +/- 0.015&quot;. A minimum of 0.020&quot; blank space is recommended between the perimeter and all features on the board. Traces placed closer than 0.015&quot; to the board’s edge may be routed off.</td>
<td>The edges of the board are cut with an accuracy of +/- 0.015&quot;. A minimum of 0.020&quot; blank space is recommended between the perimeter and all features on the board. Traces placed closer than 0.015&quot; to the board’s edge may be routed off.</td>
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