

| 4 | | 3 | | 2 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|----------------|------------------------|--|-------------|-----------------------|------------------------|--------------------------|-----------|-----|-----|--------|--------|-----------|--------|----------|-----|-----|------|-----------|--------|--|-----|--|------|-----------|-------------|------|----------|-----|-------------------|--------------|--------|---|---|---|------|-----------|--------|---|-----|---|------|-----------|--------|---|----|---|------|-----------|--------|---|-----|---|------|-----------|--------|---|---|---|------|-----------|--------|---|---|---|------|-----------|--------|---|---|---|------|-----------|------------|---|---|---|------|-----------|------------|---|---|---|------|-----------|------------|---|---|---|------|-----------|------------|---|---|---|------|-----------|------------|---|---|---|-------|-----------|------------|---|---|---|-------|-----------|------------|---|---|---|-----------|-----------|--------|-------|---|---|------------|-----------|--------|--------|---|---|------------|-----------|--------|-------|---|---|------------|-----------|--------|--------|---|---|--|
| <div>5 IMPEDANCE TABLE<table><tr><th>LAYER</th><th>TRACE (mil)</th><th>SPACEING (mil)</th><th>IMPEDANCE (Single end)</th><th>IMPEDANCE (Differential)</th><th>TOLERANCE</th></tr><tr><td>1,4</td><td>5.0</td><td>N/A</td><td>55 OHM</td><td>N/A</td><td>+/-10%</td></tr><tr><td>1,4</td><td>6.1</td><td>8.9</td><td>N/A</td><td>90 OHM</td><td>+/-10%</td></tr></table></div> | | | | LAYER | TRACE (mil) | SPACEING (mil) | IMPEDANCE (Single end) | IMPEDANCE (Differential) | TOLERANCE | 1,4 | 5.0 | N/A | 55 OHM | N/A | +/-10% | 1,4 | 6.1 | 8.9 | N/A | 90 OHM | +/-10% | <div>4 LAYER STUCK-UP<div>1.6mm 1/16"</div><div>SOLDERMASK & SILKSCREEN LAYER 1 (0.5 oz cu/planted)</div><div>PREPRG 4.2 MIL LAYER 2 (1 oz)</div><div>CORE XX MIL LAYER 3 (1 oz)</div><div>PREPRG 4.2 MIL LAYER 4 (0.5 oz cu/planted)</div><div>SOLDERMASK & SILKSCREEN</div><div>4 LAYER STUCKING</div></div> | | <div>REVISIONS<table><tr><th>REV</th><th>DESCRIPTION</th><th>DATE</th><th>APPROVED</th></tr><tr><td>1.0</td><td>EDITION ORIGINALE</td><td>2008-***-***</td><td>***</td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td><td> </td></tr></table></div> | | REV | DESCRIPTION | DATE | APPROVED | 1.0 | EDITION ORIGINALE | 2008-***-*** | *** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LAYER | TRACE (mil) | SPACEING (mil) | IMPEDANCE (Single end) | IMPEDANCE (Differential) | TOLERANCE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 5.0 | N/A | 55 OHM | N/A | +/-10% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1,4 | 6.1 | 8.9 | N/A | 90 OHM | +/-10% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REV | DESCRIPTION | DATE | APPROVED | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.0 | EDITION ORIGINALE | 2008-***-*** | *** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <div><div>114.3</div><div>172.72</div><div></div></div> | | | | <div>DRILL CHART: TOP to BOTTOM<table><tr><th colspan="6">ALL UNITS ARE IN MILS</th></tr><tr><th>FIGURE</th><th>SIZE</th><th>TOLERANCE</th><th>PLATED</th><th>ROTATION</th><th>QTY</th></tr><tr><td>•</td><td>12.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>669</td></tr><tr><td>◻</td><td>30.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>7</td></tr><tr><td>◦</td><td>33.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>2</td></tr><tr><td>◦</td><td>36.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>156</td></tr><tr><td>◦</td><td>38.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>18</td></tr><tr><td>◦</td><td>40.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>120</td></tr><tr><td>△</td><td>48.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>6</td></tr><tr><td>◻</td><td>53.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>2</td></tr><tr><td>○</td><td>95.0</td><td>+3.0/-3.0</td><td>PLATED</td><td>-</td><td>2</td></tr><tr><td>◻</td><td>28.0</td><td>+2.0/-2.0</td><td>NON-PLATED</td><td>-</td><td>3</td></tr><tr><td>◦</td><td>38.0</td><td>+2.0/-2.0</td><td>NON-PLATED</td><td>-</td><td>2</td></tr><tr><td>△</td><td>39.0</td><td>+2.0/-2.0</td><td>NON-PLATED</td><td>-</td><td>1</td></tr><tr><td>B</td><td>47.0</td><td>+2.0/-2.0</td><td>NON-PLATED</td><td>-</td><td>2</td></tr><tr><td>C</td><td>59.0</td><td>+2.0/-2.0</td><td>NON-PLATED</td><td>-</td><td>2</td></tr><tr><td>D</td><td>126.0</td><td>+2.0/-2.0</td><td>NON-PLATED</td><td>-</td><td>2</td></tr><tr><td>E</td><td>138.0</td><td>+2.0/-2.0</td><td>NON-PLATED</td><td>-</td><td>4</td></tr><tr><td>•</td><td>51.0x24.0</td><td>+5.0/-5.0</td><td>PLATED</td><td>0.000</td><td>2</td></tr><tr><td>⊗</td><td>126.0x40.0</td><td>+5.0/-5.0</td><td>PLATED</td><td>90.000</td><td>2</td></tr><tr><td>⊗</td><td>126.0x40.0</td><td>+5.0/-5.0</td><td>PLATED</td><td>0.000</td><td>1</td></tr><tr><td>⊗</td><td>140.0x50.0</td><td>+5.0/-5.0</td><td>PLATED</td><td>90.000</td><td>4</td></tr></table><div>TOTAL HOLES: 1007</div></div> | | ALL UNITS ARE IN MILS | | | | | | FIGURE | SIZE | TOLERANCE | PLATED | ROTATION | QTY | • | 12.0 | +3.0/-3.0 | PLATED | - | 669 | ◻ | 30.0 | +3.0/-3.0 | PLATED | - | 7 | ◦ | 33.0 | +3.0/-3.0 | PLATED | - | 2 | ◦ | 36.0 | +3.0/-3.0 | PLATED | - | 156 | ◦ | 38.0 | +3.0/-3.0 | PLATED | - | 18 | ◦ | 40.0 | +3.0/-3.0 | PLATED | - | 120 | △ | 48.0 | +3.0/-3.0 | PLATED | - | 6 | ◻ | 53.0 | +3.0/-3.0 | PLATED | - | 2 | ○ | 95.0 | +3.0/-3.0 | PLATED | - | 2 | ◻ | 28.0 | +2.0/-2.0 | NON-PLATED | - | 3 | ◦ | 38.0 | +2.0/-2.0 | NON-PLATED | - | 2 | △ | 39.0 | +2.0/-2.0 | NON-PLATED | - | 1 | B | 47.0 | +2.0/-2.0 | NON-PLATED | - | 2 | C | 59.0 | +2.0/-2.0 | NON-PLATED | - | 2 | D | 126.0 | +2.0/-2.0 | NON-PLATED | - | 2 | E | 138.0 | +2.0/-2.0 | NON-PLATED | - | 4 | • | 51.0x24.0 | +5.0/-5.0 | PLATED | 0.000 | 2 | ⊗ | 126.0x40.0 | +5.0/-5.0 | PLATED | 90.000 | 2 | ⊗ | 126.0x40.0 | +5.0/-5.0 | PLATED | 0.000 | 1 | ⊗ | 140.0x50.0 | +5.0/-5.0 | PLATED | 90.000 | 4 | <div>PCB SPECIFICATIONS:<div>A. MATERIAL; FR-4, <input checked="" type="checkbox"/> TG-170 <input type="checkbox"/> TG-150 <input type="checkbox"/> TG-140</div><div>B. MATERIAL FAMILY; N/A.</div><div>C. SOLDERMASK COLOR; <input type="checkbox"/> GREEN <input checked="" type="checkbox"/> BLUE <input type="checkbox"/> RED <input type="checkbox"/> BLACK</div><div>D. SILKSCREEN COLOR; <input checked="" type="checkbox"/> WHITE <input type="checkbox"/> YELLOW <input type="checkbox"/> BLACK</div><div>E. SURFACE FINISH; <input checked="" type="checkbox"/> ENIG <input type="checkbox"/> IMMERSION SILVER <input type="checkbox"/> IMMERSION TIN <input type="checkbox"/> HASL <input type="checkbox"/> HASL (PB-FREE) <input type="checkbox"/> GOLDEN FINGER</div><div>F. IMPEDANCE CONTROL; <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES (SEE IMPEDANCE TABLE FOR DETAIL INFORMATION)</div><div>G. THROUGH VIA; PLUG THE VIAS WHICH ARE COVERED WITH SOLDERMASK ONE OR TWO SIDE. PLUG MATERIAL: <input checked="" type="checkbox"/> SOLDERMASK <input type="checkbox"/> NON-CONDUCTIVE EPOXY.</div><div>H. STACK-UP; SEE LAYER STACK-UP SEQUENCE FOR OVERALL THICKNESS.</div></div> <div>PCB REQUIREMENTS:<div>1. THIS BOARD WILL CONFORM TO: IPC-A-600. CURRENT REV., CLASS II IPC-6012, CURRENT REV., CLASS II</div><div>2. UNLESS OTHERWISE SPECIFIED ALL HOLE DIMENSIONS APPLY AFTER PLATING. ALL HOLES SHALL BE LOCATED WITHIN .003" DIAMETER OF TRUE POSITION.</div><div>3. PLATED HOLE WALL THICKNESS SHALL NOT BE LESS THAN .001 INCH MINIMUM AVERAGE, WITH NO READING LESS THAN .0008 BY COROSS SECTION.</div><div>4. MATERIAL FR4 RATING 94V-0 MINIMUM EPOXY GLASS LAMINATE.</div><div>5. BOARD SHALL BE LPI SOLDER MASKED OVER BARE COPPER BOTH SIDES PER IPC-SM-840 CLASS II.</div><div>6. SILKSCREEN SHALL BE PERMANENT NON-CONDUCTIVE INK AND WITH NO OVERLAP ON ANY COMPONENT PAD OR THROUGH HOLE.</div><div>7. MFGR, TO LEGIBLY ETCH OR STAMP/SCREEN WITH PERMANENT NON-CONDUCTIVE INK A. U.L. CODE D. MFGR. LOGO B. DATE CODE E. SUCCESSFUL ELECTRICAL BOARD TEST. C. FLAMMABILITY RATING</div><div>8. REMOVE THE FLASHS WHICH SMALLER THAN HOLE SIZE.</div><div>9. REMOVE ALL SHAPE EDGES AND BURRS .005 MAXIMUM.</div><div>10. PLEASE USE THE SUPPLIED IPC 356 NETLIST TO VERIFY BOARD BEFORE FABRICATING BOARD.</div></div> | |
| ALL UNITS ARE IN MILS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FIGURE | SIZE | TOLERANCE | PLATED | ROTATION | QTY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • | 12.0 | +3.0/-3.0 | PLATED | - | 669 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◻ | 30.0 | +3.0/-3.0 | PLATED | - | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◦ | 33.0 | +3.0/-3.0 | PLATED | - | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◦ | 36.0 | +3.0/-3.0 | PLATED | - | 156 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◦ | 38.0 | +3.0/-3.0 | PLATED | - | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◦ | 40.0 | +3.0/-3.0 | PLATED | - | 120 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| △ | 48.0 | +3.0/-3.0 | PLATED | - | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◻ | 53.0 | +3.0/-3.0 | PLATED | - | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ○ | 95.0 | +3.0/-3.0 | PLATED | - | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◻ | 28.0 | +2.0/-2.0 | NON-PLATED | - | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ◦ | 38.0 | +2.0/-2.0 | NON-PLATED | - | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| △ | 39.0 | +2.0/-2.0 | NON-PLATED | - | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 47.0 | +2.0/-2.0 | NON-PLATED | - | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 59.0 | +2.0/-2.0 | NON-PLATED | - | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 126.0 | +2.0/-2.0 | NON-PLATED | - | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | 138.0 | +2.0/-2.0 | NON-PLATED | - | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • | 51.0x24.0 | +5.0/-5.0 | PLATED | 0.000 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ⊗ | 126.0x40.0 | +5.0/-5.0 | PLATED | 90.000 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ⊗ | 126.0x40.0 | +5.0/-5.0 | PLATED | 0.000 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ⊗ | 140.0x50.0 | +5.0/-5.0 | PLATED | 90.000 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |