CUSTOMER PRODUCT SPECIFICATION

MODEL NBR : HM78D-128C800ALFTR
CUSTOMER PART NBR : N/A
CUSTOMER DWG NBR / REV / DATE : N/A N/A N/A
CUSTOMER CODE : C00065

REV CHANGE DETAILS ECN # DATE PREPARED APPD
A Preliminary release. C10033 12/02/10 PJ Chong CS Teor
B Update operating temperature range. C12088 16/05/12 PJ Chong TS Huang

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN mm
TOLERANCES:
WHOLE NO ± 1.0
DECIMAL .X ± 0.5
.XX ± 0.3

PROJECTION ANGLE SCALE
1: N.T.S

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1. **MECHANICAL OUTLINE**

![Figure 1. Mechanical Outline](image1)

**FIGURE 1. MECHANICAL OUTLINE**

1.1 **RECOMMENDED PCB PATTERN**

![Figure 2. Recommended PCB Pattern](image2)

**FIGURE 2. RECOMMENDED PCB PATTERN**

2. **ELECTRICAL SCHEMATIC**

![Figure 3. Electrical Schematic](image3)

**FIGURE 3. ELECTRICAL SCHEMATIC**

3. **FINISH**

- [X] UNVARNISH
- [ ] DIP VARNISH
- [ ] VACUUM VARNISH
- [ ] POTTING
- [X] EPOXY
- [X] LEAD FREE

4. **MARKING**

- [X] BI LOGO
- [X] DATE CODE
- [ ] COUNTRY OF ORIGIN
- [ ] HI-POT
- [X] BI PART NBR
- [ ] CUSTOMER PART NBR
5. ELECTRICAL SPECIFICATION

<table>
<thead>
<tr>
<th>NO</th>
<th>PARAMETER</th>
<th>TEST CONDITION</th>
<th>TERMINAL</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Inductance, L</td>
<td>1kHz, 1Vac, 0Adc</td>
<td>1-2</td>
<td>37.6</td>
<td>47.0</td>
<td>56.4</td>
<td>µH</td>
</tr>
<tr>
<td>5.2</td>
<td>LBias</td>
<td>1kHz, 1Vac, 2.5Adc</td>
<td>1-2</td>
<td>Refer note 5.4</td>
<td>Refer note 5.4</td>
<td>Refer note 5.4</td>
<td>µH</td>
</tr>
<tr>
<td>5.3</td>
<td>DCR</td>
<td>@ 25°C</td>
<td>1-2</td>
<td>71</td>
<td>85</td>
<td></td>
<td>mΩ</td>
</tr>
</tbody>
</table>

5.4 At 2.5Adc, inductance shall not drop more than 10% from its initial (0Adc) value.

6. MATERIAL LIST

<table>
<thead>
<tr>
<th>NO</th>
<th>ITEM</th>
<th>MATERIAL DESCRIPTION</th>
<th>SOURCE</th>
<th>UL FILE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Core</td>
<td>Ferrite, NiZn</td>
<td>Various</td>
<td>N/A</td>
</tr>
<tr>
<td>6.2</td>
<td>Coil</td>
<td>Polyurethane overcoated with polyamide,</td>
<td>Various</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>180°C, MW 83-C or equivalent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>Epoxy</td>
<td>TB2285</td>
<td>Three Bond</td>
<td>-</td>
</tr>
<tr>
<td>6.4</td>
<td>Base</td>
<td>LCP E4008</td>
<td>LianCheng</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Base terminal</td>
<td>Metal Plastic</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phosphor bronze, matte tin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.5</td>
<td>Tape</td>
<td>Polyester film tape, UL510</td>
<td>3M</td>
<td>-</td>
</tr>
</tbody>
</table>

7. PACKING REQUIREMENT

![FIGURE 4. TAPE & REEL PACKAGING](image_url)

1 reel 500 pcs
1 shipping carton 6 reels or 3000 pcs

8. ENVIRONMENTAL

8.1 RESISTANCE TO SOLDERING HEAT

8.1.1 IR reflow solder, preheat at 1 – 4 °C/second to 235°C and using lead free Sn96.5/Ag3.0/Cu0.5 solder, IR at 235°C for 20 – 60 second, and 255 ± 5°C for 10 ± 5 second maximum. (refer figure 5 below).

8.1.2 Component must withstand minimum 3 IR reflow solder cycle with a cool down between.
After resistance to soldering heat test, there shall be no evidence of cracking or deformation. The parts shall meet all electrical and mechanical requirements.

8.2 MARKING PERMANENCY
8.2.1 Mix 1 part of isopropyl alcohol with 3 parts of mineral spirit. Brush 10 strokes on marking. Repeat 3 cycles per MIL-STD-202F, method 215J.

Accept criteria: Markings are still legible after test

8.3 OPERATING TEMPERATURE
8.3.1 Product operating temperature: \(-40^\circ\text{C}\) to \(+150^\circ\text{C}\)
8.3.2 The part temperature (ambient + temperature rise) should not exceed \(150^\circ\text{C}\).

8.4 TERMINAL STRENGTH
8.4.1 After soldering the part to a PCB, perform a pull test with 1 kg of force in any direction for 5 to 10 seconds.

8.5 THERMAL SHOCK
8.5.1 \(-40^\circ\text{C}\) for 15 minutes, \(+150^\circ\text{C}\) for 15 minutes, 5 cycles.

8.6 HUMIDITY
8.6.1 96 hours at \(40^\circ\text{C} \pm 2^\circ\text{C}\) at 90-95% RH per MIL-STD-202F, method 103B, test B.
9. **NOTES**

9.1 Co-planarity to be 0.12 mm maximum.
9.2 This component and all homogeneous sub-components are RoHS compliant.
9.3 Unit weight is approximately 4.3 grams.
9.4 See below table for lead free solder content.

### Solder Content Information

<table>
<thead>
<tr>
<th>S/No</th>
<th>Item / Chemicals</th>
<th>Content (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sn Balance</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ag 3.0 ~ 4.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cu 0.5 ~ 1.0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Pb Less than 0.100</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Sb Less than 0.250</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Zn Less than 0.002</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Fe Less than 0.020</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>As Less than 0.030</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Ni Less than 0.010</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Bi Less than 0.100</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Cd Less than 0.002</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Al Less than 0.002</td>
<td></td>
</tr>
</tbody>
</table>