4G/LTE Ceramic Chip Antenna

Features

• 4G/LTE full band coverage (700~960 MHz, 1710~2170 MHz, 2500~2700MHz)
• 2G/3G/GSM support
• Compact size
• Linear polarization

Applications

• IoT
• M2M
• 4G/LTE/3G/2G/GSM applications
• Telecommunications
• Networking
• Wireless modules
• Mobile devices
• Consumer electronics
• Broadband cellular connectivity
• Video and surveillance

Electrical Characteristics

<table>
<thead>
<tr>
<th>Item</th>
<th>Spec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Frequency</td>
<td>700<del>960 MHz, 1710</del>2170 MHz, 2500~2700MHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>&lt; 4.0 (depends on the special environment)*</td>
</tr>
<tr>
<td>Polarization</td>
<td>Linear</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40~85 °C</td>
</tr>
<tr>
<td>Termination</td>
<td>Ag (Environmentally-Friendly Pb Free)</td>
</tr>
</tbody>
</table>

* Evaluation board size 45.0 x 120.0 mm²
* Actual electrical value will depend on customer ground plane size
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S11 Response Curve

VSWR Response
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Smith Chart Response

Gain and Efficiency

(Ground length: 105mm)

Antenna Parameter Summary

<table>
<thead>
<tr>
<th>Band</th>
<th>700</th>
<th>824</th>
<th>890</th>
<th>960</th>
<th>1710</th>
<th>1850</th>
<th>1990</th>
<th>2170</th>
<th>2500</th>
<th>2700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Gain(dBi)</td>
<td>-1.55</td>
<td>0.1</td>
<td>0.33</td>
<td>-0.16</td>
<td>4.10</td>
<td>3.79</td>
<td>2.75</td>
<td>2.27</td>
<td>2.74</td>
<td>1.75</td>
</tr>
<tr>
<td>Efficiency(%)</td>
<td>35.78</td>
<td>56.34</td>
<td>58.14</td>
<td>50.82</td>
<td>73.61</td>
<td>75.01</td>
<td>69.64</td>
<td>55.96</td>
<td>69.45</td>
<td>68.84</td>
</tr>
</tbody>
</table>

Reference efficiency data with different ground plane length:
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40.0 x 8.0 x 3.2 mm
RoHS/RoHS II Compliant
MSL = N/A

3D Radiation Pattern
3D Radiation Pattern
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40.0 x 8.0 x 3.2 mm  
RoHS/RoHS II Compliant  
MSL = N/A

Drawings

Shape and Dimensions

Recommended Foot Print for Evaluation Board

Tolerances unless otherwise specified ±0.1mm

<table>
<thead>
<tr>
<th>Circuit Symbol</th>
<th>Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>0402</td>
<td>6.8nH Inductor</td>
</tr>
<tr>
<td>C1</td>
<td>0402</td>
<td>6.8pF Capacitor</td>
</tr>
<tr>
<td>C2</td>
<td>0402</td>
<td>1.2pF Capacitor</td>
</tr>
<tr>
<td>C3</td>
<td>0402</td>
<td>6.8pF Capacitor</td>
</tr>
</tbody>
</table>
**Environmental Conditions**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature Range</td>
<td>-40°C to + 85°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>0 ~ 95% RH @ +40°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>-40°C to + 85°C</td>
</tr>
</tbody>
</table>

**Packaging**

1. Blister tape to IEC 286-3, polyester
2. 1000 pcs/reel
3. 370*360*275 mm (3000 pcs/Carton)
4. GW – 7.1 Kg

Unit: mm
**Transmission Line and Matching**

![Diagram of component types]

The matching network has to be individually designed using one, two, or three components.

**Recommended Reflow Soldering Profile**

Abracon products can be assembled following Pb-free assembly. According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follow:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Profile features</th>
<th>Pb-Free Assembly (SnAgCu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREHEAT</td>
<td>-Temperature Min(Tmin)</td>
<td>150°C 200°C 60-120 seconds</td>
</tr>
<tr>
<td></td>
<td>-Temperature Max(Tmax)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Time(ts) form (Tmin to Tmax)</td>
<td></td>
</tr>
<tr>
<td>RAMP-UP</td>
<td>Avg. Ramp-up Rate (Tmax to TP)</td>
<td>3°C/second(max)</td>
</tr>
<tr>
<td>REFLOW</td>
<td>-Temperature(TL)</td>
<td>217°C 30-100 seconds</td>
</tr>
<tr>
<td></td>
<td>-Total Time above TL (t L)</td>
<td></td>
</tr>
<tr>
<td>PEAK</td>
<td>-Temperature(TP)</td>
<td>260°C 10-20 second</td>
</tr>
<tr>
<td></td>
<td>-Time(tp)</td>
<td></td>
</tr>
<tr>
<td>RAMP-DOWN</td>
<td>Rate</td>
<td>6°C/ second max.</td>
</tr>
<tr>
<td>Time from 25°C to Peak Temperature</td>
<td>8 minutes max.</td>
<td></td>
</tr>
<tr>
<td>Composition of solder paste</td>
<td>96.5Sn/3Ag/0.5Cu</td>
<td></td>
</tr>
<tr>
<td>Solder Paste Model</td>
<td>SHENMAO PF606-P26</td>
<td></td>
</tr>
</tbody>
</table>
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Recommended Reflow Soldering Profile

Note: All the temperature measure point is on top surface of the component, if temperature over recommend, it will make component surface peeling or damage.

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Soldering With Iron:

Soldering condition: Soldering iron temperature 270±10 °C
Apply preheating at 120 °C for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron over temperature 270±10 °C or 3 seconds, it will make component surface peeling or damage.
Soldering iron can not leakage of electricity.