2.38GHz / 2.45GHz / 2.6GHz Wideband SMD Chip Antenna

Designed for: BAN, Bluetooth, 802.11, WLAN, Zigbee, Propietary Protocol, ISM, Smart Energy, WiMax

Detail Specification: 5/24/2013

General Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>2500AT44M0400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency (MHz)</td>
<td>2300 - 2700</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 to +85°C</td>
</tr>
<tr>
<td>Return Loss (2.3-2.7GHz)</td>
<td>9.5 dB min.</td>
</tr>
<tr>
<td>Peak Gain @ 2.38GHz</td>
<td>2.0 dBi typ. (XZ-V)</td>
</tr>
<tr>
<td>Average Gain @ 2.38GHz</td>
<td>0.0 dBi typ. (XZ-V)</td>
</tr>
<tr>
<td>Peak Gain @ 2.45GHz</td>
<td>2.5 dBi typ. (XZ-V)</td>
</tr>
<tr>
<td>Average Gain @ 2.45GHz</td>
<td>0.5 dBi typ. (XZ-V)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quantity per Reel</th>
<th>1,000</th>
</tr>
</thead>
</table>

Recommended Storage Conditions

+5 ~ +35 °C, Humidity 45~75%RH

Mechanical Specifications

| L          | ± ± 0.008 | 8.00 ± 0.20 |
| W          | ± ± 0.008 | 1.00 ± 0.20 |
| T          | ± ± 0.008 | 0.039 ± 0.008 |
| a          | ± ± 0.008 | 0.039 ± 0.008 |
| a2         | ± ± 0.008 | 0.020 ± 0.008 |

Terminal Configuration

<table>
<thead>
<tr>
<th>No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feeding Point</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
</tr>
</tbody>
</table>

Mounting Considerations - Layout #1

Mount these devices with brown mark facing up. Units: mm

* Line width should be designed to provide 50 Ω impedance matching characteristics.

It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different. Go to: http://johansontechnology.com/tuning and see how to obtain the new values. If you need further help, contact our RF Applications Eng Team at: www.johansontechnology.com/en/ask-a-technical-question.html
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P/N 2500AT44M0400

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Layout #1 example (units in mm)

Orderable EVB p/n: 2500AT44M0400-EB1SMA

Return Loss - with Matching Circuits
Typical Radiation Patterns @ 2.38GHz - Layout #1

XY-V/XY-H

XZ-V/XZ-H

YZ-V/YZ-H

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Typical Radiation Patterns @ 2.45GHz - Layout #1

Typical Radiation Patterns - Layout #1

XY-V/XY-H

0° 90° 180° 270°

XY-cut scanning direction

XZ-V/XZ-H

0° 90° 180° 270°

XZ-cut scanning direction

YZ-V/YZ-H

0° 90° 180° 270°

YZ-cut scanning direction

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Typical Radiation Patterns @ 2.6GHz - Layout #1

**XY-V/XY-H**
- 0° to 180° to 270°
- XY-cut scanning direction

**XZ-V/XZ-H**
- 0° to 180° to 270°
- XZ-cut scanning direction

**YZ-V/YZ-H**
- 0° to 180° to 270°
- YZ-cut scanning direction

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**Bandwidth is about 190MHz in this configuration**
Typical Electrical Characteristics (T=25 °C)

Test Board - Layout #2 (units in mm)

- Antenna
- Ground
- Feeding line
- Matching circuits
- No Ground

Return Loss - with Matching Circuits

<table>
<thead>
<tr>
<th>m1</th>
<th>freq=2.360GHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>dB(S(1,1))=-10.052</td>
</tr>
<tr>
<td>m2</td>
<td>freq=2.545GHz</td>
</tr>
<tr>
<td></td>
<td>dB(S(1,1))=-10.236</td>
</tr>
<tr>
<td>m3</td>
<td>freq=2.450GHz</td>
</tr>
<tr>
<td></td>
<td>dB(S(1,1))=-32.746</td>
</tr>
</tbody>
</table>

"High Frequency Ceramic Solutions"

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Typical Radiation Patterns @ 2.45GHz - Layout #2

XY-V/XY-H

XZ-V/XZ-H

YZ-V/YZ-H

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<table>
<thead>
<tr>
<th>Part Number Info</th>
<th>Packing Style</th>
<th>Suffix</th>
<th>P/N Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk</td>
<td>S</td>
<td>eg. 2500AT44M0400S</td>
<td></td>
</tr>
<tr>
<td>T &amp; R</td>
<td>T</td>
<td>eg. 2500AT44M0400E</td>
<td></td>
</tr>
<tr>
<td>Evaluation Board</td>
<td>SMA</td>
<td>-EB1SMA</td>
<td>eg. 2500AT44M0400-EB1SMA</td>
</tr>
</tbody>
</table>

Tape & Reel Specifications
http://www.johansontechnology.com/ipcpackaging.html

Soldering Profile
http://johansontechnology.com/ipcsoldering-profile