2.45 GHz High Gain SMD Chip Antenna. AEC-Q200 Qualified. P/N 2450AT45A100E-AEC

General Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>2450AT45A100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power</td>
<td>3W max. (CW)</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>2400 - 2500 MHz</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>Operating Temp</td>
<td>-40°C to +125°C</td>
</tr>
<tr>
<td>Reel Quantity</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Mechanical Specifications

<table>
<thead>
<tr>
<th>In</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.374 ± 0.008</td>
</tr>
<tr>
<td>W</td>
<td>0.079 ± 0.008</td>
</tr>
<tr>
<td>T</td>
<td>0.047 ±.004/-0.008</td>
</tr>
<tr>
<td>a</td>
<td>0.020 ± 0.012</td>
</tr>
</tbody>
</table>

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>

Typical Electrical Specs for "Vertical Orientation" (T=25°C)

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>2400 - 2500 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Gain</td>
<td>2.2 dBi typ. (XZ-V)</td>
</tr>
<tr>
<td>Return Loss</td>
<td>9.5 dB min.</td>
</tr>
<tr>
<td>Average Gain</td>
<td>1.0 dBi typ. (XZ-V)</td>
</tr>
</tbody>
</table>

Mounting Considerations 1: "Vertical Orientation"

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

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

* Trace dimension will depend on the width of the trace required, PCB thickness and distance to side GND for it to have a 50ohm characteristic impedance. Preferably make it a grounded CPWG (co-planar waveguide) type trace.
Typical Electrical Characteristics for "Vertical Orientation" (T=25°C)

Test Board
Orderable Evaluation board:
p/n: 2450AT45A100-EB1SMA
"Vertical Orientation"

- Would you like for us to optimize your layout?
- Would you like the layout file of the antenna?
- Would you like for us to recalculate the matching values and validate/characterize the antenna on your board (fee may apply)?
Send us a message at: http://www.johansontechnology.com/ask-a-question

It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is mounted on Johanson's evaluation board. The matching values on client's PCB will be different, go to: http://www.johansontechnology.com/tuning.html and see how to obtain the new values on your own

Return Loss
a) Without a Matching Circuit
b) With a Matching Circuit

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2.45 GHz High Gain SMD Chip Antenna. AEC-Q200 Qualified. P/N 2450AT45A100E-AEC

Detail Specification: 6/21/2015

Typical Radiation Patterns for "Vertical Orientation" (@25C)

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2.45 GHz High Gain SMD Chip Antenna. AEC-Q200 Qualified. P/N 2450AT45A100

Typical Electrical Specs for "Horizontal Orientation_1" (T=25°C)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>2400 - 2500 MHz</td>
</tr>
<tr>
<td>Peak Gain</td>
<td>1.5 dBi typ. (XZ-V)</td>
</tr>
<tr>
<td>Return Loss</td>
<td>9.5 dB min.</td>
</tr>
<tr>
<td>Average Gain</td>
<td>0.0 dBi typ. (XZ-V)</td>
</tr>
</tbody>
</table>

Mounting Considerations 2 - Horizontal Orientation_1

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

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

EVB p/n: 2450AT45A100-EB2SMA
Horizontal Orientation_1

"C" Dimension will depend on the width of the trace required for it to have a 50ohm characteristic impedance (i.e. coplanar waveguide theory)

*These matching circuit values only apply to Johanson's evaluation board, they will be different on the client's PCB, see pages 5 and 10
Typical Electrical Characteristics "Horizontal Orientation_1" (T=25°C)

Test Board

Orderable Evaluation board:
p/n: 2450AT45A100-EB2SMA
"Horizontal Orientation_1" 20mm

- Would you like for us to optimize your layout?
- Would you like the layout file of the antenna?
- Would you like for us to recalculate the matching values and validate/characterize the antenna on your board (fee may apply)?

Send us a message at: http://www.johansontechnology.com/ask-a-question

It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is minted on Johanson's evaluation board. The matching values on client's PCB will be different, go to:
http://www.johansontechnology.com/tuning.html and see how to obtain the new values on your own

Return Loss
a) With Matching Circuit

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Detail Specification: 6/21/2015

Typical Radiation Patterns for "Horizontal Orientation_1" (@25C)

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2.45 GHz High Gain SMD Chip Antenna. AEC-Q200 Qualified. P/N 2450AT45A100

Detail Specification: 6/21/2015

### Typical Electrical Specs for "Horizontal Orientation_2" (T=25°C)

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>2400 - 2500 MHz</th>
<th>Average Gain</th>
<th>0.6 dBi typ. (XZ-V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Loss</td>
<td>9.5 dB min.</td>
<td>Peak Gain</td>
<td>1.3 dBi typ. (XZ-V)</td>
</tr>
</tbody>
</table>

### Mounting Considerations 3 - Horizontal Orientation_2

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

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

![Diagram](image1)

**Units in mm**

**EVB p/n:** 2450AT45A100-EB3SMA

Horizontal Orientation_2

- Would you like for us to optimize your layout?
- Would you like the layout file of the antenna?
- Would you like for us to recalculate the matching values and validate/characterize the antenna on your board (fee may apply)?

Send us a message at: [http://www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question)

It is recommended that the designer leave available slots for a "pi" (or shunt-series-shunt) network. The antenna matching network values above are used when antenna is minted on Johanson's evaluation board. The matching values on client's PCB will be different, go to: [http://www.johansontechnology.com/tuning.html](http://www.johansontechnology.com/tuning.html) and see how to obtain the new values on your own.

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Detail Specification: 6/21/2015

Typical Electrical Characteristics Horizontal Orientation_2 (T=25°C)

Test Board
EVB p/n:
2450AT45A100-EB3SMA
Horizontal Orientation_2

This 50Ω Feed line can be as short as needed, this length is just for reference to our EVB

- Would you like the layout file of the board?
- Need help with the layout?
Send us a message at: http://www.johansontechnology.com/ask-a-question

Return Loss
a) With Matching Circuit (0ohm)

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Typical Radiation Patterns for "Horizontal Orientation_2" (@25C)

XY-V/XY-H

XZ-V/XZ-H

YZ-V/YZ-H

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### Part Number Explanation

<table>
<thead>
<tr>
<th>Packaging Style*</th>
<th>P/N Suffix</th>
<th>Suffix = S</th>
<th>E.g.: 2450AT45A100S-AEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk (loose pieces)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T &amp; R</td>
<td></td>
<td>Suffix = E</td>
<td>E.g.: 2450AT45A100E-AEC</td>
</tr>
<tr>
<td>T &amp; R (Reverse)</td>
<td></td>
<td>Suffix = R</td>
<td>E.g.: 2450AT45A100R-AEC</td>
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<tr>
<td>100% Tin</td>
<td></td>
<td>Suffix = None</td>
<td>E.g.: 2450AT45A100(S, E, R)-AEC</td>
</tr>
<tr>
<td>Termination style</td>
<td>Tin / Lead</td>
<td>Please consult Factory</td>
<td></td>
</tr>
</tbody>
</table>

**Evaluation Boards (1-port SMA antenna test boards)**
- 2450AT45A100-EB1SMA (Page 2)
- 2450AT45A100-EB2SMA (Page 5)
- 2450AT45A100-EB3SMA (Page 8)

### Storage Conditions and Shelf Life (On T&R or Bulk)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature:</td>
<td>+5°C to +35°C</td>
</tr>
<tr>
<td>Relative Humidity:</td>
<td>45 to 75%</td>
</tr>
<tr>
<td>Shelf Life:</td>
<td>18 months max.</td>
</tr>
</tbody>
</table>

### Packaging Information

[www.johansontechnology.com/ipcpackaging.html](http://www.johansontechnology.com/ipcpackaging.html)

### Soldering Information

[www.johansontechnology.com/ipcsoldering-profile](http://www.johansontechnology.com/ipcsoldering-profile)

### Antenna layout and tuning techniques

[www.johansontechnology.com/tuning](http://www.johansontechnology.com/tuning)

### Antenna layout review, tuning, and characterization services

[www.johansontechnology.com/ipcantennaservices](http://www.johansontechnology.com/ipcantennaservices)

### MSL Info