

# "High Frequency Ceramic Solutions"

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

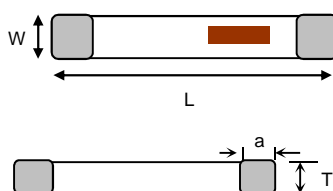
Page 1 of 10

### General Specifications

|                 |                 |               |              |
|-----------------|-----------------|---------------|--------------|
| Part Number     | 2450AT45A100    | Input Power   | 3W max. (CW) |
| Frequency Range | 2400 - 2500 Mhz | Impedance     | 50 $\Omega$  |
| Operating Temp  | -40°C to +125°C | Reel Quantity | 1,000        |

### Mechanical Specifications

|   | In                       | mm                  |
|---|--------------------------|---------------------|
| L | 0.374 $\pm$ 0.008        | 9.50 $\pm$ 0.20     |
| W | 0.079 $\pm$ 0.008        | 2.00 $\pm$ 0.20     |
| T | 0.047 $\pm$ 0.004/-0.008 | 1.20 $\pm$ 0.1/-0.2 |
| a | 0.020 $\pm$ 0.012        | 0.50 $\pm$ 0.30     |



### Terminal Configuration

| No. | Function      |
|-----|---------------|
| 1   | Feeding Point |
| 2   | NC            |

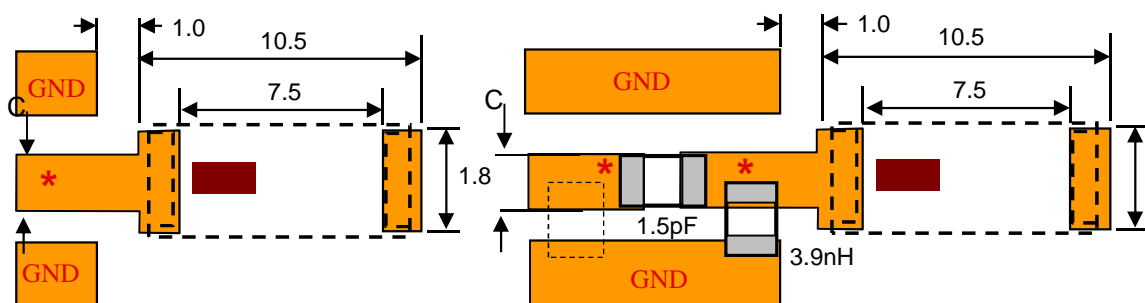
### Typical Electrical Specs for "Vertical Orientation" (T=25°C)

|                 |                 |              |                     |
|-----------------|-----------------|--------------|---------------------|
| Frequency Range | 2400 - 2500 Mhz | Peak Gain    | 3.0 dBi typ. (XZ-V) |
| Return Loss     | 9.5 dB min.     | Average Gain | 1.0 dBi typ. (XZ-V) |

### Mounting Considerations 1: "Vertical Orientation"

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

\* Line width should be designed to provide 50 $\Omega$  impedance matching characteristics.



a) Without Matching Circuit (moderate bandwidth)

b) With Matching Circuit\* (wide bandwidth)  
These matching circuit values only apply to Johanson's evaluation board, they will be different on the client's PCB, see pages 2 and 10 for details.

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

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.1

2013 Johanson Technology, Inc. All Rights Reserved

# "High Frequency Ceramic Solutions"

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

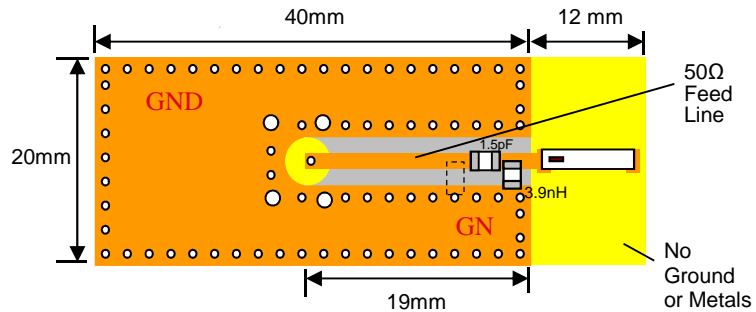
Detail Specification: 9/4/2013

Page 2 of 10

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

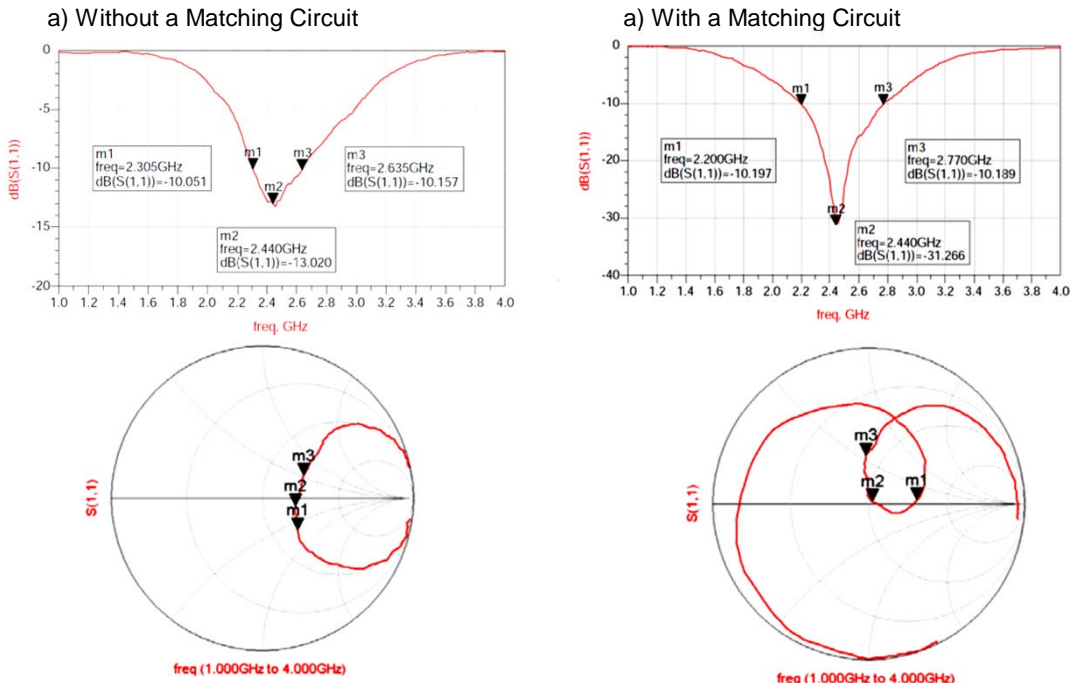
#### Test Board

Orderable Evaluation board:  
p/n: 2450AT45A100-EB1SM/  
"Vertical Orientation"



Note: 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://johansontechnology.com/tuning> and see how to obtain the new values. If you need further help, contact our RF Applications Eng Team at: <http://www.johansontechnology.com/en/ask-a-technical-question.html>

#### Return Loss



Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



[www.johansontechnology.com](http://www.johansontechnology.com)  
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved

# "High Frequency Ceramic Solutions"

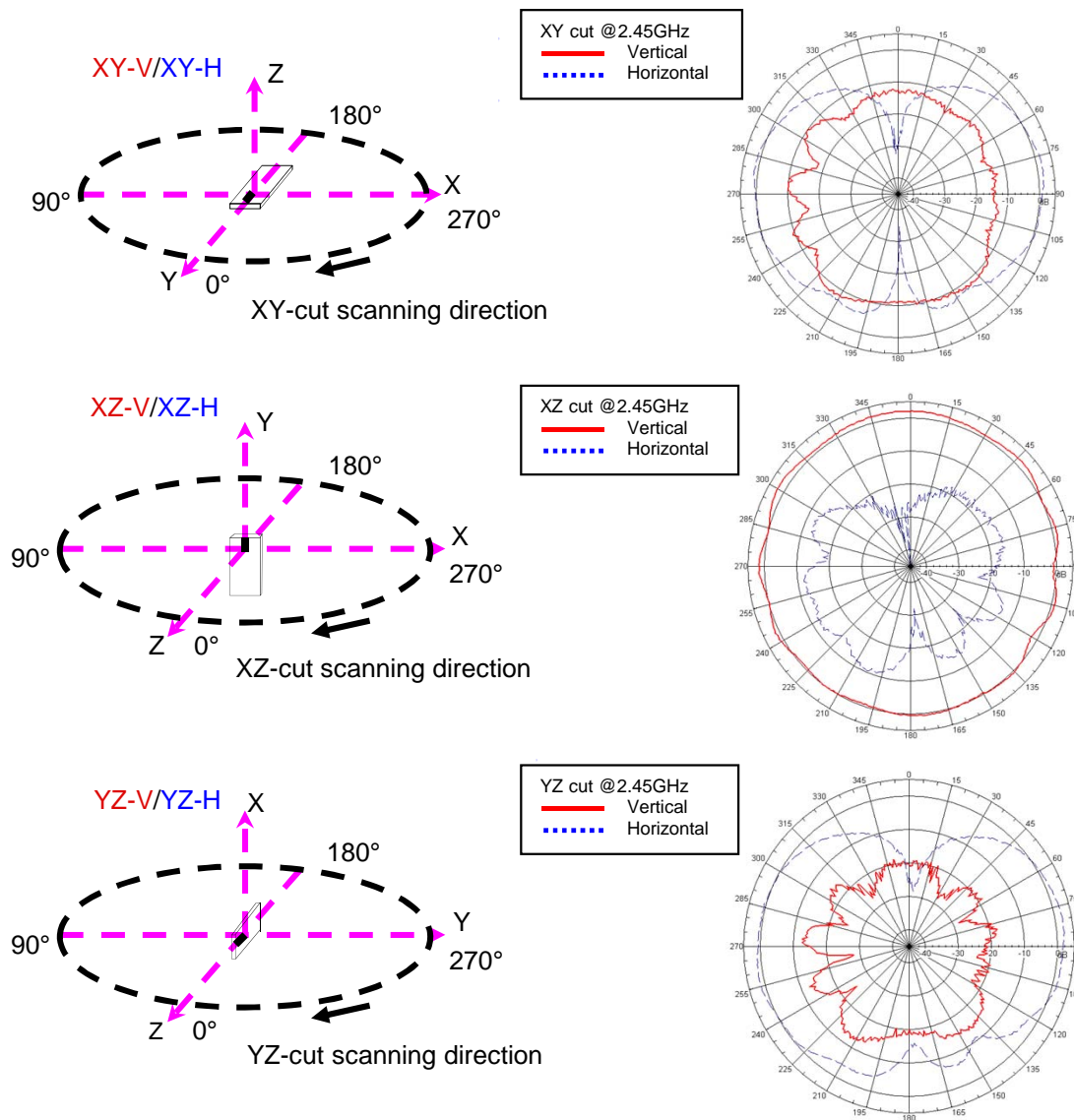
## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

Page 3 of 10

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



Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



[www.johansontechnology.com](http://www.johansontechnology.com)  
 4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved

# "High Frequency Ceramic Solutions"

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

Page 4 of 10

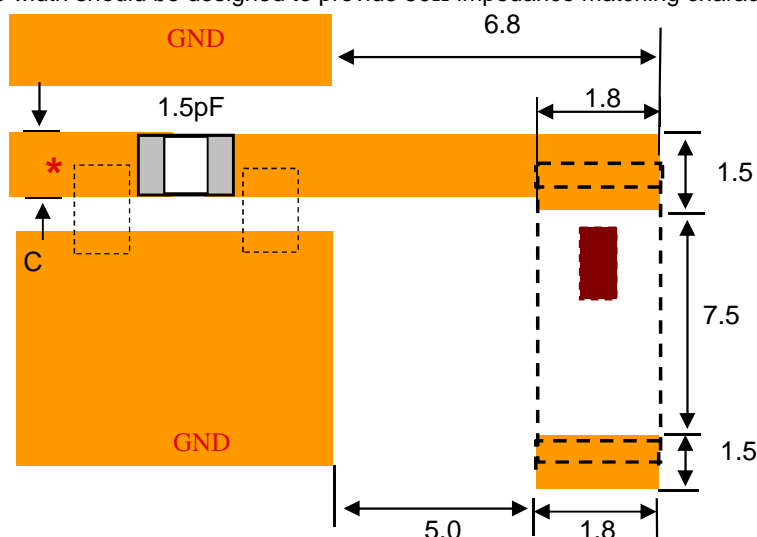
### Typical Electrical Specs for "Horizontal Orientation\_1" (T=25°C)

|                 |                 |              |                     |
|-----------------|-----------------|--------------|---------------------|
| Frequency Range | 2400 - 2500 Mhz | Peak Gain    | 1.5 dBi typ. (XZ-V) |
| Return Loss     | 9.5 dB min.     | Average Gain | 0.0 dBi typ. (XZ-V) |

### 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 for

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



[www.johansontechnology.com](http://www.johansontechnology.com)  
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved

# "High Frequency Ceramic Solutions"

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

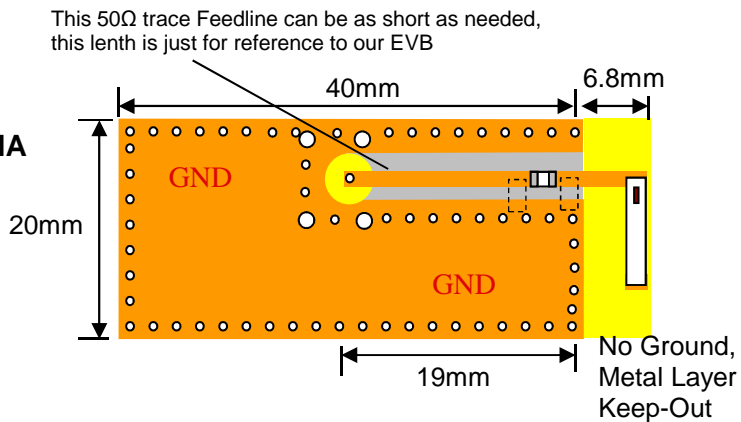
Detail Specification: 9/4/2013

Page 5 of 10

### Typical Electrical Characteristics "Horizontal Orientation\_1" (T=25°C)

#### Test Board

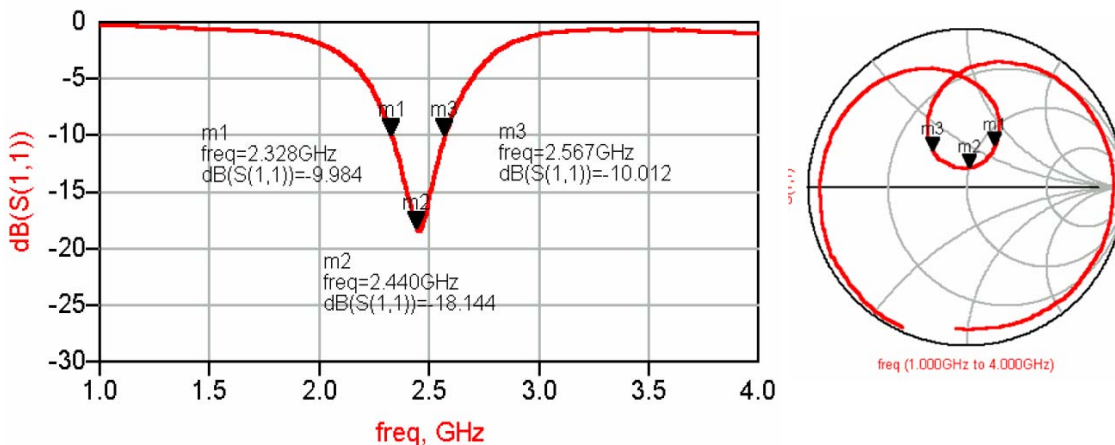
Orderable Evalu  
p/n: 2450AT45A100-EB2SMA  
"Horizontal Orientation\_1"



Note: 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://johansontechnology.com/tuning> and see how to obtain the new values. If you need further help, contact our RF Applications Eng Team at: <http://www.johansontechnology.com/en/ask-a-technical-question.html>

#### Return Loss

a) With Matching Circuit



Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved

# "High Frequency Ceramic Solutions"

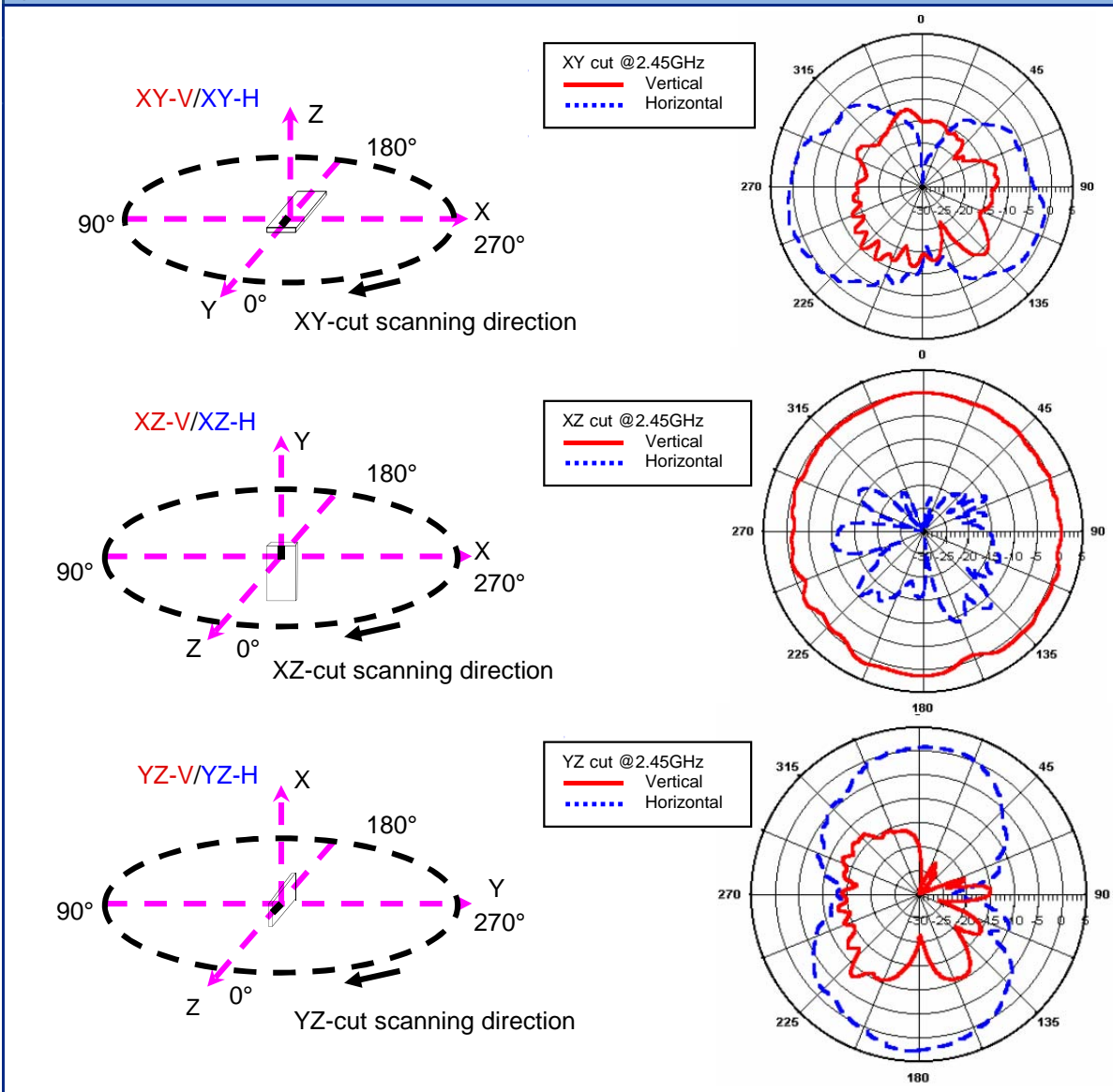
## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

Page 6 of 10

### Typical Radiation Patterns for "Horizontal Orientation\_1" (@25C)



Johanson Technology, Inc. reserves the right to make design changes without notice.  
 All sales are subject to Johanson Technology, Inc. terms and conditions.



[www.johansontechnology.com](http://www.johansontechnology.com)  
 4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved

# "High Frequency Ceramic Solutions"

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

Page 7 of 10

### Typical Electrical Specs for "Horizontal Orientation\_2" (T=25°C)

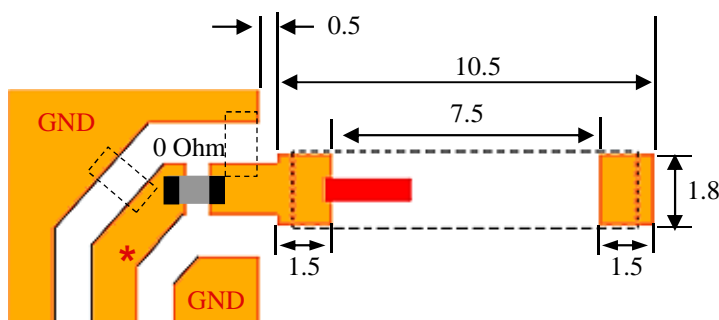
|                 |                 |              |                     |
|-----------------|-----------------|--------------|---------------------|
| Frequency Range | 2400 - 2500 Mhz | Average Gain | 0.6 dBi typ. (XZ-V) |
| Return Loss     | 9.5 dB min.     | Peak Gain    | 1.3 dBi typ. (XZ-V) |

### 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.

Units in mm



**EVB p/n:**  
**2450AT45A100-EB2SMA**  
**Horizontal Orientation\_2**

Note: 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://johansontechnology.com/tuning> and see how to obtain the new values. If you need further help, contact our RF Applications Eng Team at: <http://www.johansontechnology.com/en/ask-a-technical-question.html>

Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved



# "High Frequency Ceramic Solutions"

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

Page 8 of 10

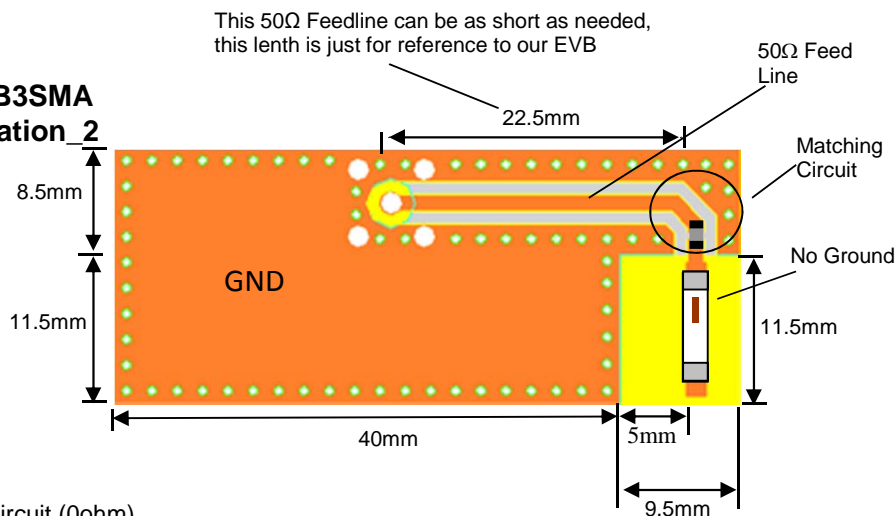
### Typical Electrical Characteristics Horizontal Orientation\_2 (T=25°C)

#### Test Board

EVB p/n:

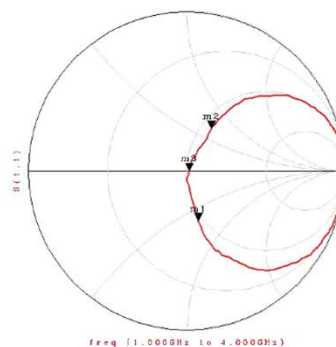
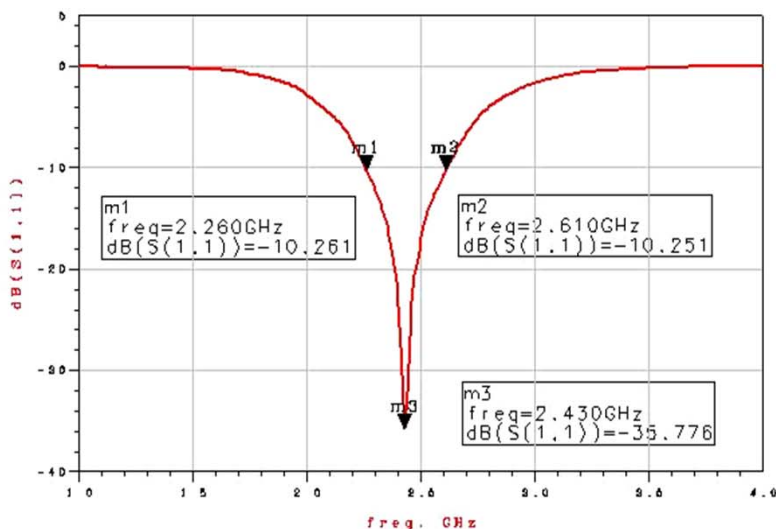
2450AT45A100-EB3SMA

Horizontal Orientation\_2



#### Return Loss

a) With Matching Circuit (0ohm)



Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved



# "High Frequency Ceramic Solutions"

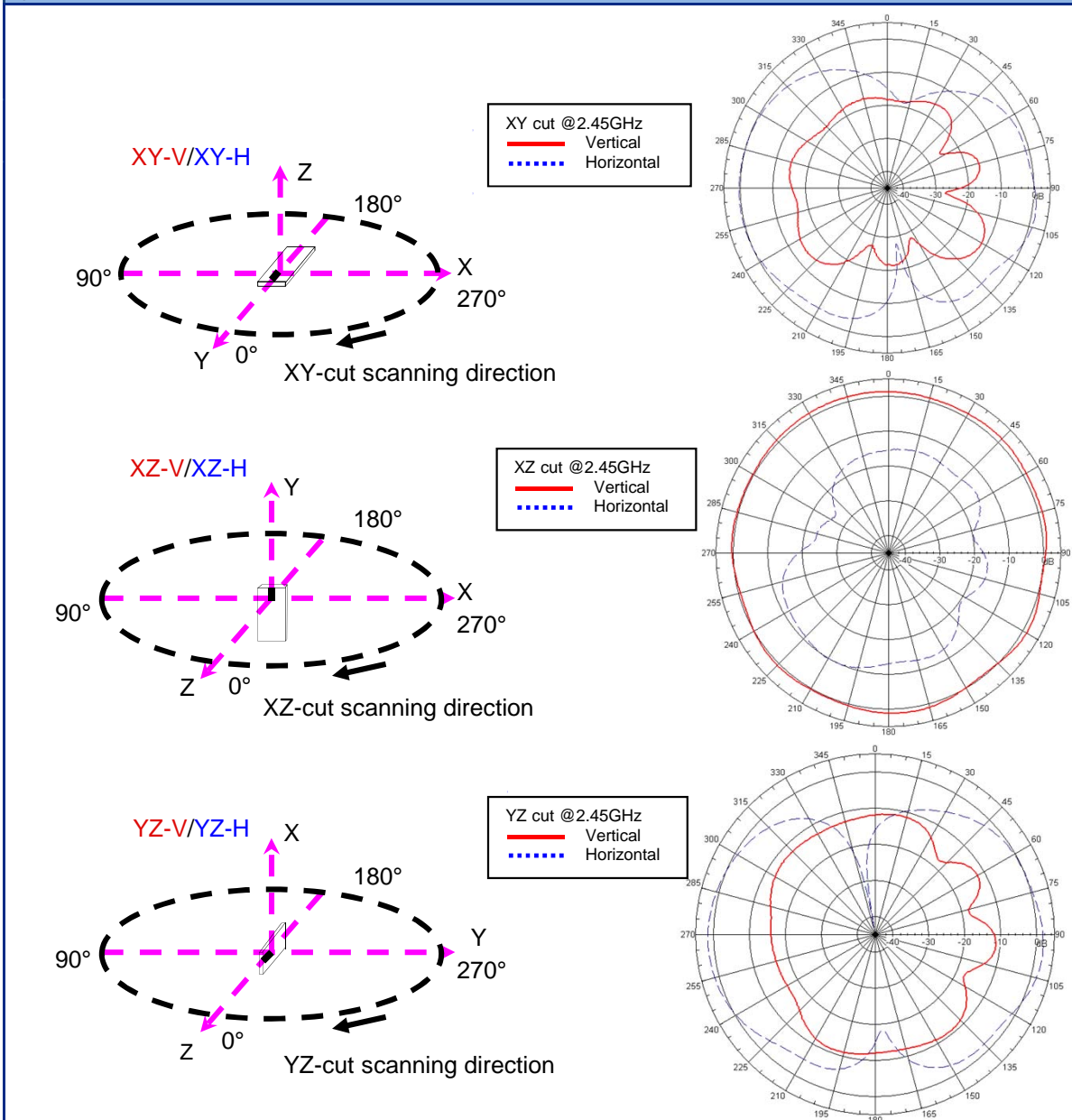
## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

Page 9 of 10

### Typical Radiation Patterns for "Horizontal Orientation\_2" (@25C)



Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved

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

# "High Frequency Ceramic Solutions"

## 2.45 GHz High Gain SMD Chip Antenna

P/N 2450AT45A100

Detail Specification: 9/4/2013

Page 10 of 10

### Part Number Explanation

| Part Number |  | Explanation                  |                        |                                 |
|-------------|--|------------------------------|------------------------|---------------------------------|
| P/N Suffix  | Packaging Style*   | Bulk (loose pieces)          | Suffix = S             | Eg. 2450AT45A100S               |
|             |  | T & R                        | Suffix = E             | Eg. 2450AT45A100E               |
|             |  | T & R (Reverse)              | Suffix = R             | Eg. 2450AT45A100R (MOQ Applies) |
|             |  | 100% Tin                     | Suffix = None          | Eg. 2450AT45A100(S, E, R)       |
|             | Termination style  | Tin / Lead                   | Please consult Factory |                                 |
|             | Evaluation Boards<br>(1-port SMA antenna<br>test boards) | 2450AT45A100-EB1SMA (Page 2) |                        |                                 |
|             |  | 2450AT45A100-EB2SMA (Page 5) |                        |                                 |
|             |  | 2450AT45A100-EB3SMA (Page 8) |                        |                                 |

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

|                              |                            |
|------------------------------|----------------------------|
| Temperature: +5C to +35°C    | Shelf Life: 18 months max. |
| Relative Humidity: 45 to 75% |                            |

### 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)

Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver 2.0

2013 Johanson Technology, Inc. All Rights Reserved