

# High Frequency Ceramic Solutions

2.4GHz Impedance Matched Balun + embedded FCC/ETSI Band Pass Filter For TI CC2620, CC2630, CC2640, CC2650, CC2652R (RGZ) chipsets operated on INTERNAL BIAS MODE

P/N: 2450BM14G0011

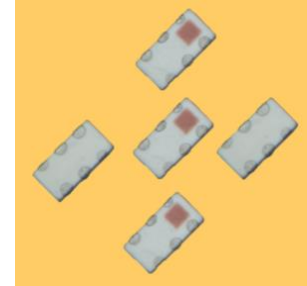
Detail Specification: 8/12/2019

Page 1 of 4

For the Full App Note and Layout Files, go to: <https://www.johansontechnology.com/ti>

## General Specifications

|   |   |
|---|---|
| Part Number   | 2450BM14G0011   |
| Frequency (MHz)   | 2400 - 2500   |
| Unbalanced Impedance  | 50 $\Omega$   |
| Balanced Differential Impedance   | Conjugate match to TI CC2620, CC2630, CC2640, CC2650, CC2652R (RGZ) chipsets operated on INTERNAL BIAS MODE |
| Insertion Loss when component measured by itself (passive insertion loss) | 1.5 Typ.<br>(1.8dB max. -40C to+105C)   |
| Return Loss (dB)  | 9.5 min.  |
| <b>Attenuation Differential mode (dB)</b>                                 |   |
| 25dB min. @ 4800-5000 MHz   |   |
| 20dB min. @ 7200-7500 MHz   |   |



|   |   |
|---|---|
| Phase Difference (deg.)                                 | 180 $\pm$ 10                                      |
| Amplitude Difference                                    | 2.0 max.  |
| Power Capacity  | 2W max (CW)                                       |
| Qty/Reel (pcs)  | 4,000   |
| Operating Temp. Range                                   | -40 to +105°C                                     |
| Recommended Storage Conditions of Unused Product on T&R | +5 ~ +35 °C,<br>Humidity 45-75%<br>18 months max. |

Do you need help selecting the best mini or micro 2.4GHz antenna for your application? Send us a message at:

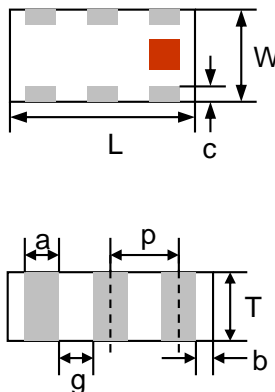
<https://www.johansontechnology.com/ask-a-question> or go to: <https://www.johansontechnology.com/antennas>

## Part Number Explanation

| P/N Suffix | Packaging Style   | Bulk     | Suffix = S    | E.g. 2450BM14G0011S        |
|------------|-------------------|----------|---------------|----------------------------|
|            |                   | T & R    | Suffix = T    | E.g. 2450BM14G0011T        |
|            | Termination Style | 100% Tin | Suffix = None | E.g. 2450BM14G0011(T or S) |

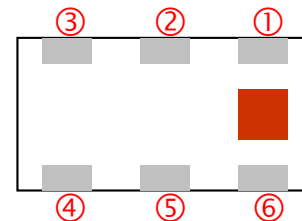
## Mechanical Dimensions

|   | Inches             | Millimeter      |
|---|--------------------|-----------------|
| L | 0.063 $\pm$ 0.004  | 1.6 $\pm$ 0.10  |
| W | 0.031 $\pm$ 0.004  | 0.8 $\pm$ 0.10  |
| T | 0.024 $\pm$ 0.004  | 0.6 $\pm$ 0.10  |
| a | 0.008 $\pm$ 0.0039 | 0.2 $\pm$ 0.10  |
| b | 0.008 +0.1/-0.15   | 0.2 +0.1/-0.15  |
| c | 0.006 $\pm$ 0.0039 | 0.15 $\pm$ 0.10 |
| g | 0.012 $\pm$ 0.0039 | 0.3 $\pm$ 0.10  |
| p | 0.020 $\pm$ 0.002  | 0.5 $\pm$ 0.05  |



## Terminal Configuration

| No | Function        | No | Function      |
|----|-----------------|----|---------------|
| 1  | Unbalanced Port | 4  | Balanced Port |
| 2  | NC              | 5  | GND           |
| 3  | Balanced Port   | 6  | GND           |



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Ver 1.5

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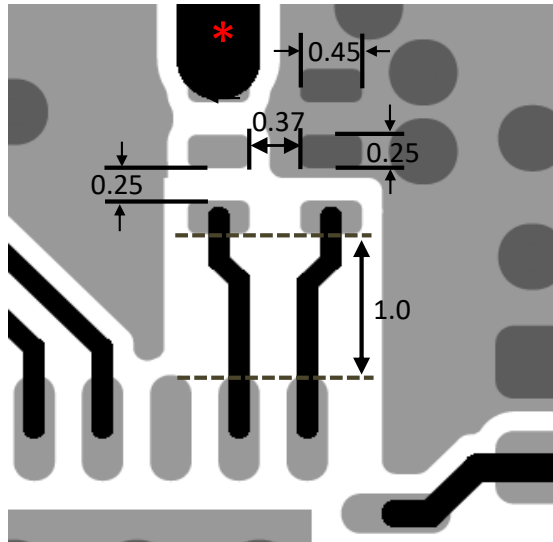
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Page 2 of 4

## Mounting Considerations



\* Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

□ Land

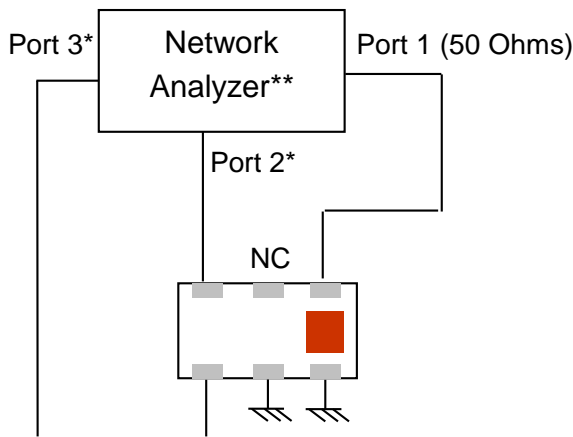
● Through-hole ( $\phi 0.3/\phi 0.2$ ) vias to GND

Would you like us to provide the layout files of the above? Go to: <https://www.johansontechnology.com/ti> or send us a message to review your layout at: <https://www.johansontechnology.com/ask-a-question> "Applications Engineering" on the drop down question type

Units in mm

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## Measuring Diagram



Port 1: Unbalanced Port  
Ports 2 and 3: Balanced Port

$$IL = S_{ds21}$$

$$RL = S_{ss11}$$

$$\text{Amp\_balance} = \text{dB}(S(2,1)/S(3,1))$$

$$\text{Phase\_balance} = \text{Phase}(S(2,1)/S(3,1))$$

\* Impedance for ports 2 and 3  
= Conjugate to Balanced Impedance/2  
\*\* E5071C from Agilent

You can download the s-parameters at: <http://www.johansontechnology.com/ti>

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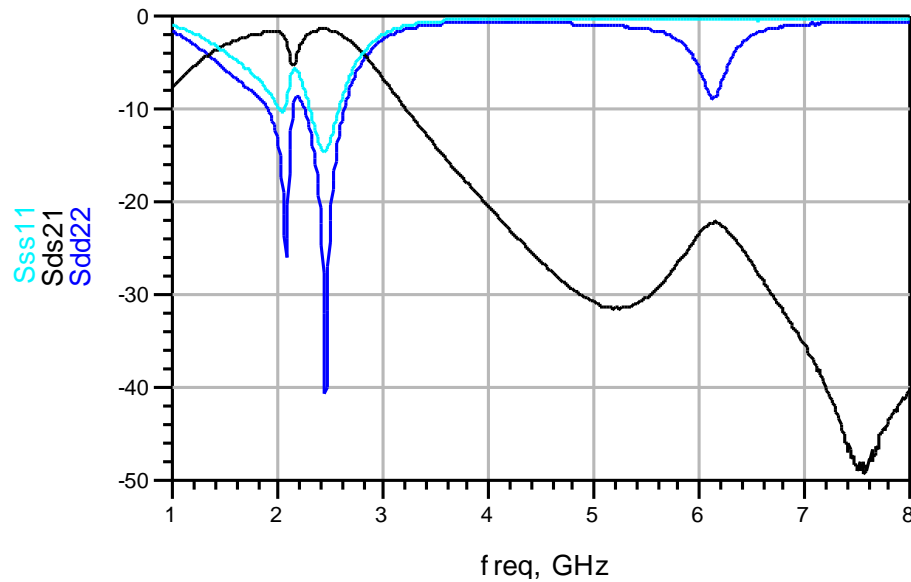
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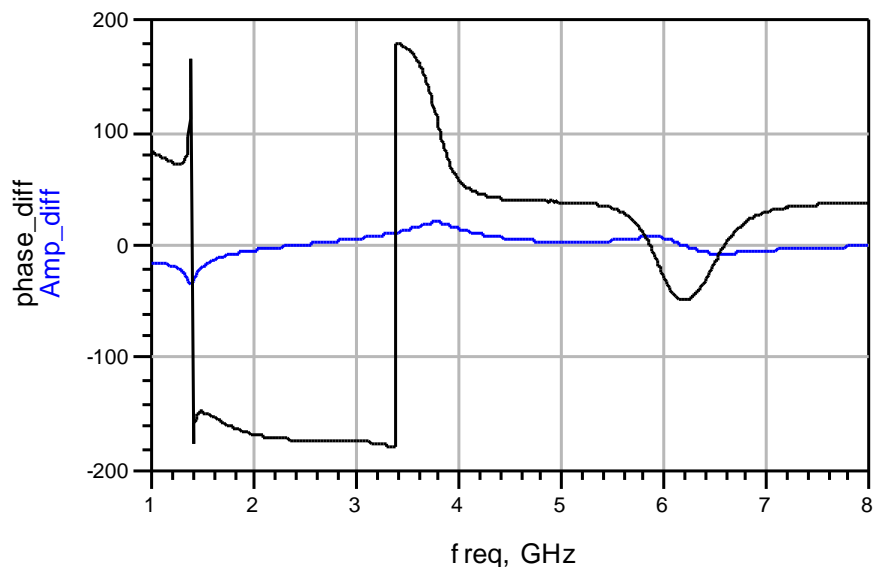
Page 3 of 4

## Typical Electrical Characteristics (T=25°C)

### Insertion and Return Loss



### Amplitude and Phase Balance



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Page 4 of 4

## Application Notes, Layout Files, and more

<https://www.johansontechnology.com/ti>

## Packaging information

<https://www.johansontechnology.com/tape-reel-packaging>

## Soldering Information

<https://www.johansontechnology.com/ipcsoldering-profile>

## MSL Info

<https://www.johansontechnology.com/msl-rating>

## Recommended Storage Condition and Max Shelf Life

<https://www.johansontechnology.com/recommended-storage-conditions>

## RoHS Compliance

<https://www.johansontechnology.com/rohs-compliance>

## Antenna layout and tuning techniques

<https://www.johansontechnology.com/tuning>

## Antenna layout review, tuning, and characterization services

<https://www.johansontechnology.com/jpc-antenna-services>

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