

# High Frequency Ceramic Solutions

## Sub-GHz Impedance Matched Balun + LPF integrated Passive Component for Microchip SAM R30

P/N: 0896BM15A0032

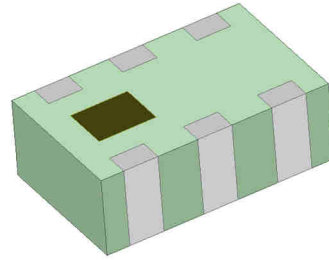
Detail Specification: 1/27/2017

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For the Full App Note and Layout Files, go to: [www.johansontechnology.com/microchip](http://www.johansontechnology.com/microchip)

### General Specifications

|  |  |  |                              |
|--|--|--|------------------------------|
| <b>Part Number</b>                         | 0896BM15A0032                                |  |                              |
| <b>Frequency (MHz)</b>                     | 863 - 928                                    |  |                              |
| <b>Unbalanced Impedance</b>                | 50 Ω   |  |                              |
| <b>Balanced Differential Impedance</b>     | Conjugate match to Microchip (Atmel) SAM R30 |  |                              |
| <b>Insertion Loss</b>                      | 1.5 dB Typ (1.7dB max.)                      | <b>Phase Difference (deg.)</b>                                     | 180 ± 10                     |
| <b>Return Loss (dB)</b>                    | 12dB Typ (9.5 min.)                          | <b>Amplitude Difference</b>  | 2.0 max.                     |
| <b>Attenuation Differential mode (dB):</b> |  | <b>Power Capacity</b>  | 1W max (CW)                  |
| 40 Typ. (30 min.) @ 1726-1856 MHz          |  | <b>Qty/Reel (pcs)</b>  | 4,000                        |
| 49 Typ. (40 min.) @ 2589-2784 MHz          |  | <b>Operating Temp. Range</b>                                       | -40 - +85°C                  |
| 46 Typ. (38 min.) @ 3452-3712 MHz          |  | <b>Storage Temp. Range</b>   | -40 - +85°C                  |
|  |  | <b>Recommended Storage Conditions of Unused Product on T&amp;R</b> | +5 - +35 °C, Humidity 45-75% |
|  |  | <b>Storage Period</b>  | 18 months max.               |



Do you need help selecting the best sub-GHz antenna for your application? Send us a message at: [www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question)

### Part Number Explanation

| P/N Suffix | Packaging Style   | Bulk     | Suffix = S    | E.g. 0896BM15A0032S        |
|------------|-------------------|----------|---------------|----------------------------|
|            |                   | T & R    | Suffix = E    | E.g. 0896BM15A0032E        |
|            | Termination Style | 100% Tin | Suffix = None | E.g. 0896BM15A0032(E or S) |

### Mechanical Dimensions

|          | Inches              | Millimeter     |
|----------|---------------------|----------------|
| <b>L</b> | 0.079 ± 0.004       | 2.00 ± 0.1     |
| <b>W</b> | 0.049 ± 0.004       | 1.25 ± 0.1     |
| <b>T</b> | 0.028 ± 0.004       | 0.70 ± 0.1     |
| <b>a</b> | 0.012 ± 0.004       | 0.30 ± 0.1     |
| <b>b</b> | 0.008 ± 0.004       | 0.20 ± 0.1     |
| <b>c</b> | 0.012 +0.004/-0.008 | 0.30 +0.1/-0.2 |
| <b>g</b> | 0.014 ± 0.004       | 0.35 ± 0.1     |
| <b>p</b> | 0.026 ± 0.002       | 0.65 ± 0.05    |

### Terminal Configuration

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

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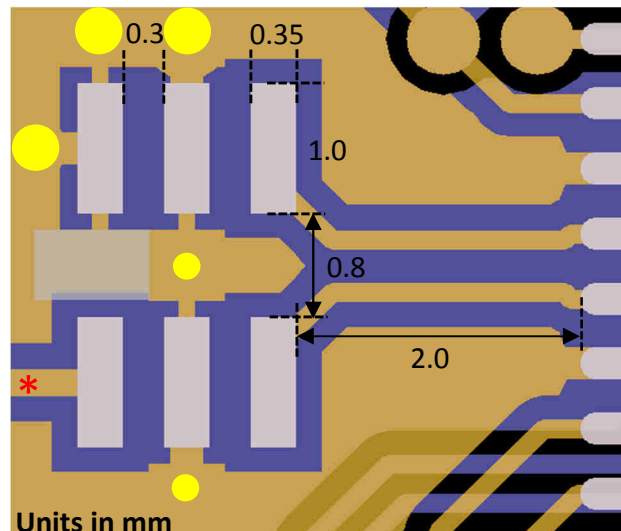
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## Mounting Considerations



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

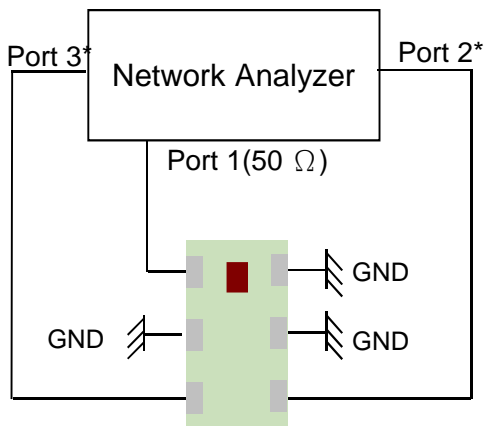
**Vias are important for proper harmonic**

- GND
- Footprint
- GND Vias ( $\phi$  0.35/ $\phi$  0.2)

Would you like us to provide the layout files of the Microchip chipset + 2450BM15A0032? Review your layout for free? Please go to this link to contact our RF team: [www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question) "Applications Engineering" on the drop down question type

Do you need the layout/gerber files of the above? Go to: [www.johansontechnology.com/microchip](http://www.johansontechnology.com/microchip) or send us message to review your layout at: <http://www.johansontechnology.com/ask-a-question>

## 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

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

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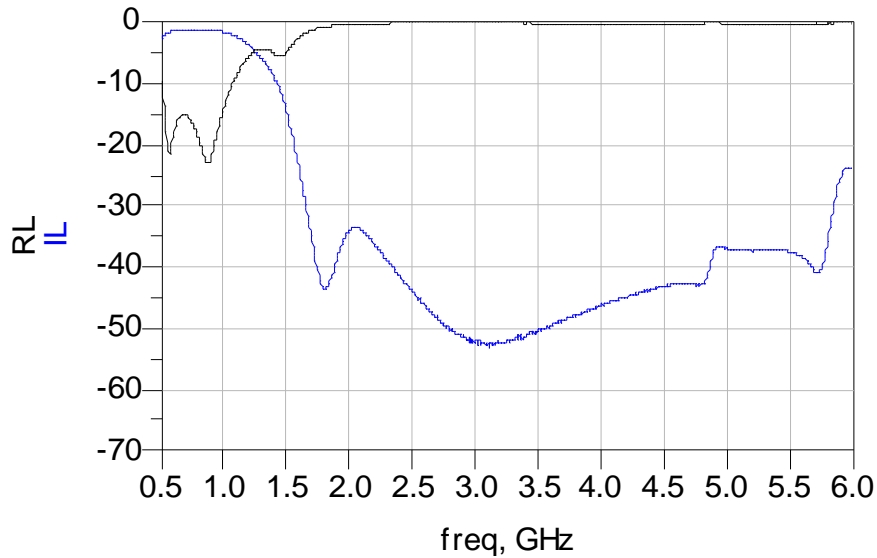
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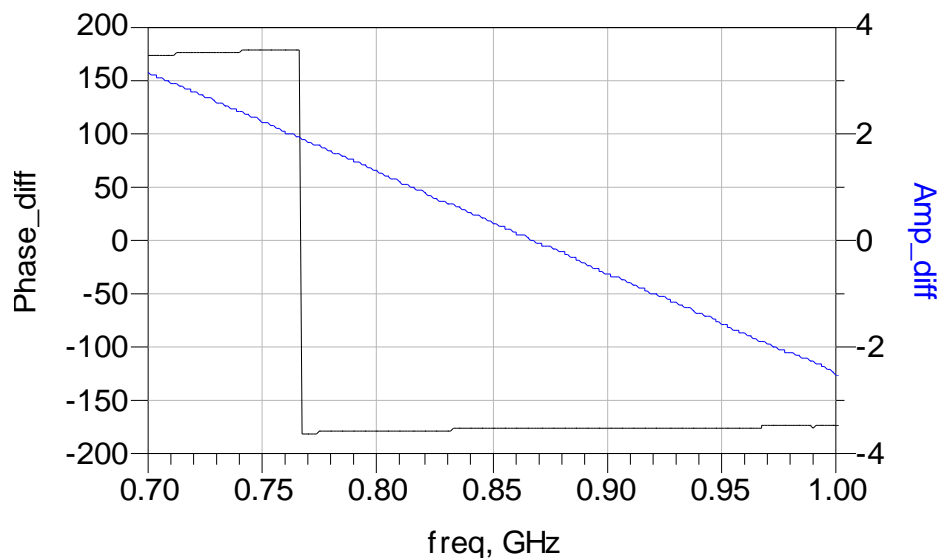
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## Typical Electrical Characteristics (T=25°C)

### Insertion and Return Loss



### Amplitude and Phase Balance



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## Application Notes, Layout Files, and more

<http://www.johansontechnology.com/microchip>

## Packaging information

[www.johansontechnology.com/tape-reel-packaging](http://www.johansontechnology.com/tape-reel-packaging)

## Soldering Information

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

## MSL Info

[www.johansontechnology.com/msl-rating](http://www.johansontechnology.com/msl-rating)

## Recommended Storage Condition and Max Shelf Life

[www.johansontechnology.com/recommended-storage-conditions](http://www.johansontechnology.com/recommended-storage-conditions)

## RoHS Compliance

[www.johansontechnology.com/rohs-compliance](http://www.johansontechnology.com/rohs-compliance)

## Antenna layout and tuning techniques

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

## Antenna layout review, tuning, and characterization services

[www.johansontechnology.com/ipc-antenna-services](http://www.johansontechnology.com/ipc-antenna-services)

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