

# High Frequency Ceramic Solutions

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

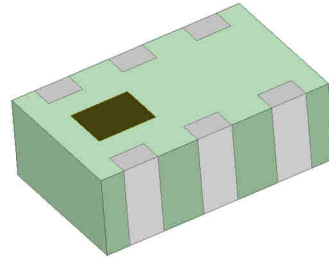
Detail Specification: 1/27/2017

Page 1 of 4

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 $\Omega$		
<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 $\pm$ 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
L	0.079 $\pm$ 0.004	2.00 $\pm$ 0.1
W	0.049 $\pm$ 0.004	1.25 $\pm$ 0.1
T	0.028 $\pm$ 0.004	0.70 $\pm$ 0.1
a	0.012 $\pm$ 0.004	0.30 $\pm$ 0.1
b	0.008 $\pm$ 0.004	0.20 $\pm$ 0.1
c	0.012 +0.004/-0.008	0.30 +0.1/-0.2
g	0.014 $\pm$ 0.004	0.35 $\pm$ 0.1
p	0.026 $\pm$ 0.002	0.65 $\pm$ 0.05

### Terminal Configuration

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

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, USA • TEL +1.805.389.1166

Ver 1.0

2017 Johanson Technology, Inc. All Rights Reserved

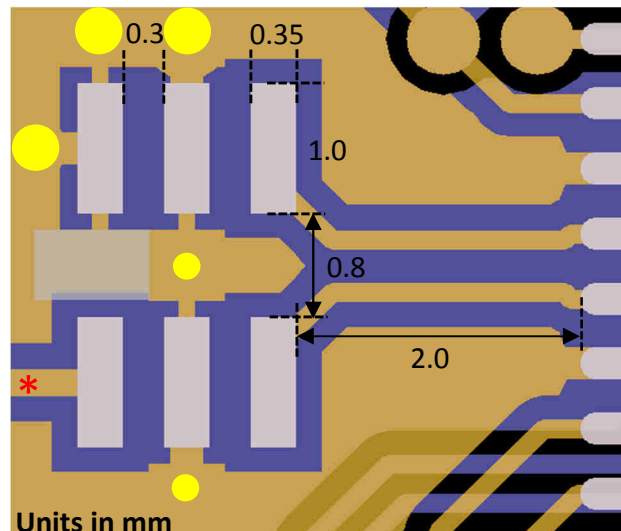
# High Frequency Ceramic Solutions

**Sub-GHz Impedance Matched Balun + LPF integrated Passive Component P/N: 0896BM15A0032 for Microchip SAM R30**

Detail Specification: 1/27/2017

Page 2 of 4

## Mounting Considerations



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

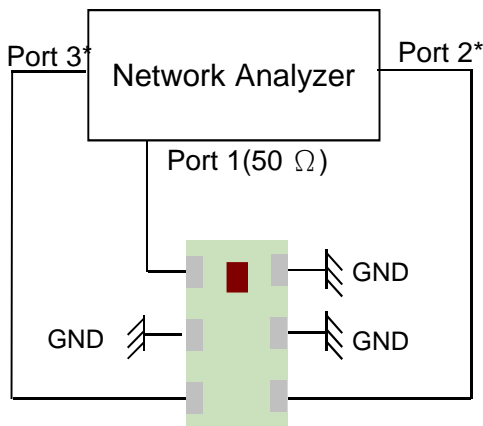
- GND
- Footprint
- GND Vias ( $\phi$  0.35/ $\phi$  0.2)

Vias are important for proper harmonic

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>

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, USA • TEL +1.805.389.1166

Ver 1.0

2017 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

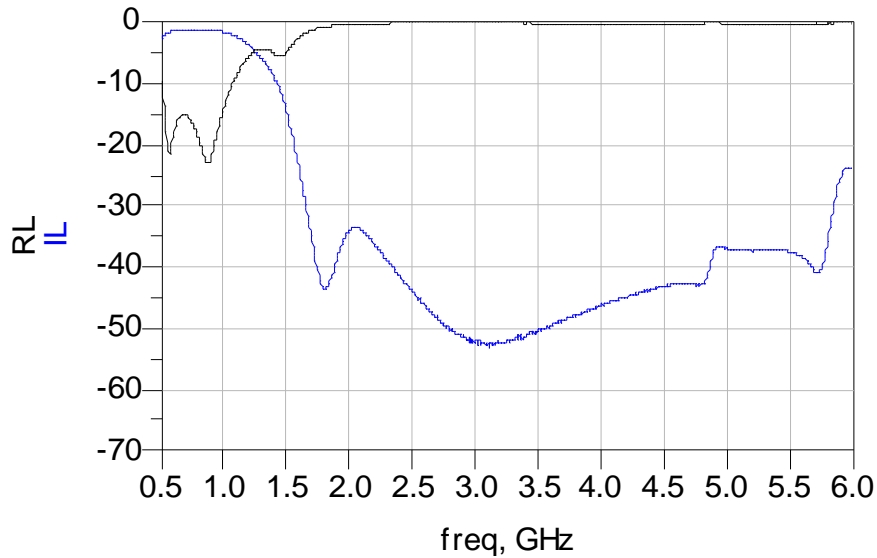
Sub-GHz Impedance Matched Balun + LPF integrated Passive Component P/N: 0896BM15A0032  
for Microchip SAM R30

Detail Specification: 1/27/2017

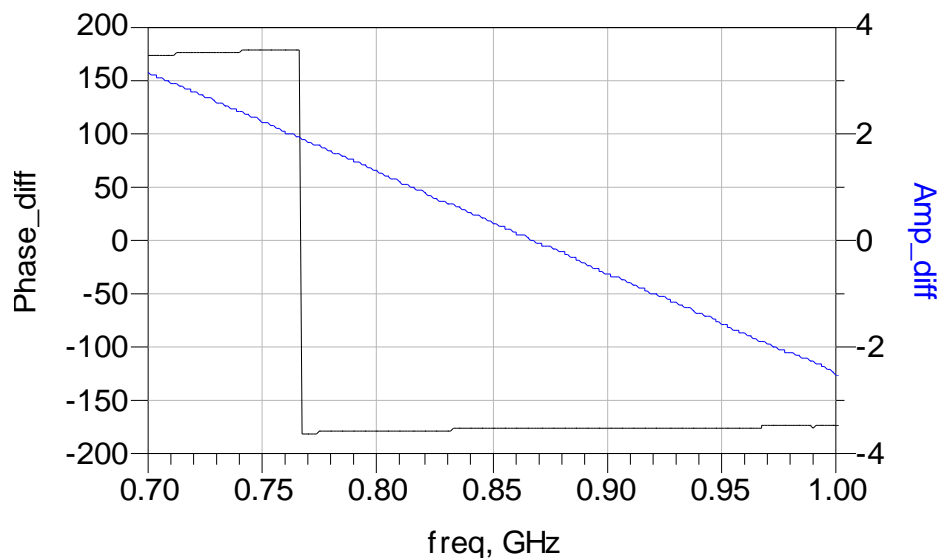
Page 3 of 4

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

### Insertion and Return Loss



### Amplitude and Phase Balance



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

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



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

4001 Calle Tecate • Camarillo, CA 93012, USA • TEL +1.805.389.1166

Ver 1.0

2017 Johanson Technology, Inc. All Rights Reserved

# 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

Page 4 of 4

## 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)

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, USA • TEL +1.805.389.1166

Ver 1.0

2017 Johanson Technology, Inc. All Rights Reserved