

# High Frequency Ceramic Solutions

Impedance Matched Balun + Harmonic Filter compatible with: Realtek RTL8188EU and  
RTL8192EU and ST BlueNRG chipsets

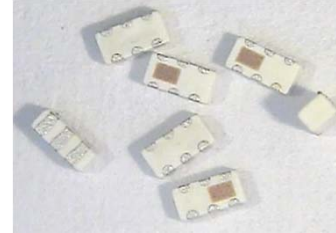
P/N 2450BM14A0023

Detail Specification: 2/27/2015

Page 1 of 5

## General Specifications

Part Number	2450BM14A0023		
Frequency (MHz)	2400 - 2500		
Unbalanced Impedance	50 $\Omega$		
Balanced Differential Impedance	Conjugate match compatible to RTL8188EU, RTL8192EU and ST BlueNRG chipsets		
Insertion Loss (dB)	1.2 max.		
Return Loss (dB)	9.5 min.		
Phase Difference (degree)	180° $\pm$ 10	Operating Temperature Range	-40 ~ +85°C
Amplitude Difference	2.0 max.	Storage Temperature Range	-40 ~ +85°C
Attenuation (dB)	30 min.@4800~5000MHz	Recommended Storage Conditions for Unused product on T&R	+5 ~ +35 °C, Humidity 45~75%RH, 18 months.
Qty/Reel (pcs)	4,000		
Power Capacity	2W max (CW)	Storage Period	18 months max.



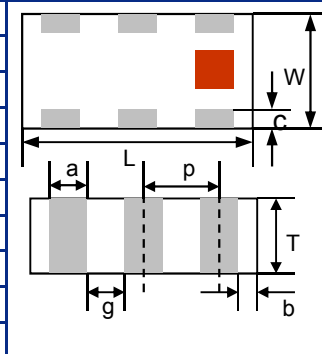
You can download measured s-parameters of this component at: [www.johansontechnology.com/chipset-ipc](http://www.johansontechnology.com/chipset-ipc)

## Part Number Explanation

P/N Suffix	Packaging Style	Bulk	Suffix = S	E.g.. 2450BM14A0023S
		T & R	Suffix = T	E.g.. 2450BM14A0023T
	Termination Style	100% Tin	Suffix = None	E.g.. 2450BM14A0023(T or S)

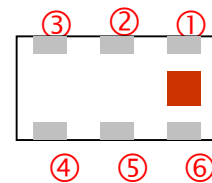
## Mechanical Dimensions

	Inches	Millimeter
L	0.063 $\pm$ 0.004	1.60 $\pm$ 0.10
W	0.031 $\pm$ 0.004	0.80 $\pm$ 0.10
T	0.024 $\pm$ 0.004	0.60 $\pm$ 0.10
a	0.008 $\pm$ 0.004	0.20 $\pm$ 0.10
b	0.008+0.004/-0.006	0.2+0.1/-0.15
c	0.006 $\pm$ 0.004	0.15 $\pm$ 0.10
g	0.012 $\pm$ 0.004	0.30 $\pm$ 0.10
p	0.020 $\pm$ 0.002	0.50 $\pm$ 0.05



## Terminal Configuration

No	Function	No	Function
1	GND	4	Balanced Port
2	GND	5	DC feed + RF GND
3	Balanced Port	6	Unbalanced Port



Note: Use a 10pF capacitor in shunt when using DC-Feed

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

2015 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

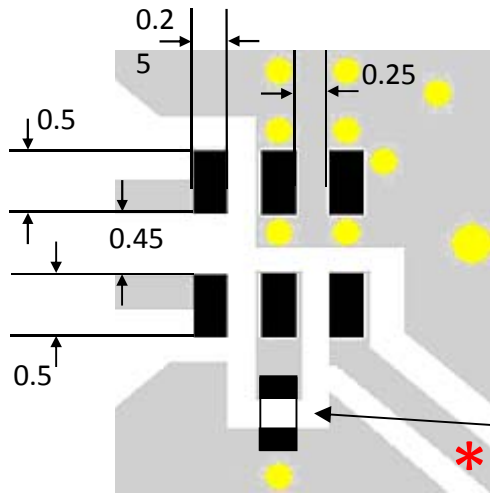
Impedance Matched Balun + Harmonic Filter compatible with: Realtek RTL8188EU and  
RTL8192EU and ST BlueNRG chipsets

P/N 2450BM14A0023

Detail Specification: 2/27/2015

Page 2 of 5

## Mounting Considerations for Balun-Filter solder pads



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

■ Solder Resist

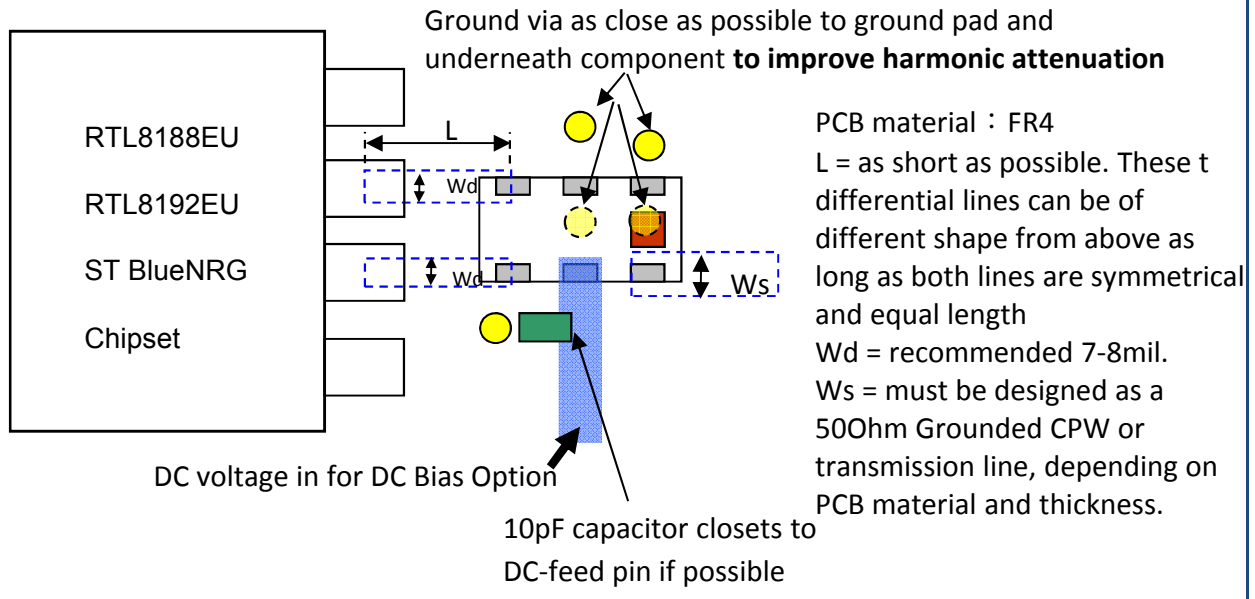
■ Land

● Through-hole ( $\phi$  0.3/0.2)

10pF capacitor

Do you need the layout/gerber files of the above? Go to: [www.johansontechnology.com/nordic](http://www.johansontechnology.com/nordic) or send us a message at <http://www.johansontechnology.com/component/techquestion/?Itemid=407>

## Recommended PCB Layout



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

2015 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

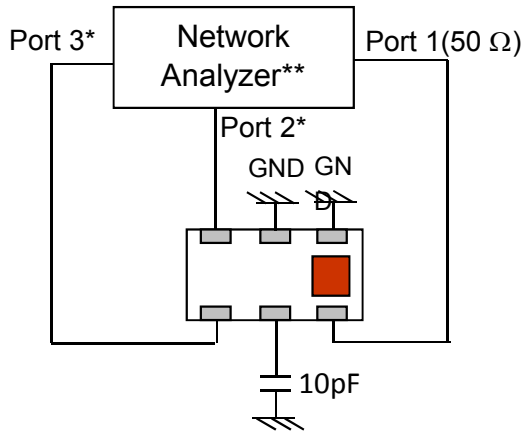
Impedance Matched Balun + Harmonic Filter compatible with: Realtek RTL8188EU and  
RTL8192EU and ST BlueNRG chipsets

P/N 2450BM14A0023

Detail Specification: 2/27/2015

Page 3 of 5

## Component Characterization Diagram



Port 1: Unbalanced Port

Ports 2 and 3: Balanced Port

$$IL = S_{ds21}$$

$$RL = S_{ss11} \text{ and } S_{dd22}$$

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

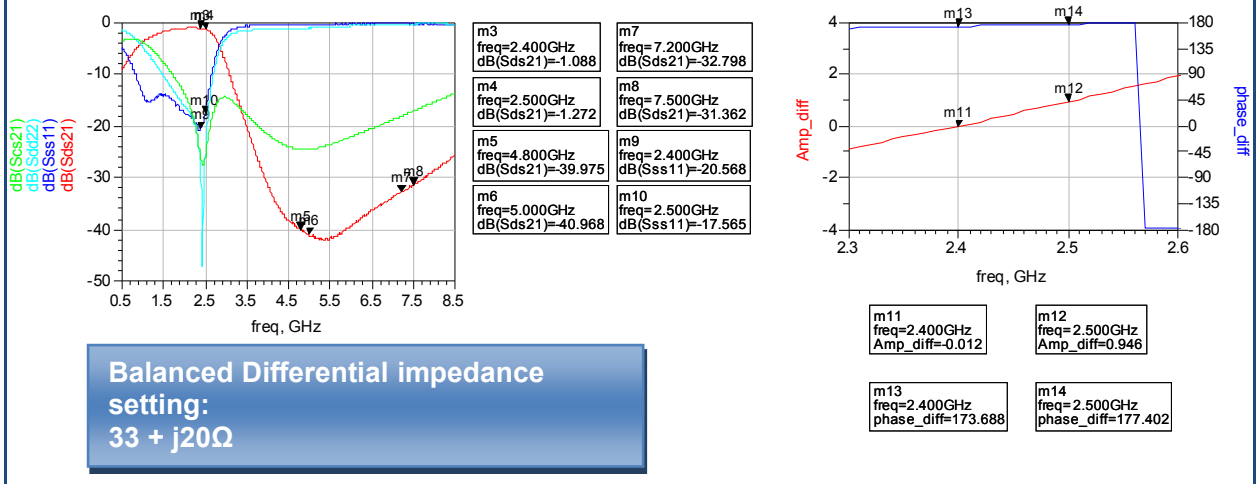
$$\text{Phase\_balance} = \text{Phase}(S(2,1)/S(3,1))$$

\*Impedance for ports 2 and 3

= Conjugate to Balanced Impedance/2

\*\* E5071B from Agilent

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



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 2015 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

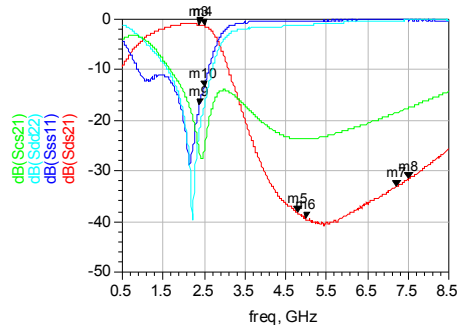
Impedance Matched Balun + Harmonic Filter compatible with: Realtek RTL8188EU and  
RTL8192EU and ST BlueNRG chipsets

P/N 2450BM14A0023

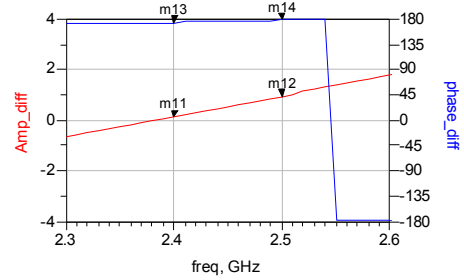
Detail Specification: 2/27/2015

Page 4 of 5

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

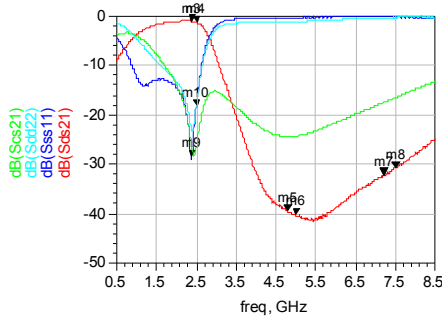


m3 freq=2.400GHz dB(Sds21)=-1.110	m7 freq=7.200GHz dB(Sds21)=-33.166
m4 freq=2.500GHz dB(Sds21)=-1.339	m8 freq=7.500GHz dB(Sds21)=-31.687
m5 freq=4.800GHz dB(Sds21)=-38.313	m9 freq=2.400GHz dB(Sss11)=-16.989
m6 freq=5.000GHz dB(Sds21)=-39.378	m10 freq=2.500GHz dB(Sss11)=-13.562

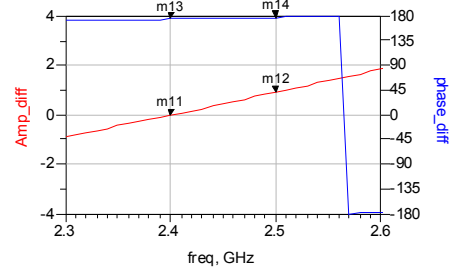


m11 freq=2.400GHz Amp_diff=0.107	m12 freq=2.500GHz Amp_diff=0.958
m13 freq=2.400GHz phase_diff=173.924	m14 freq=2.500GHz phase_diff=177.914

Balanced Differential impedance  
setting:  
 $31.4 + j26.6\Omega$



m3 freq=2.400GHz dB(Sds21)=-1.104	m7 freq=7.200GHz dB(Sds21)=-32.224
m4 freq=2.500GHz dB(Sds21)=-1.324	m8 freq=7.500GHz dB(Sds21)=-30.794
m5 freq=4.800GHz dB(Sds21)=-39.405	m9 freq=2.400GHz dB(Sss11)=-28.379
m6 freq=5.000GHz dB(Sds21)=-40.286	m10 freq=2.500GHz dB(Sss11)=-18.192



m11 freq=2.400GHz Amp_diff=0.045	m12 freq=2.500GHz Amp_diff=0.898
m13 freq=2.400GHz phase_diff=174.155	m14 freq=2.500GHz phase_diff=177.399

Balanced Differential impedance  
setting:  
 $28.8 + j18.5\Omega$

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 2015 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

Impedance Matched Balun + Harmonic Filter compatible with: Realtek RTL8188EU and  
RTL8192EU and ST BlueNRG chipsets

P/N 2450BM14A0023

Detail Specification: 2/27/2015

Page 5 of 5

## Application Notes, Layout Files, and more

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

## 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)

## MSL Info

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

## Recommended Storage Condition and Max Shelf Life

[www.johansontechnology.com/ipcstorage-shelflife](http://www.johansontechnology.com/ipcstorage-shelflife)

## RoHS Compliance

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

## 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, USA • TEL +1.805.389.1166

Ver 1.0

2015 Johanson Technology, Inc. All Rights Reserved

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9