

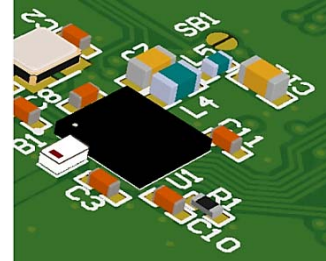
# High Frequency Ceramic Solutions

2.45GHz Impedance Matched Balun + Band Pass Filter: Optimized for Nordic's Chipset nRF51822-CEAA, nRF51822-CDAB, nRF51822-CFAC, nRF51422-CEAA, nRF51422-CDAB, nRF51422-CFAC P/N 2450BM08B0003

Detail Specification: 7/29/2015

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General Specifications	
Part Number	2450BM08B0003
Frequency (MHz)	2400 - 2500
Unbalanced Impedance	50 Ω
Balanced Differential Impedance	Conjugate match to: nRF51822-CEAA, nRF51822-CDAB, nRF51822-CFAC, nRF51422-CEAA, nRF51422-CDAB, nRF51422-CFAC
Average Insertion Loss when connected to the nRF51XX chipset (Active OP)	1dB Typ @25C, 1.5dB max. (-40 to +85C), 2.4dB max (+85 to +105C)
Insertion Loss when component measured by itself (passive insertion loss)	1.88dB Typ. @25C, 3.65dB @105C
Return Loss (dB)	14 Typ./9.5 min.
<b>Attenuation Differential mode (dB):</b>	
24 typ. /15dB min. @ 800-928 MHz	
20 typ. / 10dB min. @ 1000-1200 MHz	
36 typ. / 14dB min. @ 4800-5000 MHz	
25 typ. / 15dB min. @ 7200-7500 MHz	
Phase Difference (deg.)	180° ± 10



Phase Difference (deg.)	180° ± 10
Amplitude Difference	2.0 max.
Qty/Reel (pcs)	4,000
Operating Temp. Range	-40 ~ +105°C
Storage Temp. Range	-40 ~ +85°C
Recommended Storage Conditions of Product on T&R	+5 ~ +35 °C, Humidity 45-75%RH, 18 months max on vacuum package, 1 week max after opened <sup>1</sup>
Storage Period	18 months max.
Power Capacity	2W max (CW)

You can download layout files, schematics, output power measured results (App Note AN030), and s-parameters at: <http://www.johansontechnology.com/nordic>

Part Number Explanation				
P/N Suffix	Packaging Style	Bulk	Suffix = S	E.g.. 2450BM08B0003S
		T & R	Suffix = T	E.g.. 2450BM08B0003T
	Termination Style	AgPt <sup>1</sup>	Suffix = None	E.g.. 2450BM08B0003(T or S)

<sup>1</sup>Silver Pad component. Vacuum package required. For handling info go to: [www.johansontechnology.com/silverleads](http://www.johansontechnology.com/silverleads)

Mechanical Dimensions		
Inches	Millimeter	
L	0.055 ± 0.006	1.40 ± 0.15
W	0.039 ± 0.006	1.00 ± 0.15
T	0.027 max.	0.69 max.
a	0.009 +/- 0.002	0.22 +/- 0.05
b	0.004 +/- 0.002	0.0975 +/- 0.05
c	0.011 +/- 0.002	0.28 +/- 0.05
d	0.007 +/- 0.002	0.18 +/- 0.05

<Side View>

<Bottom View>

Terminal Configuration			
No	Function	No	Function
1	Unbalanced Port	4	Balanced Port
2	DC Feed	5	GND
3	Balanced Port		

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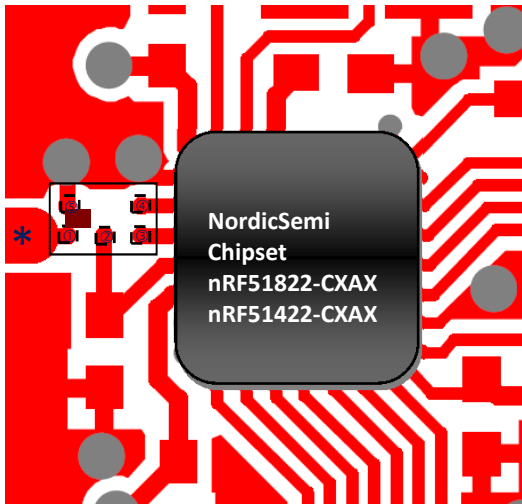
2.45GHz Impedance Matched Balun + Band Pass Filter: Optimized for Nordic's Chipset nRF5188-CEAA, nRF5188-CDAB, nRF5188-CDAB, nRF51422-CEAA, nRF51422-CDAB, nRF51422-CFAC

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## Mounting Considerations



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

□ Land

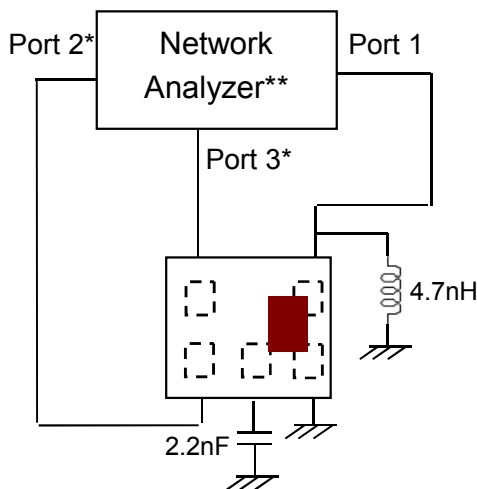
● Through-hole ( $\phi$  0.3)

Download the gerber files at:  
[www.johansontechnology.com/nordic](http://www.johansontechnology.com/nordic)

Would you like us to review your layout for free? Please go to this link to contact our RF team:  
<http://www.johansontechnology.com/ask-a-question> select "Applications Engineering" on the drop down

If you need 2.45GHz mini-antennas to go with your compact design, go to: <http://johansontechnology.com/antennas>

## 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

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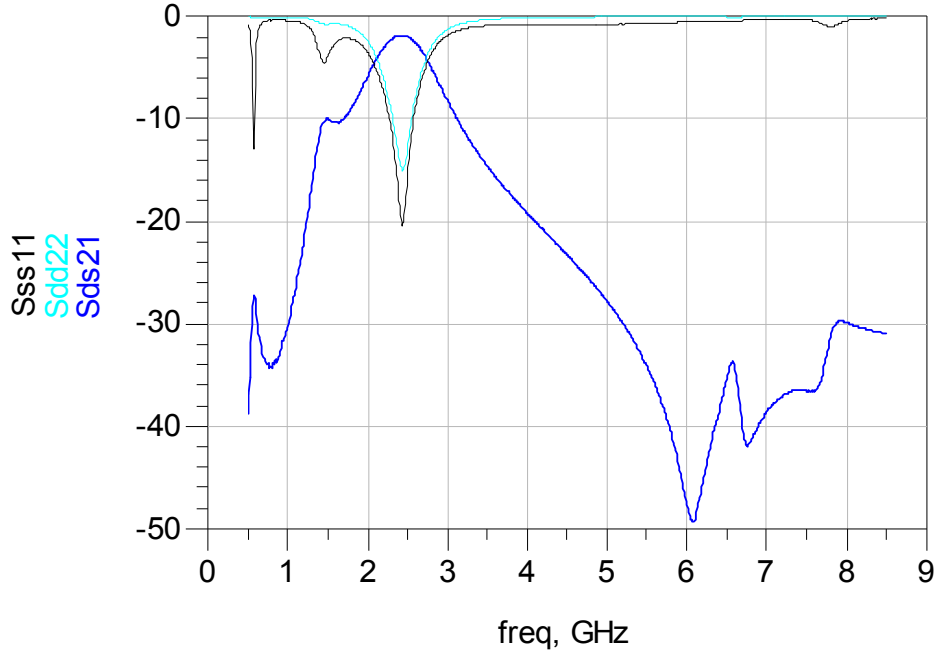
P/N 2450BM08B0003

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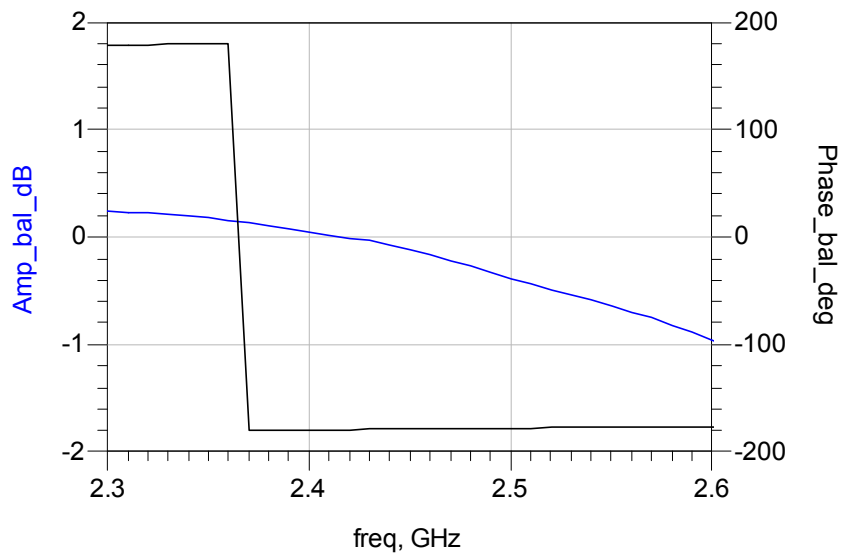
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## Typical Electrical Characteristics (T=25°C)

### Insertion and Return Loss



### Amplitude and Phase Balance



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## Application Notes, Layout Files, and more

<http://johansontechnology.com/nordic>

## 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

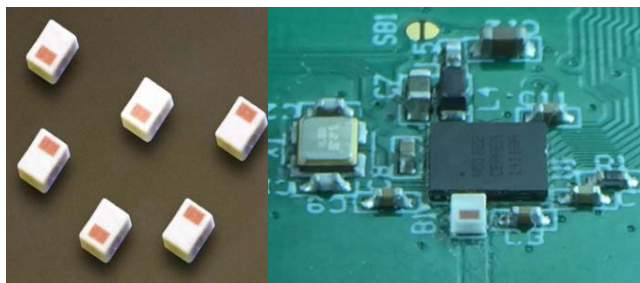
[www.johansontechnology.com/technical-notes/rohs-compliance.html](http://www.johansontechnology.com/technical-notes/rohs-compliance.html)

## 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)



In-Application Image

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