

# "High Frequency Ceramic Solutions"

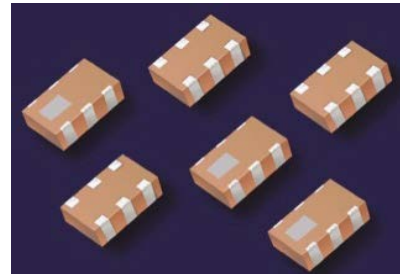
2.45GHz Impedance Matched Balun-Filter for Atmel Chipset AT86RF232 and AT86RF233. Platforms: ATMega256RFR2, Zigbit 256RFR2, Zigbit RF233, ZigBit RF233+FEM, Extension RF233, USB RF233

P/N 2450BM15A0015

Detail Specification: 1/21/2013

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General Specifications	
Part Number	2450BM15A0015
Frequency (MHz)	2400~2500
Unbalanced Impedance	50 $\Omega$
Differential Balanced Impedance	<b>Impedance match to:</b> Atmel AT86RF232, AT86RF233, ATMega256RFR2, Zigbit 256RFR2, Zigbit RF233, ZigBit RF233+FEM, Extension RF233, USB RF233
Insertion Loss (-40C to +85C)	1.1dB Typ, 1.5 dB max.
Insertion Loss (-40C to +125C)	1.3dB Typ, 1.9 dB max.
Return Loss	9.5 min.
Phase Difference	180 $\pm$ 10 (deg)
Amplitude Difference	2.0 dB max.
Power Capacity	1 Watt max.
Differential Mode Attenuation	20dB min. @2Fo 20dB min. @3Fo
Common Mode Rejection	20dB min. @2Fo



Operating Temp.	-40 to +125°C
Solder Paste	SAC 305 type is recommended
Recommended Storage Conditions*	+5 to +35 oC, Humidity 45~75%RH
Reel Quantity	4,000
Storage Period	18 months max.

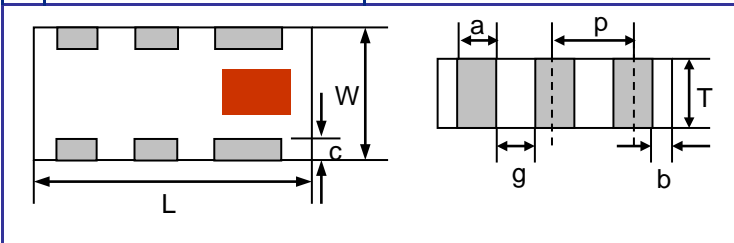
\*18 months in vacuum sealed bag and 1 week cumulative after opened.  
For more info go to [www.johansontechnology.com/silverleads](http://www.johansontechnology.com/silverleads)

## Part Number Explanation

P/N Suffix	Packing Style	Bulk (Loose)	Suffix = S	eg. 2450BM15A0015S
		T & R	Suffix = E	eg. 2450BM15A0015E
	Termination style	100% Tin	Suffix = None	eg. 2450BM15A0015 (E or S)
	Evaluation Board	2450BM15A0015-EBSMA		

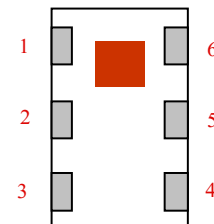
## Mechanical Dimensions

	In	mm
L	0.079 $\pm$ 0.004	2.00 $\pm$ 0.10
W	0.049 $\pm$ 0.004	1.25 $\pm$ 0.10
T	0.031 $\pm$ 0.004	0.80 $\pm$ 0.10
a	0.012 $\pm$ 0.004	0.30 $\pm$ 0.10
b	0.008 $\pm$ 0.004	0.20 $\pm$ 0.10
c	0.012 $\pm$ 0.004 /-0.2	0.30 $\pm$ 0.10
g	0.014 $\pm$ 0.004	0.35 $\pm$ 0.10
p	0.026 $\pm$ 0.002	0.65 $\pm$ 0.05



## Terminal Configuration

No.	Function
1	Unbalanced Port (50 $\Omega$ )
2	GND
3	Balanced Differential Port
4	Balanced Differential Port
5	GND
6	GND



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Ver 6.1

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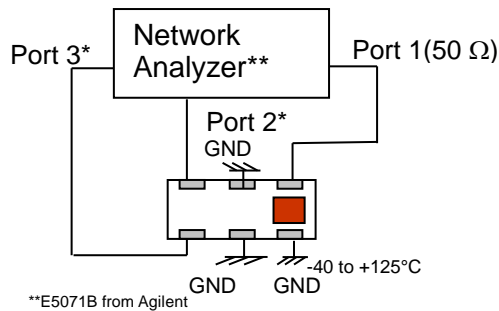
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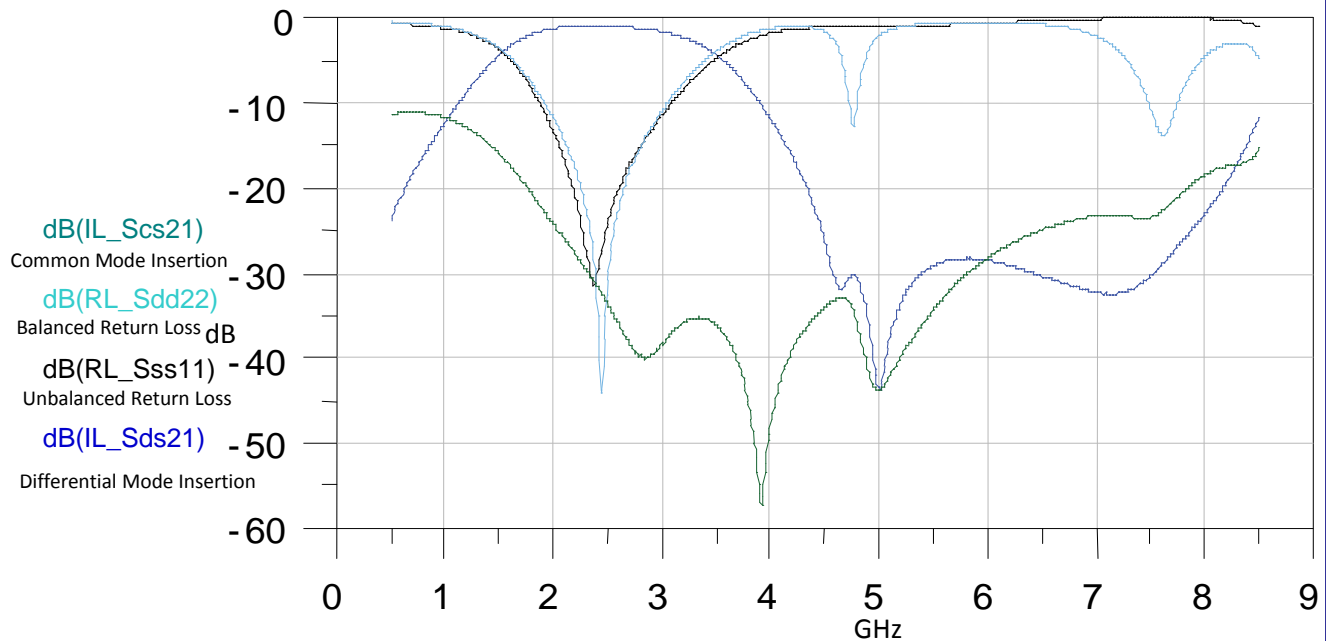
## Measuring Diagram



Port 1: Unbalanced Port  
Ports 2 and 3: Balanced Port  
IL=Sds21  
RL=Sss11  
Amp\_balance =  $\text{dB}(S(2,1)/S(3,1))$   
Phase\_balance =  $\text{Phase}(S(2,1)/S(3,1))$   
\*Impedance for ports 2 and 3  
= Conjugate to Balanced Impedance/2

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

### Insertion and Return Loss



Impedance matching network, balun and harmonic filter all in one EIA 0805 package!

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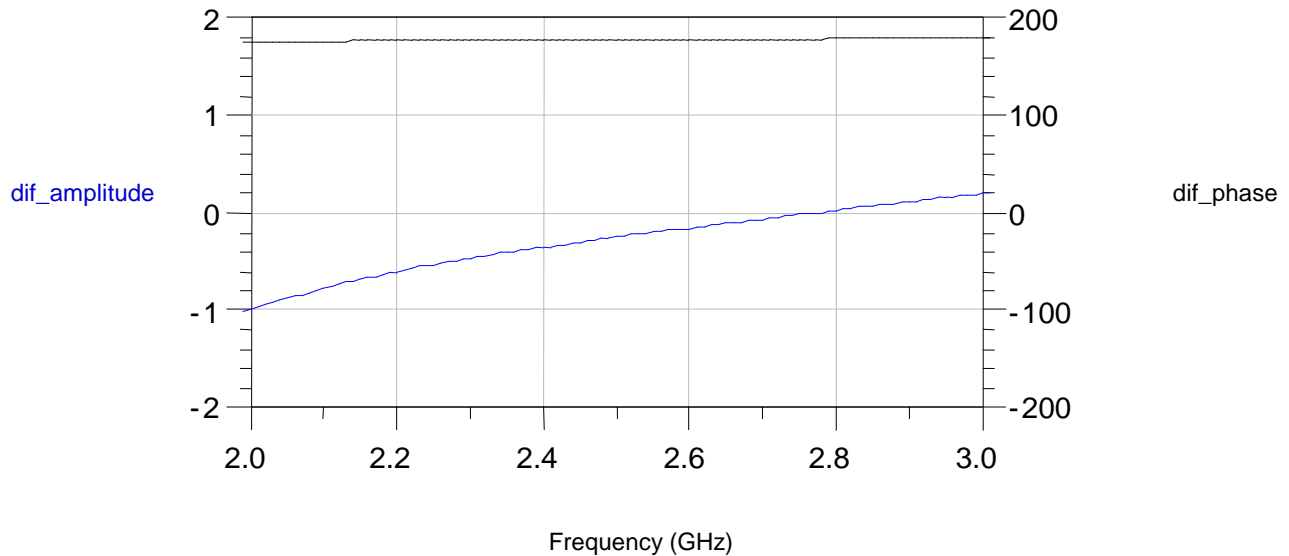
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## Typical Electrical Performance (T=25°C)

### Amplitude and Phase Balance



Impedance matching network, balun and harmonic filter all in one EIA 0805 package!

## Mounting Considerations

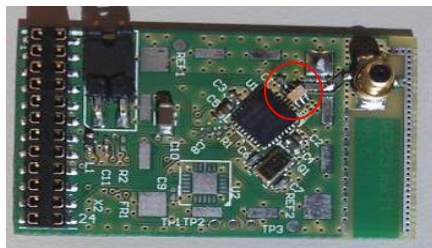
Mount these devices with brown mark facing up.

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

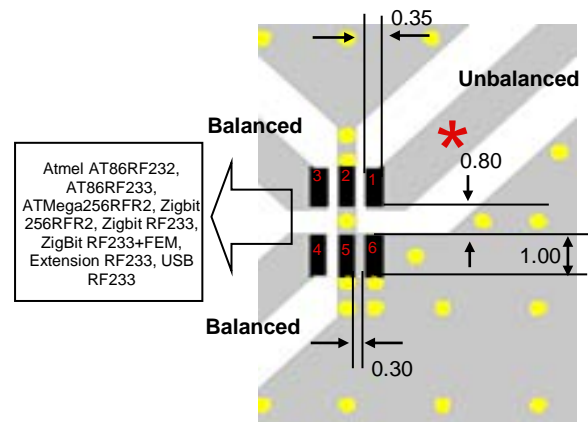
### LEGEND

- Solder Resist
- Land
- Through-hole (φ0.3)

Units : mm



REB233mkII V8.6.1 EVB Example



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