

High Frequency Ceramic Solutions

2.4GHz Impedance Matched Balun-Filter designed for TI CC2520 Chipset.

P/N: 2450BM15B0002

Detail Specification: 6/15/2015

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General Specifications

Part Number	2450BM15B0002
Frequency (MHz)	2400 - 2500
Unbalanced Impedance	50 Ω
Differential Balanced Impedance	Conjugate match to TI Chipset 2520
Insertion Loss	1.5 dB max. (-40°C to +85°C)
Insertion Loss	1.7 dB max. (-40°C to +125°C)
Return Loss (-40°C to 125°C)	9.5 dB min.
Phase Diff. (-40°C to 125°C)	180° \pm 15

Differential Mode Attenuation (dB) -40°C to 125°C	12 min. @ 1GHz
	18 min. @ 4800~5000MHz
	20 min. @ 7200~7500MHz
Input Power	2W max. CW
Reel Quantity	4,000
Operating Temperature	-40°C to +125°C
Storage Temperature Range	-40°C to +85°C
Recommended Storage Conditions of unused product on T&R	+5 ~ +35 °C, Humidity 45~75%RH, 18 mos. max

Part Number Explanation

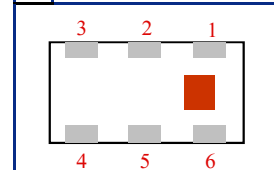
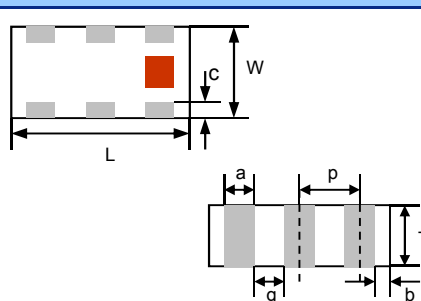
P/N Suffix	Packaging Style	Bulk	Suffix = S	Eg. 2450BM15B0002S
	Termination	T & R	Suffix = E	Eg. 2450BM15B0002E
		100% Tin	Suffix = None	Eg. 2450BM15B0002(E or S)

Terminal Configuration

No.	Function
1	Unbalanced Port (2.2nH Ind)*
2	GND
3	Balanced Port
4	Balanced Port
5	GND
6	GND

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	0.028 \pm 0.004	0.70 \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 +.004/-0.008	0.30 +0.1/-0.2
g	0.014 \pm 0.004	0.35 \pm 0.10
p	0.026 \pm 0.002	0.65 \pm 0.05



*2.2 nH Ceramic Chip inductor required on unbalanced port. See page 2 for details

Mounting Considerations

Mount these devices with brown mark facing up. Units: mm

* Line width should be designed to provide 50 Ω impedance matching characteristics.

Note: No DC Blocking Capacitor required (internal)

- Solder Resist
- Land
- Through-hole (ϕ 0.3)

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www.johansontechnology.com

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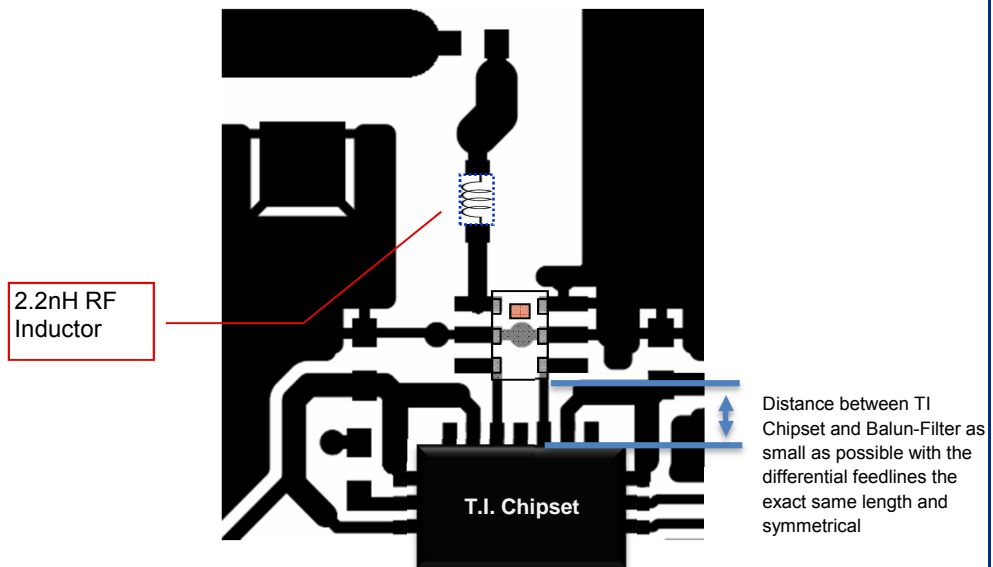
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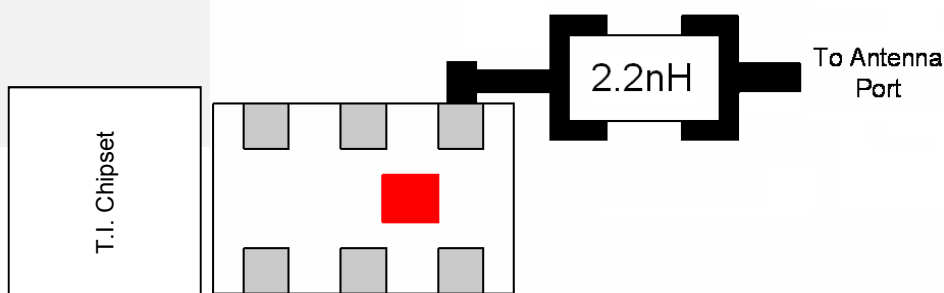
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Mounting Considerations

Mounting layout for reference only.
Mount device with colored mark facing up.
For detailed dimensions, please contact Johanson Technology at:
<http://www.johansontechnology.com/ask-a-question>
Or visit TI's CC2520 website:
<http://focus.ti.com/docs/prod/folders/print/cc2520.html>



Matching Component P/N: 2.2nH Inductor: L-07C2N2SV6T
<http://www.johansontechnology.com/ceramic-inductors.html>



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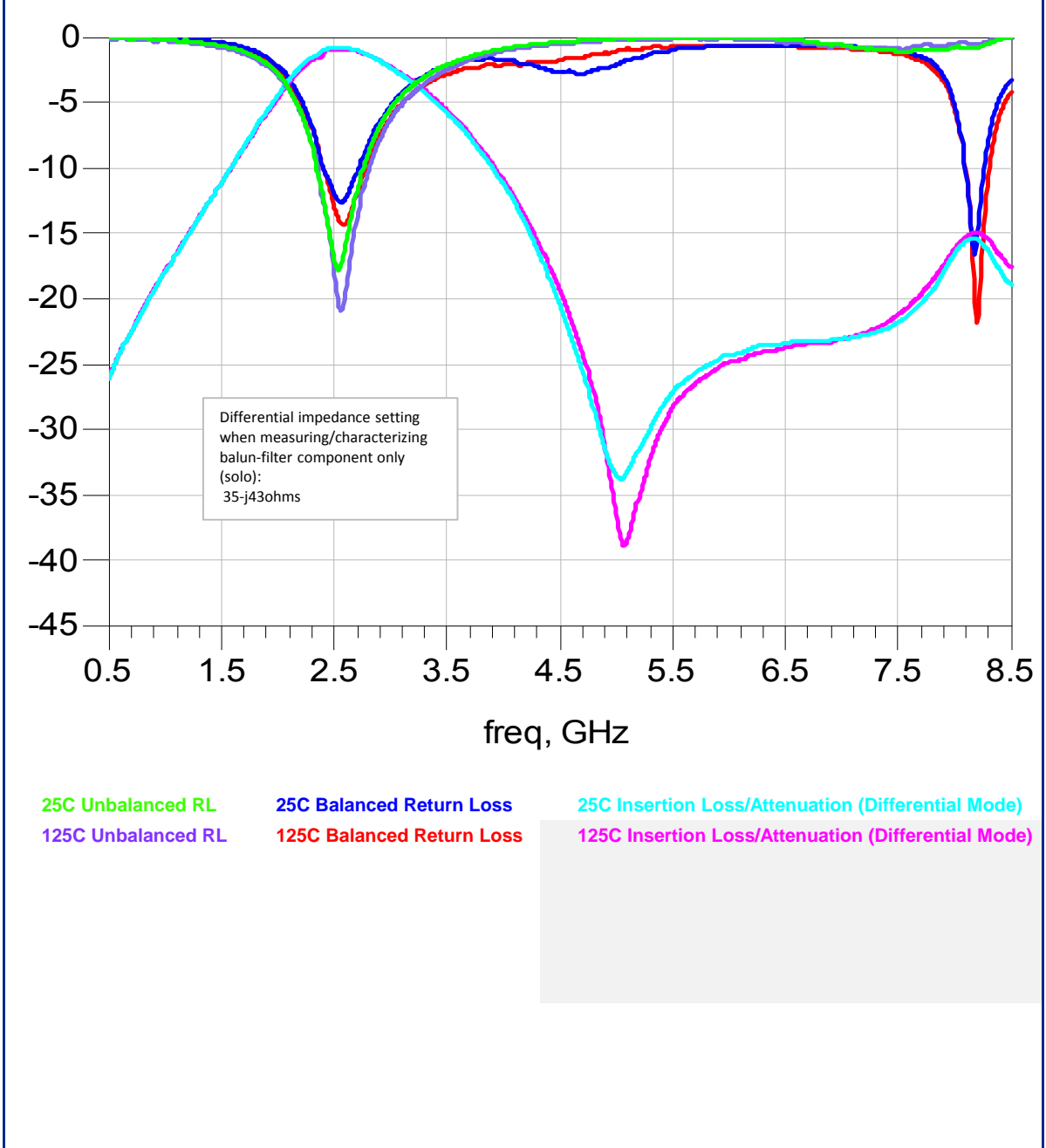
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Typ 25C and 125C RF Plot of Balun-Filter component only (solo)



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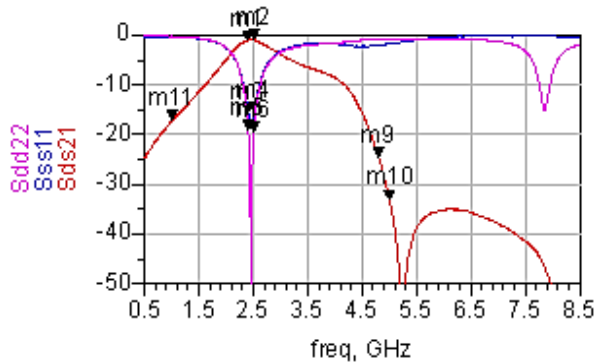
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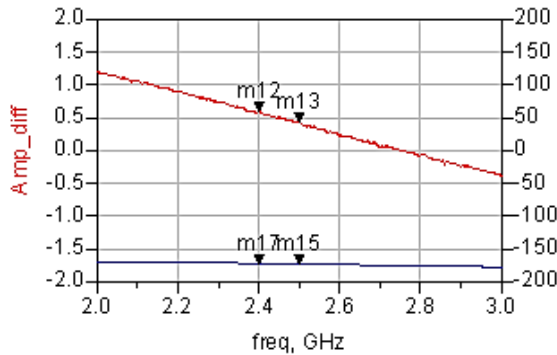
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Typical Electrical Performance (T=25°C) when balun-filter connected to TI CC2520 + 2.2nH inductor in series

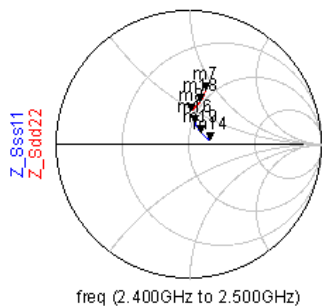


m1 freq=2.400GHz Sds21=-1.031	m3 freq=2.400GHz Sss11=-15.864
m2 freq=2.500GHz Sds21=-0.984	m4 freq=2.500GHz Sss11=-15.482
m9 freq=4.800GHz Sds21=-24.753	m5 freq=2.400GHz Sdd22=-19.050
m10 freq=5.000GHz Sds21=-33.093	m6 freq=2.500GHz Sdd22=-19.495
m11 freq=1.000GHz Sds21=-17.227	

Differential impedance setting when simulating the balun-filter component connected to TI CC2520 + 2.2nH inductor in series:
47-j34ohms



m12 freq=2.400GHz Amp_diff=0.602	m13 freq=2.500GHz Amp_diff=0.442
m17 freq=2.400GHz Phase_diff=-171.751	m15 freq=2.500GHz Phase_diff=-172.415



m7 freq=2.400GHz Z_Sdd22=0.427 / 72.813 impedance = 44.083 + j43.972	m14 freq=2.400GHz Z_Sss11=0.165 / 11.169 impedance = 69.105 + j4.534
m8 freq=2.500GHz Z_Sdd22=0.253 / 86.418 impedance = 45.335 + j24.449	m16 freq=2.500GHz Z_Sss11=0.168 / 74.863 impedance = 51.662 + j17.268
m18 freq=2.450GHz Z_Sdd22=0.332 / 75.072 impedance = 47.371 + j34.155	m19 freq=2.450GHz Z_Sss11=0.126 / 44.208 impedance = 58.899 + j10.499

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Application Notes, Layout Files, and more

www.johansontechnology.com/ti

RoHS Compliance

www.johansontechnology.com/technical-notes/rohs-compliance.html

Soldering Information

www.johansontechnology.com/ipcsoldering-profile

Antenna layout and tuning techniques

www.johansontechnology.com/tuning

Antenna layout review, tuning, and characterization services

www.johansontechnology.com/ipcantennaservices

MSL Info

www.johansontechnology.com/technical-notes/msl-rating.html

Recommended Storage Condition and Max Shelf Life

www.johansontechnology.com/ipcstorage-shelflife

Packaging information

www.johansontechnology.com/ipcpackaging.html

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