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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



High Frequency Ceramic Solutions

Sub-GHz Impedance Matched Balun + LPF integrated Passive Component for Texas Instruments' CC1310, CC1312 Chipsets

P/N: 0850BM14E0016

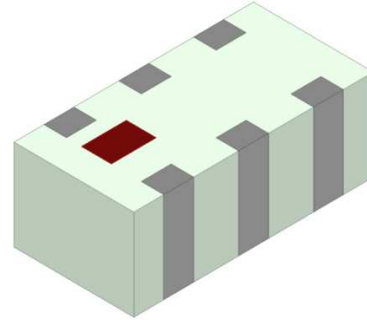
Detail Specification: 3/22/2018

Page 1 of 5

Do you need a small 900MHz antenna? Go to: www.johansontechnology.com/antennas

General Specifications

Part Number	0850BM14E0016	
Frequency (MHz)	770 - 860	860 - 928
Unbalanced Impedance (Ω)	50	
Balanced Impedance (Ω)	Impedance matched to Texas Instruments' CC1310, CC1312 chipsets	
Insertion Loss (dB)	1.3 typ. (1.6 max.)	1.8 typ. (2.2 max.)
Return Loss (dB)	9.5 min.	9.5 min.
Phase Difference (deg)	180 \pm 17	180 \pm 15
Amplitude Difference (dB)	3.5 max.	2.0 max.
Attenuation (dB)	8 min.@ 1540 - 1720MHz 15 min.@ 1720 - 1736MHz 15 min.@ 1736 - 1856MHz 30 min.@ 2310 - 2580MHz 30 min.@ 2580 - 2784MHz 33 min.@ 3080 - 3440MHz 35 min.@ 3440 - 3712MHz	
Power Capacity (W)	2 max. (CW)	



Texas Instruments - Approved!

Quantity/Reel	4,000 pcs
Operating Temperature	-40°C to +85°C
Recommended Storage Conditions for unused T&R product and period	+5 to +35 °C Humidity 45 - 75%RH 18 mos. max

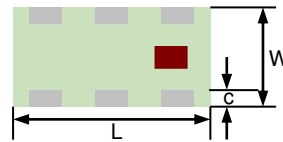
For more TI matched balun-filters, go to: www.johansontechnology.com/ti

Part Number Explanation

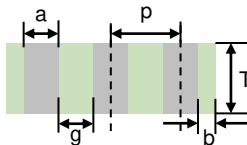
P/N Suffix	Packing Style	Bulk	Suffix = S	eg. 0850BM14E0016S
		T & R	Suffix = E	eg. 0850BM14E0016T
		100% Tin	Suffix = None	eg. 0850BM14E0016(T or S)

Mechanical Dimensions

	In	mm
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 +.004/-.008	0.20 +0.1/-0.2
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



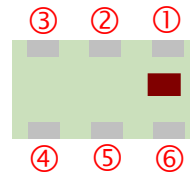
Top



Side

Terminal Configuration

No.	Function
1	Unbalanced Port
2	RX/TX
3	Balanced Port RF_N
4	Balanced Port RF_P
5	GND
6	GND



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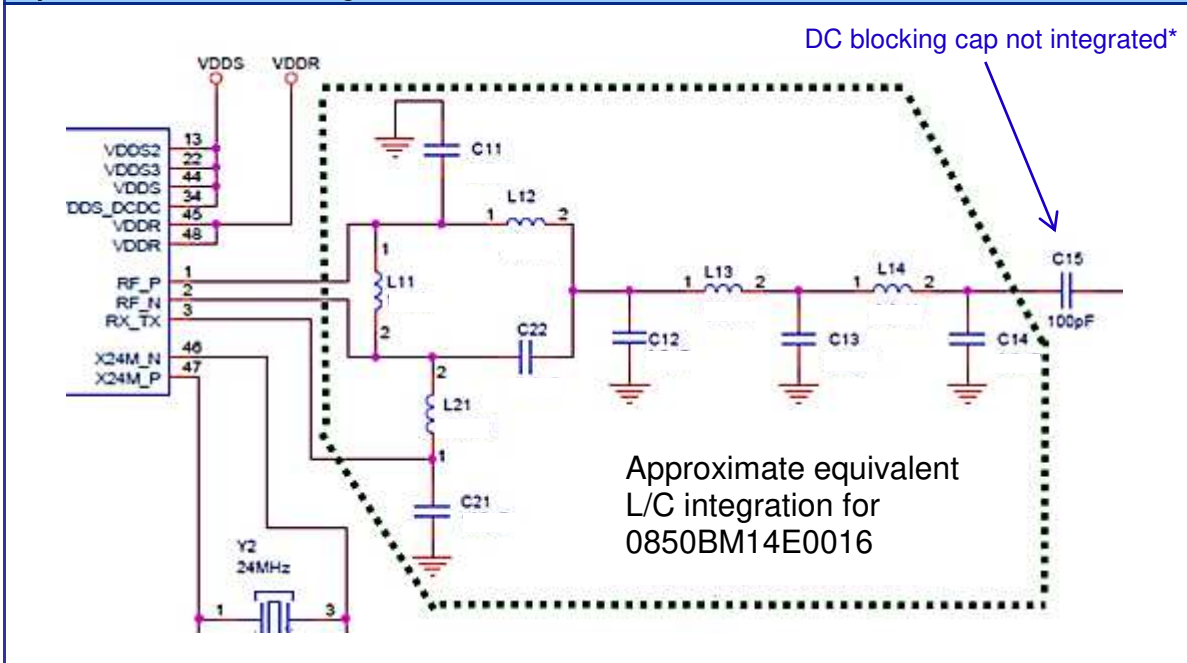
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P/N: 0850BM14E0016

Detail Specification: 3/22/2018

Page 2 of 5

Equivalent L/C Circuit Integrated into IPC



*Even though Pins 3, 4, and 1 are internally *DC blocked* from GND, Pins 3/4 are *DC coupled* to Pin 1 (there's a DC path between them). We recommend the designer place a DC blocking cap (68-100pF) in series after Pin 1 (between IPC and antenna).

Would you like the reference design, schematic, and gerber files? Need us to review your layout free or an antenna recommendation for your application? Contact us at:

www.johansontechnology.com/ask-a-question

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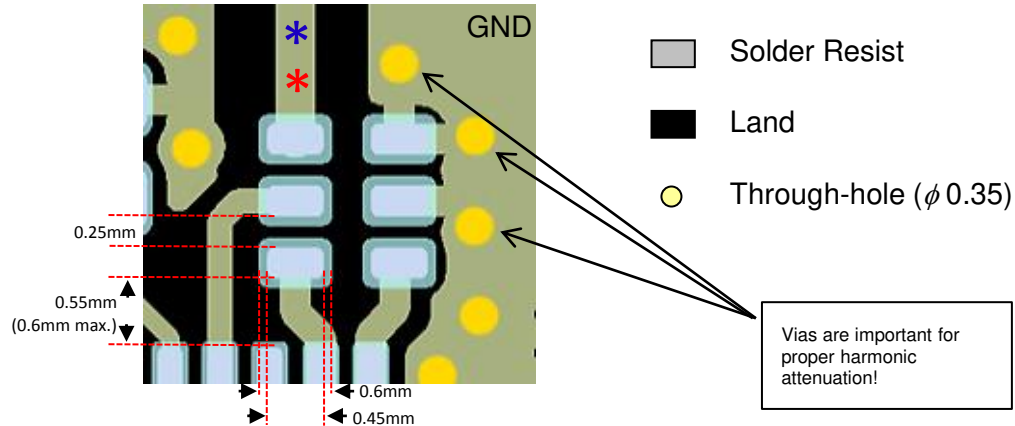
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Detail Specification: 3/22/2018

Page 3 of 5

Pad-Soldermask Guidelines

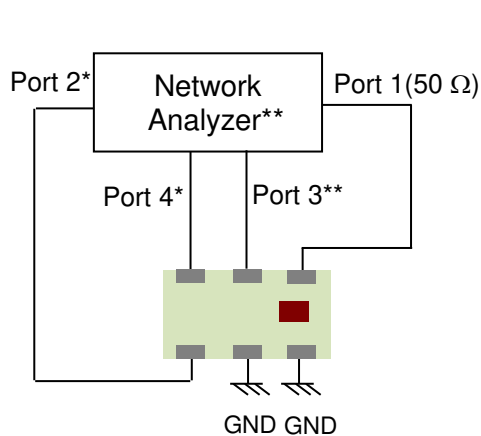
Request reference design, schematic, and gerber files at: www.johansontechnology.com/ask-a-question



* Even though Pins 3, 4, and 1 are DC blocked from GND, Pins 3/4 are DC coupled to Pin 1 (there's a DC path between them). We recommend the designer place a DC blocking cap (68-100pF) in series after Pin 1 (between IPC and antenna) per page 2 of the datasheet.

* Line width should be designed to match 50ohm characteristic impedance, depending on PCB material and thickness. Grounded CPWG is recommended.

Measurement Diagram



Port 1: Unbalanced Port

Ports 2 and 4: Balanced Port

*Ports 2 and 4 Terminate impedance

=Conjugate match to TI CC13XX chipset

Port 3: RX_TX Port

**Port 3 Terminate impedance

=The load Impedance looking into

RX_TX pin of TI CC13XX chipset

$$IL = S_{DS21}$$

$$RL = S_{SS11}$$

$$\text{Amp_balance} = \text{dB}(S(2,1)/S(4,1))$$

$$\text{Phase_balance} = \text{Phase}(S(2,1)/S(4,1))$$

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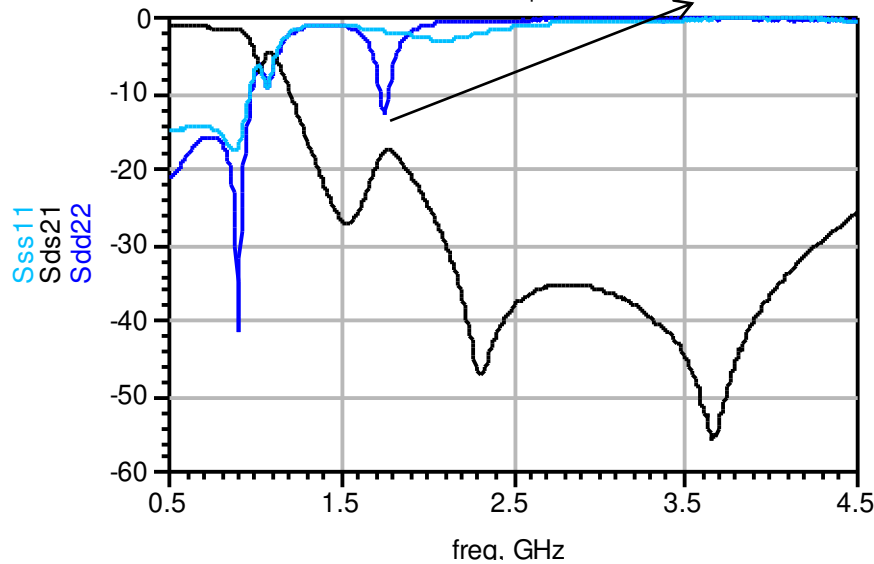
Detail Specification: 3/22/2018

Page 4 of 5

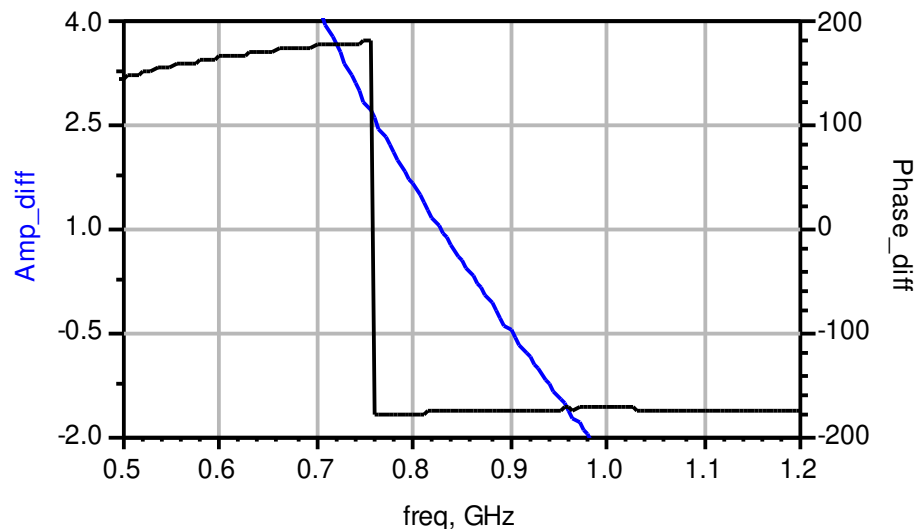
Typical Electrical Characteristics (T=25°C)

Insertion Loss, Return Loss

The Sds21 resonance around 1.8GHz was purposely designed due to an impedance reactance with the CC13XX for proper harmonic power level



Phase Difference, Amplitude Balance



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Page 5 of 5

Application Notes, Layout Files, and more

www.johansontechnology.com/ti

Small SMD 900MHz (or 2.4G, 5G) antennas at:

www.johansontechnology.com/antennas

RoHS Compliance

www.johansontechnology.com/rohs-compliance

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/ipc-antenna-services

MSL Info

www.johansontechnology.com/msl-rating

Recommended Storage Condition and Max Shelf Life

www.johansontechnology.com/recommended-storage-conditions

Packaging information

www.johansontechnology.com/tape-reel-packaging

Would you like us to review your layout for free? Need an antenna recommendation for your application?

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