High Frequency Ceramic Solutions

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

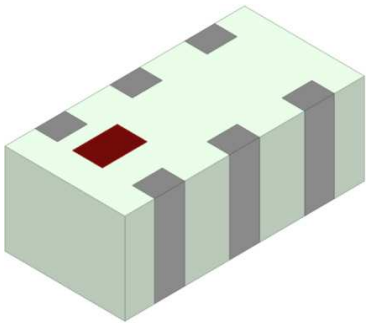
P/N: 0850BM14E0016

Detail Specification: 9/9/2021

Do you need a small 900MHz antenna? Go to: https://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±17	180±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!

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

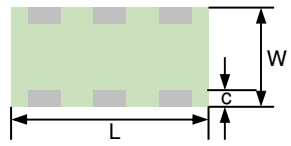
For more TI matched balun-filters, go to: https://www.johansontechnology.com/ti

Part Number Explanation

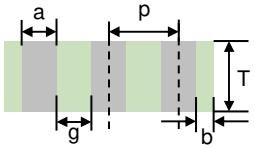
P/N Suffix	**Packaging Style**	Bulk (loose pcs.)	Suffix = S	eg. 0850BM14E0016S
		T & R	Suffix = T	eg. 0850BM14E0016T
		100% Tin	Suffix = None	eg. 0850BM14E0016(T or S)

Mechanical Dimensions

	In	mm
L	0.063 ± 0.004	1.60 ± 0.10
W	0.031 ± 0.004	0.80 ± 0.10
T	0.024 ± 0.004	0.60 ± 0.10
a	0.008 ± 0.004	0.20 ± 0.10
b	0.008 +.004/-.008	0.20 +0.1/-0.2
c	0.006 ± 0.004	0.15 ± 0.10
g	0.012 ± 0.004	0.30 ± 0.10
p	0.020 ± 0.002	0.50 ± 0.05



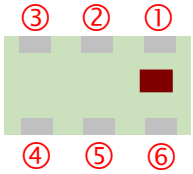
Bottom



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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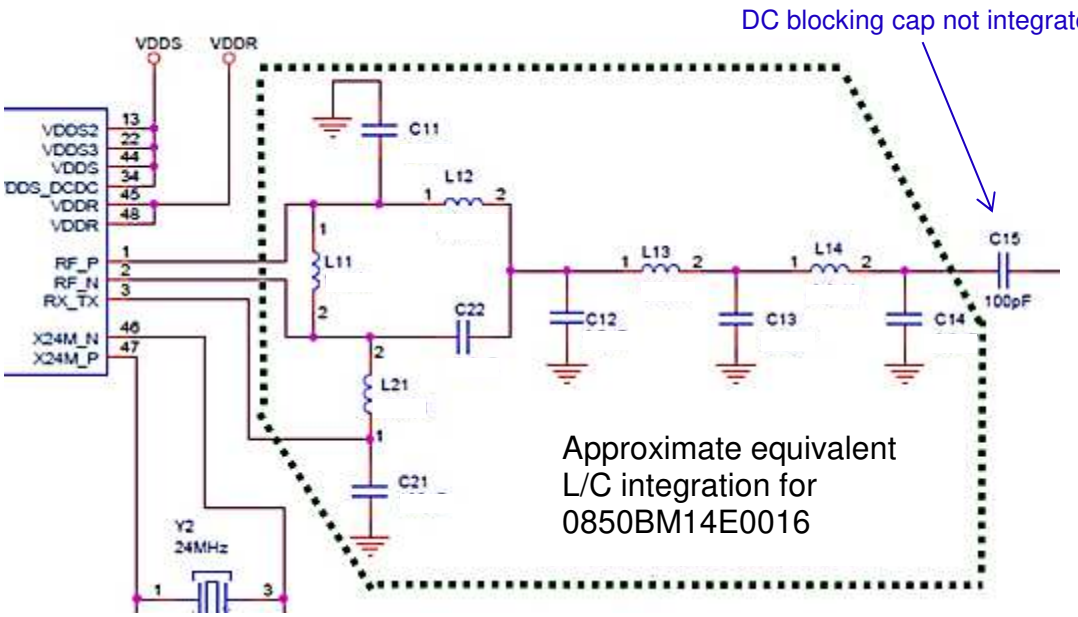
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Equivalent L/C Circuit Integrated into IPC



*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 us to review your layout for free or an antenna recommendation for your application? Contact us at:

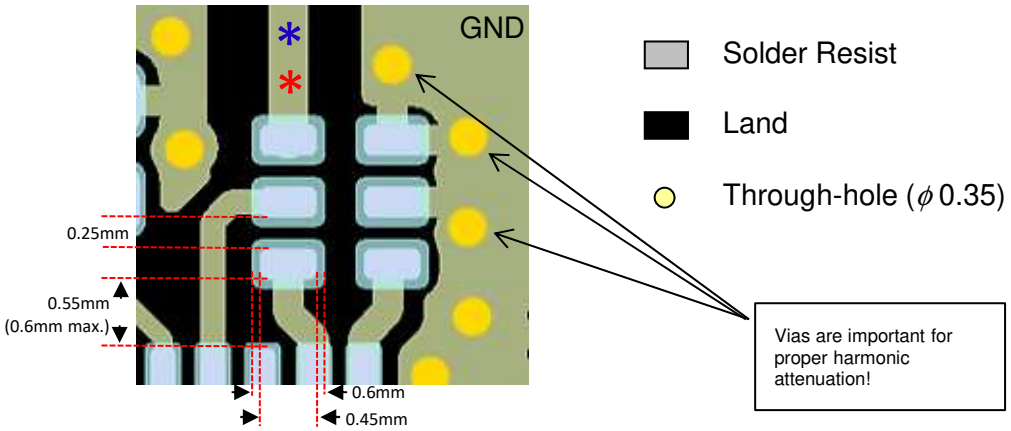
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Pad-Soldermask Guidelines

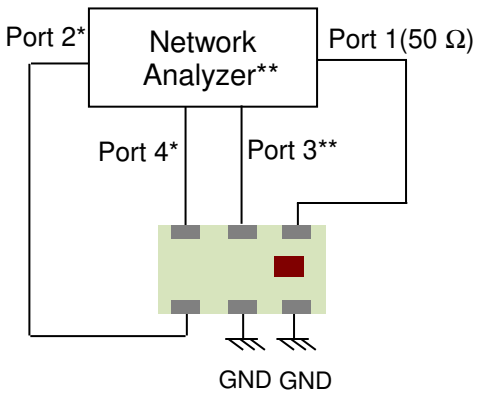
Request reference design, schematic, and gerber files at: https://www.johansontechnology.com/ask-a-question



* 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=$S_{DS}21$
RL=$S_{SS}11$
Amp_balance = dB(S(2,1)/S(4,1))
Phase_balance = Phase(S(2,1)/S(4,1))

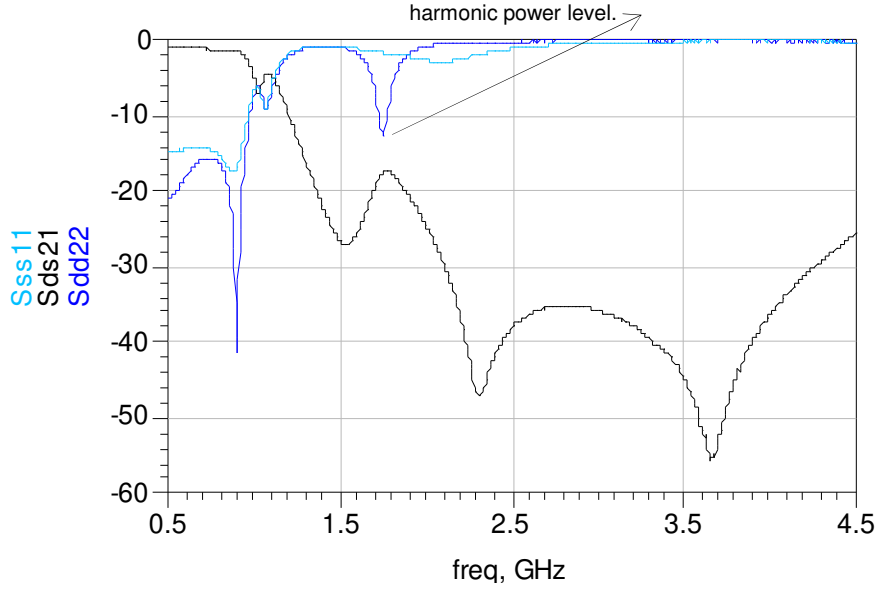
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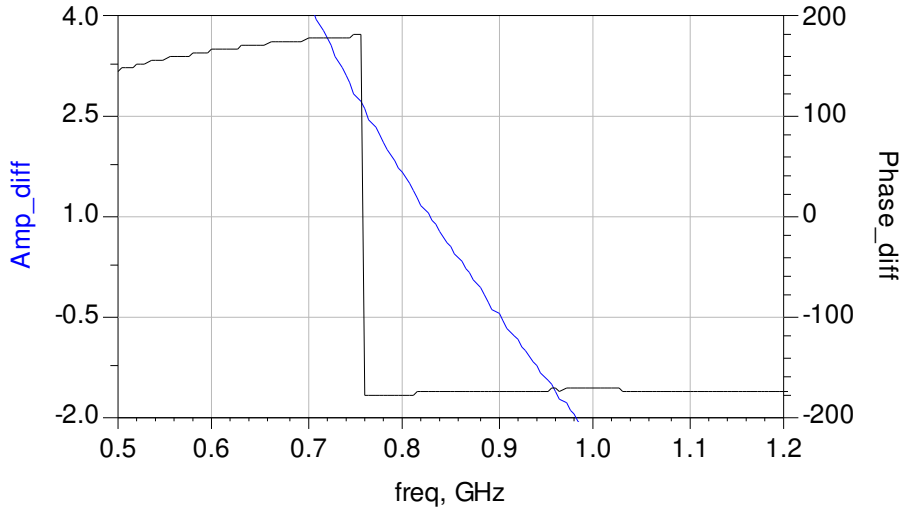
Typical Electrical Characteristics (T=25°C)

Insertion Loss, Return Loss

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



Phase Difference, Amplitude Balance



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Application Notes, Layout Files, and more
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Small SMD 433MHz (or 900M, 2.4G, 5G) antennas
https://www.johansontechnology.com/antennas

RoHS Compliance
https://www.johansontechnology.com/rohs-compliance

Soldering Information
https://www.johansontechnology.com/ipcsoldering-profile

Antenna layout and tuning techniques
https://www.johansontechnology.com/tuning

Antenna layout review, tuning, and characterization services
https://www.johansontechnology.com/ipc-antenna-services

MSL Info
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Recommended Storage Condition and Max Shelf Life
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Packaging information
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