

# "High Frequency Ceramic Solutions"

433 MHz Impedance Matched Balun + LPF Integrated Front-End SMD Passive Component for SiLabs Si4455, Si4460, Si4461, Si4463, and Si4464 Chipsets

P/N 0433BM41A0019

Detail Specification: 5/30/2017

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General Specifications	
<b>Part Number</b>	0433BM41A0019
<b>Frequency Range(MHz)</b>	424-444
<b>Balanced Impedance</b>	Si4455, Si4460, Si4461, Si4463, Si4464
<b>Unbalanced impedance</b>	50Ω (single ended)
<b>Average Insertion Loss when connected to Si44XX chipset (Active OP Tx/Rx)</b>	0.9dB Typ@25C 1.5dB max. (-45 to +85C)
<b>Insertion Loss when component measured by itself(passive insertion loss)</b>	1.6dB Typ in Rx, 1.4dB Typ in Tx @25C 2.2dB max. in Rx, 1.9dB max. in Tx (-45 to +85C)
<b>Attenuation dB (min.)</b>	35 min. @ 2xfo MHz
	35 min. @ 3xfo MHz
	35 min. @ 4xfo MHz
	35 min. @ 5xfo MHz
<b>Phase Diff. (deg.)</b>	180° ± 10
<b>VSWR @ BW</b>	2.0 max.
<b>Amplitude Difference (dB)</b>	2.0 max.
<b>Reel Quantity</b>	4,000
<b>Operating Temperature</b>	-40 to +85°C
<b>Recommended Storage Conditions for Unused product on T&amp;R</b>	+5 ~ +35 °C, Humidity 45~75%RH, 18 months.
<b>Input Power</b>	500mW max. (CW)



Download the gerber files at: <https://www.johansontechnology.com/silabs>

Part Number Explanation			
<b>P/N Suffix</b>	<b>Packing Style</b>	Bulk	Suffix = S eg. 0433BM41A0019S
		T & R	Suffix = E eg. 0433BM41A0019E
	<b>Termination style</b>	Ni/Sn	Suffix = None eg. 0433BM41A0019(E or S)

Mechanical Dimensions		
	In	mm
<b>L</b>	0.126 ± 0.008	3.20 ± 0.20
<b>W</b>	0.098 ± 0.008	2.50 ± 0.20
<b>T</b>	0.059 ± 0.006	1.50 ± 0.15
<b>a1</b>	0.022 ± 0.006	0.55 ± 0.15
<b>a2</b>	0.028 ± 0.008	0.70 ± 0.20
<b>b</b>	0.004 min.	0.1 min.
<b>c</b>	0.012 + 0.008	0.30 + 0.20
<b>g</b>	0.018 + 0.006	0.45 + 0.15
<b>p</b>	0.039 + 0.008	1.00 + 0.20

Unit :mm

Terminal Configuration			
No.	Function	No.	Function
1	GND	5	GND
2	Ant	6	TX
3	GND	7	RXN
4	GND	8	RXP

DC Connection for Pins	
(1)	Pin1 – Pin3 – Pin4 – Pin5
(2)	Pin2 – Pin7 – Pin8

Do you need to download the reference design/layout files? Go to: <https://www.johansontechnology.com/silabs>



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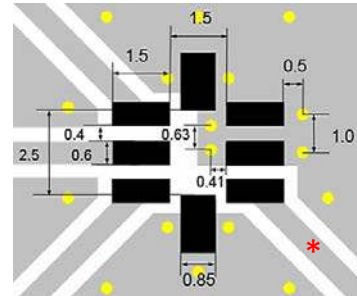
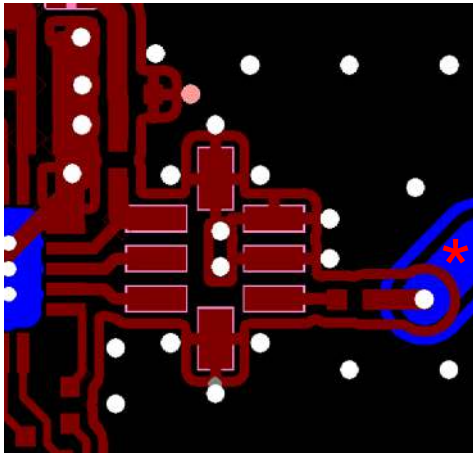
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## Mounting Considerations

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

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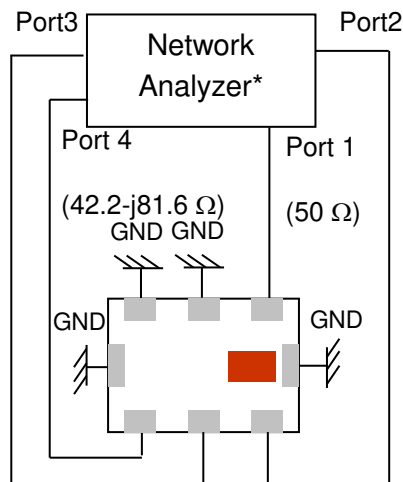


- Solder Resist
- Land
- Through-hole ( $\phi$  0.3)

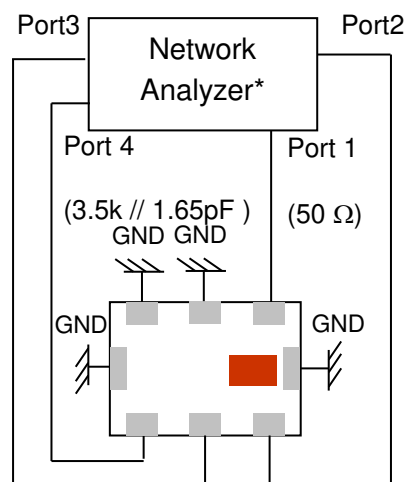
Do you need the layout/gerber files of the above? Go to: <https://www.johansontechnology.com/silabs> or send us a message at: <https://www.johansontechnology.com/ask-a-question>

## Measuring Diagram

### Tx Mode



### Rx Mode



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## Measuring Diagram (cont.)

### Tx Mode:

Port1: Antenna Port  
Port1 Terminate impedance: 50ohm  
Ports 2 and 3: Rx Balanced Port  
Port 2 and 3 Terminate impedance:  
1/2 x (the loading impedance ZIC,RX  
off of Si4455)  
Port4: Tx Port  
Port4 Terminate impedance:  
Complex conjugate to ZIC,TX on of  
Si4455

IL = S41  
RL = S11 / S44

### RXMode:

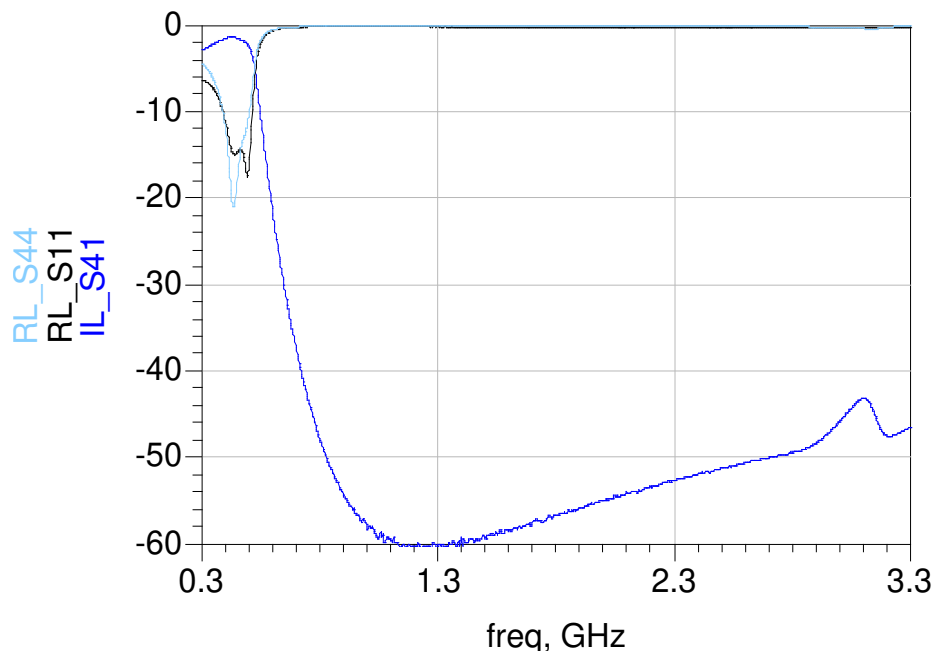
Port 1: Antenna Port  
Port1 Terminate impedance: 50ohm  
Ports 2 and 3: Rx Balanced Port  
Port 2 and 3 Terminate impedance:  
Complex conjugate to 1/2 x (Balance  
impedance of ZIC,RX on of Si4455)  
Port4: Tx Port  
Port4 Terminate impedance: The loading  
impedance ZIC,TX off of Si4455

IL=Sds21  
RL=Sss11 / Sdd22  
Amp\_balance = dB(S(3,1)/S(2,1))

## Typical Electrical Characteristics (T=25oC)

### TX mode:

#### Insertion and Return Loss



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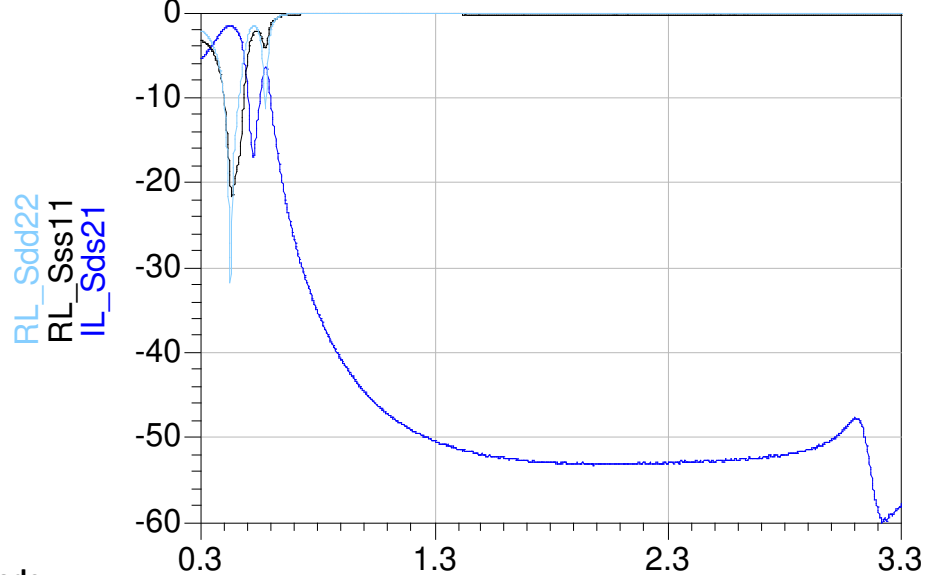
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## Typical Electrical Characteristics (T=25oC)

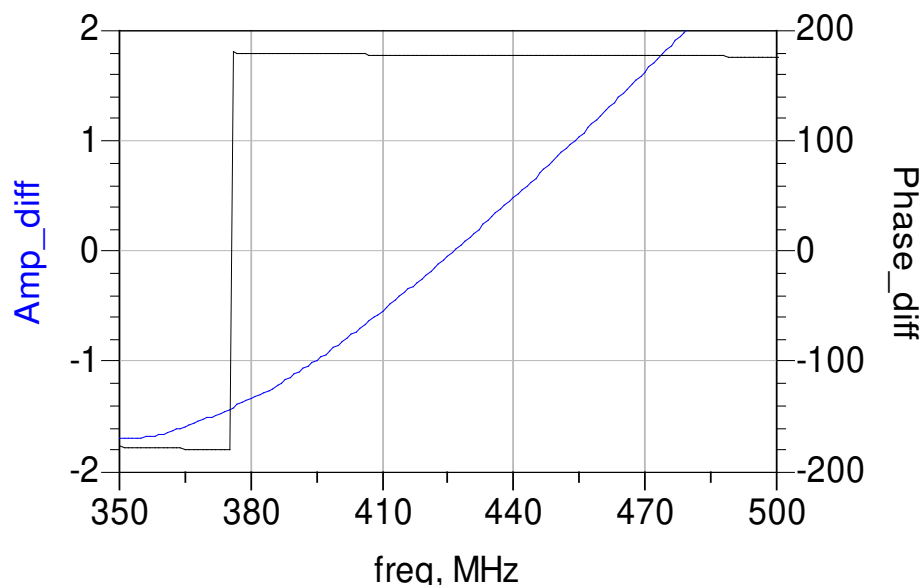
RX mode:

Insertion and Return Loss



RX mode:

Amplitude and Phase Balance



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## Application Notes, Layout Files, and more

[www.johansontechnology.com/silabs](http://www.johansontechnology.com/silabs)

## RoHS Compliance

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

## Soldering Information

[www.johansontechnology.com/ipcsoldering-profile](http://www.johansontechnology.com/ipcsoldering-profile)

## 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)

## MSL Info

[www.johansontechnology.com/technical-notes/msl-rating](http://www.johansontechnology.com/technical-notes/msl-rating)

## Recommended Storage Condition and Max Shelf Life

[www.johansontechnology.com/recommended-storage-conditions](http://www.johansontechnology.com/recommended-storage-conditions)

## Packaging information

[www.johansontechnology.com/tape-reel-packaging](http://www.johansontechnology.com/tape-reel-packaging)

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