


# "High Frequency Ceramic Solutions"

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

P/N 0433BM41A0019

Detail Specification: 5/1/2015

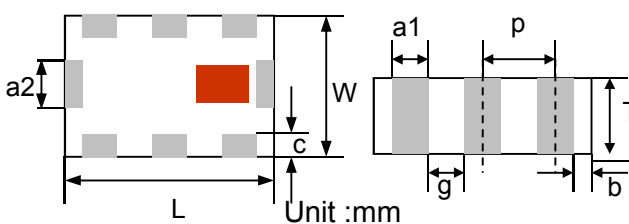
Page 1 of 5

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

Download the gerber files at: [www.johansontechnology.com/silabs](http://www.johansontechnology.com/silabs)

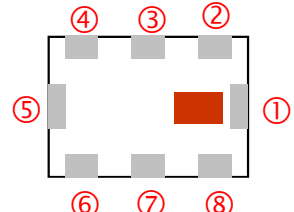
Part Number Explanation				
P/N Suffix	Packing Style	Bulk	Suffix = S	eg. 0433BM41A0019S
		T & R	Suffix = E	eg. 0433BM41A0019E
	Termination style	Ni/Sn	Suffix = None	eg. 0433BM41A0019(E or S)

Mechanical Dimensions		
	In	mm
L	0.126 ± 0.008	3.20 ± 0.20
W	0.098 ± 0.008	2.50 ± 0.20
T	0.059 ± 0.006	1.50 ± 0.15
a1	0.022 ± 0.006	0.55 ± 0.15
a2	0.028 ± 0.008	0.70 ± 0.20
b	0.004 min.	0.1 min.
c	0.012 + 0.008	0.30 + 0.20
g	0.018 + 0.006	0.45 + 0.15
p	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: [www.johansontechnology.com/SiLabs](http://www.johansontechnology.com/SiLabs)



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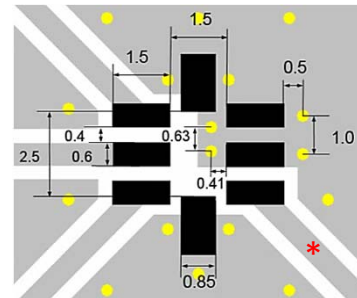
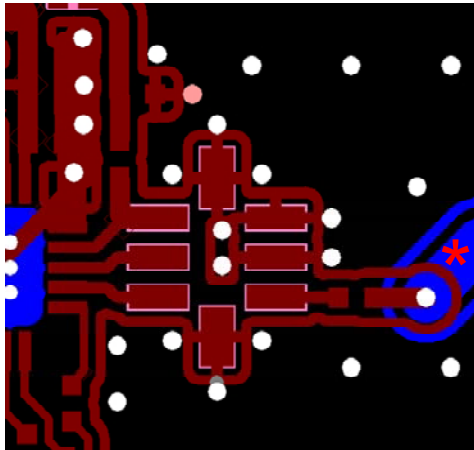
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Page 2 of 5

## Mounting Considerations

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

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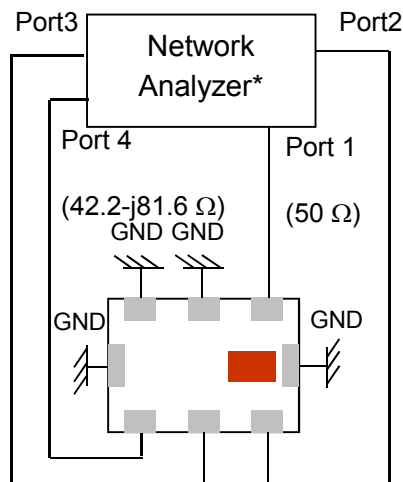


- Solder Resist
- Land
- Through-hole ( $\phi$  0.3)

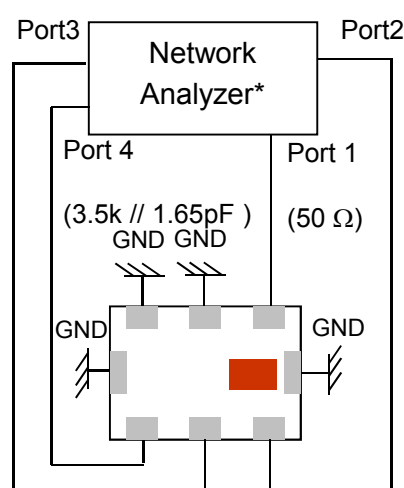
Do you need the layout/gerber files of the above? Go to: [www.johansontechnology.com/silabs](http://www.johansontechnology.com/silabs) or send us a message at: <http://www.johansontechnology.com/component/techquestion>

## Measuring Diagram

### Tx Mode



### Rx Mode



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Page 3 of 5

## 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

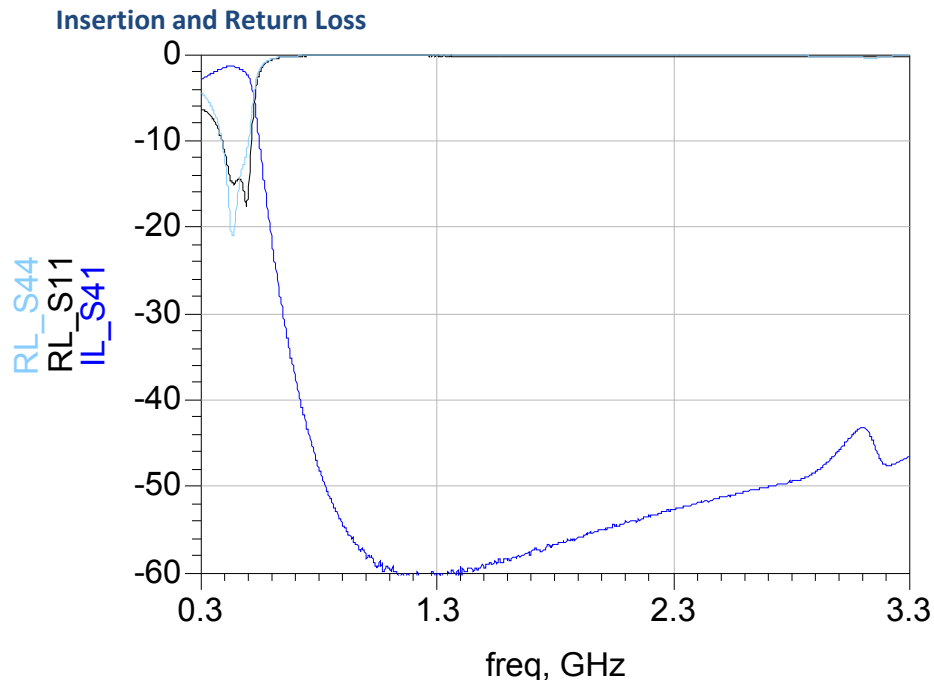
### RXMode:

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:



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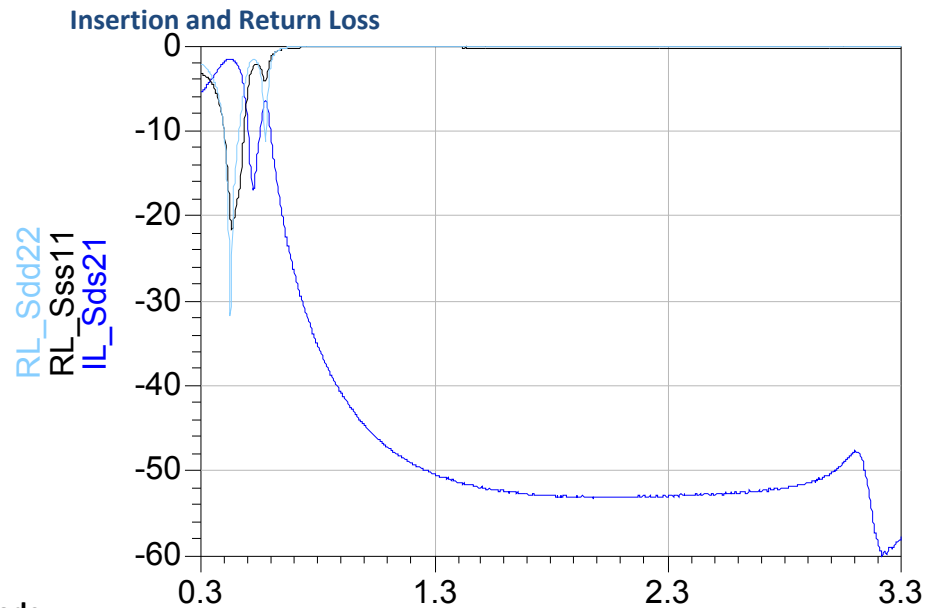
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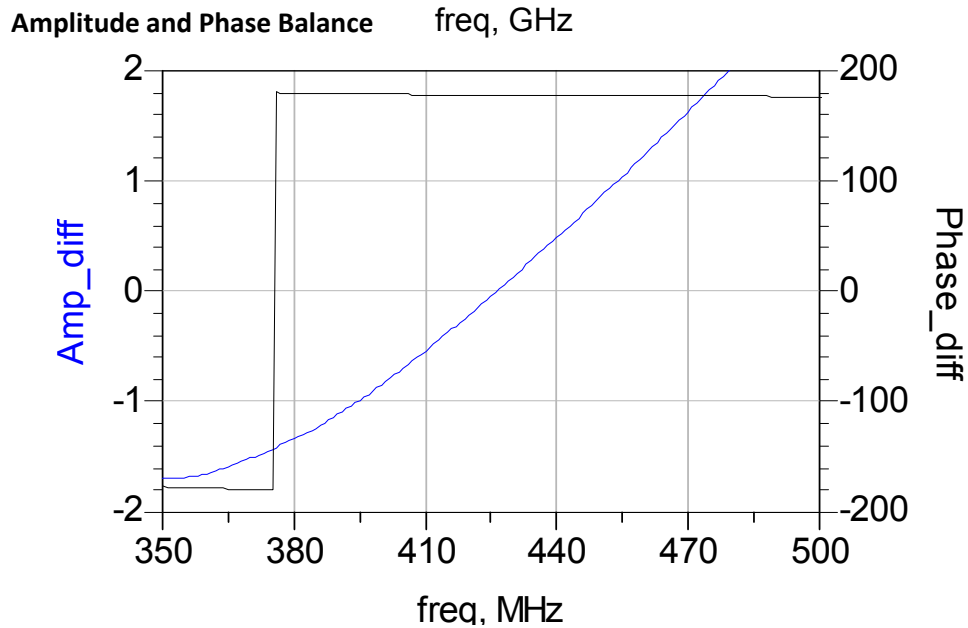
Page 4 of 5

## Typical Electrical Characteristics (T=25oC)

RX mode:



RX mode:



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Page 5 of 5

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

## Recommended Storage Condition and Max Shelf Life

[www.johansontechnology.com/ipcstorage-shelflife](http://www.johansontechnology.com/ipcstorage-shelflife)

## Packaging information

[www.johansontechnology.com/ipcpackaging.html](http://www.johansontechnology.com/ipcpackaging.html)

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