

# High Frequency Ceramic Solutions

**862 - 928MHz Integrated Impedance-matched Balun Filter for Analog Devices, Inc. ADF7023, ADF7023-J, and ADF7024**

**P/N: 0900PC15F0030**

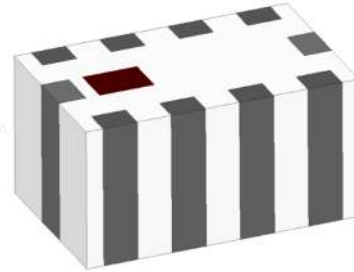
Detail Specification: 1/4/2018

Page 1 of 6

Do you need a small sub-GHz antenna? Go to: [www.johansontechnology.com/antennas](http://www.johansontechnology.com/antennas)

## General Specifications

<b>Part Number</b>	0900PC15F0030
<b>Frequency (MHz)</b>	862 - 928
<b>Unbalanced Impedance (<math>\Omega</math>)</b>	50
<b>Balanced Impedance (<math>\Omega</math>)</b>	Impedance matched to Analog Devices, Inc. ADF7023, ADF7023-J, ADF7024
<b>Insertion Loss (dB)</b>	1.8 typ (2.3 max.)
<b>Return Loss (dB)</b>	10 min.
<b>Phase Balance (deg)</b>	180 $\pm$ 15
<b>Amplitude Difference (dB)</b>	2.0 max.
<b>Attenuation (dB @MHz)</b>	33 min. @1736 - 1856 40 min. @2604 - 2784 40 min. @3472 - 3712 35 min. @4340 - 4640
<b>Power Capacity (W)</b>	3 max. CW
<b>Operating Temperature</b>	-40°C to +85°C
<b>Quantity/Reel</b>	4,000



Analog Devices, Inc. Approved!

<b>Storage Temperature Range</b>	-40°C to +85°C
<b>Storage Period</b>	18 months max
<b>Recommended Storage Conditions for unused T&amp;R product</b>	+5 ~ +35 °C, Humidity 45~75%RH, 18 mos. max

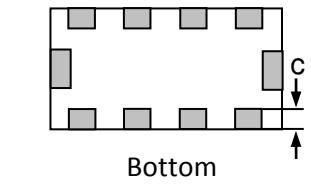
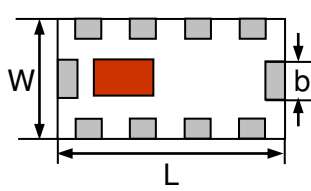
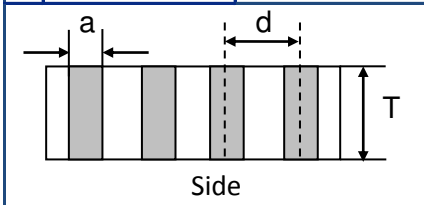
For more Analog Devices, Inc. matched balun-filters, go to: [www.johansontechnology.com/analog](http://www.johansontechnology.com/analog)

## Part Number Explanation

P/N Suffix	Packing Style	Bulk	Suffix = S	eg. 0900PC15F0030S
		T & R	Suffix = E	eg. 0900PC15F0030E
		100% Tin	Suffix = None	eg. 0900PC15F0030(E or S)

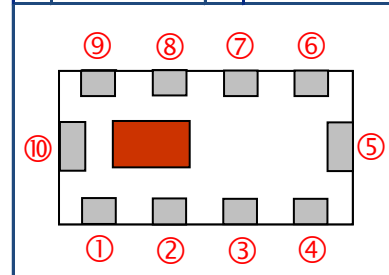
## Mechanical Dimensions

	In	mm
<b>L</b>	0.079 $\pm$ 0.008	2.00 $\pm$ 0.2
<b>W</b>	0.049 $\pm$ 0.008	1.25 $\pm$ 0.2
<b>T</b>	0.039 max.	1.00 max.
<b>a</b>	0.010 $\pm$ 0.004	0.25 $\pm$ 0.1
<b>b</b>	0.012 $\pm$ 0.006	0.30 $\pm$ 0.2
<b>c</b>	0.008+0.004/-0.006	0.20 +0.1/-0.15
<b>d</b>	0.020 $\pm$ 0.004	0.50 $\pm$ 0.1



## Terminal Configuration

No.	Function	No.	Function
1	GND	6	TX
2	GND	7	RX_N
3	ANT	8	RX_P
4	GND	9	DC Feed or GND
5	GND	10	GND



Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver. 1.0

2017 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

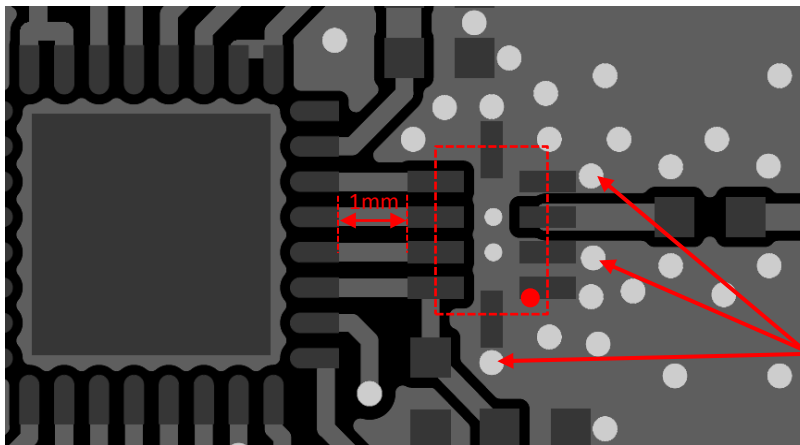
862 - 928MHz Integrated Impedance-matched Balun Filter for Analog  
Devices, Inc. ADF7023, ADF7023-J, and ADF7024

P/N: 0900PC15F0030

Detail Specification: 1/4/2018

Page 2 of 6

## Pad-Soldermask Guidelines (with DC Feed)



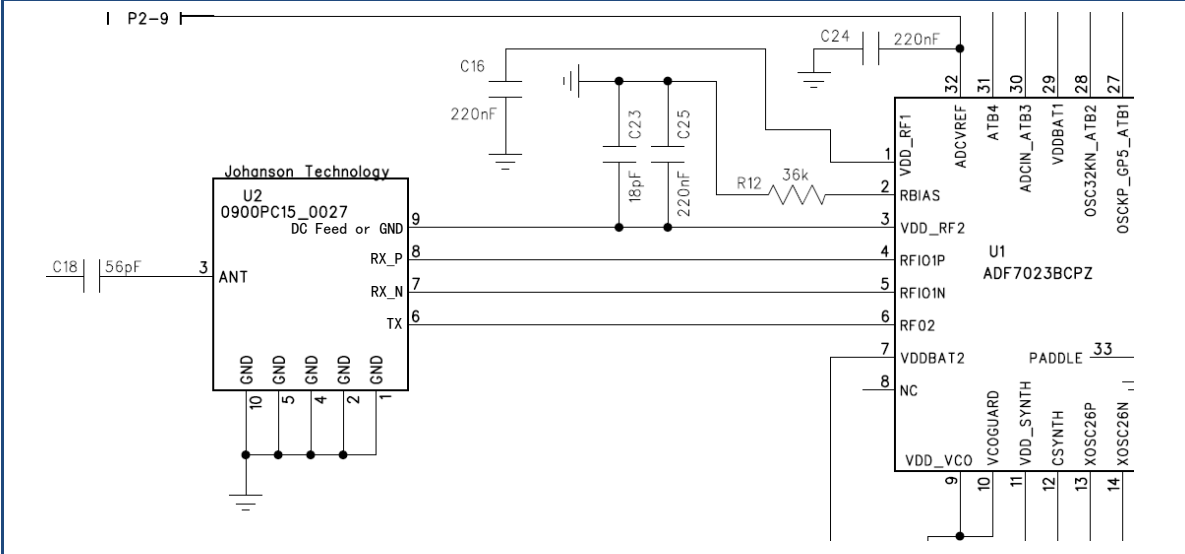
- GND Pads
- Solder Pads
- GND via ( $\phi$  0.20&0.35)

GND vias are crucial for filter harmonic attenuation

For reference design package and PCB CAD files, please contact us at:

[www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question)

## PCB Reference Design Schematic



Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver. 1.0

2017 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

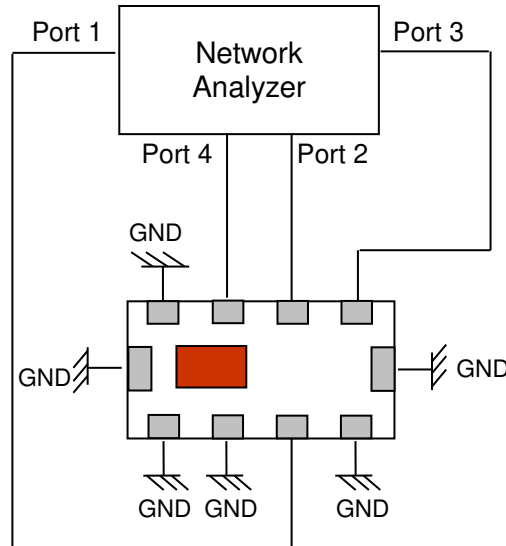
**862 - 928MHz Integrated Impedance-matched Balun Filter for Analog Devices, Inc. ADF7023, ADF7023-J, and ADF7024**

**P/N: 0900PC15F0030**

Detail Specification: 1/4/2018

Page 3 of 6

## Measuring Diagram



### Tx mode:

Port 1 Load Impedance :  $50\Omega$

Port 3 Load impedance: Complex conjugate to  $Z_{IC,TX\ on}$  of ADF7023, ADF7023-J, ADF7024

Port 2 and 4 Load impedance:  $Z_{IC,RX\ off}$  of ADF7023, ADF7023-J, ADF7024

$$IL = S_{31}$$

$$RL = S_{11} / S_{33}$$

### Rx mode:

Port 1 Load impedance:  $50\Omega$

Port 2 and 4 Load impedance: Complex conjugate to  $Z_{IC,RX\ on}$  of ADI ADF7023, ADF7023-J ADF7024

Port 3 Load impedance:  $Z_{IC,TX\ off}$  of ADI ADF7023, ADF7023-J, ADF7024

$$IL = S_{DS21}$$

$$RL = S_{SS11} / S_{DD22}$$

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

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

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver. 1.0

2017 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

862 - 928MHz Integrated Impedance-matched Balun Filter for Analog  
Devices, Inc. ADF7023, ADF7023-J, and ADF7024

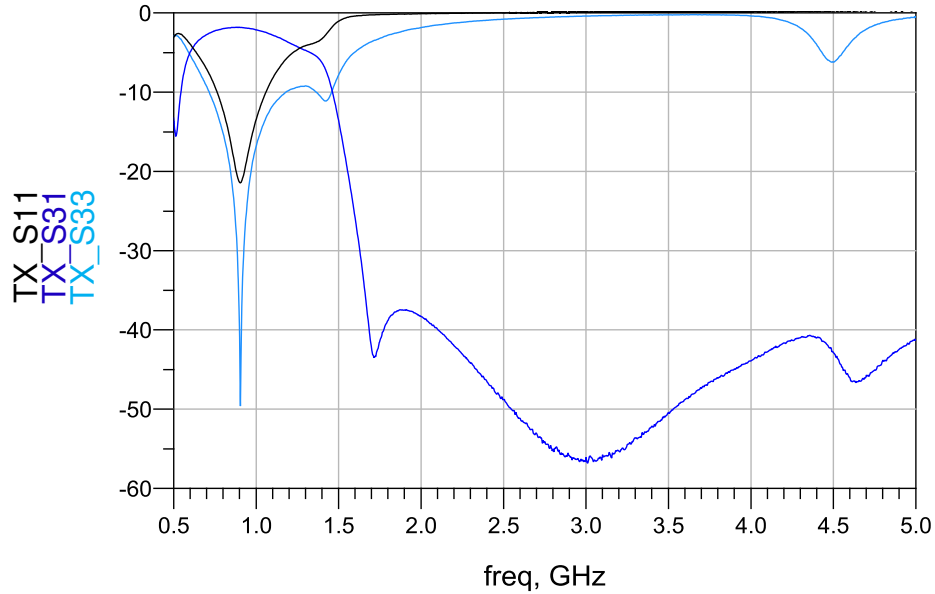
P/N: 0900PC15F0030

Detail Specification: 1/4/2018

Page 4 of 6

## Typical Electrical Characteristics (T=25°C)

### Transmit Mode Insertion Loss, Return Loss, and Attenuation



If you would like the measured s-parameters, contact us at:

[www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question)

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



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

4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver. 1.0

2017 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

862 - 928MHz Integrated Impedance-matched Balun Filter for Analog  
Devices, Inc. ADF7023, ADF7023-J, and ADF7024

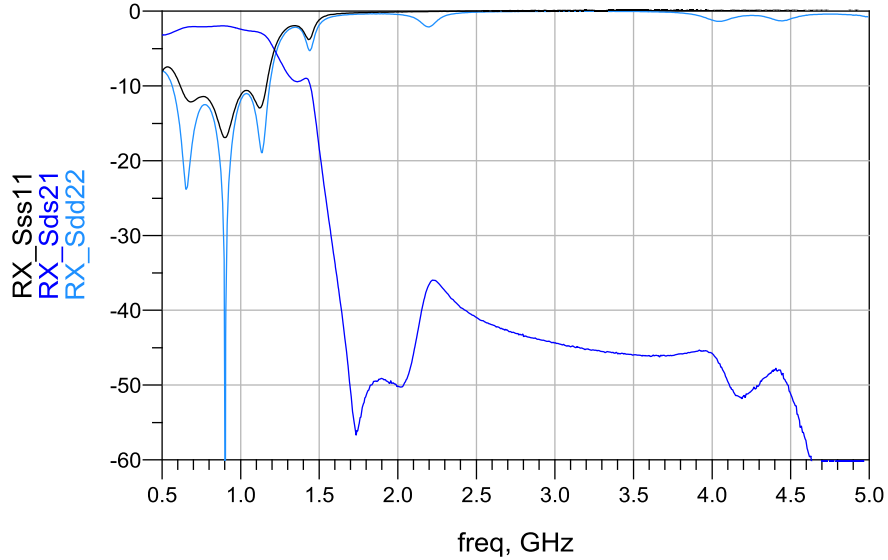
P/N: 0900PC15F0030

Detail Specification: 1/4/2018

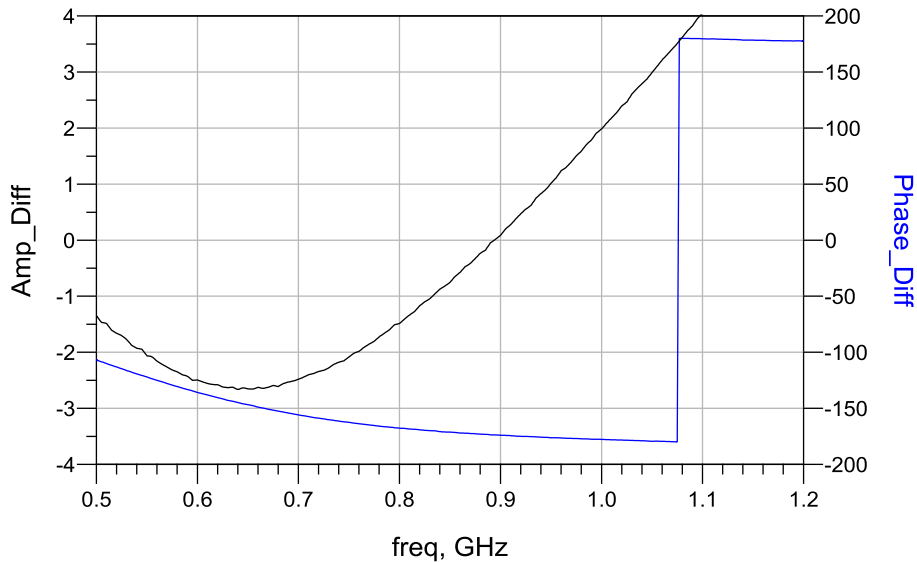
Page 5 of 6

## Typical Electrical Characteristics (T=25°C)

### Receive Mode Insertion Loss, Return Loss, and Attenuation



### Receive Mode Phase Balance, Amplitude Difference



Johanson Technology, Inc. reserves the right to make design changes without notice.  
All sales are subject to Johanson Technology, Inc. terms and conditions.



[www.johansontechnology.com](http://www.johansontechnology.com)  
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821  
Ver. 1.0 2017 Johanson Technology, Inc. All Rights Reserved

# High Frequency Ceramic Solutions

862 - 928MHz Integrated Impedance-matched Balun Filter for Analog  
Devices, Inc. ADF7023, ADF7023-J, and ADF7024

P/N: 0900PC15F0030

Detail Specification: 1/4/2018

Page 6 of 6

## Application Notes, Layout Files, and more

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

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

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

## RoHS Compliance

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

## 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/ipc-antenna-services](http://www.johansontechnology.com/ipc-antenna-services)

## MSL Info

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

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

Contact us at:

[www.johansontechnology.com/ask-a-question](http://www.johansontechnology.com/ask-a-question)

Johanson Technology, Inc. reserves the right to make design changes without notice.

All sales are subject to Johanson Technology, Inc. terms and conditions.



[www.johansontechnology.com](http://www.johansontechnology.com)  
4001 Calle Tecate • Camarillo, CA 93012 • TEL 805.389.1166 FAX 805.389.1821

Ver. 1.0

2017 Johanson Technology, Inc. All Rights Reserved