

# High Frequency Ceramic Solutions

Miniature Impedance-Matched Filter for Semtech SX1261, SX1262, LLCC68 for 868MHz and 915MHz. Integrated Passive Component (IPC)

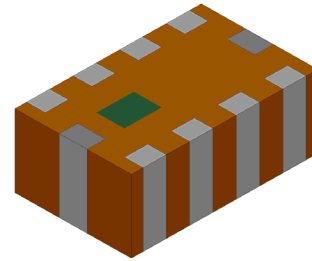
P/N 0900FM15K0039

Detail Specification: 3/23/2022

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## General Specifications

<b>Part Number</b>	0900FM15K0039	
<b>Frequency (MHz)</b>	<b>Tx (862 - 928)</b>	<b>Rx (862 - 928)</b>
<b>Insertion loss (dB)</b>	1.1 Typ. (1.4 max.)	1.5 Typ. (2.0 max.)
<b>Return Loss (dB)</b>	10 min.	
<b>Chipset-side Impedance (<math>\Omega</math>)</b>	Conjugate match to Semtech SX1261, SX1262, and LLCC68	
<b>Antenna-side Impedance (<math>\Omega</math>)</b>	50	
<b>Attenuation (dB)</b>	20 min. @ 2Fo 40 min. @ 3Fo 40 min. @ 4Fo 30 min. @ 5Fo 20 min. @ 6Fo 15 min. @ 7Fo	



For the full app note and layout files, go to:  
<https://www.johansontechnology.com/semtech>

<b>Recommended Storage Conditions unused Product on T&amp;R*</b>	+5 to +35°C	<b>Power Capacity (W)</b>	2 max. (CW)
	Humidity: 45-75%RH	<b>Operating Temperature</b>	-40 to +85°C
	18 months max. in vacuum sealed bag 1 week (cumulatively) after opening.	<b>Reel Quantity (pcs/reel)</b>	4,000

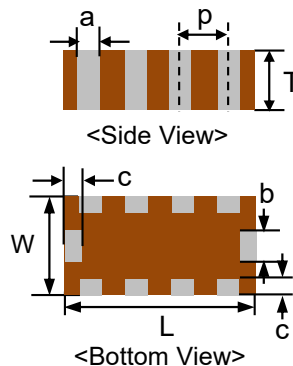
fa

## Orderable Part Number Explanation

P/N Suffix	Packaging Style	Bulk (loose pcs.)	Suffix = S	E.g. 0900FM15K0039S
		T & R	Suffix = E	E.g. 0900FM15K0039E
	Termination Style	Ag	Suffix = None	E.g. 0900FM15K0039(E or S)

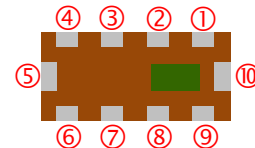
## Mechanical Dimensions

	In	mm
<b>L</b>	0.079 ± 0.006	2.00 ± 0.15
<b>W</b>	0.049 ± 0.004	1.25 ± 0.10
<b>T</b>	0.031 ± 0.004	0.80 ± 0.10
<b>a</b>	0.010 ± 0.004	0.25 ± 0.10
<b>b</b>	0.012 ± 0.006	0.30 ± 0.15
<b>c</b>	0.008 +0.004/-0.006	0.20 +0.1/-0.15
<b>p</b>	0.020 ± 0.004	0.50 ± 0.10



## Terminal Configuration

Pin		Pin	
1	RFO / VR_PA	6	SW_RFI (Ant In)
2	GND	7	GND
3	RFI_N	8	SW_RFO (Ant Out)
4	RFI_P	9	GND
5	GND	10	GND



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Ver. 1.0

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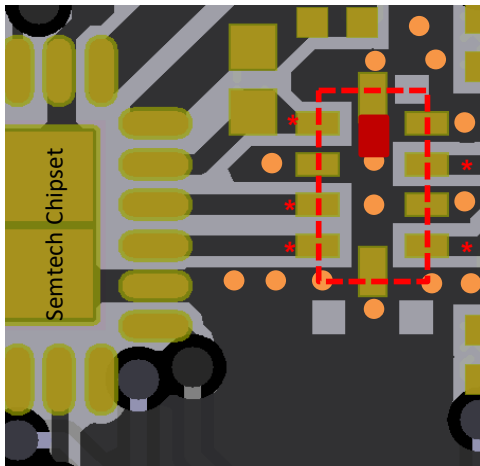
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## Reference Layout



-  Johanson IPC
-  Solder Resist
-  Land
-  GND Via ( $\phi$  0.2mm)

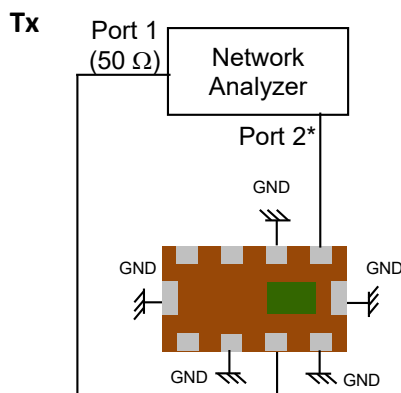
**NOTE: GND via placement is crucial to the harmonic attenuation capability of the filter.**

For gerber/layout files or a free layout review, contact our RF engineers directly at:  
<https://www.johansontechnology.com/ask-a-question>

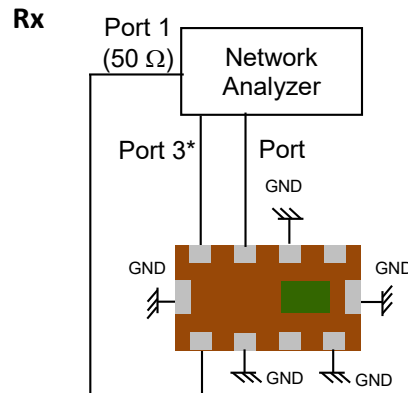
For App Notes, Reference Designs, and samples go to:  
<https://www.johansontechnology.com/semtech>

\*Line width should be designed to maintain 50 $\Omega$  characteristic impedance, depending on PCB material and thickness.

## Measurement Schematic (For Mass Production and Passive RF characteristics)



Port 1: Antenna Port  
 Port 1 Terminate impedance: 50 $\Omega$   
 Port 2: Tx Port  
 \*Port 2 Terminate impedance:  
 Complex conjugate match to RFO impedance



Port 1: Antenna Port  
 Port 1 Terminate impedance: 50 $\Omega$   
 Ports 2 and 3: Rx Balanced Port  
 \*Port 2 and 3 Terminate impedance:  
 Complex conjugate match to RFI balanced impedance/2

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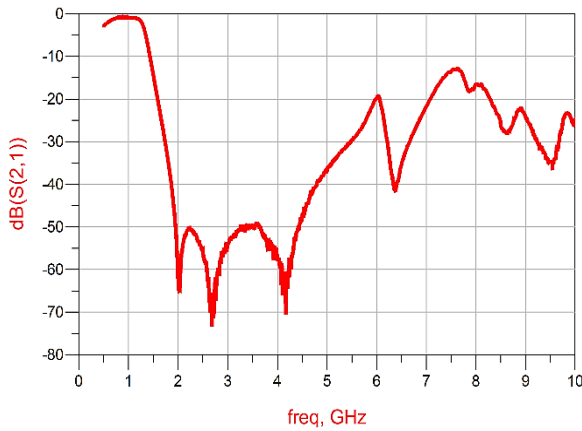
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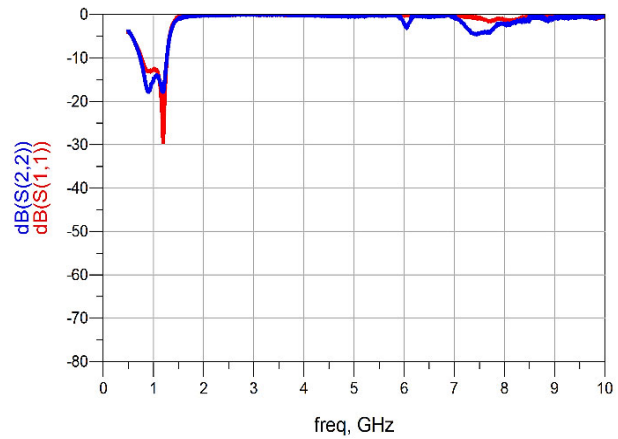
## Typical Electrical Characteristics (T=25°C)

**Tx mode:**

**Insertion Loss**

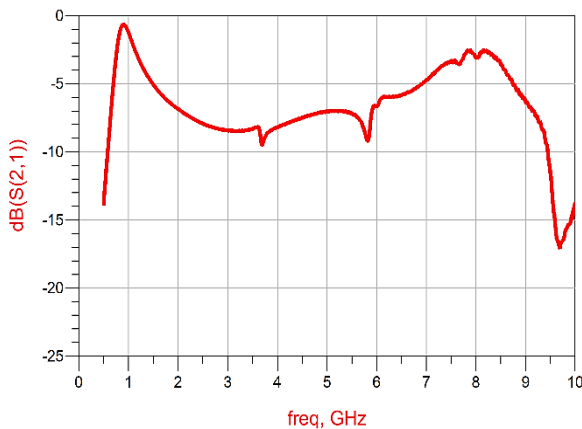


**Return Loss**

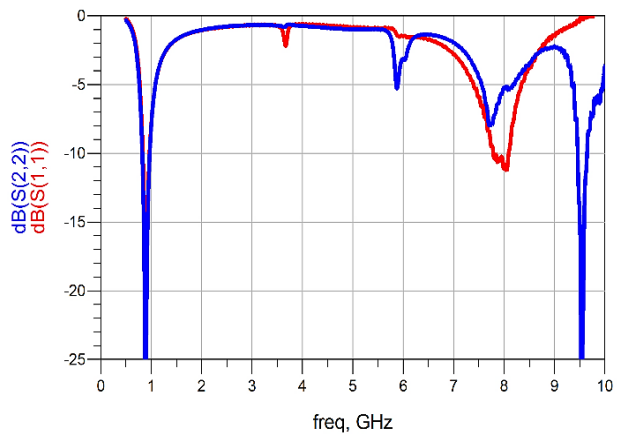


**Rx mode:**

**Insertion Loss**



**Return Loss**



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## Application Notes, Layout Files, and more

<https://www.johansontechnology.com/semtech>

## Packaging information

<https://www.johansontechnology.com/tape-reel-packaging>

## Soldering Information

<https://www.johansontechnology.com/ipcsoldering-profile>

## Silver Termination Information

<https://www.johansontechnology.com/silverleads-profile>

## MSL Info

<https://www.johansontechnology.com/msl-rating>

## Recommended Storage Condition and Max Shelf Life

<https://www.johansontechnology.com/recommended-storage-conditions>

## RoHS Compliance

<https://www.johansontechnology.com/technical-notes/rohs-compliance>

## Antenna layout and tuning techniques

<https://www.johansontechnology.com/tuning>

Johanson uses 6/6 RoHS Green Low-Temperature-Co-fired-Ceramic (LTCC) integrated passive technology in a monolithic structure. This component is 100% RF Tested, making it a more reliable system, impedance controlled environment, consistent-guaranteed RF performance in a very small RF front end-solution compared to an L/C discrete solution.

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