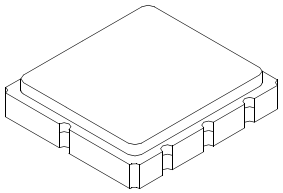
RF3181E

916.5 MHz SAW Filter

- ***Front-end Filter for 916.5 MHz Wireless Receivers***
- ***Low-loss, Coupled-resonator Quartz Design***
- ***Simple External Impedance Matching***
- ***Complies with Directive 2002/95/EC (RoHS)***

The RF3181E is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 916.5 MHz receivers. Receiver designs using this filter include superhet with 10.7 MHz IF, direct conversion and superregen. Typical applications of these receivers are wireless remote-control and security, data telemetry, and meter reading devices operating in the USA under FCC Part 15 and in Canada under DoC RSS-210.

This coupled-resonator filter (CRF) uses selective null placement to provide suppression, typically greater than 40 dB, of the LO and image spurious responses of superhet receivers with 10.7 MHz IF. RFM's advanced SAW design and fabrication technology is utilized to achieve high performance and very low loss with simple external impedance matching (not included).



SM3030-6 Case
3.0 x 3.0

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C	Absolute Frequency	f_c	1, 2, 3		916.5		MHz
	Tolerance from 916.50 MHz	Δf_c					kHz
Insertion Loss		IL	1, 3		2.7	4.0	dB
3 dB Bandwidth		BW_3	1, 3	500	750	900	kHz
Rejection relative to Min IL:	10 to 895 MHz		1, 3	40	50		dB
	895 to 906 MHz			30	35		
	906 to 910 MHz			25	30		
	922 to 925 MHz			40	50		
	925 to 933 MHz			15	20		
	933 to 940 MHz			30	35		
	940 to 1100 MHz			35	40		
Temperature	Freq. Temp. Coefficient	FTC	3, 4		0.032		ppm/ °C^2
Frequency Aging	Absolute Value during the First Year	|fA|	5		≤10		ppm/yr
Impedance @ f_C	Input $Z_{IN} = R_{IN}/C_{IN}$	Z_{IN}	1	54.2kΩ || 1.44pF			
	Output $Z_{OUT} = R_{OUT}/C_{OUT}$	Z_{OUT}		52.8kΩ || 1.30pF			
Lid Symbolization (in addition to Lot and/or Date Codes)		698 || YWWS					
Standard Reel Quantity	7 Inch Reel		9	500 Pieces/Reel			
Standard Reel Quantity	13 Inch Reel			3000 Pieces/Reel			

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

1. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture which is connected to a 50 Ω test system with VSWR ≤ 1.2:1. The test fixture L and C are adjusted for minimum insertion loss at the filter center frequency, f_c. Note that insertion loss and bandwidth and passband shape are dependent on the impedance matching component values and quality.
2. The frequency f_c is defined as the midpoint between the 3dB frequencies.
3. Where noted specifications apply over the entire specified operating temperature range of -40 to 90 °C.
4. The turnover temperature, T_O, is the temperature of maximum (or turnover) frequency, f_o. The nominal frequency at any case temperature, T_c, may be calculated from: $f = f_o [1 - FTC (T_o - T_c)^2]$.
5. Frequency aging is the change in fc with time and is specified at +65 °C or less. Aging may exceed the specification for prolonged temperatures above +65°C. Typically, aging is greatest the first year after manufacture, decreasing significantly in subsequent years.
6. The design, manufacturing process, and specifications of this device are subject to change.
7. One or more of the following U.S. Patents apply: 4,54,488, 4,616,197, and others pending.
8. All equipment designs utilizing this product must be approved by the appropriate government agency prior to manufacture or sale.
9. Tape and Reel Standard for ANSI/EIA 481.

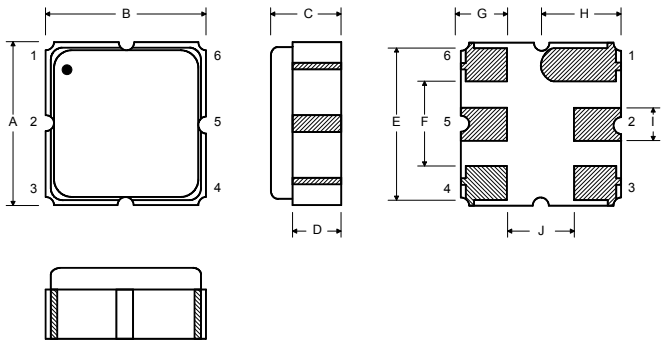
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Absolute Maximum Ratings

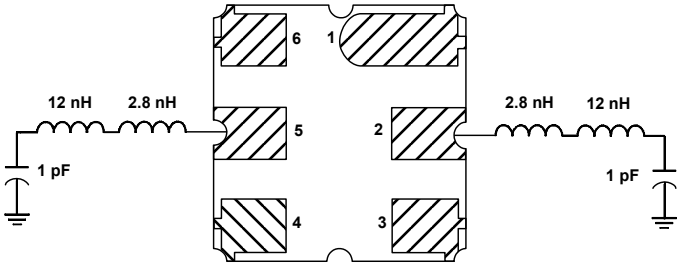
Rating	Value	Units
Input Power Level	14	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +125	°C
Operable Temperature Range	-40 to +125	°C
Soldering Temperature, 10 seconds / 5 cycles Maximum	260	°C

Electrical Connections

Pin	Connection
1	Ground
2	Input
3	Ground
4	Ground
5	Output
6	Ground



Matching Circuit to 50Ω

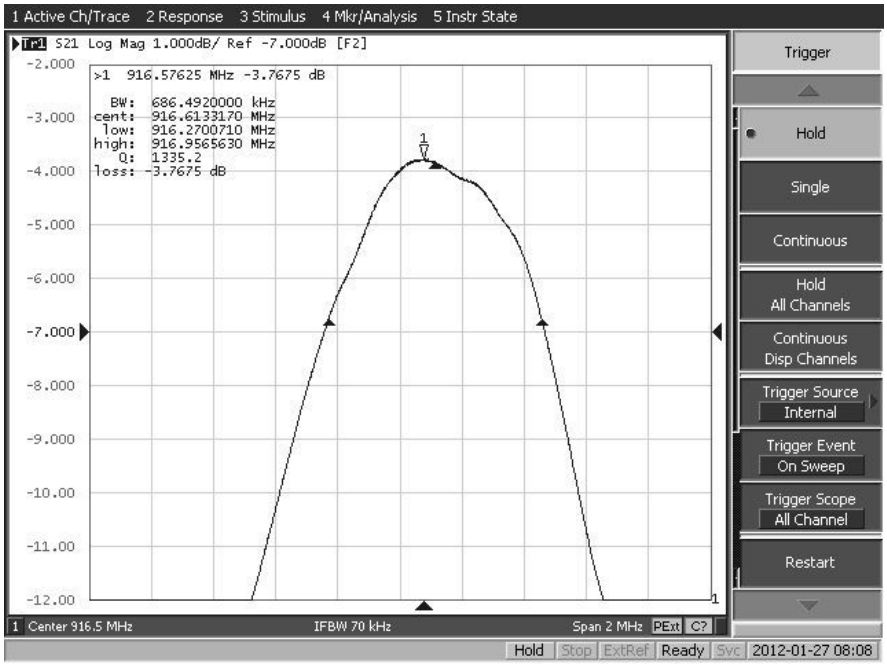


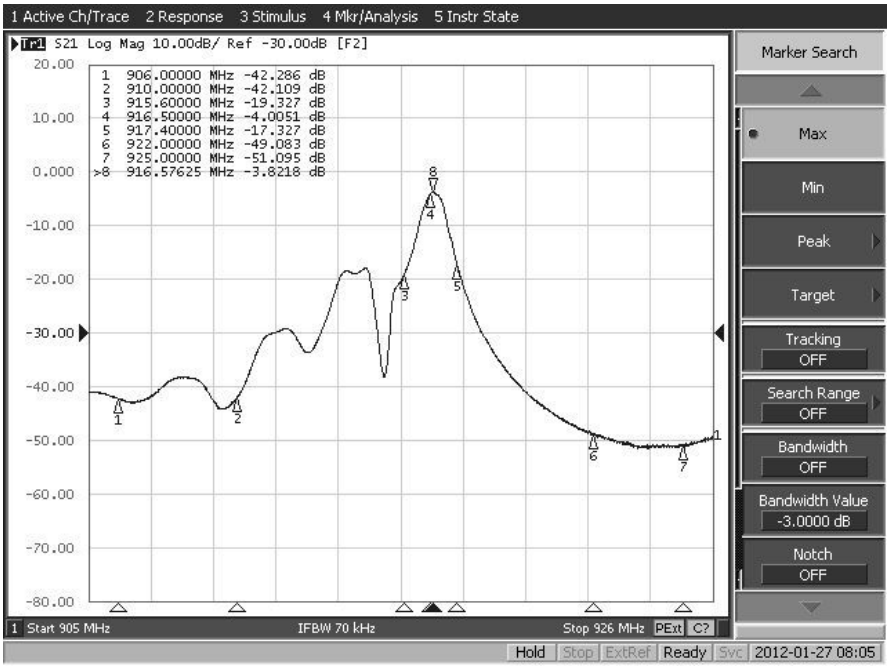
Case Dimensions

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.0	3.13	0.113	0.118	0.123
B	2.87	3.0	3.13	0.113	0.118	0.123
C	1.12	1.25	1.38	0.044	0.049	0.054
D	0.77	0.90	1.03	0.030	0.035	0.040
E	2.67	2.80	2.93	0.105	0.110	0.115
F	1.47	1.6	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.5	1.63	0.054	0.059	0.064
I	0.47	0.60	0.73	0.019	0.024	0.029
J	1.17	1.30	1.43	0.046	0.051	0.056

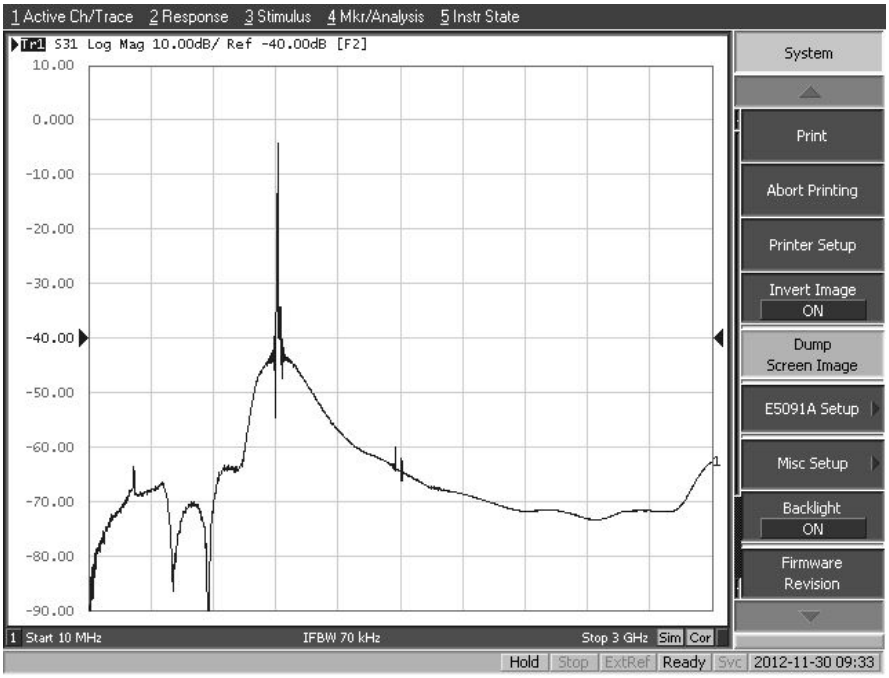
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Filter Response Plots

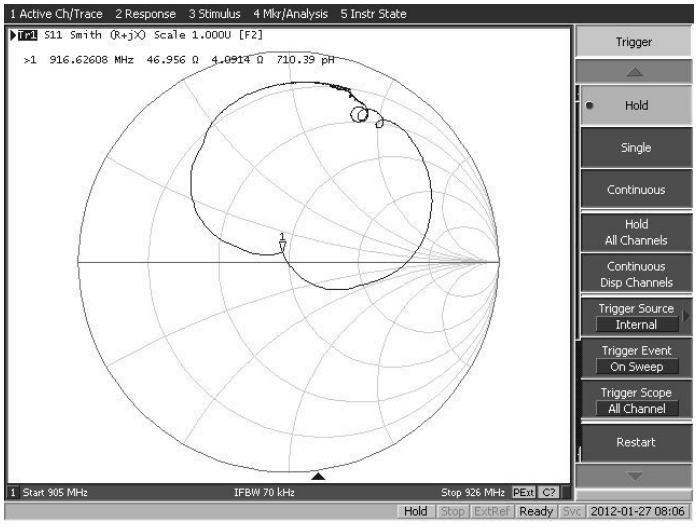


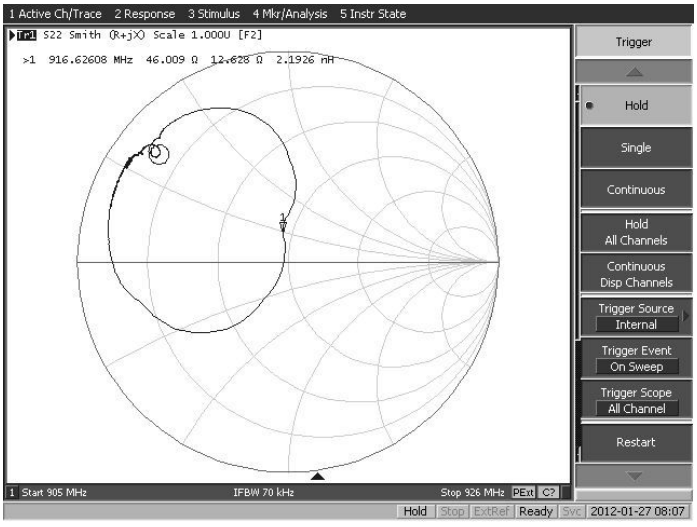


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Filter Impedance Plots





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