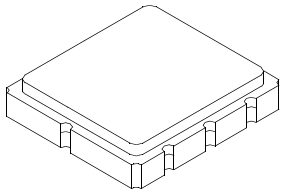
RF1404E

433.92 MHz SAW Filter

- ***Ideal Front-End Filter for European Wireless Receivers***
- ***Low-Loss, Coupled-Resonator Quartz Design***
- ***Simple External Impedance Matching***
- ***RoHS Compliant*** [10]
- ***Complies with Directive 2002/95/EC (RoHS)***

The RF1404E is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 433.92 MHz receivers. Receiver designs using this filter include superhet with 10.7 MHz or 500 kHz IF, direct conversion and superregen. Typical applications of these receivers are wireless remote-control and security devices operating in Europe under ETSI I-ETS 300 220.

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.



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		433.92		MHz
	Tolerance from MHz	Δf_c	1, 2		±100		kHz
Insertion Loss (433.760 - 434.080)		IL_{MIN}	1, 3		2.3	3.5	dB
3 dB Bandwidth		BW_3	1, 3	600	650	700	kHz
Rejection Attenuation: (relative to ILmin)	10 - 414 MHz		1, 3	42	45		dB
	414 - 424 MHz			27	35		
	424 - 431 MHz			16	20		
	431 - 432 MHz			8	10		
	435 - 437 MHz			19	25		
	437 - 441 MHz			25	32		
	441 - 445 MHz			15	20		
	445 - 1000 MHz			30	46		
Turnover Temperature		To	3, 4	10	25	40	°C
Temperature	Freq. Temp. Coefficient	FTC			0.032		ppm/ °C^2
Frequency Aging	Absolute Value during the First Year	|fA|	5		≤10		ppm/yr
Impedance @ fc	Input $Z_{IN} = R_{IN} \| C_{IN}$	Z_{IN}	1	150Ω // 3.4pF			
	Output $Z_{OUT} = R_{OUT} \| C_{OUT}$	Z_{OUT}		175Ω // 4.1pF			
Lid Symbolization (Y=year WW=week S=shift)		584 // YWWS					
Standard Reel Quantity	Reel Size 7 Inch		9	500 Pieces/Reel			
	Reel Size 13 Inch			3000 Pieces/Reel			

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

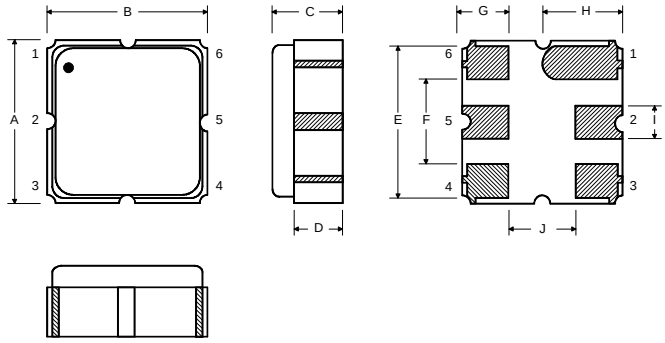
1. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture which is connected to a 50 Ω test system with VSWR ≤ 1.2:1. The test fixture L and C are adjusted for minimum insertion loss at the filter center frequency, f_c. Note that insertion loss and bandwidth 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°C to +105°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 Per ANSI / EIA 481.

Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	10	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +125	°C
Operable Temperature Range	-40 to +105	°C
Soldering Temperature (10 seconds/5 cycles Max..)	260	°C

Electrical Connections

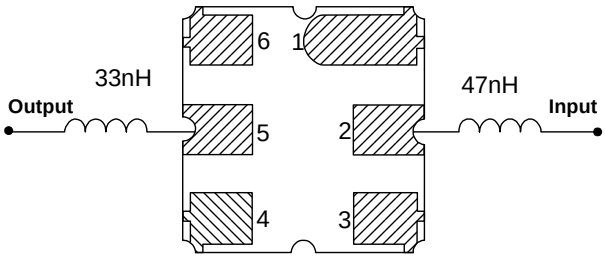
Pin	Connection
1	Input Return
2	Input
3	Ground
4	Output Return
5	Output
6	Ground

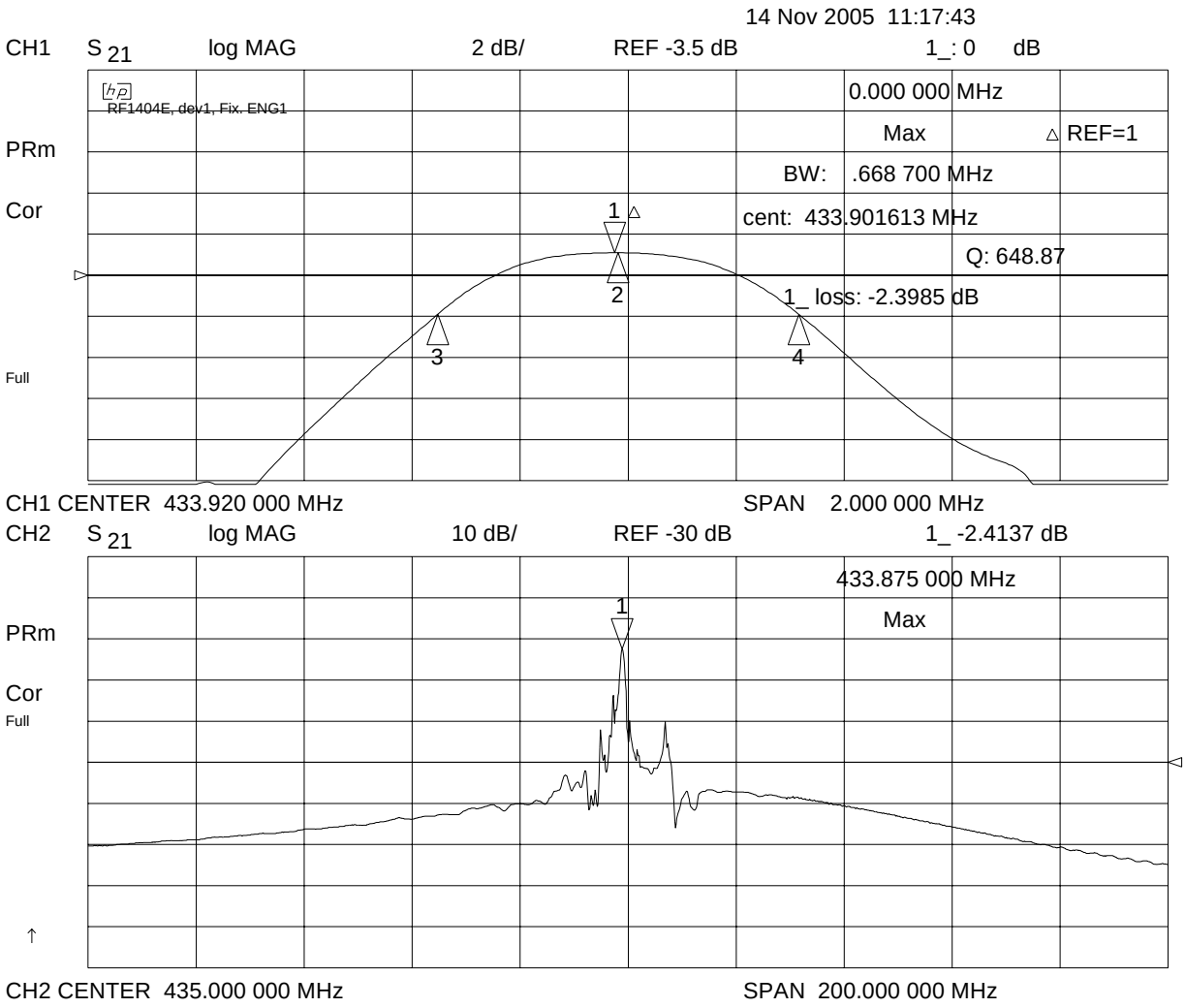


Case Dimensions

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

Matching Circuit to 50Ω





14 Nov 2005 11:18:38

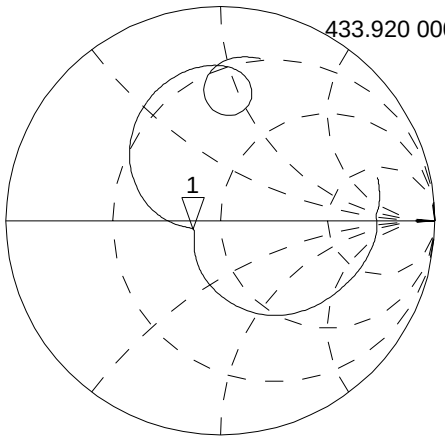
CH1 S 11 1 U FS 1_: 38.504 Ω -2.9746 Ω 123.3 pF

433.920 000 MHz

RF1404E, dev1, Fix. ENG1

PRm

Cor



Full

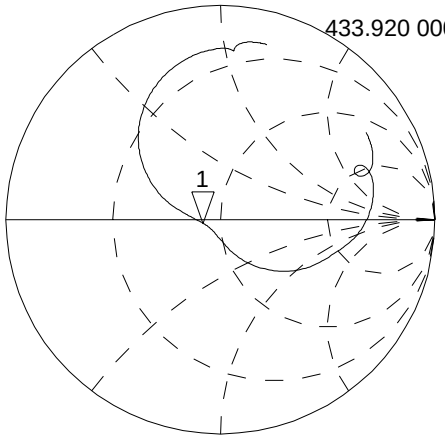
CH2 S 22 1 U FS 1_ 42.586 Ω -1.4609 Ω 251.06 pF

433.920 000 MHz

PRm

Cor

Full



CENTER 433.920 000 MHz SPAN 2.000 000 MHz