

Excellent Integrated System Limited

Stocking Distributor

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[Murata Electronics North America](#)

[RF1404D](#)

For any questions, you can email us directly:

sales@integrated-circuit.com



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

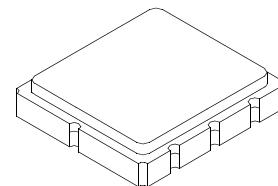


The RF1404D is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 433.92 MHz receivers. Receiver designs using this filter include superhet with 10.7 MHz or 500 kHz IF, direct conversion and superregen. Typical applications of these receivers 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.

RF1404D

**433.92 MHz
SAW Filter**



**SM3838-8 Case
3.8 x 3.8**

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C Absolute Frequency	f_c	1, 2, 3		433.92		MHz
Insertion Loss	IL_{MIN}	1, 3		1.6	2.5	dB
Passband Ripple (Relative to IL_{MIN}) $F_c \pm 200\text{kHz}$		1, 3		1.2	1.8	dB
3 dB Bandwidth	BW_3	1, 3	500	600	800	kHz
Rejection Attenuation: (relative to IL_{MIN})	10 - 414 MHz 414 - 424 MHz 424 - 431 MHz 431 - 432 MHz 432 - 433 MHz 434.92 - 442 MHz 442 - 550 MHz 550 - 1000 MHz	1, 3	50 45 30 18 12 11 35 50	55 50 34 22 17 14 38 55		dB
Temperature Freq. Temp. Coefficient	FTC			0.032		$\text{ppm}/^\circ\text{C}^2$
Frequency Aging	$ fA $	5		≤ 10		ppm/yr
Impedance @ f_c	$Z_{IN} = R_{IN} \parallel C_{IN}$ $Z_{OUT} = R_{OUT} \parallel C_{OUT}$	Z_{IN} Z_{OUT}	1	$2853\Omega \parallel 1.66\text{pf}$ $2411\Omega \parallel 1.73\text{pf}$		
Lid Symbolization (Y=year WW=week S=shift)				539 // YWWS		
Standard Reel Quantity	Reel Size 7 Inch Reel Size 13 Inch		9	500 Pieces/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 $50\ \Omega$ test system with $VSWR \leq 1.2:1$. 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 $+90^\circ\text{C}$.
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: $f = f_O [1 - FTC (T_c - T_O)]^2$.
5. Frequency aging is the change in f_c with time and is specified at $+65^\circ\text{C}$ or less. Aging may exceed the specification for prolonged temperatures above $+65^\circ\text{C}$. 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.
10. This product complies with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Absolute Maximum Ratings

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

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C Absolute Frequency	f_c	1, 2, 3		433.92		MHz
Insertion Loss	IL_{MIN}	1, 3		2.3	3.0	dB
Passband Ripple (Relative to IL_{MIN}) $F_c \pm 200\text{kHz}$		1, 3		1.2	2.0	dB
3 dB Bandwidth	BW_3	1, 3	500	600	800	kHz
Rejection Attenuation: (relative to IL_{MIN})	10 - 414 MHz 414 - 424 MHz 424 - 431 MHz 431 - 432 MHz 432 - 433 MHz 434.92 - 442 MHz 442 - 550 MHz 550 - 1000 MHz	1, 3	50 45 30 18 12 11 35 50	53 50 34 22 14 14 37 55		dB
Temperature Freq. Temp. Coefficient	FTC			0.032		$\text{ppm}/\text{°C}^2$
Frequency Aging	Absolute Value during the First Year	$ f_A $	5	≤ 10		ppm/yr
Impedance @ f_c	$Z_{IN} = R_{IN} C_{IN}$ $Z_{OUT} = R_{OUT} C_{OUT}$	Z_{IN} Z_{OUT}	1	$2853\Omega // 1.66\text{pf}$ $2411\Omega // 1.73\text{pf}$		
Lid Symbolization (Y=year WW=week S=shift)				539 // YWWS		
Standard Reel Quantity	Reel Size 7 Inch Reel Size 13 Inch		9	500 Pieces/Reel 3000 Pieces/Reel		



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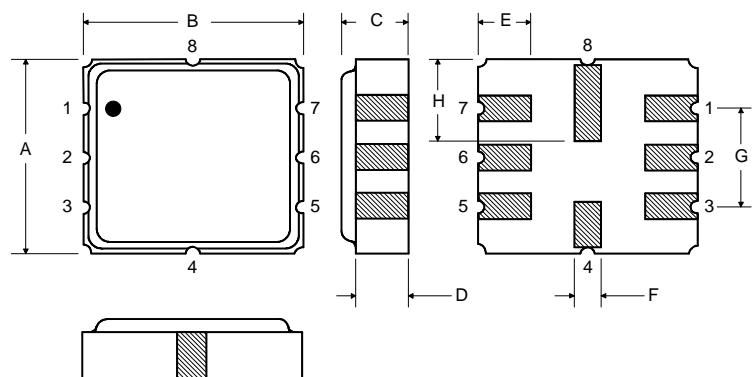
Notes:

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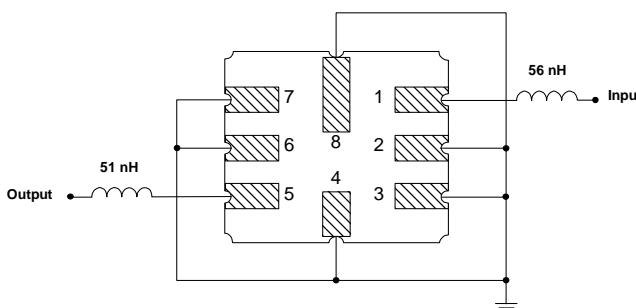
PRIMARY

Electrical Connections

Pin	Connection
1	Input
2	Input Ground
3	Ground
4	Case Ground
5	Output
6	Output Ground
7	Ground
8	Case Ground



Matching Circuit to 50Ω



Case Dimensions

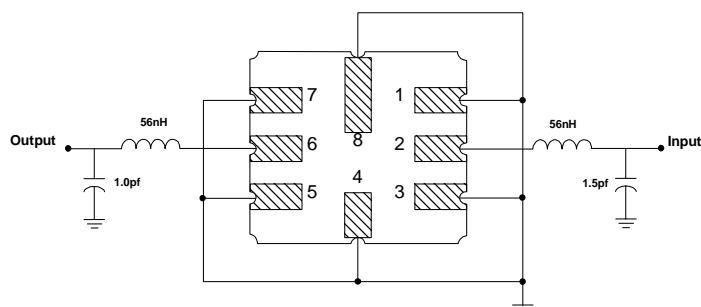
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	3.6	3.8	4.0	0.14	0.15	0.16
B	3.6	3.8	4.0	0.14	0.15	0.16
C	1.00	1.20	1.40	0.04	0.05	0.055
D	0.95	1.10	1.25	0.033	0.043	0.05
E	0.90	1.0	1.10	0.035	0.04	0.043
F	0.50	0.6	0.70	0.020	0.024	0.028
G	2.39	2.54	2.69	0.090	0.100	0.110
H	1.40	1.75	2.05	0.055	0.069	0.080

OPTIONAL

Electrical Connections

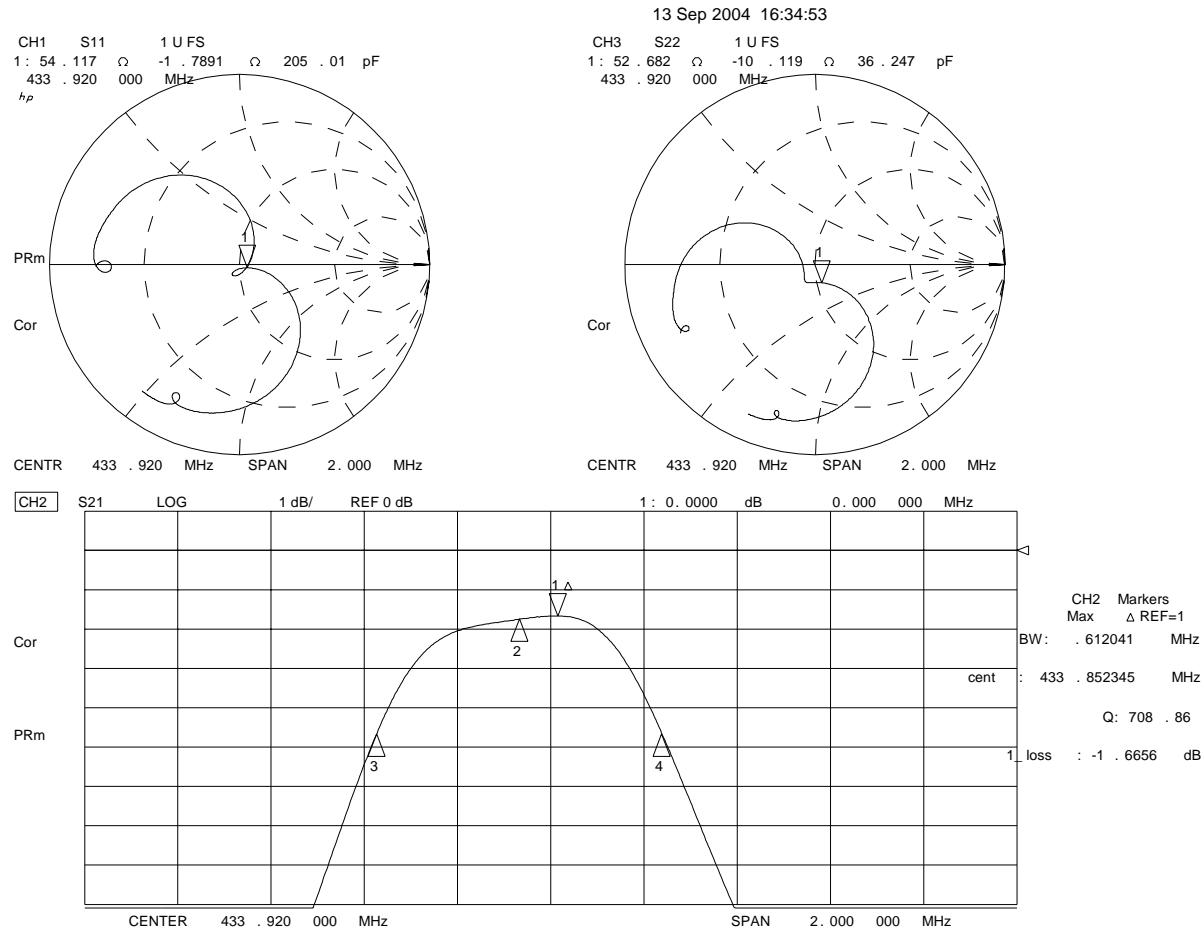
Pin	Connection
1	Input Ground
2	Input
3	Ground
4	Case Ground
5	Output Ground
6	Output
7	Ground
8	Case Ground

Matching Circuit to 50Ω



RF1404D (PRIMARY)

Inductor only match



RF1404D (PRIMARY)

Inductor only match

