

- **Ideal Front-End Filter for Wireless Receiver in the US and UK**
- **Low-Loss, Coupled-Resonator Quartz Design**
- **Surface-Mount Ceramic Case with 50 mm<sup>2</sup> Footprint**
- **Simple External Impedance Matching**
- **Complies with Directive 2002/95/EC (RoHS)**

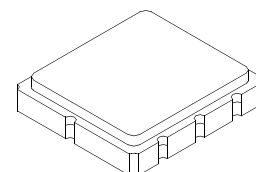


The RF3171D is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 418.0 MHz receivers. Receiver designs using this filter include superhet with 10.7 MHz or 500 kHz IF, direct conversion and superregen. Typical applications of these receivers are wireless remote-control and security devices operating in the USA under FCC Part 15.

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. Murata's advanced SAW design and fabrication technology is utilized to achieve high performance and very low loss with simple external impedance matching.

**RF3171D**

**418.0 MHz  
SAW Filter**



**SM3838-8 Case**  
**3.8 x 3.8**

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency	$F_C$	1, 2, 3		418.0		MHz
Minimum I.L.	$IL_{min}$	1, 3		1.6	2.5	dB
Pass bandwidth (relative to $IL_{min}$ )	$BW_3$	1, 3	500	620	800	kHz
Attenuation: (relative to $IL_{min}$ )		1, 3	10.00 - 400.00 MHz	50	60	dB
			400.00 - 413.00 MHz	30	35	
			413.00 - 417.00 MHz	13	15	
			419.00 - 426.00 MHz	10	11	
			426.00 - 435.00 MHz	35	38	
			435.00 - 1000 MHz	50	56	
Impedance at $F_C$ ; Input	$Z_{IN}=R_{IN}/C_{IN}$	1	2.58 k $\Omega$ // 3.37 pF			$\Omega/pF$
Impedance at $F_C$ ; Output	$Z_{OUT}=R_{OUT}/C_{OUT}$		1.92 k $\Omega$ // 3.55 pF			$\Omega/pF$
Frequency Aging	Absolute Value during the First Year	5		$\leq 10$		ppm/yr
Lid Symbolization (in addition to Lot and/or Date Codes)		775 YWWS				
Standard Reel Quantity	Reel Size 7 Inch	9	500 Pieces/Reel			
	Reel Size 13 Inch		3000 Pieces/Reel			

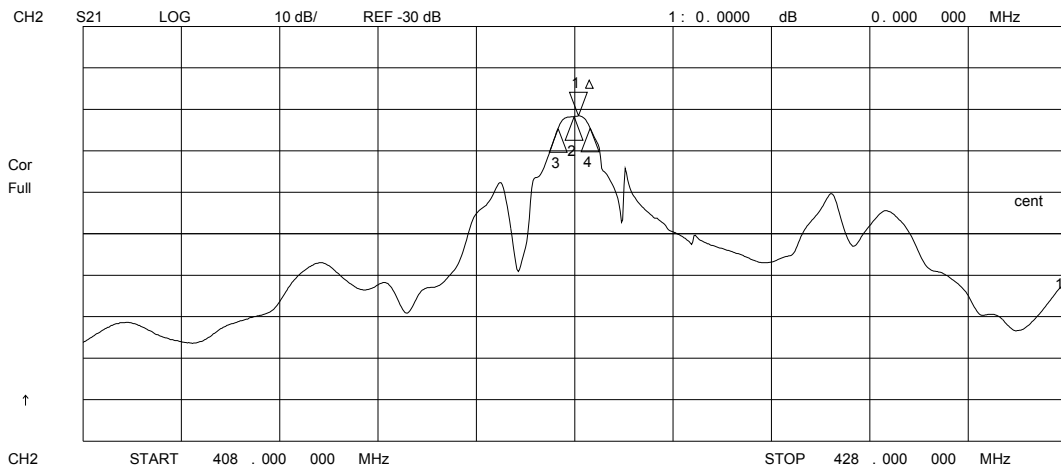
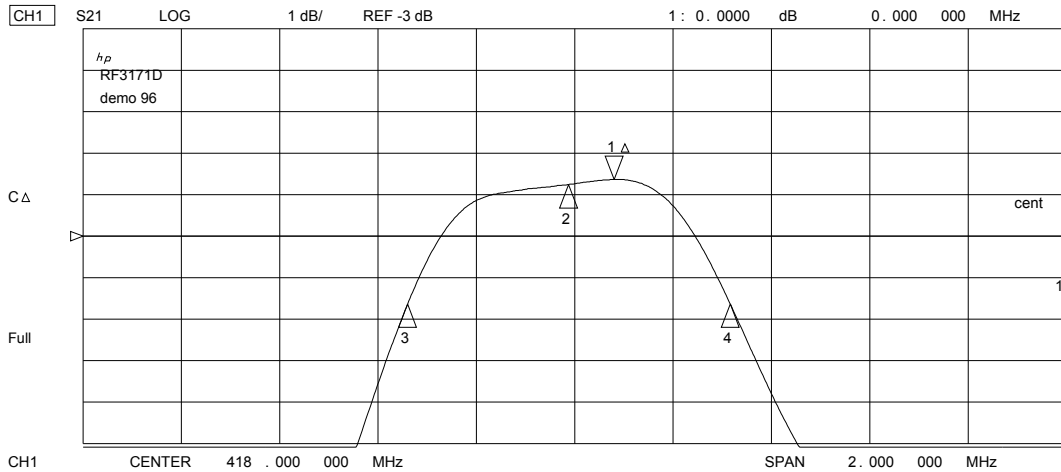


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

#### NOTES:

1. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture which is connected to a 50  $\Omega$  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, 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. Unless noted otherwise, specifications apply over the entire specified operating temperature range. (-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  $f_c$  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 without notice.
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.

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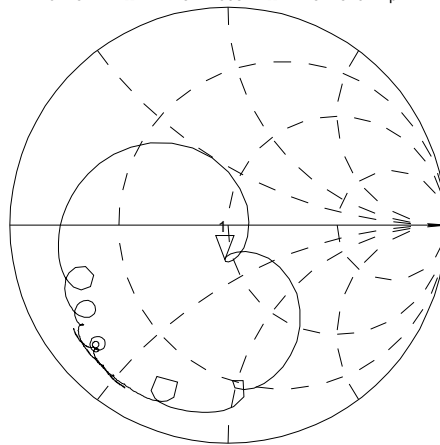
CH1 S11 1 UFS 1: 46 . 314  $\Omega$  -15 . 008  $\Omega$  25 . 370 pF 418 . 000 000 MHz

hp  
RF3171D  
demo 96

Cor

Full

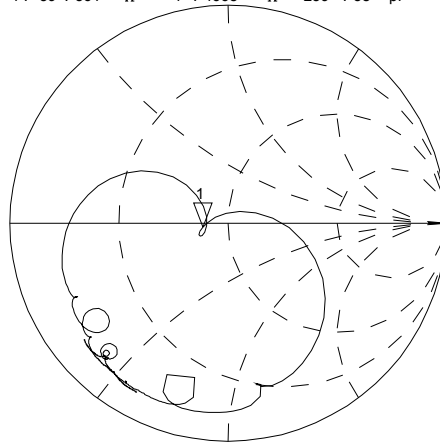
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CH3 S22 1 UFS 1: 39 . 561  $\Omega$  -1 . 4668  $\Omega$  259 . 58 pF 418 . 000 000 MHz

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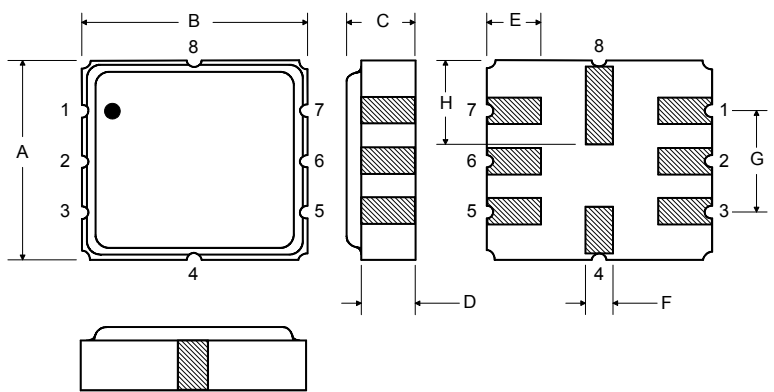


CENTER 418 . 000 000 MHz SPAN 20 . 000 000 MHz

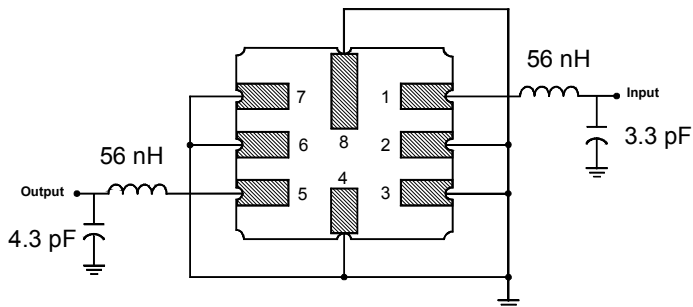
Rating	Value	Units
Input Power Level	10	dBm
DC Voltage	12	VDC
Storage Temperature	-40 to +125	°C
Operable Temperature Range	-40 to +125	°C
Soldering Temperature (10 sec. max.)	260	°C

#### 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	Input Ground
4	Case Ground
5	Output Ground
6	Output
7	Output Ground
8	Case Ground

#### Matching Circuit to 50Ω

