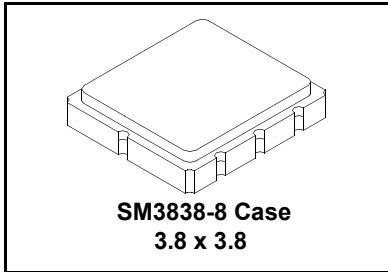


**RF3417D**

**315.0 MHz  
SAW Filter**



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



The RF3417D is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 315.0 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 (especially for automotive keyless entry) operating in the USA under FCC Part 15, in Canada under RSS-210, and in Italy.

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.

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C	$f_c$	1, 2, 3	314.85	315.00	315.15	MHz
Insertion Loss	$IL_{MIN}$	1, 3		1.6	2.5	dB
Passband Ripple Relative to $IL_{MIN}$ , $F_c \pm 200$ kHz		1, 3		0.4	1.2	dB
3 dB Bandwidth	$BW_3$	1, 3	500	600	800	kHz
Rejection Relative to $IL_{MIN}$						
10 - 295 MHz			46	51		
295 - 305 MHz			41	46		
305 - 310 MHz			27	30		
310 - 313 MHz			17	20		
313 - 314 MHz		1, 3	7	10		dB
316 - 320 MHz			9	12		
320 - 325 MHz			16	20		
325 - 335 MHz			32	36		
335 - 600 MHz			42	46		
600 - 1000 MHz			55	60		
Temperature Freq. Temp. Coefficient	FTC			0.032		ppm/°C <sup>2</sup>
Frequency Aging Absolute Value during the First Year	fAI	5		≤10		ppm/yr
Impedance @ $f_c$	Input: $Z_{IN} = R_{IN}    C_{IN}$ Output: $Z_{OUT} = R_{OUT}    C_{OUT}$	$Z_{IN}$ $Z_{OUT}$	1	1.92 kΩ    5.93 pF 1.28 kΩ    6.09 pF		
Lid Symbolization (Y=year WW=week S=shift)				550    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 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 3 dB frequencies.
3. Where noted specifications apply over the entire specified operating temperature range of -40 °C 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.
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.

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 seconds / 5 cycles maximum)	260	°C

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C	$f_c$	1, 2, 3	314.85	315.00	315.15	MHz
Insertion Loss	$IL_{MIN}$	1, 3		2.3	3.0	dB
Passband Ripple Relative to $IL_{MIN}$ , $F_c \pm 200$ kHz		1, 3		0.5	1.4	dB
3 dB Bandwidth	$BW_3$	1, 3	500	600	800	kHz
Rejection Relative to $IL_{MIN}$	10 - 295 MHz	1, 3	44	49		dB
	295 - 305 MHz		39	44		
	305 - 310 MHz		27	30		
	310 - 313 MHz		17	20		
	313 - 314 MHz		7	10		
	316 - 320 MHz		9	12		
	320 - 325 MHz		16	20		
	325 - 335 MHz		32	36		
	335 - 600 MHz		42	45		
600 - 1000 MHz	55	60				
Temperature Freq. Temp. Coefficient	FTC			0.032		ppm/°C <sup>2</sup>
Frequency Aging	Absolute Value during the First Year	IfAI	5	≤10		ppm/yr
Impedance @ $f_c$	Input $Z_{IN} = R_{IN}    C_{IN}$	$Z_{IN}$	1	1.92 kΩ    5.93 pF		
	Output $Z_{OUT} = R_{OUT}    C_{OUT}$	$Z_{OUT}$		1.28 kΩ    6.09 pF		

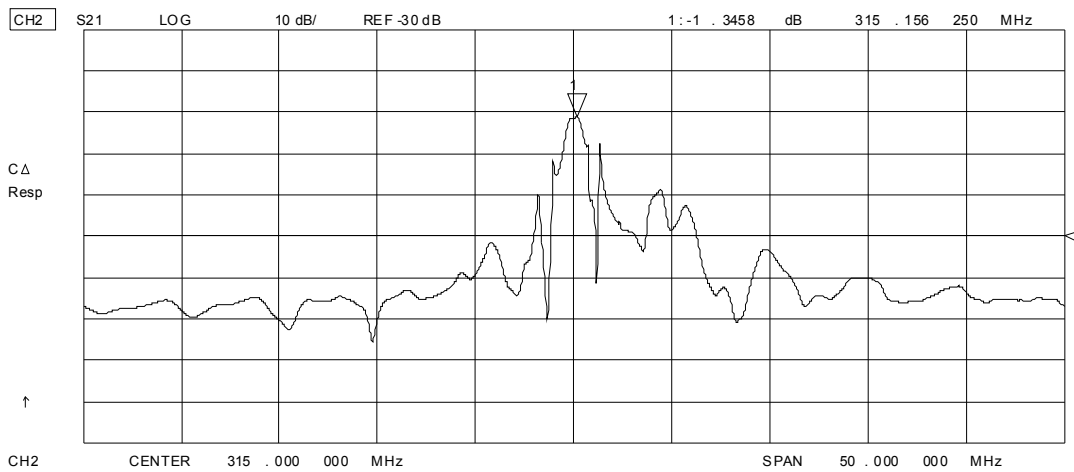
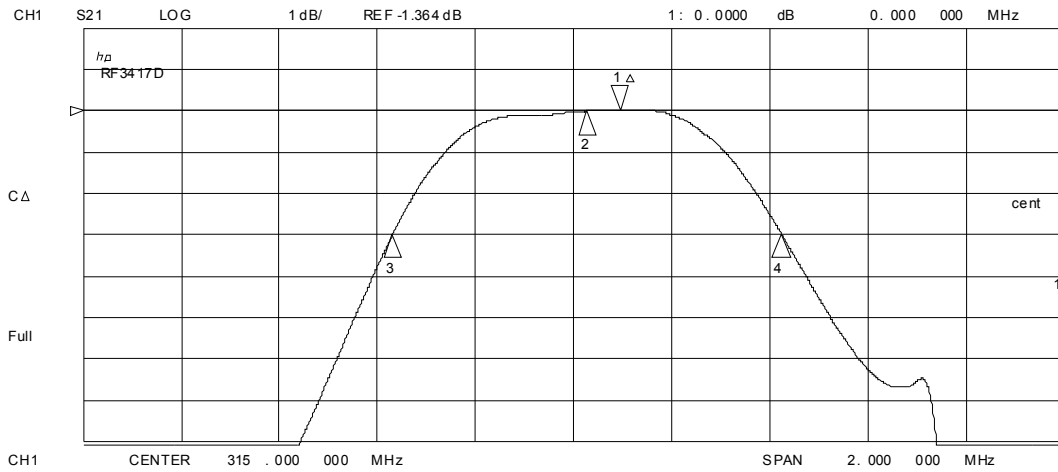


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

#### NOTES:

- 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.
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19 Mar 2009 08:54:09



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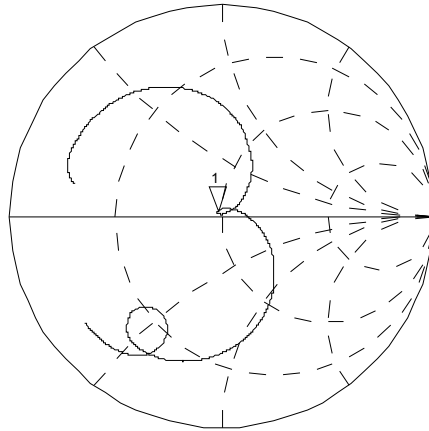
CH1 S11 1 UFS 1: 48.232  $\Omega$  2: 3398  $\Omega$  1.1822 nH 315.000 000 MHz

hp  
RF3417D

C  $\Delta$

Full

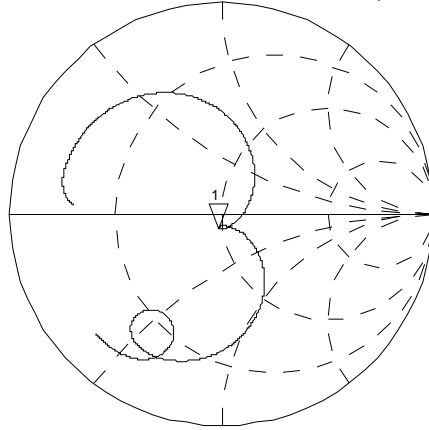
↑



CH3 S22 1 UFS 1: 48.295  $\Omega$  -6.4219  $\Omega$  78.677 pF 315.000 000 MHz

C  $\Delta$

↑

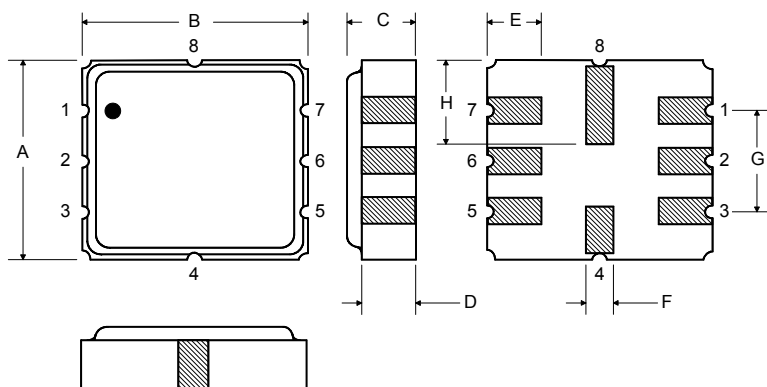


CENTER 315.000 000 MHz

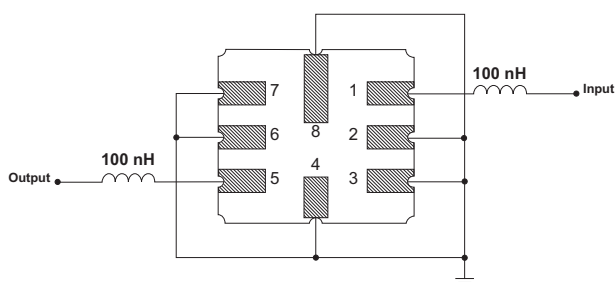
SPAN 2.000 000 MHz

## 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

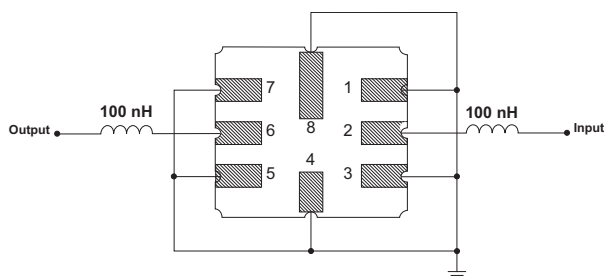
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	3.6	3.8	4.0	0.14	0.15	0.16
B	3.6	3.8	4.0	0.14	0.15	0.16
C	1.00	1.20	1.40	0.04	0.05	0.055
D	0.95	1.10	1.25	0.033	0.043	0.05
E	0.90	1.0	1.10	0.035	0.04	0.043
F	0.50	0.6	0.70	0.020	0.024	0.028
G	2.39	2.54	2.69	0.090	0.100	0.110
H	1.40	1.75	2.05	0.055	0.069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

## Optional Matching Circuit to 50Ω



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