RFM products are now Murata products.

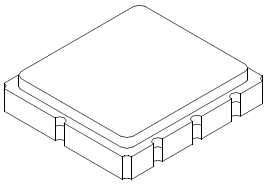
# RF3417D

# 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.



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

| 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 $IL_{MIN}$, Fc ±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 | | 1, 3 | 46 | 51 | | dB |
| | 295 - 305 MHz | | | 41 | 46 | | |
| | 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 | 46 | | |
| | 600 - 1000 MHz | | | 55 | 60 | | |
| 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 | 1.92 kΩ \|\| 5.93 pF | | | |
| | Output: $Z_{OUT} = R_{OUT} \| C_{OUT}$ | $Z_{OUT}$ | | 1.28 kΩ \|\| 6.09 pF | | | |
| Lid Symbolization (Y=year WW=week S=shift) | | 550 \|\| 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 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 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.

| 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 |
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| 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 $IL_{MIN}$ ,Fc ±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$^2$ |
| Frequency Aging | Absolute Value during the First Year | IfAI | 5 | | ≤10 | | ppm/yr |
| Impedance @ fc | 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 | | | |

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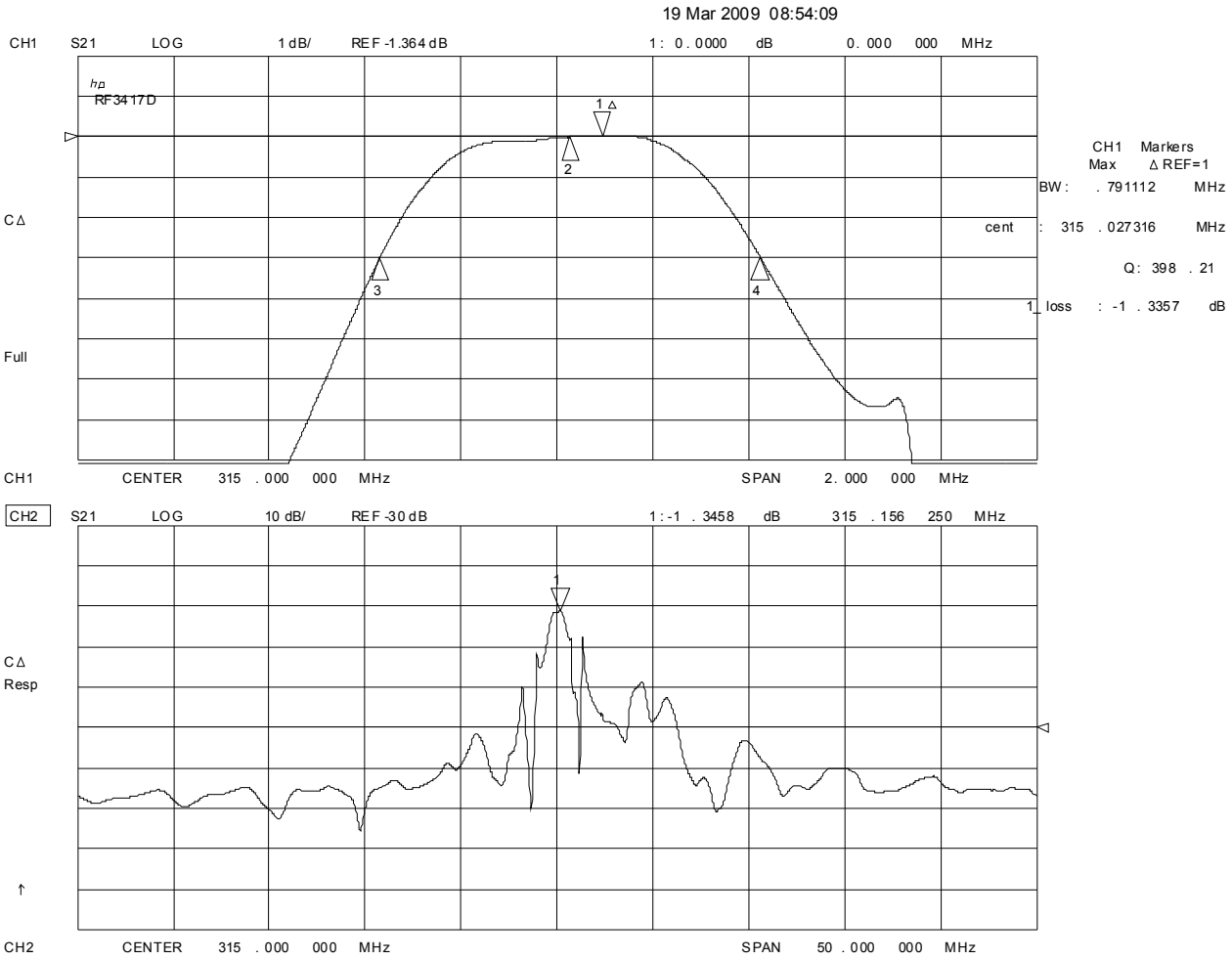
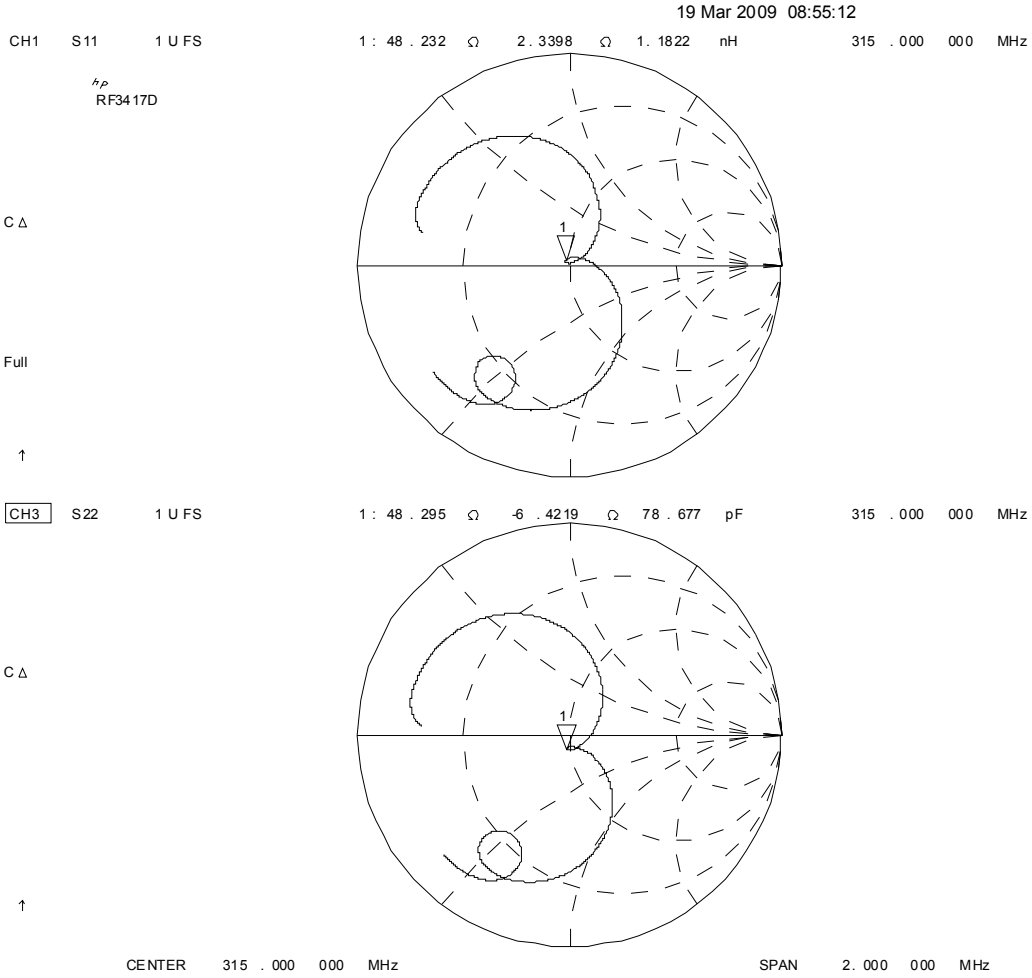
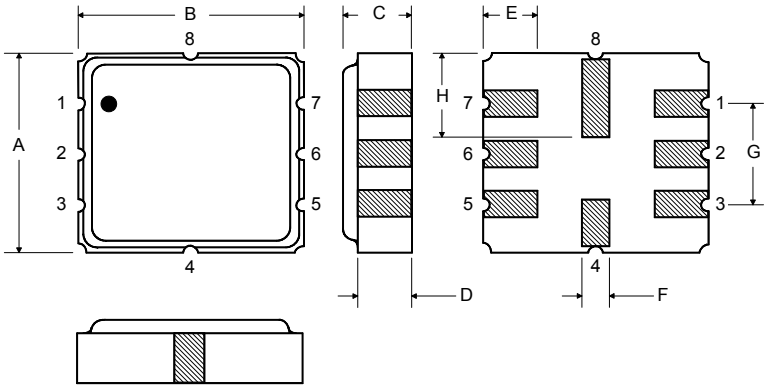


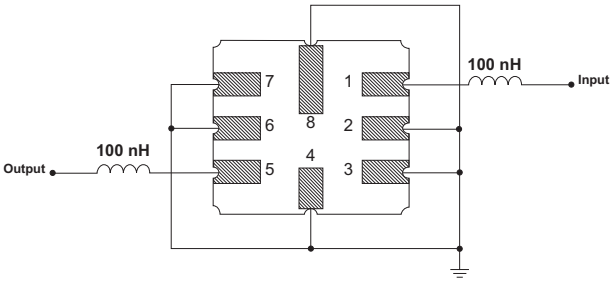


### Electrical Connections

| 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