

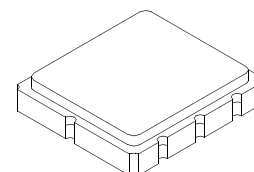


**THE DATASHEET OF  
RF3171D**



# RF3171D

## 418.0 MHz SAW Filter



**SM3838-8 Case**  
3.8 x 3.8

- **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)**
- **Tape and Reel Standard per ANSI/EIA-481**
- **Moisture Sensitivity Level: 1**

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

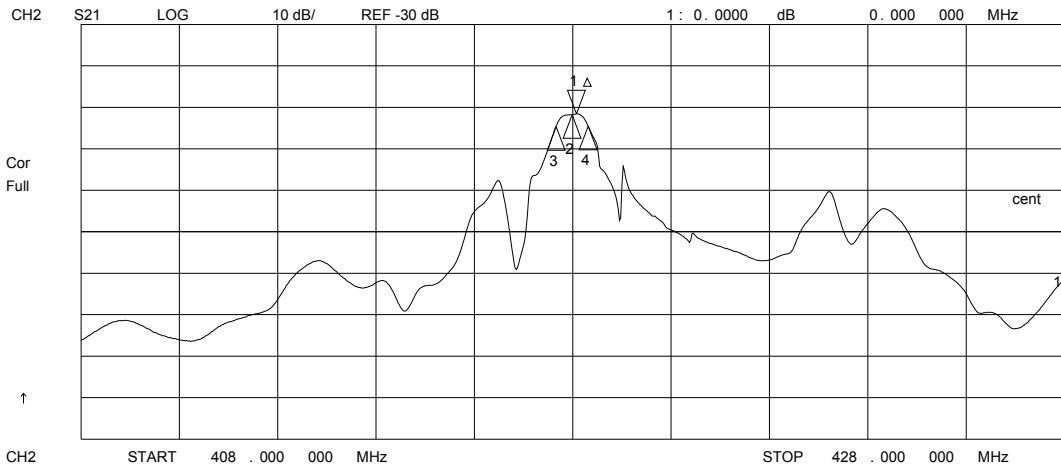
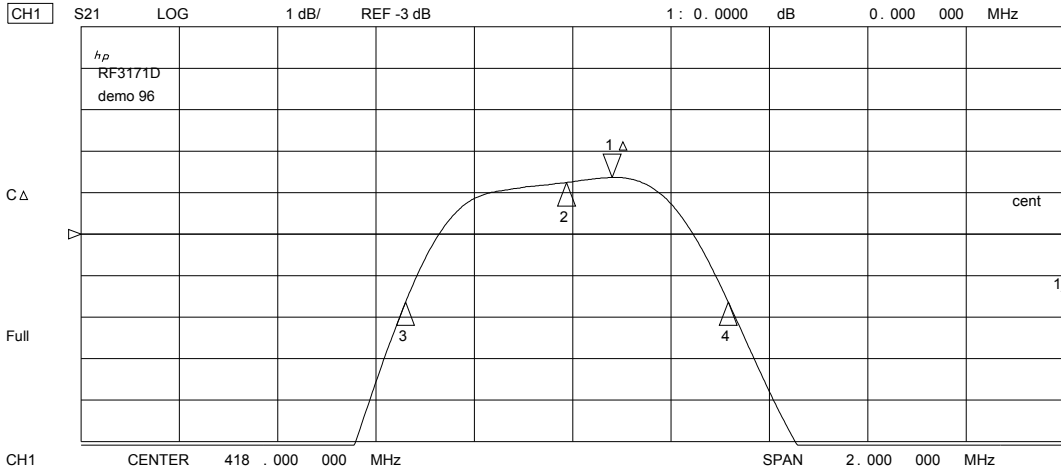
| Characteristic                                     | Sym                                  | Notes  | Minimum                    | Typical   | Maximum | Units         |
|--|--------------------------------------|--------|----------------------------|-----------|---------|---------------|
| Center Frequency                                   | $F_C$                                |        |                            | 418.0     |         | MHz           |
| Minimum I.L.                                       | $IL_{min}$                           |        |                            | 1.6       | 2.5     | dB            |
| Pass bandwidth (relative to $IL_{min}$ )           | $BW_3$                               |        | 500                        | 620       | 800     | kHz           |
| Attenuation: (relative to $IL_{min}$ )             |                                      |        | 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                         | $Z_{IN}=R_{IN}/C_{IN}$               |        | 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 | $ fA $ |                            | $\leq 10$ |         | ppm/yr        |
| Lid Symbolization (Y = Year, WW = Week, S = Shift) | 775, <u>Y</u> WW <u>S</u>            |        |                            |           |         |               |
| Standard Reel Quantity                             | Reel Size 7 Inch                     |        | 500 Pieces/Reel            |           |         |               |
|  | Reel Size 13 Inch                    |        | 3000 Pieces/Reel           |           |         |               |

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

**NOTES:**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

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CH1 S11 1 UFS

1: 46.314 Ω -15.008 Ω 25.370 pF

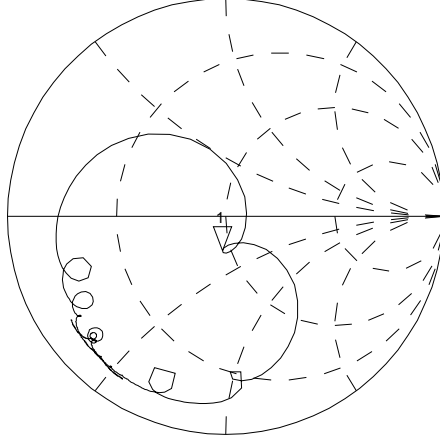
418.000 000 MHz

hp  
RF3171D  
demo 96

Cor

Full

↑



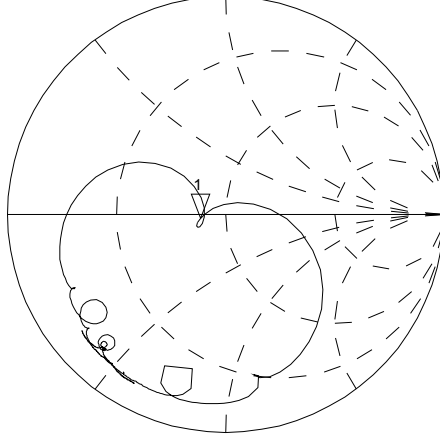
CH3 S22 1 UFS

1: 39.561 Ω -1.4668 Ω 259.58 pF

418.000 000 MHz

Cor

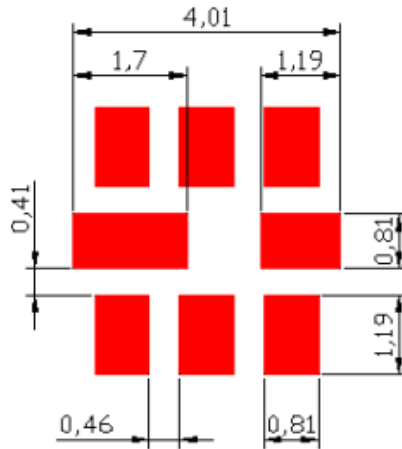
↑



CENTER 418.000 000 MHz

SPAN 20.000 000 MHz

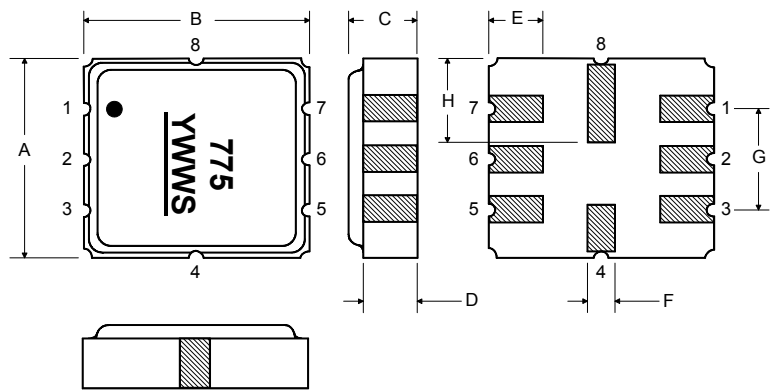
### PCB Footprint



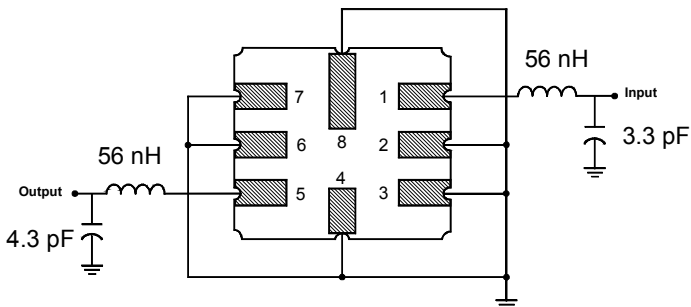
| Rating                               | Value       | Units |
|--------------------------------------|-------------|-------|
| Input Power Level                    | 10          | dBm   |
| DC Voltage                           | 12          | VDC   |
| Storage Temperature                  | -40 to +125 | °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

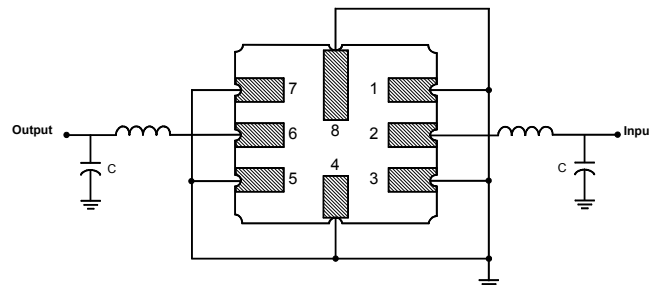
| Dimension | mm   |      |      | Inches |       |       |
|-----------|------|------|------|--------|-------|-------|
|           | Min  | Nom  | Max  | Min    | Nom   | Max   |
| A         | 3.6  | 3.8  | 4.0  | 0.14   | 0.15  | 0.16  |
| B         | 3.6  | 3.8  | 4.0  | 0.14   | 0.15  | 0.16  |
| 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





## Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C +0/-5°C peak (10 seconds).
4. Time: 5 times maximum.



## Looking for pricing, stock, or lifecycle information?

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-  Shortage Management
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