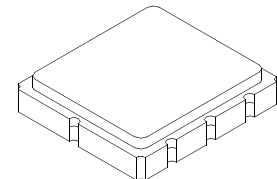


RF3404D

433.92 MHz SAW Filter



SM3838-8 Case
3.8 x 3.8

- **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)**
- **Tape and Reel Standard per ANSI/EIA-481**
- **Moisture Sensitivity Level: 1**
- **AEC-Q200 Qualified**

The RF3404D 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. RFMi's advanced SAW design and fabrication technology is utilized to achieve high performance and very low loss with simple external impedance matching.

| Characteristic | Value | Units |
|--|-------------|-------|
| Input Power Level | 10 | dBm |
| DC Voltage | 12 | VDC |
| Storage Temperature | -40 to +125 | °C |
| Specification Temperature Range | -40 to +90 | °C |
| Soldering Temperature (10 seconds / 5 cycles max.) | 260 | °C |

| Characteristic | Sym | Notes | Minimum | Typical | Maximum | Units |
|--|---------------------------------------|-----------|------------------|---------|---------|-------------------------|
| Center Frequency at 25°C Absolute Frequency | f_c | | | 433.92 | | MHz |
| Insertion Loss | IL_{MIN} | | | 1.6 | 2.5 | dB |
| Passband Ripple (Relative to IL_{MIN}) $f_c \pm 200kHz$ | | | | 1.2 | 1.8 | dB |
| 3 dB Bandwidth | BW_3 | | 500 | 600 | 800 | kHz |
| Rejection Attenuation: (relative to IL_{min}) | 10 - 414 MHz | | 50 | 55 | | dB |
| | 414 - 424 MHz | | 45 | 50 | | |
| | 424 - 431 MHz | | 30 | 34 | | |
| | 431 - 432 MHz | | 18 | 22 | | |
| | 432 - 433 MHz | | 12 | 17 | | |
| | 434.92 - 442 MHz | | 11 | 14 | | |
| | 442 - 550 MHz | | 35 | 38 | | |
| | 550 - 1000 MHz | | 50 | 55 | | |
| Temperature Freq. Temp. Coefficient | FTC | | | 0.032 | | ppm/ °C ² |
| Frequency Aging Absolute Value during the First Year | $ fA $ | | | ≤10 | | ppm/yr |
| Impedance @ f_c | Input $Z_{IN} = R_{IN} C_{IN}$ | Z_{IN} | 2853Ω // 1.66pf | | | |
| | Output $Z_{OUT} = R_{OUT} C_{OUT}$ | Z_{OUT} | 2411Ω // 1.73pf | | | |
| Lid Symbolization (Y=year WW=week S=shift) | | | 539, YWWS | | | |
| Standard Reel Quantity | Reel Size 7 Inch | | 500 Pieces/Reel | | | |
| | Reel Size 13 Inch | | 3000 Pieces/Reel | | | |

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

| Characteristic | Sym | Notes | Minimum | Typical | Maximum | Units |
|--|---------------------------------------|-----------|------------------|---------|---------|---------------------|
| Center Frequency at 25°C Absolute Frequency | f_c | | | 433.92 | | MHz |
| Insertion Loss | IL_{MIN} | | | 1.6 | 3.0 | dB |
| Passband Ripple (Relative to IL_{MIN}) $F_c \pm 200kHz$ | | | | 1.2 | 2.0 | dB |
| 3 dB Bandwidth | BW_3 | | 500 | 600 | 800 | kHz |
| Rejection Attenuation: (relative to IL_{min}) | 10 - 414 MHz | | 50 | 55 | | dB |
| | 414 - 424 MHz | | 45 | 50 | | |
| | 424 - 431 MHz | | 30 | 34 | | |
| | 431 - 432 MHz | | 18 | 22 | | |
| | 432 - 433 MHz | | 12 | 17 | | |
| | 434.92 - 442 MHz | | 11 | 14 | | |
| | 442 - 550 MHz | | 35 | 38 | | |
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| | Reel Size 13 Inch | | 3000 Pieces/Reel | | | |



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

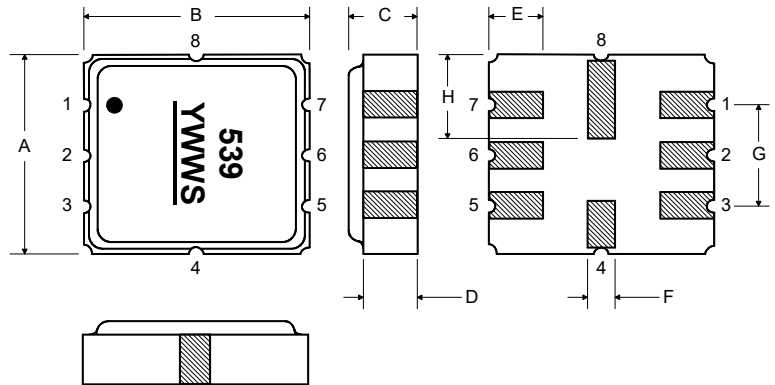
NOTES:

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.

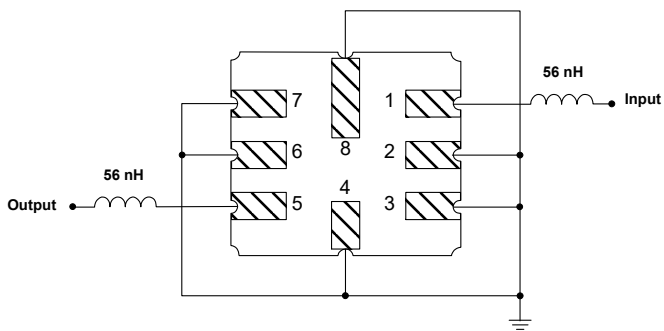
PRIMARY

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

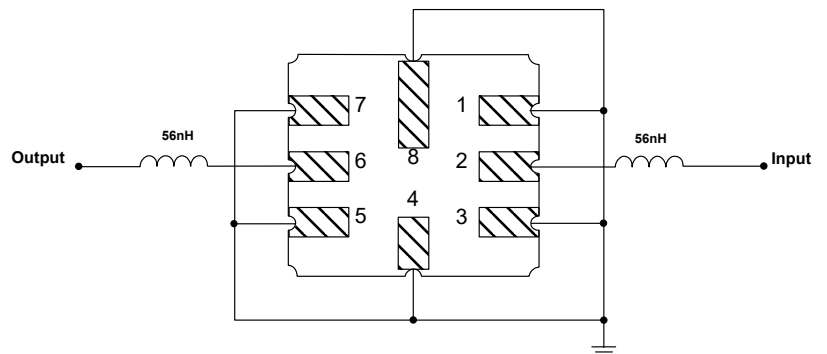
| Dimension | mm | | | Inches | | |
|-----------|------|------|------|--------|-------|-------|
| | Min | Nom | Max | Min | Nom | Max |
| A | 3.6 | 3.8 | 4.0 | 0.14 | 0.15 | 0.16 |
| B | 3.6 | 3.8 | 4.0 | 0.14 | 0.15 | 0.16 |
| C | 1.00 | 1.20 | 1.40 | 0.04 | 0.05 | 0.055 |
| D | 0.95 | 1.10 | 1.25 | 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

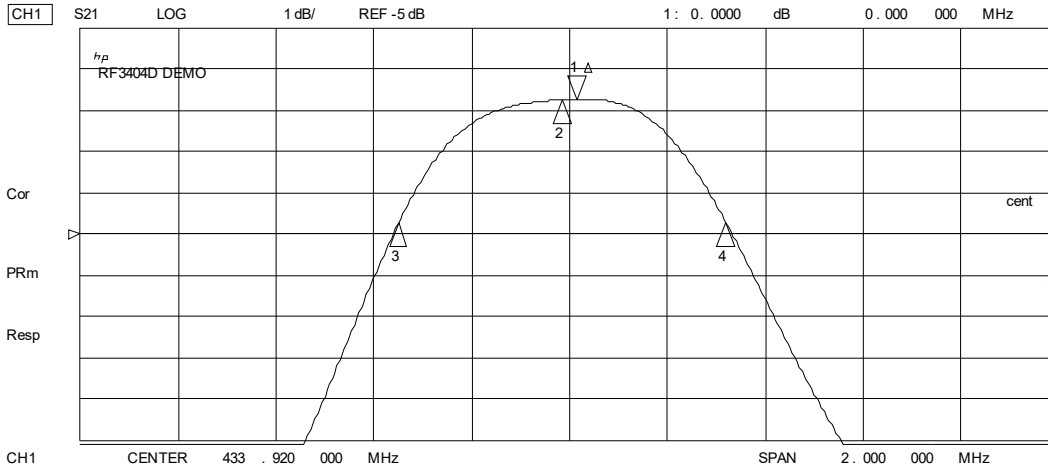
Electrical Connections

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

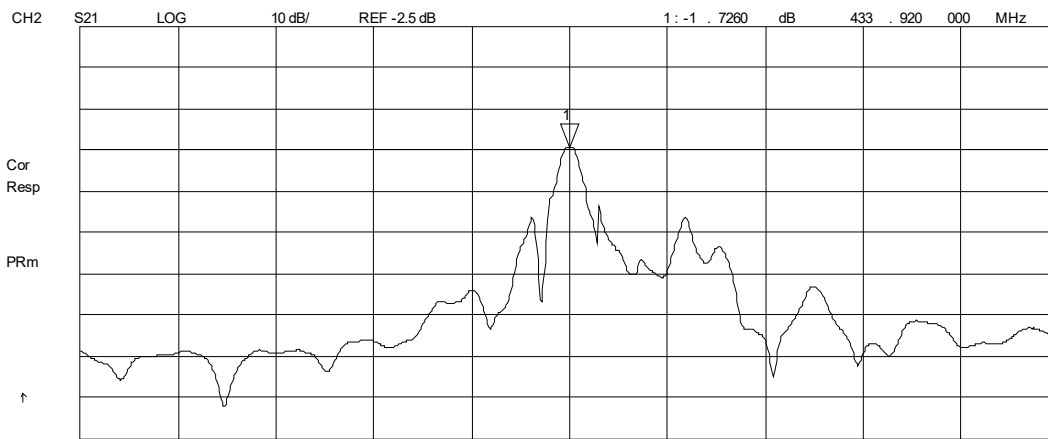
Matching Circuit to 50Ω



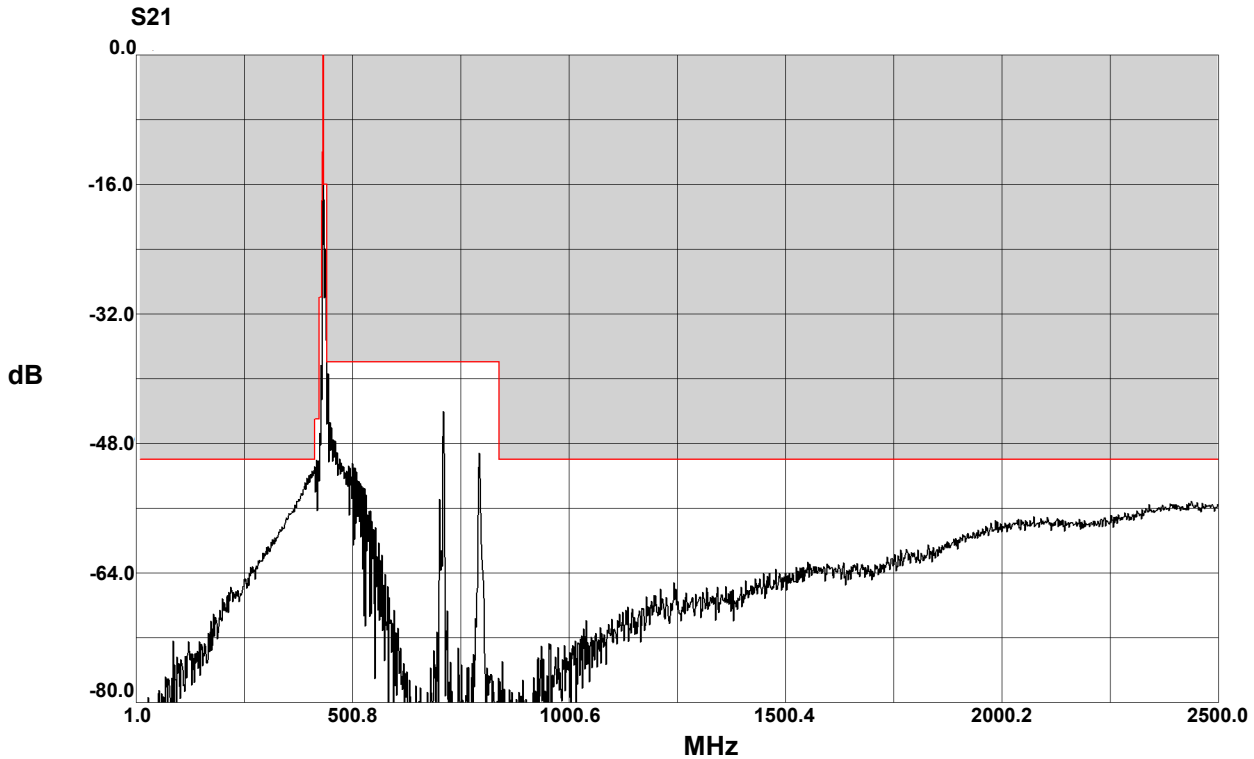
1 Aug 2007 14:03:00



CH1 Markers
Max Δ REF=1
BW: .669068 MHz
cent : 433.905059 MHz
Q: 648.52
1 loss : -1.7269 dB



Max



1 Aug 2007 14:03:18

CH1 S11 1UFS

1: 53.467 Ω -8.236 Ω 44.585 pF 433.920 000 MHz

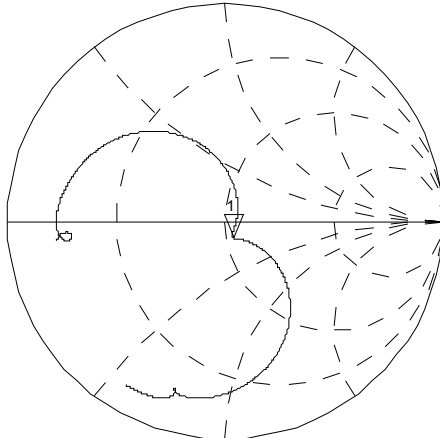
RF3404D DEMO

Cor

PRm

Full

↑



CH2 S22 1UFS

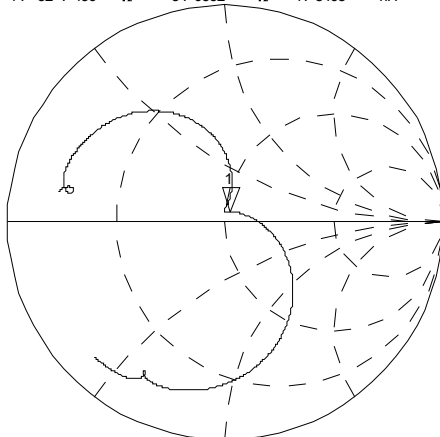
1: 52.436 Ω 5.0352 Ω 1.8468 nH 433.920 000 MHz

Cor

Full

PRm

↑



CENTER 433.920 000 MHz

SPAN 2.000 000 MHz

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.

