

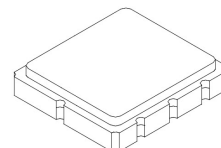
- **RF Front-end Filter for European Wireless Receivers**
- **Low-Loss, Coupled-Resonator Quartz Design**
- **Simple External Impedance Matching**

The RF3396D is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 434.42 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. Murata's advanced SAW design and fabrication technology is utilized to achieve high performance and very low loss with simple external impedance matching.

**RF3396D**

**434.420 MHz  
SAW Filter**



**SM3838-8 Case  
3.8 x 3.8**

| Characteristic   |                                      | Sym               | Notes   | Minimum | Typical | Maximum | Units                   |
|--|--------------------------------------|-------------------|---------|---------|---------|---------|-------------------------|
| Center Frequency at 25°C    Absolute Frequency   |                                      | f <sub>c</sub>    | 1, 2, 3 |         | 434.420 |         | MHz                     |
| Insertion Loss   |                                      | IL <sub>MIN</sub> | 1, 3    |         | 1.8     | 2.5     | dB                      |
| Passband Ripple (Relative to IL <sub>MIN</sub> ) Fc ±200kHz  |                                      |                   | 1, 3    |         | 0.5     | 1.0     | dB                      |
| 3 dB Bandwidth   |                                      | BW <sub>3</sub>   | 1, 3    | 850     | 900     | 950     | kHz                     |
| Rejection Attenuation: (relative to ILmin)<br><br>10 - 420 MHz<br>420 - 427 MHz<br>427 - 431 MHz<br>431 - 433.2 MHz<br>435.92 - 439 MHz<br>439 - 447 MHz<br>447 - 1000 MHz |                                      |                   | 1, 3    | 40      | 43      |         | dB                      |
|  |                                      |                   |         | 33      | 36      |         |                         |
|  |                                      |                   |         | 27      | 30      |         |                         |
|  |                                      |                   |         | 10      | 13      |         |                         |
|  |                                      |                   |         | 6       | 10      |         |                         |
|  |                                      |                   |         | 20      | 23      |         |                         |
|  |                                      |                   |         | 34      | 37      |         |                         |
| Temperature                      Freq. Temp. Coefficient   |                                      | FTC               |         |         | 0.032   |         | ppm/<br>°C <sup>2</sup> |
| Frequency Aging  | Absolute Value during the First Year | fA                | 5       |         | ≤10     |         | ppm/yr                  |
| Impedance @ fc                      Input Z <sub>IN</sub> = R <sub>IN</sub>   C <sub>IN</sub><br><br>  |                                      |                   |         |         |         |         |                         |

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

Notes:



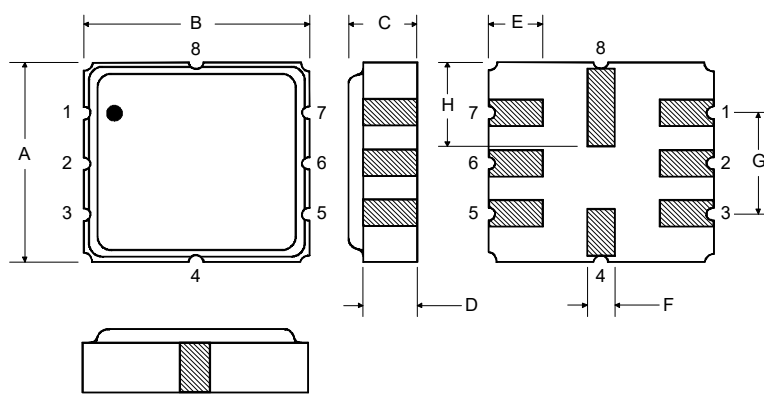
1. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture which is connected to a 50  $\Omega$  test system with VSWR ≤ 1.2:1. The test fixture L and C are adjusted for minimum insertion loss at the filter center frequency,  $f_c$ . Note that insertion 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 3dB 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,  $f_c$ . 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.

| Characteristic                                     | 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 max.) | 260         | °C    |

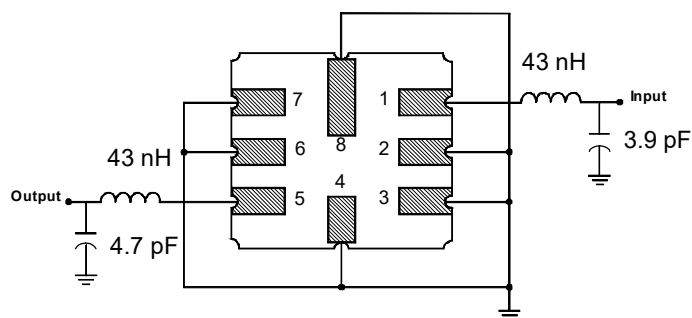
## PRIMARY

### 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 |