

- **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)**

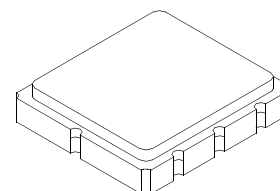


The RF1407D is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 868.60 MHz receivers. Receiver designs using this filter include superhet IF, direct conversion and superregen. Typical applications of these receivers are wireless remote-control and security devices operating in Europe under ETSI I-ETS 300 220, in Germany under FTZ 17 TR 2100, in the United Kingdom under DTI MPT 1340 (for automotive only), in France under PTT Specifications ST/PAA/TPA/AGH/1542, and in Scandinavia.

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 (not included).

## RF1407D

## 868.60 MHz SAW Filter



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

| Characteristic                                           | Sym                                                            | Notes            | Minimum | Typical                             | Maximum | Units               |  |
|----------------------------------------------------------|----------------------------------------------------------------|------------------|---------|-------------------------------------|---------|---------------------|--|
| Center Frequency @ 25°C                                  | f <sub>C</sub>                                                 | 1, 2, 3          |         | 868.60                              |         | MHz                 |  |
| Minimum I.L. (868.210-868.990 MHz)                       |                                                                | 1, 3             |         | 3.0                                 | 4.2     | dB                  |  |
| 1dB Bandwidth 868.05-869.15                              |                                                                | 1                | 960     |                                     |         | kHz                 |  |
| -45°C to +90°C<br>-25°C to +60°C                         |                                                                |                  | 1000    |                                     |         |                     |  |
| Pass Bandwidth (relative to IL <sub>min</sub> )          | BW <sub>3</sub>                                                | 1, 3             | 1200    | 1800                                |         | kHz                 |  |
| Rejection (relative to IL <sub>min</sub> )               | 10-700 MHz                                                     | 1, 3             | 50      | 55                                  |         | dB                  |  |
|                                                          | 700-830 MHz                                                    |                  | 40      | 45                                  |         |                     |  |
|                                                          | 830-850 MHz                                                    |                  | 32      | 37                                  |         |                     |  |
|                                                          | 850-865.02 MHz                                                 |                  | 25      | 28                                  |         |                     |  |
|                                                          | 871-874.5 MHz                                                  |                  | 11      | 14                                  |         |                     |  |
|                                                          | 874.5-883 MHz                                                  |                  | 16      | 21                                  |         |                     |  |
|                                                          | 883-900 MHz                                                    |                  | 30      | 33                                  |         |                     |  |
|                                                          | 900-1000 MHz                                                   |                  | 40      | 45                                  |         |                     |  |
| Temperature Coeff                                        |                                                                |                  | 0.032   |                                     |         | ppm/°C <sup>2</sup> |  |
| Operating Temperature Range                              |                                                                |                  | -45     |                                     | +90     | °C                  |  |
| Impedance @ f <sub>c</sub>                               | Input Z <sub>IN</sub> = R <sub>IN</sub>    C <sub>IN</sub>     | Z <sub>IN</sub>  | 1       | 117Ω    3.7pf                       |         |                     |  |
|                                                          | Output Z <sub>OUT</sub> = R <sub>OUT</sub>    C <sub>OUT</sub> | Z <sub>OUT</sub> | 1       | 117Ω    3.7pf                       |         |                     |  |
| Lid Symbolization (in addition to Lot and/or Date Codes) | 505 // YWWS                                                    |                  |         |                                     |         |                     |  |
| Standard Reel Quantity                                   | 7 Inch Reel<br>13 Inch Reel                                    |                  | 8       | 500 Pieces/Reel<br>3000 Pieces/Reel |         |                     |  |



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

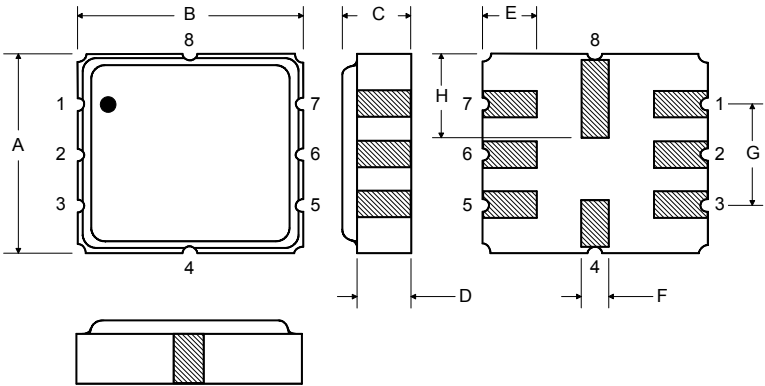
### NOTES:

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 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 -45°C to +90°C.
4. 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.
5. The design, manufacturing process, and specifications of this device are subject to change.
6. One or more of the following U.S. Patents apply: 4,54,488, 4,616,197, and others pending.
7. All equipment designs utilizing this product must be approved by the appropriate government agency prior to manufacture or sale.
8. Tape and Reel Standard Per ANSI / EIA 481.
9. This product complies with directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

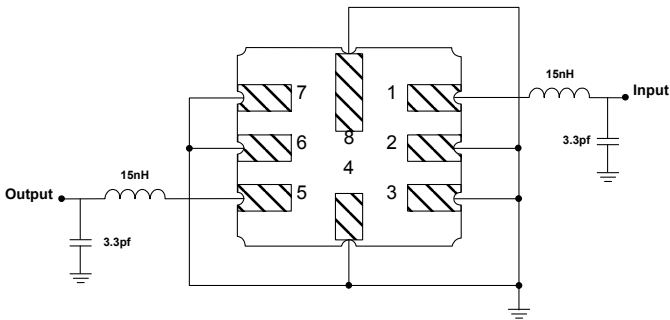
| Rating                | Value                        | Units  |
|-----------------------|------------------------------|--------|
| Input Power Level     | +10                          | dBm    |
| DC Voltage            | 12                           | VDC    |
| Storage Temperature   | -45 to +90                   | °C     |
| Soldering Temperature | (10 seconds / 5 cycles max.) | 260 °C |

### Electrical Connections

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