




RF1301

**499.250 MHz
SAW Filter**



TO39-3 Case

- **Ideal Front-End Filter for European Wireless Receivers**
- **Low-Loss, Coupled-Resonator Quartz Design**
- **Simple External Impedance Matching**
- **Rugged TO39 Hermetic Package**
- **Complies with Directive 2002/95/EC (RoHS)** 

The RF1301 is a low-loss, compact and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 499.250 MHz receivers. Typical applications of these FSK receivers are wireless remote-control and security devices operating in Europe.

RFM's advanced SAW design and fabrication technology is utilized to achieve high performance and very low loss with simple external impedance matching (not included). Quartz construction provides excellent frequency stability over a wide temperature range.

Electrical Characteristics

| Characteristic | | Sym | Notes | Minimum | Typical | Maximum | Units |
|--|--------------------------------------|------------|------------|----------|---------|---------|--------------------|
| Nominal Frequency | | f_C | 2, 4, 5, 6 | | 499.250 | | MHz |
| Insertion Loss | | IL | 3, 4, 7 | | | 4.0 | dB |
| 4 dB Passband | | BW_3 | 2, 3, 4, 7 | ± 30 | | | kHz |
| 3 dB Reject Band | | BW_3 | 2, 3, 4, 7 | | | | kHz |
| Rejection | at $f_C \pm 1.50$ MHz | | 4 | | | 10 | dB |
| | at $f_C \pm 6.0$ MHz | | | | | 25 | |
| | at $f_C \pm 50$ MHz | | | | | | |
| Temperature | Operating Case Temperature | T_C | 3, 7, 8 | -40 | | +85 | $^{\circ}C$ |
| | Turnover Temperature | T_O | | 15 | 25 | 40 | $^{\circ}C$ |
| | Turnover Frequency | f_O | | | f_C | | MHz |
| | Frequency Temperature Coefficient | FTC | | | 0.032 | | ppm/ $^{\circ}C^2$ |
| Frequency Aging | Absolute Value during the First Year | fA | 3 | | 10 | | ppm/yr |
| External Impedance | Series Inductance | L | 1, 7 | | 22 | | nH |
| | Shunt Capacitance | C | | | 5-18 | | pF |
| Lid Symbolization (in addition to Lot and/or Date Codes) | | RFM RF1301 | | | | | |



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

1. Typical test circuit is shown for TO-39 RF filters.
2. Passband and reject bands are specified in reference to f_C .
3. All characteristics are specified over the operating temperature range and typical aging for 10 years.
4. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture. Note that insertion loss, bandwidth, and pass-band shape are dependent on the impedance matching component values and quality. Demonstration circuits are available for confirmation of device performance.
5. One or more of the following U.S. Patents apply: 4,454,488; 4,616,197; and other pending.
6. All equipment designs utilizing this product must be approved by the appropriate government agency prior to manufacture or sale.
7. The design, manufacturing process, and specifications of this device are subject to change without notice.
8. The turnover temperature, T_O , is the temperature of maximum (or turnover) frequency, f_O . The nominal frequency at any case temperature, T_C , outside the operating temperature range may be calculated from: $f = f_o [1 - FTC (T_O - T_C)^2]$.

499.250 MHz

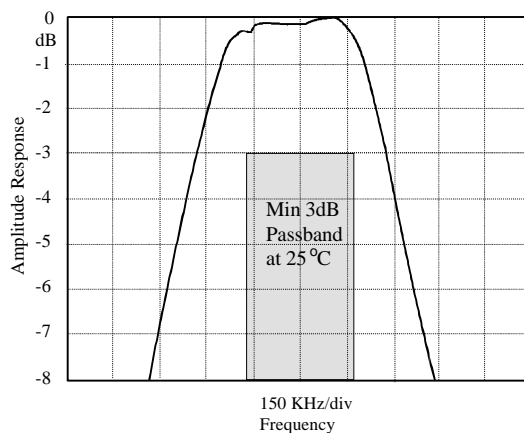
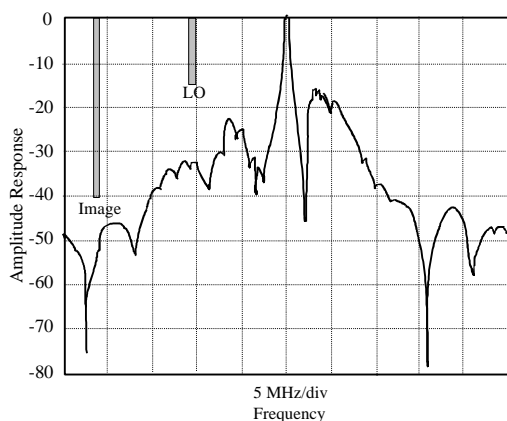
SAW Filter

Absolute Maximum Ratings

| Rating | Value | Units |
|---|------------|-------|
| Incident RF Power | +13 | dBm |
| DC Voltage Between Any Two Pins (Observe ESD Precautions) | ±30 | VDC |
| Case Temperature | -40 to +85 | °C |

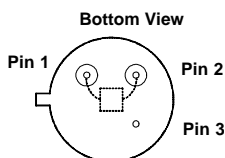
Typical Filter Response

Typical filter responses are shown below. Illustrated frequencies and minimum rejection for LO and IMAGE are shown only for superhet receivers with 10.7 MHz IF.

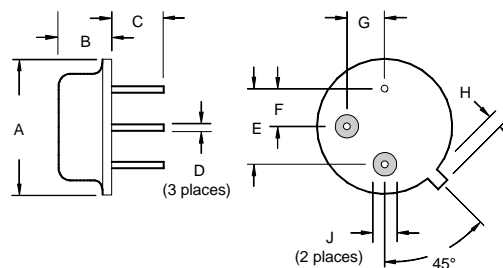


Electrical Connections

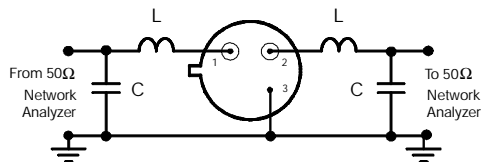
| Pin | Connection |
|-----|-----------------|
| 1 | Input or Output |
| 2 | Output or Input |
| 3 | Case Ground |



Case Design



Typical Test Circuit



| Dimensions | Millimeters | | Inches | |
|------------|--------------|------|---------------|-------|
| | Min | Max | Min | Max |
| A | | 9.40 | | 0.370 |
| B | | 3.18 | | 0.125 |
| C | 2.50 | 3.50 | 0.098 | 0.138 |
| D | 0.46 Nominal | | 0.018 Nominal | |
| E | 5.08 Nominal | | 0.200 Nominal | |
| F | 2.54 Nominal | | 0.100 Nominal | |
| G | 2.54 Nominal | | 0.100 Nominal | |
| H | | 1.02 | | 0.040 |
| J | 1.40 | | 0.055 | |