



- **Designed for WiMax Applications**
- **Low Insertion Loss IF Filter**
- **Hermetic 13.3 x 6.5 mm Surface-mount Case**
- **Complies with Directive 2002/95/EC (RoHS)**

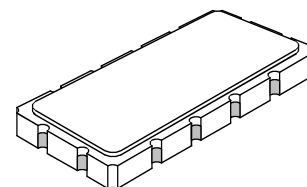


**SF2157A**

**156 MHz  
SAW Filter**

#### Absolute Maximum Ratings

| Rating                                                       | Value           | Units |
|--------------------------------------------------------------|-----------------|-------|
| Maximum Incident Power in Passband                           | +10             | dBm   |
| Maximum DC Voltage Between any Two Terminals                 | 30              | VDC   |
| Storage Temperature Range                                    | -50 to +125     | °C    |
| Suitable for Lead-free Soldering - Maximum Soldering Profile | 260 °C for 30 s |       |



**SM13365-12**

#### Electrical Characteristics

| Characteristic                          | Sym       | Notes   | Min  | Typ   | Max  | Units             |
|-----------------------------------------|-----------|---------|------|-------|------|-------------------|
| Center Frequency                        | $f_c$     | 1       |      | 156   |      | MHz               |
| 1 dB Bandwidth                          | $BW_1$    | 1       | 20.0 | 22.0  |      | MHz               |
| 3 dB Bandwidth                          | $BW_3$    | 1       | 21.0 | 24.0  |      | MHz               |
| 40 dB Bandwidth                         | $BW_{40}$ | 1       |      | 27    | 30   | MHz               |
| Insertion Loss                          | IL        | 1       |      | 10.0  | 12.0 | dB                |
| Attenuation Relative to IL              |           | 1, 2, 3 |      |       |      | dB                |
| 0 to 123 MHz                            |           |         | 45   | 50    |      |                   |
| 190 to 1000 MHz                         |           |         | 45   | 50    |      |                   |
| Passband Ripple, 146 to 166 MHz         |           | 1, 2, 3 |      | 1.0   | 1.8  | dB <sub>p-p</sub> |
| Absolute Group Delay, 156 MHz           |           |         |      | 1.13  | 1.50 | μs                |
| Group Delay Ripple, 146 to 166 MHz      |           |         |      | 30    | 100  | ns <sub>p-p</sub> |
| Operating Temperature Range             |           | 1       | -40  |       | +85  | °C                |
| Source Impedance                        |           |         |      | 50    |      | ohm               |
| VSWR to Source through Matching Network |           |         |      | 1.4:1 | 2:1  |                   |
| Load Impedance                          |           |         |      | 50    |      | ohm               |
| VSWR to Load through Matching Network   |           |         |      | 1.4:1 | 2:1  |                   |
| Frequency Temperature Coefficient       |           |         |      | -94   |      | ppm/K             |

|                                          |                                            |
|------------------------------------------|--------------------------------------------|
| Impedance Matching to 50 Ω Unbalanced    | External L-C                               |
| Case Style                               | SM13365-12 13.3 x 6.5 mm Nominal Footprint |
| Lid Symbolization (YY = year, WW = week) | RFM SF2157A YYWW                           |

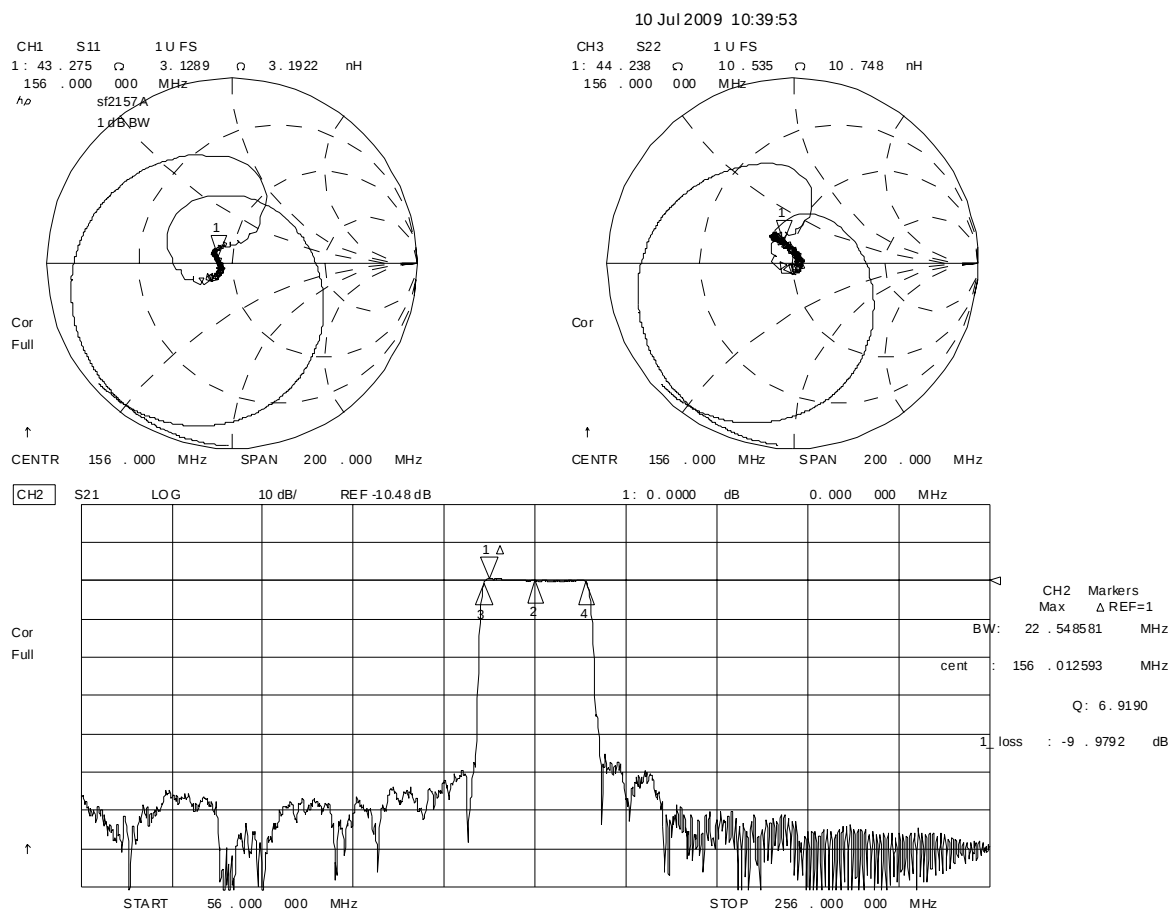


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

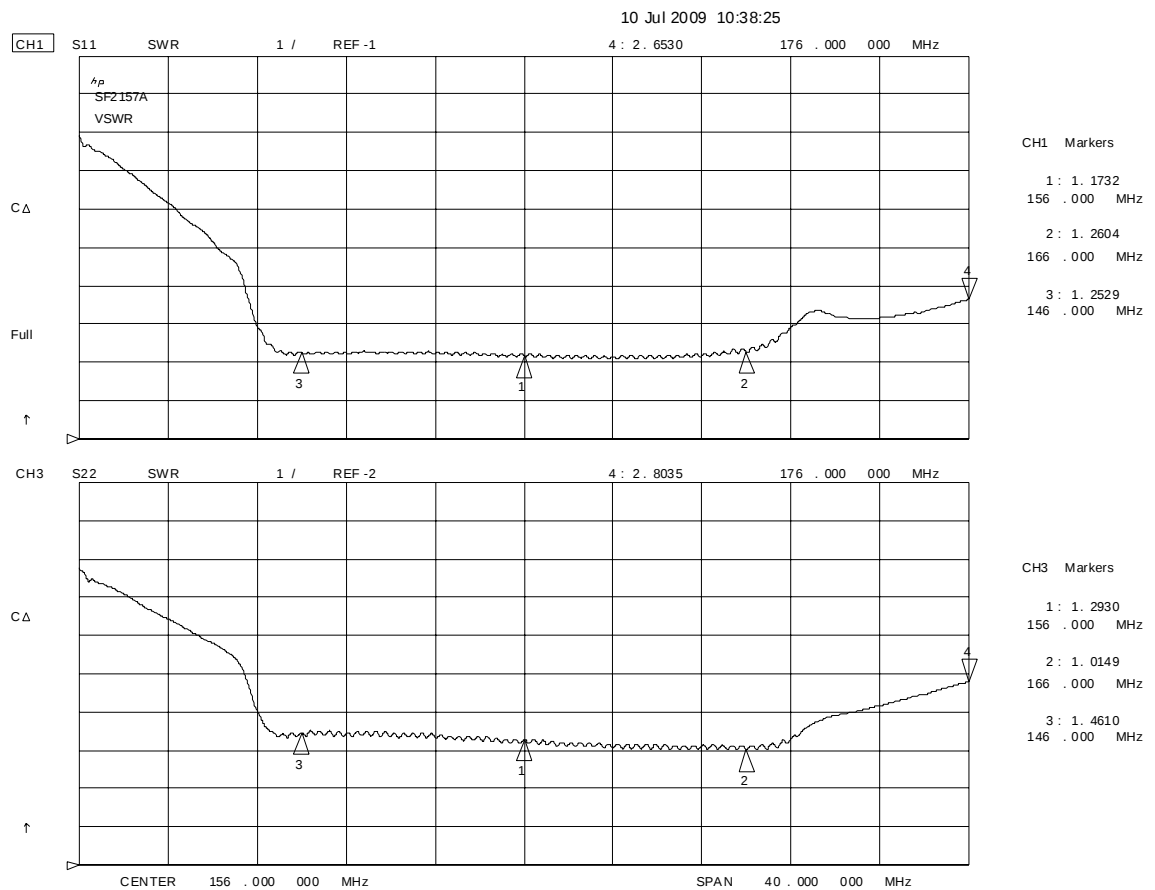
#### Notes:

1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 50 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency,  $f_c$ .
3. Rejection is measured as attenuation below the minimum IL point in the passband. Rejection in final user application is dependent on PCB layout and external impedance matching design. See Application Note No. 42 for details.
4. Part to part absolute delay measurement records the absolute delay mean across 1 dB passband.
5. "LRIP" or "L" after the part number indicates "low rate initial production" and "ENG" or "E" indicates "engineering prototypes."
6. The design, manufacturing process, and specifications of this filter are subject to change.
7. Either Port 1 or Port 2 may be used for either input or output in the design. However, impedances and impedance matching may vary between Port 1 and Port 2, so that the filter must always be installed in one direction per the circuit design.
8. US and international patents may apply.

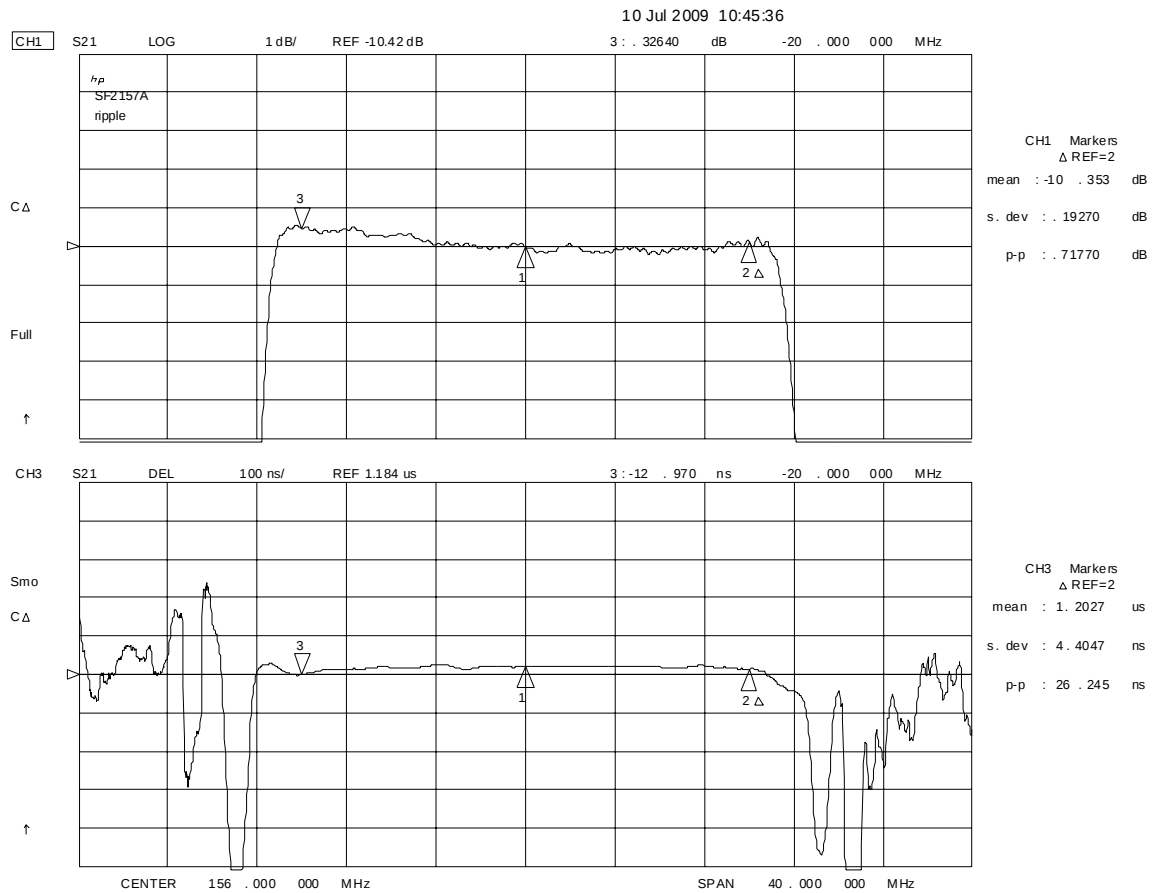
# S<sub>11</sub>, S<sub>22</sub> and S<sub>21</sub> Filter Plots



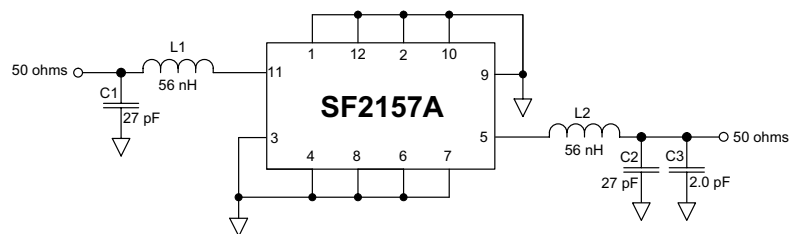
# Filter Passband VSWR



# Filter Amplitude and Group Delay Ripple

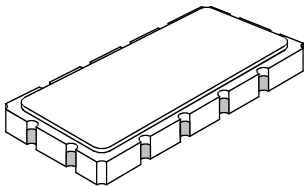


## SF2157A Demonstration Circuit



SM13365-12 Case

12-Terminal Ceramic Surface-Mount Case
13.3 x 6.5 mm Nominal Footprint



Case Dimensions

| Dimension | mm    |       |       | Inches |       |       |
|-----------|-------|-------|-------|--------|-------|-------|
|           | Min   | Nom   | Max   | Min    | Nom   | Max   |
| A         | 13.08 | 13.31 | 13.60 | 0.515  | 0.524 | 0.535 |
| B         | 6.27  | 6.50  | 6.80  | 0.247  | 0.256 | 0.268 |
| C         |       | 1.91  | 2.00  |        | 0.075 | 0.079 |
| D         |       | 1.50  |       |        | 0.059 |       |
| E         |       | 0.79  |       |        | 0.031 |       |
| H         |       | 1.0   |       |        | 0.039 |       |
| P         |       | 2.54  |       |        | 0.100 |       |

Electrical Connections

| Connection  | Terminals  |
|-------------|------------|
| Input       | 11         |
| Output      | 5          |
| Case Ground | All others |

Materials

|                    |                                                |
|--------------------|------------------------------------------------|
| Solder Pad Plating | 0.3 to 1.0 μm Gold over 1.27 to 8.89 μm Nickel |
| Lid Plating        | 2.0 to 3.0 μm Nickel                           |
| Body               | Al <sub>2</sub> O <sub>3</sub> Ceramic         |
| Pb Free            |                                                |

