



# Preliminary

- Precision IF SAW Filter
- Hermetic 13.3 x 6.5 mm Surface-mount Case
- Complies with Directive 2002/95/EC (RoHS)

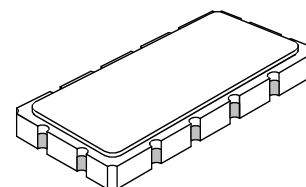


## SF2229A

## 70 MHz SAW Filter

### Absolute Maximum Ratings

| Rating                                                       | Value           | Units |
|--------------------------------------------------------------|-----------------|-------|
| Maximum Incident Power in Passband                           | +20             | dBm   |
| Maximum DC Voltage on any Non-ground Terminal                | 10              | VDC   |
| Storage Temperature Range in Tape and Reel                   | -40 to +85      | °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       | 69.9 | 70.0 | 70.1 | MHz               |
| 1 dB Bandwidth                        | $BW_1$    | 1       | 0.8  | 0.92 |      |                   |
| 3 dB Bandwidth                        | $BW_3$    | 1       | 1.1  | 1.2  |      |                   |
| 40 dB Bandwidth                       | $BW_{40}$ | 1       |      | 2.2  | 2.3  |                   |
| Insertion Loss                        | IL        | 1       |      | 9.2  | 11.5 | dB                |
| Amplitude Ripple, $f_C \pm 0.3$ MHz   |           | 1, 2, 3 |      | 0.7  | 1.0  | dB <sub>p-p</sub> |
| Group Delay Ripple, $f_C \pm 0.3$ MHz |           |         |      | 350  | 400  | ns <sub>p-p</sub> |
| Relative Attenuation:                 |           |         |      |      |      | dB                |
| 10 to 65 MHz                          |           |         | 45   | 55   |      |                   |
| 75 to 200 MHz                         |           |         | 45   | 55   |      |                   |
| Operating Temperature Range           |           | 1       | -40  |      | +80  | °C                |
| Frequency Temperature Coefficient     |           |         |      | -94  |      | ppm/°C            |

|                                                          |                                            |
|----------------------------------------------------------|--------------------------------------------|
| Impedance Matching to 50 $\Omega$ Unbalanced Source/Load | External L-C                               |
| Case Style                                               | SM13365-12 13.3 x 6.5 mm Nominal Footprint |
| Lid Symbolization (YY = year, WW = week)                 | RFM SF2229A YYWW                           |

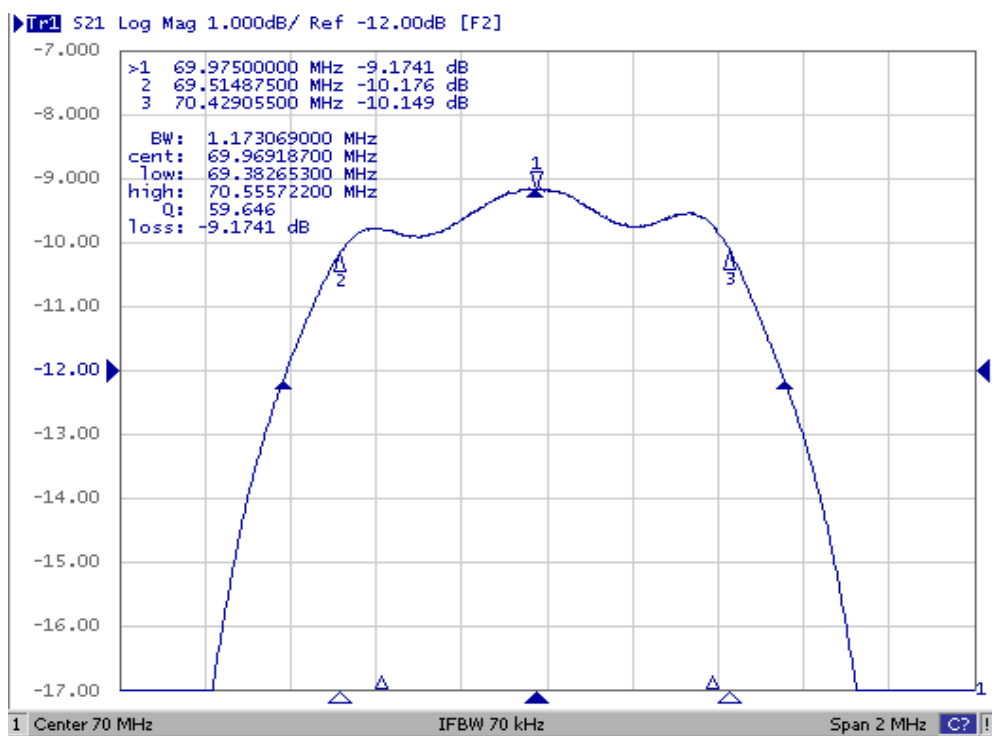
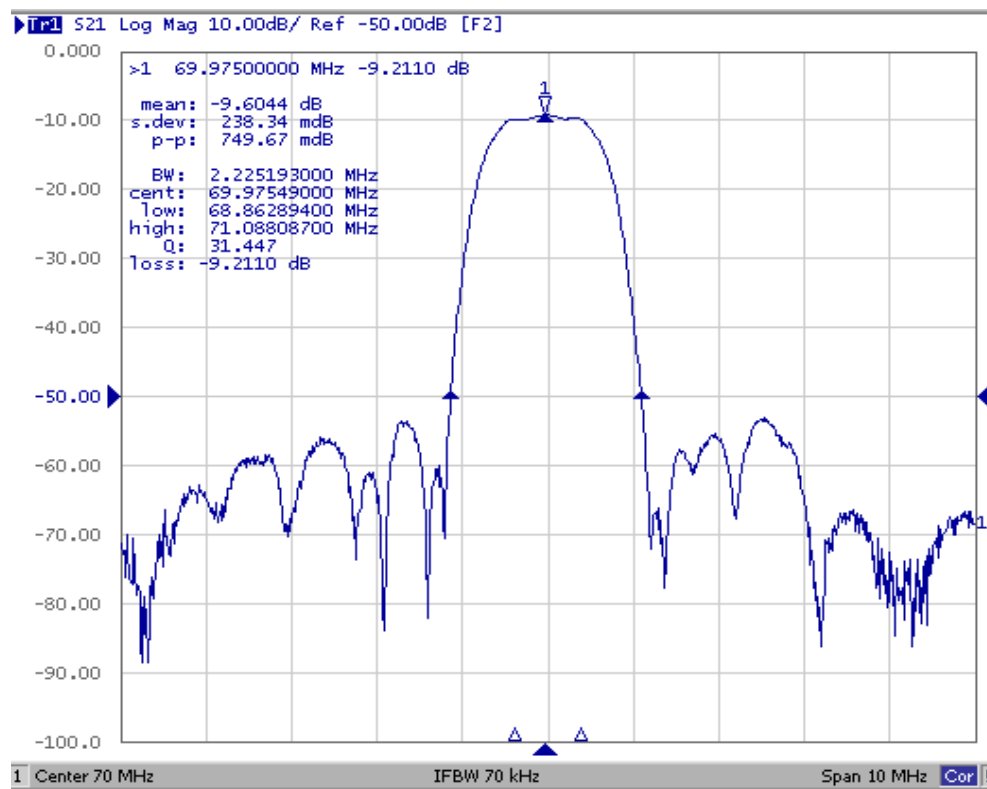


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

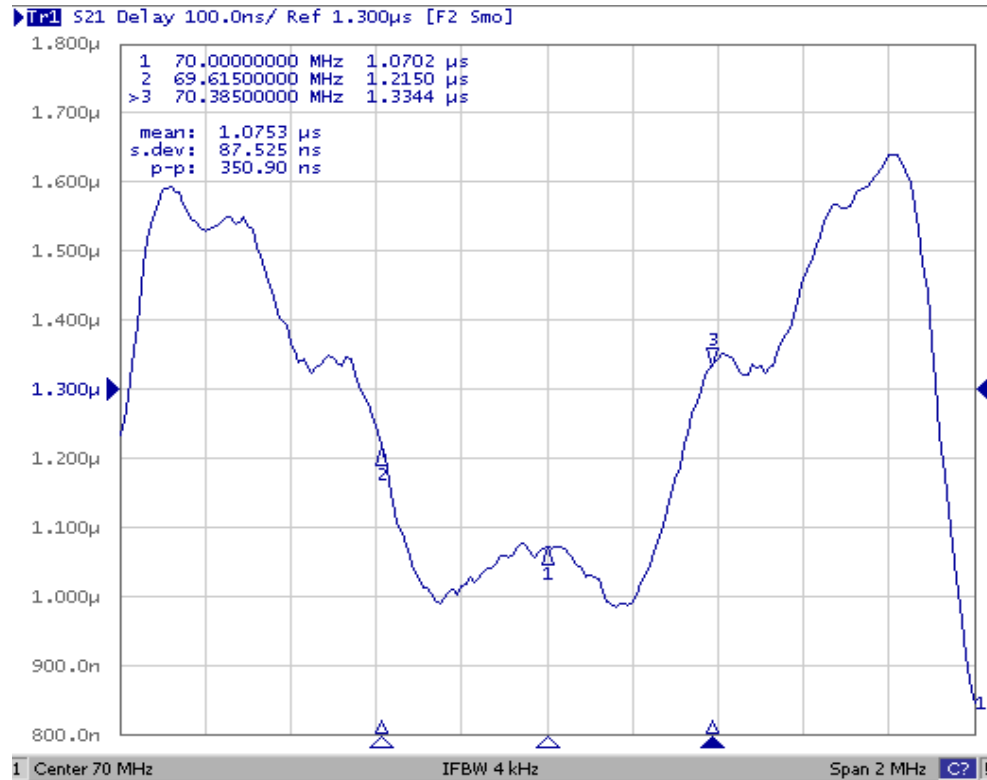
### Notes:

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  $\Omega$  and measured with 50  $\Omega$  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.

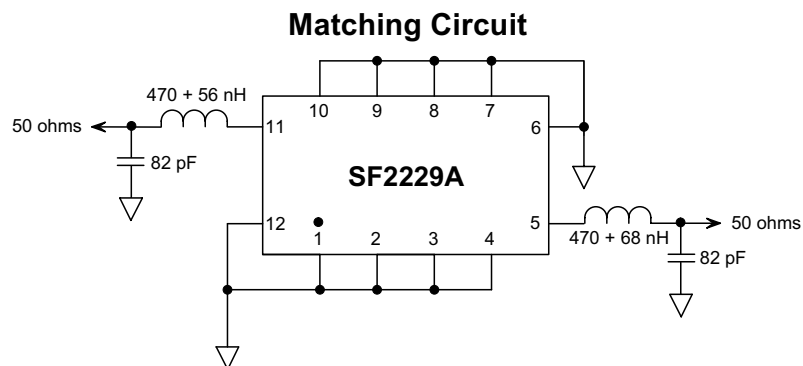
## Filter Amplitude Response Plots



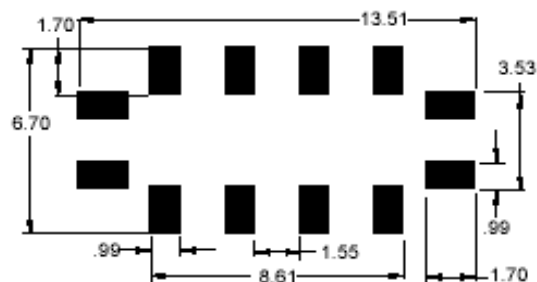
## Filter Group Delay Plot



## Tuning Component Values

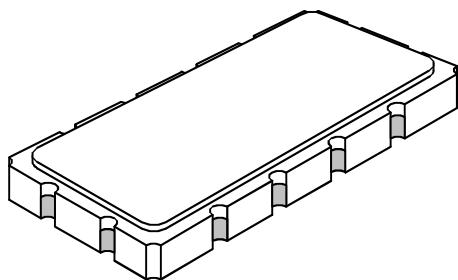


## PCB Pad Layout



# SM13365-12 Ceramic Surface-mount 12-Terminal Case

## 13.3 x 6.5 mm Nominal Footprint



### Electrical Connections

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

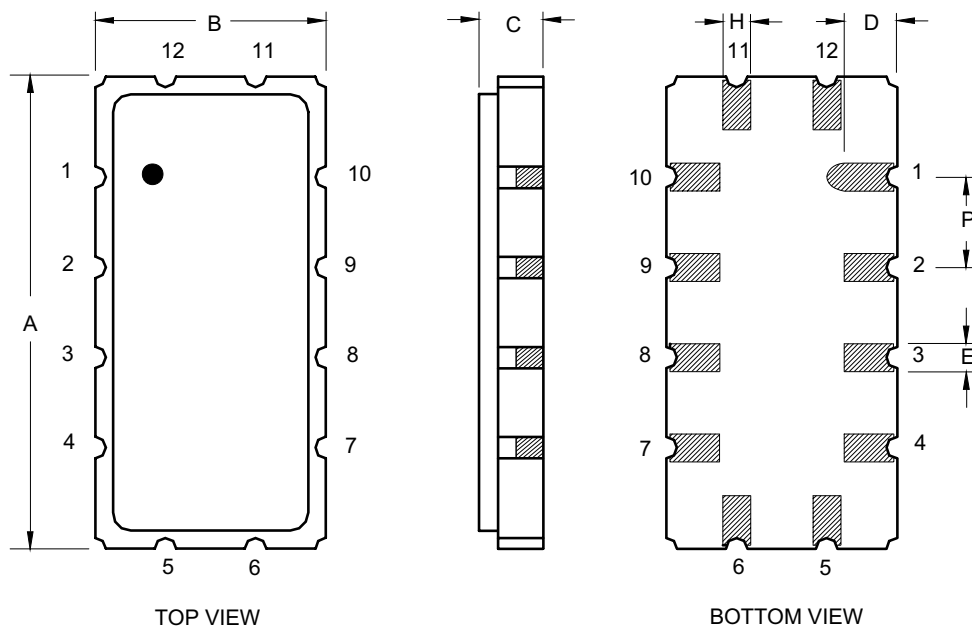
### Case Dimensions

| Dimension | mm    |       |       | Inches |       |       |
|-----------|-------|-------|-------|--------|-------|-------|
|           | Min   | Nom   | Max   | Min    | Nom   | Max   |
| A         | 13.10 | 13.30 | 13.50 | 0.516  | 0.524 | 0.531 |
| B         | 6.30  | 6.50  | 6.70  | 0.248  | 0.256 | 0.264 |
| C         |       |       | 1.80  |        |       | 0.071 |
| D         |       | 1.50  |       |        | 0.059 |       |
| E         |       | 0.80  |       |        | 0.031 |       |
| H         |       | 0.80  |       |        | 0.031 |       |
| P         |       | 2.54  |       |        | 0.100 |       |

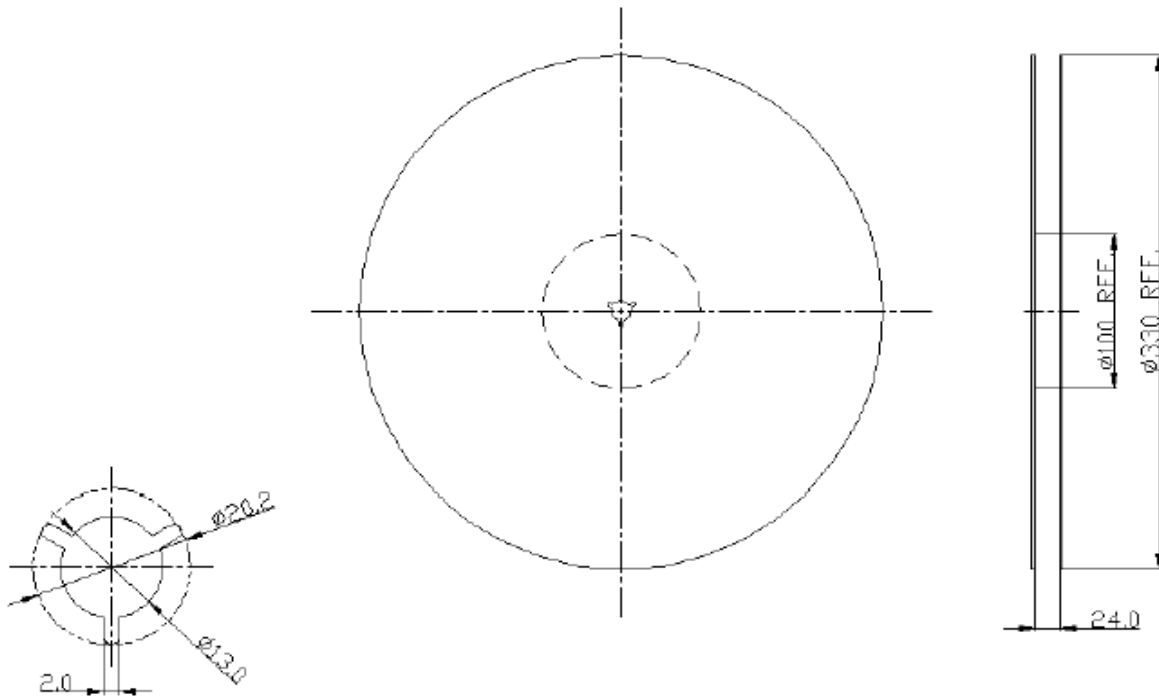
### Case Material

| Materials          |                                                                      |
|--------------------|----------------------------------------------------------------------|
| Solder Pad Plating | 0.3 to 1.0 $\mu\text{m}$ Gold over 1.27 to 8.89 $\mu\text{m}$ Nickel |
| Lid Plating        | 2.0 to 3.0 $\mu\text{m}$ Nickel                                      |
| Body               | $\text{Al}_2\text{O}_3$ Ceramic                                      |
| Pb Free            |                                                                      |

### Case Outline Drawing



## Tape and Reel Details



# 13.3X6.5

