

# Preliminary

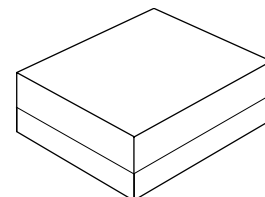


- Low-loss SAW Filter
- Single-ended Input, Balanced Output
- Excellent Rejection
- 1.45 x 1.15 mm Surface-Mount Case
- Complies with Directive 2002/95/EC (RoHS)



**SF2212K**

**1902 MHz  
SAW Filter**



**SM1411-5**

## Absolute Maximum Ratings

| Rating   | Value           | Units |
|--|-----------------|-------|
| Maximum Incident Power in Passband                       | +10             | dBm   |
| Maximum DC Voltage On any Non-ground Terminal            | 3               | VDC   |
| Operating Temperature Range                              | -20 to +75      | °C    |
| Storage Temperature Range in Tape and Reel               | -30 to +85      | °C    |
| Maximum Soldering Temperature Profile (5 cycles maximum) | 265 °C for 10 s |       |

## Electrical Characteristics

| Characteristic  | Sym        | Notes | Min                   | Typ     | Max     | Units             |
|---|------------|-------|-----------------------|---------|---------|-------------------|
| Center Frequency  | $f_C$      |       |                       | 1902    |         | MHz               |
| Insertion Loss, 1884.55 to 1919.45 MHz                            | $IL_{MAX}$ |       |                       | 1.8     | 2.4     | dB                |
| Amplitude Ripple, 1884.55 to 1919.45 MHz                          |            |       |                       | 0.5     | 1.0     | dB <sub>P-P</sub> |
| Output Amplitude Balance, $ S_{31} / S_{21} $                     |            |       | -3                    | +1.9    | +3      | dB                |
| Output Phase Balance, $Phase(S_{31}) - Phase(S_{21}) + 180^\circ$ |            |       | -12                   | +6      | 12      | deg               |
| Rejection Referenced to 0 dB                                      |            |       |                       |         |         |                   |
| 1349 to 1455 MHz  |            |       | 35                    | 40      |         | dB                |
| 1614 to 1687 MHz  |            |       | 35                    | 46      |         |                   |
| 1731 to 1801 MHz  |            |       | 34                    | 36      |         |                   |
| 1986 to 2056 MHz  |            |       | 18                    | 22      |         |                   |
| 2037 to 2039 MHz  |            |       | 25                    | 33      |         |                   |
| 2113 to 2186 MHz  |            |       | 35                    | 42      |         |                   |
| 2386 to 2451 MHz  |            |       | 40                    | 48      |         |                   |
| 3000 to 3840 MHz  |            |       | 40                    | 51      |         |                   |
| 4941 to 5760 MHz  |            |       | 35                    | 48      |         |                   |
| VSWR, 1884.55 to 1919.45 MHz                                      |            |       |                       | 2.0 : 1 | 2.5 : 1 |                   |
| Terminating Source impedance                                      | $Z_S$      |       |                       | 50      |         | $\Omega$          |
| Terminating Balanced Load impedance                               | $Z_L$      |       | 200 $\Omega$    22 nH |         |         |                   |
| Case Style  |            |       | SM1411-5              |         |         |                   |
| Lid Symbolization (V = week character)                            |            |       | 7V                    |         |         |                   |

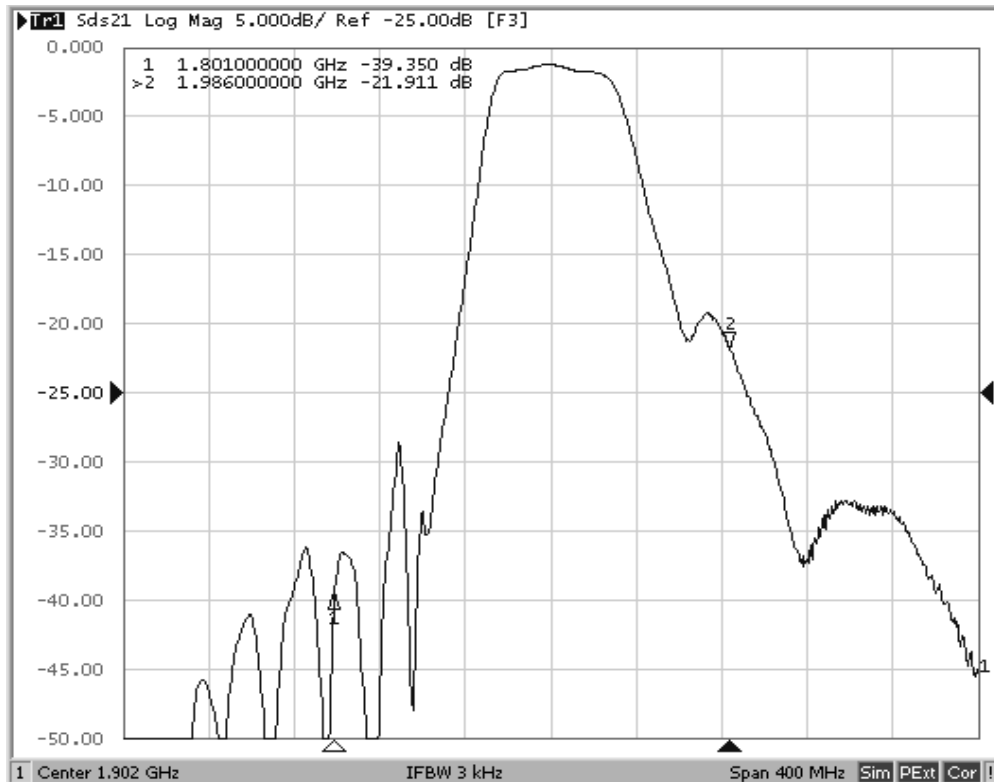
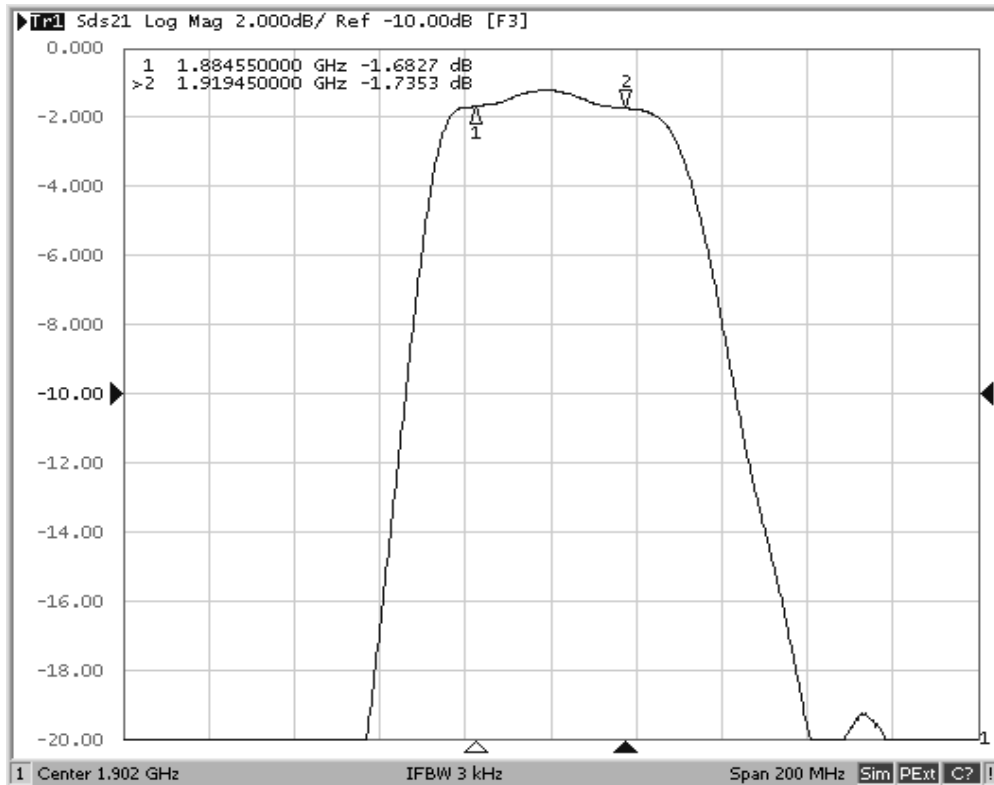


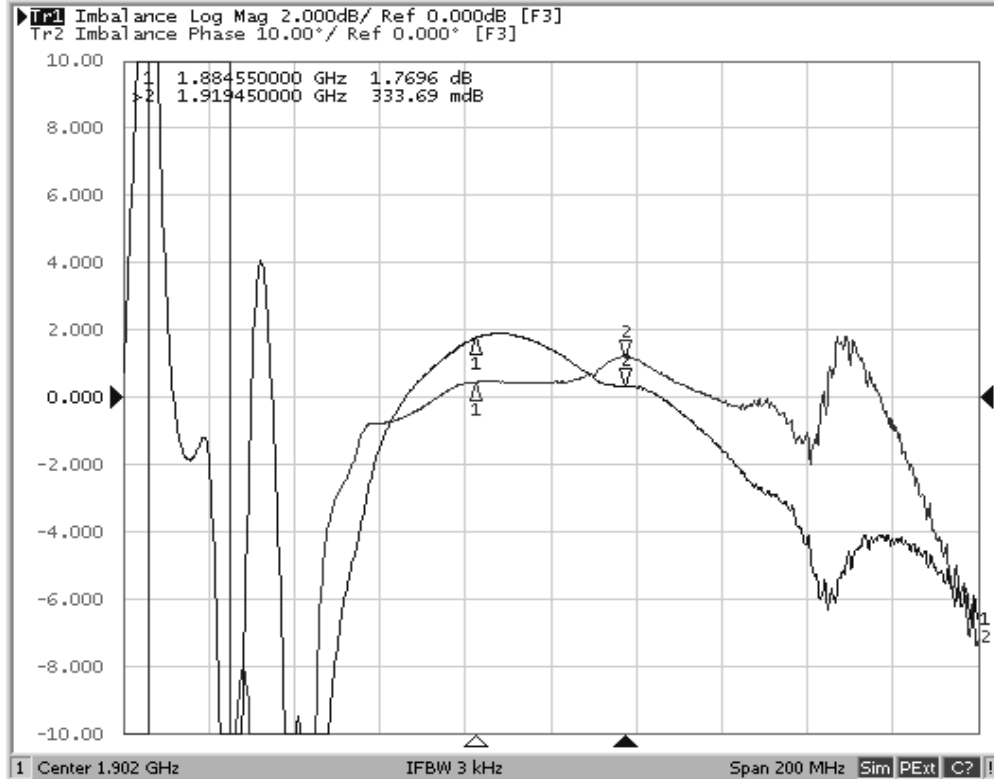
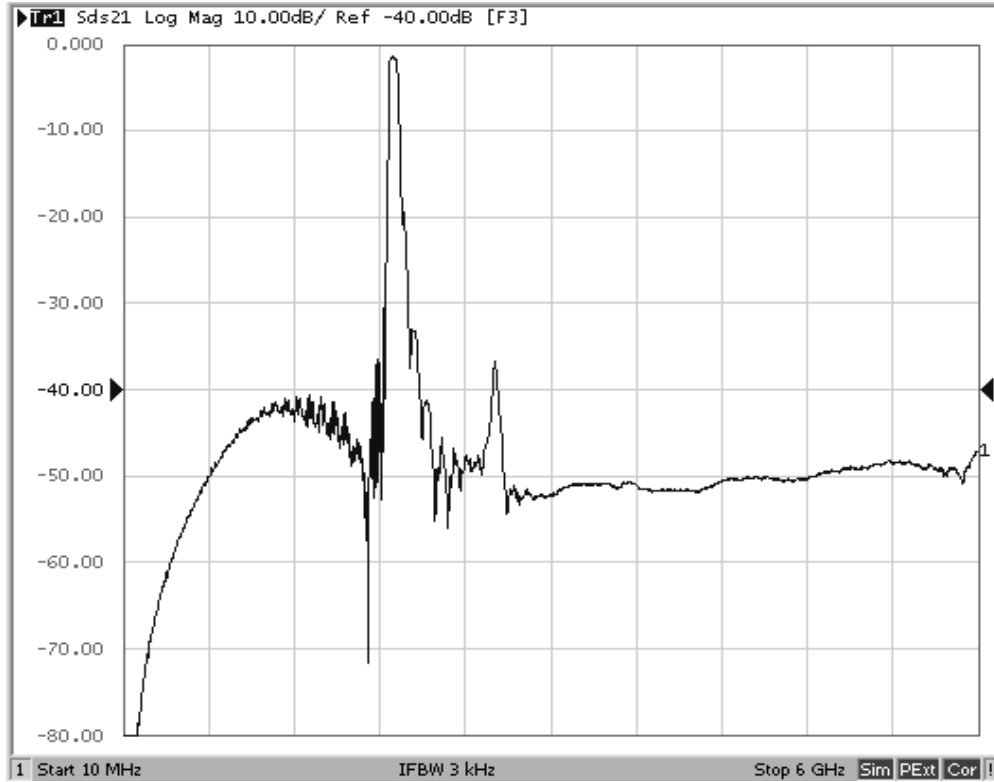
**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

### Notes:

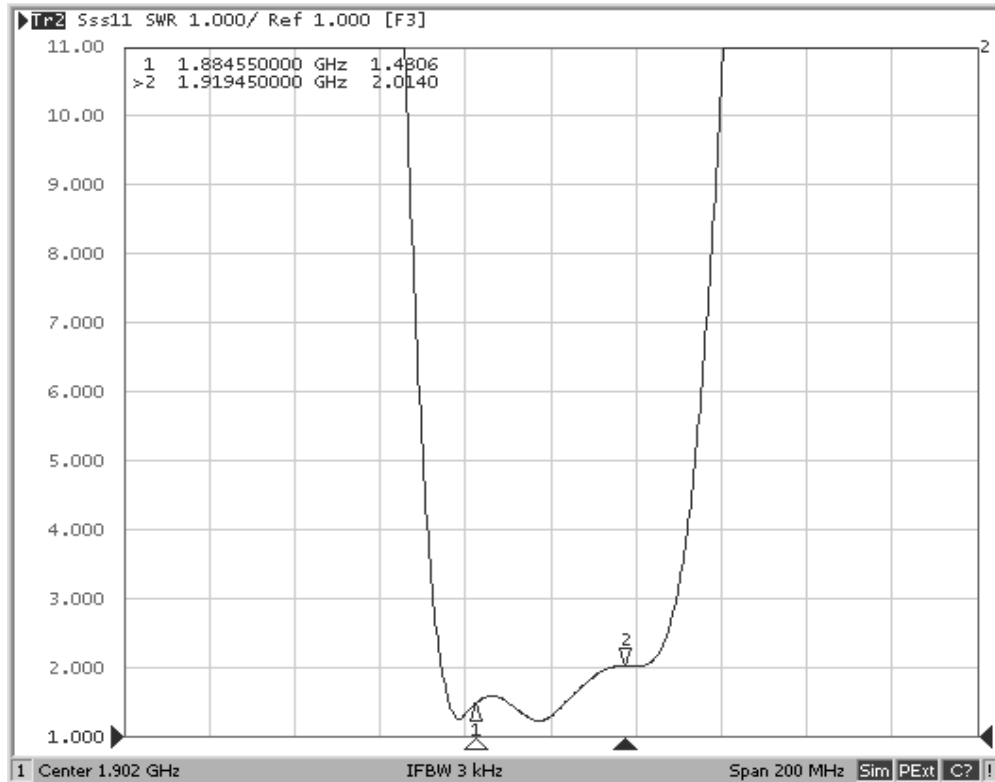
1. US and international patents may apply.
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# Frequency Response Plots

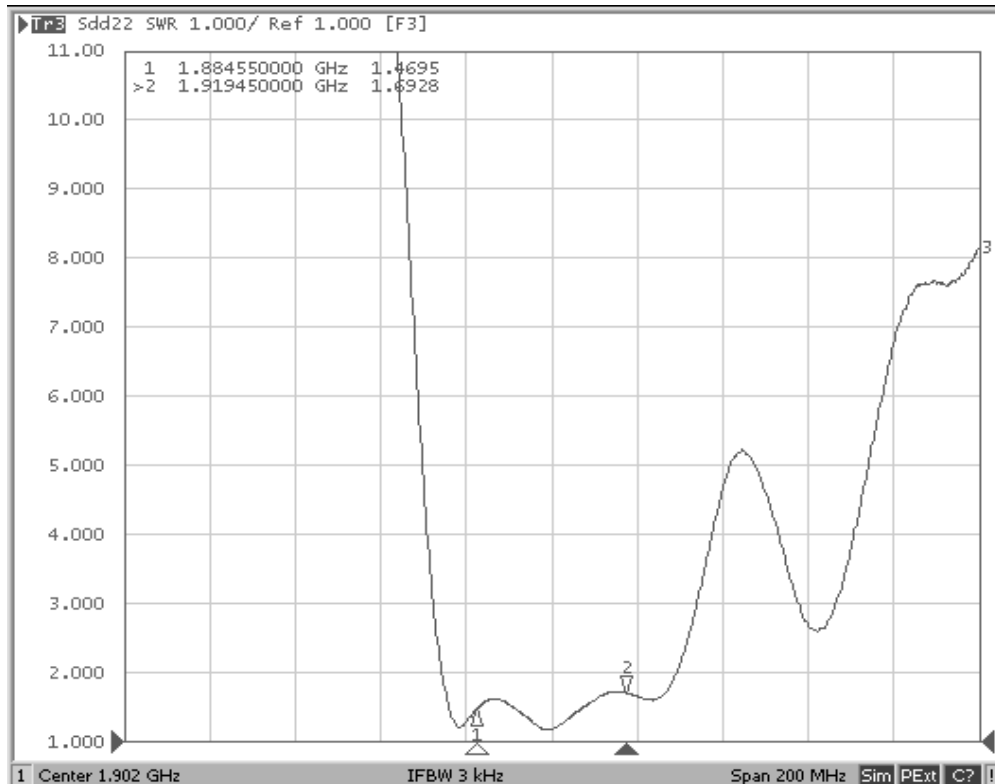




## 50 ohm Input VSWR Plot



## 200 ohm Balanced Output VSWR Plot



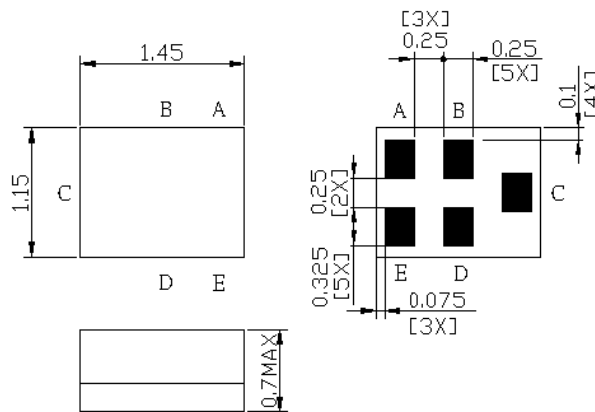
# SM1411-5 Case

## 5-Terminal Surface-Mount Case 1.45 X 1.15- mm Nominal Footprint

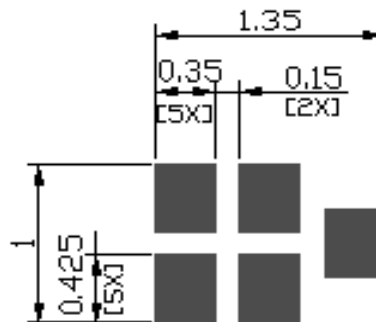
### Electrical Connections

| Connection         | Terminals |
|--------------------|-----------|
| Single-ended Input | C         |
| Balanced Output    | A, E      |
| Ground             | B, D      |

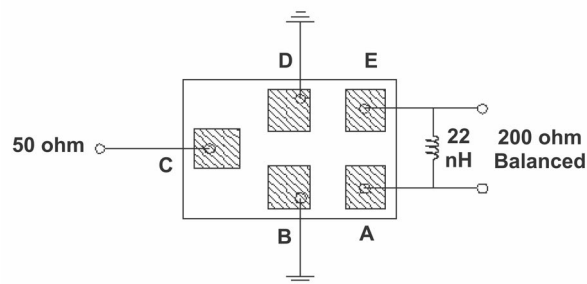
### Package Dimensions



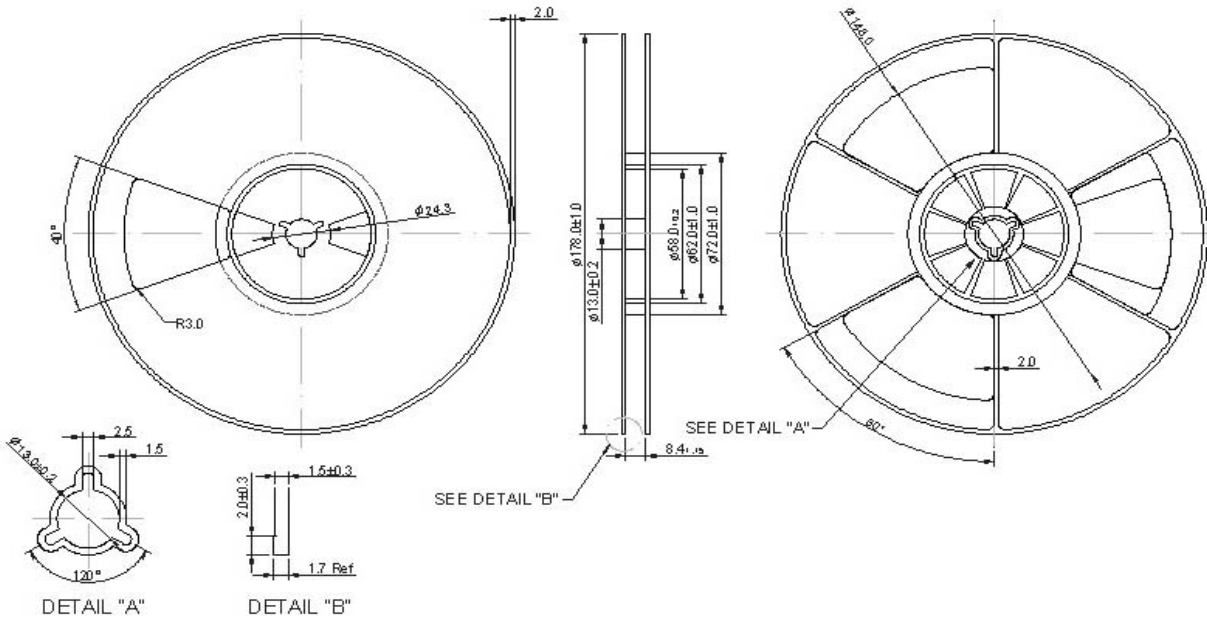
### Circuit Board Footprint



### Test Circuit



# Reel Dimensions - 7 inch Reel, 3000 Filters



## Tape Dimensions

