



# Preliminary

- Surface Mount 3.8 x 3.8 x 1.4 mm Package
- Complies with Directive 2002/95/EC (RoHS)

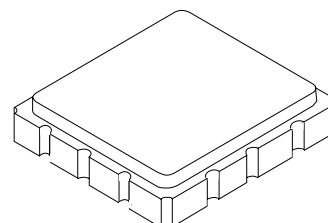


## Absolute Maximum Ratings

| Rating                                     | Value      | Units |
|--------------------------------------------|------------|-------|
| CW Input Power Level, 50,000 hours, +50 °C | 0.5        | W     |
| DC Voltage                                 | 0          | V     |
| Operating Temperature Range                | -30 to +85 | °C    |
| Storage Temperature Range in Tape and Reel | -40 to +85 | °C    |

**SF1223D**

**800/842 MHz  
SAW Duplexer**



## Electrical Characteristics, Transmitter, 842.0 MHz

| Characteristic                                                   | Sym                                             | Notes            | Min            | Typ   | Max   | Units             |
|------------------------------------------------------------------|-------------------------------------------------|------------------|----------------|-------|-------|-------------------|
| Center Frequency                                                 | F <sub>C</sub>                                  |                  |                | 842.0 |       | MHz               |
| Insertion Loss, 832.0 to 852.0 MHz                               | IL                                              |                  |                | 2.0   | 3.0   | dB                |
| Amplitude Ripple, 832.0 to 852.0 MHz                             |                                                 |                  |                | 0.8   | 1.5   | dB <sub>p-p</sub> |
| VSWR, 832.0 to 852.0 MHz                                         |                                                 |                  |                | 1.6:1 | 2.2:1 |                   |
| Attenuation Referenced to 0 dB, 790.0 to 810.0 MHz               |                                                 |                  | 45             | 50    |       | dB                |
| Input Impedance (Antenna)                                        | Z <sub>S</sub>                                  |                  | 50 (L-C Match) |       |       | Ω                 |
| Output Impedance, (TX and RX)                                    | Z <sub>L</sub>                                  |                  | 50 (L-C Match) |       |       |                   |
| Case Style                                                       | SM3838-12 3.8 x 3.8 x 1.45 mm Nominal Footprint |                  |                |       |       |                   |
| Lid Symbolization (Y=year, WW=week, S=shift) dot=pin 1 indicator | 939, YWWS                                       |                  |                |       |       |                   |
| Standard Reel Quantity                                           | Reel Size 7 Inch                                | 1000 Pieces/Reel |                |       |       |                   |
|                                                                  | Reel Size 13 Inch                               | 3000 Pieces/Reel |                |       |       |                   |



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

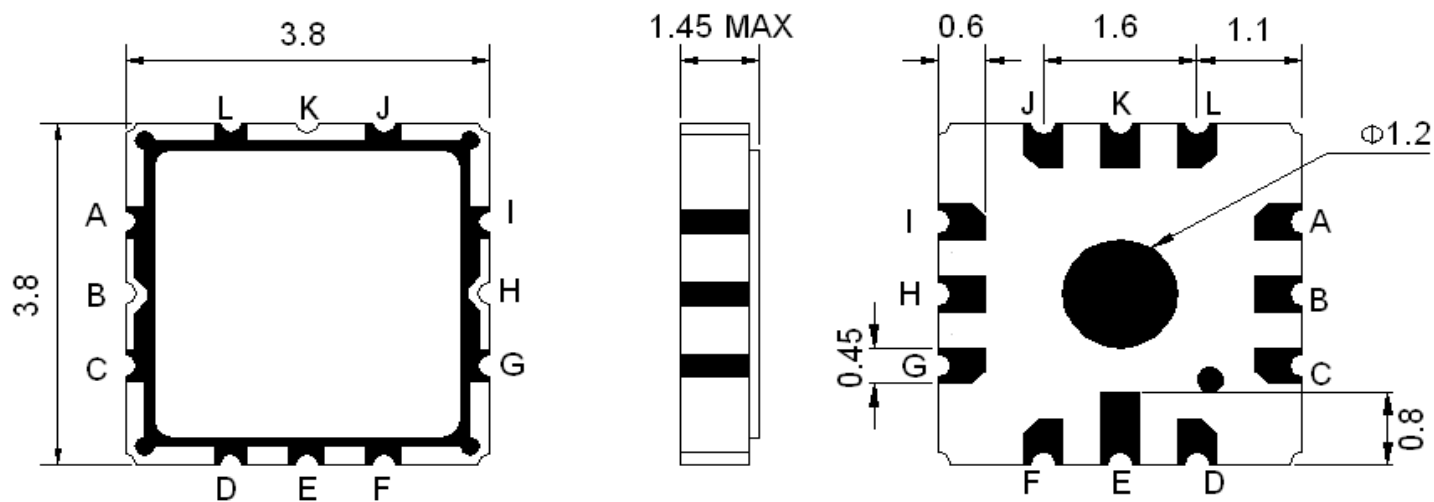
### Notes:

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, fc.
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. "LRIP" or "L" after the part number indicates "low rate initial production" and "ENG" or "E" indicates "engineering prototypes."
5. The design, manufacturing process, and specifications of this filter are subject to change.
6. 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.
7. US and international patents may apply.
8. RFM, stylized RFM logo, and RF Monolithics, Inc. are registered trademarks of RF Monolithics, Inc

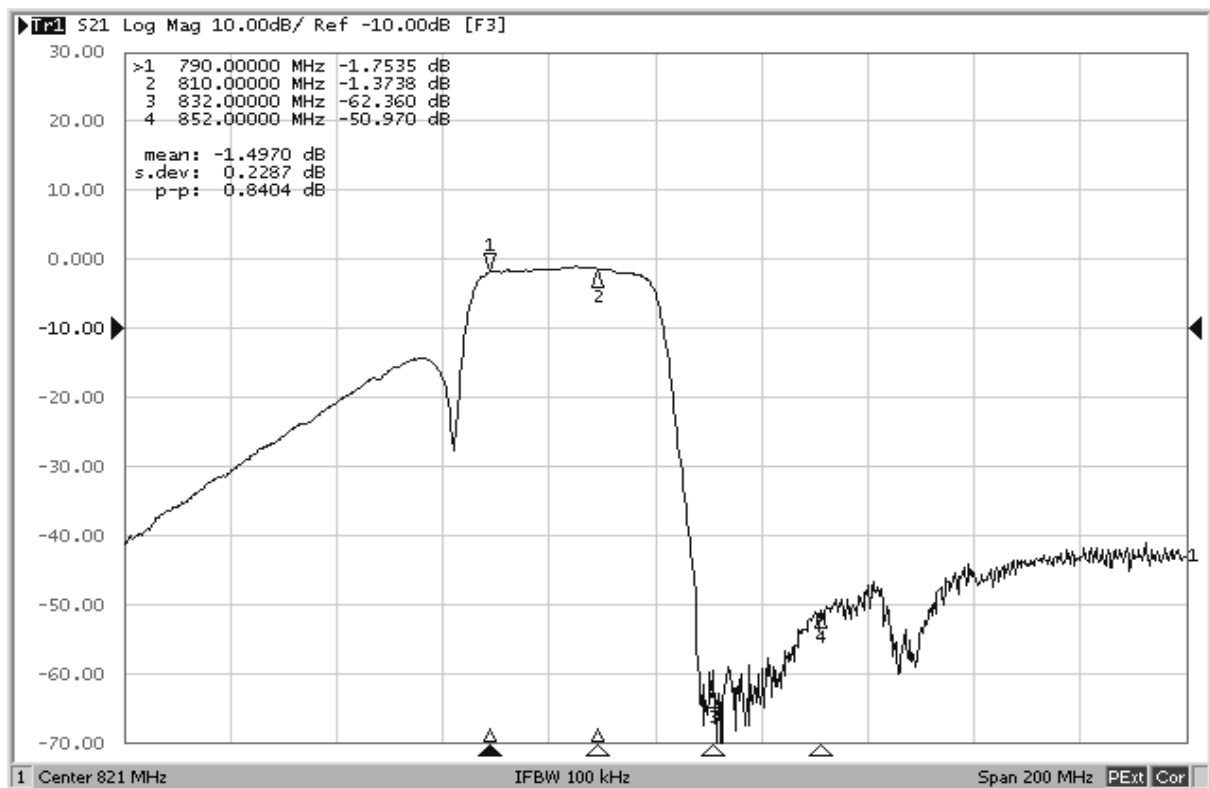
# Electrical Characteristics, Receiver, 800.0 MHz

| Characteristic                       | Sym   | Notes | Min | Typ   | Max   | Units             |
|--------------------------------------|-------|-------|-----|-------|-------|-------------------|
| Center Frequency                     | $F_C$ |       |     | 800.0 |       | MHz               |
| Insertion Loss, 790.0 to 810.0 MHz   | IL    |       |     | 1.8   | 2.5   | dB                |
| Amplitude Ripple, 790.0 to 810.0 MHz |       |       |     | 0.8   | 1.5   | dB <sub>P-P</sub> |
| VSWR, 790.0 to 810.0 MHz             |       |       |     | 1.7:1 | 2.2:1 |                   |
| Attenuation, 832.0 to 852.0 MHz      |       |       | 45  | 50    |       | dB                |
| Receiver-Transmitter Isolation:      |       |       |     |       |       |                   |
| 790.0 to 810.0 MHz                   |       |       | 45  | 50    |       | dB                |
| 832.0 to 852.0 MHz                   |       |       | 45  | 50    |       |                   |

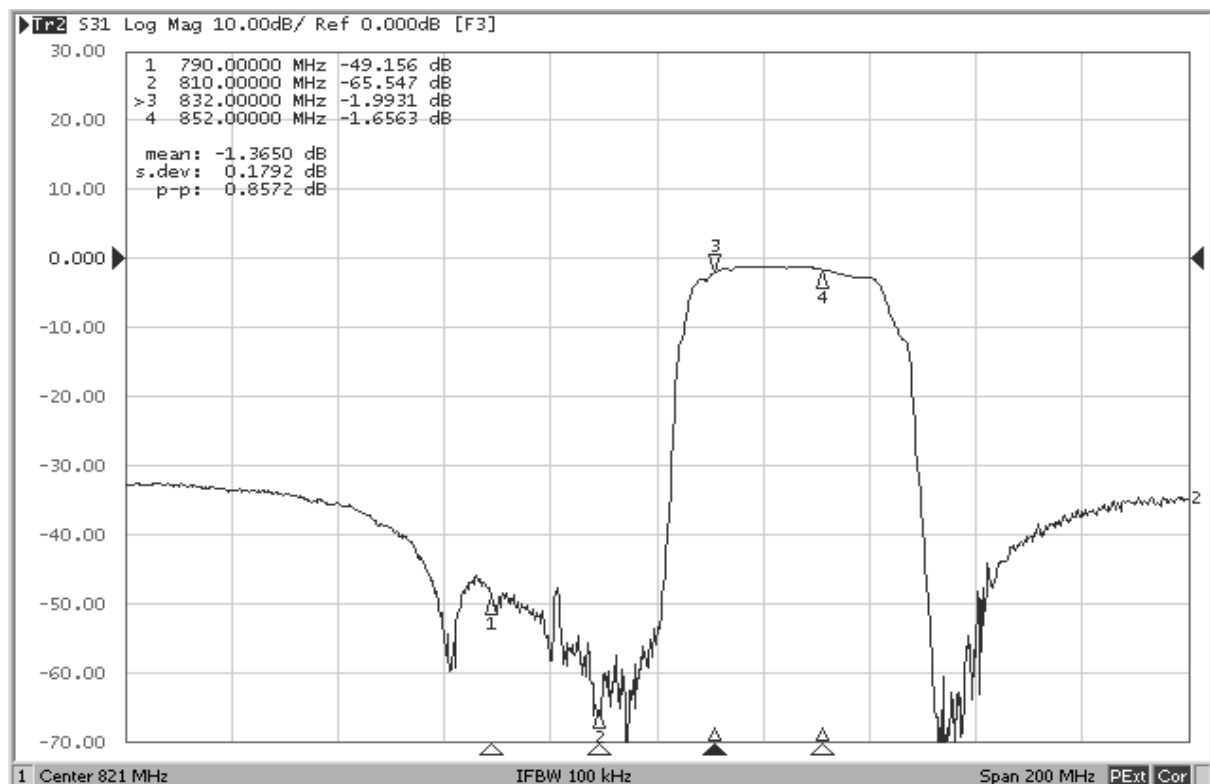
## Duplexer Package



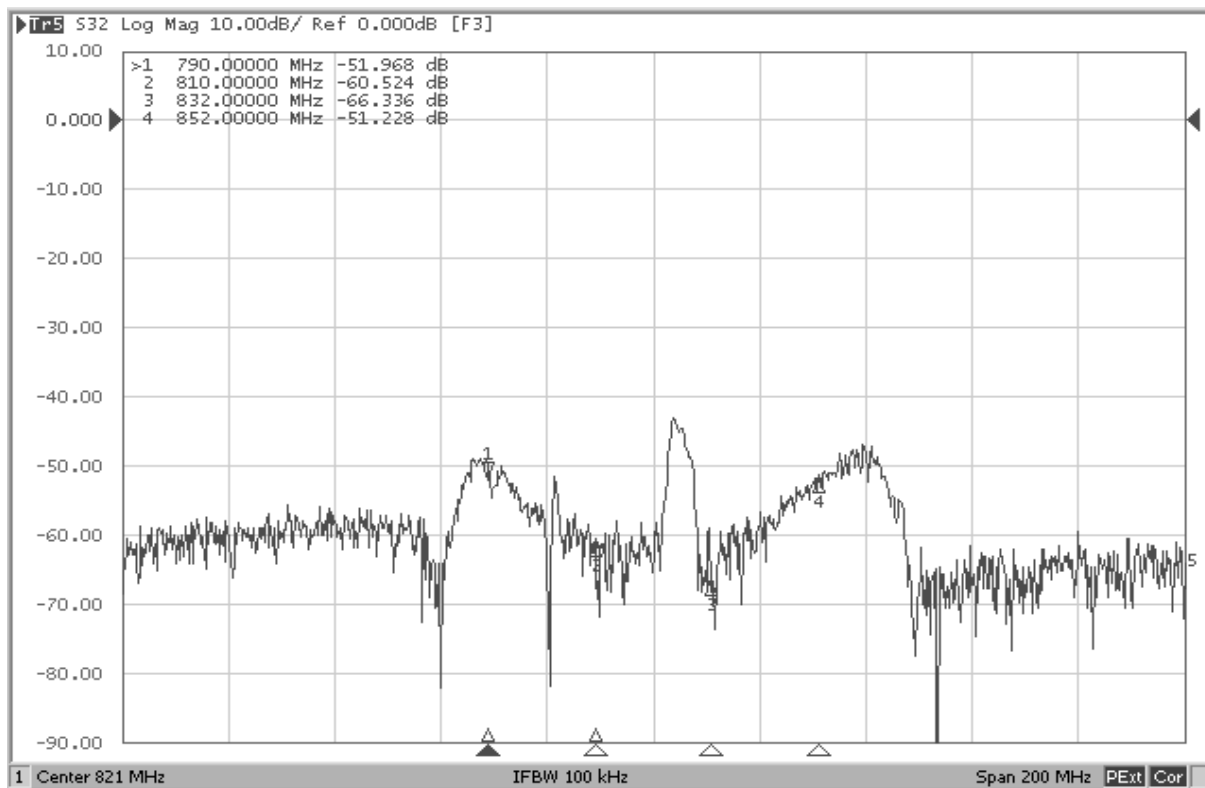
## Receiver Port to Antenna Port Amplitude Response



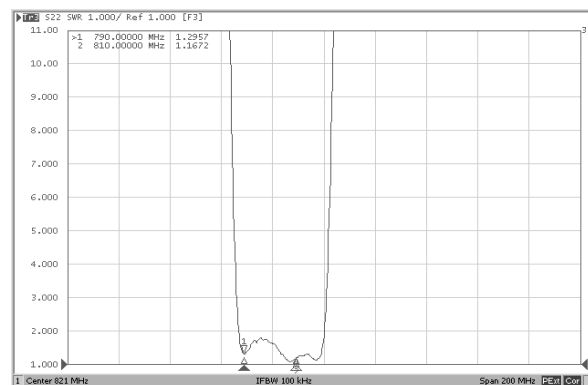
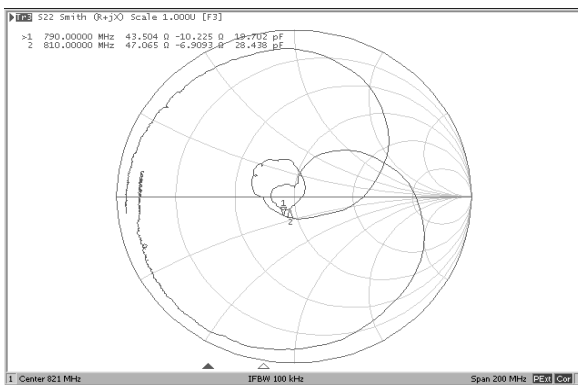
## Transmitter Port to Receiver Port Amplitude Response



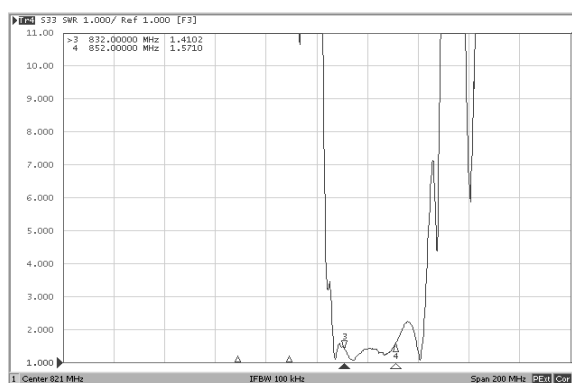
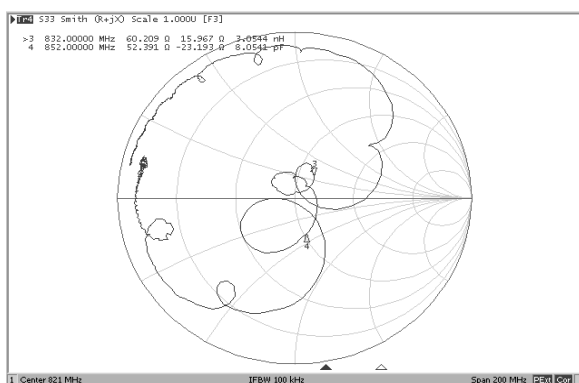
## Receiver Port -Transmitter Port Isolation Plot



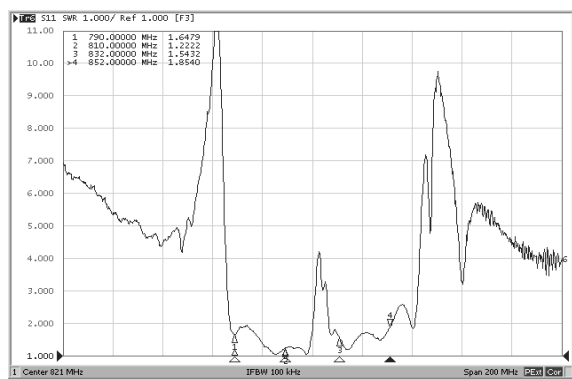
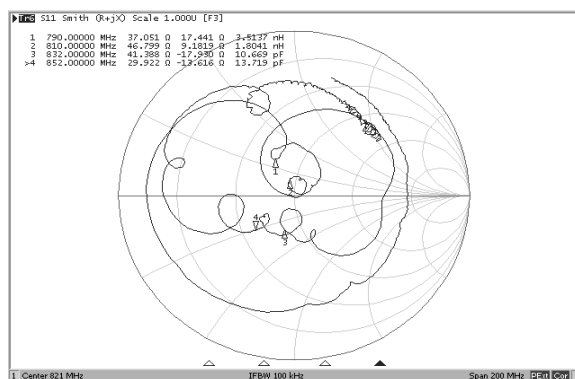
## Receiver Port Smith Chart and VSWR Plots



## Transmitter Port Smith Chart and VSWR Plots

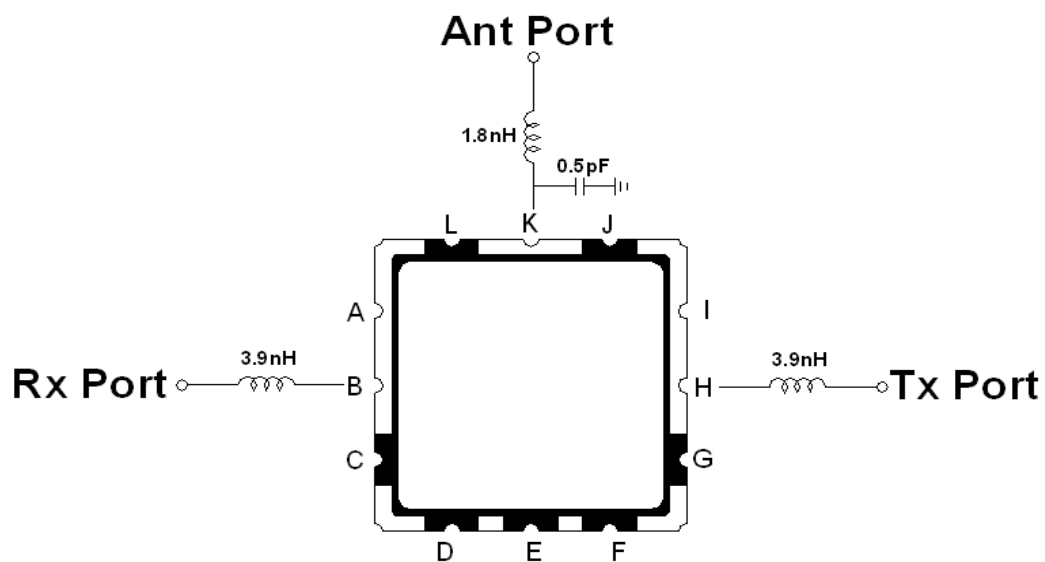


## Antenna Port Smith Chart and VSWR Plots



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## Duplexer Test Circuit



K is the Antenna Port  
B is the Receiver Port  
H is the Transmitter Port  
All other Package Pads are Ground