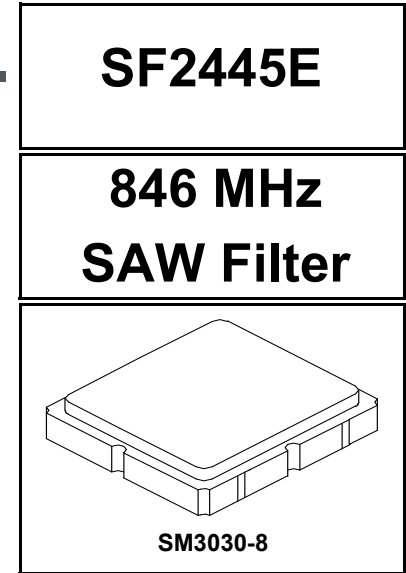


- **RF Filter for Mobile Communication Applications**
- **Low Insertion Loss**
- **3.0 x 3.0 x 1.3 mm Surface-Mount Case**
- **The SAW filters are 100% tested in a test fixture, and Murata has made the best effort to correlate such test results to the performance on the customer's board with recommended matching.**

**Absolute Maximum Ratings**

| Rating                                      | Value           | Units    |
|---|-----------------|----------|
| Maximum Incident Power in Passband          | +15             | dBm      |
| Maximum DC Voltage Between any 2 Terminals  | 3               | VDC      |
| Operable Temperature Range                  | -45 to +125     | °C       |
| Specification Temperature Range             | -30 to +85      | °C       |
| Storage Temperature Range                   | -40 to +85      | °C       |
| Terminating Source Impedance (single) $Z_S$ | 50              | $\Omega$ |
| Terminating Load Impedance (single) $Z_L$   | 50              | $\Omega$ |
| Maximum Soldering Profile                   | 260 °C for 10 s |          |



| Characteristic                                    | Sym                                 | Notes | Min  | Typ | Max  | Units |
|---|-------------------------------------|-------|------|-----|------|-------|
| Center Frequency                                  | $f_c$                               |       |      | 846 |      | MHz   |
| 3dB Bandwidth                                     |                                     |       | 1.23 | 1.7 |      | MHz   |
| Total Amplitude Variation, 845.385 to 846.615 MHz |                                     |       |      | 2.5 | 4.7  | dB    |
| Minimum Insertion Loss                            |                                     |       |      | 8.0 | 10.5 |       |
| Input VSWR, 845.385 to 846.615 MHz                |                                     |       |      | 4.7 | 6.3  |       |
| Output VSWR, 845.385 to 846.615 MHz               |                                     |       |      | 2.1 | 3.8  |       |
| Phase Deviation (845.385 to 846.615 MHz RMS))     |                                     |       |      | 2   | 5    | deg.  |
| Attenuation Referenced to IL min:                 | IL                                  |       |      |     |      | dB    |
| 0.1 to 841 MHz                                    |                                     |       | 40   | 45  |      |       |
| 841 to 844.28 MHz                                 |                                     |       | 19   | 25  |      |       |
| 849 to 1000 MHz                                   |                                     |       | 35   | 38  |      |       |
| Case Style  | SM3030-8 3 x 3 mm Nominal Footprint |       |      |     |      |       |
| Lid Symbolization (Y=year, WW=week, S=shift)      | 9B <u>YWW</u> S                     |       |      |     |      |       |

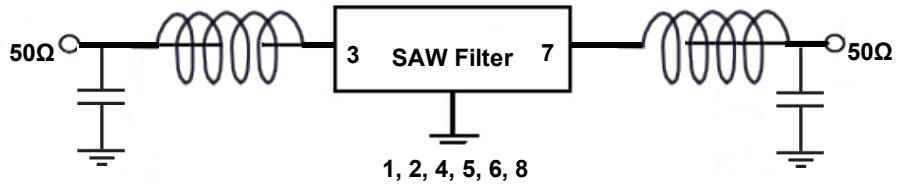
**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

**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. "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. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd.
9. Electrostatic Sensitive Device. Observe precautions for handling.

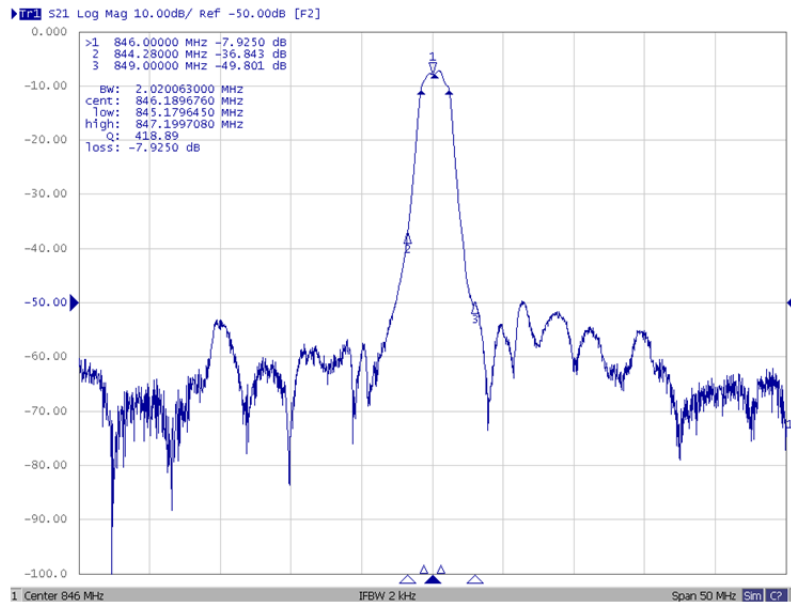
## Electrical Connections

| Connection | Terminals  |
|------------|------------|
| Input      | 3          |
| Output     | 7          |
| Ground     | All others |

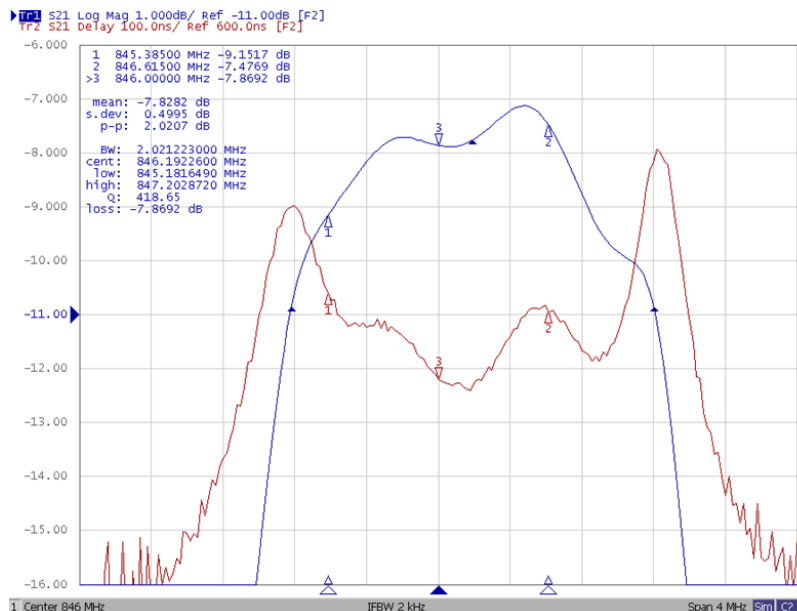


## Frequency Characteristics

### Narrow Band Response



### Pass Band and Group Time Delay Response

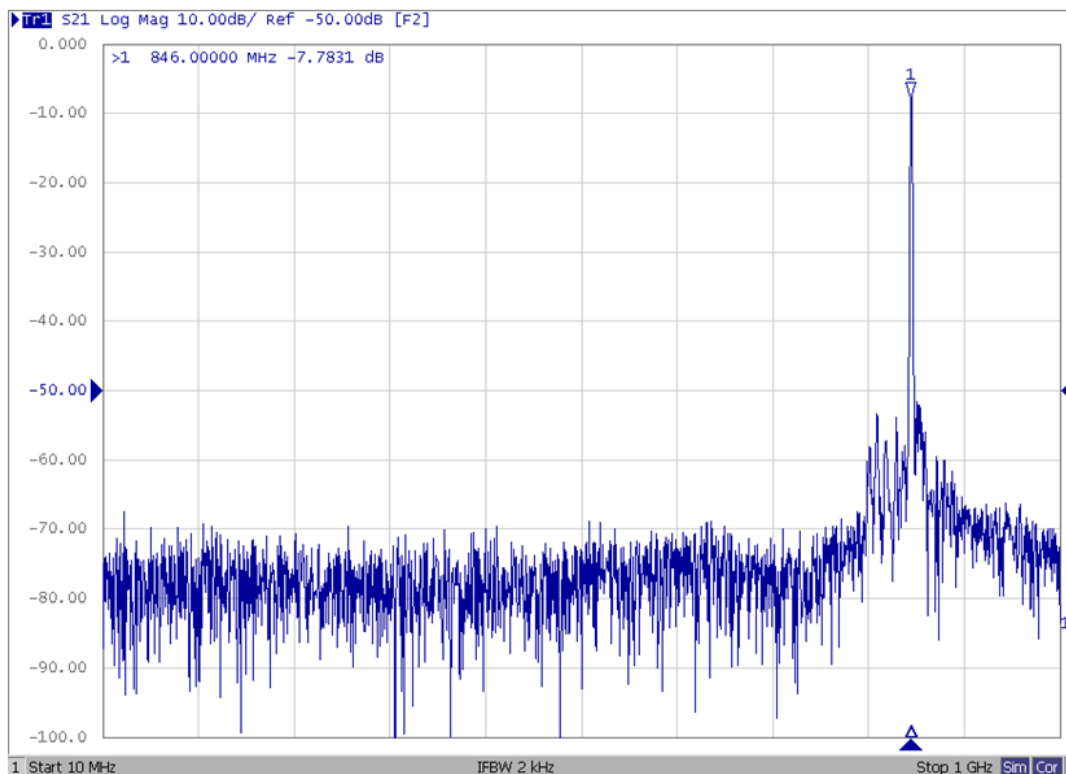


# Frequency Characteristics (cont.)

## VSWR

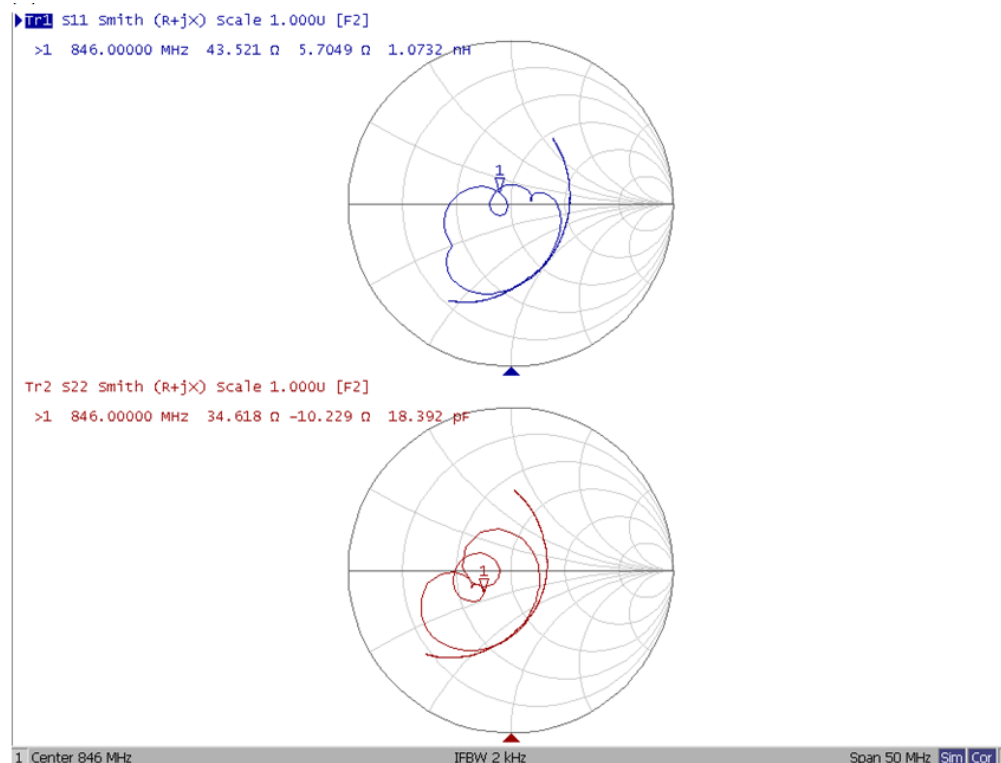


## Wide Band Response



# Frequency Characteristics (cont.)

## Smith Chart



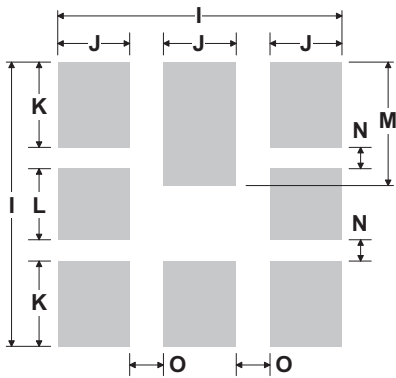
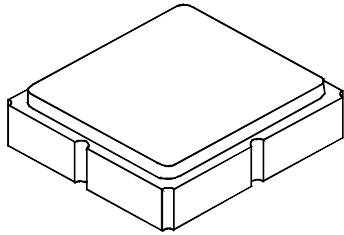
## Phase



# SM3030-8 Case

## 8-Terminal Ceramic Surface-Mount Case

### 3.0 X 3.0 mm Nominal Footprint



PCB Footprint, Top View

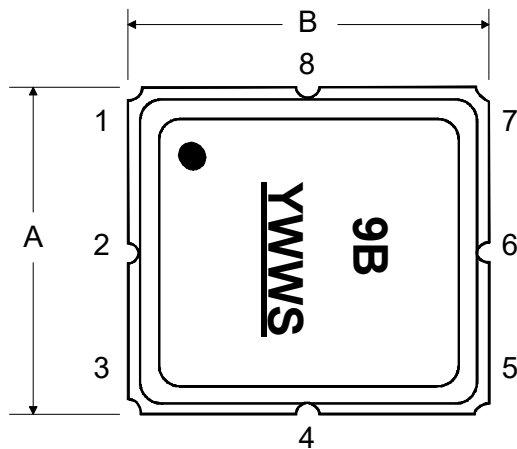
#### Case Dimensions

| Dimension | mm   |      |      | Inches |       |       |
|-----------|------|------|------|--------|-------|-------|
|           | Min  | Nom  | Max  | Min    | Nom   | Max   |
| A         | 2.87 | 3.0  | 3.13 | 0.113  | 0.118 | 0.123 |
| B         | 2.87 | 3.0  | 3.13 | 0.113  | 0.118 | 0.123 |
| C         | 1.14 | 1.27 | 1.40 | 0.045  | 0.050 | 0.055 |
| D         | 0.79 | 0.92 | 1.05 | 0.031  | 0.036 | 0.041 |
| E         | 0.62 | 0.75 | 0.88 | 0.024  | 0.029 | 0.034 |
| F         | 0.47 | 0.60 | 0.73 | 0.018  | 0.024 | 0.029 |
| G         | 0.47 | 0.60 | 0.73 | 0.018  | 0.024 | 0.029 |
| H         | 1.07 | 1.20 | 1.33 | 0.042  | 0.047 | 0.052 |
| I         |      | 3.19 |      |        | 0.126 |       |
| J         |      | 0.81 |      |        | 0.032 |       |
| K         |      | 0.96 |      |        | 0.038 |       |
| L         |      | 0.81 |      |        | 0.032 |       |
| M         |      | 1.39 |      |        | 0.055 |       |
| N         |      | 0.23 |      |        | 0.009 |       |
| O         |      | 0.38 |      |        | 0.015 |       |

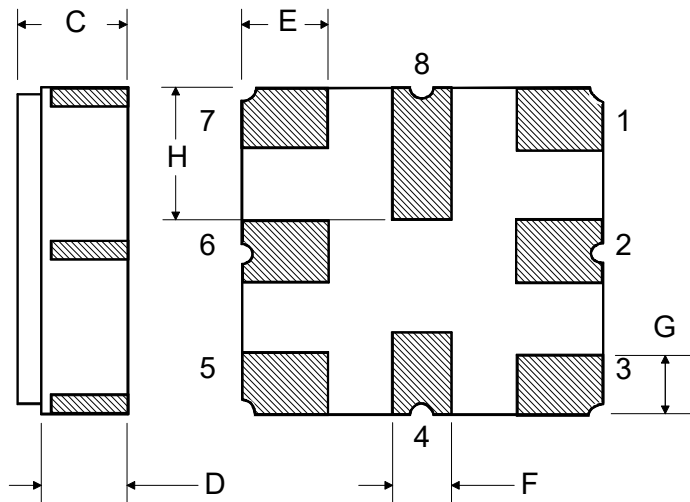
#### Case Materials

| 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            |  |

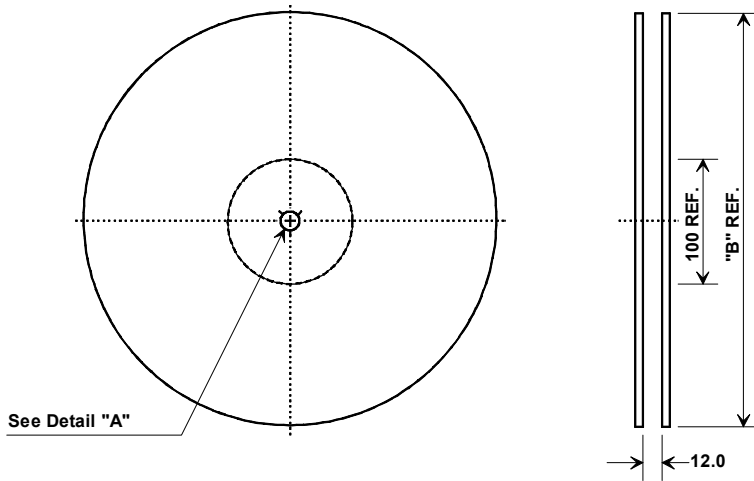
TOP VIEW



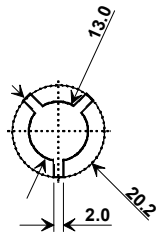
BOTTOM VIEW



## Tape and Reel Specifications

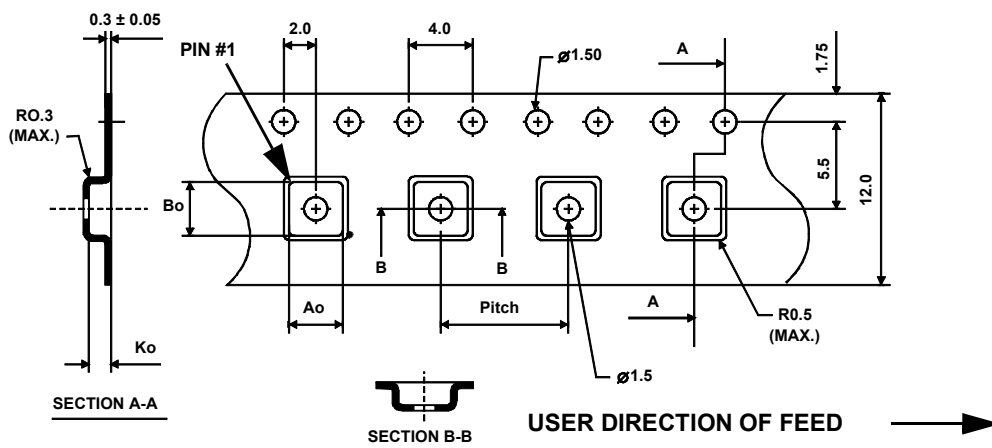


| "B"    |             | Quantity Per Reel |
|--------|-------------|-------------------|
| Inches | millimeters |                   |
| 7      | 178         | 1000              |
| 13     | 330         | 3000              |



### COMPONENT ORIENTATION and DIMENSIONS

| Carrier Tape Dimensions |         |
|-------------------------|---------|
| Ao                      | 4.25 mm |
| Bo                      | 4.25 mm |
| Ko                      | 1.3 mm  |
| Pitch                   | 8.0 mm  |
| W                       | 12.0 mm |



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