

- 3.8 X 3.8 X 1.0 mm Surface Mount Case
- Complies with Directive 2002/95/EC (RoHS)

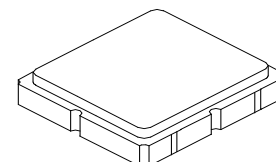


## Absolute Maximum Ratings

| Rating                                                       | Value           | Units |
|--------------------------------------------------------------|-----------------|-------|
| Maximum Incident Power in Passband                           | +15             | dBm   |
| Maximum DC Voltage on any Non-ground Terminal                | 3               | VDC   |
| Storage Temperature Range in Tape and Reel                   | -45 to +85      | °C    |
| Suitable for Lead-free Soldering - Maximum Soldering Profile | 260 °C for 30 s |       |

**SF2146D**

**415.0 MHz  
SAW Filter**



**SM3838-8**

## Electrical Characteristics

| Characteristic                    | Sym        | Notes | Min      | Typ | Max | Units             |
|-----------------------------------|------------|-------|----------|-----|-----|-------------------|
| Center Frequency                  | $f_0$      | 1     |          | 415 |     | MHz               |
| 3 dB Bandwidth                    | $BW_3$     |       | 25       | 32  |     | MHz               |
| Maximum Insertion loss at 415 MHz | $IL_{MAX}$ |       |          | 4.0 | 4.5 | dB                |
| Amplitude Ripple, 403 to 427 MHz  |            |       |          | 1.5 | 2.0 | dB <sub>P-P</sub> |
| Attenuation:                      |            |       |          |     |     |                   |
| 90 to 290 MHz                     |            |       | 41       | 50  |     | dB                |
| 290 to 328 MHz                    |            |       | 32       | 40  |     |                   |
| 328 to 350 MHz                    |            |       | 42       | 50  |     |                   |
| 350 to 375 MHz                    |            |       | 30       | 40  |     |                   |
| 375 to 390 MHz                    |            |       | 17       | 20  |     |                   |
| 445 to 475 MHz                    |            |       | 13       | 20  |     |                   |
| 475 to 485 MHz                    |            |       | 35       | 40  |     |                   |
| 485 to 900 MHz                    |            |       | 30       | 36  |     |                   |
| Input/Output Impedance            |            |       | 50 / 100 |     |     | $\Omega$          |
| Operating Temperature             |            |       | -30      |     | +85 | °C                |

|                                                                  |                                         |                  |  |
|------------------------------------------------------------------|-----------------------------------------|------------------|--|
| Case Style                                                       | SM3838-8 3.8 x 3.8 mm Nominal Footprint |                  |  |
| Lid Symbolization (Y=year, WW=week, S=shift) dot=pin 1 indicator | 777, YWWS                               |                  |  |
| Standard Reel Quantity                                           | Reel Size 7 Inch                        | 500 Pieces/Reel  |  |
|                                                                  | Reel Size 13 Inch                       | 3000 Pieces/Reel |  |

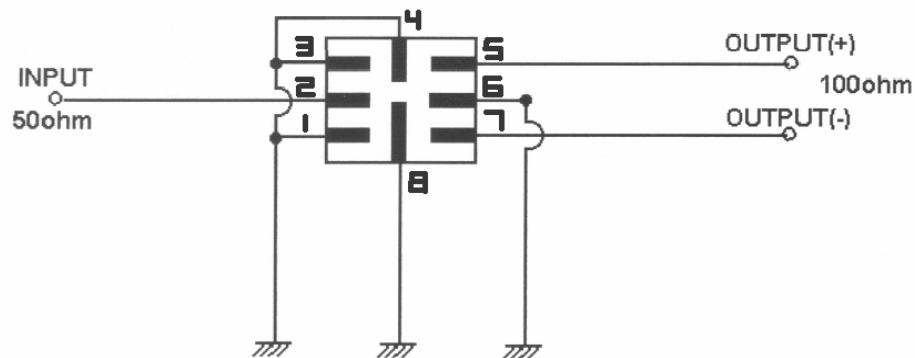


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

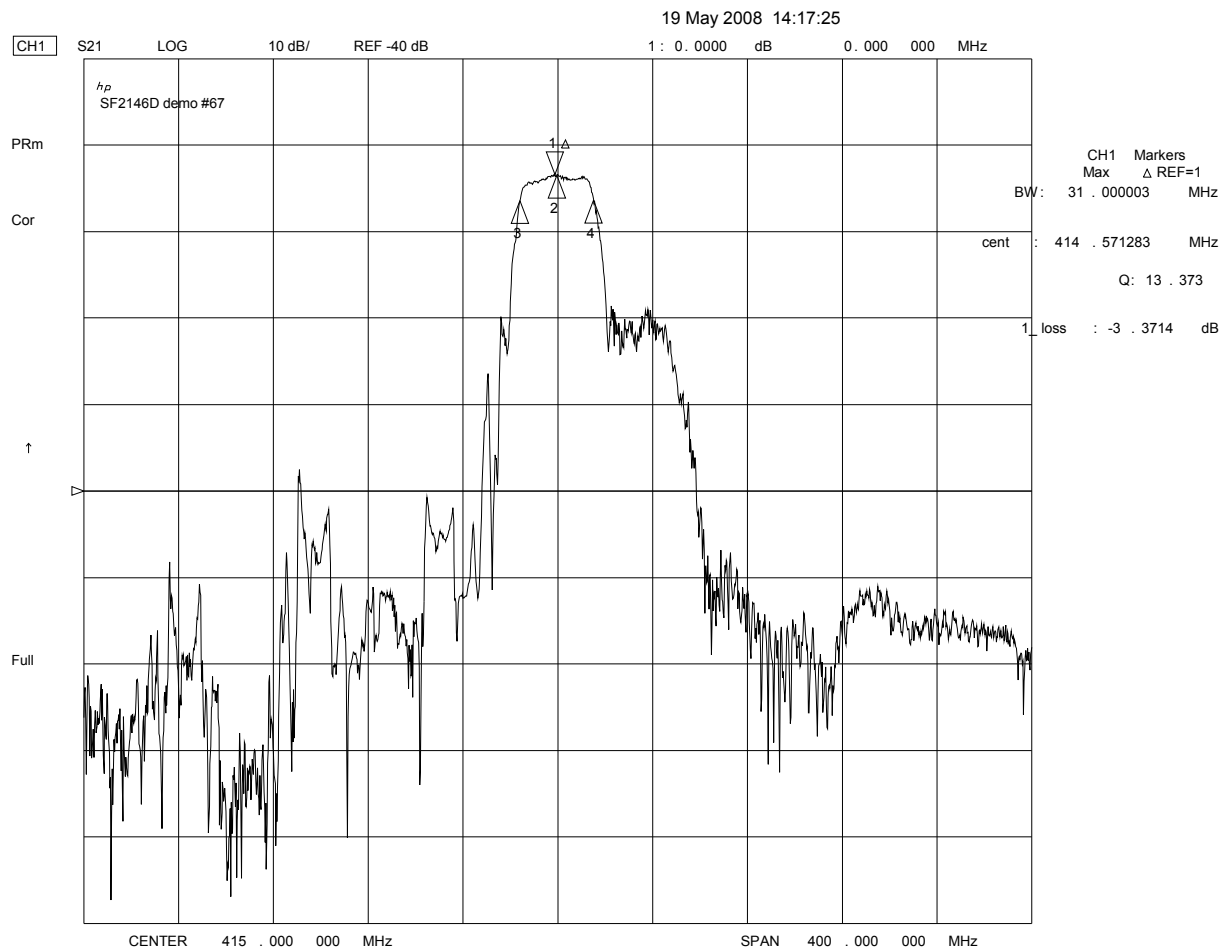
## NOTES:

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,  $f_c$ .
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. The design, manufacturing process, and specifications of this filter are subject to change.
5. 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.
6. US and international patents may apply.
7. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd.

## Test Circuit

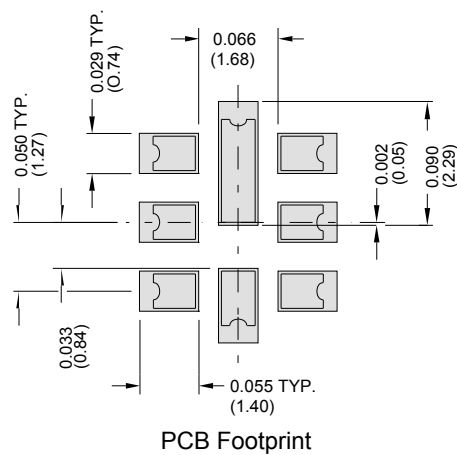


## Frequency Response



# SM3838-8 Case

## 8-Terminal Ceramic Surface-Mount Case 3.8 X 3.8 mm Nominal Footprint

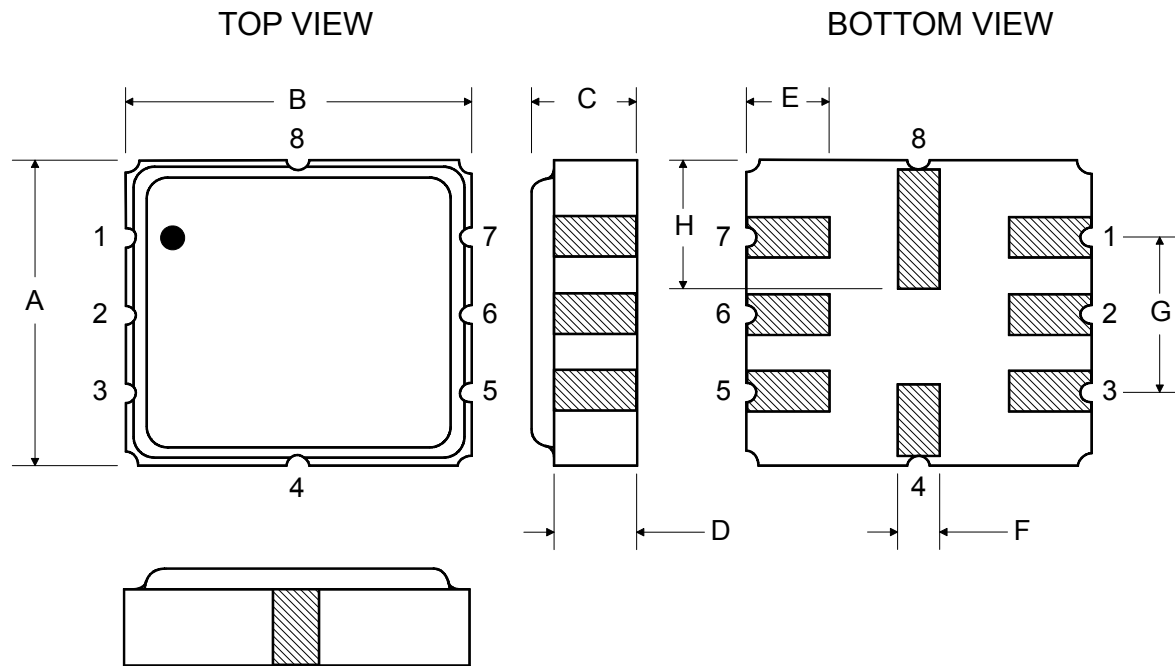


| Case Dimensions |      |      |      |        |       |       |
|-----------------|------|------|------|--------|-------|-------|
| Dimension       | mm   |      |      | Inches |       |       |
|                 | Min  | Nom  | Max  | Min    | Nom   | Max   |
| A               | 3.6  | 3.8  | 4.0  | 0.142  | 0.150 | 0.157 |
| B               | 3.6  | 3.8  | 4.0  | 0.142  | 0.150 | 0.157 |
| C               | 1.05 | 1.20 | 1.35 | 0.041  | 0.047 | 0.053 |
| D               | 0.95 | 1.10 | 1.25 | 0.037  | 0.043 | 0.049 |
| E               | 0.90 | 1.00 | 1.10 | 0.035  | 0.040 | 0.043 |
| F               | 0.50 | 0.60 | 0.70 | 0.020  | 0.024 | 0.028 |
| G               | 2.39 | 2.54 | 2.69 | 0.090  | 0.100 | 0.110 |
| H               | 1.40 | 1.75 | 2.05 | 0.055  | 0.069 | 0.080 |

| Electrical Connections |                     |            |
|------------------------|---------------------|------------|
|                        | Connection          | Terminals  |
| Port 1                 | Input               | 2          |
| Port 2                 | Differential Output | 5, 7       |
|                        | Ground              | All Others |

Dot Indicates Pin 1

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



Technical drawing of a circular component. The top view shows a large outer circle and a smaller concentric inner circle. A central hole is indicated by a circle with a crosshair. A leader line points from the text "See Detail 'A'" to the central hole. The side view shows the component's profile, which is a thin, elongated shape. The total height is labeled "100 REF." and the width is labeled "12.0". The side view also shows a central hole with a diameter of "20.2" and a thickness of "2.0". The top view includes a vertical centerline and a horizontal centerline. The side view includes a vertical centerline and a horizontal centerline. The side view also shows a central hole with a diameter of "20.2" and a thickness of "2.0".

| “B”    |             | Quantity Per Reel |
|--------|-------------|-------------------|
| Inches | millimeters |                   |
| 7      | 178         | 500               |
| 13     | 330         | 3000              |

| Carrier Tape Dimensions |         |
|-------------------------|---------|
| Ao                      | 4.25 mm |
| Bo                      | 4.25 mm |
| Ko                      | 1.30 mm |
| Pitch                   | 8.0 mm  |
| W                       | 12.0 mm |

