

- **Low Insertion Loss**
- **5.0 X 5.0 mm Surface-mount Case**
- **Single-ended Input and Output**
- **Complies with Directive 2002/95/EC (RoHS)**

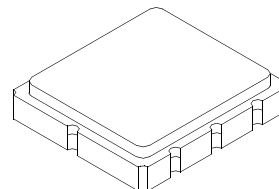


#### Absolute Maximum Ratings

| Rating                                                           | Value           | Units |
|------------------------------------------------------------------|-----------------|-------|
| Maximum Incident Power in Passband                               | +13             | dBm   |
| Maximum DC Voltage on any Non-ground Terminal                    | 30              | VDC   |
| Storage Temperature Range in Tape and Reel                       | -40 to +85      | °C    |
| Suitable for Lead-free Soldering - Maximum Soldering Temperature | 260 °C for 30 s |       |

**SF2091C**

**385.00 MHz  
SAW Filter**



**SM5050-8**

#### Electrical Characteristics

| Characteristic                                                         | Sym        | Notes                               | Min | Typ    | Max   | Units             |
|------------------------------------------------------------------------|------------|-------------------------------------|-----|--------|-------|-------------------|
| Nominal Center Frequency                                               | $f_C$      | 1                                   |     | 385.00 |       | MHz               |
| Insertion Loss                                                         | $IL_{MAX}$ | 1                                   |     |        | 12    | dB                |
| 1.2 dB Bandwidth                                                       | $BW_{1.2}$ | 1                                   | 30  | 32     |       | MHz               |
| Amplitude Ripple, $f_C \pm 15$ MHz, within Adjacent 5 MHz Windows      |            | 1                                   |     |        | 1     | dB <sub>P-P</sub> |
| Group Delay Deviation, $f_C \pm 15$ MHz, within Adjacent 5 MHz Windows |            | 1                                   |     |        | 50    | ns <sub>P-P</sub> |
| Group Delay Deviation, $f_C \pm 15$ MHz, full bandwidth                |            | 1                                   |     | 305    |       | ns <sub>P-P</sub> |
| VSWR at $f_C$                                                          |            | 1                                   |     |        | 2.5:1 |                   |
| Group Delay, $f_C \pm 15$ MHz                                          |            | 1                                   |     | 305    |       | ns                |
| 40 dB Rejection Bandwidth                                              |            | 1, 2                                |     |        | 65    | MHz               |
| Operating Temperature Range                                            |            |                                     | -40 |        | 85    | °C                |
| Case Style                                                             |            | SM5050-8 5 x 5 mm Nominal Footprint |     |        |       |                   |
| Lid Symbolization (Y=year, WW=week, S=shift)                           |            | RFM 593 YWWS                        |     |        |       |                   |

#### Electrical Connections

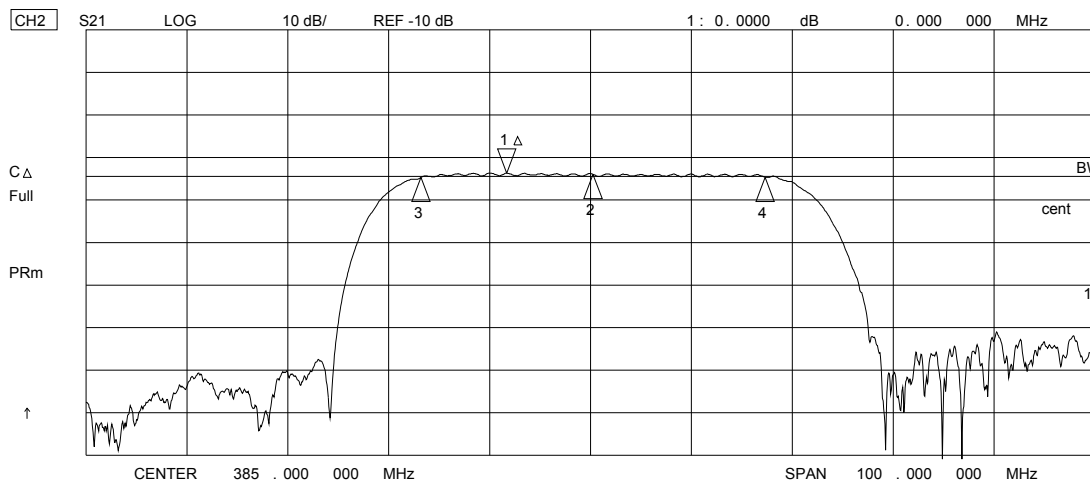
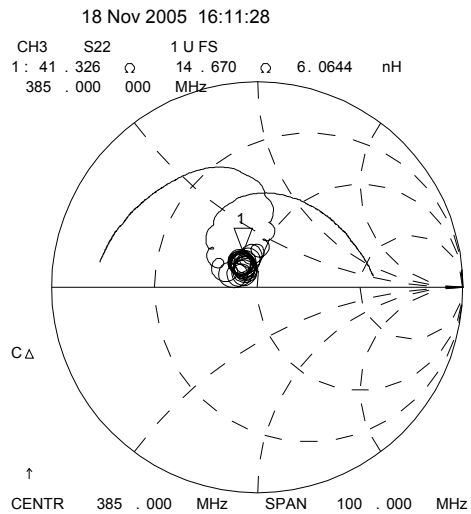
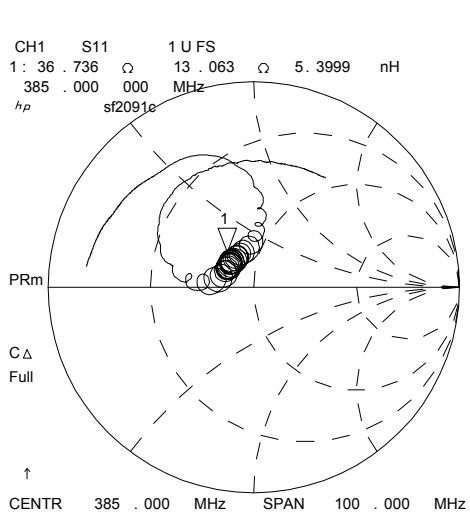
| Connection          |        | Terminals  |
|---------------------|--------|------------|
| Port 1              | Input  | 1          |
| Port 2              | Output | 5          |
|                     | Ground | All others |
| Dot indicates Pin 1 |        |            |



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

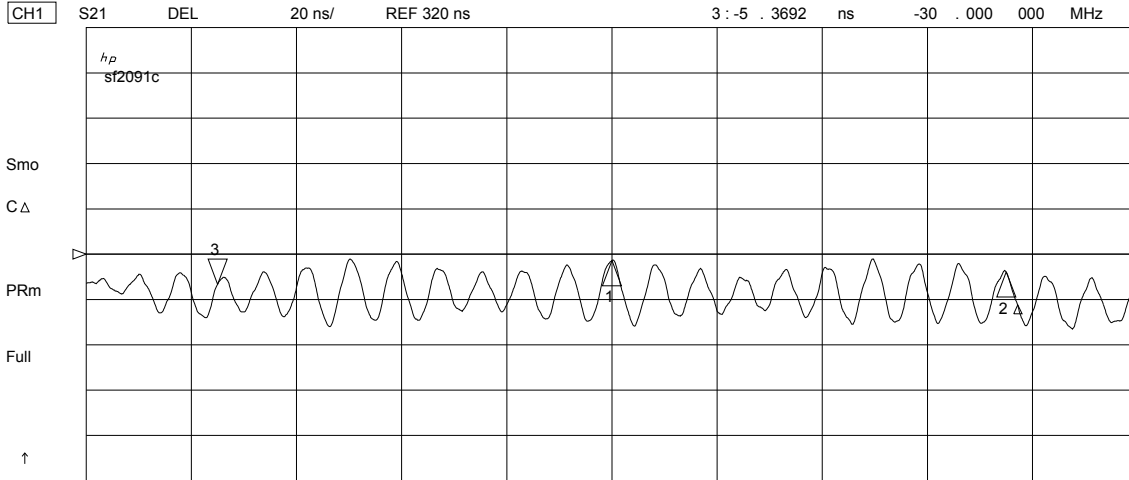
#### NOTES:

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. 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.
3. The design, manufacturing process, and specifications of this filter are subject to change.
4. Tape and Reel Standard ANSI / EIA 481.
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.

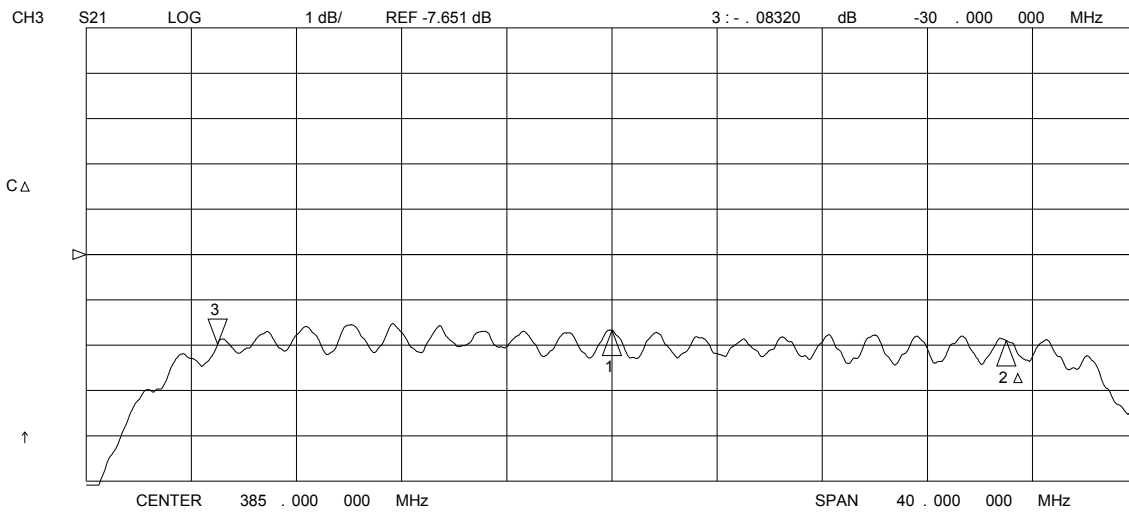


CH2 Markers  
Max  $\Delta$  REF=1  
34.092049 MHz  
cent : 385.259820 MHz  
Q: 11.301  
1\_loss : -9.1736 dB

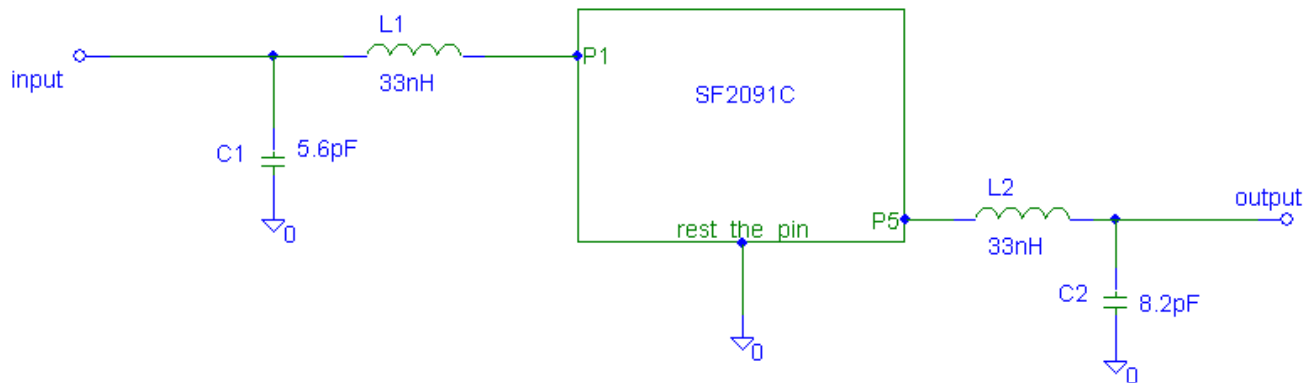
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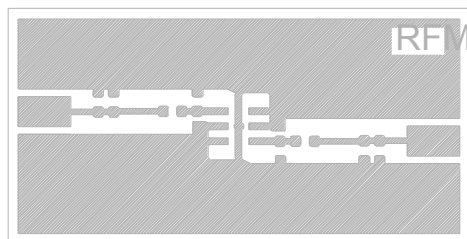
CH1 Markers  
Δ REF=2  
mean : 303 . 07 ns  
s. dev : 8 . 1164 ns  
p-p : 29 . 840 ns



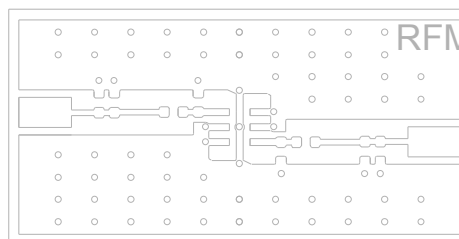
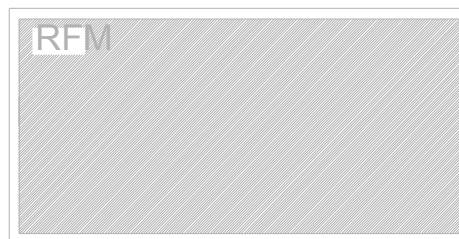
CH3 Markers  
Δ REF=2  
mean : -9 . 6368 dB  
s. dev : . 20680 dB  
p-p : . 91380 dB



use RFM 400-1624-001 demo board  
0603 Coilcraft inductor  
0603 capacitor



1.590 REF.

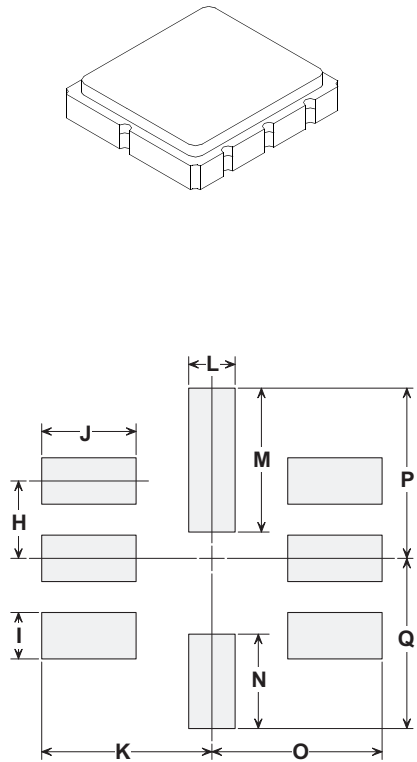


DRILL ALL HOLES #76 DRILL (0.020)  
ALL HOLES ARE PLATED THRU.

# **SM5050-8 Surface-Mount 8-Terminal Ceramic Case** **5.0 X 5.0 mm Nominal Footprint**

**Case Dimensions**

| Dimension | mm   |      |      | Inches |       |       |
|-----------|------|------|------|--------|-------|-------|
|           | Min  | Nom  | Max  | Min    | Nom   | Max   |
| <b>A</b>  | 4.80 | 5.00 | 5.20 | 0.189  | 0.197 | 0.205 |
| <b>B</b>  | 4.80 | 5.00 | 5.20 | 0.189  | 0.197 | 0.205 |
| <b>C</b>  | 1.30 | 1.50 | 1.70 | 0.050  | 0.060 | 0.067 |
| <b>D</b>  | 1.98 | 2.08 | 2.18 | 0.078  | 0.082 | 0.086 |
| <b>E</b>  | 1.07 | 1.17 | 1.27 | 0.042  | 0.046 | 0.050 |
| <b>F</b>  | 0.50 | 0.64 | 0.70 | 0.020  | 0.025 | 0.028 |
| <b>G</b>  | 2.39 | 2.54 | 2.69 | 0.094  | 0.100 | 0.106 |
| <b>H</b>  |      | 1.27 |      |        | 0.050 |       |
| <b>I</b>  |      | 0.76 |      |        | 0.030 |       |
| <b>J</b>  |      | 1.55 |      |        | 0.061 |       |
| <b>K</b>  |      | 2.79 |      |        | 0.110 |       |
| <b>L</b>  |      | 0.76 |      |        | 0.030 |       |
| <b>M</b>  |      | 2.36 |      |        | 0.093 |       |
| <b>N</b>  |      | 1.55 |      |        | 0.061 |       |
| <b>O</b>  |      | 2.79 |      |        | 0.110 |       |
| <b>P</b>  |      | 2.79 |      |        | 0.110 |       |
| <b>Q</b>  |      | 2.79 |      |        | 0.110 |       |

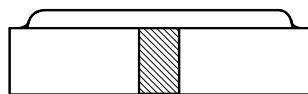
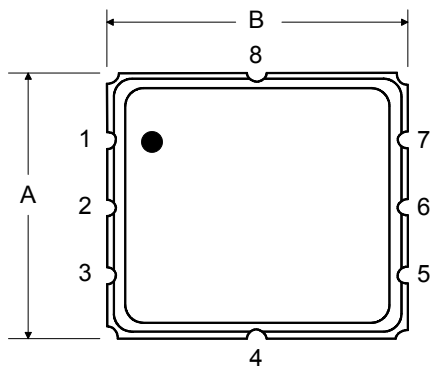


**PCB Footprint**

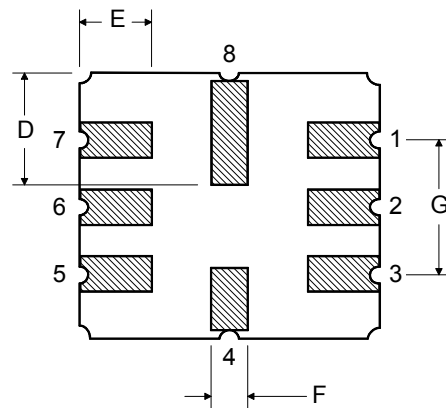
**Case Materials**

| 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                                                  |

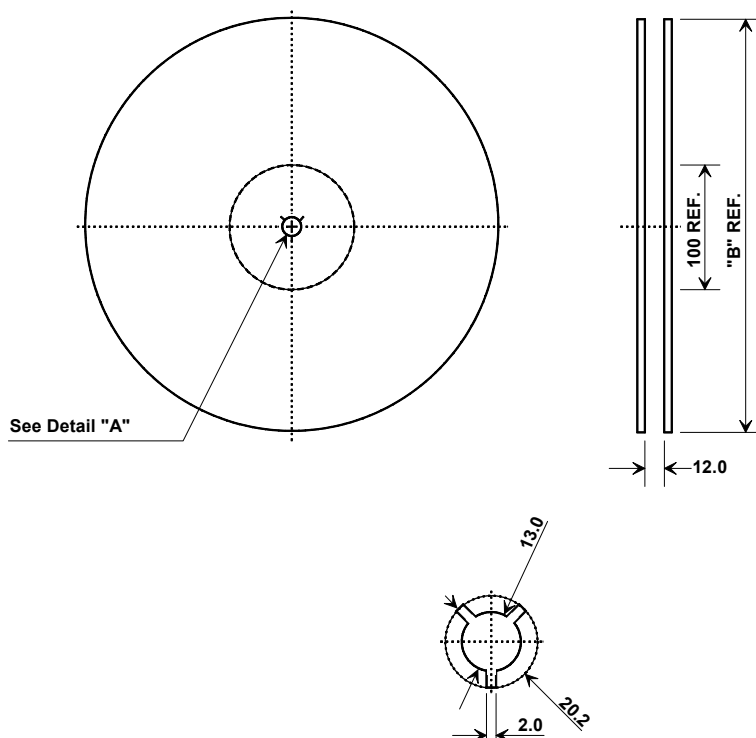
**TOP VIEW**



**BOTTOM VIEW**



## Tape and Reel Specifications



| "B"<br>Nominal Size |             | Quantity Per Reel |
|---------------------|-------------|-------------------|
| Inches              | millimeters |                   |
| 7                   | 178         | 500               |
| 13                  | 330         | 3000              |

## COMPONENT ORIENTATION and DIMENSIONS

| Carrier Tape Dimensions |         |
|-------------------------|---------|
| Ao                      | 5.3 mm  |
| Bo                      | 5.3 mm  |
| Ko                      | 2.0 mm  |
| Pitch                   | 8.0 mm  |
| W                       | 12.0 mm |

COVER TAPE SIZE

