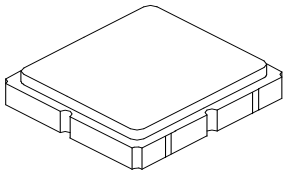
muRata
INNOVATOR IN ELECTRONICS

# SF1186E-2

# 1575.42 MHz SAW Filter

- ***Designed for Front-end GPS Applications***
- ***Low Insertion Loss***
- ***3.0 x 3.0 x 1.3 mm Surface-mount Case***
- ***No Matching Circuit Required***
- ***Complies with Directive 2002/95/EC (RoHS)***



**SM3030-6**

### Maximum Ratings at +25 °C Unless Stated Otherwise

| Rating | Symbol | Value | Units |
|---|---|---|---|
| Maximum Input Signal Level | | +10 | dBm |
| DC Voltage on any Non-ground Terminal | WVdc | 4 | Volts |
| Operating Temperature Range | $T_A$ | -40 to +95 | °C |
| Storage Temperature Range on Tape and Reel | $T_{STG}$ | -40 to +85 | °C |
| Lead Soldering Temperature for 10 Seconds | $T_{WAVE}$ | 260 | °C |
| Peak Reflow Solder Temp for 40 Seconds | $T_{Reflow}$ | 235 | °C |
| Suitable for lead-free soldering - Max Soldering Temperature | | 260°C for 30 s | |

### Electrical Characteristics

| Characteristic | | Sym | Notes | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|---|
| Center Frequency | | $f_O$ | 1 | | 1575.42 | | MHz |
| 1 dB Bandwidth | | | 1 | 2.046 | 15.3 | | MHz |
| Passband Amplitude Ripple, $f_O$ ±2.0 MHz | | | | | 0.1 | 2.0 | $dB_{P-P}$ |
| Passband VSWR | | | | | 1.4 | 2.0 | |
| Insertion Loss | | | 1 | | 2.68 | 3.5 | dB |
| Attenuation Referenced to 0 dB: | | | | | | | |
| 850 MHz | | | 1 | 45 | 51.2 | | dB |
| 1500 MHz | | | 1 | 40 | 52.7 | | |
| 1535.42 MHz | | | 1 | 20 | 38.9 | | |
| 1615.42 MHz | | | 1 | 20 | 58.8 | | |
| 1640 MHz | | | 1 | 45 | 59.1 | | |
| 1700 MHz | | | 1 | 50 | 56.7 | | |
| Temperature Coefficient | | | | -30 | | | ppm/°C |
| Operating Temperature | | $T_A$ | 1 | -40 | | +95 | °C |
| Single-ended Input /Output Impedance Match | | No matching network required for operation at 50 ohms | | | | | |
| Case Style | | SM3030-6 3 x 3 mm Nominal Footprint | | | | | |
| Lid Symbolization | y=year, ww=week, s=shift | 979 YWWS | | | | | |
| Standard Reel Quantity | Reel Size 7 Inch | | 6 | 500 Pieces/Reel | | | |
| | Reel Size 13 Inch | | | 3000 Pieces/Reel | | | |

### Electrical Connections

| Pin # | Description | Pin # | Description |
|---|---|---|---|
| 1 | Ground | 4 | Ground |
| 2 | Input | 5 | Output |
| 3 | Ground | 6 | Ground |

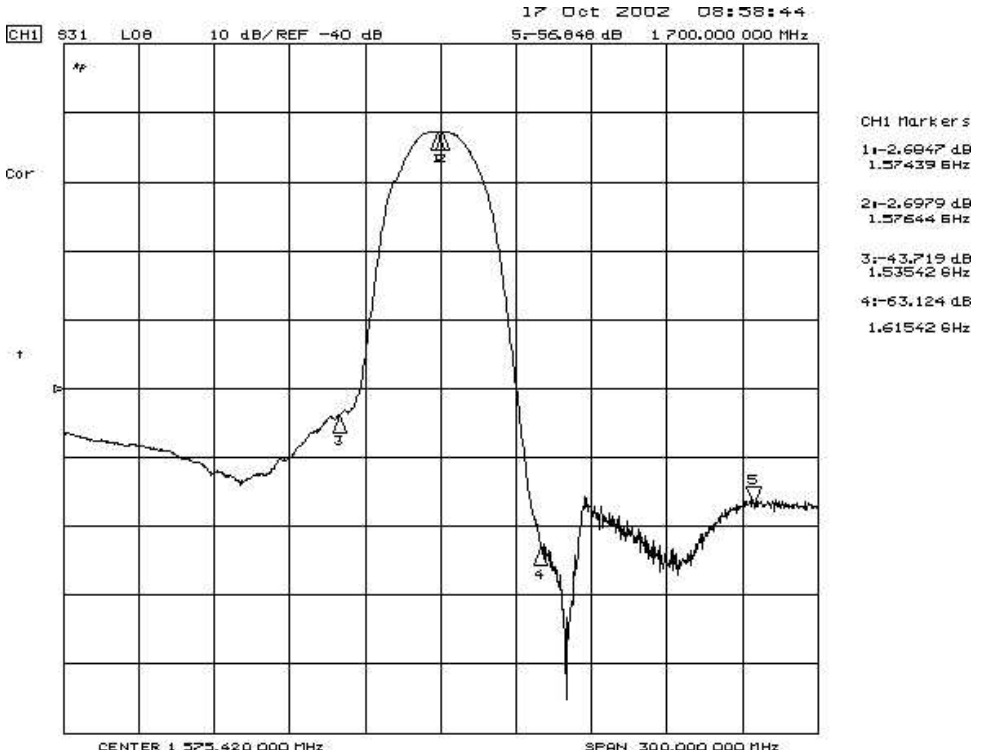
**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

### NOTES:

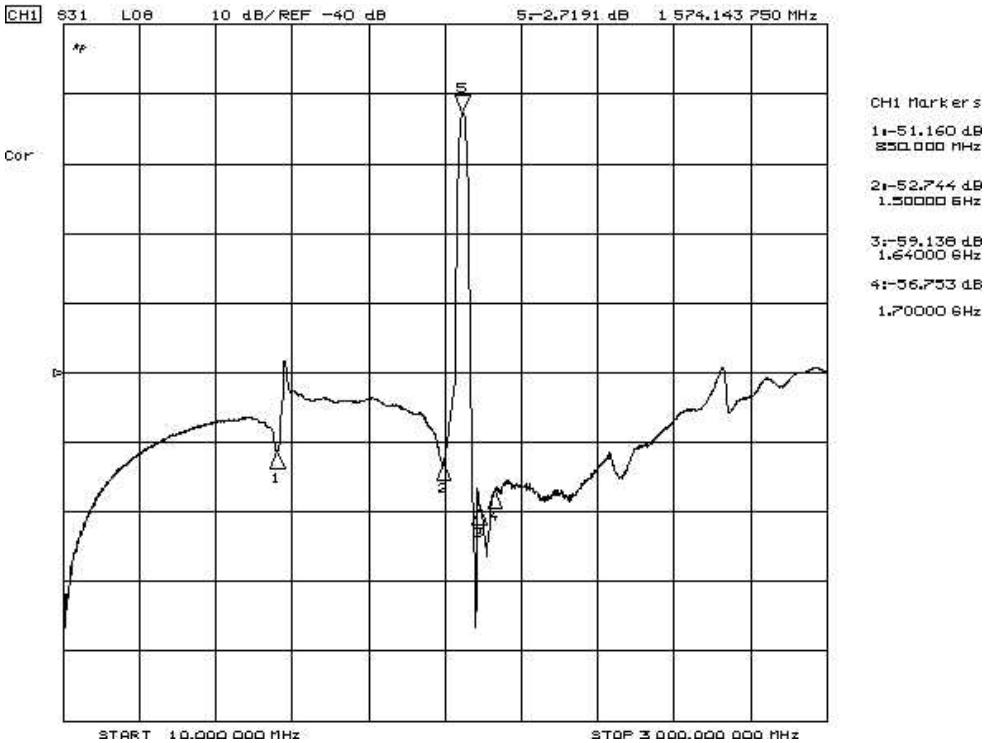
1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board without impedance matching and measured with 50 Ω network analyzer.
2. The design, manufacturing process, and specifications of this filter are subject to change.
3. 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.
4. US and international patents may apply.
5. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd.
6. Tape and Reel Standard Per ANSI/EIA 481.

## Transfer function :

(1) S21 response (span : 300 MHz)

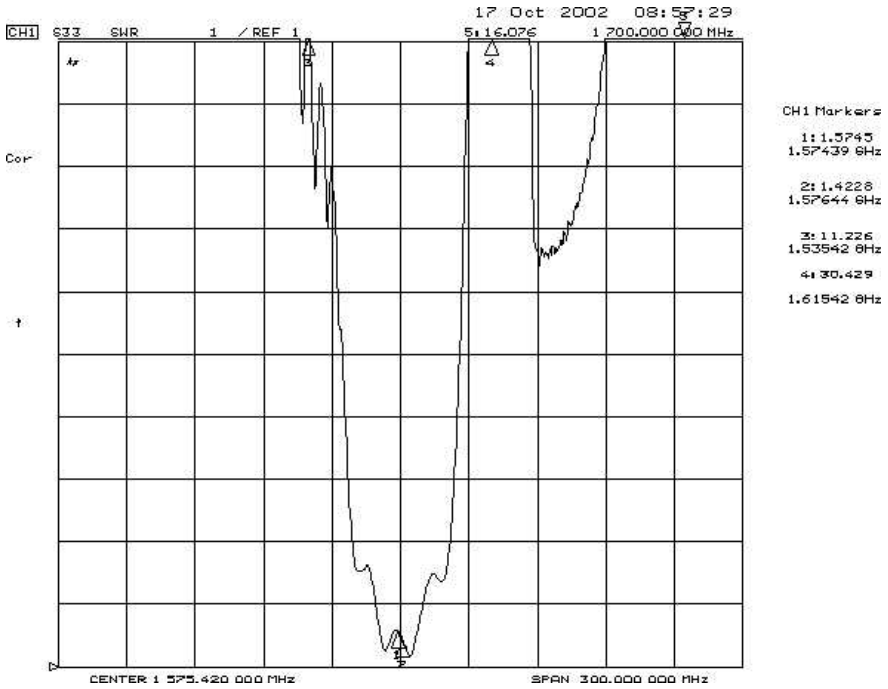



(2) S21 response (span : 3 GHz)

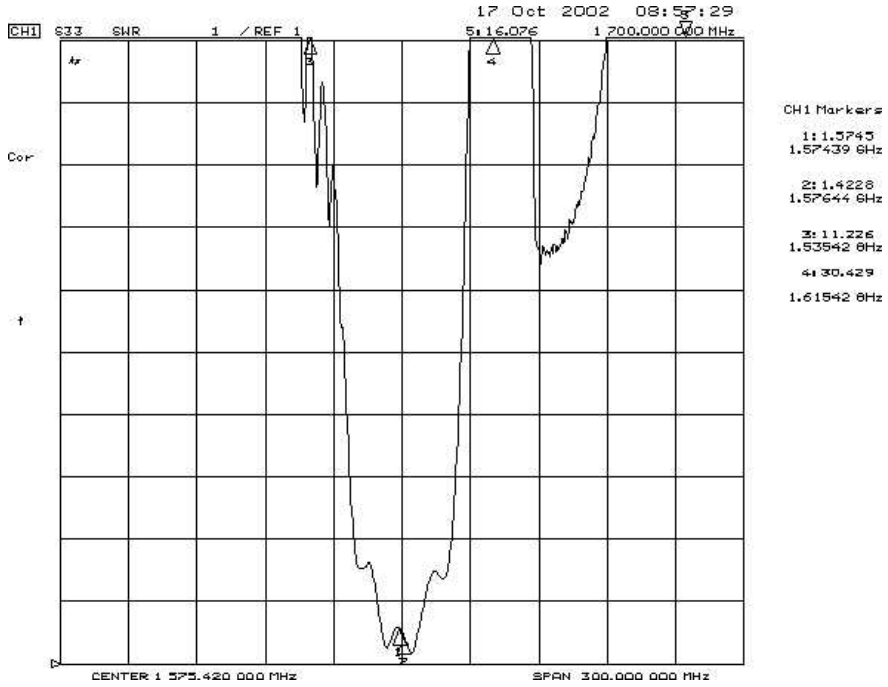


## Reflection Functions:

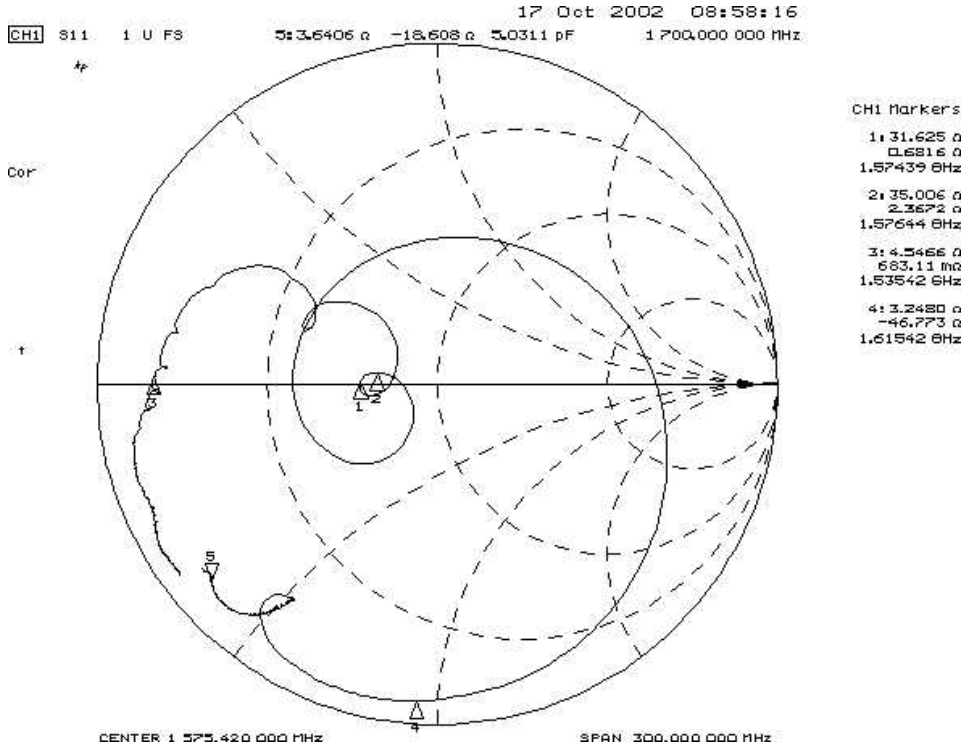
S11

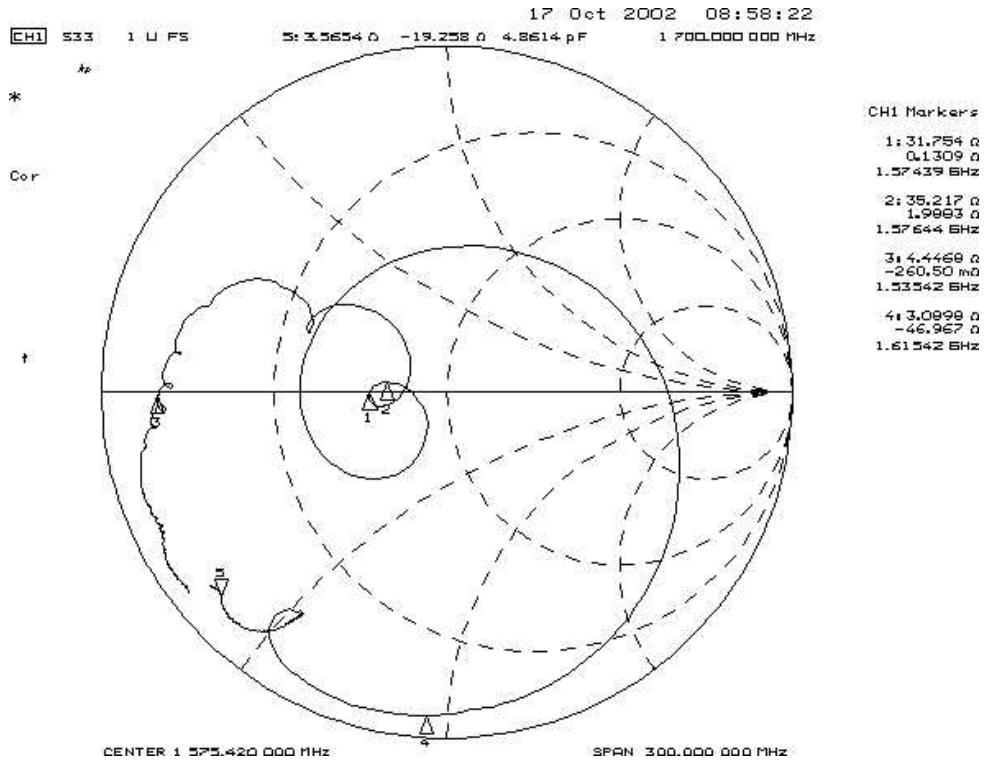



S22



Reflection Functions:

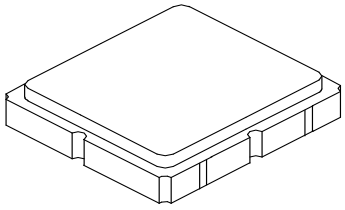


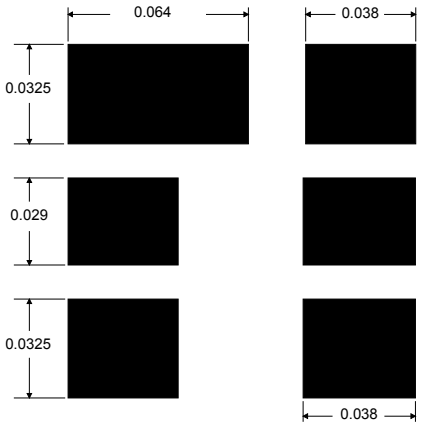



# SM3030-6 Case

## 6-Terminal Ceramic Surface-Mount Case

## 3.0 X 3.0 mm Nominal Footprint






**Foot Print Dimensions in Nominal Inches**

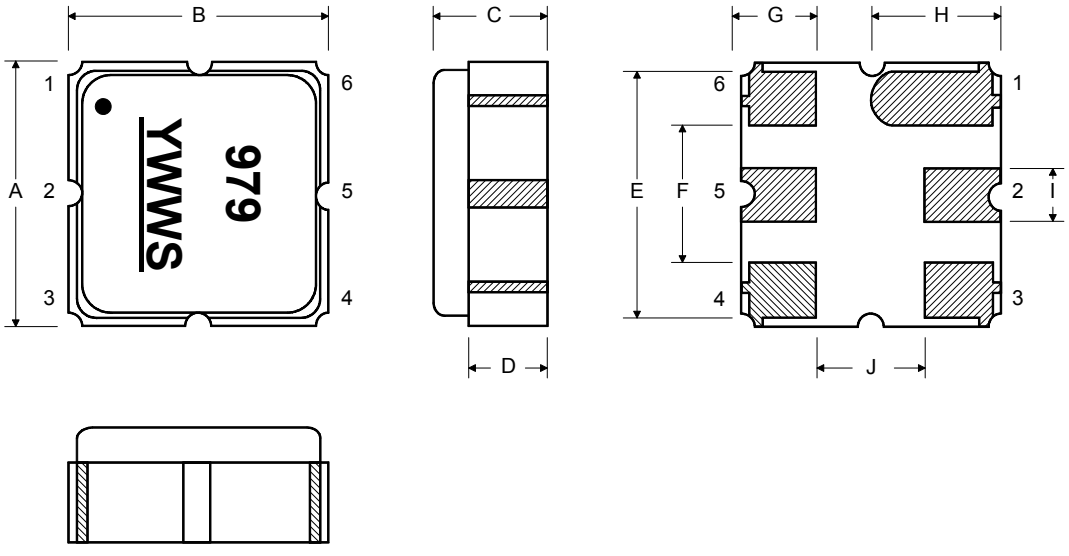
| Case Dimensions | | | | | | |
|---|---|---|---|---|---|---|
| **Dimension** | **mm** | | | **Inches** | | |
| | **Min** | **Nom** | **Max** | **Min** | **Nom** | **Max** |
| **A** | 2.87 | 3.0 | 3.13 | 0.113 | 0.118 | 0.123 |
| **B** | 2.87 | 3.0 | 3.13 | 0.113 | 0.118 | 0.123 |
| **C** | 1.12 | 1.25 | 1.38 | 0.044 | 0.049 | 0.054 |
| **D** | 0.77 | 0.9 | 1.03 | 0.030 | 0.035 | 0.040 |
| **E** | 2.67 | 2.80 | 2.93 | 0.105 | 0.110 | 0.115 |
| **F** | 1.47 | 1.6 | 1.73 | 0.058 | 0.063 | 0.068 |
| **G** | 0.72 | 0.85 | 0.98 | 0.028 | 0.033 | 0.038 |
| **H** | 1.37 | 1.5 | 1.63 | 0.054 | 0.059 | 0.064 |
| **I** | 0.47 | 0.6 | 0.73 | 0.019 | 0.024 | 0.029 |
| **J** | 1.17 | 1.3 | 1.43 | 0.046 | 0.051 | 0.056 |

| Electrical Connections | | |
|---|---|---|
| **Connection** | | **Terminals** |
| Port 1 | Single-ended Input | 2 |
| Port 2 | Single-ended Output | 5 |
| | Ground | All others |
| Single-ended Operation Only | | |
| Dot indicates Pin 1 | | |

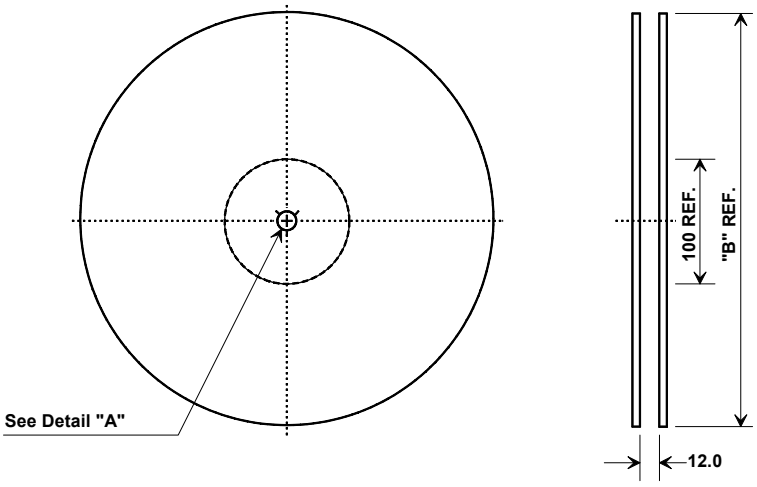
| Case Materials | |
|---|---|
| Solder Pad Plating | 0.3 to 1.0 µm Gold over 1.27 to 8.89 µm Nickel |
| Lid Plating | 2.0 to 3.0 µm Nickel |
| Body | $Al_2O_3$ Ceramic |
| | Pb Free |

TOP VIEW

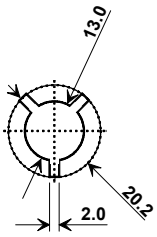
BOTTOM VIEW



## Tape and Reel Specifications




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




**COMPONENT ORIENTATION**