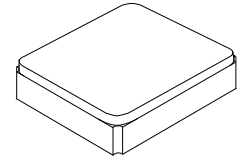


**SF1186G**

**1575.42 MHz  
SAW Filter**



**SM2520-4**

- *Designed for Front End GPS Applications*
- *Steep Rejection*
- *2.5 x 2.0 x 1.0 mm Surface-Mount Case*
- *No Matching Circuit Required*
- *AEC Q200 Qualified*

**Absolute Maximum Ratings**

| Rating   | Value           | Units |
|--|-----------------|-------|
| Maximum Input Power, DC to 3 GHz                     | +10             | dBm   |
| Maximum Input Power, 0.8 to 1 GHz and 1.7 to 1.9 GHz | +20             | dBm   |
| Maximum DC Voltage On any Non-ground Terminal        | 5               | VDC   |
| Storage Temperature Range in Tape and Reel           | -40 to +85      | °C    |
| Maximum Soldering Profile (5 cycles maximum)         | 265 °C for 10 s |       |

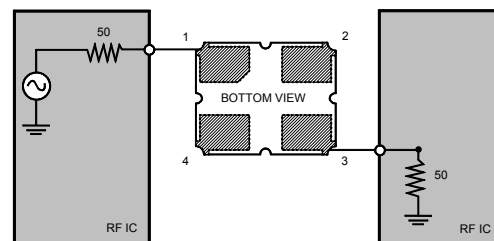
**Electrical Characteristics**

| Characteristic                             | Sym   | Notes | Min  | Typ     | Max | Units             |
|--|-------|-------|------|---------|-----|-------------------|
| Nominal Operating Frequency                | $f_C$ |       |      | 1575.42 |     | MHz               |
| Passband Insertion Loss, $f_C \pm 1.0$ MHz | IL    |       |      | 1.5     | 2.2 | dB                |
| Amplitude Ripple, $f_C \pm 1.0$ MHz        |       |       |      | 0.1     | 1.0 | dB <sub>p-p</sub> |
| Attenuation Referenced to 0 dB:            |       |       |      |         |     | dB                |
| DC to 1400 MHz                             |       |       | 35.0 | 37.0    |     |                   |
| 1400 to 1475 MHz                           |       |       | 30.0 | 34.0    |     |                   |
| 1475 to 1525 MHz                           |       |       | 25.0 | 37.0    |     |                   |
| 1625 to 1640 MHz                           |       |       | 30.0 | 45.0    |     |                   |
| 1640 to 2000 MHz                           |       |       | 32.0 | 34.0    |     |                   |
| 2000 to 3000 MHz                           |       |       | 20.0 | 28.0    |     |                   |
| $S_{11}$ VSWR across $f_C \pm 1.0$ MHz     |       |       |      | 1.2     | 2.0 |                   |
| $S_{22}$ VSWR across $f_C \pm 1.0$ MHz     |       |       |      | 1.2     | 2.0 |                   |
| Source impedance                           | $Z_S$ |       |      | 50      |     | $\Omega$          |
| Load impedance                             | $Z_L$ |       |      | 50      |     | $\Omega$          |
| Operating Temperature                      | $T_A$ |       | -40  |         | +85 | °C                |

|   |   |
|---|---|
| Single-ended Input / Output Impedance Match   | No matching network required for operation at 50 ohms |
| Case Style                                    | SM2520-4  |
| Lid Symbolization (2A=SF1186G Y=year, W=week) | 2A, YW  |
| Standard Reel Quality, 7 inch Reel Size       | 500 Pieces Reel                                       |
| Standard Reel Quantity, 13 inch Reel Size     | 3000 Pieces/Reel                                      |

**Electrical Connections**

| Connection | Terminals  |
|------------|------------|
| Input      | 1          |
| Output     | 3          |
| Ground     | All others |

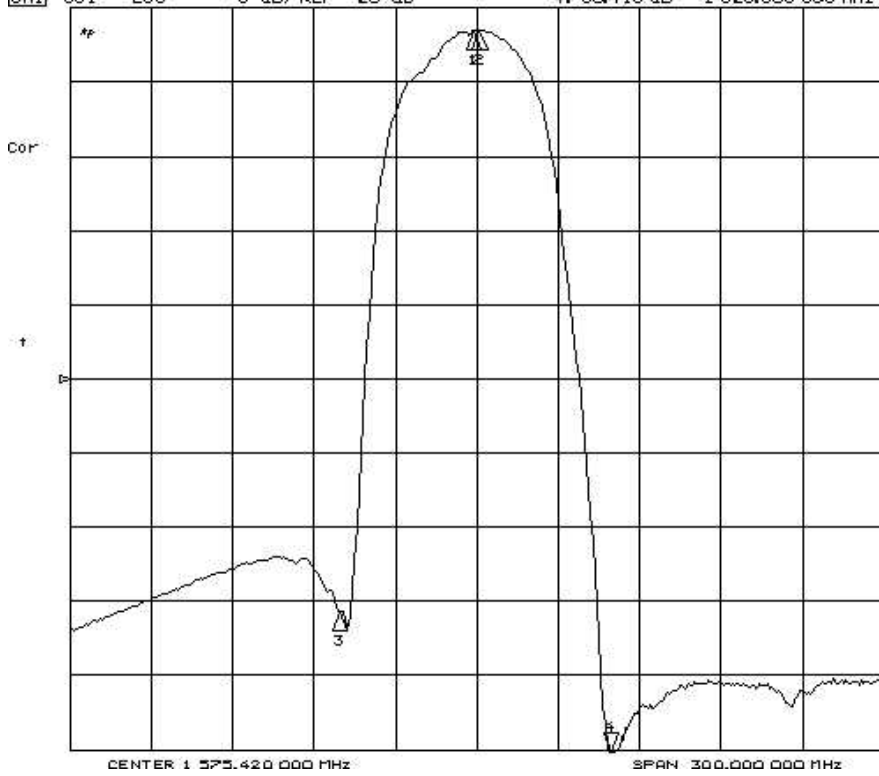


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

**NOTES:**

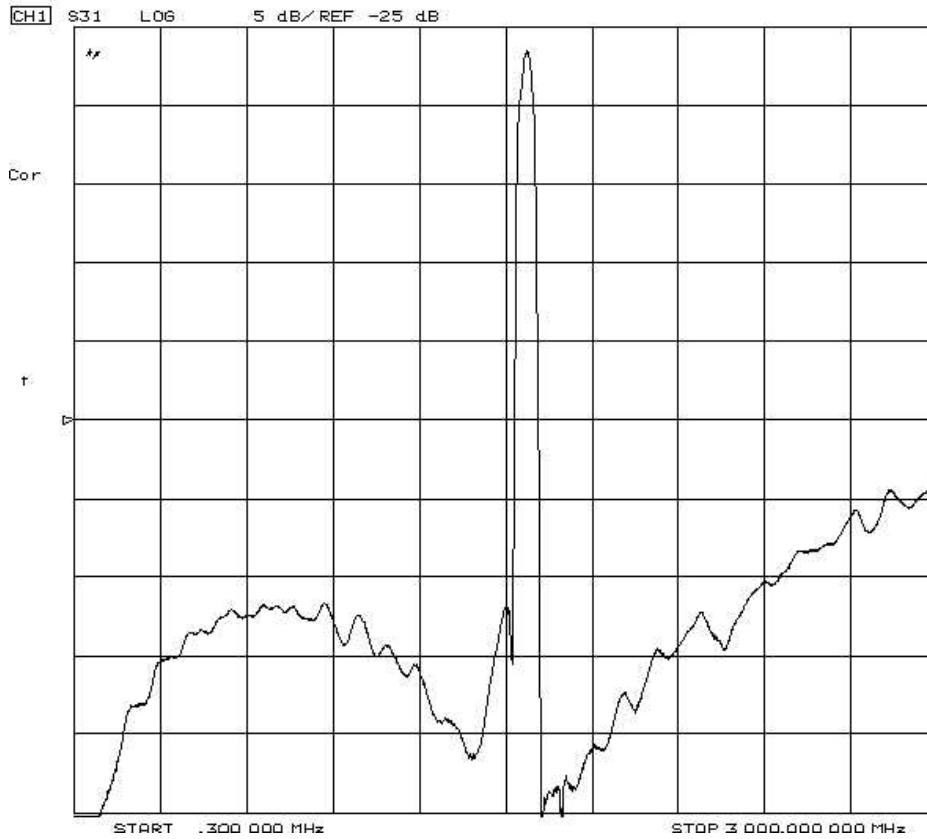
1. US and international patents may apply.
2. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd
3. This product is made by TAI-SAW Technology Co., LTD. in Taiwan.

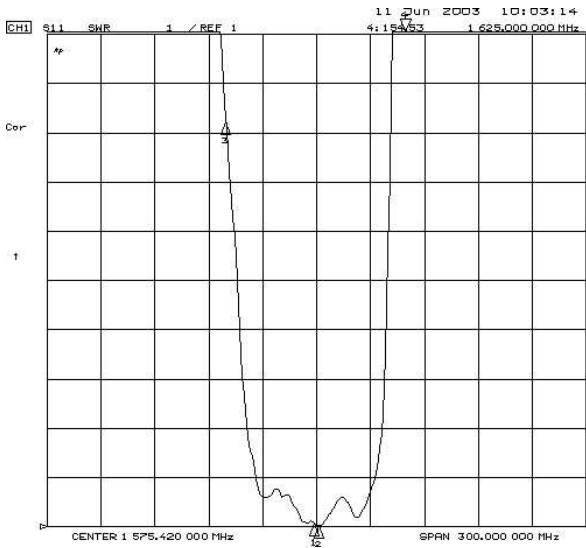
11 Jun 2003 10:02:57  
 [CH1] S31 L06 5 dB/REF -25 dB 47-50.418 dB 1.625.000 000 MHz



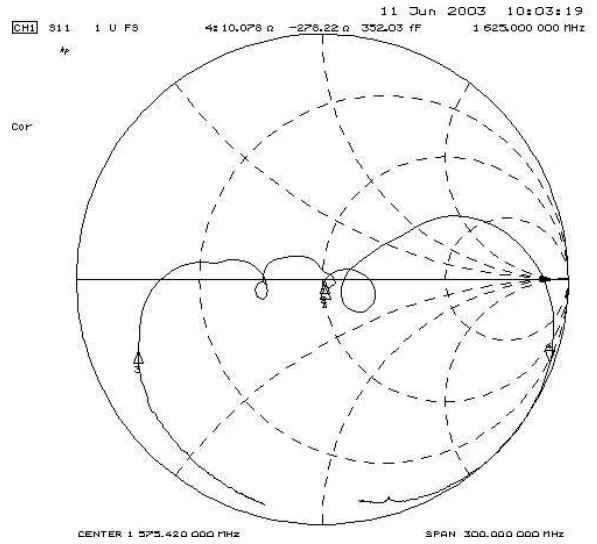
CH1 Markers  
 1:-1.5373 dB  
 1.52422 GHz  
 2:-1.5102 dB  
 1.52662 GHz  
 3:-40.682 dB  
 1.52500 GHz

11 Jun 2003 10:43:09

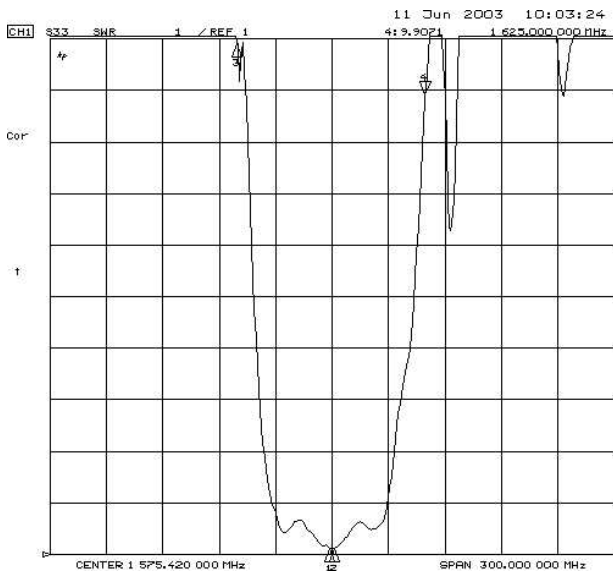




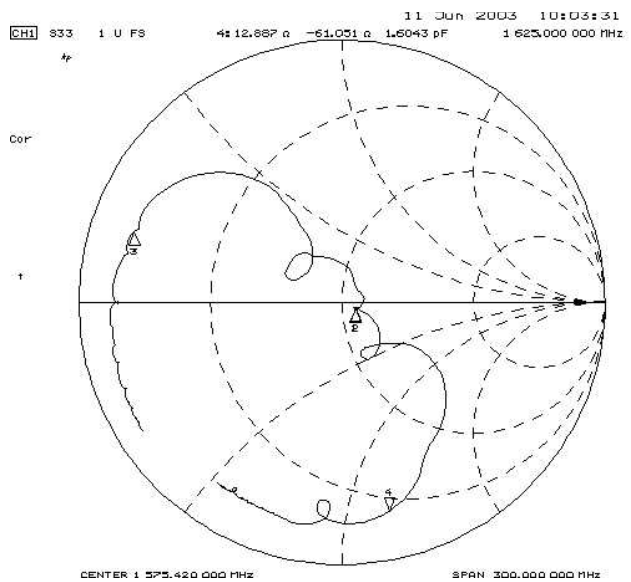
CH1 Markers  
 1: 1.0649  
 1.57422 GHz  
 2: 1.0252  
 1.57662 GHz  
 3: 9.2329  
 1.52800 GHz



CH1 Markers  
 1: 51.211 a  
 -2.9629 a  
 1.57422 GHz  
 2: 51.002 a  
 -667.97 na  
 1.57662 GHz  
 3: 5.6143 a  
 -3.6334 a  
 1.52800 GHz



CH1 Markers  
 1: 1.1199  
 1.57422 GHz  
 2: 1.1221  
 1.57662 GHz  
 3: 11.090  
 1.52800 GHz

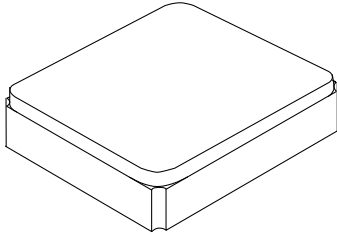


CH1 Markers  
 1: 55.340 a  
 -2.5137 a  
 1.57422 GHz  
 2: 55.604 a  
 -2.3867 a  
 1.57662 GHz  
 3: 4.6333 a  
 8.2705 a  
 1.52800 GHz

# SM2520-4 Case

## 4-Terminal Ceramic Surface-Mount Case

### 2.5 X 2.0 mm Nominal Footprint



#### Case Dimensions

| Dimension | mm   |      |      |
|-----------|------|------|------|
|           | Min  | Nom  | Max  |
| A         | 1.88 | 2.0  | 2.12 |
| B         | 2.38 | 2.5  | 2.62 |
| C         |      |      | 1.00 |
| D         | 0.67 | 0.80 | 0.83 |
| E         | 0.80 | 0.95 | 1.10 |
| F         | 0.55 | 0.70 | 0.85 |
| G         | 0.50 | 0.60 | 0.70 |

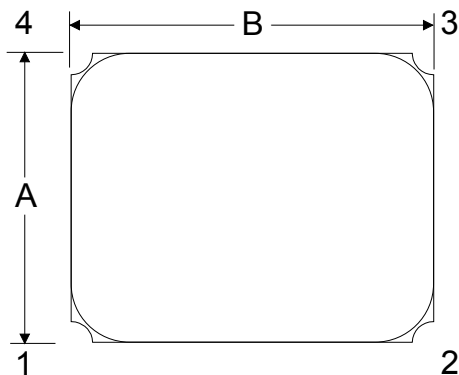
#### Electrical Connections

| Connection                  |                     | Terminals  |
|-----------------------------|---------------------|------------|
| Port 1                      | Single-ended Input  | 1          |
| Port 2                      | Single-ended Output | 3          |
|                             | Ground              | All others |
| Single-ended Operation Only |                     |            |

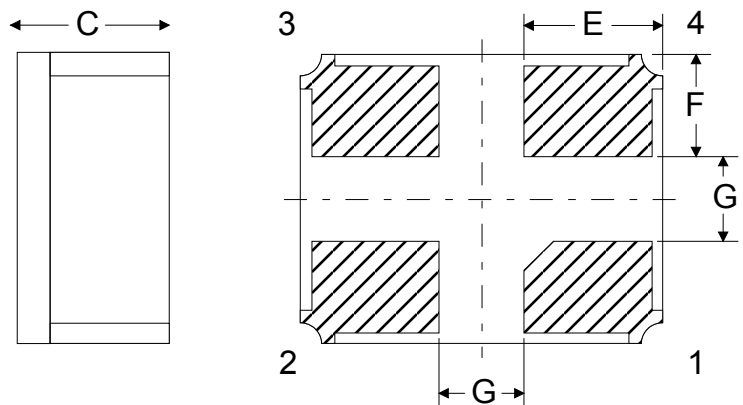
#### Materials

|                    |  |
|--------------------|--|
| 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



## PCB Foot Print

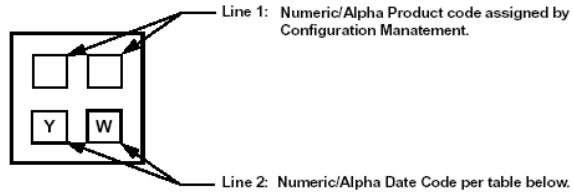
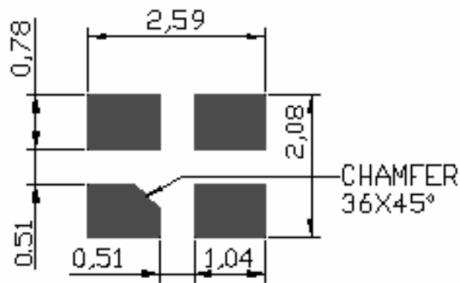


Table 4: SM2520-4

| YEAR CODE |            | WEEK CODE       |                     |                 |                     |                 |                     |                 |                     |
|-----------|------------|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|-----------------|---------------------|
| NUMBER    | REPRESENTS | ALPHA CHARACTER | REPRESENTS WEEK NO. | ALPHA CHARACTER | REPRESENTS WEEK NO. | ALPHA CHARACTER | REPRESENTS WEEK NO. | ALPHA CHARACTER | REPRESENTS WEEK NO. |
| 3         | 2013       | A               | 01                  | N               | 14                  | a               | 27                  | n               | 40                  |
| 4         | 2014       | B               | 02                  | O               | 15                  | b               | 28                  | o               | 41                  |
| 5         | 2015       | C               | 03                  | P               | 16                  | c               | 29                  | p               | 42                  |
| 6         | 2016       | D               | 04                  | Q               | 17                  | d               | 30                  | q               | 43                  |
| 7         | 2017       | E               | 05                  | R               | 18                  | e               | 31                  | r               | 44                  |
| 8         | 2018       | F               | 06                  | S               | 19                  | f               | 32                  | s               | 45                  |
| 9         | 2019       | G               | 07                  | T               | 20                  | g               | 33                  | t               | 46                  |
| 0         | 2020       | H               | 08                  | U               | 21                  | h               | 34                  | u               | 47                  |
|           |            | I               | 09                  | V               | 22                  | i               | 35                  | v               | 48                  |
|           |            | J               | 10                  | W               | 23                  | j               | 36                  | w               | 49                  |
|           |            | K               | 11                  | X               | 24                  | k               | 37                  | x               | 50                  |
|           |            | L               | 12                  | Y               | 25                  | l               | 38                  | y               | 51                  |
|           |            | M               | 13                  | Z               | 26                  | m               | 39                  | z               | 52                  |

## Reflow Profile

