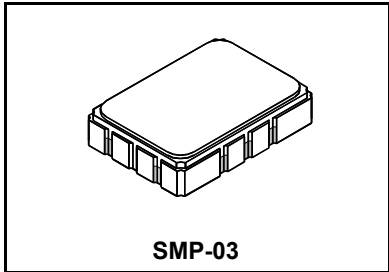



SF2038B

76.500 MHz
SAW Filter



- **Designed for SDARS IF Receiver**
- **Low Insertion Loss**
- **5.0 X 7.0 mm Surface-Mount Case**
- **Differential or Single Ended Input and Output**
- **Complies with Directive 2002/95/EC (RoHS)** 

Absolute Maximum Ratings

| Rating | Value | Units |
|---|----------------|-------|
| Maximum Incident Power in Passband | +10 | dBm |
| Max. DC voltage between any 2 terminals | 30 | VDC |
| Storage Temperature Range | -40 to +85 | °C |
| Max Soldering Profile | 265°C for 10 s | |

| Characteristic | Sym | Notes | Min | Typ | Max | Units |
|--|-----------------------------------|-------|--------|------|------|-------------------|
| Nominal Center Frequency | f_c | 1 | 76.500 | | | MHz |
| Passband Insertion Loss | IL | | | 10.0 | 12.0 | dB |
| 1dB Passband | BW ₁ | 1 | 12.5 | 14.0 | | MHz |
| 15dB Bandwidth | BW ₁₅ | | | 16.8 | 18.0 | MHz |
| 30dB Bandwidth | BW ₃₀ | | | 18.0 | 19.2 | MHz |
| Amplitude Ripple over $f_c \pm 6.25$ MHz | | | | 0.70 | 1.3 | dB _{P-P} |
| Group Delay Variation over $f_c \pm 6.25$ MHz | GDV | | | 40 | 150 | ns _{P-P} |
| Rejection | 50 to 64.44 MHz | 1, 3 | 40 | 46 | | dB |
| | 64.44 to 66.70 MHz | | 36 | 41 | | |
| | 86.30 to 87.06 MHz | | *30 | 44 | | |
| | 87.06 to 91.50 MHz | | 36 | 44 | | |
| | 91.50 to 100 MHz | | 40 | 47 | | |
| Operating Temperature Range | T _A | 1 | -40 | | +85 | °C |
| Frequency Coefficient | FTC | | | -87 | | ppm/°C |
| Differential Input | 175 ohms | | | | | |
| Differential Output | 180 ohms | | | | | |
| Case Style | SMP-03 7 x 5 mm Nominal Footprint | | | | | |
| Lid Symbolization (YY=year, WW=week, S=shift) See note 4 | RFM SF2038B YYWWS | | | | | |

*At low temperature extreme -40°C

Electrical Connections

| Connection | Terminals |
|----------------------|------------|
| Port 1 Hot | 10 |
| Port 1 Ground Return | 1 |
| Port 2 Hot | 5 |
| Port 2 Ground Return | 6 |
| Case Ground | All Others |

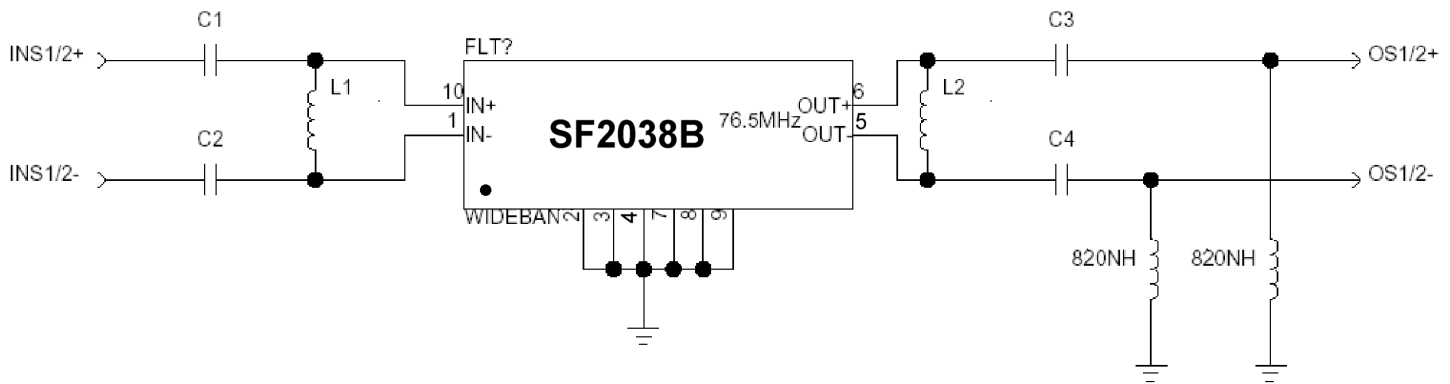
NOTES:

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 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency, fc.
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. Tape and Reel Standard ANSI / EIA 481.
7. 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.
8. US and international patents may apply.
9. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd.
10. Electrostatic Sensitive Device. Observe precautions for handling.



Matching Circuit and Matching Component Values Used in G3 Sirius Radios

(Refer to Sirius Radio G3 Chipset Application Note, Doc. #RX000104-B, Sec. 4.2.2)

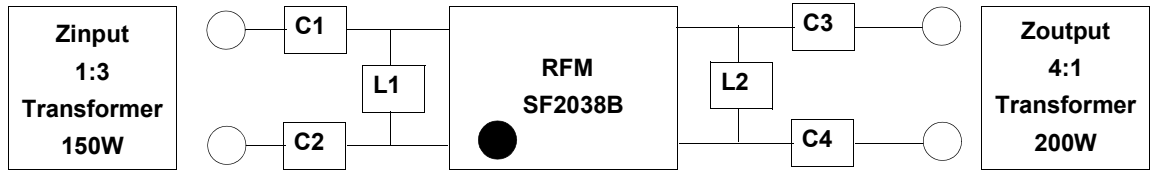


Wideband SAW Matching Circuit

Wideband SAW Matching Values

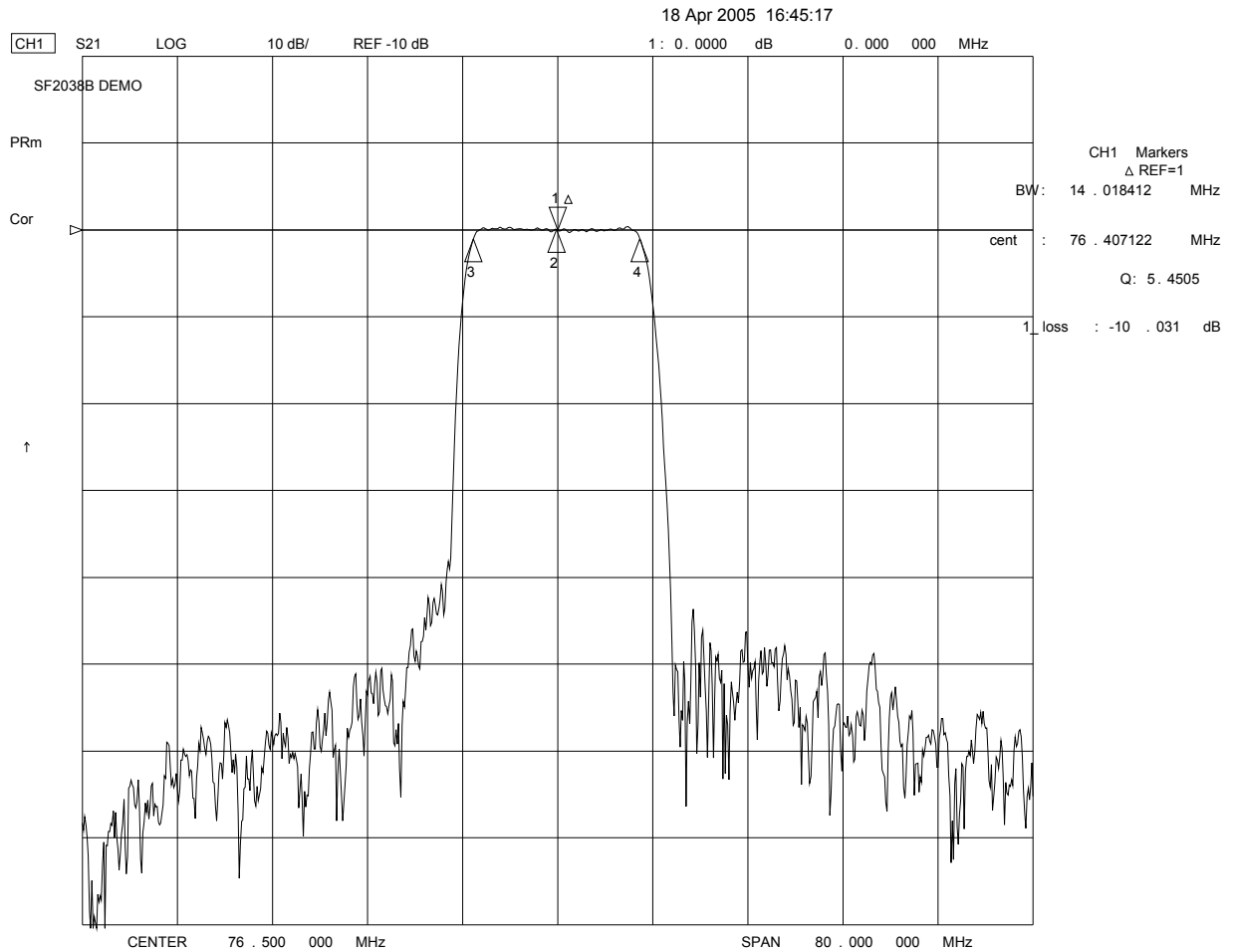
| Reference Designator | Value |
|----------------------|--------|
| C1 | 15 pF |
| C2 | 15 pF |
| L1 | 270 nH |
| L2 | 270 nH |
| C3 | 27 pF |
| C4 | 27 pF |

Matching Circuit and Matching Component Values Used on Filter Demo Board

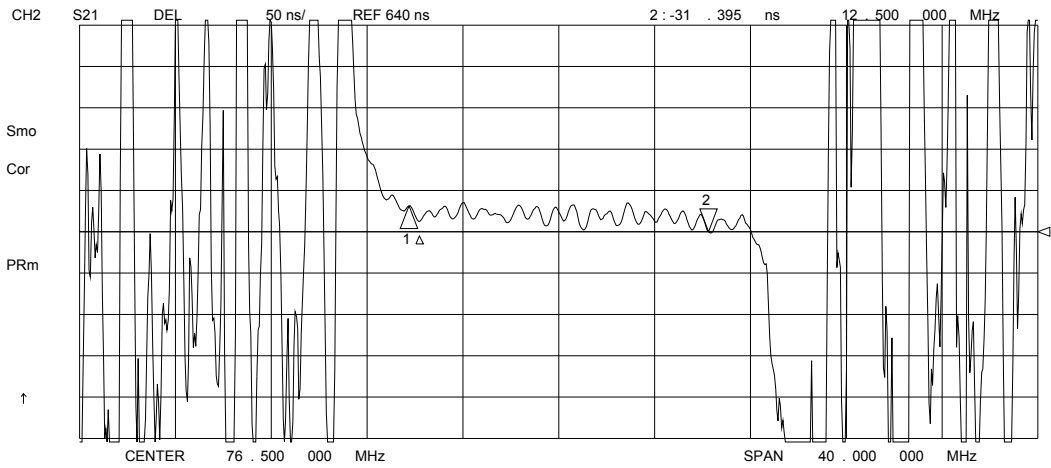
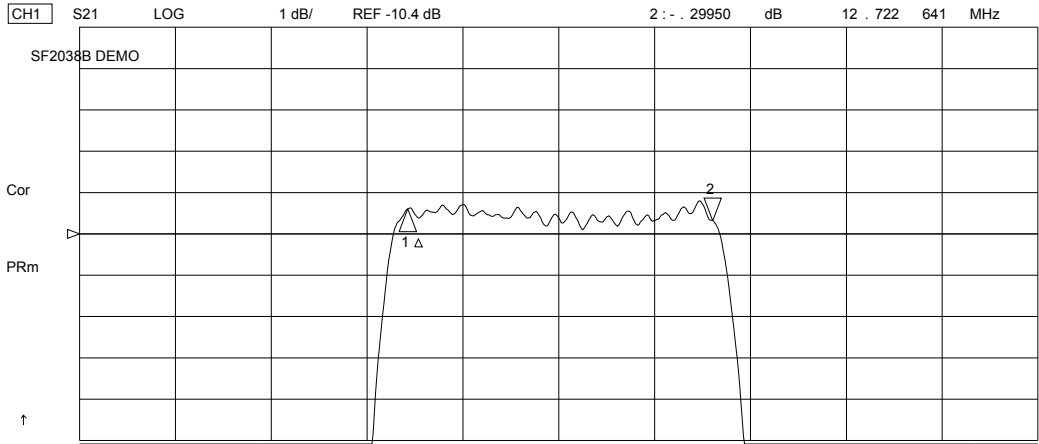


SF2038B
76.500 MHz

C1 = 22pF
C2 = 22pF
L1 = 220nH
L2 = 270nH
C3 = 22pF
C4 = 22pF



18 Apr 2005 16:42:05



18 Apr 2005 16:35:10

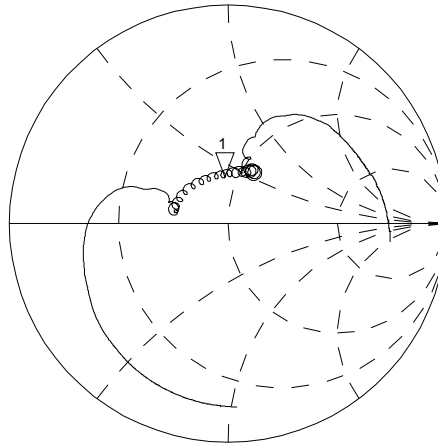
CH1 S11 1 UFS

1: 44.537 Ω 19.910 Ω 41.422 nH 76.500 000 MHz

SF2038B DEMO

Cor

PRm

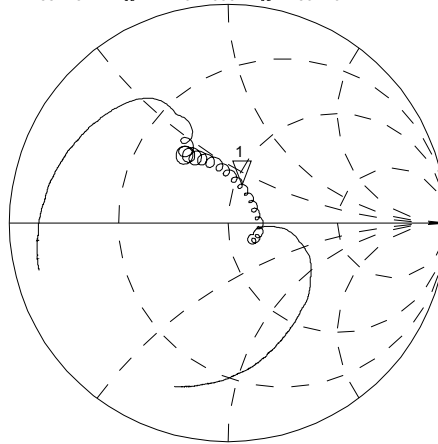


CH2 S22 1 UFS

1: 53.521 Ω 19.055 Ω 39.642 nH 76.500 000 MHz

Cor

PRm



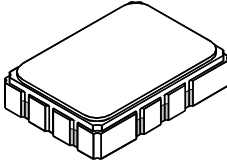
CENTER 76.500 000 MHz

SPAN 40.000 000 MHz

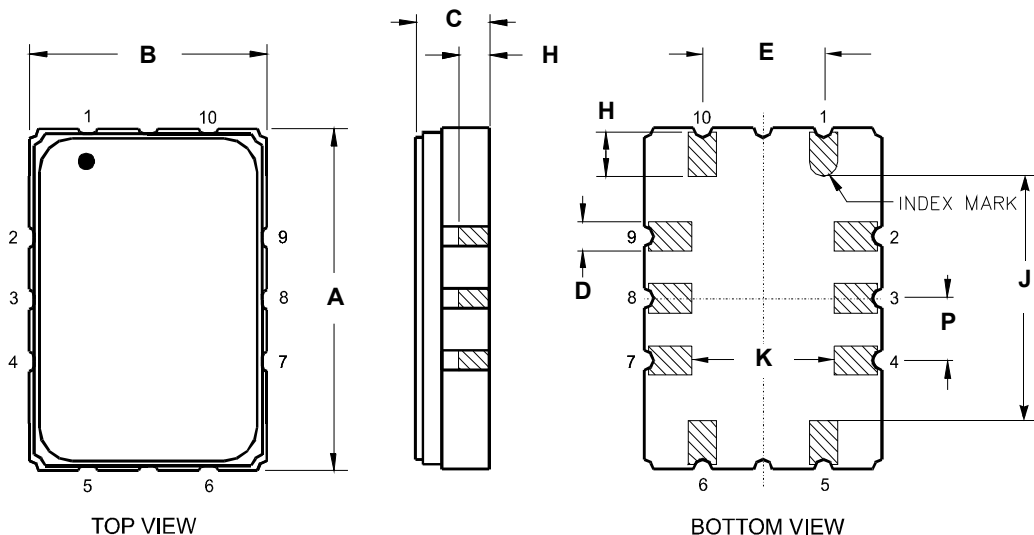
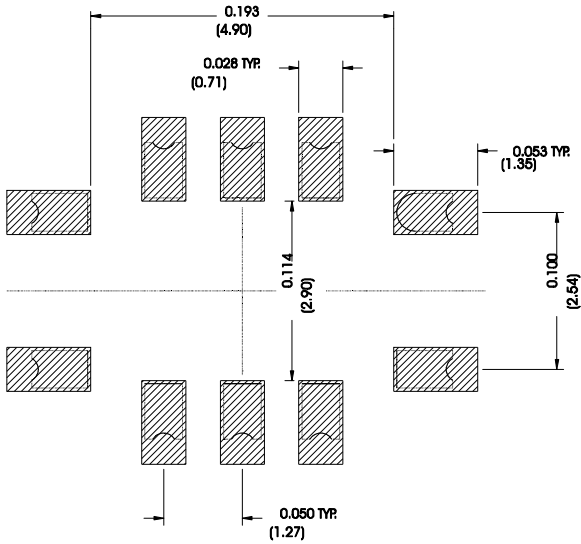
SMP-03 Case

10-Terminal Ceramic Surface-Mount Case

7 x 5 mm Nominal Footprint



Recommended PCB Footprint

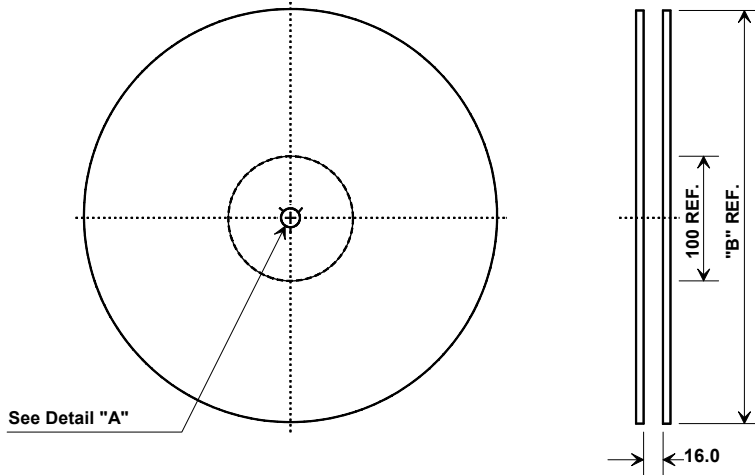


| Case Dimensions | | | | | | |
|-----------------|------|------|------|--------|-------|-------|
| Dimension | mm | | | Inches | | |
| | Min | Nom | Max | Min | Nom | Max |
| A | 6.80 | 7.00 | 7.20 | 0.268 | 0.276 | 0.283 |
| B | 4.80 | 5.00 | 5.20 | 0.189 | 0.197 | 0.205 |
| C | | 1.65 | 2.00 | | 0.065 | 0.079 |
| D | .47 | 0.60 | .73 | 0.019 | 0.024 | 0.029 |
| E | 2.41 | 2.54 | 2.67 | 0.095 | 0.100 | 0.105 |
| H | 0.87 | 1.0 | 1.13 | 0.034 | 0.039 | 0.044 |
| J | 4.87 | 5.00 | 5.13 | 0.192 | 0.197 | 0.202 |
| K | 2.87 | 3.00 | 3.13 | 0.113 | 0.118 | 0.123 |
| P | 1.14 | 1.27 | 1.40 | 0.045 | 0.050 | 0.055 |

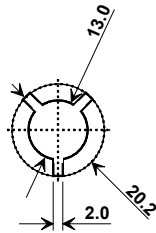
| Materials | |
|------------------------|--|
| Solder Pad Termination | Au plating 30 - 60 ulnches (76.2-152 uM) over 80-200 ulnches (203-508 uM) Ni. |
| Lid | Fe-Ni-Co Alloy Electroless Nickel Plate (8-11% Phosphorus) 100-200 ulnches Thick |
| Body | Al ₂ O ₃ Ceramic |
| Pb Free | |

| Electrical Connections | | |
|------------------------|------------------|------------------|
| Connection | | Terminals |
| Port 1 | Input or Return | 10 |
| | Return or Input | 1 |
| Port 2 | Output or Return | 5 |
| | Return or Output | 6 |
| Ground | | All others |
| Single Ended Operation | | Return is ground |
| Differential Operation | | Return is hot |

Tape and Reel Specifications

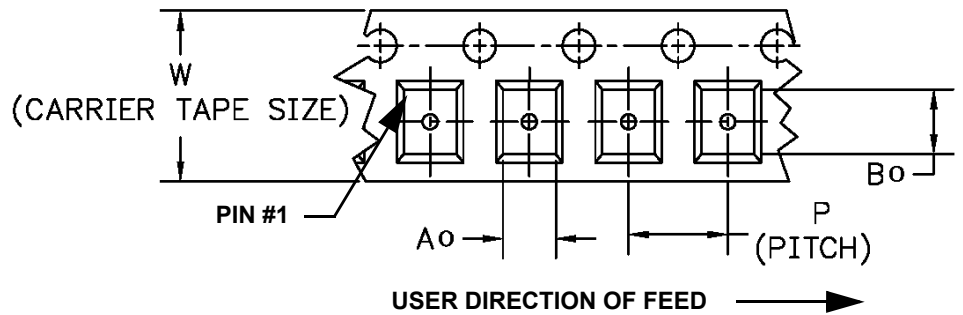
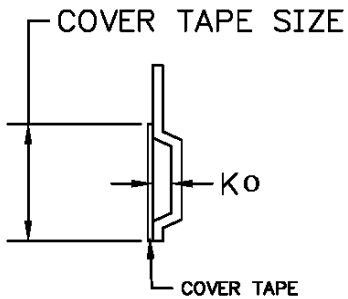


| "B" Nominal Size | | Quantity Per Reel |
|------------------|-------------|-------------------|
| Inches | millimeters | |
| 7 | 178 | 500 |
| 13 | 330 | 2000 |



COMPONENT ORIENTATION and DIMENSIONS

| Carrier Tape Dimensions | |
|-------------------------|---------|
| Ao | 5.5 mm |
| Bo | 7.5 mm |
| Ko | 2.0 mm |
| Pitch | 8.0 mm |
| W | 16.0 mm |



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