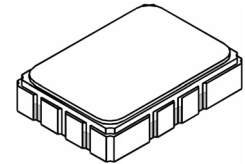


- Designed for SDARS IF Receiver
- Low Insertion Loss
- 5.0 X 7.0 mm Surface-Mount Case
- Differential or Single Ended Input and Output
- Complies with Directive 2002/95/EC (RoHS)
- Moisture Sensitivity Level: 1
- AEC-Q200 Qualified

RoHS
Compliant

SF2038B-2

**76.500 MHz
SAW Filter**



SMP-03

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 (with tape & reel) | -40 to +85 | °C |
| Storage Temperature Range (without tape & reel) | -50 to +125 | °C |
| Max Soldering Profile | 265°C for 10 s | |

Electrical Characteristics

| Characteristic | Sym | Notes | Min | Typ | Max | Units | |
|---|-----------------|--------------------------------|-----------|-----------------------------------|------|-------------------|-----|
| Nominal Center Frequency | f_C | | | 76.500 | | MHz | |
| Passband | Insertion Loss | IL | | 10.0 | 12.0 | dB | |
| | | 1dB Passband | BW_{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 | 64.44 to 66.70 MHz -40 to 85°C | 40 | 46 | | dB | |
| | | 64.44 to 66.70 MHz 85 to 105°C | 36 | 41 | | | |
| | | 86.30 to 87.54 MHz | 30 | | | | |
| | | 87.54 to 91.50 MHz | *30 | 44 | | | |
| | | 91.50 to 100 MHz | 31 | 44 | | | |
| | | | 40 | 47 | | | |
| Operating Temperature Range | T_A | | -40 | | +105 | °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, ## = Sequence code) | | | | RFM, SF2038B, YYWWS## | | | |

*At low temperature extreme -40°C



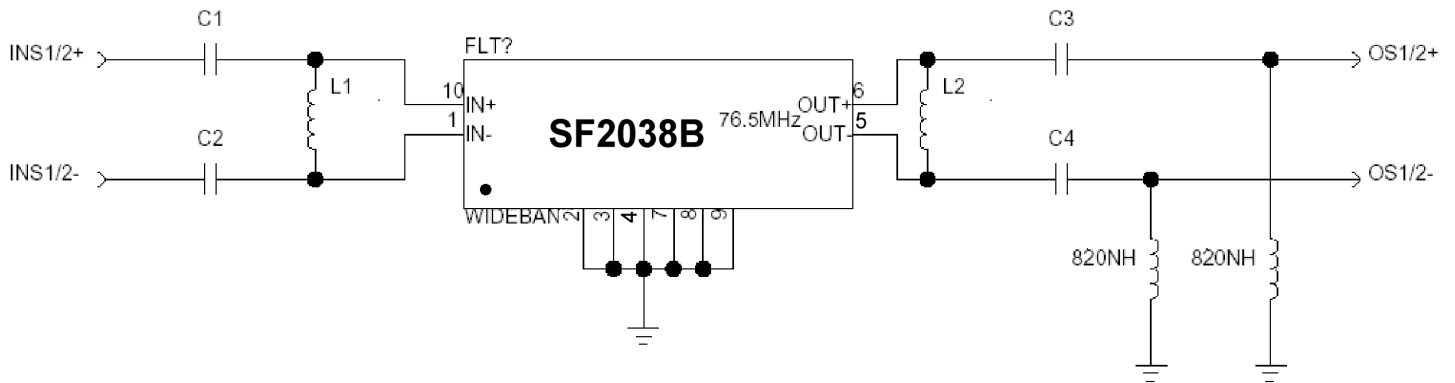
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

NOTES:

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

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)

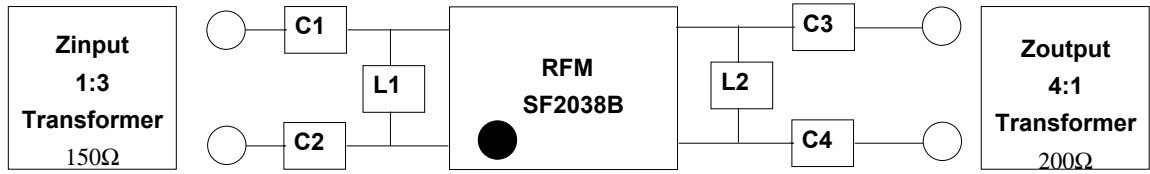


Wideband SAW Matching Circuit

Wideband SAW Matching Values

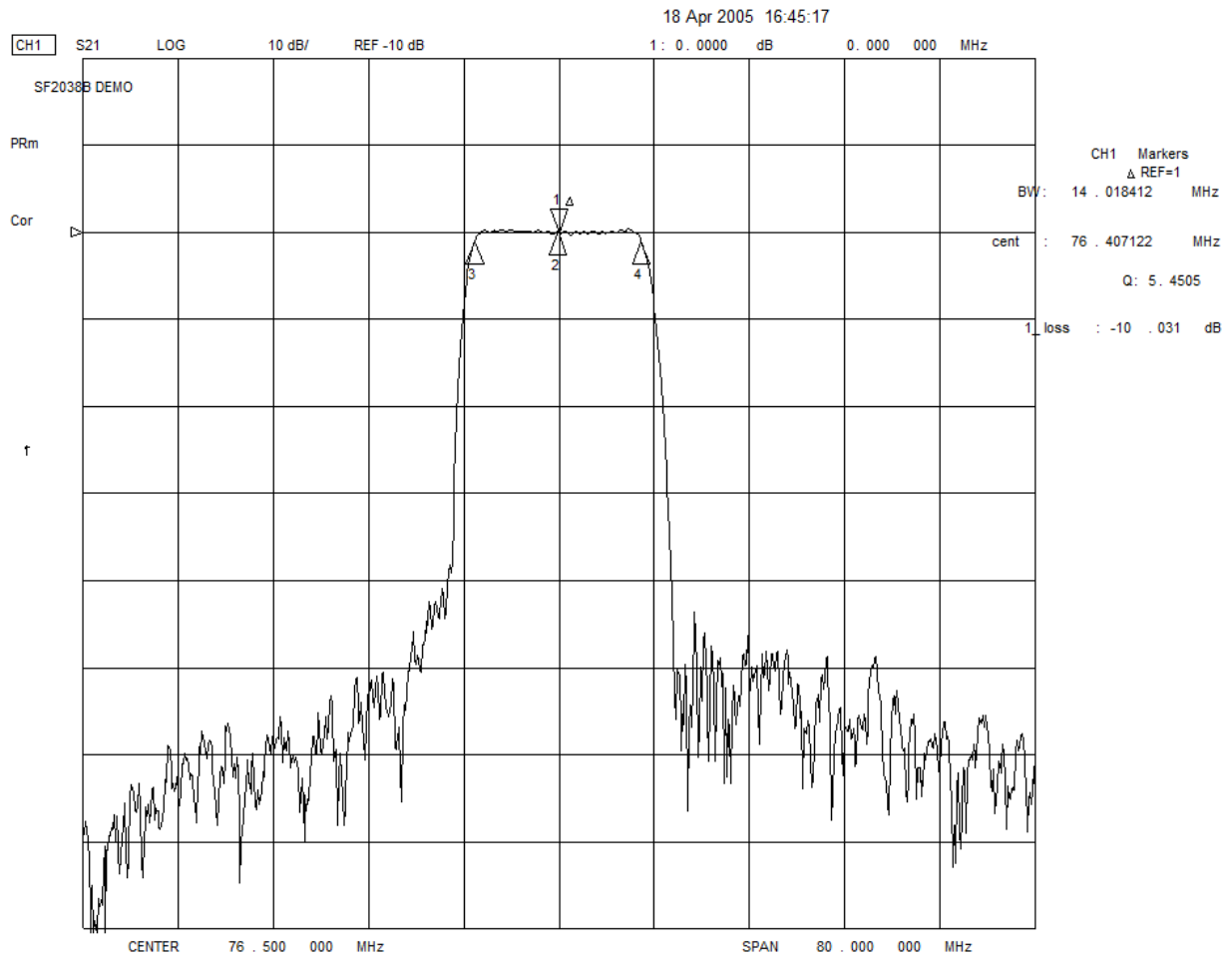
| Reference Designator | Value |
|----------------------|--------|
| C1 | 15 pF |
| C2 | 15 pF |
| L1 | 270 nH |
| L2 | 270 nH |
| C3 | 27 pF |
| C4 | 27 pF |

Matching Circuit and Matching Component Values Used on Filter Demo Board



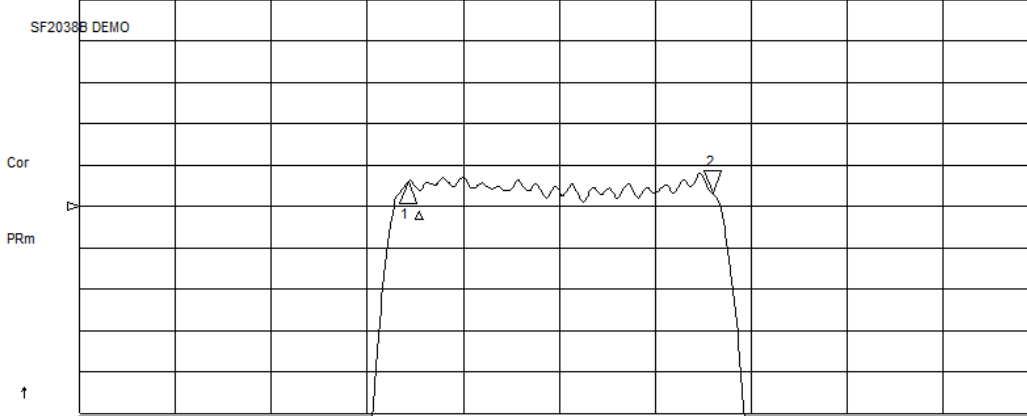
SF2038B
76.500 MHz

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

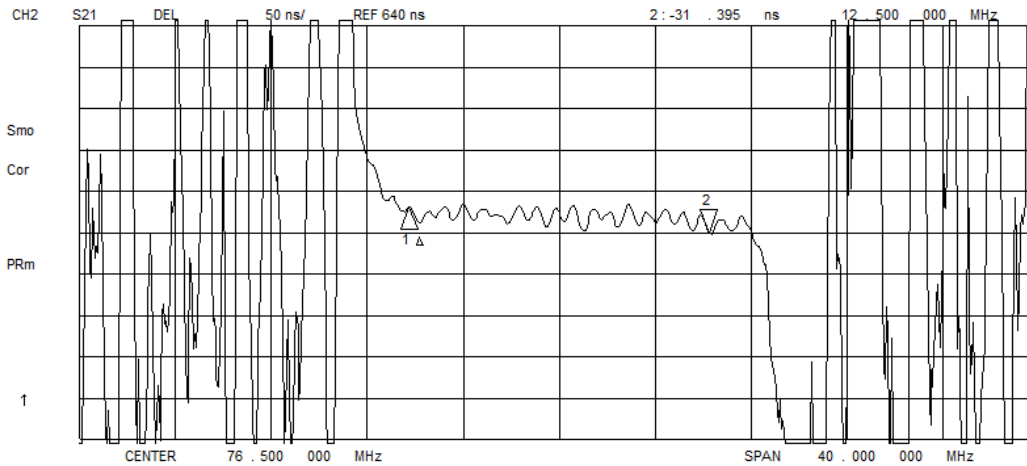


18 Apr 2005 16:42:05

CH1 S21 LOG 1 dB/ REF -10.4 dB 2 :- .29950 dB 12 .722 641 MHz



CH1 Markers
Δ REF=1
mean : -9.9489 dB
s. dev : .13250 dB
p-p : .69240 dB



CH2 Markers
Δ REF=1
mean : 659.90 ns
s. dev : 7.6786 ns
p-p : 35.477 ns

18 Apr 2005 16:35:10

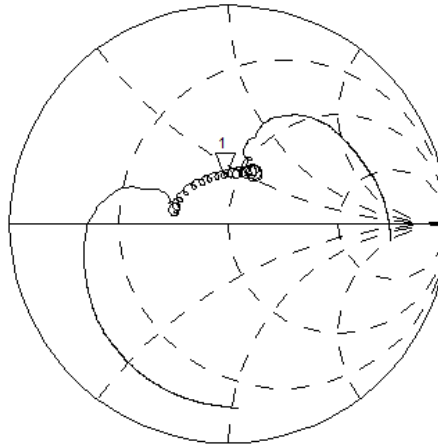
CH1 S11 1 UFS

1 : 44 . 537 Ω 19 . 910 Ω 41 . 422 nH 76 . 500 000 MHz

SF2038B DEMO

Cor

PRm

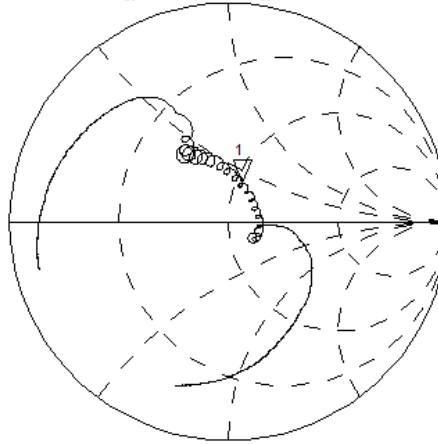


CH2 S22 1 UFS

1 : 53 . 521 Ω 19 . 055 Ω 39 . 642 nH 76 . 500 000 MHz

Cor

PRm

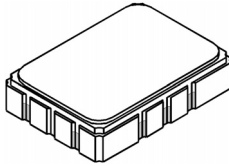


CENTER 76 . 500 000 MHz

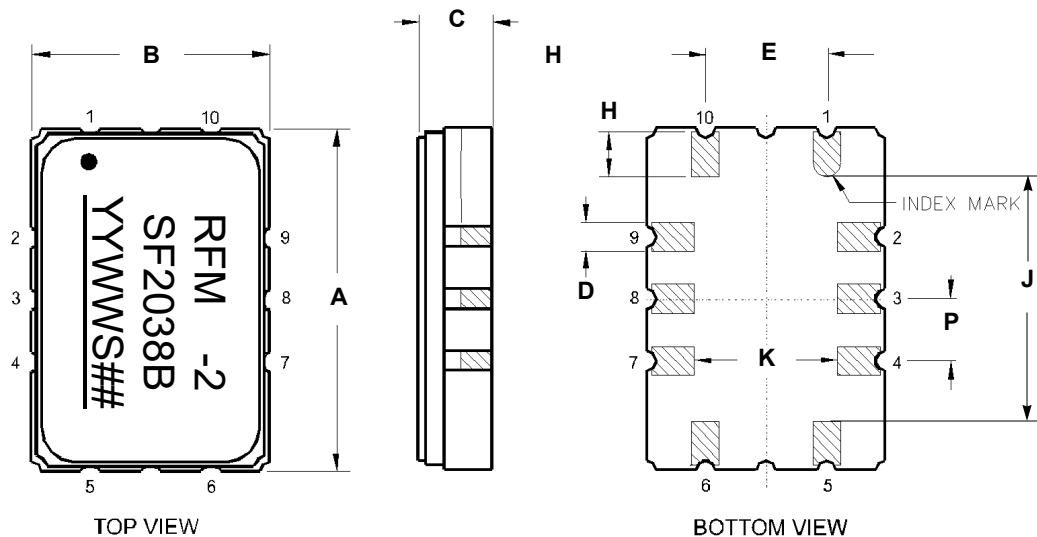
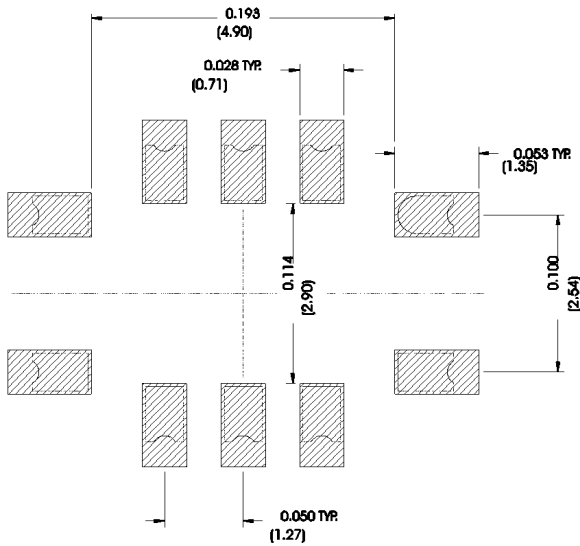
SPAN 40 . 000 000 MHz

SMP-03 Case

10-Terminal Ceramic Surface-Mount Case 7 x 5 mm Nominal Footprint



Recommended PCB Footprint



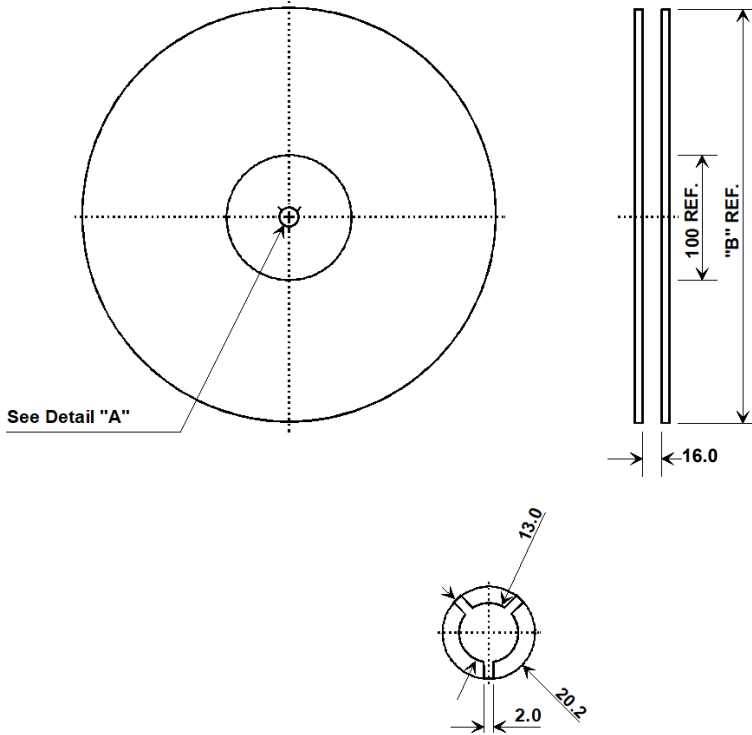
| Case Dimensions | | | | | | |
|-----------------|------|------|------|--------|-------|-------|
| Dimension | mm | | | Inches | | |
| | Min | Nom | Max | Min | Nom | Max |
| A | 6.80 | 7.00 | 7.20 | 0.268 | 0.276 | 0.283 |
| B | 4.80 | 5.00 | 5.20 | 0.189 | 0.197 | 0.205 |
| C | | 1.65 | 2.00 | | 0.065 | 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 |

| 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

Tape and Reel Standard per ANSI/EIA-481



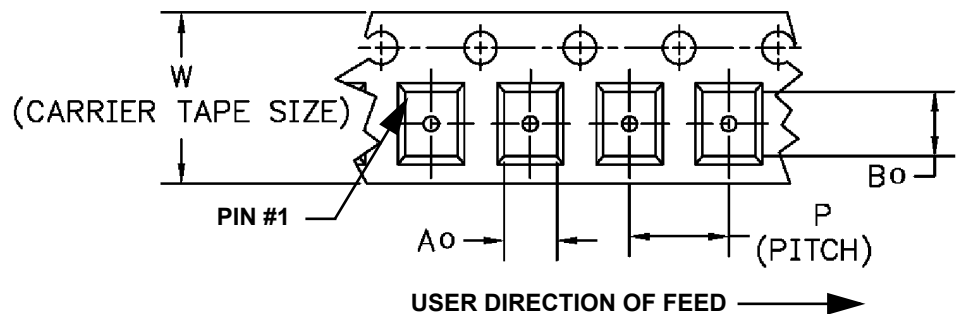
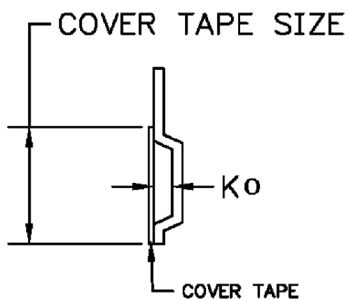
| "B" | | Quantity Per Reel |
|--------|-------------|-------------------|
| Inches | millimeters | |
| 7 | 178 | 500 |
| 13 | 330 | 2000 |

Product Reflow/ESD/MSL

| | | |
|------------------------------------|------|---------|
| Reflow Peak Temperature | 265 | °C |
| Reflow Peak Time | 10 | Seconds |
| Liquidus 217 Temperature/Time | 110 | Seconds |
| Over Liquidus 230 Temperature/Time | 70 | Seconds |
| Reflow Condition | SMT | |
| Class Level HBM | 2 | |
| HBM(V) | 2000 | HBM(V) |
| MM(V) | N/A | MM(V) |
| CDM(V) | 2000 | CDM(V) |

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 |



Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C+0/-5°C peak (10 seconds).
4. Time: 5 times maximum.

