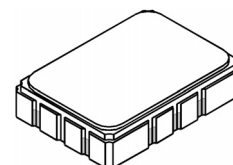


SF2040B-2

**80.460 MHz
SAW Filter**



SMP-03

- **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**

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 | | | 80.460 | | MHz | |
| Passband | Insertion Loss | IL | | 9.5 | 12.0 | dB | |
| | | | 1dB Passband | 3.7 | 4.1 | | |
| | 15dB Bandwidth | BW_{15} | | 6.6 | 6.7 | MHz | |
| | 30dB Bandwidth | BW_{30} | | 7.6 | 7.7 | MHz | |
| | Amplitude Ripple over $f_c \pm 1.85$ MHz | | | 0.5 | 1.10 | dB _{p,p} | |
| | Group Delay Variation over $f_c \pm 1.85$ MHz | | | 60 | 150 | ns _{p,p} | |
| Rejection | 50 to 74.39 MHz | | 40 | 44 | | dB | |
| | | | 74.39 to 75.99 MHz | 32 | | | 40 |
| | | | 85.21 to 86.5 MHz | 35 | | | 44 |
| | | | 86.5 to 91.50 MHz | 37 | | | 48 |
| | | | 91.50 to 100 MHz | 45 | | | 53 |
| Operating Temperature Range | T_A | | -40 | | +105 | °C | |
| Frequency Temperature Coefficient | FTC | | | -18 | | ppm/°C | |
| Differential Input | | | 175 ohms | | | | |
| Differential Output | | | 1000 ohms | | | | |
| Case Style | | | SMP-03 7 x 5 mm Nominal Footprint | | | | |
| Lid Symbolization (YY=year, WW=week, S=shift, ##=Sequence Code) | | | RFM, SF2040B-2, YYWWS## | | | | |

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 |



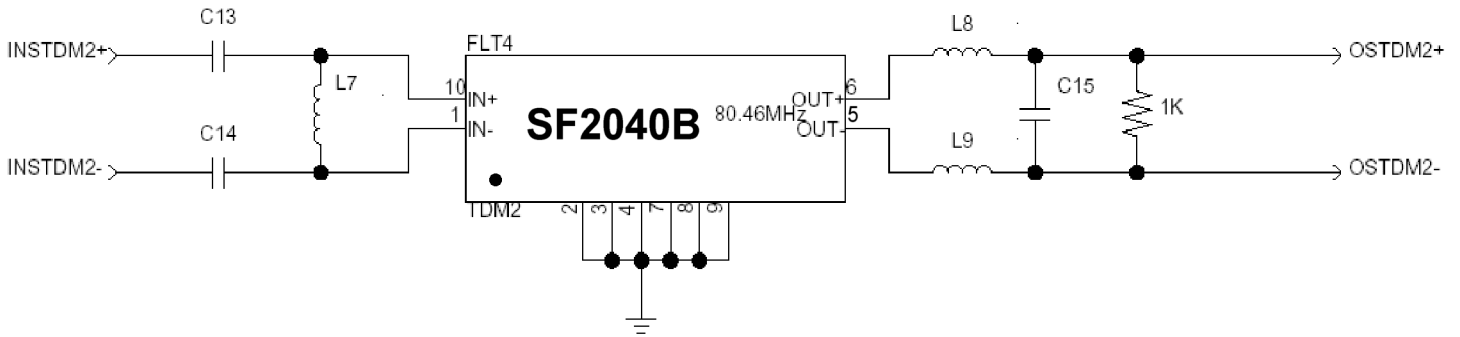
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

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. 4.2.5)

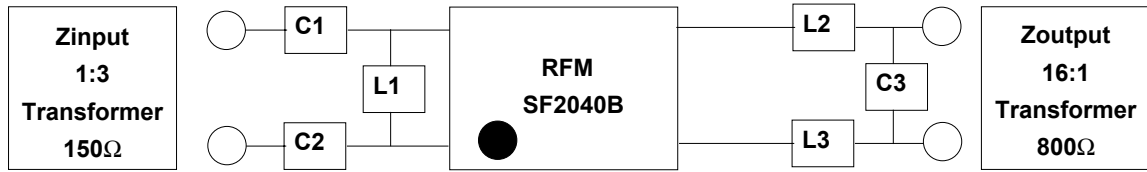


TDM2 Narrowband SAW Matching Circuit

TDM2 Narrowband SAW Matching Values

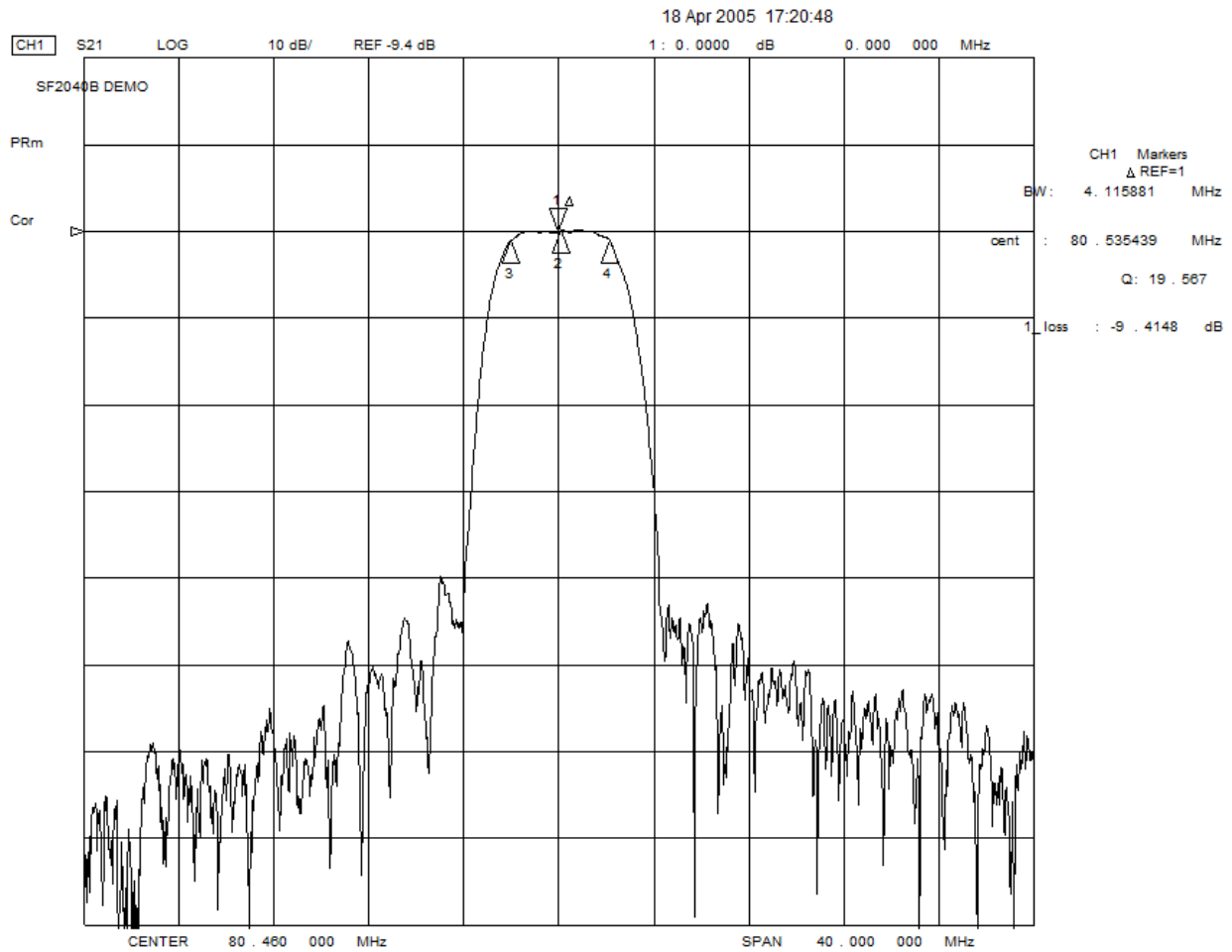
| Reference Designator | Value |
|----------------------|--------|
| C13 | 12 pF |
| C14 | 12 pF |
| L7 | 240 nH |
| L8 | 390 nH |
| L9 | 390 pF |
| C15 | 10 pF |

Matching Circuit and Matching Component Values Used on Filter Demo Board

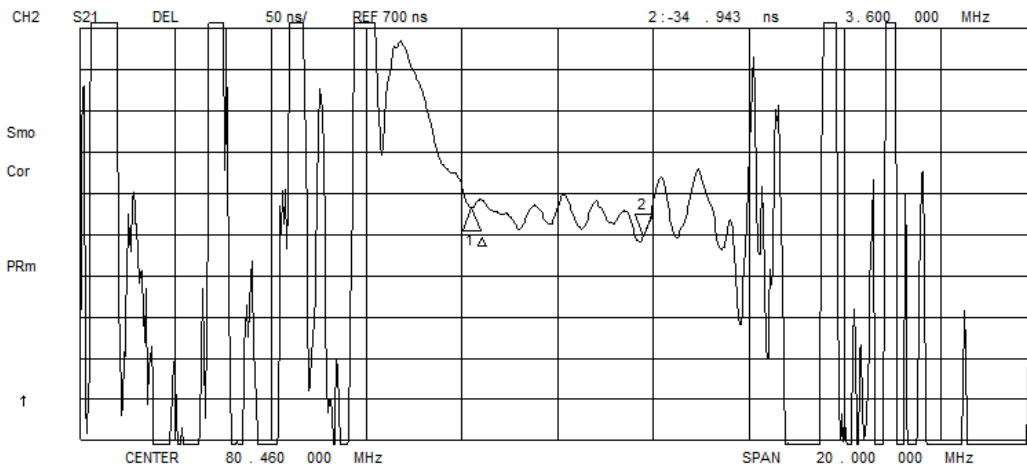
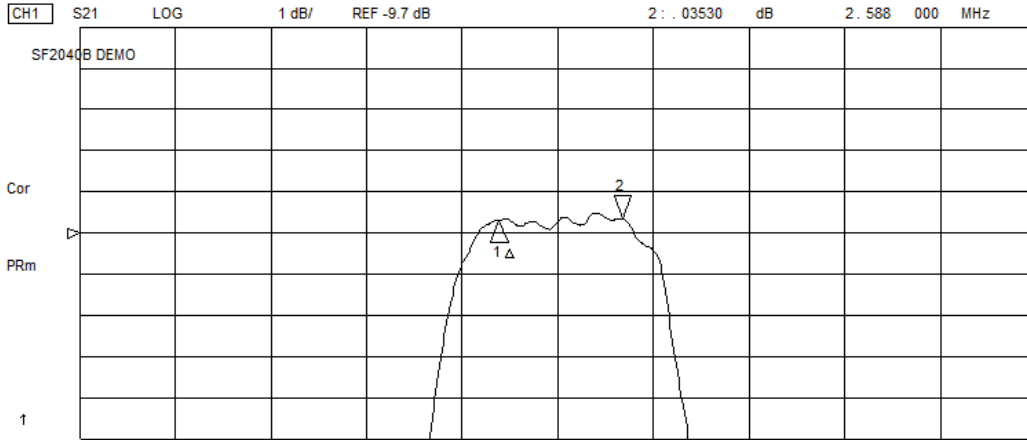


SF2040B
80.460 MHz

C1 = 9pF
C2 = 9pF
L1 = 270nH
L2 = 330nH
L3 = 330pF
C3 = 12pF



18 Apr 2005 17:17:25



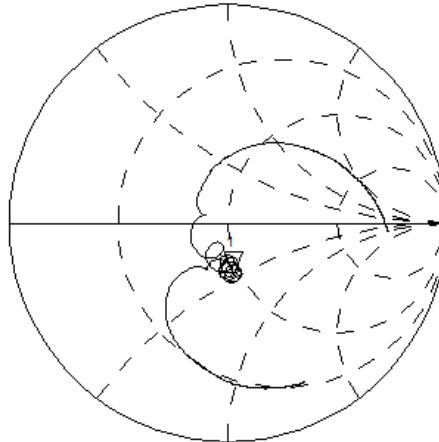
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CH1 S11 1 UFS

1: 46.854 Ω -23.961 Ω 82.554 pF 80.460 000 MHz

SF2040B DEMO

PRm

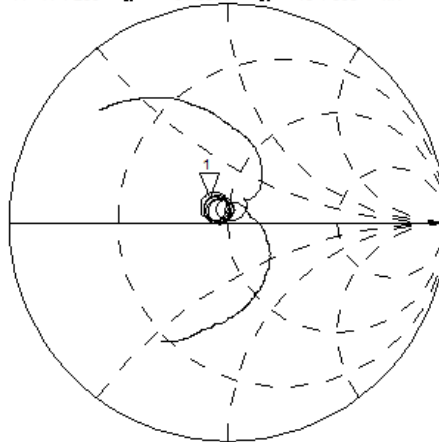


↑

CH2 S22 1 UFS

1: 41.250 Ω 9.5586 Ω 18.908 nH 80.460 000 MHz

PRm



↑

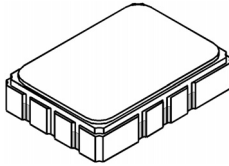
CENTER 80.460 000 MHz

SPAN 20.000 000 MHz

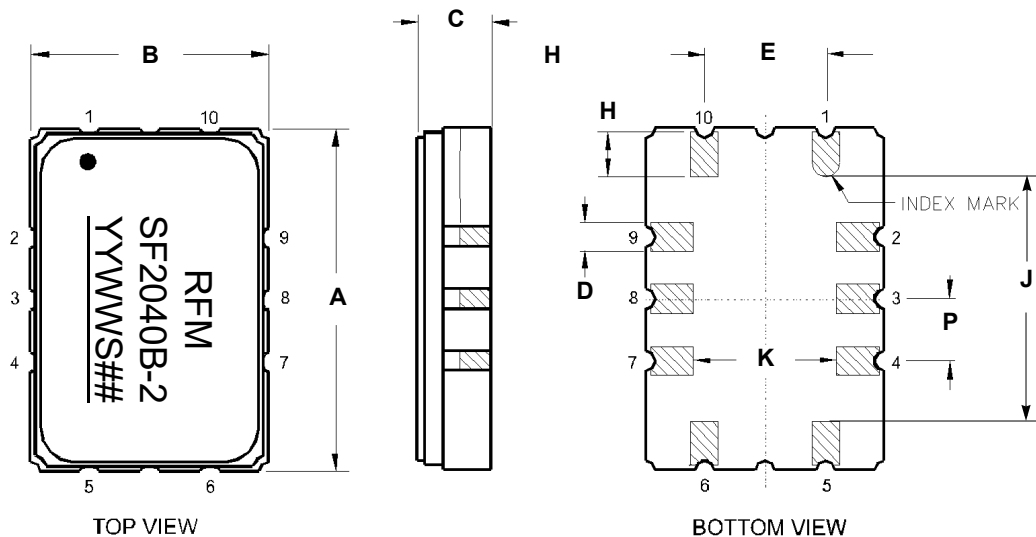
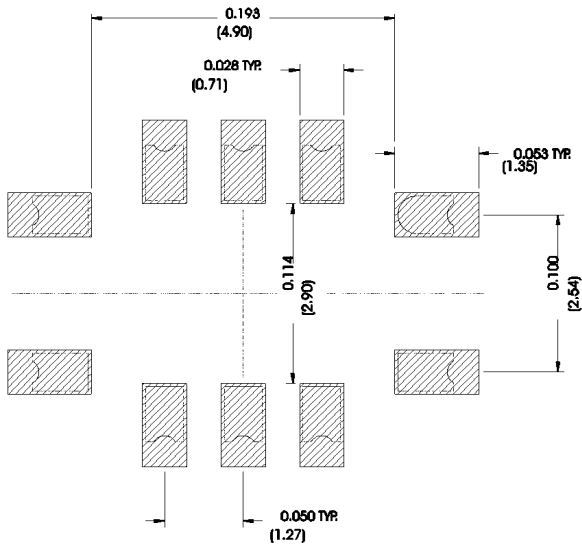
SMP-03 Case

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

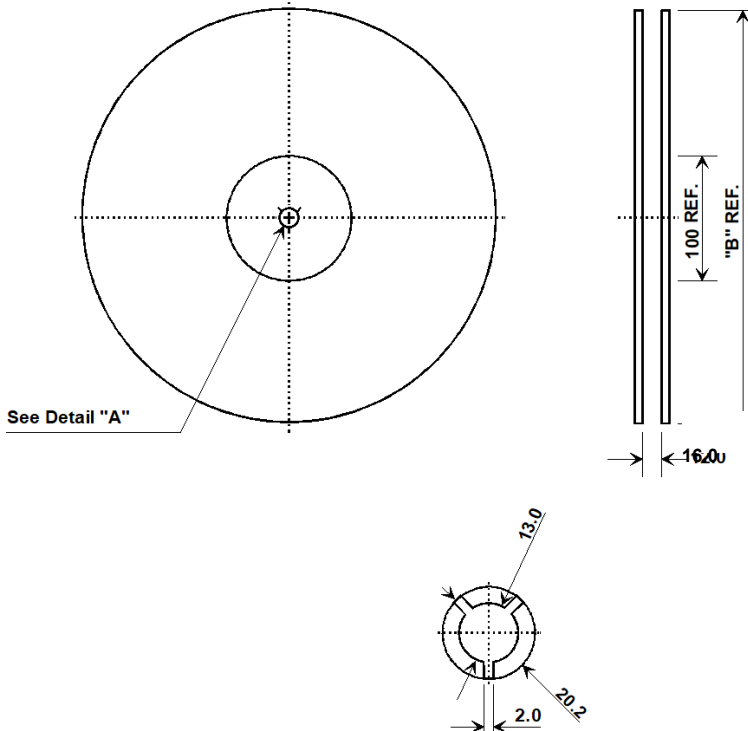
| | |
|------------------------|----------------------------------------------------------------------------------|
| Solder Pad Termination | Au plating 30 - 60 ulnches (76.2-152 uM) over 80-200 ulnches (203-508 uM) Ni. |
| Lid | Fe-Ni-Co Alloy Electroless Nickel Plate (8-11% Phosphorus) 100-200 ulnches 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



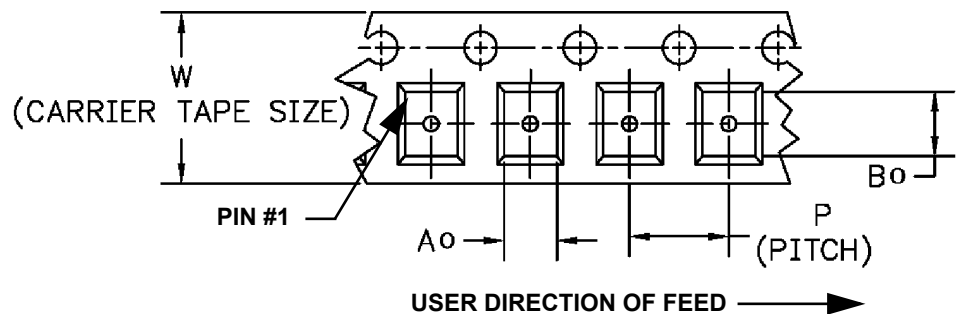
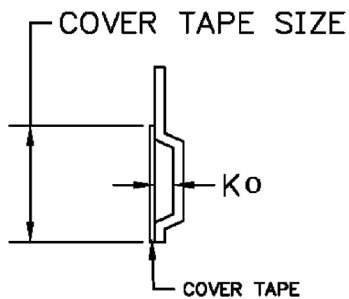
| "B" | | Quantity Per Reel |
|--------|-------------|-------------------|
| Inches | millimeters | |
| 7 | 178 | 500 |
| 13 | 330 | 2000 |

Product Reflow/ESD

| | | |
|------------------------------------|------|---------|
| 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.

