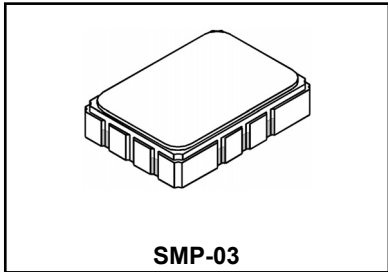


**SF2039B-2**

**72.540 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 2011/65/EU (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 (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	$f_c$			72.540		MHz
Passband	Insertion Loss	IL		10.5	12.5	dB
			1dB Passband	BW <sub>1</sub>	3.7	
				6.5	6.7	MHz
				7.5	7.7	MHz
				0.5	1.3	dB <sub>P-P</sub>
				60	150	ns <sub>P-P</sub>
Rejection	50 to 66.48 MHz		40	47		dB
			66.48 to 68.08 MHz	30.5	43	
			77.30 to 78.60 MHz	38	42	
			78.60 to 86.50 MHz	40	44	
			86.50 to 91.50 MHz	45	50	
			91.50 to 100.00 MHz	45	55	
Operating Temperature Range	T <sub>A</sub>	1	-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) See note 4		6		RFM SF2039B 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



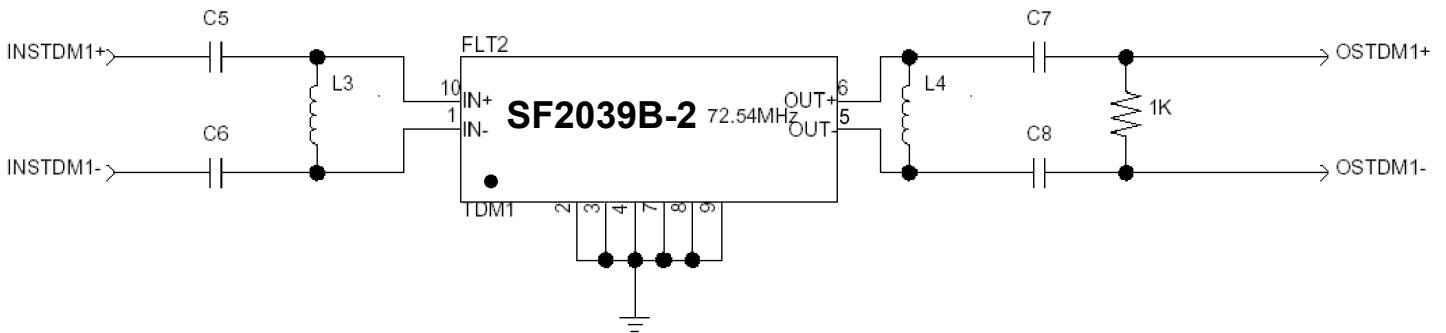
**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

**NOTES:**

1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 50  $\Omega$  and measured with 50  $\Omega$  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.

**Matching Circuit and Matching Component Values Used in G3 Sirius Radios**

(Refer to Sirius Radio G3 Chipset Application Note, Doc. #RX000104-B, Sec. 4.2.3)

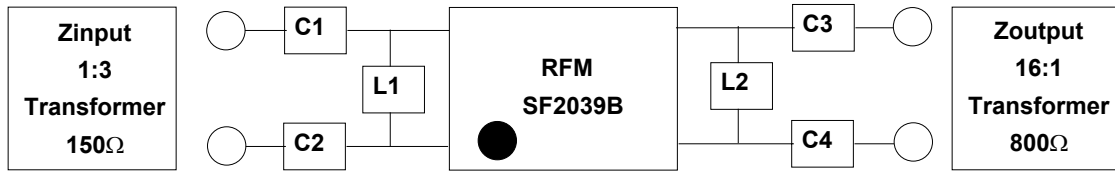


**TDM1 Narrowband SAW Matching Circuit**

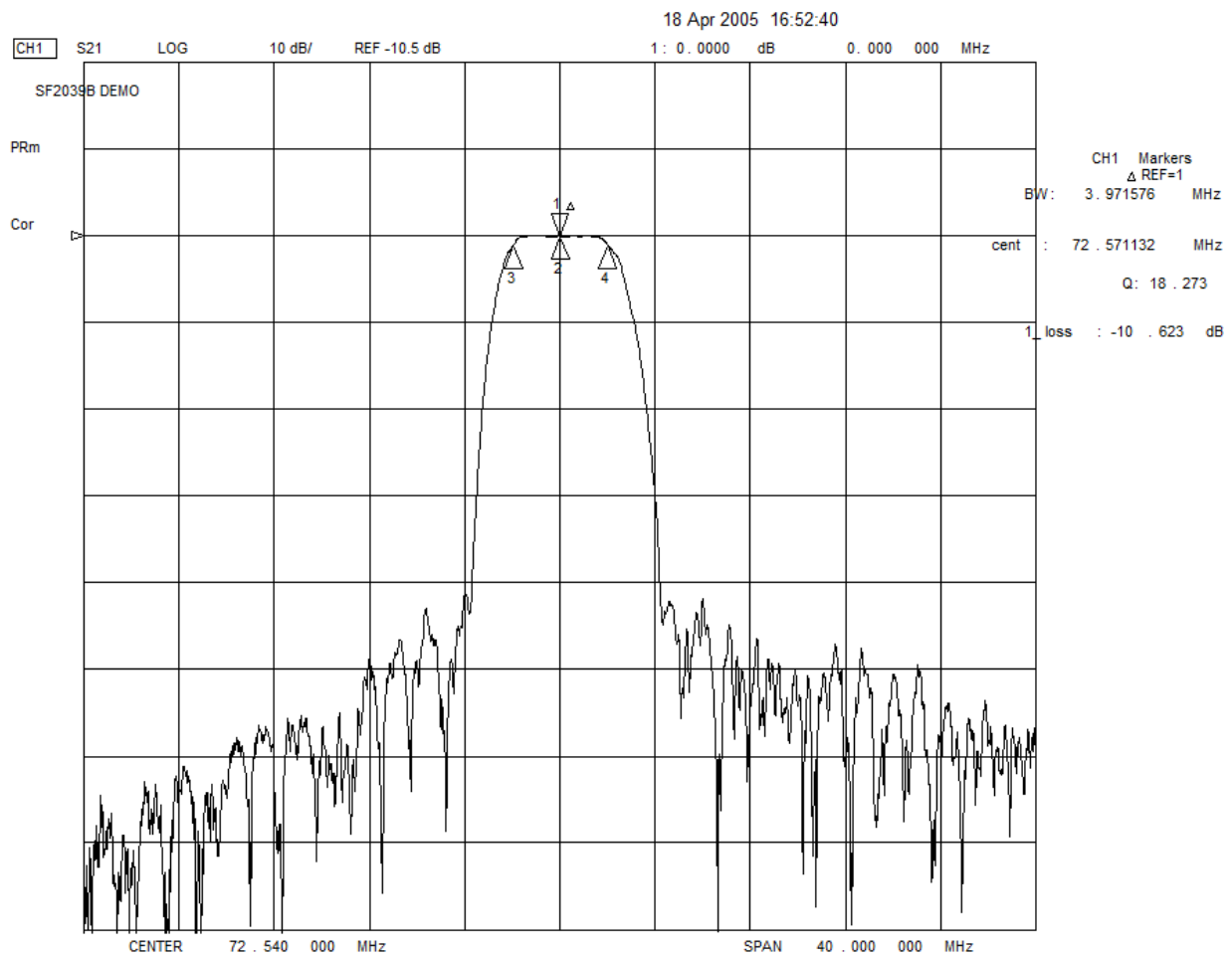
**TDM1 Narrowband SAW Matching Values**

Reference Designator	Value
C5	10 pF
C6	10 pF
L3	330 nH
L4	560 nH
C7	100 pF
C8	100 pF

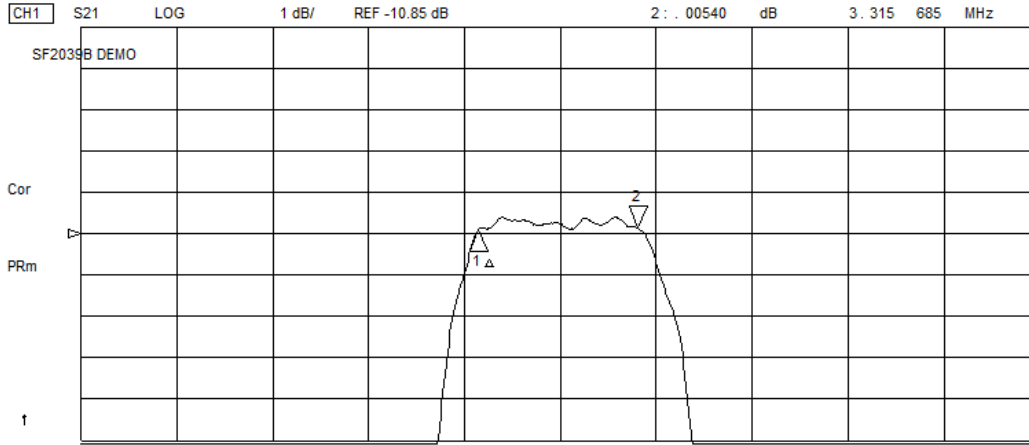
# Matching Circuit and Matching Component Values Used on Filter Demo Board



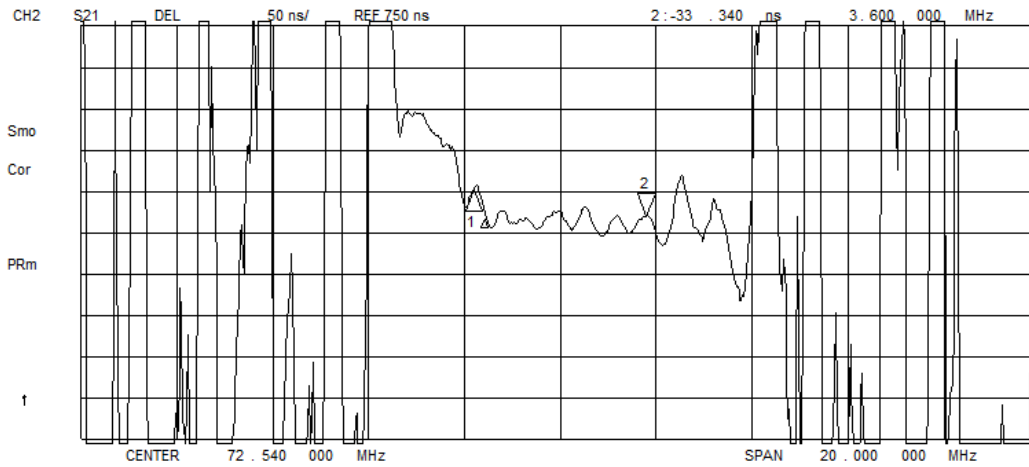
- SF2039B**  
**72.540 MHz**
- C1 = 10pF**
  - C2 = 10pF**
  - L1 = 330nH**
  - L2 = 390nH**
  - C3 = 18pF**
  - C4 = 18pF**



18 Apr 2005 16:59:10



CH1 Markers  
Δ REF=1  
mean : -10.593 dB  
s. dev : .08060 dB  
p-p : .28160 dB



CH2 Markers  
Δ REF=1  
mean : 766.06 ns  
s. dev : 11.855 ns  
p-p : 61.340 ns

18 Apr 2005 17:02:37

CH1 S11 1 UFS

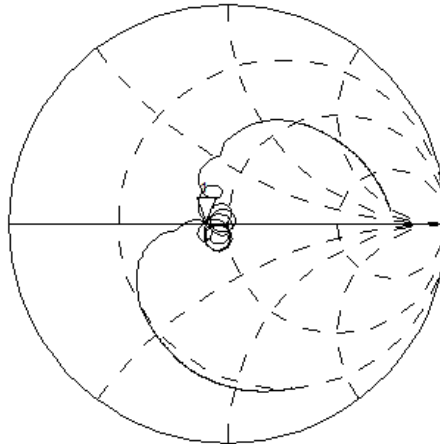
1: 41.178  $\Omega$  0.9043  $\Omega$  1.9840 nH 72.540 000 MHz

SF2039B DEMO

Cor

PRm

1



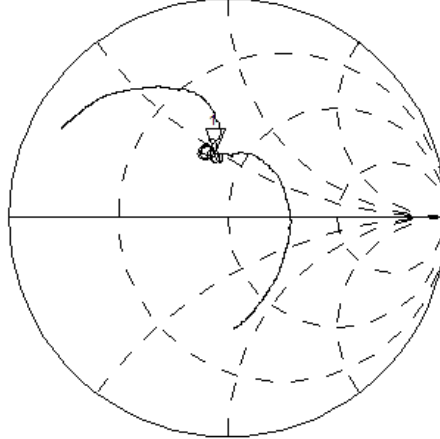
CH2 S22 1 UFS

1: 37.799  $\Omega$  24.313  $\Omega$  53.342 nH 72.540 000 MHz

Cor

PRm

1



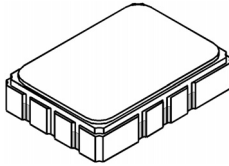
CENTER 72.540 000 MHz

SPAN 20.000 000 MHz

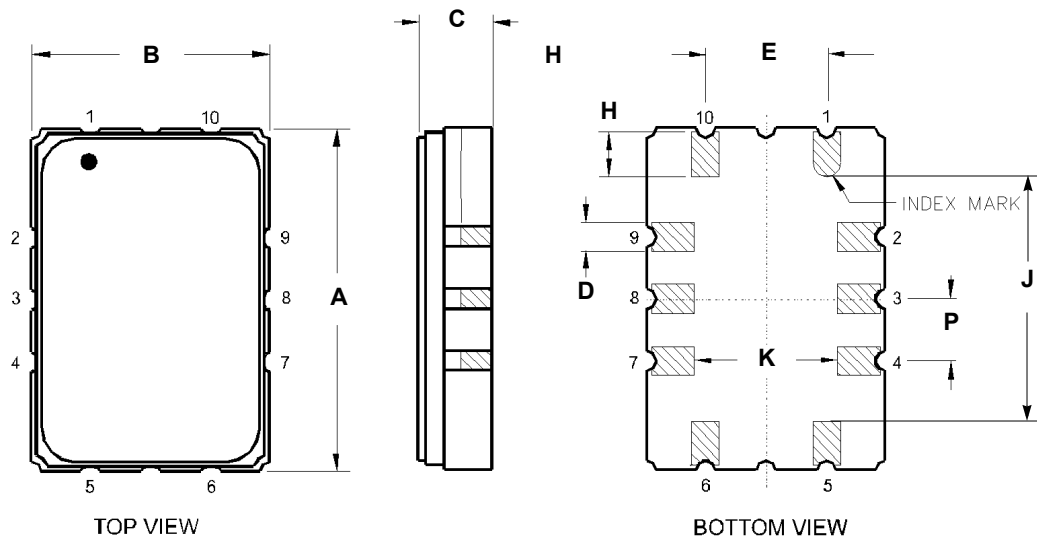
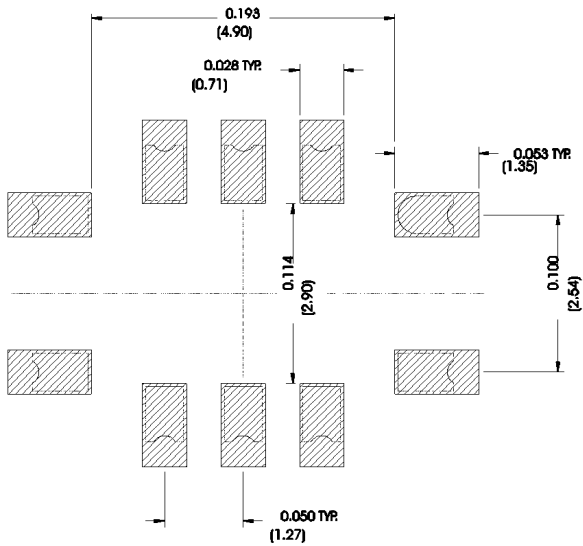
# SMP-03 Case

## 10-Terminal Ceramic Surface-Mount Case

### 7 x 5 mm Nominal Footprint



#### Recommended PCB Footprint

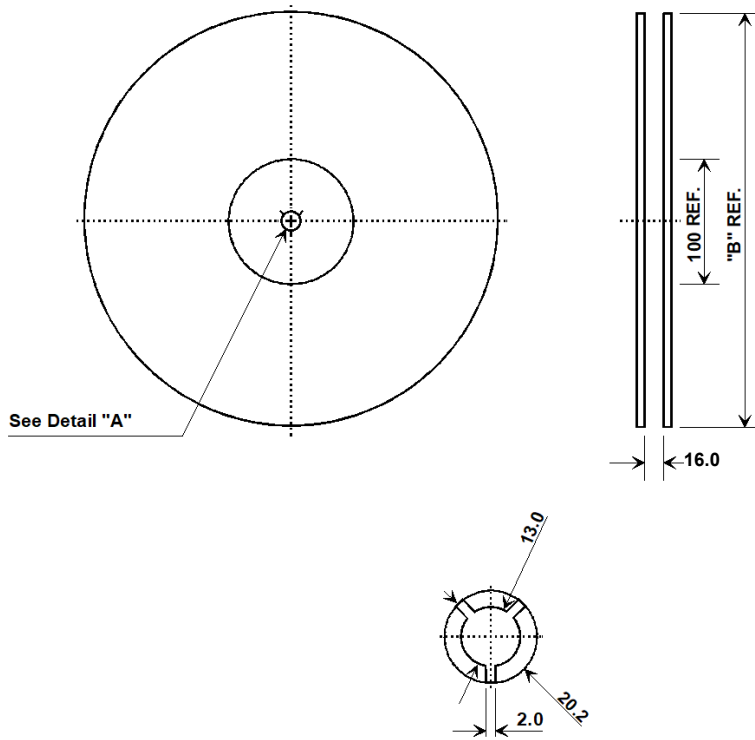


Case Dimensions						
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	6.80	7.00	7.20	0.268	0.276	0.283
B	4.80	5.00	5.20	0.189	0.197	0.205
C		1.65	2.00		0.065	0.079
D	.47	0.60	.73	0.019	0.024	0.029
E	2.41	2.54	2.67	0.095	0.100	0.105
H	0.87	1.0	1.13	0.034	0.039	0.044
J	4.87	5.00	5.13	0.192	0.197	0.202
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 <sub>2</sub> O <sub>3</sub> 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



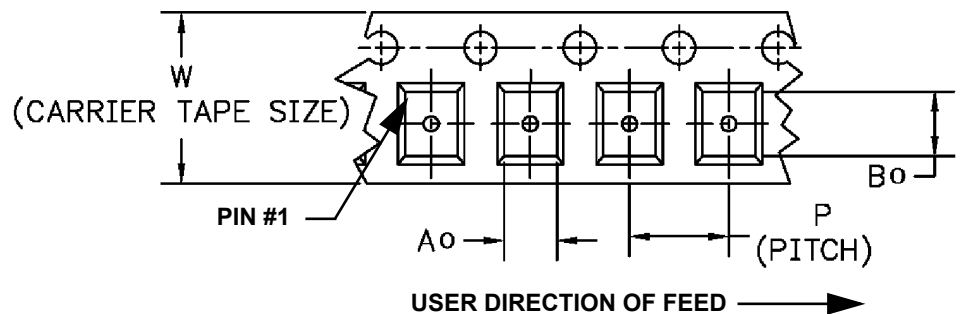
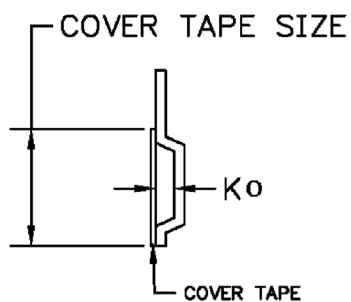
"B"		Quantity Per Reel
Inches	millimeters	
7	178	500
13	330	2000

## 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)
MSL	1	

## 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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