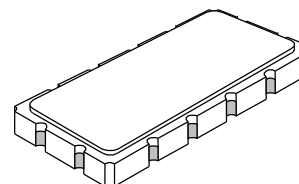


# SF1093A 175 MHz SAW Filter



- Designed for GSM BTS Transmitter Applications
- Low Insertion Loss
- Excellent Size-to-Performance Ratio
- Hermetic 13.3 x 6.5 mm Surface-Mount Case
- Unbalanced Input and Output



Characteristic	Sym	Min	Typ	Max	Units	Notes
Nominal Center Frequency	fc		175.000		MHz	1
Passband	Insertion Loss at fc		8	9.0	dB	1, 2
	2 dB Passband	BW <sub>2</sub>	±330	±460	kHz	
	Amplitude Ripple (peak to adjacent valley)			0.5	dB <sub>P-P</sub>	
	Amplitude Variation over fc ±200 kHz			1.0		
	Group Delay Variation over fc ±300 kHz	GDV		<200	260	
Absolute Group Delay	GD		1.3	1.5	µs	
Rejection	fc -0.9 to fc -0.6 and fc +0.6 to fc +0.9 MHz		5		dB	1, 2, 3
	fc -1.2 to fc -0.9 and fc +0.9 to fc +1.2 MHz		17			
	fc -6.0 to fc -1.2 and fc +1.2 to fc +6.0 MHz		30			
	fc -155 to fc -6.0 and fc +6.0 to fc +125 MHz		50			
Operating Temperature Range	T <sub>A</sub>	-5		+70	°C	1
Impedance Matching to 50 Ω unbalanced	External L-C					
Case Style	SM13365-12 13.3 x 6.5 mm Nominal Footprint					
Lid Symbolization (YY = Year, WW = week)	RFM SF1093A YYWW					

## 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	

## Electrical Connections

Connection	Terminals
Port 1 Hot	2
Port 1 Gnd Return	3
Port 2 Hot	8
Port 2 Gnd Return	9
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. 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.
7. US and international patents may apply.
8. RFM, stylized RFM logo, and RF Monolithics, Inc. are registered trademarks of RF Monolithics, Inc.
9. ©Copyright 1999, RF Monolithics Inc.
10. Electrostatic Sensitive Device. Observe precautions for handling.

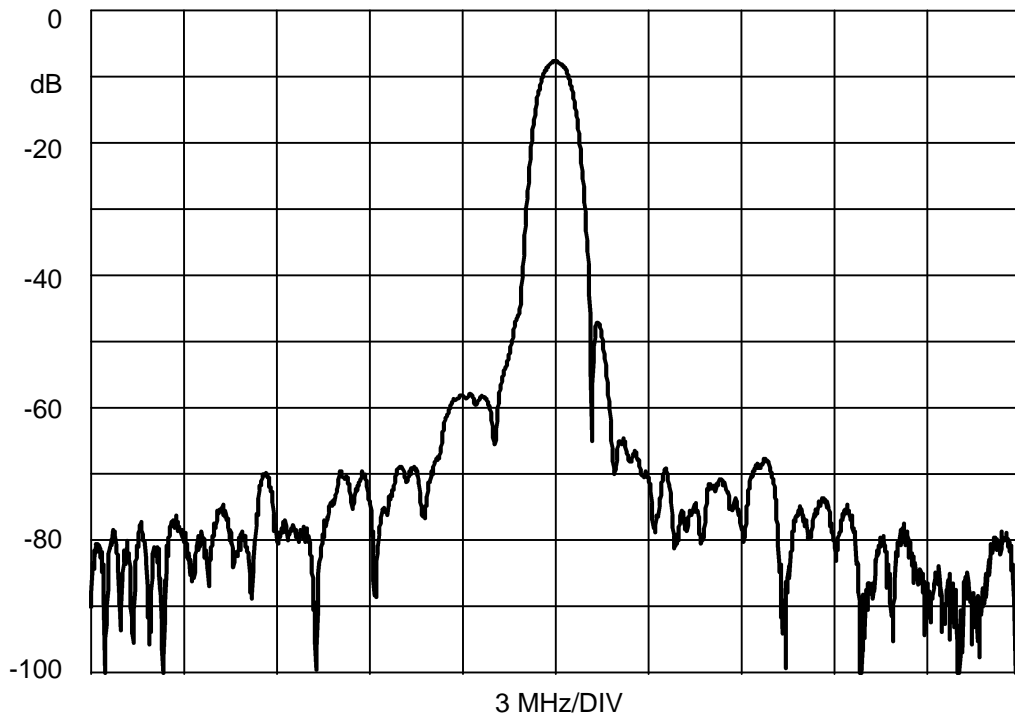


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Home page: [www.rfm.com](http://www.rfm.com)

**European Sales Office**  
44 1963 251383  
44 1963 251510

# SF1093A 175 MHz SAW Filter

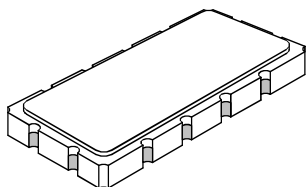


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Home page: [www.rfm.com](http://www.rfm.com)

**European Sales Office**  
44 1963 251383  
44 1963 251510

## 12-Terminal Ceramic Surface-Mount Case 13.3 x 6.5 mm Nominal Footprint

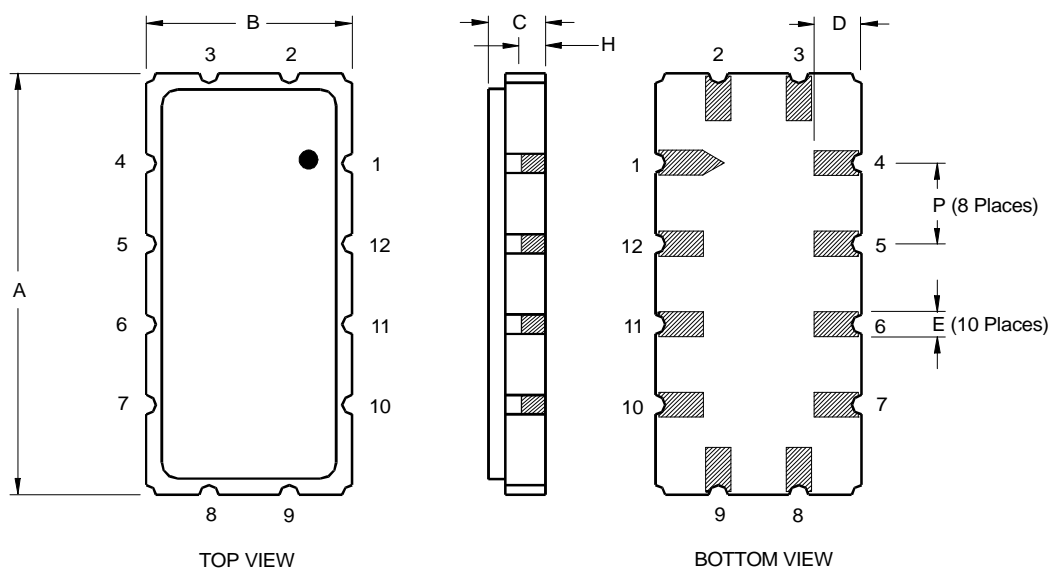


### Case Dimensions

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	13.08	13.31	13.60	0.515	0.524	0.535
B	6.27	6.50	6.80	0.247	0.256	0.268
C		1.91	2.00		0.075	0.079
D		1.50			0.059	
E		0.79			0.031	
H		1.0			0.039	
P		2.54			0.100	

### Electrical Connections

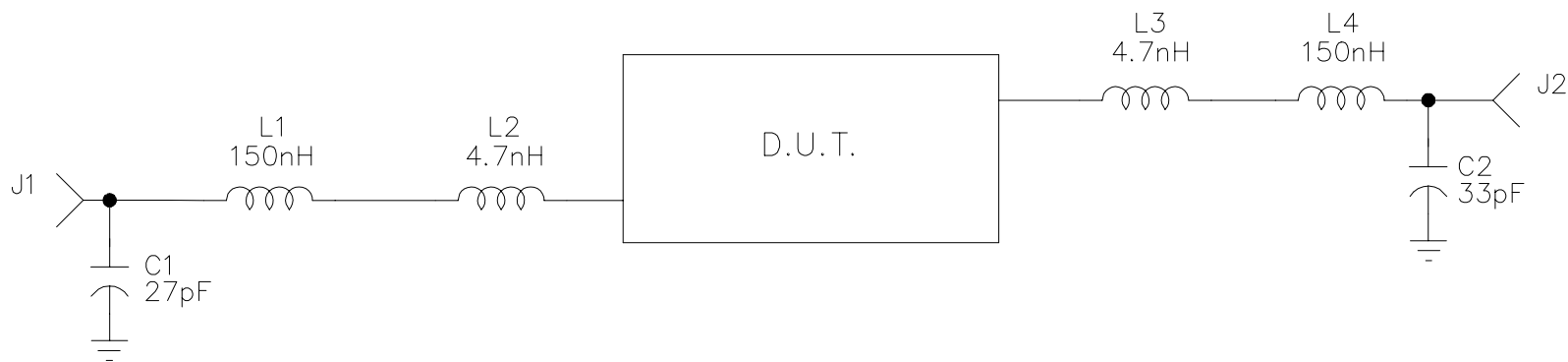
Connection		Terminals
Port 1	Input or Return	2
	Return or Input	3
Port 2	Output or Return	8
	Return or Output	9
Ground		All others
<b>Single Ended Operation</b>		<b>Return is ground</b>
<b>Differential Operation</b>		<b>Return is hot</b>



NOTES:

1. ORIENTATION OF COMPONENTS MAY VARY FROM ASSEMBLY DIAGRAM IN ORDER TO FINE TUNE DEVICE.
2. ACTUAL COMPONENTS USED MAY VARY FOR EACH DEVICE.

REV	ECN NO.	DESCRIPTION	DATE
A	6797	INITIAL RELEASE	6/29/98



DRAWN BY/DATE: J.J. LAYTON 06/29/98

TITLE: ASSY DIAGRAM, DEMO BOARD, SF1093A

**RF Monolithics, Inc.**  
DALLAS, TEXAS 75244

CHECKED/APPROVED

SIZE  
**A**

CODE IDENT  
**2U874**

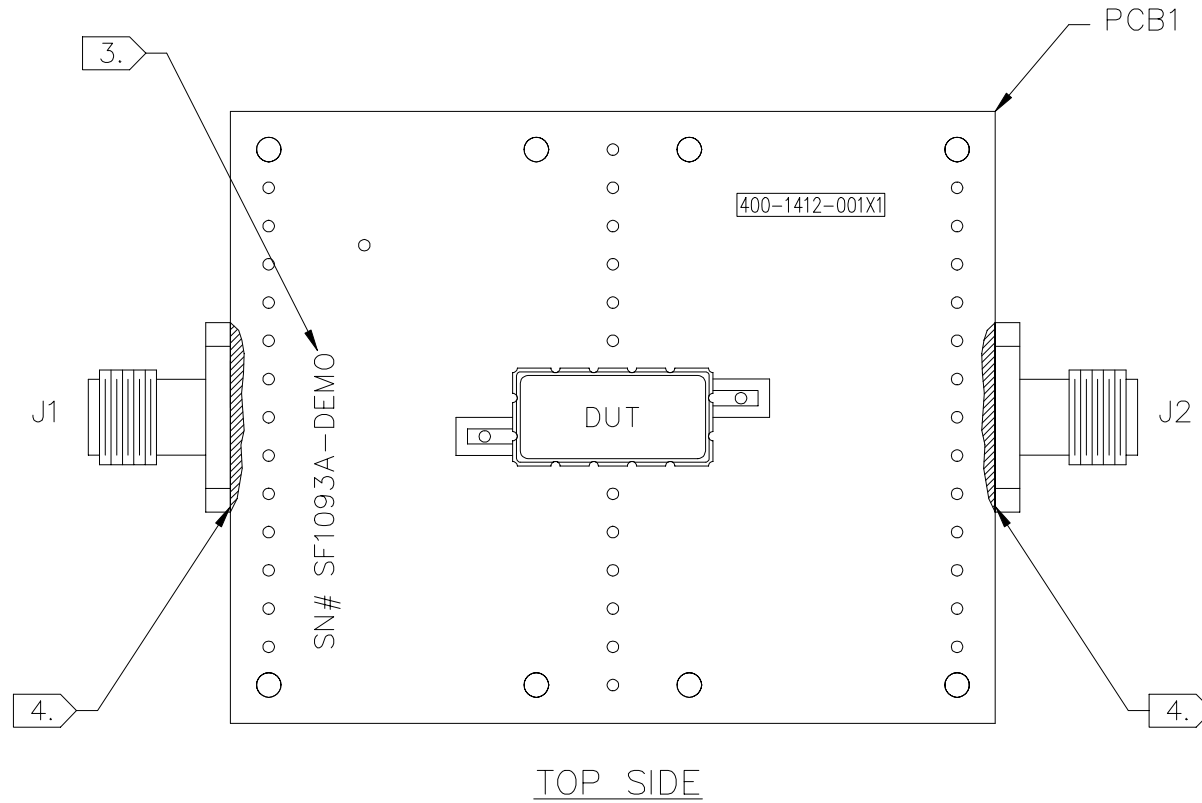
DWG. NO. SF1093A-000

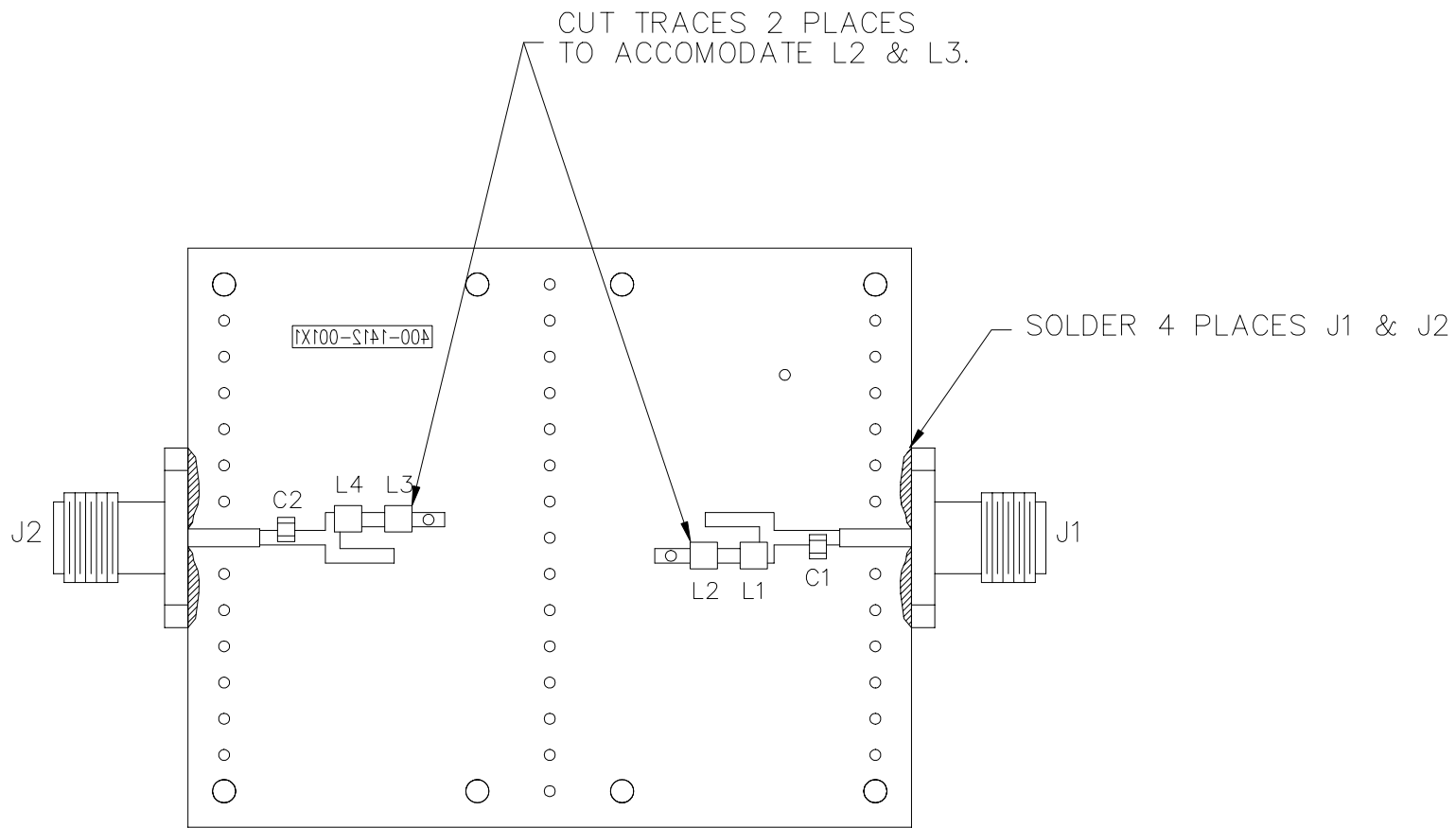
REV  
A

SHEET  
1/4

3. LABEL FIXTURE WITH ELECTRONIC METHOD AS SHOWN.

4. SOLDER J1 & J2 TO PCB1 AS SHOWN.



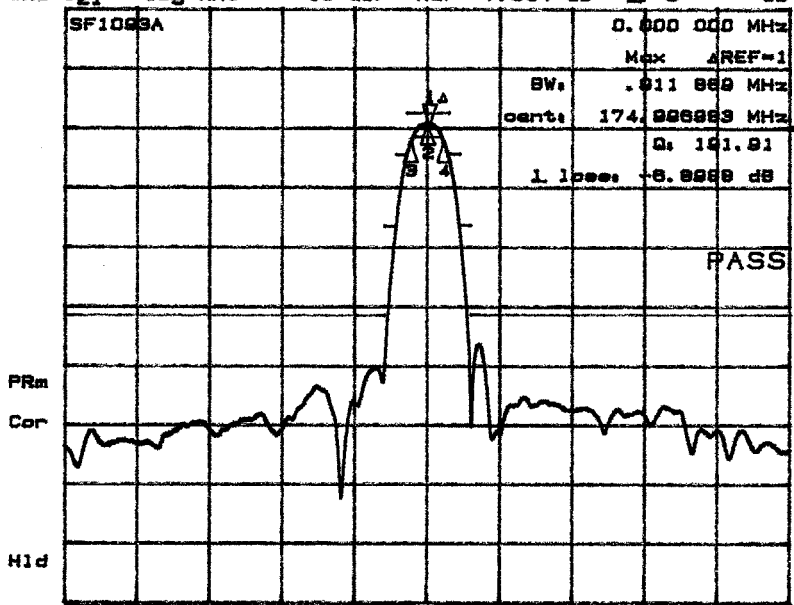


BOTTOM SIDE

SF1093A  
E# N/A  
#1

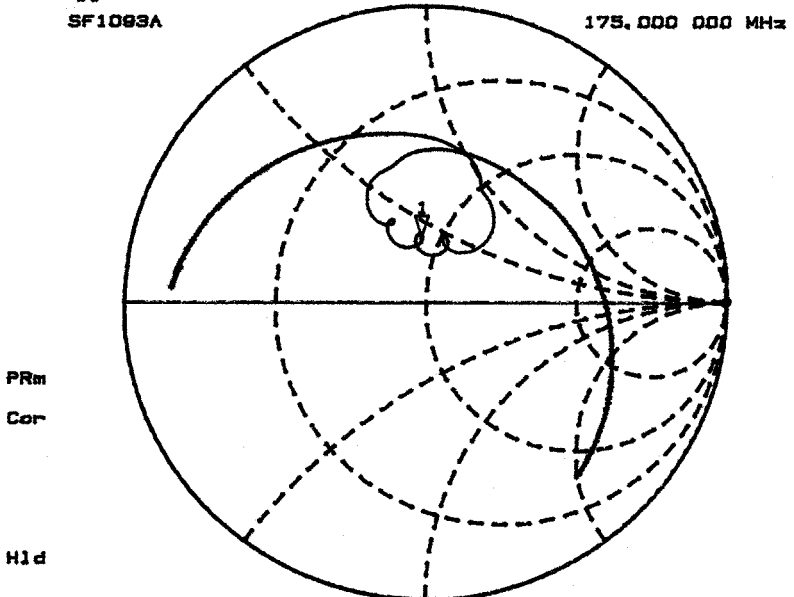
Demo  
5/28/98  
B.C

28 May 1998 13:19:51  
CH2 S<sub>21</sub> log MAG 10 dB/ REF -7.984 dB L<sub>1</sub> 0 dB



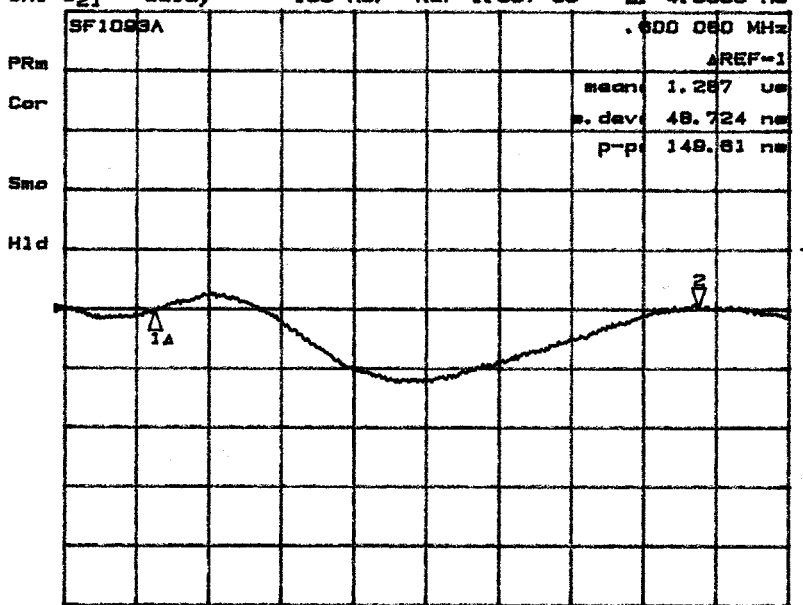
CH2 CENTER 175.000 000 MHz SPAN 20.000 000 MHz

28 May 1998 13:20:47  
CH2 S<sub>11</sub> 1 U FS L<sub>1</sub> 49.849 n 20.98 n 18.081 nH  
SF1093A 175.000 000 MHz



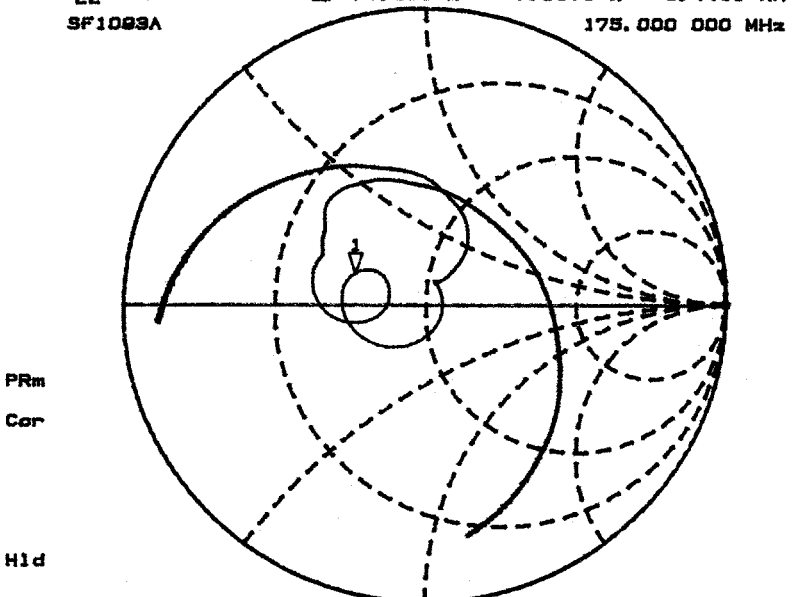
CH2 CENTER 175.000 000 MHz SPAN 20.000 000 MHz

28 May 1998 13:24:42  
CH1 S<sub>21</sub> delay 100 ns/ REF 1.337 us 2: 4.8885 ns

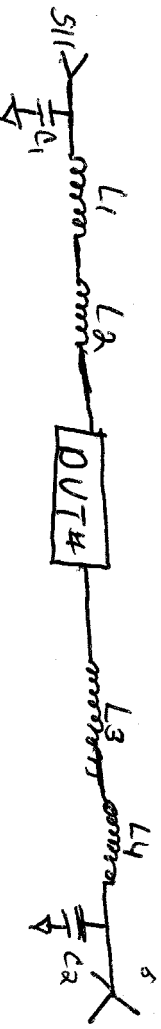


CH1 CENTER 175.000 000 MHz SPAN .800 000 MHz

28 May 1998 13:22:45  
CH2 S<sub>22</sub> 1 U FS L<sub>1</sub> 30.835 n 7.0878 n 6.4481 nH  
SF1093A 175.000 000 MHz



CH2 CENTER 175.000 000 MHz SPAN 20.000 000 MHz



C<sub>1</sub> = 27 pF  
C<sub>2</sub> = 33 pF  
L<sub>1</sub>, L<sub>4</sub> = 150 nH  
L<sub>3</sub> = 4.7 pF

SF1093A-000 REV.A SMT 4/4

## BILL OF MATERIALS

<u>PART IDENTIFIER</u>	<u>DESCRIPTION 1</u>	<u>DESCRIPTION 2</u>	<u>QTY/ASSY</u>	<u>REFERENCE DESCRIPTION</u>
SF1093A-DEMO	DEMO BOARD,SF1093A			
SF1093A-000	ASSY DIAGRAM,DEMO BOARD	SF1093A	0	
400-1412-001	PCB, DEMO, 13MM, TYPE 2		1.0000	PCB
500-0003-270	CAP,CHIP,NPO,27(J),STD		1.0000	C 1
500-0003-330	CAP,CHIP,NPO,33(J),STD		1.0000	C 2
500-0248-001	CONN,COAX,FLANGE MT.JACK	4 HOLE	2.0000	J 1,2
500-0010-150	IND,CHIP,1008CS,15NH,10%		2.0000	L 1,4
500-0010-047	IND,CHIP,1008CS,4.7NH,10%		2.0000	L 2,3



SIZE

**A**

FSCM NO.

**2U874**

DWG NO.

**SF1093A-DEMO**

SCALE

**NONE**

W/O or ECN

**6797**

REV

**A**

SHEET

**1**

OF

**2**



**REV HISTORY**

REV	ECN	DATE	DESCRIPTION
A	6797	06/24/98	INITIAL RELEASE



	SIZE <b>A</b>	FSCM NO. <b>2U874</b>	DWG NO. <b>SF1093A-DEMO</b>	
	SCALE <b>NONE</b>	W/O or ECN <b>6797</b>	REV <b>A</b>	SHEET <b>2</b> OF <b>2</b>