



- **Excellent Size-to-Performance Ratio**
- **Hermetic 13.3 X 6.5 mm Surface-Mount Case**
- **Complies with Directive 2002/95/EC (RoHS)**

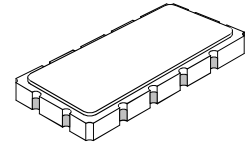


#### Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	+10	dBm
Storage Temperature Range	-40 to +85	°C
Operating Temperature Range	-30 to +80	°C
Suitable for Lead-free Soldering - Maximum Soldering Profile	260 °C for 30 s	

**SF2140A-1**

**140.0 MHz  
SAW Filter**



**SMP-53**

#### Electrical Characteristics

Characteristic	Sym	Notes	Min	Typ	Max	Units
Nominal Center Frequency	$f_c$	1	140.0			MHz
Maximum Insertion Loss at $f_c$	IL			10.3	11.0	dB
1 dB Bandwidth			18.4	20.8		MHz
3 dB Bandwidth			19.6	21.4		MHz
35 dB Bandwidth				25.2	26.4	MHz
Passband Ripple, 130.8 to 149.2 MHz				0.8	1.0	dB
Group Delay Ripple, 130.8 to 149.2 MHz				115	160	ns
Absolute Group Delay				1.0		μs
Input VSWR, 130.8 to 149.2 MHz				1.7	2.8	dB
Output VSWR, 130.8 to 149.2 MHz				1.8	2.3	dB
Temperature Coefficient						ppm/°C
Attenuation Referenced to Insertion Loss at $f_c$						dB
10 to 90 MHz			35	49		
90 to 120 MHz			40	47		
120 to 126.8 MHz			35	50		
153.2 to 160 MHz			35	45		
160 to 190 MHz			40	53		
190 to 800 MHz			35	62		
Source/Load Impedance				50		ohms

Case Style	SMP-53 13.3 X 6.5 mm Nominal Footprint
Lid Symbolization (YY=year, WW=week) See note 4	RFM SF2140A-1 YYWWS##

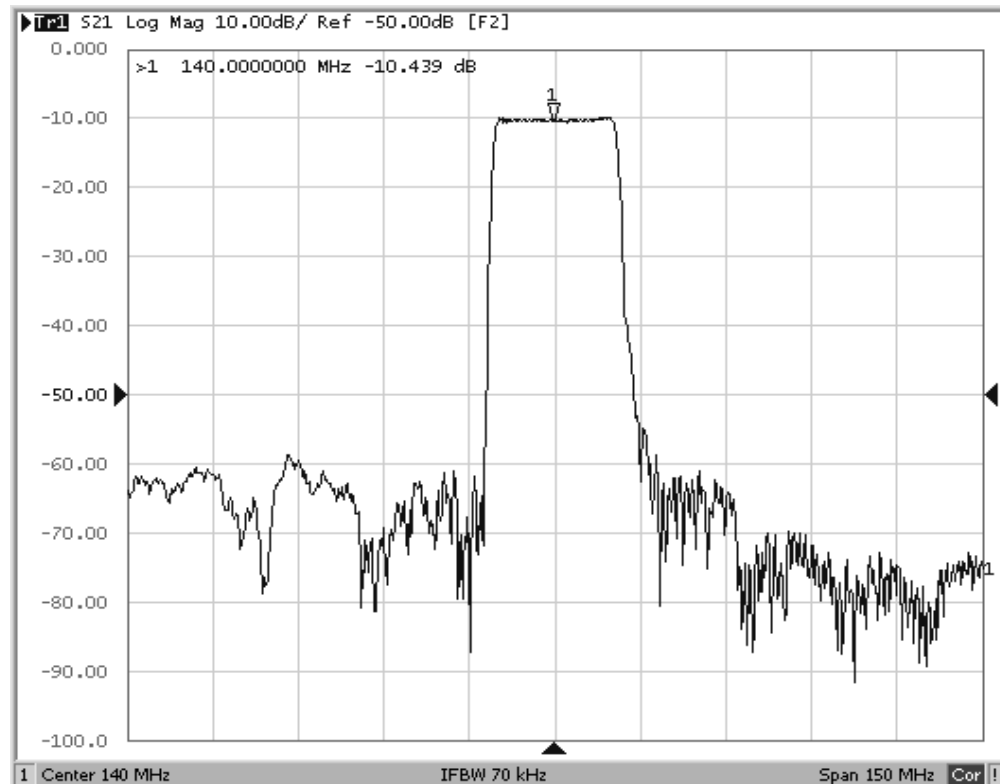


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

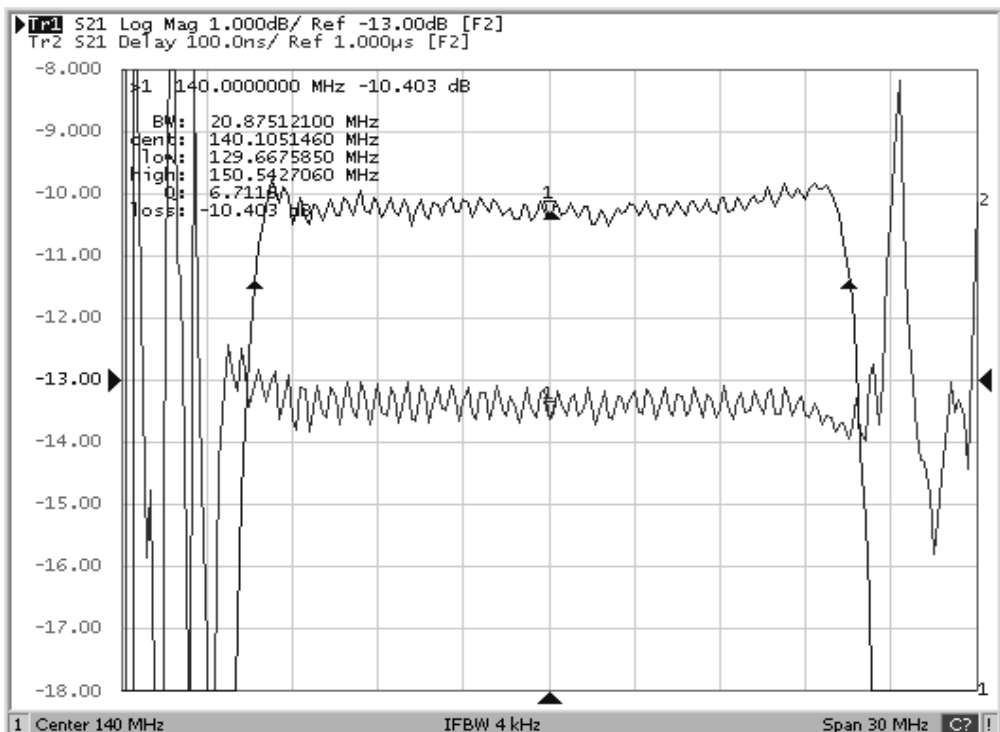
#### Notes:

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 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency,  $f_c$ .
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.

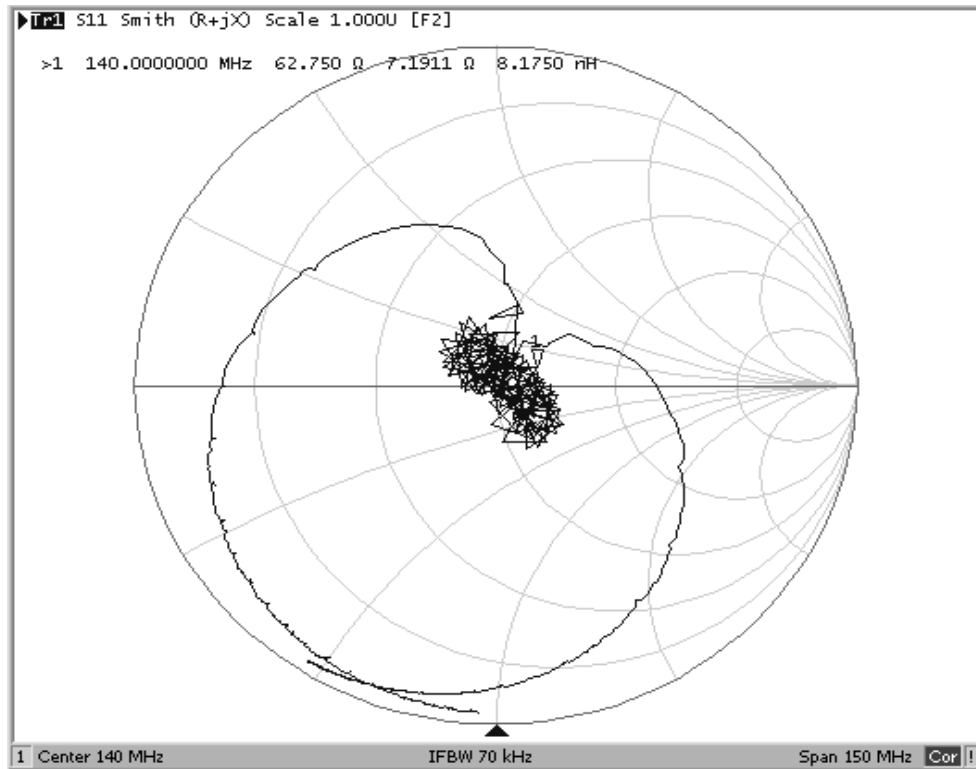
## SF2140A-1 $S_{21}$ Amplitude Response



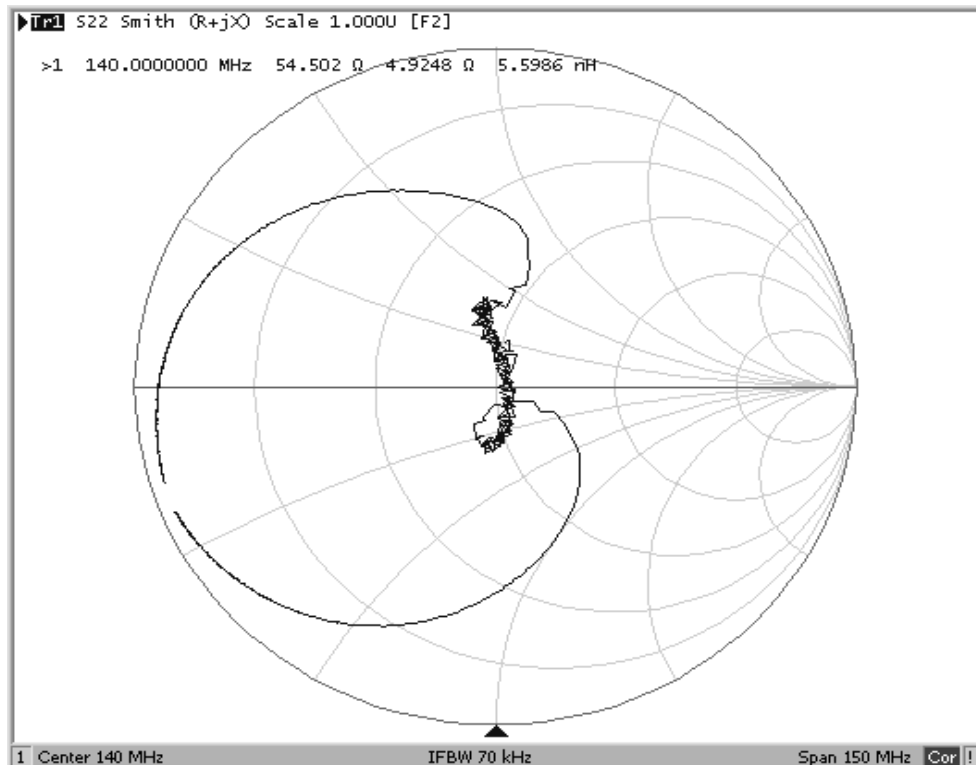
## SF2140A-1 Pass-band Amplitude and Group Delay Ripple



## SF2140A-1 $S_{11}$ Impedance Plot through Matching Network

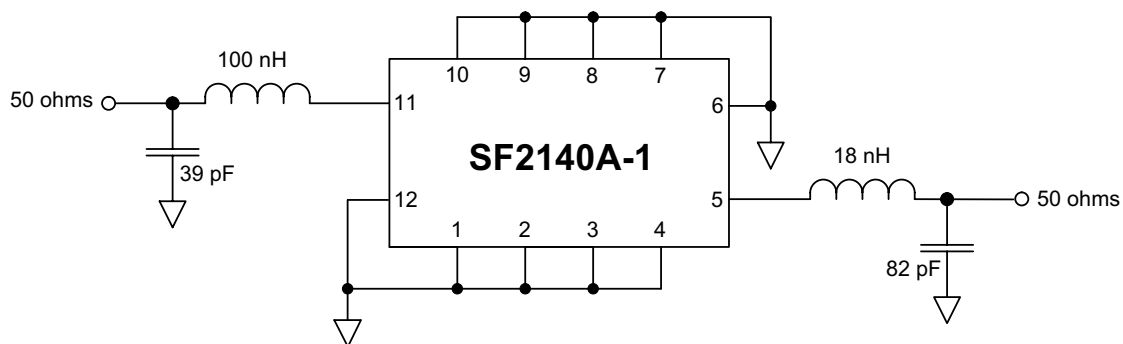


## SF2140A-1 $S_{22}$ Impedance Plot through Matching Network

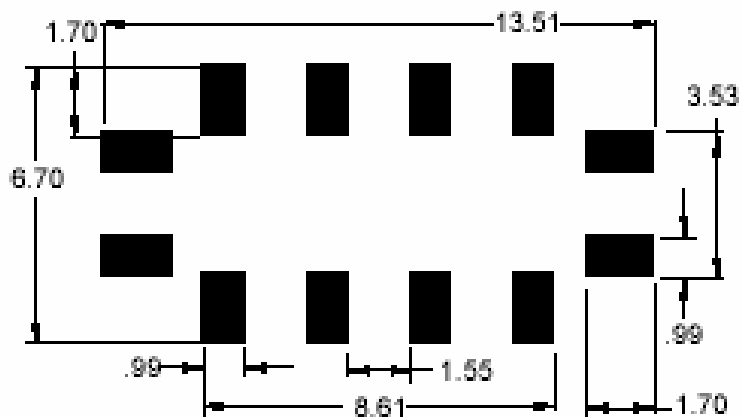


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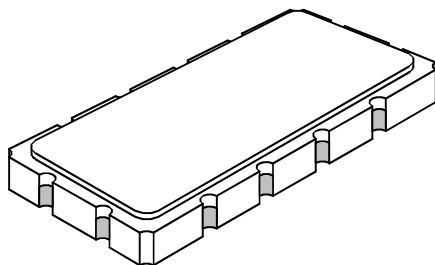
## SF2140A-1 50 ohm Matching Network



## SF2140A-1 Circuit Board Pad Layout



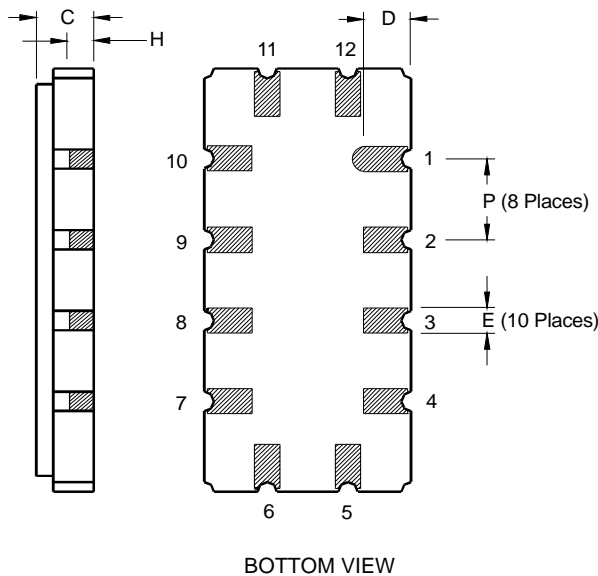
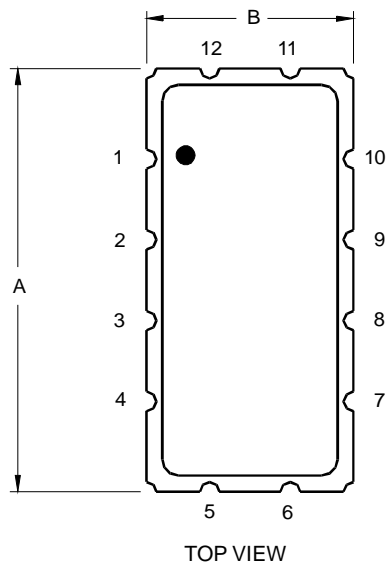
12-Terminal Ceramic Surface-Mount Case  
13.3 x 6.5 mm Nominal Footprint



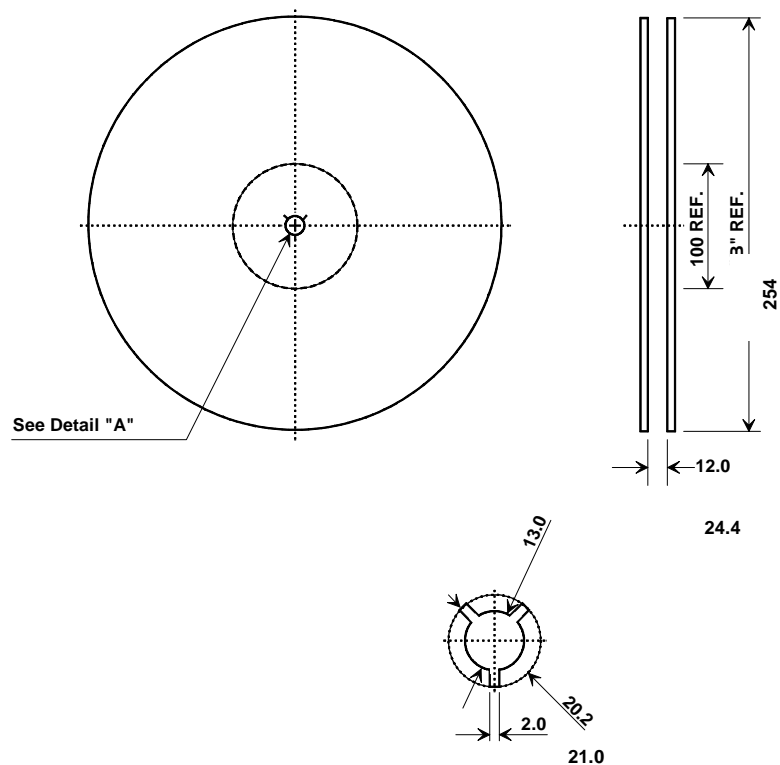
Case Dimensions						
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	13.08	13.31	13.60	0.515	0.524	0.535
B	6.27	6.50	6.80	0.247	0.256	0.268
C		1.91	2.00		0.075	0.079
D		1.50			0.059	
E		0.79			0.031	
H		1.0			0.039	
P		2.54			0.100	

Electrical Connections		
Connection		Terminals
Port 1	RF Input	11
	RF Input Ground	12
Port 2	RF Output	5
	RF Output Ground	6
	Ground	All others

Materials	
Solder Pad Plating	0.3 to 1.0 $\mu\text{m}$ Gold over 1.27 to 8.89 $\mu\text{m}$ Nickel
Lid Plating	2.0 to 3.0 $\mu\text{m}$ Nickel
Body	$\text{Al}_2\text{O}_3$ Ceramic
Pb Free	



## Tape and Reel Specifications



Quantity Per Reel
100 Min
1000 Max

## COMPONENT ORIENTATION and DIMENSIONS

Carrier Tape Dimensions	
<b>Ao</b>	7.0 mm
<b>Bo</b>	13.8 mm
<b>Ko</b>	2.0 mm
<b>Pitch</b>	12.0 mm
<b>W</b>	24.0 mm

