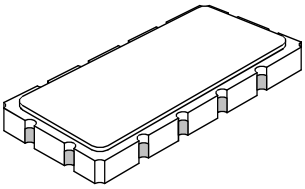
SF2178A

168 MHz SAW Filter

- ***Precision IF SAW Filter***
- ***Hermetic 13.3 x 6.5 mm Surface-mount Case***
- ***Complies with Directive 2002/95/EC (RoHS)***



SM13365-12

Absolute Maximum Ratings

Rating	Value	Units
Maximum Incident Power in Passband	+10	dBm
Maximum DC Voltage Between any 2 Terminals	30	VDC
Storage Temperature Range	-40 to +85	°C
Suitable for Lead-free Soldering - Maximum Soldering Profile	260°C for 30 s	

Electrical Characteristics

Characteristic		Sym	Notes	Min	Typ	Max	Units
Center Frequency		f_C	1		168		MHz
1 dB Bandwidth		BW_1	1	20.0	20.9		MHz
3 dB Bandwidth		BW_3	1		22.4		MHz
Upper -35 dB Band Edge			1		181.7	182.0	MHz
Lower -35 dB Band Edge			1	154	155.1		MHz
Insertion Loss		IL	1		12.2	13.5	dB
Passband Ripple (p-p)	158 to 178 MHz		1, 2, 3		0.76	1.0	dB
Absolute Group Delay	168 MHz				0.85	1	µs
Group delay ripple (p-p)	158 to 178 MHz				54	160	ns
Operating Temperature			1	-40		+85	°C
Source Impedance					50		ohm
VSWR to Source (Matching Network)	159.5 to 168.5 MHz				2.3		
Load Impedance					50		ohm
VSWR to Load (Matching Network)	159.5 to 168.5 MHz				2.2		
Frequency Temperature Coefficient					-72		ppm/°C

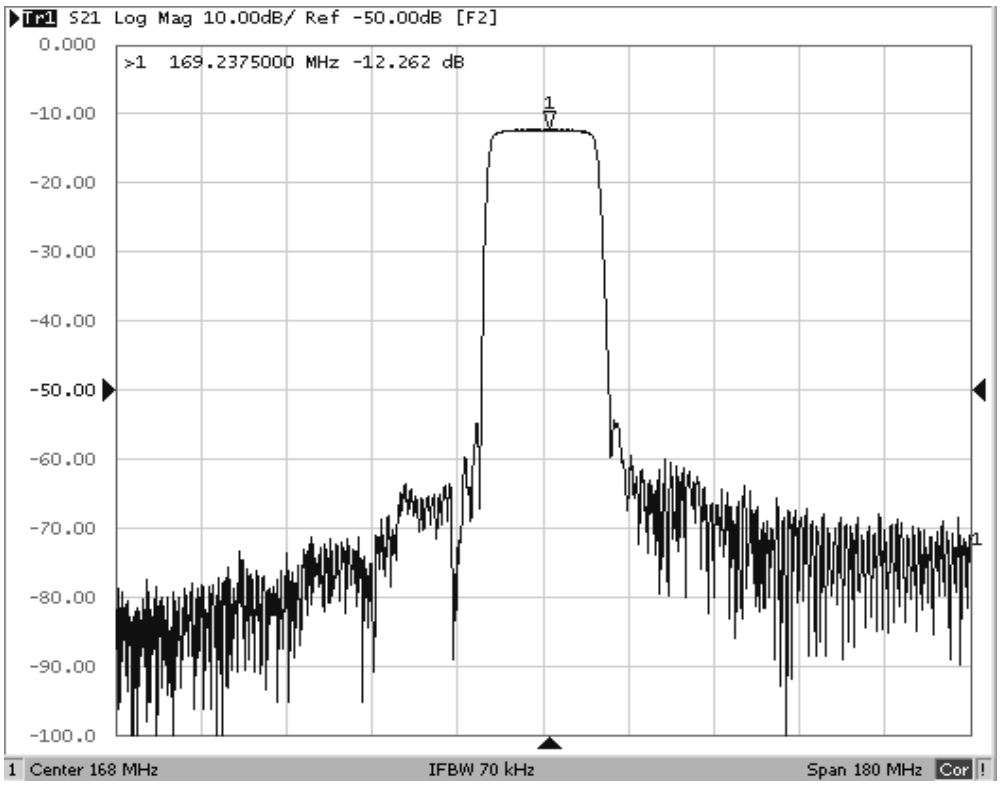
Impedance Matching to 50 Ω Unbalanced	External L-C
Case Style	SM13365-12 13.3 x 6.5 mm Nominal Footprint
Lid Symbolization (YY = year, WW = week)	RFM SF2178A YYWW

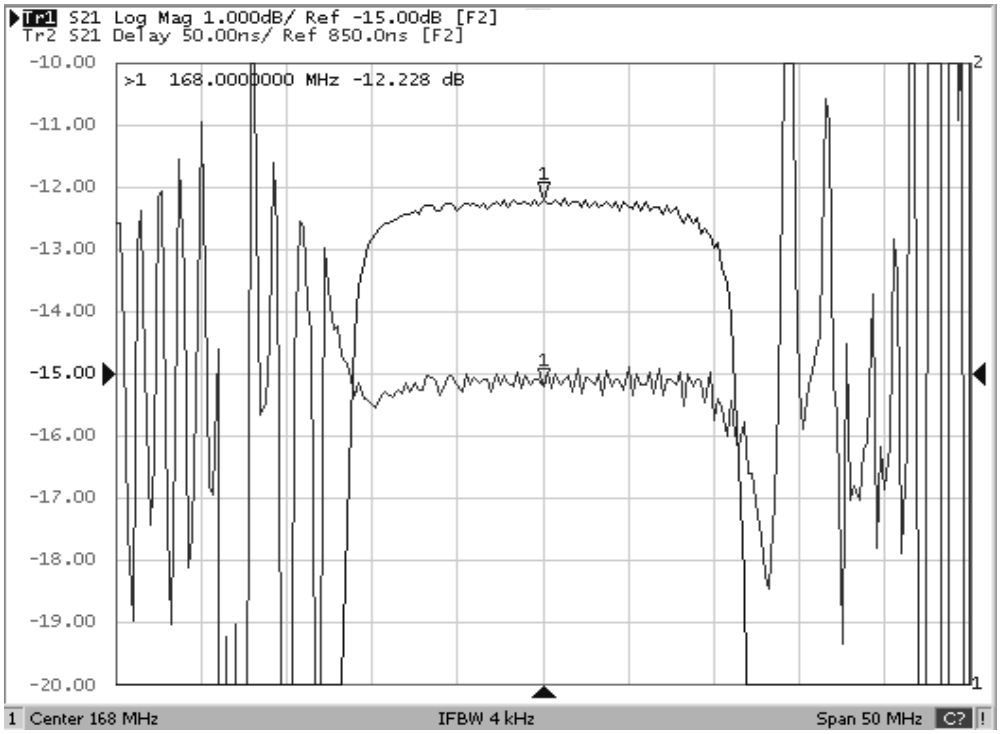
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

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, 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. Part to part absolute delay measurement records the absolute delay mean across 1 dB passband.
5. "LRIP" or "L" after the part number indicates "low rate initial production" and "ENG" or "E" indicates "engineering prototypes."
6. The design, manufacturing process, and specifications of this filter are subject to change.
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.

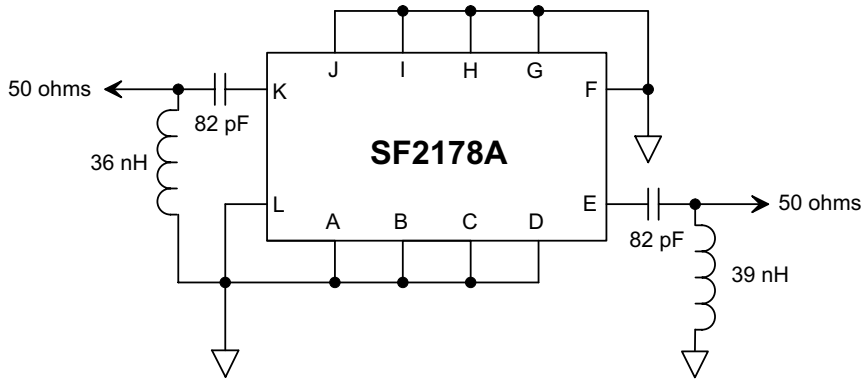
Wide-band and Narrow-band Filter Plots



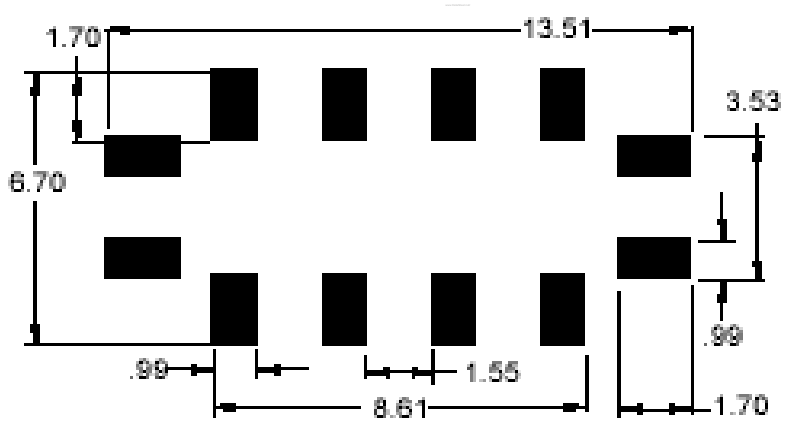


Tuning Component Values

Matching Circuit



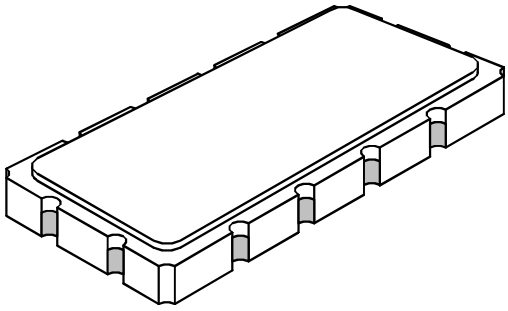
PCB Pad Layout



SM13365-12 Case

12-Terminal Ceramic Surface-Mount Case

13.3 x 6.5 mm Nominal Footprint



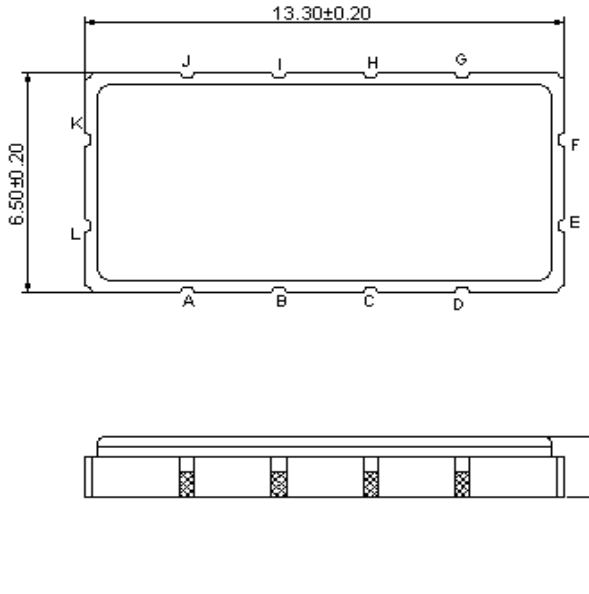
Case Dimensions

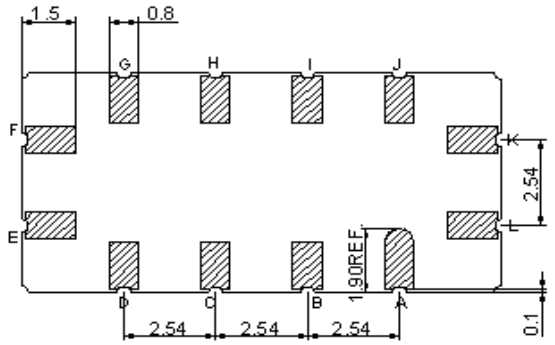
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	13.08	13.31	13.60	0.515	0.524	0.535
B	6.27	6.50	6.80	0.247	0.256	0.268
C		1.91	2.00		0.075	0.079
D		1.50			0.059	
E		0.79			0.031	
H		1.0			0.039	
P		2.54			0.100	

Electrical Connections

Connection	Terminals
Input	K
Output	E
Case Ground	All others

Materials	
Solder Pad Plating	0.3 to 1.0 µm Gold over 1.27 to 8.89 µm Nickel
Lid Plating	2.0 to 3.0 µm Nickel
Body	Al_2O_3 Ceramic
Pb Free	





Tape and Reel Details