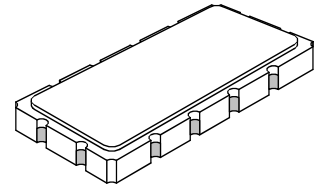


- Precision IF SAW Filter
- Hermetic 13.3 x 6.5 mm Surface-mount Case
- Complies with Directive 2002/95/EC (RoHS)



**SF2189A**

**140 MHz  
SAW Filter**



**SM13365-12**

**Absolute Maximum Ratings**

Rating	Value	Units
Maximum Incident Power in Passband	+10	dBm
Maximum DC Voltage between any Two Terminals	3	VDC
Storage Temperature Range in Tape and Reel	-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	$F_C$			140		MHz
Minimum Insertion Loss	$IL_{MIN}$			11.3	13.0	dB
1 dB Bandwidth	$BW_1$		30.0	33.0		MHz
3 dB Bandwidth	$BW_3$		32.0	35.0		MHz
35 dB Bandwidth	$BW_{35}$			42.4	44.0	MHz
Passband Amplitude Ripple, 80% of 3 dB Bandwidth				0.6	1.2	dB <sub>p-p</sub>
Passband Group Delay Ripple, 80% of 3 dB Bandwidth				50	120	ns <sub>p-p</sub>
Passband Absolute Group Delay				0.55		µs
Passband Phase Linearity, 80% of 3 dB Bandwidth				5	14	deg <sub>p-p</sub>
Specification Temperature Range			-20		+80	°C
Operable Temperature Range			-45		+125	°C
Frequency Temperature Coefficient				-94		ppm/°C
Source Impedance				50		ohm
Load Impedance				50		ohm

Case Style	SM13365-12 13.3 x 6.5 mm Nominal Footprint
Lid Symbolization (YY = year, WW = week)	SF2189A YYWW

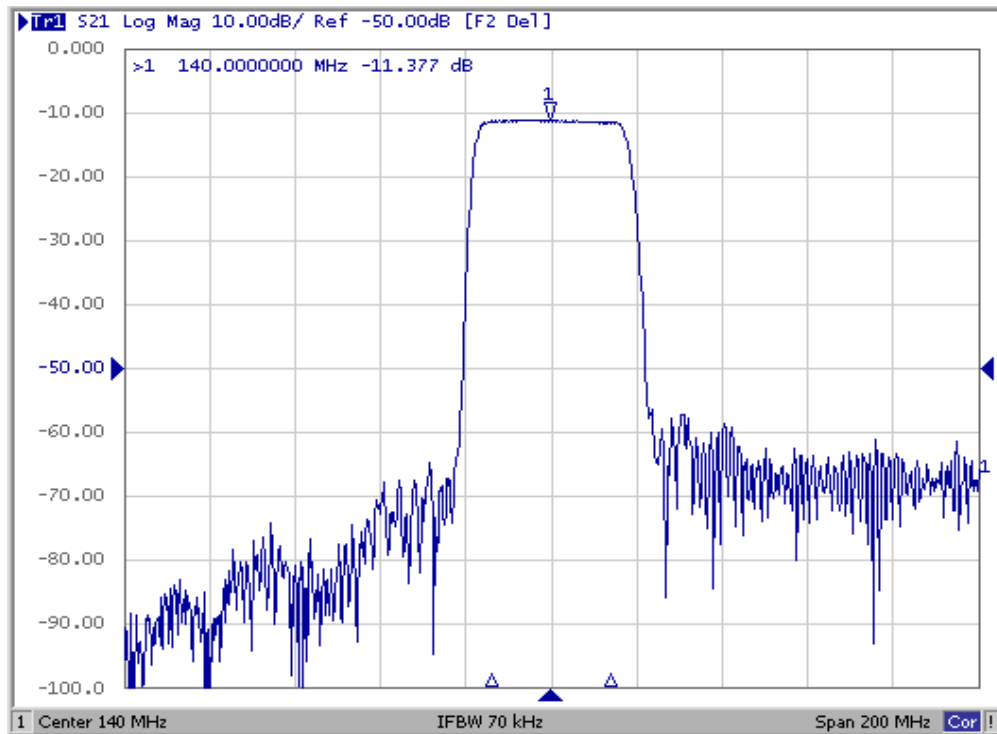


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

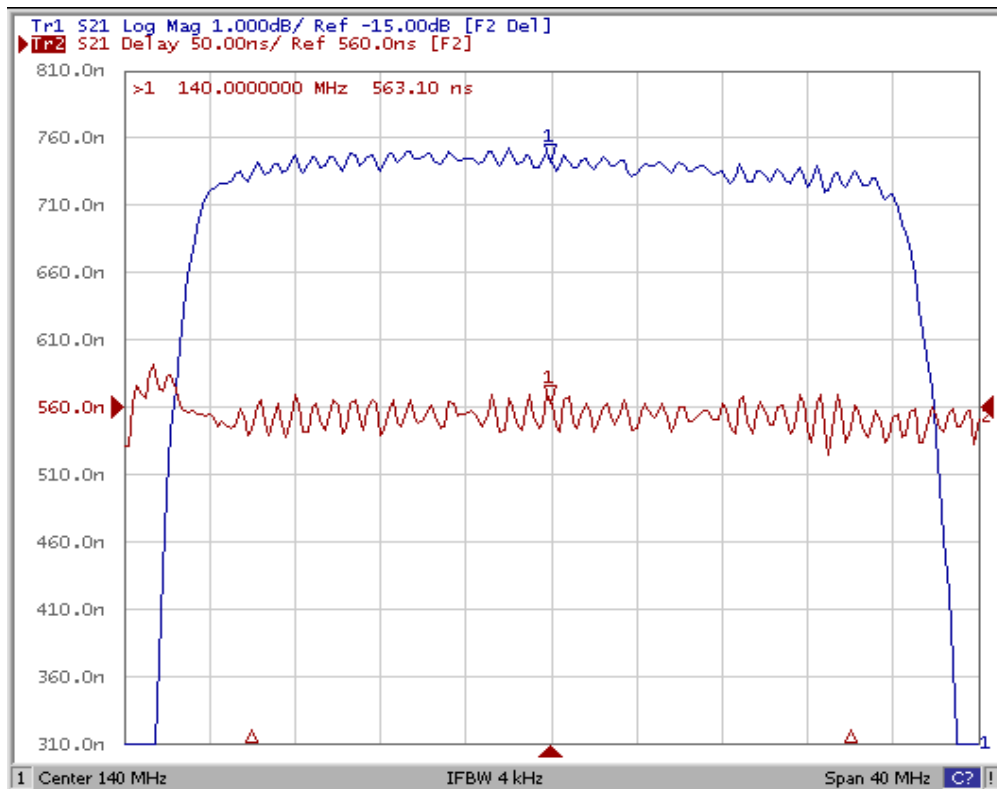
**NOTES:**

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.

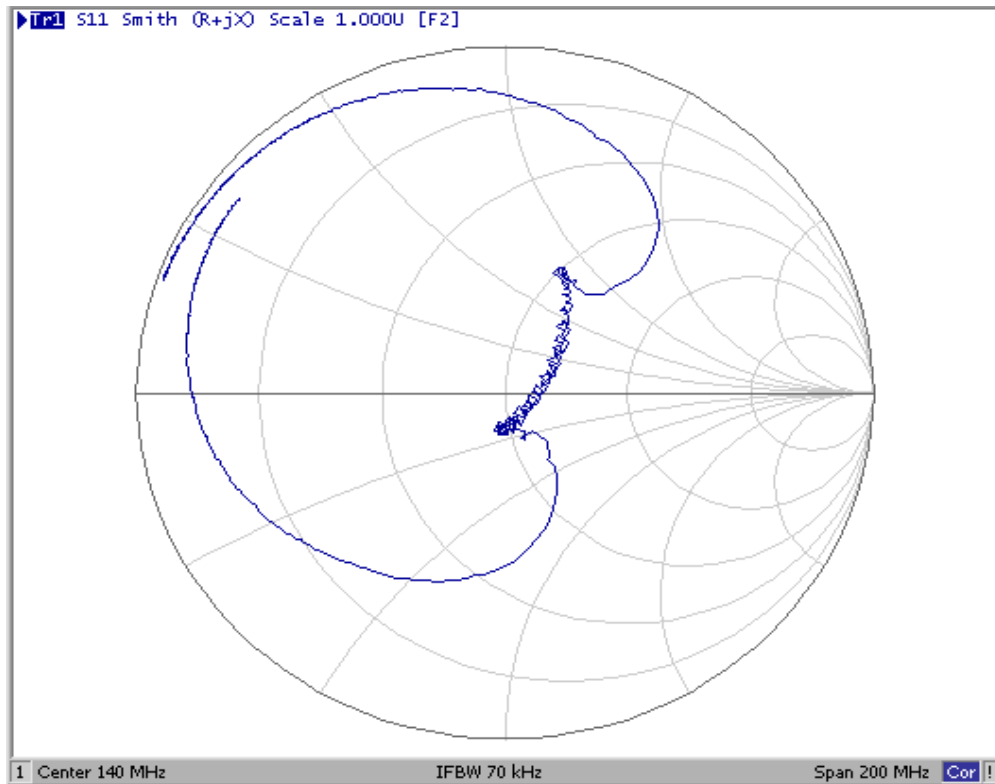
## SF2189A Filter Response



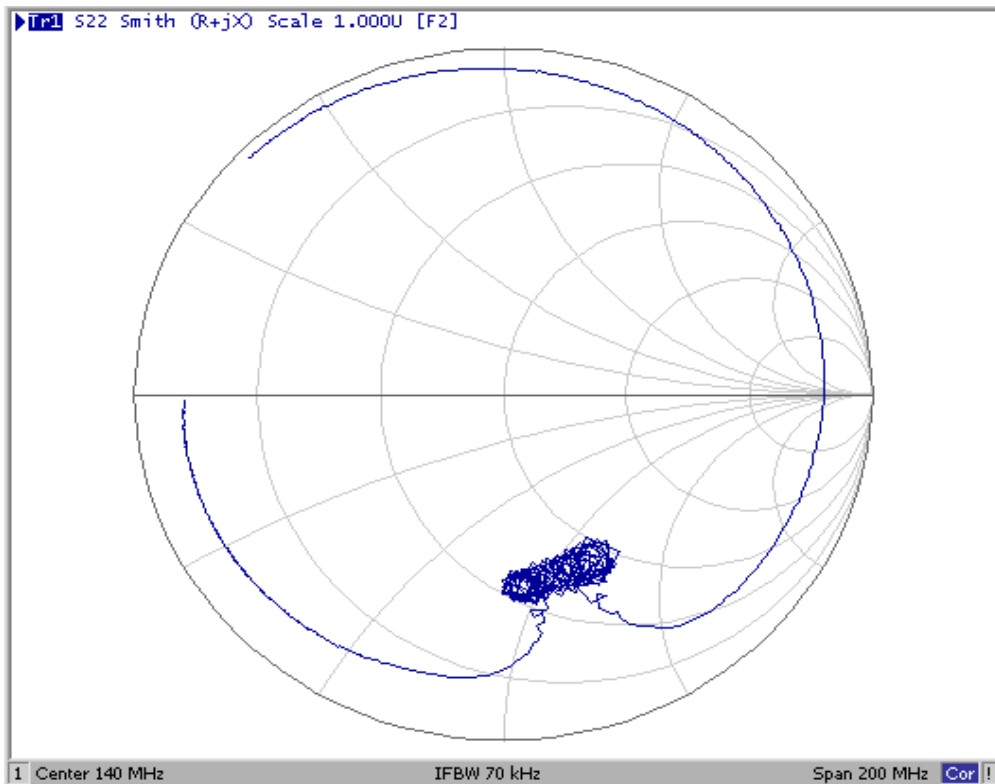
## SF2189A Passband Amplitude and Group Delay Ripple



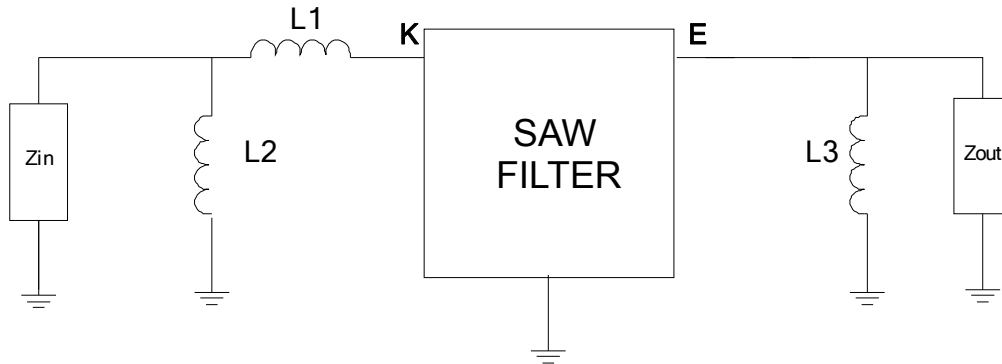
## SF2189A Input Impedance (K Port)



## SF2189A Output Impedance (E Port)

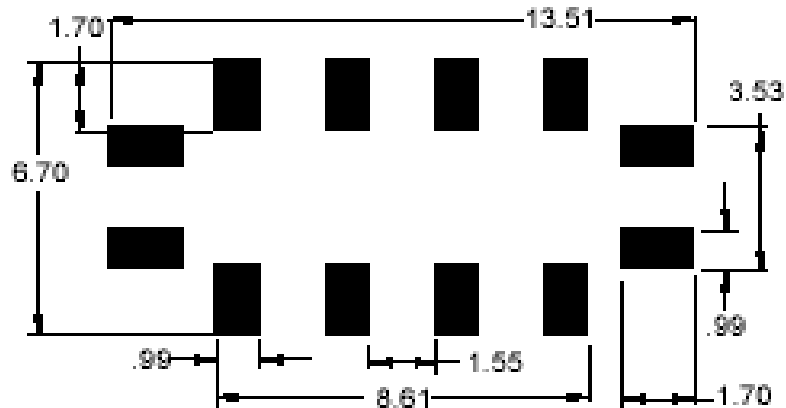


## SF2189A 50 ohm Matching Network



$$L1 = 10 \text{ nH}, L2 = 27 \text{ nH}, L3 = 68 \text{ nH}$$

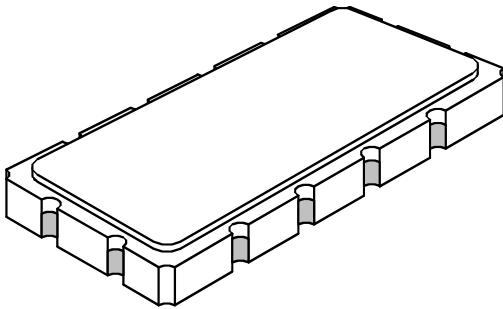
## SF2189A PCB Pad Layout



# SM13365-12 Case

## 12-Terminal Ceramic Surface-Mount Case

### 13.3 x 6.5 mm Nominal Footprint



#### Case Dimensions

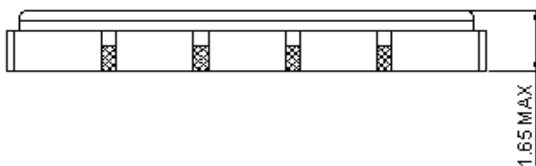
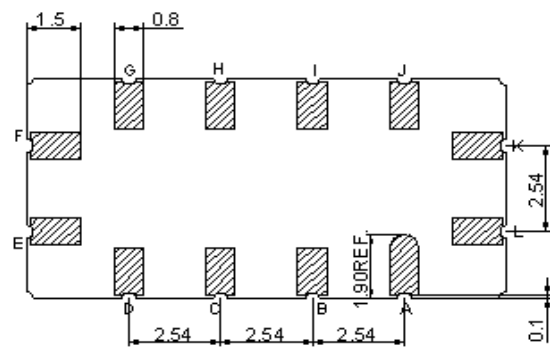
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	13.08	13.31	13.60	0.515	0.524	0.535
B	6.27	6.50	6.80	0.247	0.256	0.268
C		1.91	2.00		0.075	0.079
D		1.50			0.059	
E		0.79			0.031	
H		1.0			0.039	
P		2.54			0.100	

#### Electrical Connections

Connection	Terminals
Input	K
Output	E
Case Ground	All others

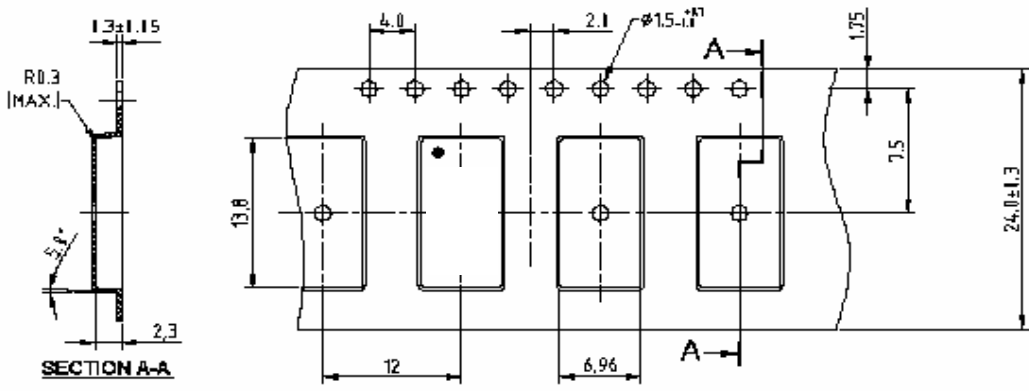
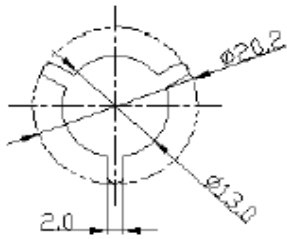
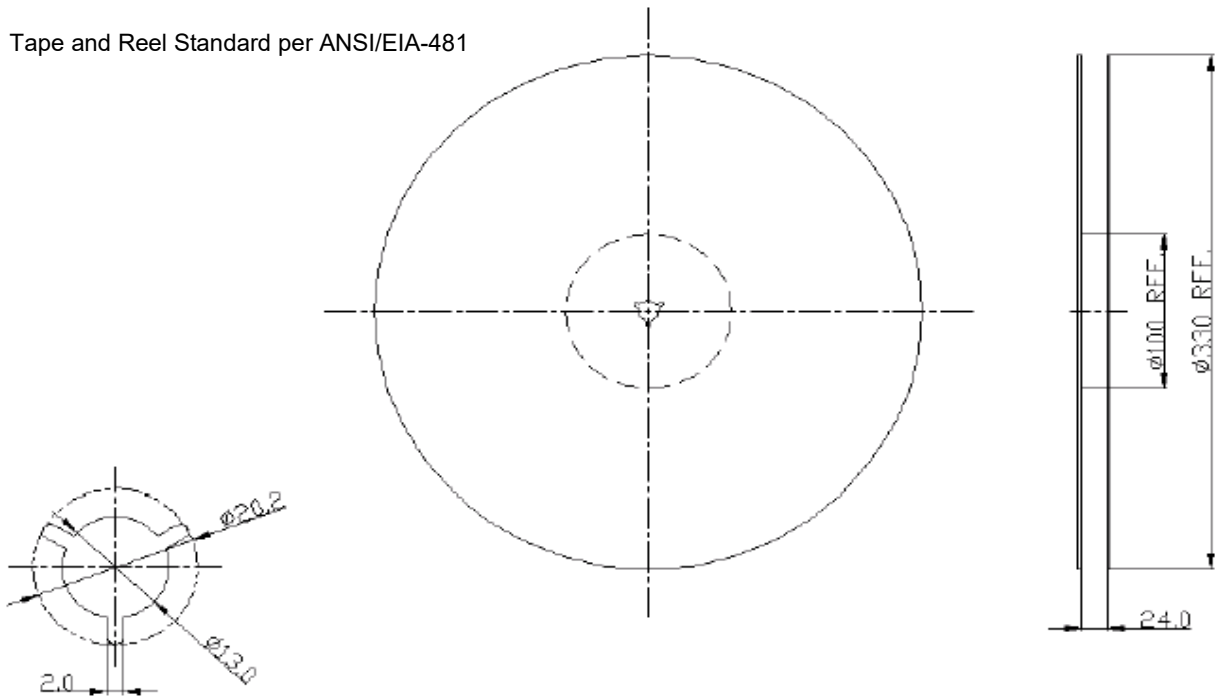
#### Materials

Solder Pad Plating	0.3 to 1.0 $\mu\text{m}$ 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

Tape and Reel Standard per ANSI/EIA-481



## 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.

