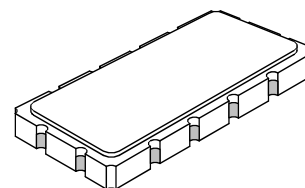




AEC-Q200

This component was always  
RoHS compliant from the first  
date of manufacture.

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

**SF2229A****70 MHz  
SAW Filter****SM13365-12****Absolute Maximum Ratings**

Rating	Value	Units
Maximum Incident Power in Passband	+20	dBm
Maximum DC Voltage on any Non-ground Terminal	10	VDC
Storage Temperature Range of Component	-55 to +95	°C
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**

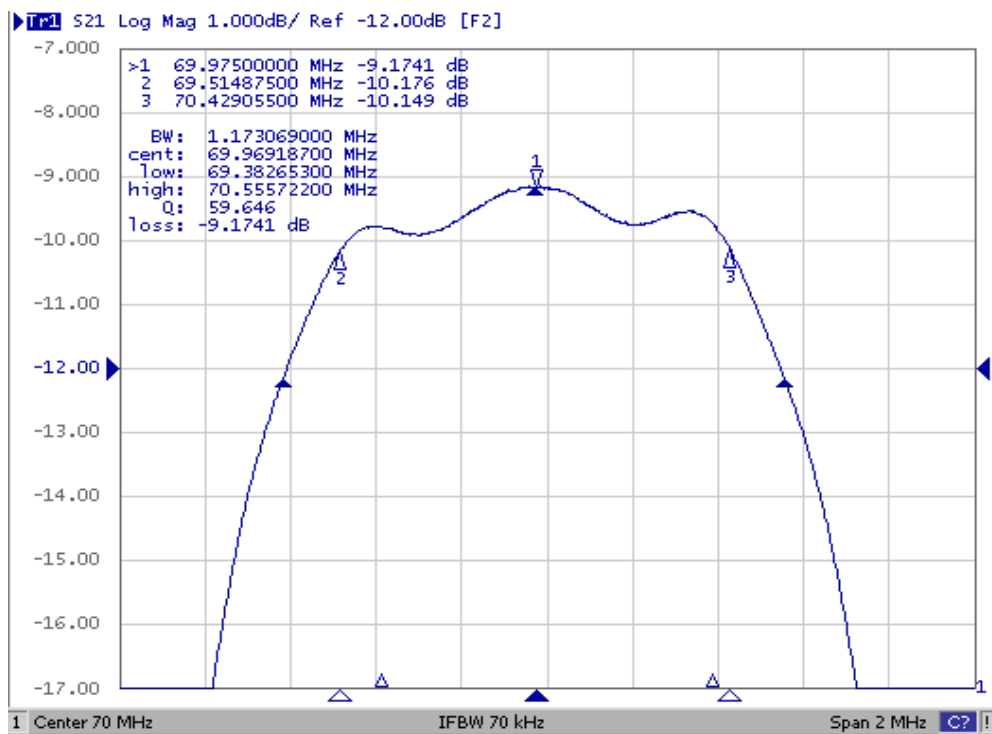
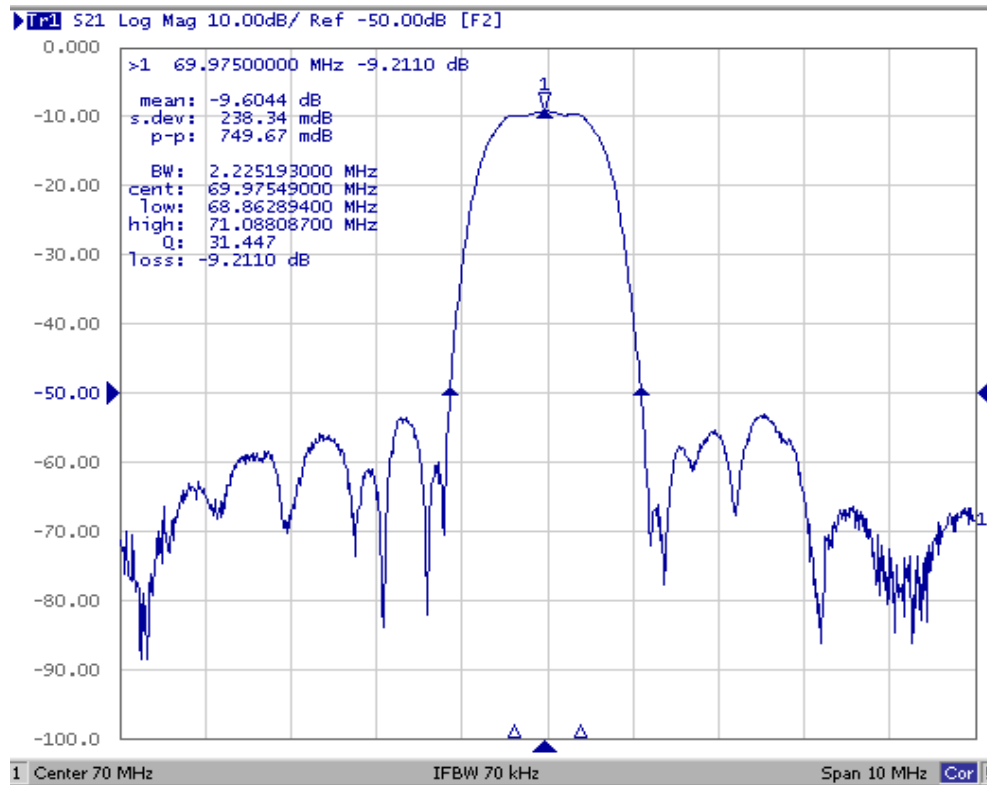
Characteristic	Sym	Notes	Min	Typ	Max	Units
Center Frequency	$f_C$		69.9	70.0	70.1	MHz
1 dB Bandwidth	$BW_1$		0.8	0.92		
3 dB Bandwidth	$BW_3$		1.1	1.2		
40 dB Bandwidth	$BW_{40}$			2.2	2.3	
Insertion Loss	IL			10.5	12.0	dB
Amplitude Ripple, $f_C \pm 0.3$ MHz				0.7	1.2	dB <sub>P-P</sub>
Group Delay Ripple, $f_C \pm 0.3$ MHz				350	400	ns <sub>P-P</sub>
Relative Attenuation:						dB
10 to 65 MHz			45	55		
75 to 200 MHz			45	55		
Operating Temperature Range			-55		+95	°C
Frequency Temperature Coefficient				-94		ppm/°C

Impedance Matching to 50 $\Omega$ Unbalanced Source/Load	External L-C
Case Style	SM13365-12 13.3 x 6.5 mm Nominal Footprint
Lid Symbolization (YY = year, WW = week, S = shift)	RFM, SF2229A, YYWWS

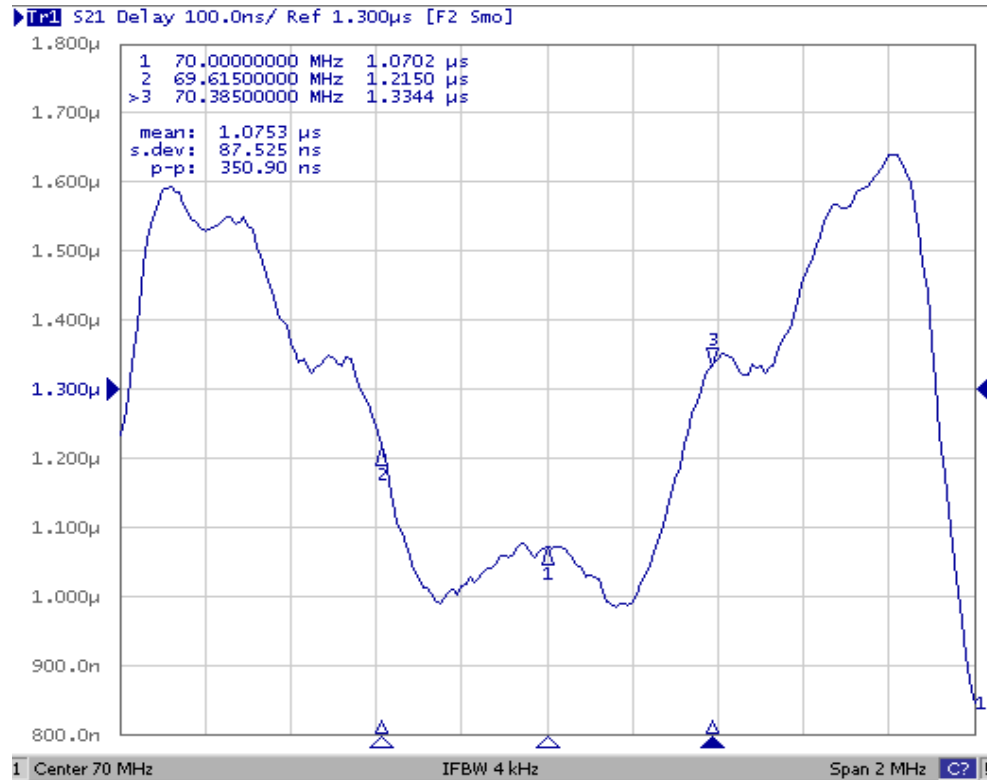
**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.****NOTES:**

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

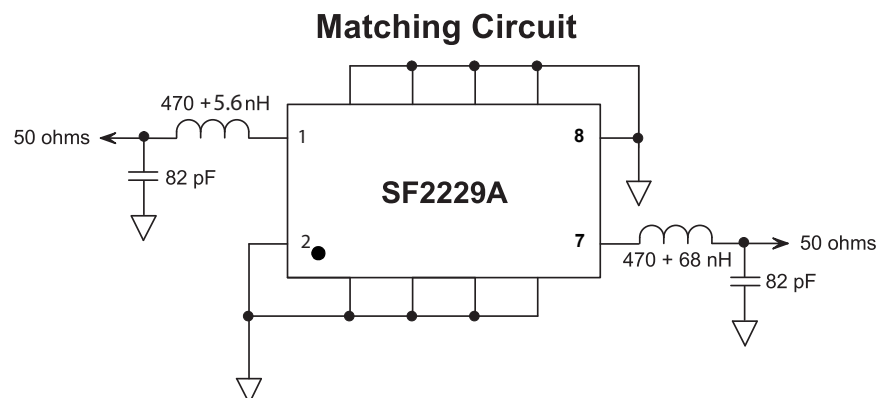
## Filter Amplitude Response Plots



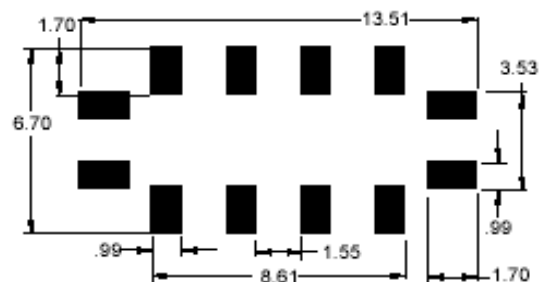
## Filter Group Delay Plot



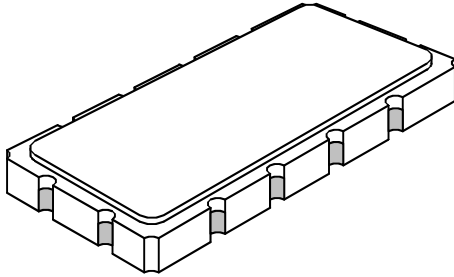
## Tuning Component Values



## PCB Pad Layout



# **SM13365-12 Ceramic Surface-mount 12-Terminal Case** **13.3 x 6.5 mm Nominal Footprint**



## **Electrical Connections**

Connection	Terminals
Input	1
Input Ground	2
Output	7
Output Ground	8
Case Ground	3, 4, 5, 6, 9, 10, 11, 12

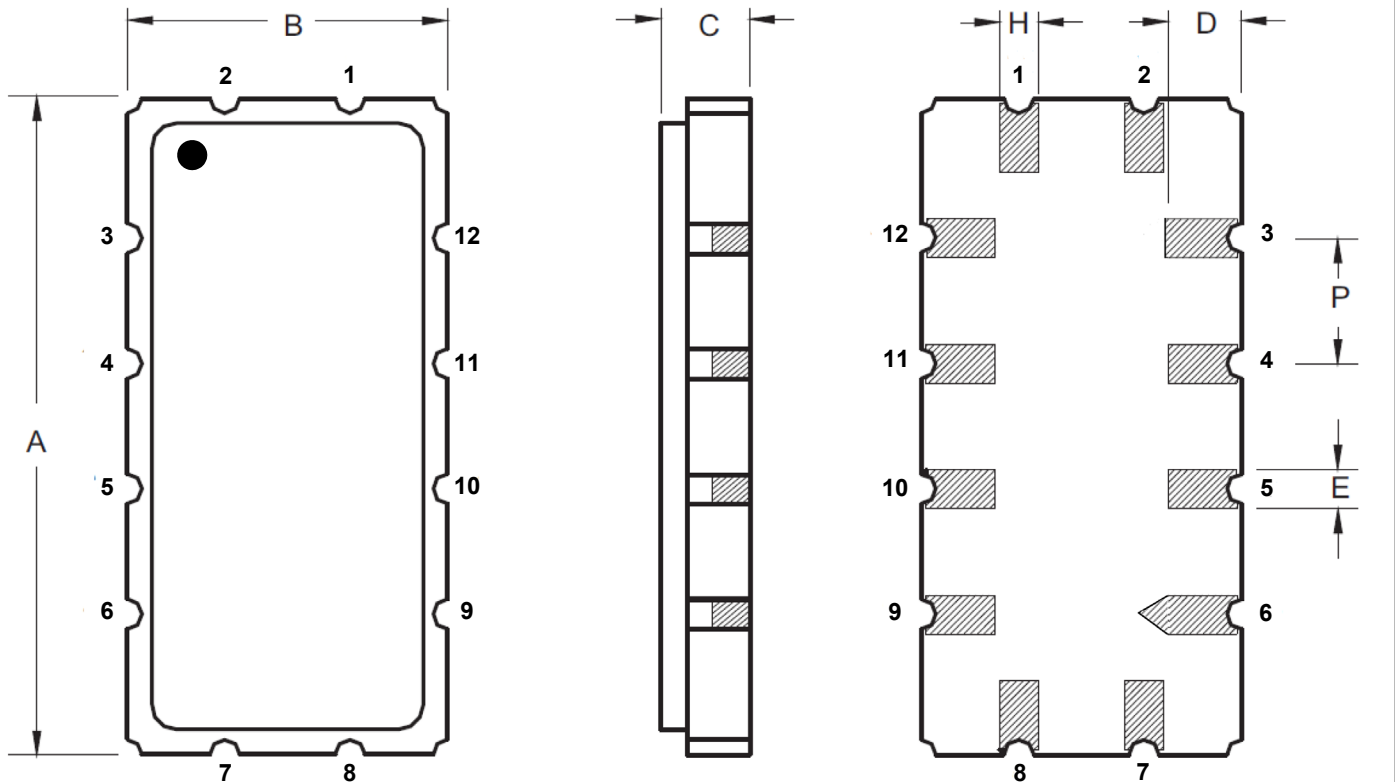
## **Case Dimensions**

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	13.10	13.30	13.50	0.516	0.524	0.531
B	6.30	6.50	6.70	0.248	0.256	0.264
C			1.80			0.071
D		1.50			0.059	
E		0.80			0.031	
H		0.80			0.031	
P		2.54			0.100	

## **Case Material**

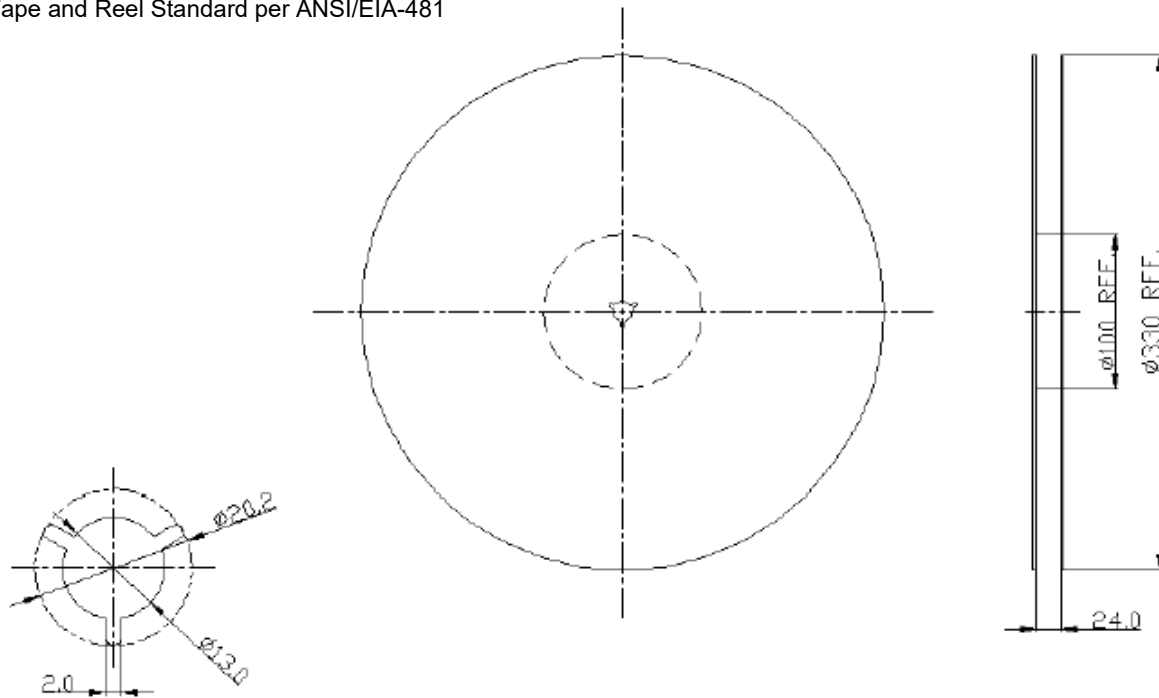
Materials	
Solder Pad Plating	0.3 to 1.0 $\mu$ m Gold over 1.27 to 8.89 $\mu$ m Nickel
Lid Plating	2.0 to 3.0 $\mu$ m Nickel
Body	Al <sub>2</sub> O <sub>3</sub> Ceramic
Pb Free	

## **Case Outline Drawing**

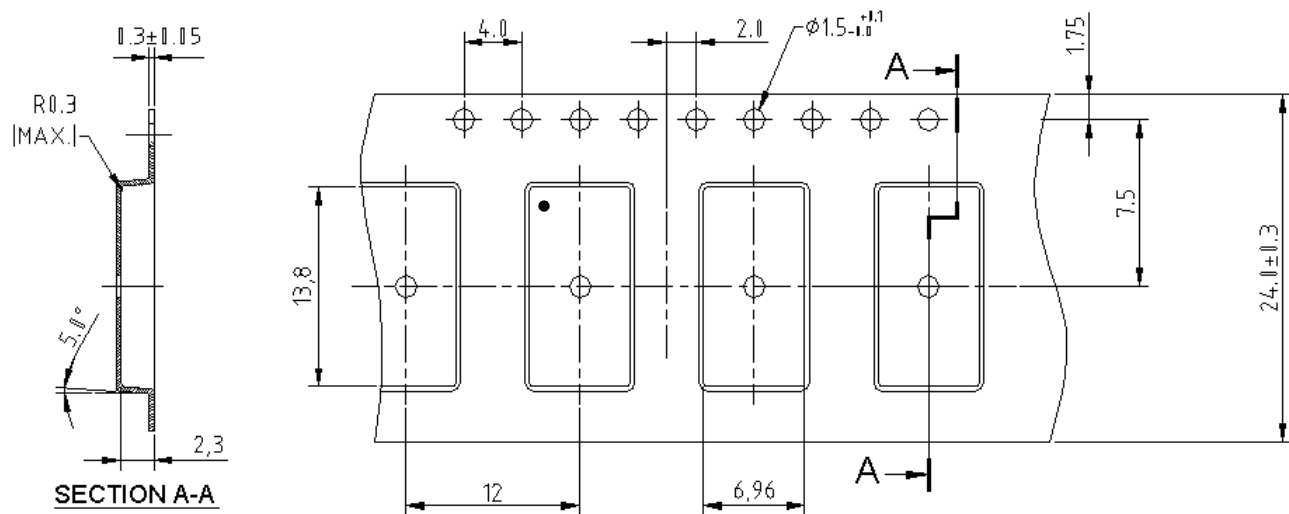


## Tape and Reel Specifications

Tape and Reel Standard per ANSI/EIA-481

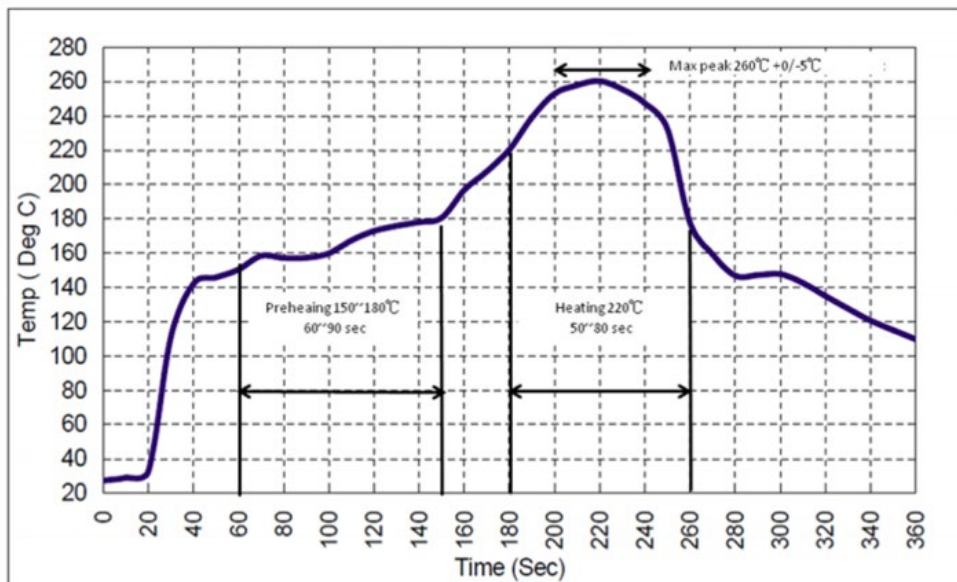


# 13.3X6.5



## 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.



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