

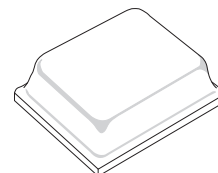


AEC-Q200


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

**SF1219K**

**2338.75 MHz  
SAW Filter**



**SM1411-5H**

- RF SAW Filter with Single-ended input and Balanced Output
- 1.4 x 1.1 x 0.6 mm Surface-Mount Case
- $Z_S = 50 \text{ ohm}$ ,  $Z_L = 100 \text{ ohm}$
- Complies with Directive 2002/95/EC (RoHS) 

#### Absolute Maximum Ratings

Rating	Value	Units
Maximum Input Power	+15	dBm
Maximum DC Voltage Between any Two Terminals	3	V
Operating Temperature Range	-40 to +85	°C
Storage Temperature Range in Tape and Reel	-40 to +85	°C
Maximum Soldering Profile	265 °C for 10 s	

#### Electrical Characteristics

Characteristic	Sym	Notes	Min	Typ	Max	Units
Center Frequency	$f_c$		2338.75			MHz
Maximum Insertion Loss, 2332.5 to 2345.0 MHz	$IL_{MAX}$			2.6	3.2	dB
Amplitude Ripple, 2332.5 to 2345.0 MHz				0.2	1.0	dB <sub>P-P</sub>
Group Delay Ripple, 2332.5 to 2345.0 MHz				6.5		ns <sub>P-P</sub>
Group Delay, 2338.75 MHz				12		ns
Return Loss, 2332.5 to 2345.0 MHz			6.5	9.6		dB
Source Impedance, Single Ended				50		$\Omega$
Load Impedance, Balanced				100		$\Omega$
Rejection:						
DC to 2224 MHz			35	41		dB
2453 to 2600 MHz			35	40		
2600 to 3000 MHz			40	44		
3000 to 6000 MHz			35	44		

Case Style	1.4 x 1.1 x 0.7 mm
Lid Symbolization, V = week character, A-Z and a-z, 52 total characters	3 V

Connection	Terminal
Input	1
Output	3, 4
Ground	2, 5

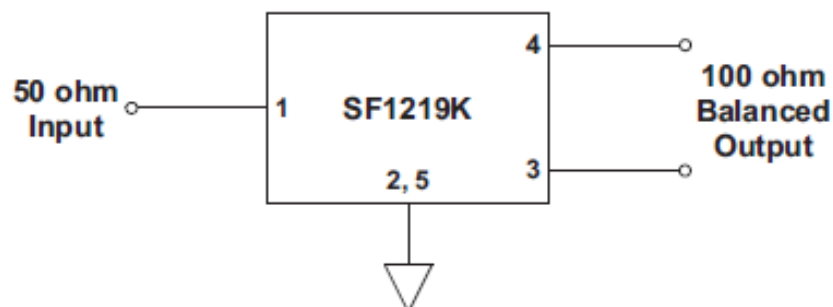


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

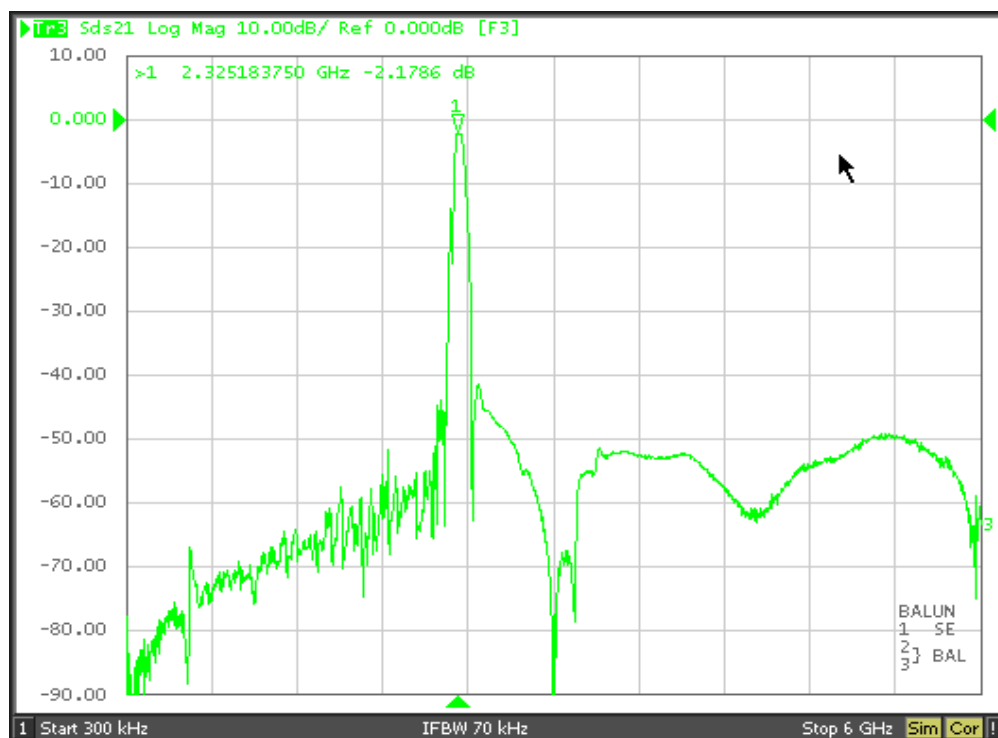
#### NOTES:

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

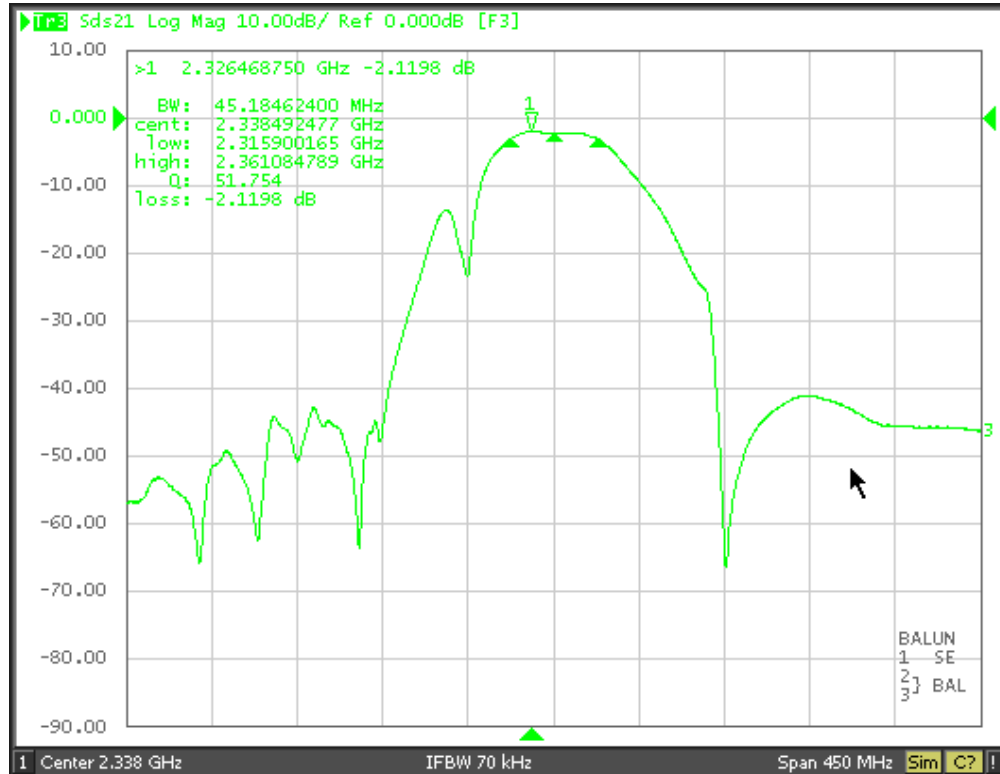
## Filter Performance without Input Matching



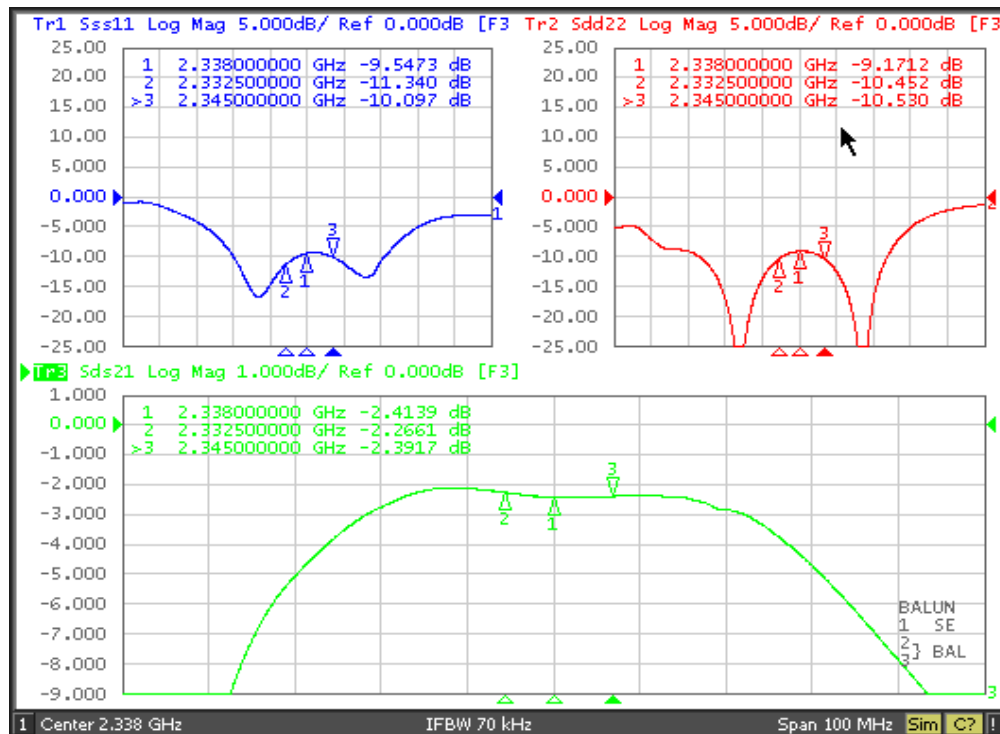
## Filter Amplitude Response, 300 kHz to 6000 MHz:



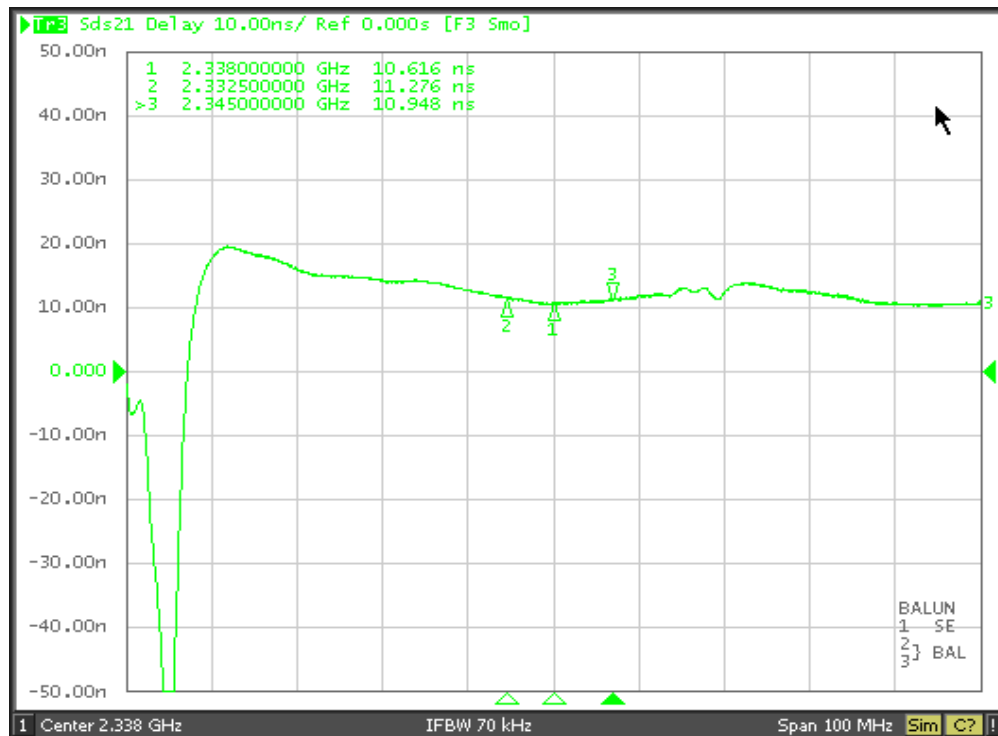
## Filter Amplitude Response, 2113 to 2563 MHz:



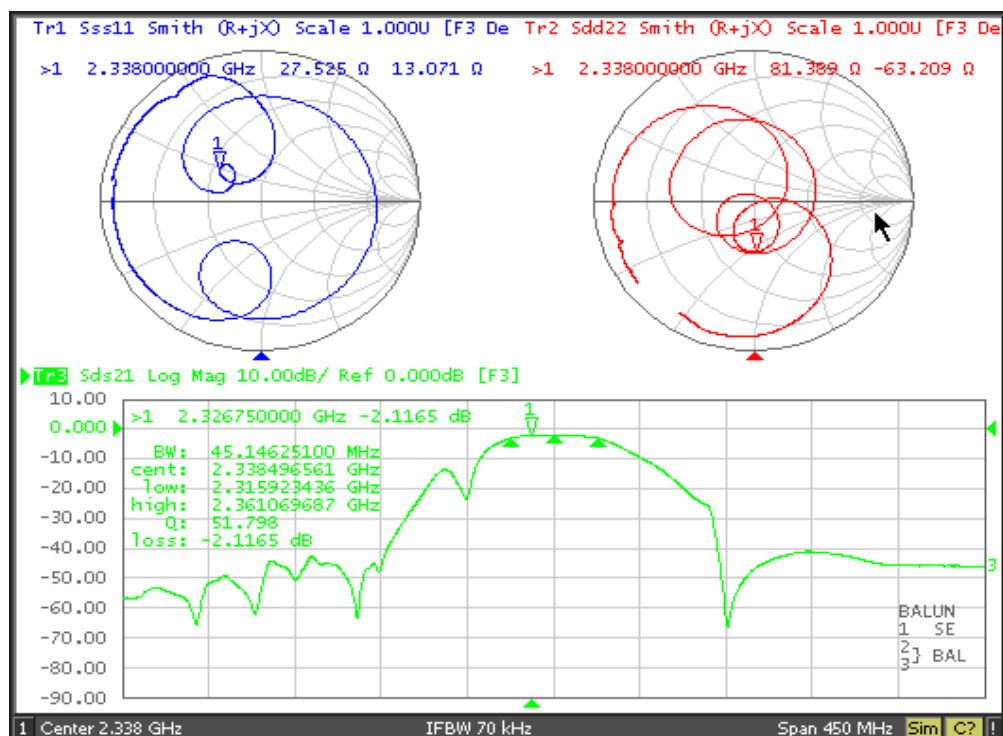
## Passband Amplitude and Return Loss:



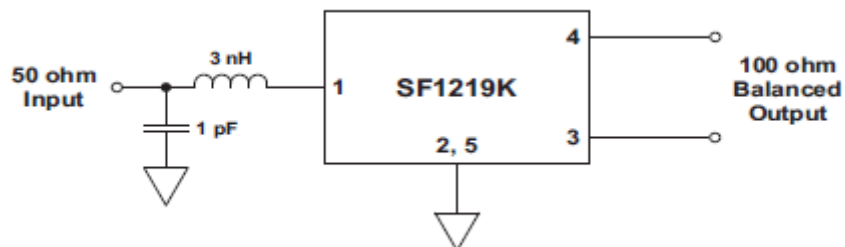
## Passband Group Delay:



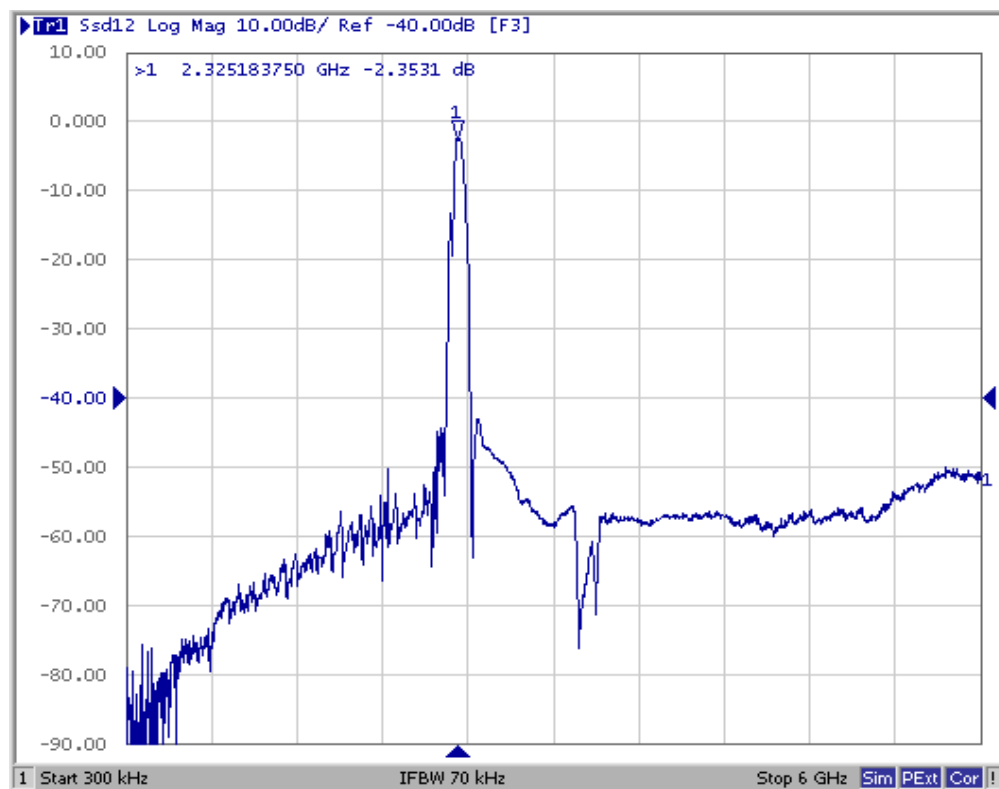
## Passband Smith Chart Plots:



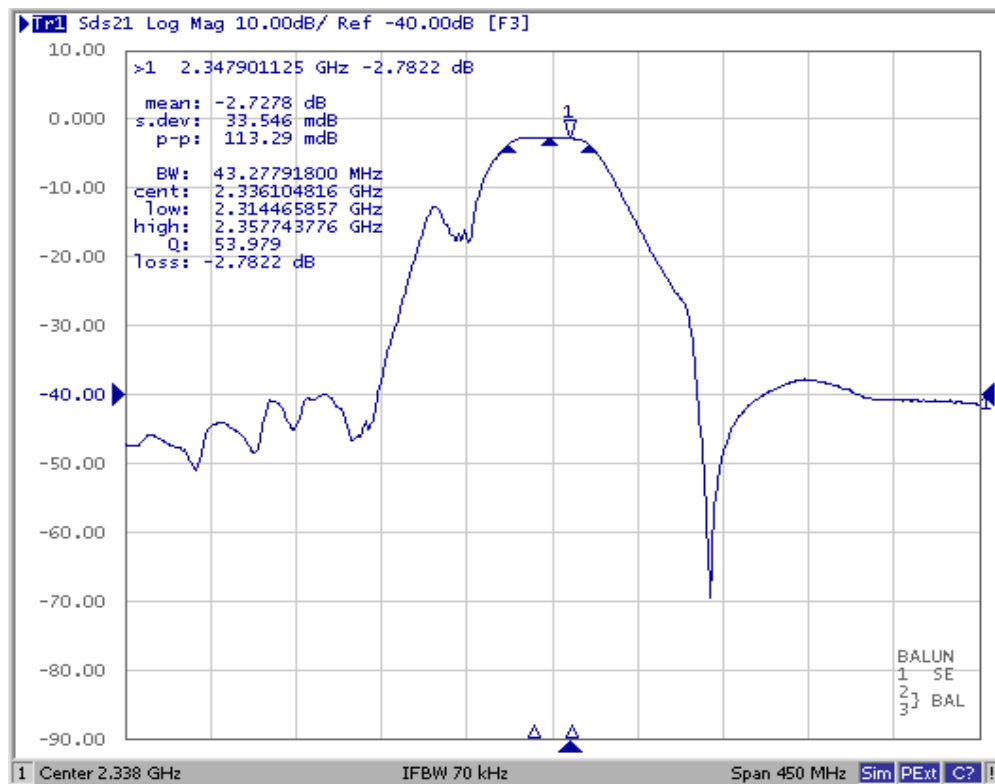
## Filter Performance with Input Matching



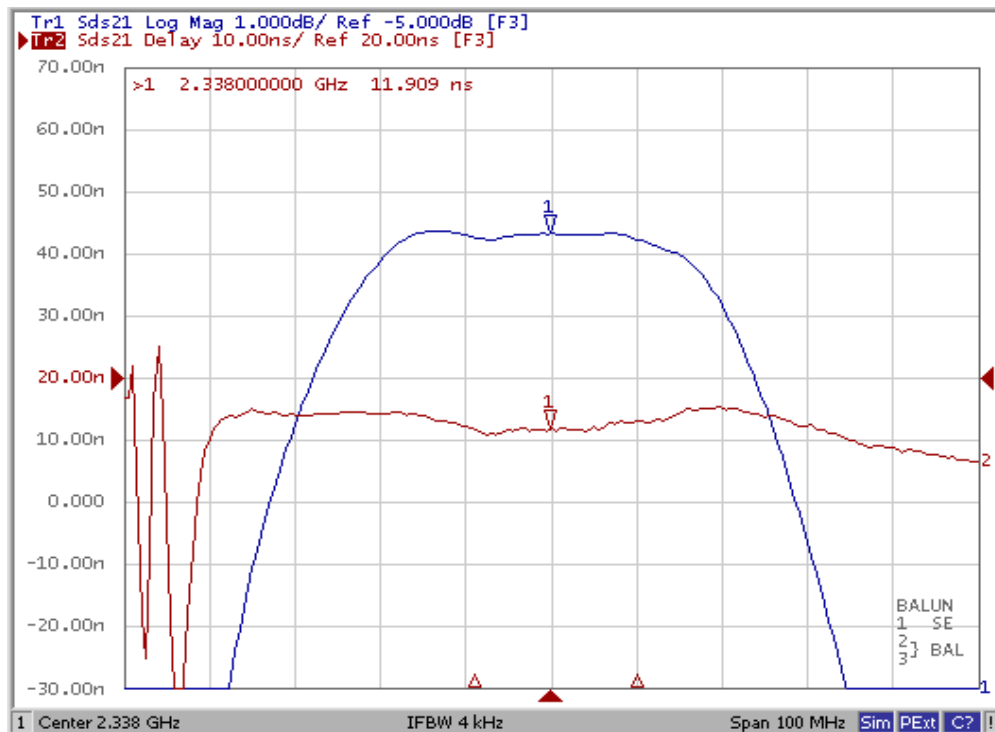
## Filter Amplitude Response, 300 kHz to 6000 MHz:



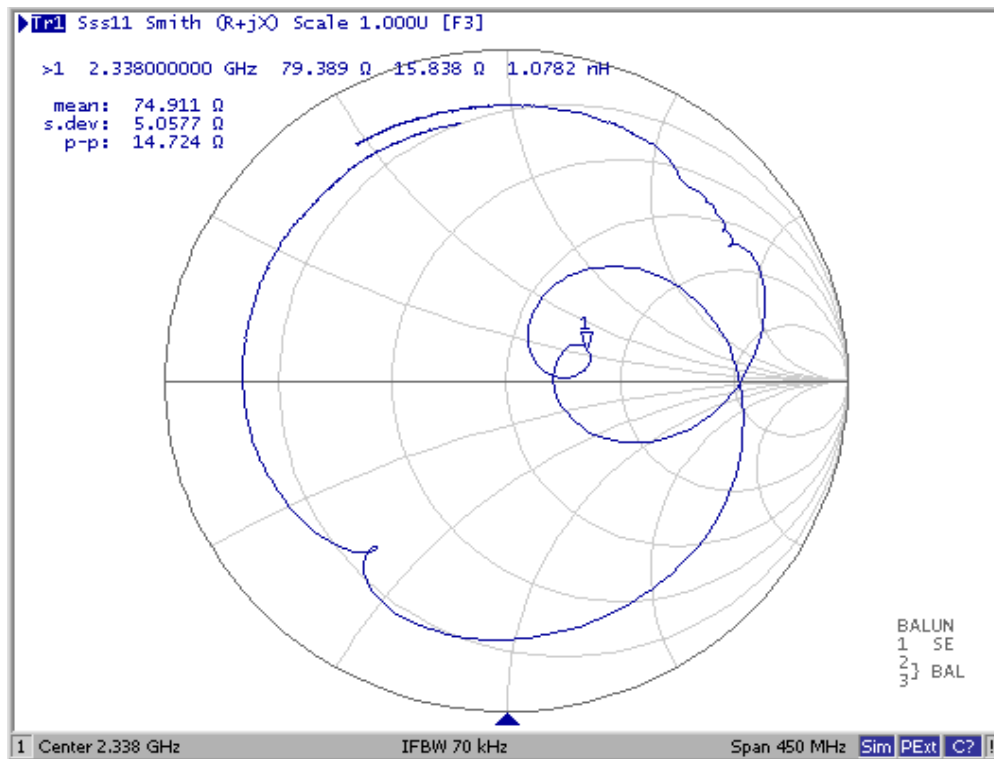
## Filter Amplitude Response, 2113 to 2563 MHz:



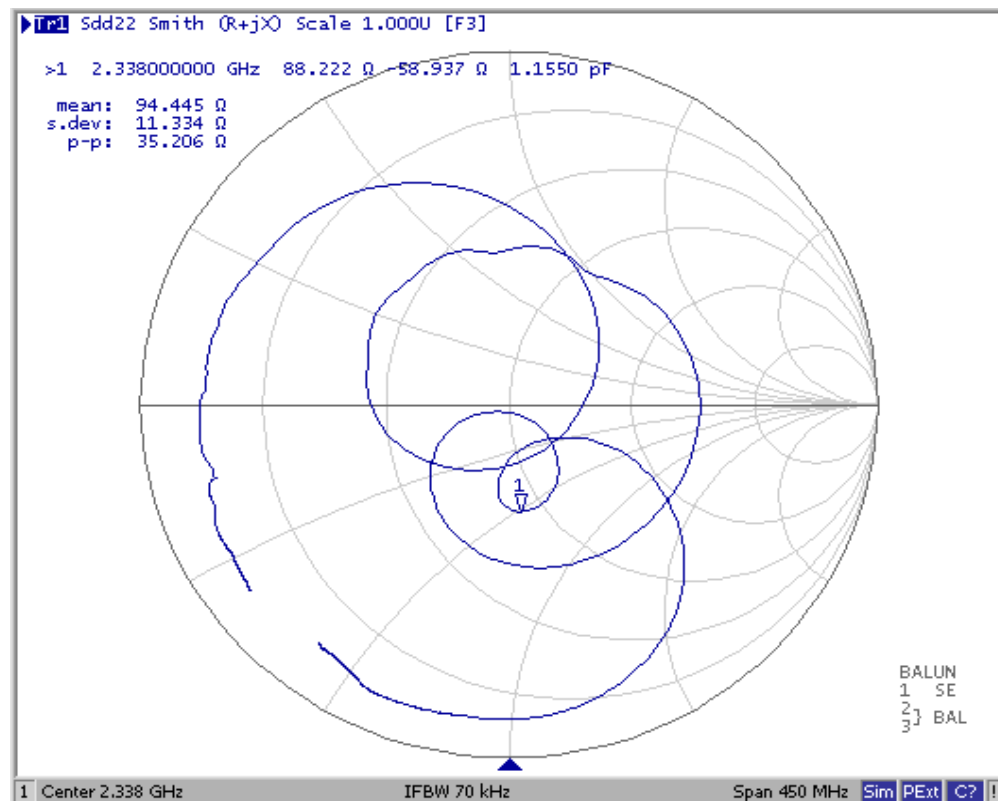
## Passband Amplitude and Group Delay Response:



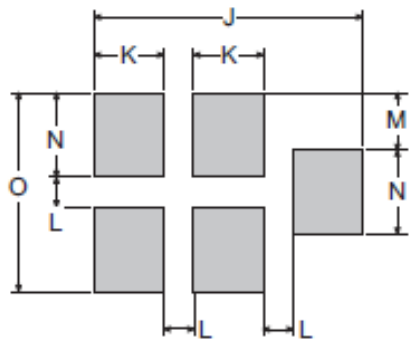
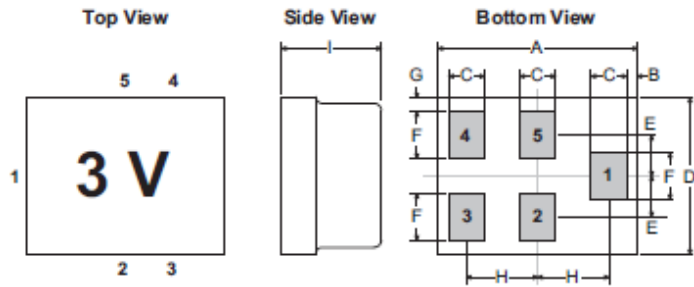
## S<sub>11</sub> Smith Chart Plot:



## S<sub>22</sub> Smith Chart Plot:



# SM1411-5H 5 Terminal 1.4 X 1.1 mm Surface-mount Case Drawing



PCB Footprint

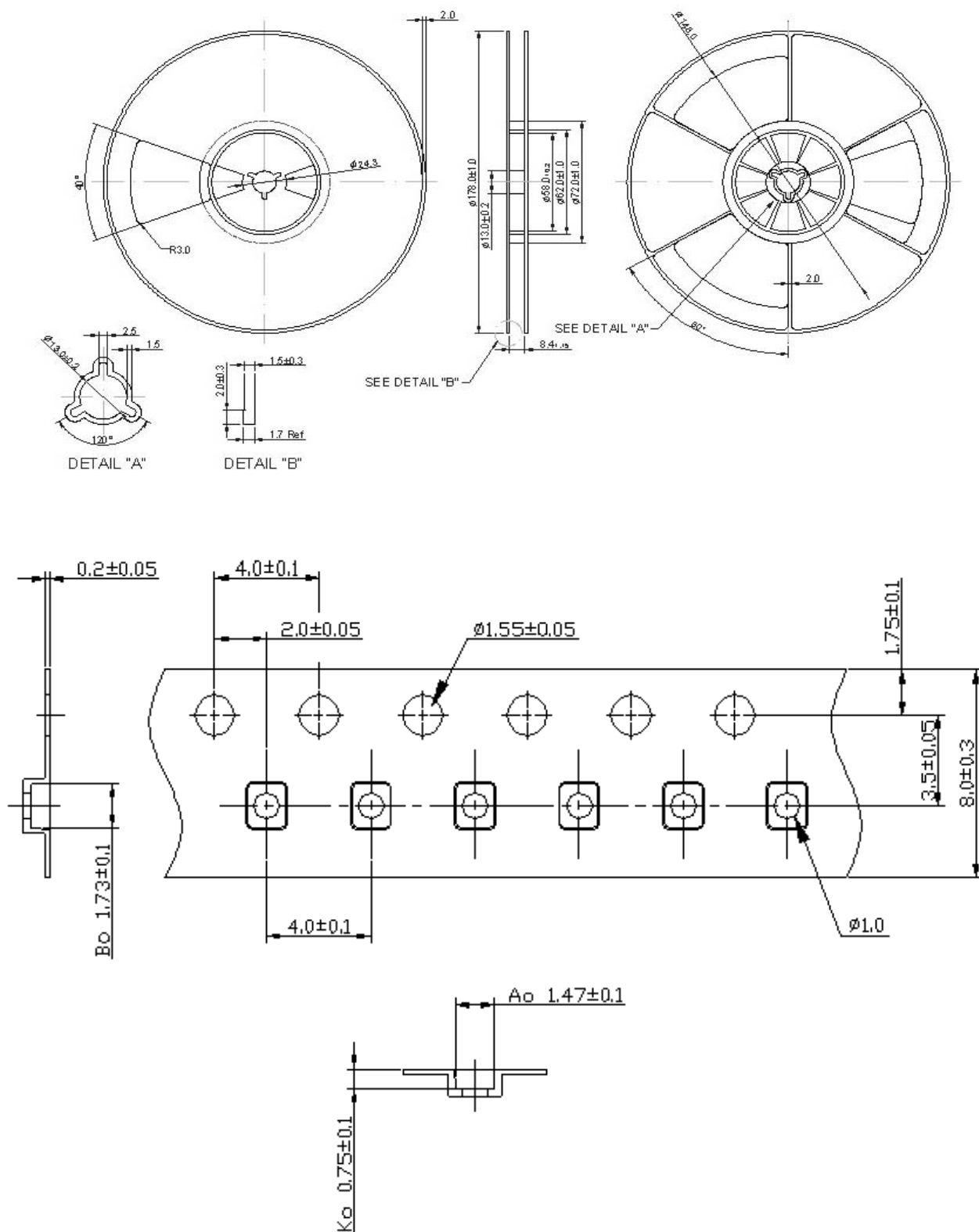
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	1.3500	1.4000	1.4500	0.0531	0.0551	0.0571
B	-	0.0750	-	-	0.0030	-
C	0.1700	0.250	0.3300	0.0067	0.0098	0.0130
D	1.0500	1.1000	1.1500	0.0413	0.0433	0.0453
E	-	0.2875	-	-	0.0113	-
F	0.2450	0.3250	0.4050	0.0096	0.0128	0.0159
G	-	0.100	-	-	0.0039	-
H	-	0.5000	-	-	0.0197	-
I	0.6000	0.6500	0.700	0.0236	0.0256	0.0276
J	-	1.3500	-	-	0.0531	-
K	-	0.3500	-	-	0.0138	-
L	-	0.1500	-	-	0.0059	-
M	-	0.2875	-	-	0.0113	-
N	-	0.4250	-	-	0.0167	-
O	-	1.0000	-	-	0.0394	-

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	



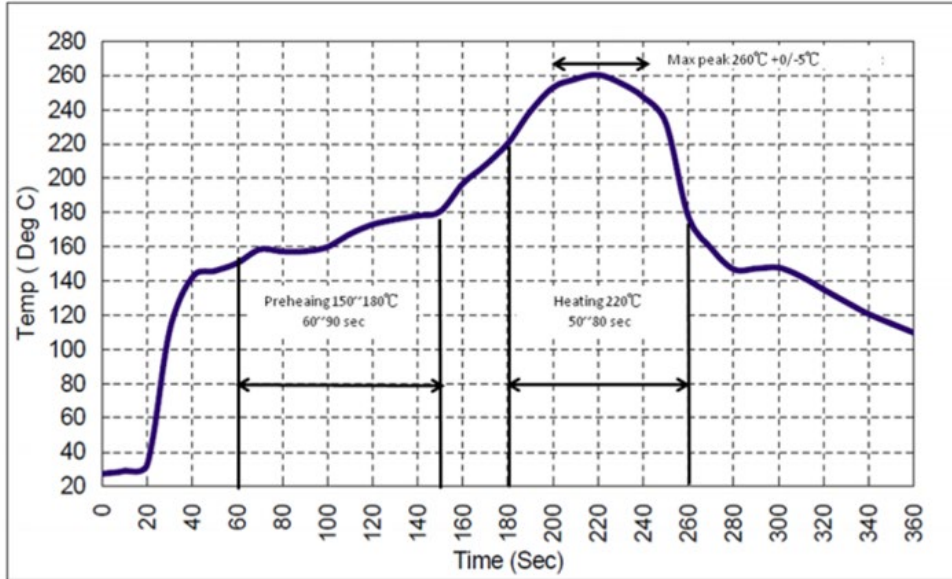
## Tape and Reel Detail

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.



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