



- Designed for GSM BTS Transmitter Applications
- Low Insertion Loss
- Excellent Size-to-Performance Ratio
- Hermetic 13.3 X 6.5 mm Surface-Mount Case
- Unbalanced Input and Output
- Complies with Directive 2002/95/EC (RoHS)

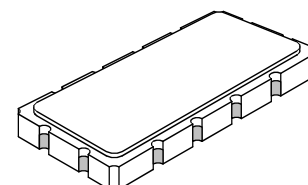


SF1091A

**211 MHz
SAW Filter**

Absolute Maximum Ratings

Rating	Value	Units
Maximum Incident Power in Passband	+10	dBm
Max. DC voltage between any 2 terminals	30	VDC
Storage Temperature Range	-40 to +85	°C
Suitable for lead-free soldering - Max Soldering Profile	260°C for 30 s	



SM13365-12

Electrical Specification

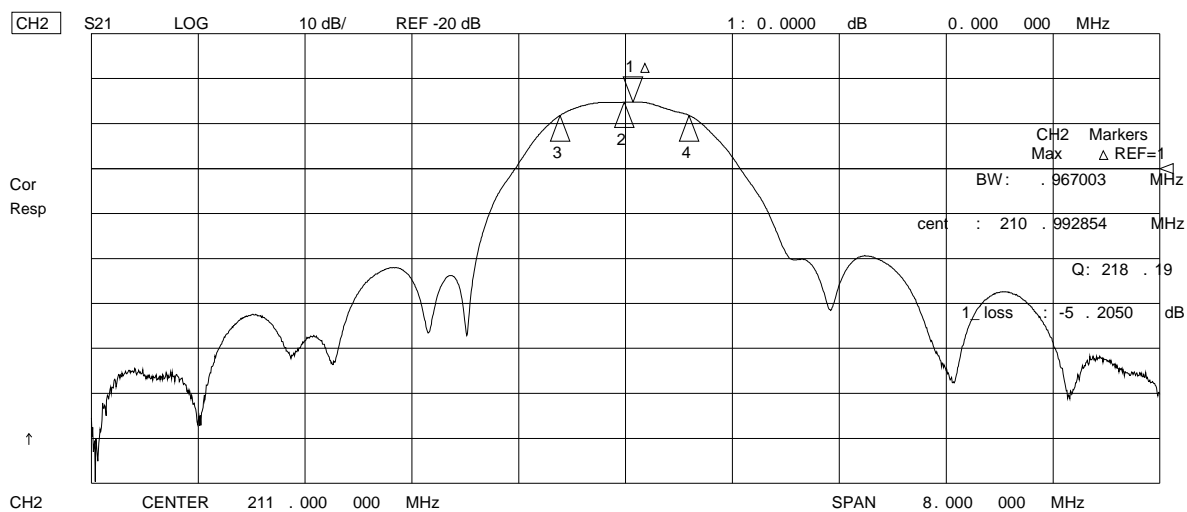
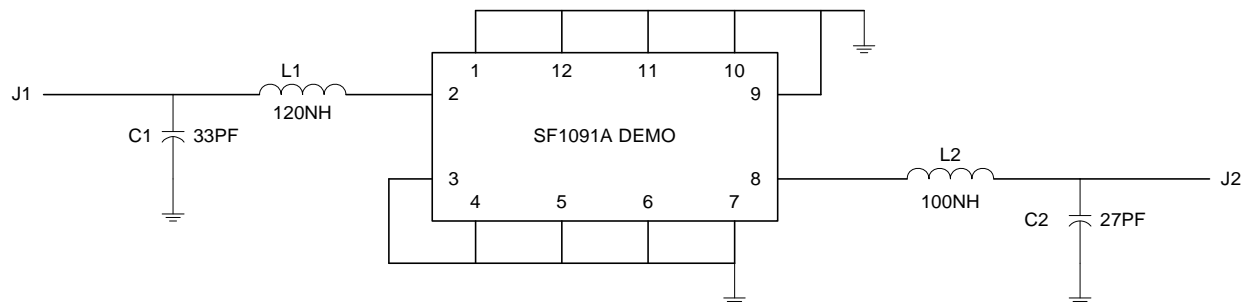
Characteristic	Sym	Notes	Min	Typ	Max	Units
Nominal Center Frequency	f_c	1	211.000			MHz
Passband Insertion Loss at f_c 3 dB Passband Group Delay Variation over $f_c \pm 150$ kHz	IL	1, 2		7	8.0	dB
	BW_3		± 450	± 500		kHz
	GDV			200	250	ns _{p-p}
Rejection $f_c - 2.0$ to $f_c - 1.05$ and $f_c + 1.05$ to $f_c + 2.0$ MHz $f_c - 80$ to $f_c - 2.0$ and $f_c + 2.0$ to $f_c + 80$ MHz $n \times f_c$ over 291 to 2000 MHz		1, 2, 3	10	21		dB
			30	33		
			40	60		
Operating Temperature Range	T_A	1	-10		+85	°C
Frequency Temperature Coefficient	FTC	1		0.32		ppm/°C ²
Impedance Matching to 50 Ω unbalanced	External L-C					
Case Style	SM13365-12 13.3 x 6.5 mm Nominal Footprint					
Lid Symbolization (XX = 2 character date code)	RFM SF1091A XX					



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

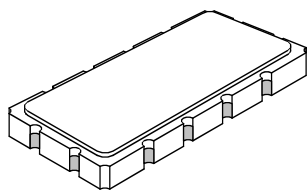
Notes:

1. Unless noted otherwise, all specification apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 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. The turnover temperature, T_O , is the temperature of maximum (or turnover) frequency, f_o . The nominal frequency at any case temperature, T_c , may be calculated from: $f = f_o[1 - FTC(T_o - T_c)^2]$.
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.



SM13365-12 Case

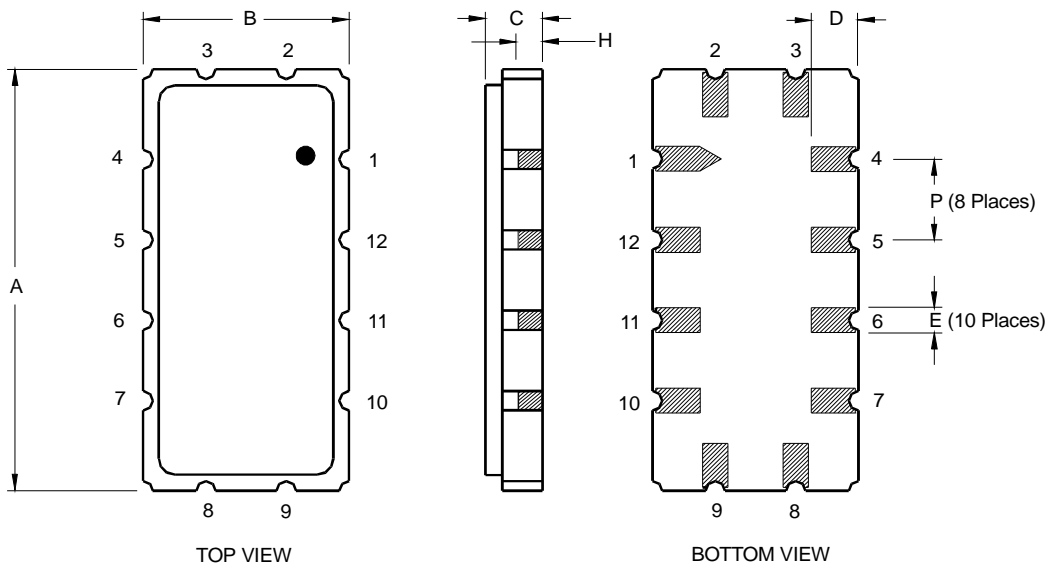
12-Terminal Ceramic Surface-Mount Case 13.3 x 6.5 mm Nominal Footprint



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	

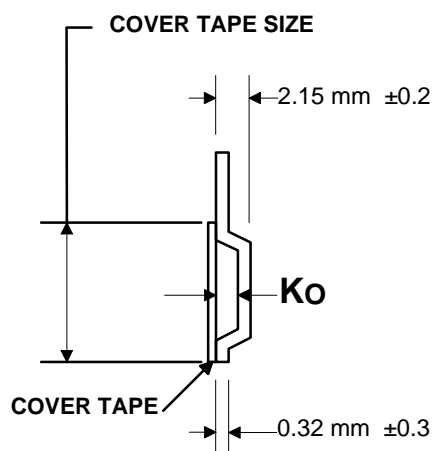
Materials	
Solder Pad Termination	Au plating 30 - 60 ulnches (76.2-152 uM) over 80-200 ulnches (203-508 uM) Ni.
Lid	Fe-Ni-Co Alloy Electroless Nickel Plate (8-11% Phosphorus) 100-200 ulnches Thick
Body	Al ₂ O ₃ Ceramic
Pb Free	

Electrical Connections		
Connection		Terminals
Port 1	Input or Return	2
	Return or Input	3
Port 2	Output or Return	8
	Return or Output	9
	Ground	All others
Single Ended Operation		Return is ground
Differential Operation		Return is hot



Technical drawing of a carrier tape showing dimensions and labels. The drawing includes the following specifications:

- Carrier Tape Size:** Indicated by W and the label "(CARRIER TAPE SIZE)".
- Pin Dimensions:**
 - Top pin diameter: $1.5\text{ mm } +0.1 / -0.0$
 - Bottom pin diameter: $1.5\text{ mm } +0.3 / -0.0$
- Pin Spacing:**
 - Distance between the first and second pins: $4.0\text{ mm } \pm 0.1$
 - Distance between the second and third pins: $2.0\text{ mm } \pm 0.1$
- Carrier Dimensions:**
 - Distance from the top edge to the center of the first pin: $1.75\text{ mm } \pm 0.1$
 - Distance from the bottom edge to the center of the first pin: $11.5\text{ mm } \pm 0.1$
- Labels and Features:**
 - PIN #1:** Label for the first pin.
 - Bo:** Label for the bottom edge.
 - P:** Label for the pitch.
 - Ao:** Label for the distance from the center of the first pin to the center of the second pin.
- USER DIRECTION OF FEED:** Indicated by an arrow pointing to the right.



Carrier Tape Dimensions		
Ao	7.0 mm	±0.1
Bo	13.8 mm	±0.1
Ko	2.2 mm	±0.1
Pitch	12.0 mm	±0.1
W	24.0 mm	±0.3

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