

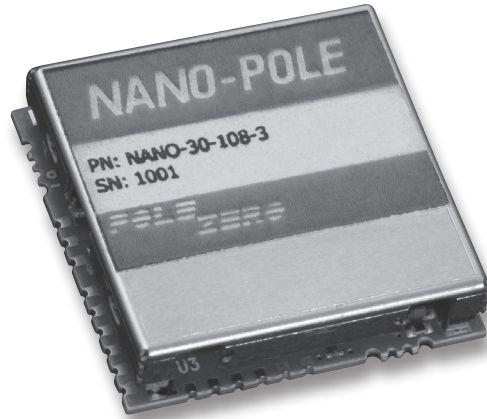
Tunable Bandpass Filters

Preliminary

NANO-POLE SERIES

Specifications:

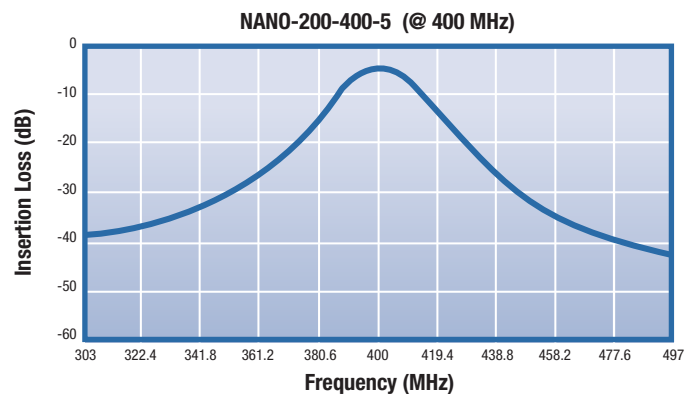
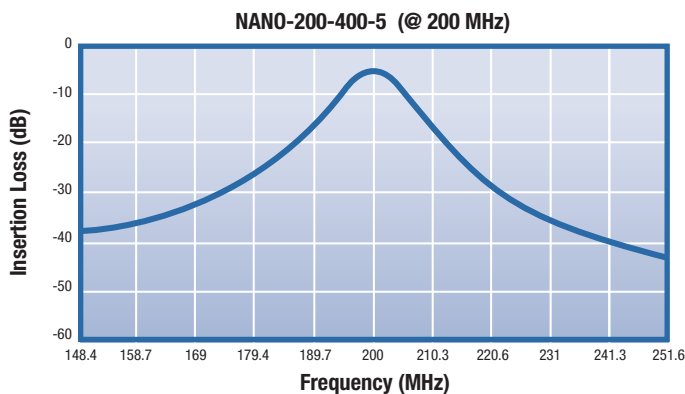
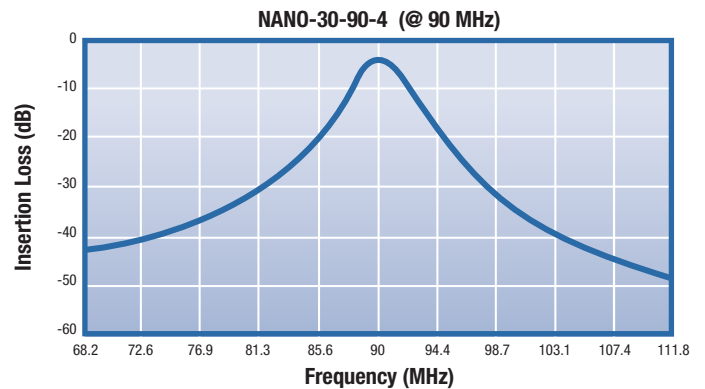
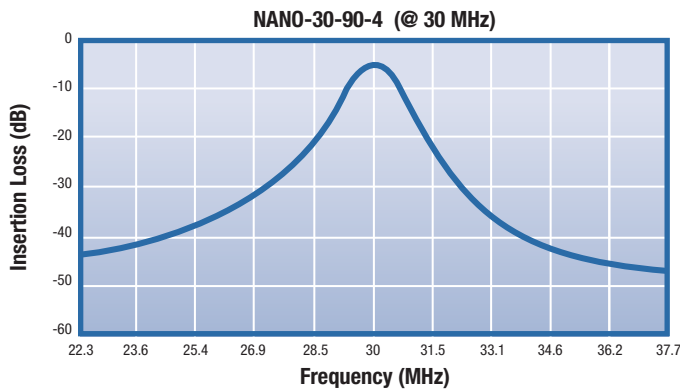
Frequency Coverage (12 bands):	10 MHz to 3 GHz
Input/Output Impedance:	50Ω
Inband RF Power Handling:	1 milliwatt (input)
Inband Third Order Intercept Point:	+10 dBm (input)
Inband Second Order Intercept Point:	+70 dBm
Tuning Control:	SPI
Tuning Speed:	25 uS Typical
DC Current:	2.6 mA to 12 mA
Operating Temperature Range:	-40° to +85°C
Size:	
(10 to 30 MHz):	.93 × 1.5 × .27 (in.) / 23.6 × 38.1 × 6.86 (mm.)
(30 to 225 MHz):	.93 × .93 × .21 (in.) / 23.6 × 23.6 × 5.8 (mm.)
(225 to 3000 MHz):	.787 × .787 × 196 (in.) / 20 × 20 × 5 (mm.)
Weight:	
(10 to 30 MHz):	TBD
(30 to 225 MHz):	.18 oz. / 5.1 g.
(30 to 3000 MHz):	.18 oz. / 5.1 g.



The **NANO-POLE** features an on-board 20V switching regulator. It is possible to disable this supply and use an external 20V. Slightly higher power versions of the **NANO-POLE** may be possible depending on filter parameters.

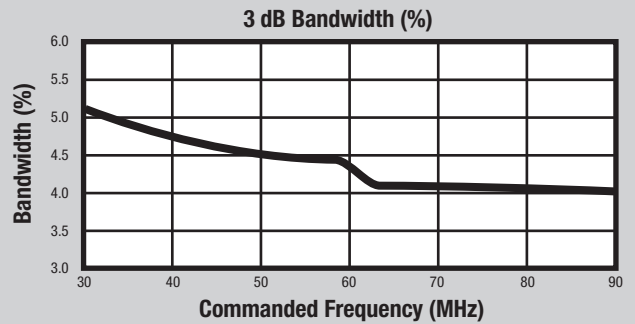
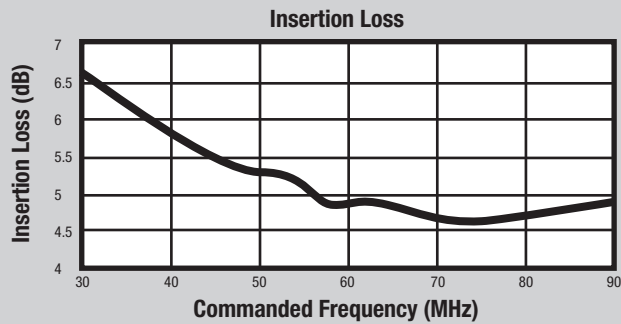
Performance:

The following plots illustrate approximate performance (not representative of all frequency ranges):

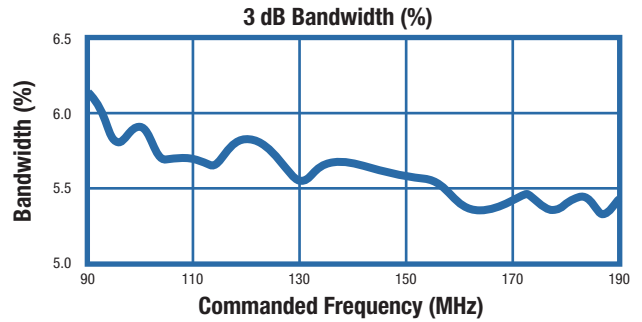
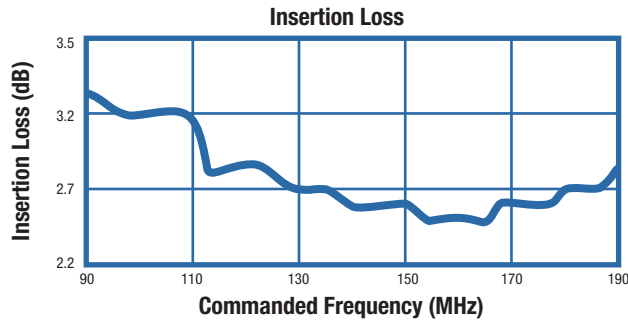


The following plots illustrate approximate insertion loss and bandwidth trends across a given frequency band, and the differences between various bands:

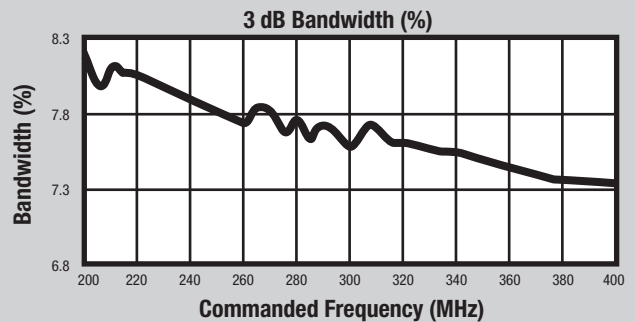
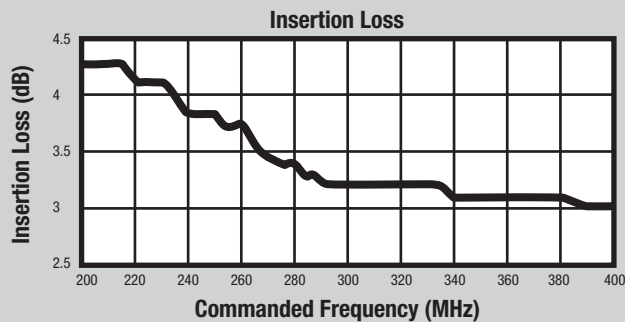
NANO-30-90-4



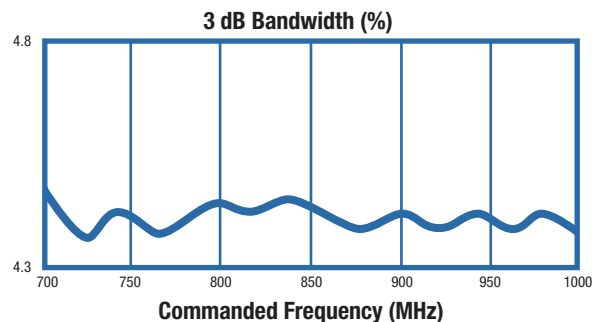
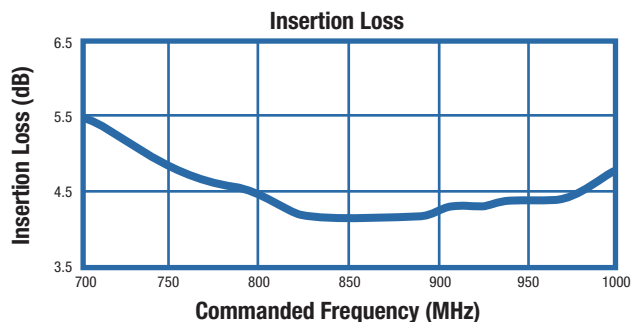
NANO-90-200-6



NANO-200-400-8



NANO-700-1000-7



Tunable Bandpass Filters

NANO-POLE SERIES Selection Guide

Table 1

Frequency Range	Suffix	% Bandwidth (3 dB)	Insertion Loss	Shape Factor (30 dB / 3 dB)		
				Overall	Low Side	High Side
10 to 30 MHz	-5	4.7/5.7	5/7	6.68/6.75	7.1/7.8	5.7/6.2
	-15	14.2/15.4	2/3	5.9/7	6.99/9.3	4.85/5
30 to 90 MHz	-4	3.8/5.1	4.8/6.7	6.1/6.9	6.2/7.8	6/6.1
	-8	7.6/8.6	2.8/3.8	5.3/5.7	6.3/7.8	5.2/5.7
	-15	14.5/16	1.8/2.3	5.5/6.9	6.9/8.9	3.7/5.7
30 to 108 MHz	-8	7.8/9.6	2.8/4.2	5.3/5.7	6.3/7.8	5.2/5.7
90 to 200 MHz	-3	3/3.4	4.8/5.8	6.3/7.1	5.9/7.3	5.6/6
	-6	5.3/6.1	2.6/3.6	6.3/6.5	6.8/7.4	5.3/6
	-8	7.8/8.2	2/2.9	6.1/6.3	7/7.5	5/5.5
200 to 400 MHz	-5	4.8/5.4	4.4/5.6	6.9/7.2	7.7/7.8	6.1/6.6
	-8	7.4/8.2	2.8/3.7	6.6/6.7	7.5/7.8	5.6/5.7
	-10	10.5/11.2	1.9/2.7	6.1/6.7	6.8/8.1	5.1/5.3
225 to 512 MHz	-4	3.8/4.5	4.8/6.5	6.2/7.5	7.1/8.4	5.5/6.7
	-5	4.7/5.5	4/5.5	5.9/7.2	7.2/8	4.9/6.2
	-10	10.1/11	1.75/2.96	5.8/6.12	6.8/7.1	4.7/5.1
400 to 700 MHz	-5	4.5/4.8	4.5/5.6	6.8/7	4.7/7.6	6.2/6.4
	-8	7.6/8.1	2.5/3.3	6.2/6.7	5.3/6	5.3/6
	-12	12/12.2	1.7/2.45	5.8/6.8	6.5/7.5	5.1/6.2
700 to 1000 MHz	-4	4.3/4.5	4.5/5.5	6.4/7.2	6.4/7.1	5.3/7.4
	-7	7.1/7.4	2.8/3.6	4.9/5.9	6.4/6.95	5.3/7.4
	-10	10.6/11	1.7/2.7	5.3/5.5	5.5/7.3	4.2/7
1000 to 1500 MHz	-3	3.0/3.3	5.2/6.9	6.2/6.7	7.2/7.4	6.1/6.7
	-4	4.3/5	4.3/5	6.3/6.8	7.3/7.4	5.7/6.0
	-5	3.3/4.1	3.3/4.1	6.4/6.5	7.4/7.5	5.5/5.6
1500 to 2000 MHz	-3	3.1/3.2	5.2/6.9	7.0/7.3	7.7/8.0	6.3/6.5
	-4	3.7/4.0	4/5.1	6.6/6.7	7.4/7.6	5.6/5.8
	-5	4.8/5.1	3.4/4.3	6.6/6.9	7.5/7.8	5.6/5.9
2000 to 3000 MHz	-3	3/3.3	5.2/7.9	7.2/7.6	7.8/8.6	6.3/6.7
	-4	4.1/4.6	4.3/6	6.6/6.8	7.6/7.9	5.6/5.8
	-5	4.6/5.2	3.8/5.4	6.6/7.1	7.6/8.4	5.7/5.8

This Selection Guide illustrates approximate performance for the NANO-POLE Series: Table values are shown as average/maximum.

NANO-POLE Series Product Number Selection Guide:

Series	Frequency (MHz)	Bandwidth	Options
NANO	10-30	-5 thru -15	C
	30-90	-4 thru 15	
	30-108	-8	
	90-200	-3 thru -8	
	200-400	-5 thru -10	
	225-512	-4 thru -10	
	400-700	-5 thru -12	
	700-1000	-4 thru -10	
	1000-1500	-3 thru -5	
	1500-2000	-3 thru -5	
2000-3000	-3 thru -5		

Options: C. Custom Frequency Bands (Specify START and STOP frequencies in MHz.)

Note(s): Options may be limited to particular frequency bands and/or performance levels. Consult the factory for your application.

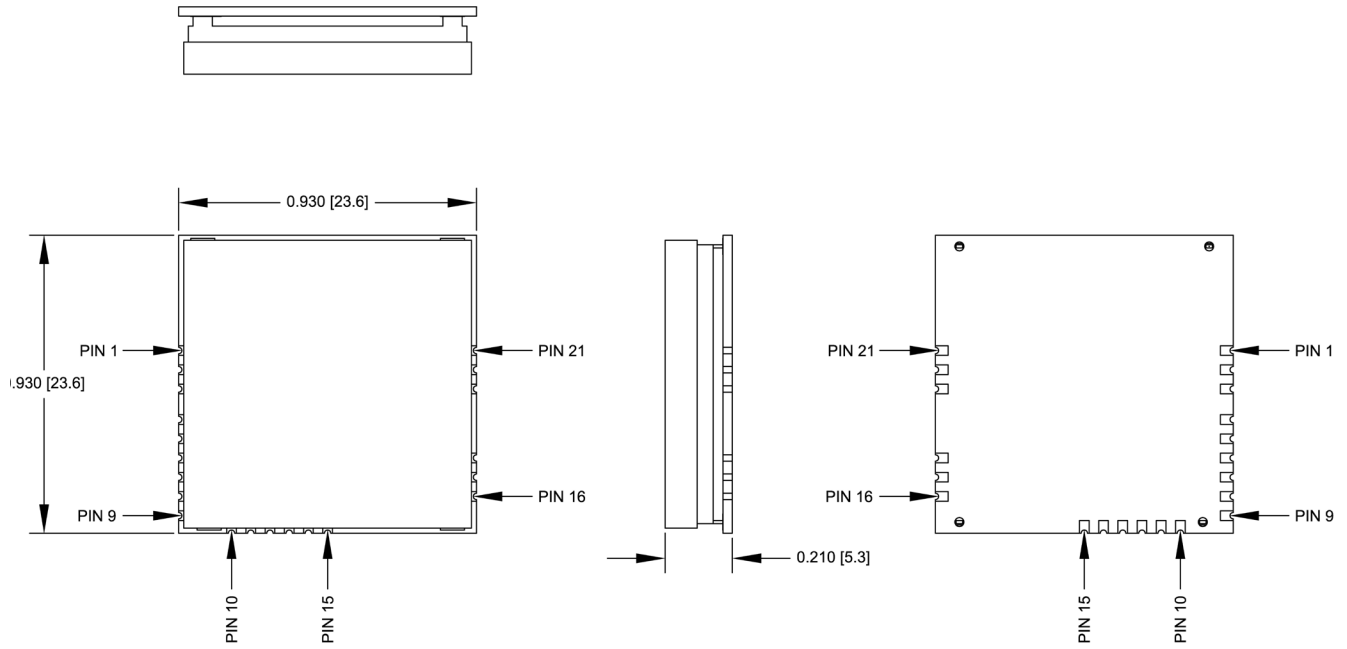
Pinout & Ratings:

PIN #	Reference Designator	Description	Maximum Rating
1	AGND		
2	RF_IN	Filter Input	+10 dBm, +17 dBm ¹
3	AGND		
4	AGND		
5	N/C	Must be left unconnected for unit to function properly	
6	N/C	Must be left unconnected for unit to function properly	
7	N/C	Must be left unconnected for unit to function properly	-0.5 to +3.8V
8	N/C	Must be left unconnected for unit to function properly	
9	N/C	Must be left unconnected for unit to function properly	+30 VDC _C
10	/TUNE_READY	Signal is logic high when the filter is ready for a new tune word	-0.5 to 3.6V
11	MOSI	Serial tune data sent to unit	
12	/CS	Tune data chip select	
13	SCLK	Tune data clock	
14	MISCO	Tune data returned from unit	
15	AGND		
16	+3.3V	Vdd	+3.6V
17	AGND		
18	+5V		+30 VDC _C
19	AGND		
20	RF_OUT	Filter Output	+10 dBm, +17 dBm ¹
21	AGND		

Note(s): 1. First number indicates maximum inband power levels and second number indicates maximum out of band RF power levels either in CW or composite average for multi-tones.

2. N/C = No Connect.

Mechanical Outline:
30 - 225 MHz



225 - 3000 MHz

