

# Coaxial Low Pass Filter

## VLFG-1000+

50Ω DC to 1000 MHz



Generic photo used for illustration purposes only  
CASE STYLE: FF704

### The Big Deal

- Excellent power handling, 5.5 W
- Temperature stable
- Rugged unibody construction
- Good rejection, 45 dB typical

### Product Overview

VLFG-1000+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-1000 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. VLFG-1000+ offer low insertion loss, and excellent power handling capability. It handles up to 5.5W RF input power and provides a wide operating temperature range from -55°C to 125°C.

### Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application.
5.5 W Power handling	Supports a range of system power requirements.
Connectorized package	The connectorized package is easy to interface with other devices and well suited for test setups.

#### Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



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**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### Features

- Low loss, 0.9 dB typical
- Good rejection 45 dB typical
- Excellent power handling, 5.5 W
- Temperature stable
- Connectorized package
- Rugged unibody construction

### Applications

- Harmonic Rejection
- VHF/UHF transmitters / receivers
- Lab use

### Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 1000	—	0.9	1.8	dB
	Freq. Cut-Off	F2*	1370	—	3.0	—	dB
	Return Loss	DC-F1	DC - 1000	—	21	—	dB
Stop Band	Rejection Loss	F3-F4	1550 - 1900	20	29	—	dB
		F4-F5	1900 - 3000	35	45	—	dB
		F5-F6	3000 - 6000	30	40	—	dB
		F6-F7	6000 - 10000	—	34	—	dB

In Application where DC voltage is present at either input or output port, DC blocks are required.

\* Typically, a ±5% frequency deviation from the stated value may occur on a unit-to-unit basis.

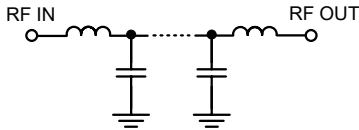
### Maximum Ratings

Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	5.5 W max. @25°C

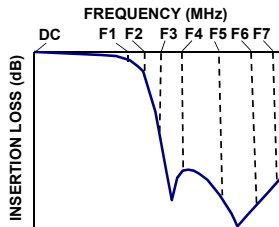
\*Passband rating, derate linearly to 1 W at 125°C ambient

Permanent damage may occur if any of these limits are exceeded.

### Functional Schematic

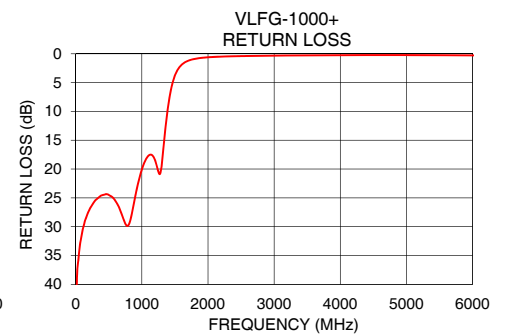
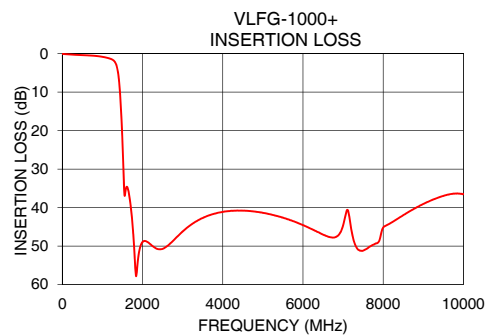
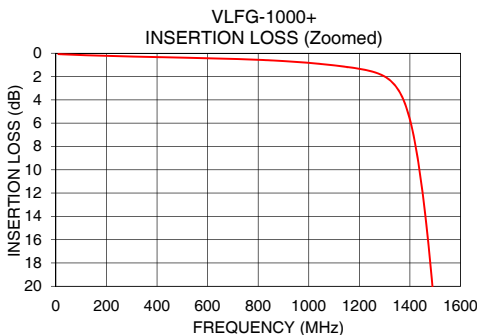


### Typical Frequency Response



### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	0.07	42.18
100	0.15	30.84
400	0.33	24.54
600	0.43	25.52
800	0.56	29.70
1000	0.83	20.08
1370	3.78	11.54
1490	20.25	4.08
1525	30.30	3.12
1550	36.72	2.62
1900	52.45	0.72
2000	48.94	0.61
2500	50.71	0.41
3000	46.20	0.33
5000	41.37	0.23
6000	44.55	0.29
7500	51.18	0.44
8000	45.20	0.45
9000	39.04	0.50
10000	36.47	0.55



#### Notes

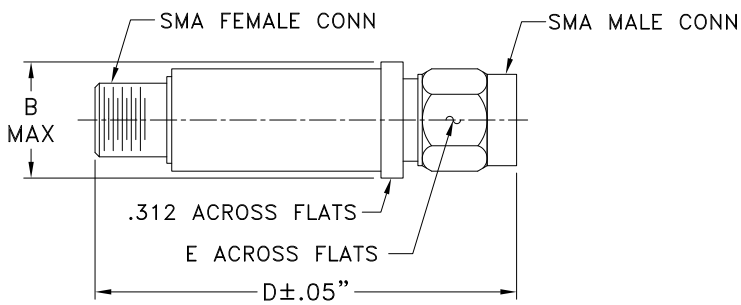
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**Coaxial Connections**

PORT - 1	SMA-Male
PORT - 2	SMA-Female

**Outline Drawing**



**Outline Dimensions ( inch )**

B	D	E	wt.
.410	1.43	.312	grams
10.41	36.32	7.92	10

Note: Please refer to case style drawing for details

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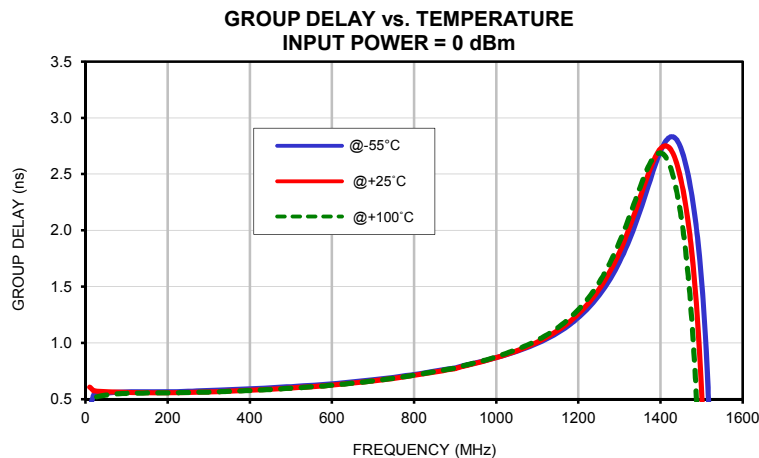
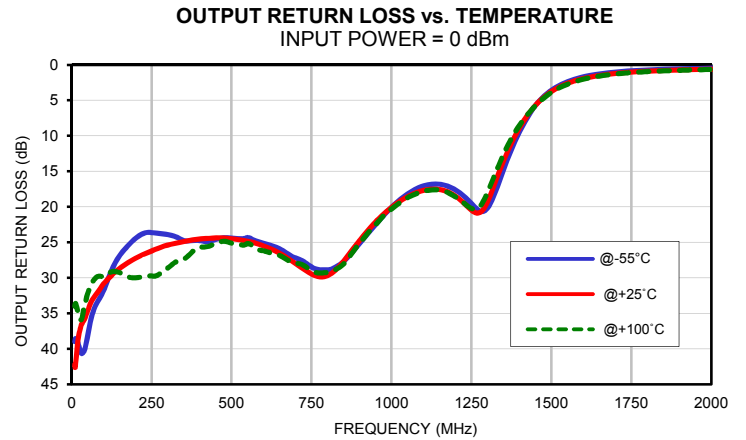
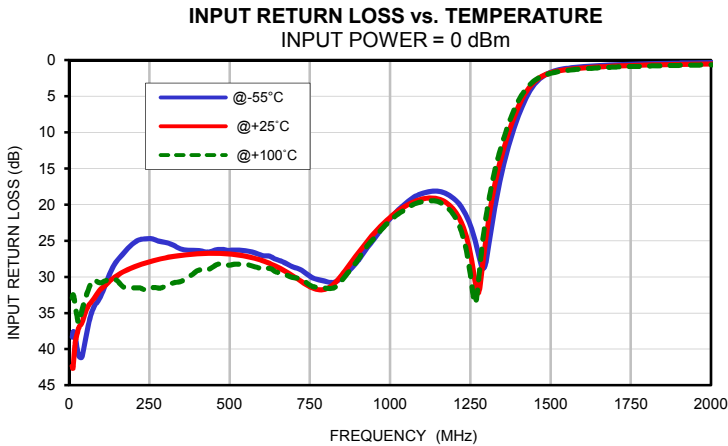
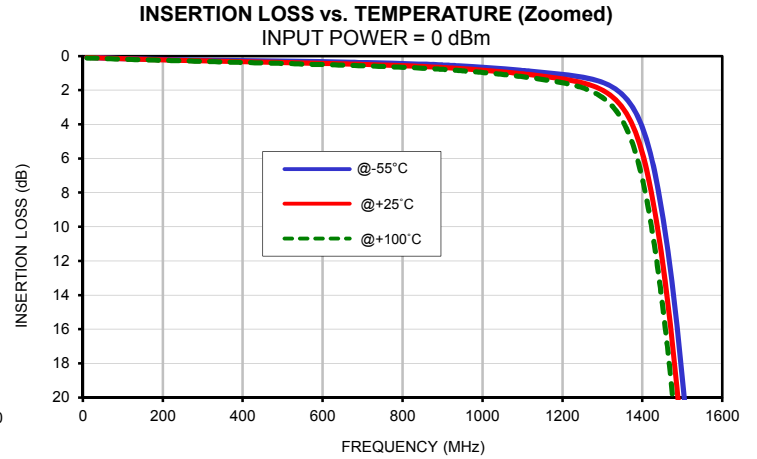
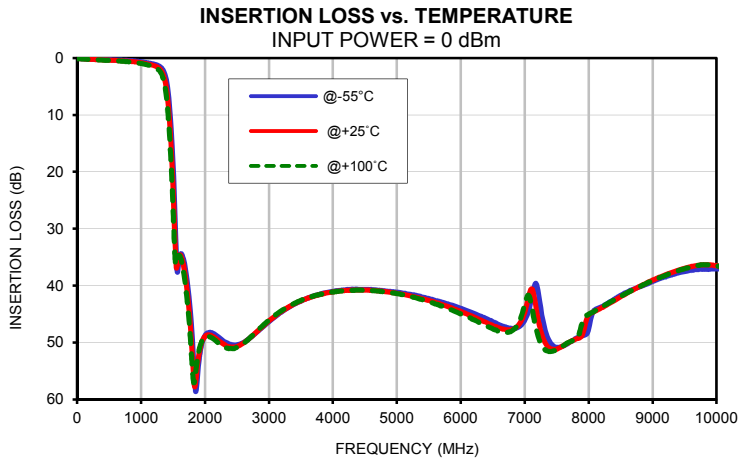
*Typical Performance Data*

FREQ.  (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
10	0.07	0.07	0.11	38.33	42.36	32.93	38.99	42.18	34.01
60	0.11	0.12	0.15	36.74	34.02	31.77	35.94	33.50	31.09
100	0.15	0.15	0.18	32.54	31.65	30.83	31.80	30.84	29.82
140	0.17	0.18	0.21	28.37	30.12	30.33	27.57	29.00	29.14
180	0.20	0.21	0.23	26.19	29.06	31.49	25.30	27.74	29.91
200	0.21	0.22	0.25	25.37	28.66	31.52	24.43	27.25	29.98
240	0.22	0.25	0.27	24.73	28.04	31.85	23.60	26.41	29.73
300	0.24	0.28	0.31	25.22	27.37	31.23	23.90	25.39	28.65
400	0.26	0.33	0.37	26.32	26.81	29.14	24.75	24.54	25.71
500	0.29	0.38	0.43	26.32	26.83	28.37	24.42	24.48	25.12
800	0.43	0.56	0.66	30.62	31.68	31.56	28.87	29.70	29.25
1000	0.66	0.83	0.96	21.93	21.76	22.23	20.09	20.08	20.32
1100	0.84	1.04	1.21	18.46	19.23	19.60	17.05	17.69	17.78
1150	0.95	1.18	1.37	18.14	19.21	19.59	16.79	17.55	17.62
1200	1.07	1.33	1.56	19.21	20.79	21.55	17.62	18.48	18.59
1250	1.24	1.57	1.86	22.84	26.71	29.60	19.53	20.47	20.21
1300	1.54	2.00	2.42	27.69	24.14	21.41	20.20	19.35	18.01
1325	1.81	2.39	2.94	20.72	17.53	15.60	17.98	16.54	15.30
1350	2.25	3.01	3.77	15.22	12.88	11.41	14.90	13.63	12.64
1370	2.79	3.78	4.78	11.77	9.92	8.71	12.57	11.54	10.82
1400	4.18	5.69	7.19	7.68	6.42	5.64	9.49	8.91	8.56
1490	16.52	20.25	23.60	1.89	1.90	1.95	3.92	4.08	4.20
1500	18.82	22.82	26.39	1.69	1.75	1.83	3.58	3.77	3.90
1525	25.56	30.30	33.76	1.35	1.48	1.58	2.90	3.12	3.24
1550	34.00	36.72	36.22	1.15	1.31	1.43	2.39	2.62	2.73
1600	35.10	34.66	34.72	0.90	1.08	1.20	1.70	1.93	2.02
1700	37.58	39.12	40.50	0.64	0.83	0.95	1.02	1.22	1.29
1800	48.98	51.97	54.26	0.50	0.68	0.82	0.72	0.89	0.96
1850	58.35	57.40	55.74	0.45	0.63	0.76	0.63	0.79	0.85
1900	53.77	52.45	51.72	0.41	0.58	0.72	0.56	0.72	0.77
1950	50.26	49.95	49.80	0.38	0.55	0.68	0.51	0.66	0.71
2000	48.79	48.94	49.06	0.34	0.52	0.64	0.46	0.61	0.65
2100	48.27	48.79	49.14	0.29	0.47	0.58	0.40	0.54	0.57
2250	49.39	49.99	50.41	0.26	0.42	0.53	0.35	0.47	0.51
2500	50.41	50.71	50.85	0.22	0.37	0.47	0.29	0.41	0.43
2750	48.79	48.74	48.69	0.20	0.35	0.45	0.25	0.36	0.39
3000	46.33	46.20	46.07	0.19	0.34	0.45	0.20	0.33	0.35
3250	44.24	44.15	44.04	0.19	0.35	0.45	0.18	0.30	0.33
3500	42.71	42.71	42.61	0.20	0.36	0.46	0.15	0.28	0.31
3750	41.67	41.70	41.68	0.23	0.37	0.46	0.11	0.26	0.30
4000	41.00	41.12	41.11	0.26	0.39	0.46	0.08	0.24	0.29
4250	40.71	40.85	40.89	0.28	0.41	0.48	0.07	0.24	0.31
4500	40.68	40.79	40.82	0.28	0.42	0.51	0.05	0.23	0.32
4750	40.83	40.95	41.00	0.25	0.43	0.55	0.04	0.23	0.34
5000	41.19	41.37	41.43	0.21	0.43	0.59	0.04	0.23	0.35
5250	41.64	41.92	42.02	0.16	0.42	0.63	0.05	0.24	0.37
5500	42.27	42.59	42.81	0.11	0.42	0.65	0.04	0.25	0.38
5750	43.07	43.51	43.82	0.08	0.41	0.68	0.06	0.27	0.40
6000	44.00	44.55	44.99	0.08	0.40	0.68	0.07	0.29	0.43
6250	45.10	45.73	46.25	0.09	0.40	0.67	0.09	0.31	0.44
6500	46.34	47.00	47.61	0.10	0.39	0.65	0.12	0.33	0.46
6750	47.45	47.80	48.16	0.11	0.39	0.61	0.16	0.37	0.51
7000	46.09	44.65	43.27	0.11	0.38	0.58	0.26	0.61	1.00
7250	43.91	47.90	50.15	0.09	0.38	0.56	0.67	0.60	0.62
7500	50.85	51.18	51.21	0.07	0.36	0.53	0.24	0.44	0.52
8000	47.66	45.20	45.08	0.04	0.33	0.55	0.25	0.45	0.52
8500	41.71	41.96	41.88	0.05	0.32	0.58	0.25	0.47	0.50
9000	39.25	39.04	39.09	0.12	0.37	0.61	0.23	0.50	0.53
9500	37.53	36.97	37.06	0.24	0.48	0.73	0.21	0.52	0.57
10000	37.01	36.47	36.52	0.37	0.67	0.94	0.18	0.55	0.61

## Typical Performance Data

FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-55°C	@+25°C	@+100°C
10	0.43	0.61	0.36
20	0.54	0.57	0.51
40	0.55	0.57	0.53
60	0.56	0.56	0.54
80	0.56	0.56	0.55
100	0.56	0.56	0.55
120	0.57	0.56	0.55
140	0.57	0.56	0.55
160	0.57	0.56	0.55
180	0.57	0.56	0.56
200	0.57	0.56	0.56
220	0.57	0.56	0.56
240	0.57	0.56	0.56
260	0.57	0.56	0.56
280	0.57	0.56	0.56
300	0.58	0.56	0.56
320	0.58	0.57	0.57
340	0.58	0.57	0.57
360	0.58	0.57	0.57
380	0.59	0.57	0.57
400	0.59	0.58	0.58
420	0.59	0.58	0.58
440	0.60	0.59	0.58
460	0.60	0.59	0.59
480	0.61	0.59	0.59
500	0.61	0.60	0.60
520	0.62	0.60	0.60
540	0.62	0.61	0.61
560	0.62	0.61	0.61
580	0.63	0.62	0.62
600	0.64	0.63	0.62
620	0.64	0.63	0.63
640	0.65	0.64	0.64
660	0.66	0.65	0.65
680	0.66	0.65	0.65
700	0.67	0.66	0.66
800	0.72	0.71	0.71
820	0.73	0.72	0.73
900	0.78	0.77	0.78
950	0.82	0.82	0.82
1000	0.87	0.87	0.88

## Typical Performance Curves

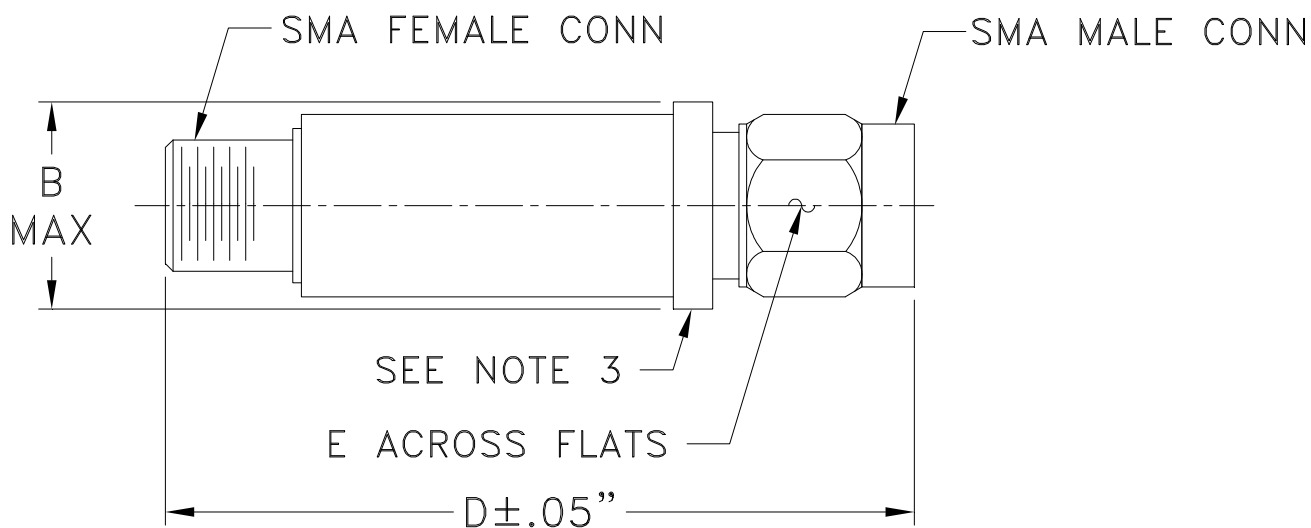


# Case Style

# FF

## FF704

### Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF704	--	.410 (10.41)	--	1.43 (36.32)	.312 (7.92)	10.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .04; 3Pl. ± .030

#### Notes:

1. Case material: Stainless steel.
2. Case finish: Gold plated.
3. Round Flange may have .312 Across Flats in some models.

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RF/IF MICROWAVE COMPONENTS

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, Except +100°C