Coaxial

Low Pass Filter

VLFG-2000+

50Ω DC to 2000 MHz

Generic photo used for illustration purposes only

CASE STYLE: FF704

The Big Deal

- Excellent power handling, 5.5W
- Temperature stable
- Rugged unibody construction
- Good rejection, 42 dB typical

Product Overview

VLFG-2000+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-2000 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. VLFG-2000+ 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.
5.5W 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.

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

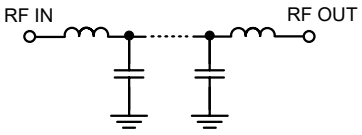
Features

- Low loss, 1.1dB typ.
- Very good rejection 42dB typ.
- Excellent power handling, 5.5W
- Temperature stable
- Connectorized package
- Rugged unibody construction

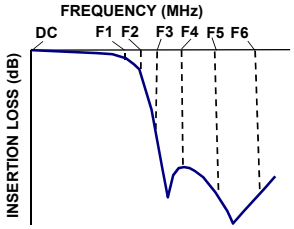
Applications

- Military radio applications
- Test and measurement
- Telecommunications and broadband wireless applications
- Military Radar applications.

Functional Schematic



Typical Frequency Response



Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 2000	—	1.1	1.7	dB
	Freq. Cut-Off	F2*	2350	—	3.0	—	dB
	Return Loss	DC-F1	DC - 2000	—	16	—	dB
Stop Band	Rejection Loss	F3-F4	2850 - 3300	20	40	—	dB
		F4-F5	3300 - 7500	32	42	—	dB
		F5-F6	7500 - 13500	—	28	—	dB

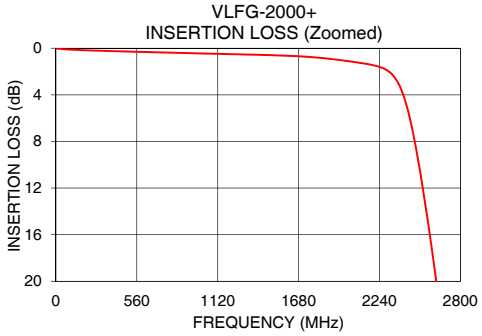
In Application where DC voltage is present at either input or output port, DC blocks are required.
* Typically, a ±5% frequency deviation from the stated value may occur on a unit-to-unit basis.

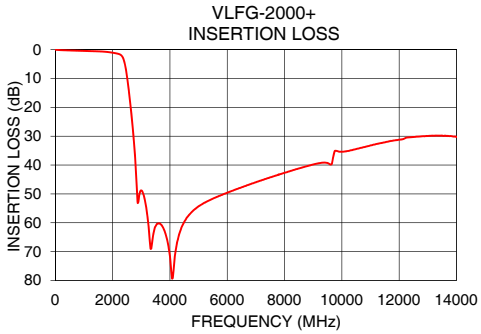
Maximum Ratings	
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	5.5W max.@25°C

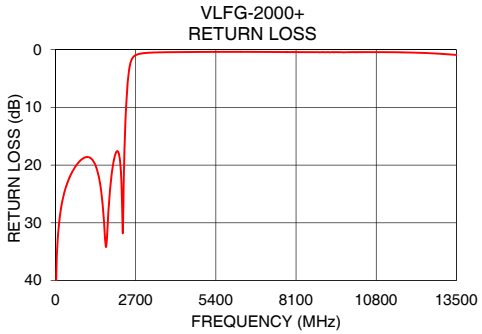
*Passband rating, derate linearly to 1W at 125°C ambient
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	0.04	42.93
100	0.12	31.19
300	0.21	24.71
500	0.29	21.84
700	0.35	20.05
1000	0.45	18.66
1500	0.60	23.15
2000	1.07	18.39
2350	2.62	13.19
2370	3.03	10.78
2510	9.86	2.62
2635	20.34	1.18
2725	29.63	0.88
2850	49.02	0.70
3300	66.56	0.50
5000	54.29	0.39
7500	44.25	0.41
9000	39.81	0.43
11000	33.19	0.43
13500	29.79	0.92





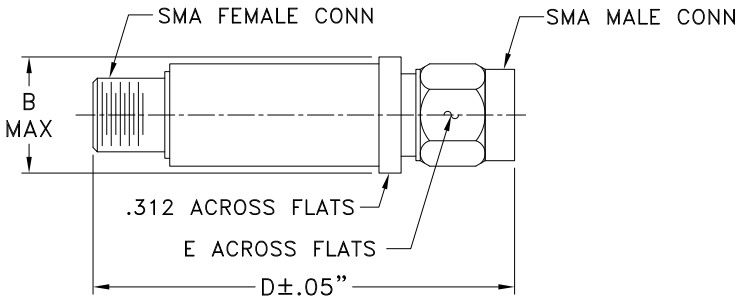


Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

Coaxial Connections

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

Outline Drawing



Outline Dimensions (inch / mm)

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

Coaxial Low Pass Filter VLFG-2000+

Typical Performance Data

FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C
10	0.09	0.10	0.12	39.82	40.22	37.59	39.13	39.15	36.93
100	0.10	0.12	0.16	34.17	33.11	32.40	33.72	32.69	31.92
200	0.13	0.16	0.20	28.32	28.58	28.72	27.72	27.86	27.88
250	0.14	0.17	0.22	26.66	27.22	27.65	25.96	26.33	26.56
300	0.15	0.19	0.24	25.48	26.13	26.73	24.66	25.08	25.42
350	0.16	0.20	0.26	24.62	25.23	25.91	23.68	24.05	24.41
400	0.17	0.22	0.27	23.92	24.46	25.15	22.87	23.15	23.49
500	0.19	0.24	0.31	22.68	23.15	23.82	21.50	21.69	21.99
550	0.20	0.26	0.32	22.08	22.58	23.22	20.89	21.08	21.37
600	0.21	0.27	0.34	21.56	22.07	22.71	20.35	20.55	20.83
650	0.22	0.28	0.36	21.09	21.61	22.24	19.87	20.09	20.36
700	0.23	0.30	0.37	20.67	21.20	21.81	19.47	19.69	19.96
750	0.24	0.31	0.39	20.30	20.82	21.41	19.12	19.34	19.60
1000	0.30	0.38	0.47	19.19	19.57	19.95	18.34	18.47	18.61
1500	0.40	0.51	0.65	22.79	23.21	23.60	23.01	23.10	23.04
1800	0.54	0.68	0.87	31.29	30.42	29.34	25.47	24.71	23.83
2000	0.73	0.92	1.15	21.46	21.58	21.76	20.07	19.92	19.77
2100	0.87	1.08	1.34	20.25	20.87	21.78	19.59	19.84	20.19
2200	1.04	1.29	1.63	22.81	25.04	29.04	21.91	22.89	23.77
2350	1.81	2.32	3.09	18.08	15.15	12.50	16.59	14.76	12.77
2400	2.55	3.30	4.39	11.68	9.98	8.34	11.66	10.38	9.10
2500	6.16	7.57	9.44	4.38	3.85	3.43	5.17	4.83	4.62
2600	12.96	14.88	17.29	1.71	1.69	1.74	2.66	2.79	3.01
2660	18.10	20.23	22.89	1.13	1.21	1.34	2.07	2.27	2.55
2700	21.86	24.14	27.01	0.91	1.03	1.18	1.82	2.05	2.33
2760	28.10	30.69	34.02	0.71	0.85	1.02	1.55	1.78	2.06
2800	32.85	35.78	39.58	0.63	0.77	0.94	1.40	1.63	1.90
2850	40.00	43.52	47.32	0.55	0.69	0.87	1.25	1.47	1.72
3000	50.96	50.58	50.58	0.39	0.54	0.71	0.90	1.10	1.31
3100	50.00	51.00	52.38	0.33	0.48	0.64	0.74	0.92	1.11
3200	53.44	55.22	57.56	0.28	0.43	0.58	0.62	0.79	0.95
3300	60.17	63.10	66.06	0.25	0.39	0.53	0.53	0.68	0.83
4000	63.27	64.23	65.53	0.13	0.24	0.34	0.23	0.34	0.43
4500	82.51	90.81	86.68	0.08	0.18	0.26	0.15	0.25	0.35
5000	74.60	73.67	71.76	0.05	0.14	0.22	0.11	0.22	0.34
5400	70.26	69.48	69.29	0.03	0.13	0.21	0.08	0.21	0.37
5500	68.91	68.59	68.28	0.02	0.12	0.21	0.08	0.21	0.38
5600	67.50	67.41	66.95	0.02	0.12	0.21	0.08	0.21	0.39
5700	66.93	66.79	66.22	0.02	0.12	0.21	0.08	0.22	0.40
5800	66.47	66.99	66.03	0.01	0.12	0.22	0.07	0.22	0.41
5900	66.86	67.02	66.16	0.01	0.12	0.22	0.07	0.22	0.42
6000	66.21	66.28	66.32	0.01	0.12	0.23	0.07	0.23	0.43
6100	64.25	63.79	63.34	0.00	0.12	0.23	0.08	0.23	0.45
6200	62.53	62.55	62.16	0.00	0.12	0.24	0.08	0.24	0.47
6300	62.22	62.24	61.53	0.00	0.12	0.25	0.08	0.25	0.48
6400	60.71	61.12	60.50	0.00	0.13	0.26	0.08	0.26	0.50
6500	59.96	60.43	59.61	0.00	0.13	0.27	0.09	0.26	0.51
6600	60.24	59.80	59.25	0.00	0.14	0.28	0.09	0.27	0.53
6700	59.87	58.61	58.88	0.00	0.14	0.29	0.09	0.28	0.54
6800	58.86	57.71	58.54	0.00	0.15	0.31	0.10	0.28	0.55
7000	55.38	54.97	54.30	0.01	0.16	0.34	0.11	0.30	0.58
7500	52.80	52.57	52.01	0.02	0.20	0.42	0.12	0.32	0.61
8500	44.99	44.48	44.41	0.08	0.29	0.58	0.13	0.32	0.58
9000	41.92	41.61	41.71	0.11	0.33	0.64	0.11	0.30	0.51
10000	36.58	36.95	37.01	0.14	0.36	0.67	0.06	0.22	0.35
11000	33.04	33.27	33.27	0.16	0.37	0.60	0.01	0.18	0.30
11500	31.62	31.78	32.05	0.15	0.33	0.53	0.01	0.17	0.33
12000	31.14	31.25	31.31	0.13	0.31	0.47	0.01	0.19	0.40
13000	29.71	29.93	30.07	0.11	0.29	0.46	0.04	0.21	0.57
13500	29.72	29.94	30.14	0.09	0.30	0.52	0.06	0.23	0.66

*** Temperature test data was based on the underlying chip**

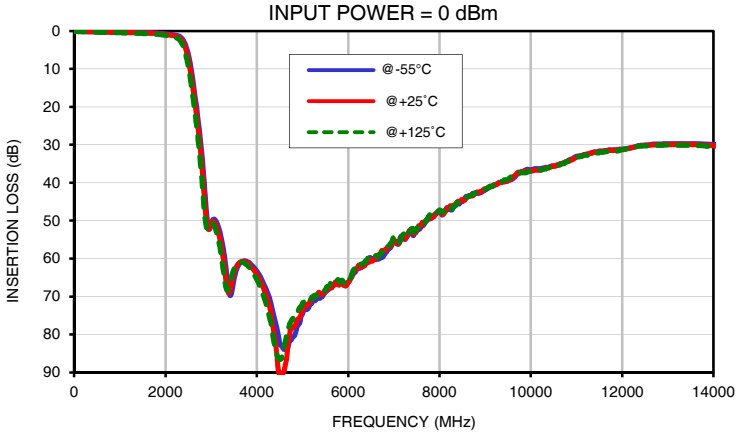
Typical Performance Data

FREQ. (MHz)	GROUP DELAY (nsec)		
	@-55°C	@+25°C	@+125°C
10	0.25	0.27	0.27
50	0.25	0.27	0.27
100	0.26	0.26	0.27
150	0.26	0.26	0.27
200	0.26	0.26	0.27
250	0.26	0.26	0.27
300	0.26	0.26	0.27
350	0.26	0.26	0.27
400	0.26	0.26	0.27
450	0.26	0.26	0.27
500	0.26	0.27	0.27
550	0.26	0.27	0.27
600	0.27	0.27	0.27
650	0.27	0.27	0.28
700	0.27	0.27	0.28
750	0.27	0.28	0.28
800	0.28	0.28	0.29
850	0.28	0.28	0.29
900	0.29	0.29	0.29
950	0.29	0.29	0.30
1000	0.29	0.30	0.30
1050	0.30	0.30	0.31
1100	0.30	0.31	0.31
1150	0.31	0.31	0.32
1200	0.32	0.32	0.33
1250	0.32	0.33	0.33
1300	0.33	0.34	0.34
1350	0.34	0.34	0.35
1400	0.35	0.35	0.36
1450	0.36	0.36	0.37
1500	0.37	0.38	0.38
1550	0.38	0.39	0.40
1600	0.40	0.40	0.41
1650	0.41	0.42	0.43
1700	0.43	0.43	0.45
1750	0.44	0.45	0.47
1800	0.46	0.47	0.49
1850	0.49	0.49	0.51
1900	0.51	0.52	0.54
1950	0.54	0.55	0.57
2000	0.57	0.58	0.60

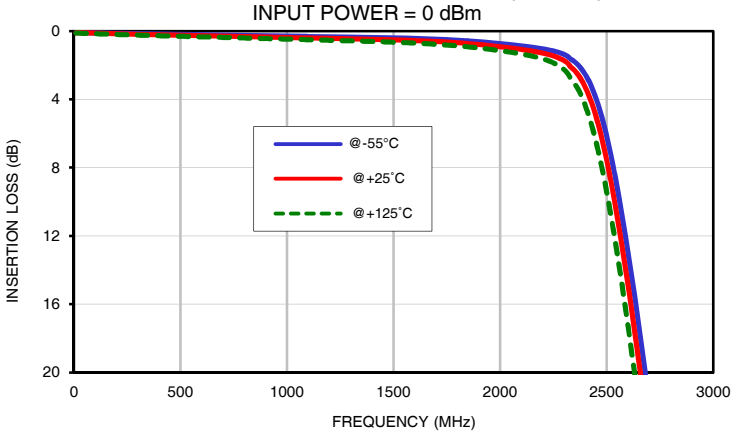
*** Temperature test data was based on the underlying chip**

Typical Performance Curves

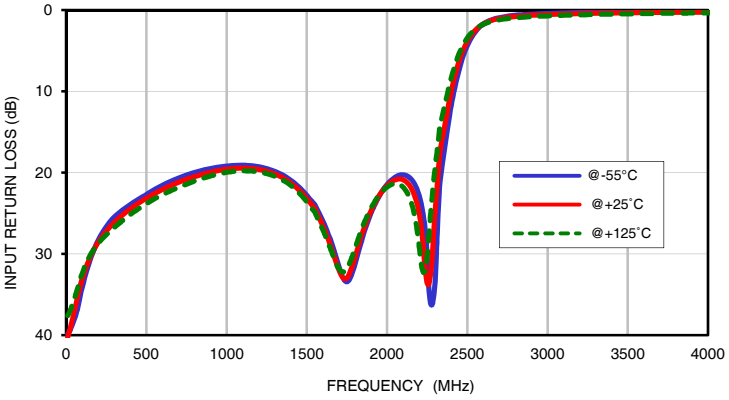
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



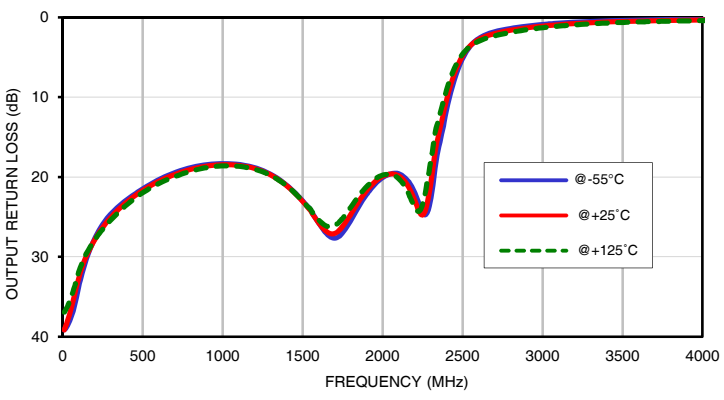
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



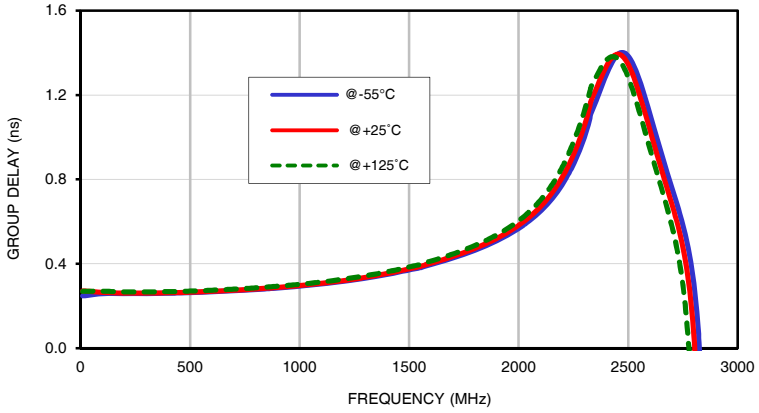
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

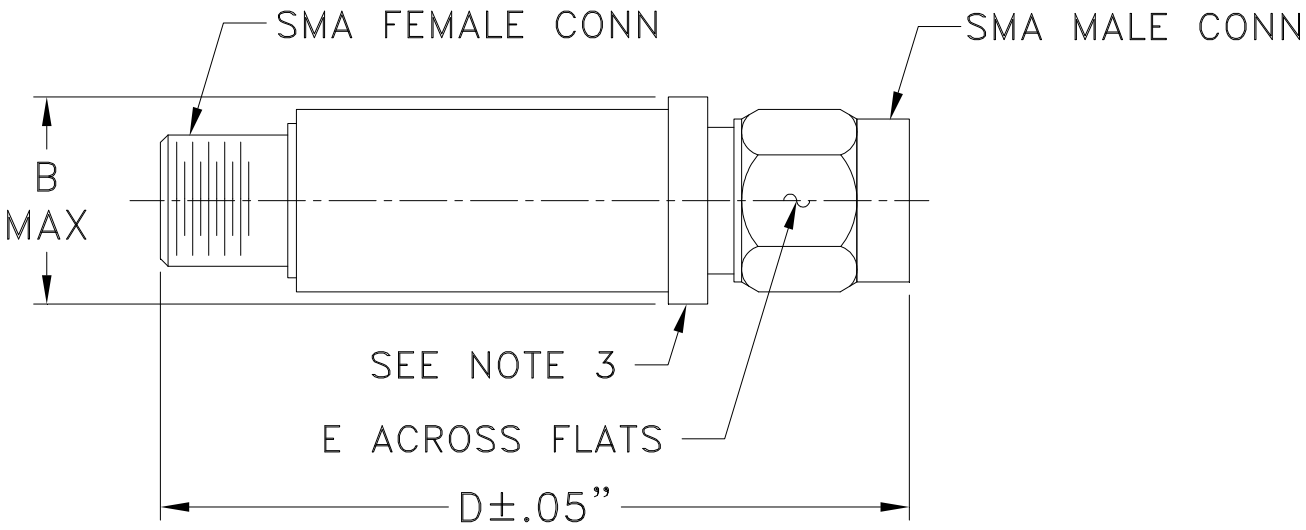


*** Temperature test data was based on the underlying chip**

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.

Mini-Circuits

Environmental Specifications ENV123

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 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° 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 125°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, Except +125°C