

Coaxial Low Pass Filter

VLFG-320+

50Ω DC to 320 MHz



Generic photo used for illustration purposes only
CASE STYLE: FF704

The Big Deal

- Excellent power handling, 3.5W
- Temperature stable
- Rugged, unibody construction
- Good rejection, 33 dB typical

Product Overview

VLFG-320+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-320 MHz bandwidth, these units offer good matching within the passband and high rejection in stopband. VLFG-320+ offer low insertion loss, and excellent power handling capability. It handles up to 3.5W 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.
3.5W 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.

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



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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 dB typical
- Good rejection 33 dB typical
- Excellent power handling, 3.5 W
- Temperature stable
- Connectorized package

Applications

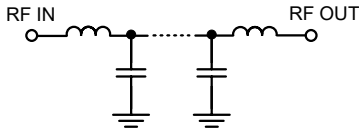
- Harmonic Rejection
- VHF/UHF transmitters / receivers
- RF suppression for DC lines on PCB
- Anti-aliasing for A/D converter

Electrical Specifications at 25°C

	Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 320	—	1.0	1.7	dB
	Freq. Cut-Off	F2*	440	—	3.0	—	dB
	Return Loss	DC-F1	DC - 320	—	21	—	dB
Stop Band	Rejection Loss	F3-F4	660 - 2000	25	33	—	dB
		F4-F5	2000 - 6000	—	25	—	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.

Functional Schematic



Maximum Ratings

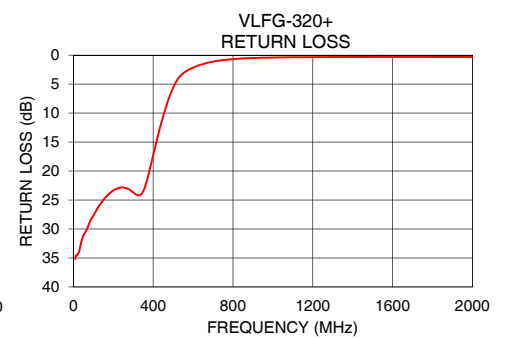
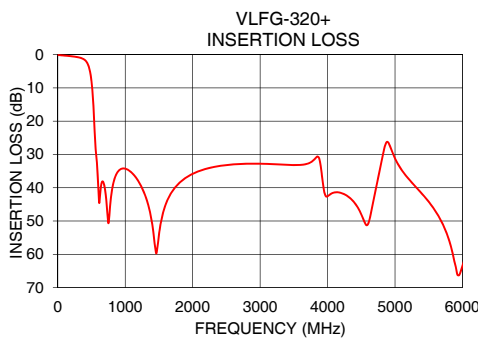
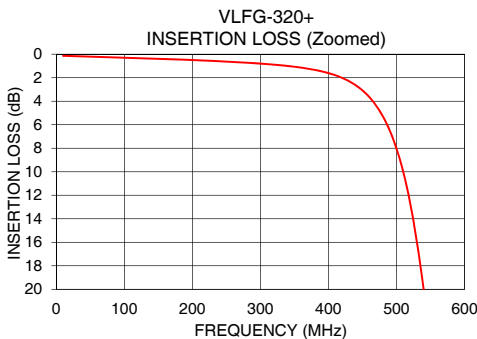
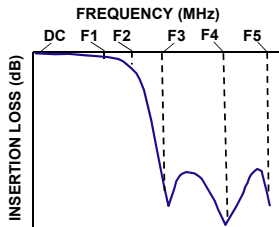
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	3.5 W max. @25°C

*Passband rating, derate linearly to 0.6 W 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	0.14	35.16
50	0.21	31.12
100	0.30	27.72
320	0.89	24.14
400	1.61	17.26
440	2.64	11.80
450	3.08	10.58
525	14.22	4.06
540	20.07	3.44
570	30.30	2.67
660	38.13	1.43
700	40.46	1.12
800	41.20	0.68
1000	34.27	0.41
1500	54.12	0.32
2000	35.82	0.31
3000	32.79	0.33
4000	42.56	0.35
5000	31.20	0.60
6000	63.43	0.34

Typical Frequency Response



Notes

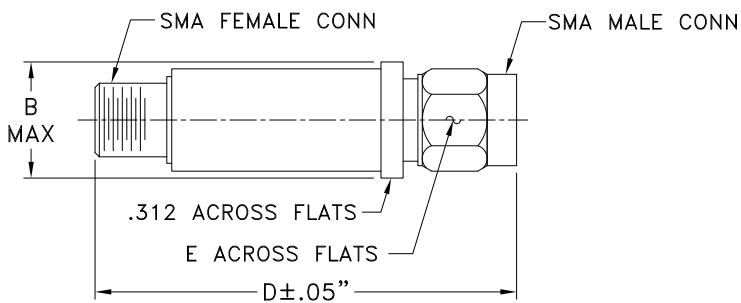
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Coaxial Connections

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

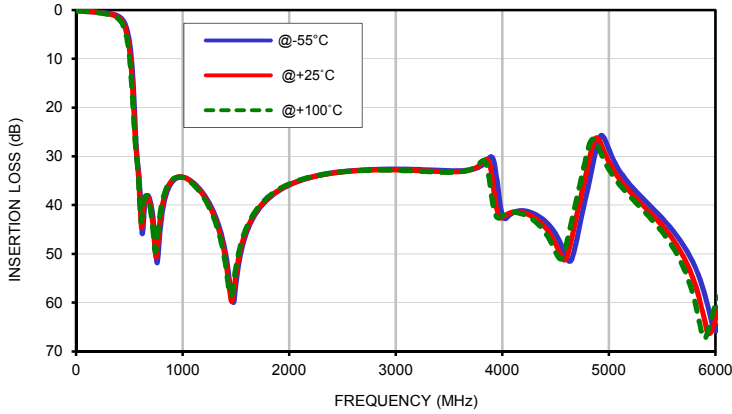
FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
10	0.11	0.14	0.17	36.76	34.93	33.54	36.73	35.16	33.44
50	0.18	0.21	0.24	35.37	33.19	31.48	32.24	31.12	29.91
100	0.26	0.30	0.33	34.81	34.04	32.83	28.30	27.72	27.34
150	0.35	0.39	0.43	33.31	37.84	35.65	25.13	25.03	24.79
200	0.43	0.50	0.55	32.79	47.94	34.24	23.59	23.36	22.86
250	0.54	0.63	0.70	35.23	47.02	35.60	23.57	22.83	22.40
320	0.74	0.89	1.01	40.22	34.42	33.04	25.92	24.14	23.49
400	1.31	1.61	1.88	19.65	18.33	17.09	18.65	17.26	15.94
440	2.12	2.64	3.13	13.23	12.63	12.05	12.51	11.80	11.04
500	6.41	8.03	9.49	7.83	8.48	9.46	5.79	5.61	5.55
525	11.49	14.22	16.43	8.30	9.66	10.87	3.99	4.06	4.20
540	16.75	20.07	22.22	8.28	8.79	8.83	3.26	3.44	3.66
570	29.79	30.30	30.76	4.59	4.49	4.42	2.42	2.67	2.91
600	37.42	39.51	40.94	2.54	2.62	2.70	1.92	2.15	2.35
660	38.39	38.13	38.06	1.36	1.49	1.61	1.26	1.43	1.57
675	38.07	38.33	38.61	1.23	1.36	1.49	1.14	1.30	1.43
700	39.51	40.46	41.25	1.08	1.21	1.33	0.97	1.12	1.23
800	42.78	41.20	40.19	0.73	0.86	0.98	0.58	0.68	0.74
1000	34.28	34.27	34.37	0.43	0.56	0.66	0.33	0.41	0.44
1200	37.85	38.19	38.59	0.28	0.42	0.51	0.27	0.34	0.35
1500	56.13	54.12	52.63	0.19	0.31	0.41	0.25	0.32	0.32
1800	38.73	38.60	38.36	0.17	0.28	0.37	0.24	0.31	0.32
1900	37.08	36.97	36.78	0.16	0.28	0.36	0.24	0.31	0.32
2000	35.89	35.82	35.64	0.16	0.27	0.36	0.24	0.31	0.32
2100	34.99	34.96	34.82	0.17	0.28	0.36	0.24	0.32	0.33
2200	34.31	34.32	34.21	0.18	0.28	0.36	0.24	0.32	0.33
2300	33.81	33.83	33.76	0.18	0.29	0.36	0.24	0.32	0.33
2400	33.43	33.47	33.41	0.18	0.29	0.37	0.23	0.32	0.34
2500	33.13	33.19	33.17	0.19	0.30	0.38	0.23	0.32	0.34
2600	32.93	32.99	33.00	0.19	0.31	0.39	0.23	0.32	0.34
2700	32.79	32.87	32.89	0.19	0.31	0.40	0.23	0.32	0.34
2800	32.70	32.80	32.85	0.19	0.32	0.41	0.22	0.33	0.35
2900	32.62	32.77	32.84	0.20	0.33	0.42	0.22	0.33	0.35
3000	32.60	32.79	32.88	0.20	0.34	0.43	0.22	0.33	0.36
3100	32.63	32.84	32.94	0.20	0.34	0.44	0.21	0.33	0.36
3200	32.70	32.92	33.03	0.21	0.35	0.45	0.21	0.33	0.37
3300	32.78	33.02	33.14	0.22	0.36	0.46	0.21	0.33	0.38
3400	32.86	33.11	33.24	0.22	0.37	0.47	0.20	0.33	0.38
3500	32.96	33.19	33.29	0.23	0.38	0.48	0.20	0.33	0.39
3600	32.97	33.13	33.19	0.25	0.39	0.50	0.19	0.33	0.40
3700	32.75	32.80	32.70	0.28	0.43	0.55	0.19	0.34	0.41
3800	31.96	31.57	31.14	0.37	0.61	0.87	0.18	0.35	0.43
3900	30.14	33.75	38.37	1.07	1.21	0.94	0.21	0.38	0.45
4000	42.20	42.56	42.18	0.51	0.52	0.56	0.18	0.35	0.44
4100	41.57	41.42	41.48	0.32	0.43	0.51	0.17	0.35	0.45
4200	41.14	41.56	41.93	0.28	0.41	0.50	0.16	0.35	0.46
4300	41.83	42.59	43.23	0.27	0.41	0.51	0.16	0.35	0.47
4400	43.29	44.53	45.59	0.26	0.41	0.52	0.16	0.36	0.49
4500	45.94	48.00	49.70	0.25	0.41	0.54	0.16	0.37	0.51
4600	50.60	50.92	48.13	0.25	0.42	0.57	0.16	0.40	0.56
4700	46.84	41.87	38.37	0.24	0.43	0.61	0.20	0.47	0.68
4800	36.63	32.07	28.83	0.25	0.49	0.72	0.34	0.83	1.36
4900	26.84	26.43	28.14	0.35	0.56	0.71	1.30	1.46	1.15
5000	28.64	31.20	32.71	0.27	0.47	0.69	0.59	0.60	0.69
5100	33.01	34.72	35.83	0.22	0.46	0.70	0.24	0.45	0.60
5200	35.90	37.30	38.30	0.21	0.46	0.73	0.16	0.40	0.57
5400	40.46	41.84	42.95	0.20	0.48	0.78	0.11	0.37	0.56
5500	42.71	44.21	45.52	0.21	0.49	0.81	0.10	0.37	0.56
5750	50.13	52.86	55.72	0.24	0.53	0.86	0.08	0.36	0.56
6000	65.80	63.43	60.46	0.31	0.60	0.92	0.06	0.34	0.55

Typical Performance Data

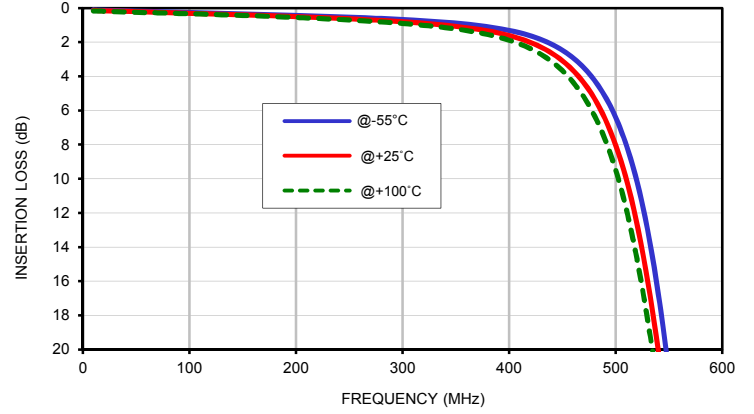
FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-55°C	@+25°C	@+100°C
10	1.05	1.08	1.07
20	1.05	1.06	1.06
30	1.05	1.06	1.05
40	1.05	1.05	1.05
50	1.05	1.05	1.05
60	1.05	1.05	1.05
70	1.05	1.05	1.05
80	1.05	1.05	1.05
90	1.05	1.06	1.06
100	1.06	1.06	1.06
110	1.06	1.07	1.07
120	1.07	1.07	1.07
130	1.07	1.08	1.08
140	1.08	1.09	1.09
150	1.09	1.10	1.10
160	1.10	1.11	1.11
170	1.11	1.12	1.12
180	1.12	1.13	1.13
190	1.13	1.14	1.14
200	1.15	1.15	1.16
210	1.16	1.17	1.17
220	1.18	1.19	1.19
225	1.19	1.20	1.21
230	1.21	1.21	1.22
235	1.22	1.23	1.23
240	1.23	1.24	1.24
245	1.24	1.25	1.26
250	1.25	1.26	1.27
255	1.27	1.28	1.28
260	1.28	1.29	1.30
265	1.29	1.30	1.31
270	1.31	1.32	1.33
275	1.32	1.34	1.35
280	1.34	1.35	1.36
285	1.36	1.37	1.38
290	1.37	1.39	1.40
295	1.39	1.41	1.42
300	1.41	1.43	1.44
305	1.43	1.45	1.46
310	1.45	1.47	1.49
320	1.50	1.52	1.54

Typical Performance Curves

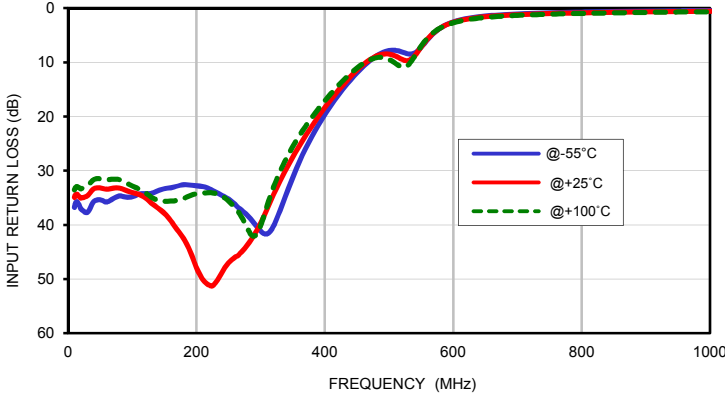
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



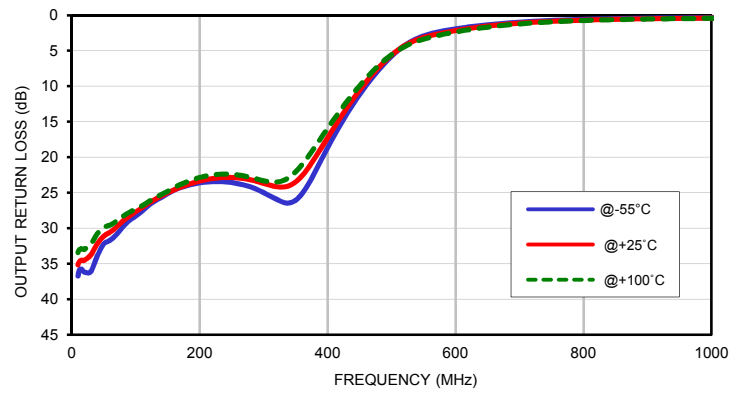
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



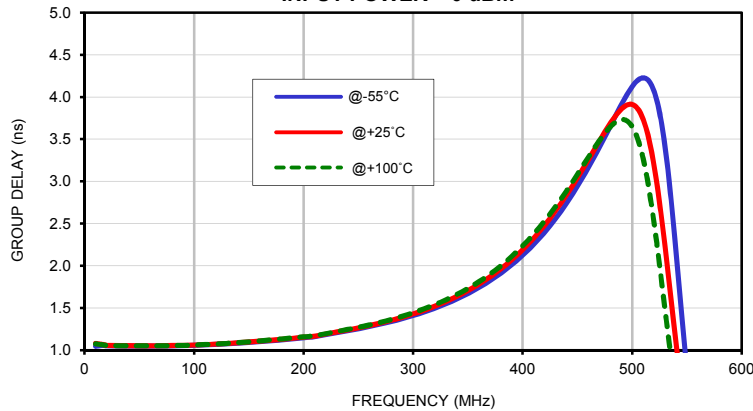
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm

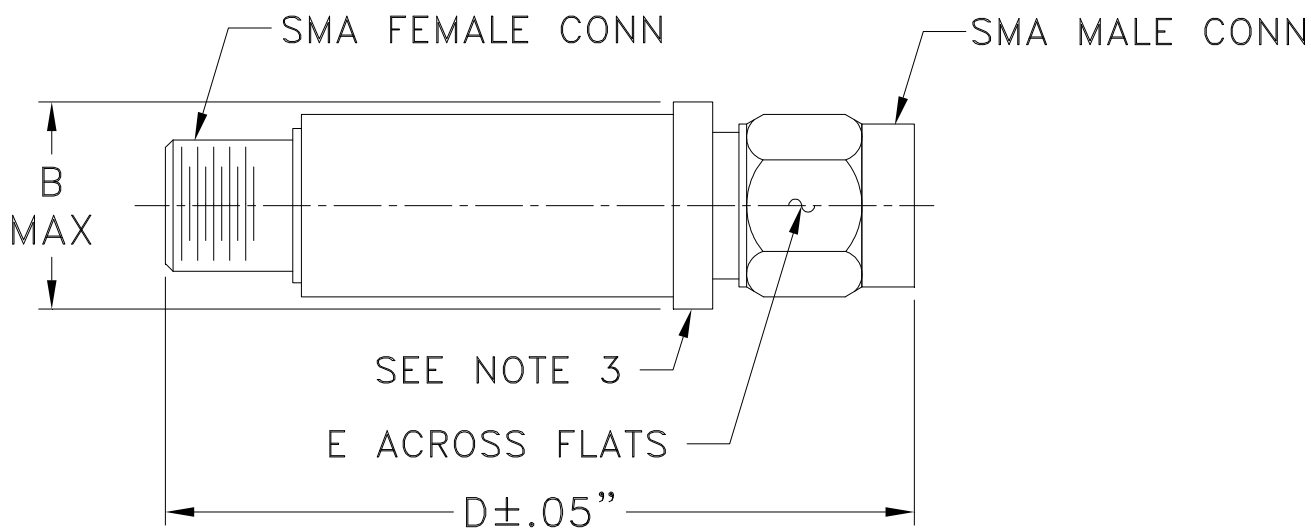


Case Style

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