

# Coaxial Low Pass Filter

## VLFG-2250+

50Ω DC to 2250 MHz



Generic photo used for illustration purposes only  
CASE STYLE: FF704

### The Big Deal

- Excellent power handling, 4.5W
- Temperature stable
- Rugged unibody construction
- Good rejection, 40 dB typical

### Product Overview

VLFG-2250+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-2250 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. VLFG-2250+ offer low insertion loss, and excellent power handling capability. It handles up to 4.5W 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.
4.5W 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.  
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**+RoHS Compliant**

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

### Features

- Low loss, 1.2 dB typical
- Good rejection 40 dB typical
- Excellent power handling, 4.5W
- Temperature stable
- Connectorized package
- Rugged unibody construction

### Applications

- Military radar applications
- Test and measurement
- Telecommunication and broadband wireless applications

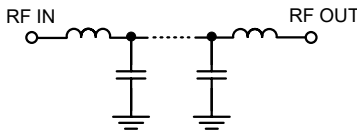
### Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 2250	—	1.2	2.0	dB
	Freq. Cut-Off	F2*	2500	—	3.0	—	dB
	Return Loss	DC-F1	DC - 2250	—	21	—	dB
Stop Band	Rejection Loss	F3-F4	2950 - 3600	20	30	—	dB
		F4-F5	3600 - 8000	32	40	—	dB
		F5-F6	8000 - 15000	—	26	—	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*	4.5W max. @25°C

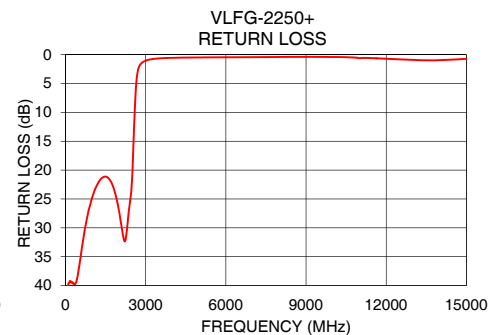
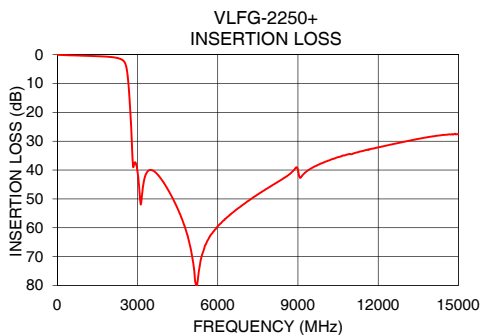
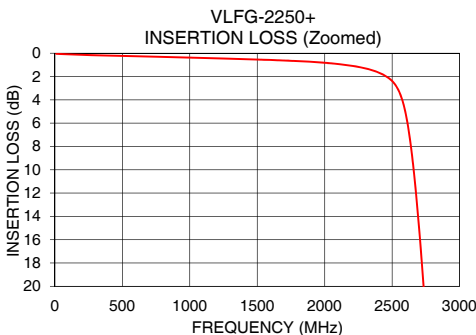
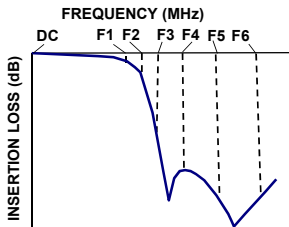
\*Passband rating, derate linearly to 1W at 125°C ambient

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	0.05	45.25
100	0.10	40.02
1000	0.38	24.72
1400	0.51	21.26
1800	0.67	23.09
2000	0.82	27.01
2250	1.17	32.00
2500	2.39	20.74
2560	3.52	13.40
2760	24.75	2.01
2800	33.02	1.70
2950	38.01	1.14
3000	40.49	1.04
3600	40.31	0.61
5000	67.78	0.48
8000	45.53	0.41
10000	37.18	0.40
11000	34.51	0.61
12000	32.15	0.70
15000	27.57	0.73

### Typical Frequency Response



#### Notes

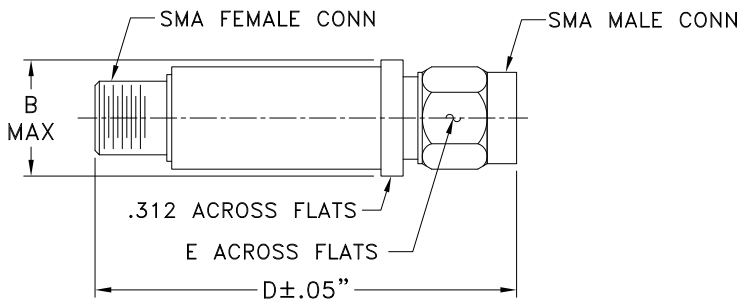
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**Coaxial Connections**

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

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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	0.01	0.03	0.04	46.98	42.99	42.09	35.26	33.18	33.54
60	0.03	0.05	0.06	40.64	42.82	39.65	43.44	43.14	38.62
100	0.03	0.06	0.08	40.86	41.84	39.99	38.54	38.39	37.14
140	0.04	0.07	0.09	42.23	40.55	41.17	38.53	36.85	35.79
180	0.05	0.08	0.10	41.16	39.60	38.94	36.76	35.36	34.27
200	0.05	0.08	0.10	40.35	39.08	36.68	34.94	34.57	33.09
240	0.05	0.09	0.11	39.41	38.09	33.17	33.72	33.08	30.69
300	0.06	0.11	0.13	46.62	36.78	30.27	32.43	30.74	27.99
400	0.07	0.13	0.16	37.93	34.31	28.70	30.16	28.30	26.00
500	0.08	0.15	0.18	32.27	31.64	28.09	26.93	26.02	24.40
800	0.13	0.22	0.26	25.58	25.04	24.02	22.27	21.65	20.92
1000	0.17	0.27	0.33	22.60	22.28	22.26	20.42	19.99	19.77
1500	0.27	0.42	0.50	20.69	20.91	21.63	20.81	20.66	21.14
2000	0.47	0.70	0.84	31.03	35.12	35.03	36.73	45.53	42.15
2250	0.77	1.10	1.34	41.78	42.12	35.71	37.00	37.59	34.47
2300	0.87	1.25	1.53	41.34	35.24	31.22	37.49	36.17	32.57
2400	1.19	1.71	2.13	29.02	25.06	22.91	30.71	28.79	28.23
2500	1.87	2.86	3.80	18.56	14.91	12.73	23.41	19.92	17.50
2550	2.69	4.40	6.07	12.91	9.59	7.86	16.39	12.67	10.61
2600	4.54	7.62	10.33	7.71	5.51	4.62	9.72	7.33	6.25
2650	8.33	13.06	16.74	4.19	3.27	3.00	5.32	4.35	3.98
2680	11.69	17.32	21.53	2.98	2.57	2.48	3.79	3.35	3.20
2695	13.65	19.71	24.20	2.57	2.33	2.30	3.25	3.00	2.92
2700	14.34	20.55	25.13	2.45	2.26	2.24	3.10	2.89	2.83
2745	21.50	29.20	33.57	1.74	1.80	1.88	2.13	2.19	2.23
2800	33.06	36.19	35.01	1.33	1.49	1.60	1.52	1.68	1.76
2950	34.75	36.73	38.45	0.85	1.07	1.20	0.79	0.99	1.08
3000	36.70	39.82	42.32	0.76	0.99	1.12	0.66	0.86	0.95
3250	46.94	43.70	42.54	0.51	0.74	0.86	0.31	0.49	0.56
3500	40.81	40.66	40.72	0.39	0.62	0.73	0.15	0.31	0.38
3600	40.80	41.05	41.29	0.37	0.59	0.70	0.11	0.27	0.33
4000	44.48	45.40	45.97	0.32	0.51	0.59	0.02	0.14	0.21
4250	47.72	48.77	49.43	0.30	0.49	0.55	0.09	0.09	0.16
4500	50.63	51.71	52.37	0.28	0.46	0.52	0.14	0.05	0.13
4750	52.92	53.80	54.57	0.24	0.44	0.50	0.19	0.01	0.11
5000	53.64	54.64	55.42	0.20	0.42	0.48	0.22	0.01	0.09
5250	54.21	54.39	54.88	0.17	0.40	0.47	0.26	0.04	0.09
5500	53.17	53.33	53.18	0.11	0.37	0.46	0.28	0.05	0.08
5750	52.49	52.52	53.17	0.06	0.33	0.45	0.30	0.06	0.08
6000	51.66	51.55	52.56	0.00	0.30	0.44	0.30	0.07	0.08
6250	53.25	53.95	53.35	0.06	0.26	0.43	0.31	0.07	0.08
6500	51.30	52.37	51.82	0.11	0.22	0.41	0.30	0.07	0.08
6750	51.33	51.18	52.42	0.15	0.19	0.40	0.29	0.06	0.09
7000	50.91	51.09	51.40	0.19	0.16	0.39	0.27	0.04	0.10
7500	47.16	48.81	50.87	0.22	0.11	0.37	0.21	0.00	0.11
8000	49.87	49.26	48.93	0.21	0.09	0.35	0.17	0.04	0.12
8500	50.46	48.51	47.46	0.13	0.09	0.31	0.12	0.09	0.15
9000	43.51	46.08	45.68	0.03	0.15	0.27	1.04	0.73	0.37
9500	43.41	43.73	42.29	0.23	0.28	0.29	0.13	0.12	0.13
10000	39.39	38.87	39.18	0.40	0.40	0.29	0.20	0.09	0.12
10500	37.00	37.73	38.45	0.59	0.58	0.38	0.25	0.06	0.14
11000	35.48	35.08	35.26	0.67	0.69	0.45	0.31	0.03	0.16
11500	33.88	33.16	32.51	0.59	0.79	0.59	0.33	0.02	0.19
12000	31.84	32.26	31.72	0.57	0.89	0.71	0.35	0.02	0.19
12500	30.99	31.25	30.64	0.48	0.93	0.87	0.36	0.03	0.20
13000	29.45	30.12	29.85	0.40	0.98	1.02	0.35	0.08	0.26
13500	28.13	29.16	29.22	0.23	0.96	1.14	0.33	0.15	0.35
14000	27.31	28.16	28.50	0.00	0.89	1.19	0.30	0.23	0.47
14500	26.60	27.37	27.69	0.25	0.77	1.24	0.24	0.35	0.66
15000	26.23	26.89	27.17	0.34	0.66	1.31	0.15	0.52	0.92

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

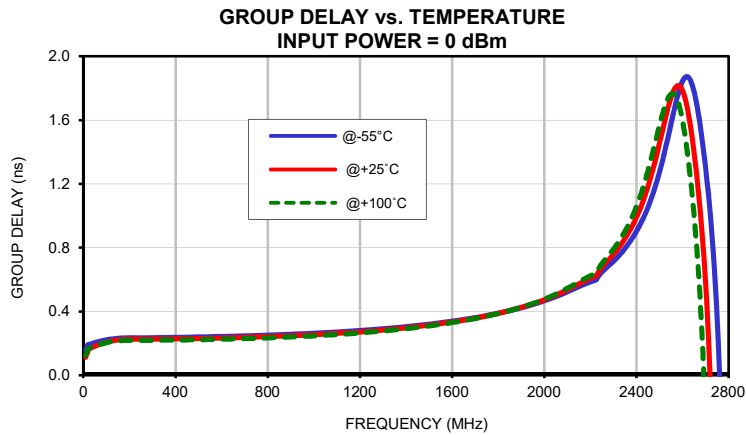
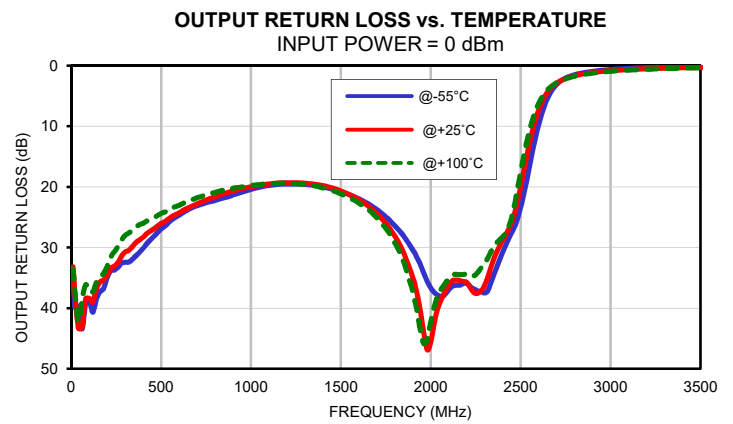
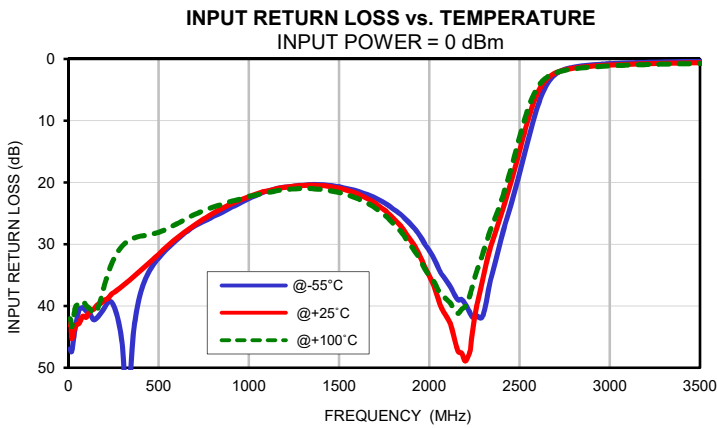
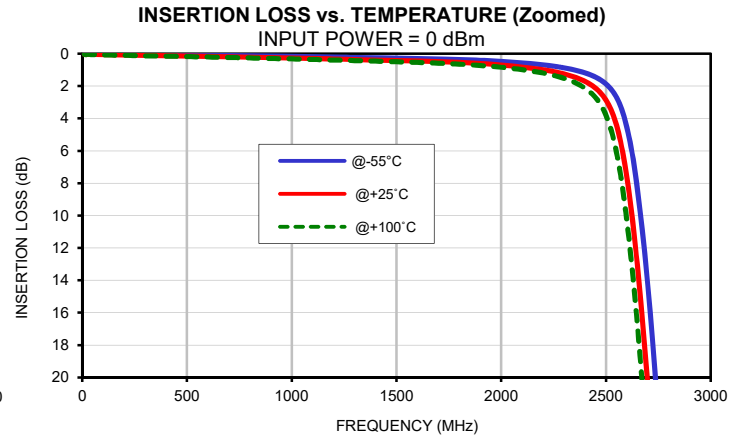
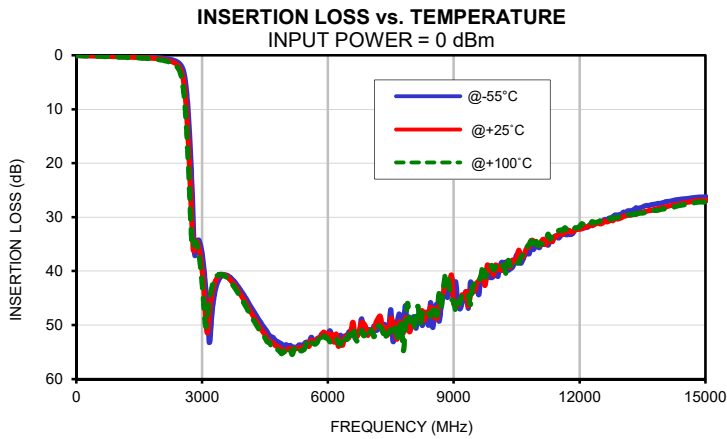


## Typical Performance Data

FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-55°C	@+25°C	@+100°C
10	0.16	0.11	0.12
80	0.22	0.20	0.20
140	0.23	0.22	0.21
200	0.23	0.23	0.22
260	0.24	0.23	0.22
320	0.24	0.23	0.22
380	0.24	0.23	0.22
440	0.24	0.23	0.22
500	0.24	0.23	0.22
560	0.24	0.23	0.22
620	0.24	0.23	0.23
680	0.25	0.24	0.23
740	0.25	0.24	0.23
800	0.25	0.24	0.23
860	0.25	0.25	0.24
920	0.26	0.25	0.24
980	0.26	0.25	0.25
1040	0.27	0.26	0.25
1100	0.27	0.26	0.26
1160	0.28	0.27	0.26
1220	0.28	0.27	0.27
1280	0.29	0.28	0.27
1340	0.30	0.29	0.28
1400	0.30	0.30	0.29
1460	0.31	0.31	0.30
1520	0.32	0.32	0.31
1580	0.33	0.33	0.33
1640	0.35	0.34	0.34
1700	0.36	0.36	0.36
1760	0.38	0.38	0.37
1820	0.40	0.39	0.39
1880	0.42	0.42	0.42
1940	0.44	0.44	0.44
2000	0.47	0.47	0.48
2040	0.49	0.50	0.50
2060	0.50	0.51	0.52
2100	0.52	0.54	0.54
2120	0.54	0.55	0.56
2200	0.59	0.61	0.62
2240	0.63	0.66	0.68
2250	0.65	0.68	0.70

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

## Typical Performance Curves



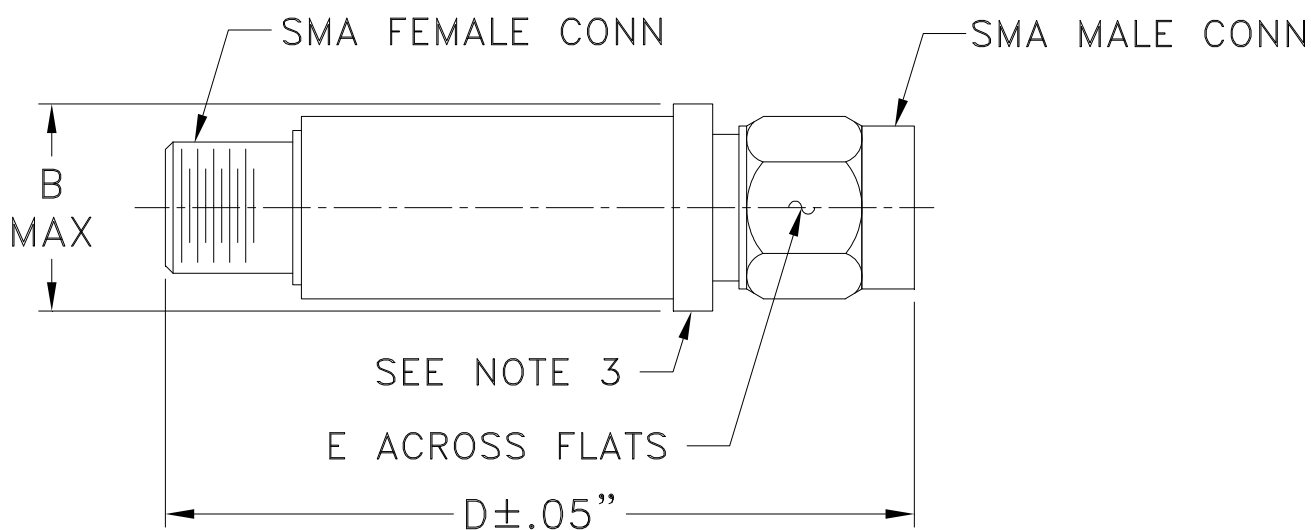
\*Temperature test data was based on the underlying chip.

# 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.

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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