

Coaxial

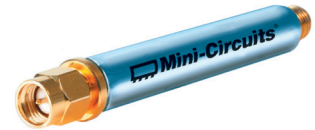
# Low Pass Filter

VLFX-500+

50Ω DC to 500 MHz (40 dB Typ. Isolation up to 20 GHz)

## The Big Deal

- Very good rejection, 40 dB typ. up to 20 GHz
- Excellent power handling, 10W
- Rugged unibody construction



Generic photo used for illustration purposes only  
CASE STYLE: FF1118

## Product Overview

VLFX-500+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-500 MHz bandwidth, these units offer good matching within the passband and high rejection in stopband, 40 dB typ. up to 20 GHz. This will find its applications in harmonic rejection, transmitters / receivers and test instrumentation.

## Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application
Fast roll-off	Provides very good adjacent band rejection
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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Connectors Model

SMA VLFX-500+

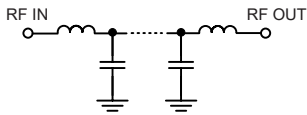
## Features

- Very good isolation, 40 dB typ. up to 20 GHz
- Excellent power handling, 10W
- Temperature stable LTCC internal structure
- Re-entry frequency > 20 GHz
- Protected by US patent 6,943,646
- Rugged unibody construction

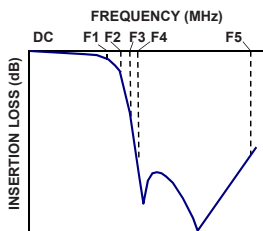
## Applications

- Harmonic rejection
- Transmitters/receivers
- Lab use
- Test instrumentation

## Functional Schematic



## Typical Frequency Response



## Electrical Specifications<sup>(1)</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC-500	—	1.1	dB
	Freq. Cut-Off	F2	750	—	3.0	dB
	VSWR	DC-F1	DC-500	—	1.15	:1
Stop Band	Insertion Loss	F3	900	20	33	dB
		F4-F5	1100-20000	—	40	dB
	VSWR	F3-F5	900-20000	—	10	:1

(1) In Application where DC voltage is present at either input or output ports, coupling capacitors are required.

## Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	10W max.

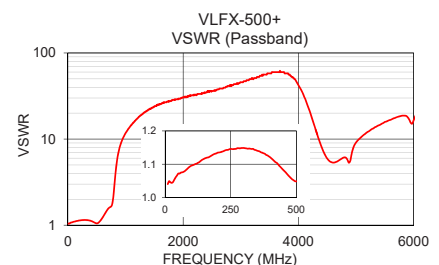
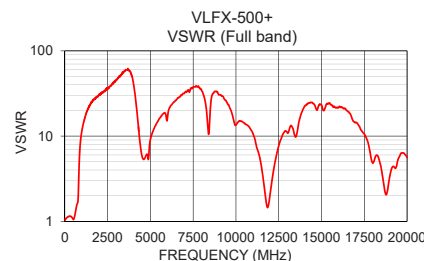
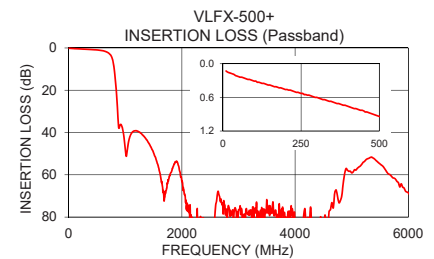
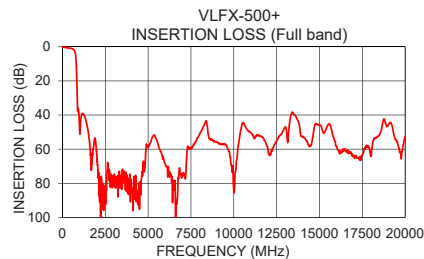
\*Passband rating, derate linearly to 3.5W at 100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

## Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
10	0.13	1.04
250	0.53	1.15
500	0.94	1.05
730	2.99	1.62
750	3.73	1.65
840	19.87	4.87
865	30.17	6.37
900	37.15	8.08
1100	40.78	14.50
1500	49.60	23.81
2000	63.15	30.49
4000	82.68	42.38
5000	59.06	9.13
8000	51.44	34.07
10000	83.79	13.49
12500	55.46	7.66
15000	45.93	23.18
17500	63.27	10.56
18500	51.77	4.08
20000	52.75	5.61

## +RoHS Compliant

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



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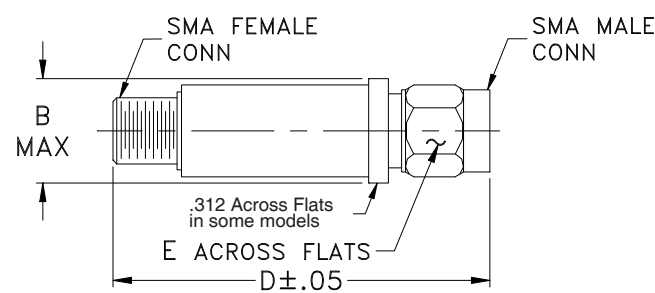


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Coaxial Connections

INPUT	SMA-Male
OUTPUT	SMA-Female

Outline Drawing



Outline Dimensions ( <sup>inch</sup><sub>mm</sub> )

B	D	E	wt.
.410	2.67	.312	grams
10.41	67.82	7.92	17.0

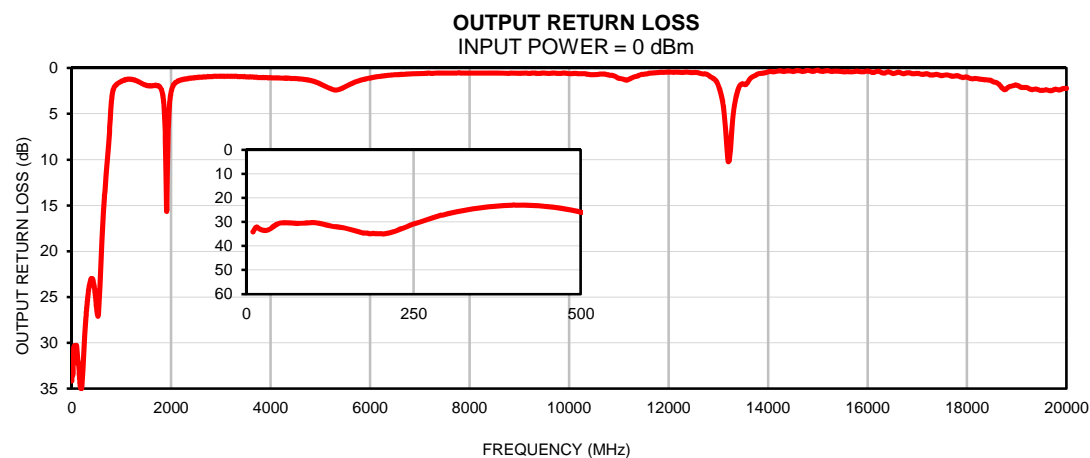
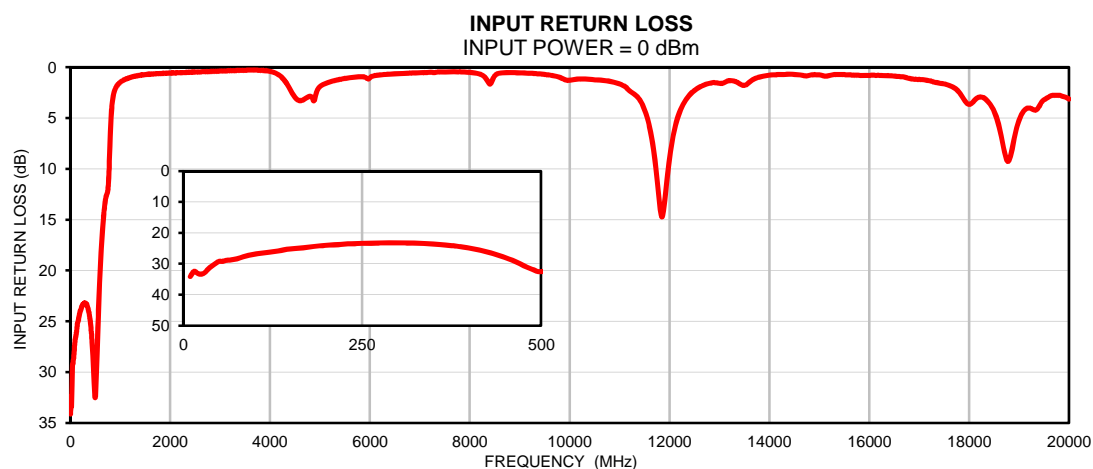
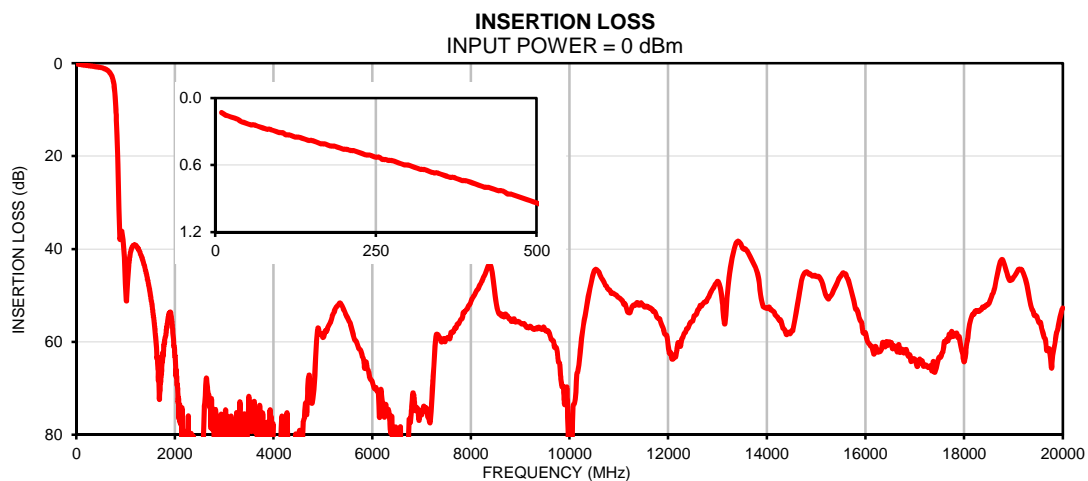
Note: Please refer to case style drawing for details

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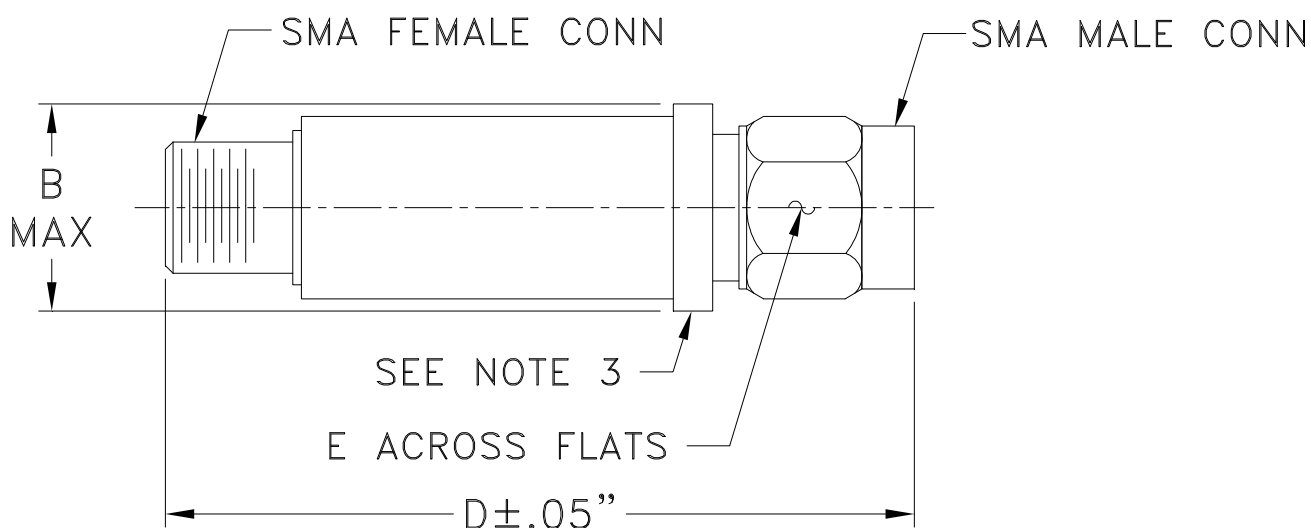
## Typical Performance Data

FREQ.	INSERTION LOSS	INPUT RETURN LOSS	OUTPUT RETURN LOSS
(MHz)	(dB)	(dB)	(dB)
10	0.13	34.12	34.17
50	0.23	29.21	30.47
75	0.27	28.37	30.60
100	0.31	26.82	30.28
200	0.46	24.00	34.90
300	0.60	23.19	26.66
500	0.94	32.52	25.97
525	1.00	30.44	26.90
550	1.08	26.43	26.39
575	1.17	22.94	23.69
600	1.29	20.05	20.48
625	1.45	17.72	17.66
650	1.66	15.83	15.29
675	1.94	14.33	13.27
700	2.31	13.25	11.53
725	2.85	12.63	9.92
750	3.73	12.23	8.18
775	5.46	10.57	6.07
800	9.00	7.11	3.99
825	15.06	4.51	2.74
850	23.61	3.20	2.22
875	34.90	2.54	1.98
900	37.15	2.16	1.83
925	36.22	1.91	1.72
950	37.99	1.73	1.62
975	41.75	1.60	1.53
1000	47.97	1.49	1.46
1100	40.78	1.20	1.25
1200	39.23	1.01	1.23
1250	39.80	0.94	1.28
1500	49.60	0.73	1.88
1750	63.96	0.64	1.94
2000	63.15	0.57	2.72
2500	88.82	0.48	1.04
2750	73.96	0.43	0.93
3000	76.71	0.38	0.89
3500	71.73	0.30	0.95
4000	82.68	0.41	1.05
5000	59.06	1.91	1.73
7500	59.29	0.46	0.55
8000	51.44	0.51	0.54
9000	55.88	0.57	0.58
10000	83.79	1.29	0.60
11000	50.49	1.64	1.11
11500	52.12	4.17	0.67
12000	60.56	8.98	0.44
12500	55.46	2.28	0.49
13000	46.96	1.59	1.87
13500	39.56	1.78	1.72
14000	52.65	0.79	0.41
14500	57.66	0.72	0.37
15000	45.93	0.75	0.24
15500	45.85	0.73	0.39
16000	58.06	0.80	0.34
16500	60.12	0.88	0.58
17000	63.73	1.20	0.57
18500	51.77	4.35	1.41
19000	46.12	5.19	1.87
19500	55.38	3.20	2.45
20000	52.75	3.13	2.21

## Typical Performance Curves



### Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF1118	--	.410 (10.41)	--	2.67 (67.82)	.312 (7.92)	17.0

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.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

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
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I