

Coaxial

# Low Pass Filter

VLFX-400+

50Ω DC to 400 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-400+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-400 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.  
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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Connectors Model

SMA VLFX-400+

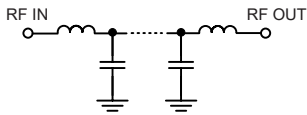
## Features

- 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

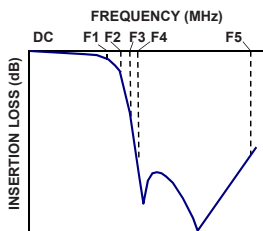
## Applications

- 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	—	1.0	1.6	dB
	Freq. Cut-Off	F2	—	3.0	—	dB
	VSWR	DC-F1	—	1.15	—	:1
Stop Band	Insertion Loss	F3	20	27	—	dB
		F4-F5	—	40	—	dB
	VSWR	F3-F5	—	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.

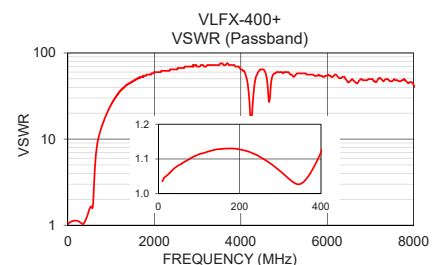
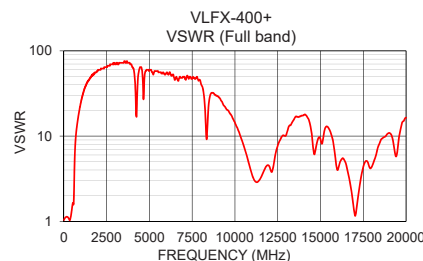
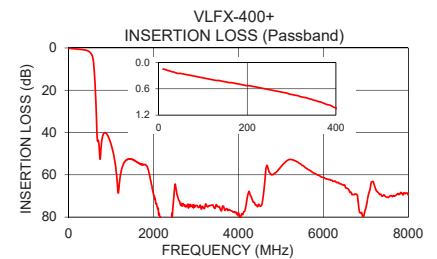
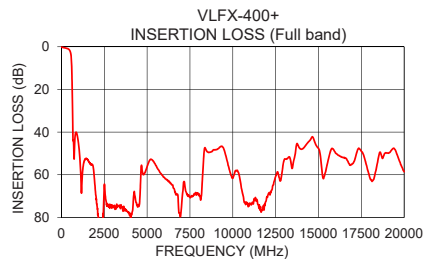
\*Passband rating, derate linearly to 3.5W at 100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

## Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
10	0.15	1.04
100	0.35	1.11
400	1.04	1.12
500	2.00	1.54
540	3.01	1.64
600	10.02	2.61
630	20.66	5.09
650	30.43	6.73
670	42.12	8.16
700	43.91	9.90
800	41.80	14.74
1000	45.62	25.19
2500	65.14	64.35
5000	56.15	59.91
7500	70.51	46.96
10000	61.65	14.38
12500	60.76	7.70
15000	47.59	9.18
17500	48.96	4.36
20000	58.57	16.41

### +RoHS Compliant

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



### Notes

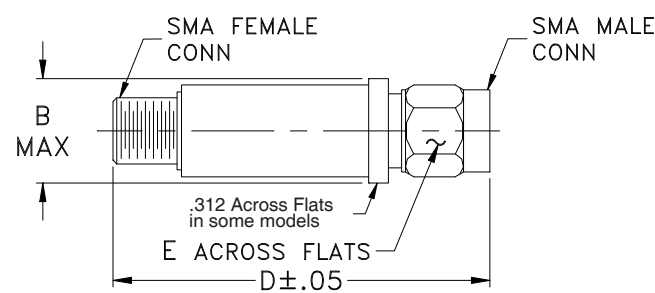
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Coaxial Connections

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

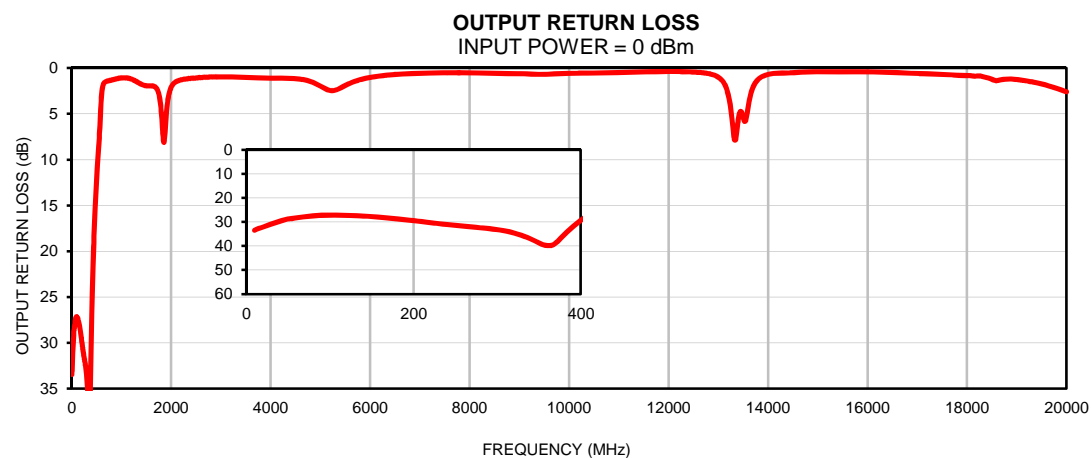
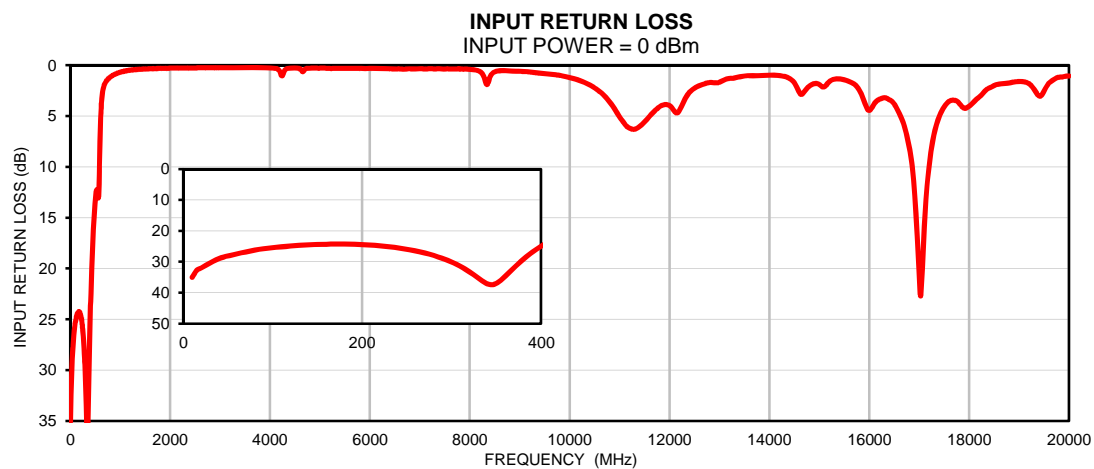
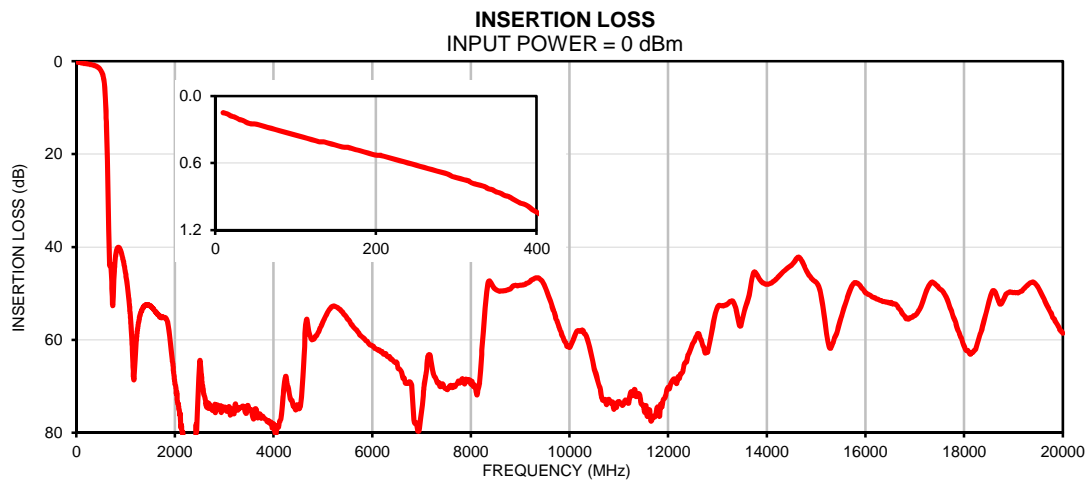
Note: Please refer to case style drawing for details

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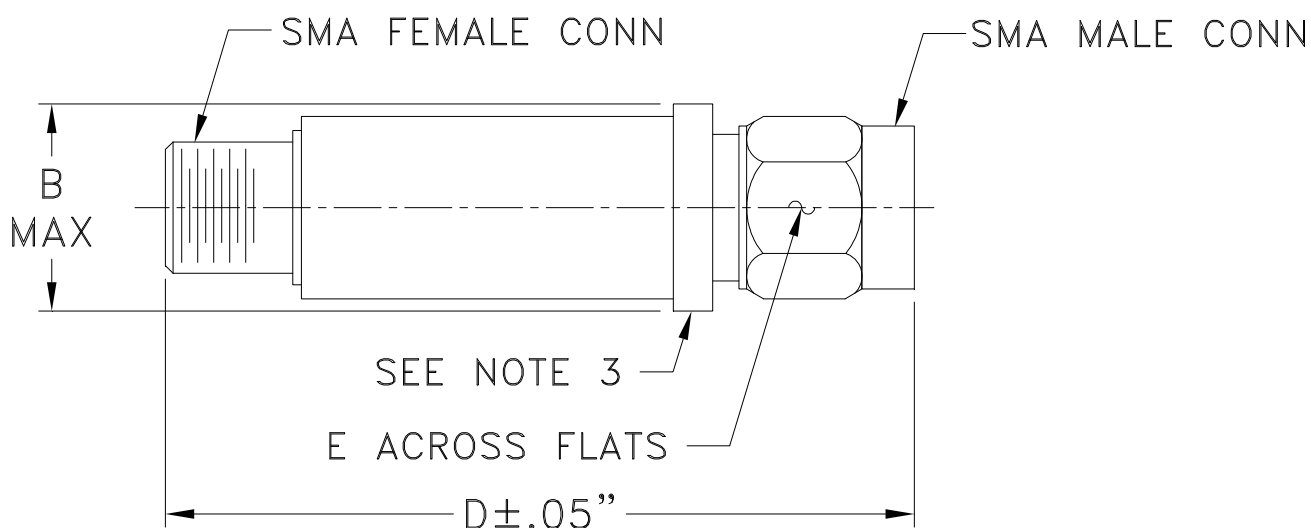
## Typical Performance Data

FREQ.	INSERTION LOSS	INPUT RETURN LOSS	OUTPUT RETURN LOSS
(MHz)	(dB)	(dB)	(dB)
10	0.15	35.05	33.46
50	0.25	28.08	28.73
75	0.30	26.52	27.67
100	0.35	25.38	27.17
200	0.53	24.43	29.44
300	0.73	30.06	33.22
400	1.04	24.96	29.35
450	1.36	17.84	19.10
475	1.62	15.31	15.60
500	2.00	13.42	12.79
510	2.20	12.87	11.82
520	2.42	12.47	10.93
530	2.69	12.28	10.11
540	3.01	12.30	9.33
550	3.42	12.57	8.53
600	10.02	7.02	3.41
625	18.57	3.80	2.10
630	20.66	3.46	1.97
650	30.43	2.60	1.69
670	42.12	2.14	1.56
680	44.04	1.99	1.52
700	43.91	1.76	1.46
750	50.76	1.40	1.38
800	41.80	1.18	1.32
900	40.77	0.88	1.18
1000	45.62	0.69	1.07
1250	57.31	0.46	1.30
1500	52.71	0.37	1.93
1750	55.19	0.32	2.69
2000	69.34	0.29	2.15
2500	65.14	0.27	1.09
3000	74.52	0.25	0.96
3500	74.76	0.24	1.02
4000	78.05	0.27	1.09
4500	74.67	0.27	1.16
5000	56.15	0.29	1.95
5500	55.54	0.30	1.92
6000	61.24	0.32	1.03
6500	64.86	0.38	0.70
7000	75.69	0.35	0.57
8000	69.52	0.41	0.52
9000	48.26	0.59	0.62
10000	61.65	1.21	0.58
11000	73.28	5.08	0.49
11500	74.09	5.59	0.41
12000	70.25	3.97	0.38
12500	60.76	2.27	0.43
13000	53.02	1.68	0.99
13500	55.90	1.06	5.37
14000	48.03	0.99	0.70
14500	43.90	1.74	0.51
15000	47.59	1.90	0.40
15500	55.46	1.44	0.40
16000	49.86	4.45	0.42
16500	52.07	3.81	0.48
17000	54.79	20.78	0.59
18500	52.02	2.00	1.23
19000	49.79	1.60	1.25
19500	48.70	2.56	1.73
20000	58.57	1.06	2.59

## 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