

Coaxial

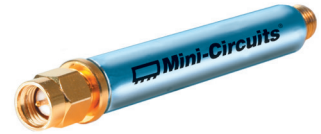
# Low Pass Filter

VLFX-300+

50Ω DC to 300 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-300+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-300 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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CASE STYLE: FF1118

| Connectors | Model     |
|------------|-----------|
| SMA        | VLFX-300+ |

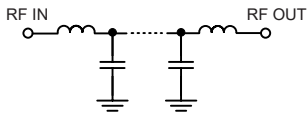
## Features

- 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

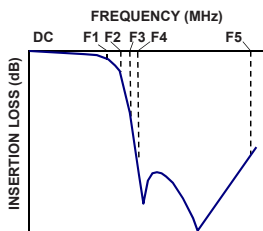
## Applications

- 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.       |

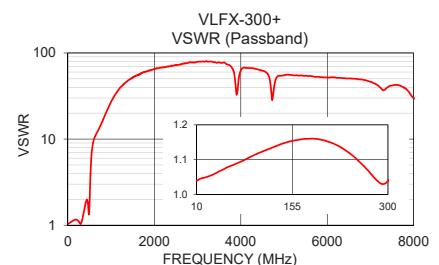
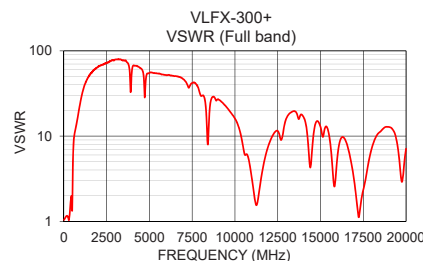
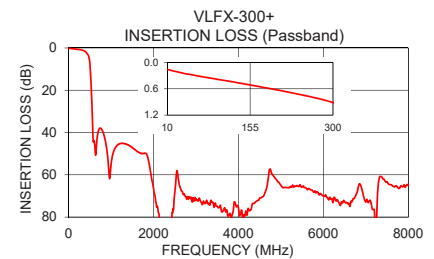
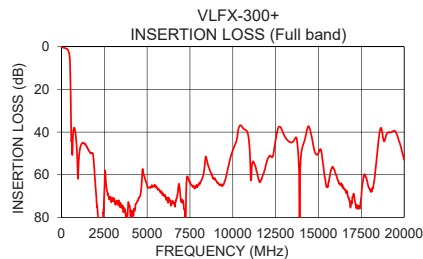
\*Passband rating, derate linearly to 3.5W at 100°C ambient.  
Permanent damage may occur if any of these limits are exceeded.

## Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 10              | 0.16                | 1.04      |
| 100             | 0.39                | 1.12      |
| 200             | 0.62                | 1.16      |
| 300             | 0.91                | 1.04      |
| 400             | 1.87                | 1.71      |
| 450             | 3.09                | 1.94      |
| 510             | 10.40               | 2.55      |
| 535             | 20.40               | 5.32      |
| 550             | 28.08               | 6.86      |
| 555             | 31.02               | 7.30      |
| 580             | 44.40               | 8.96      |
| 600             | 43.91               | 9.83      |
| 650             | 47.50               | 11.30     |
| 1000            | 54.95               | 27.11     |
| 5000            | 64.99               | 55.33     |
| 10000           | 48.55               | 16.08     |
| 12500           | 43.81               | 11.50     |
| 15000           | 49.85               | 12.84     |
| 17500           | 70.38               | 2.34      |
| 20000           | 52.94               | 7.09      |

## +RoHS Compliant

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



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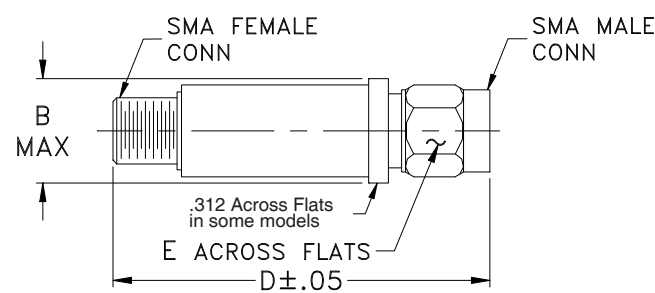


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Coaxial Connections

|        |            |
|--------|------------|
| 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  |

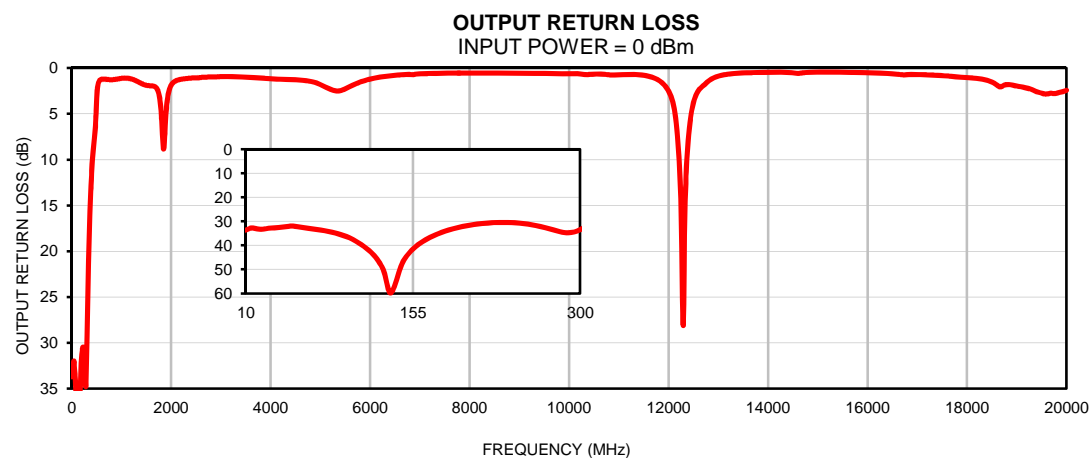
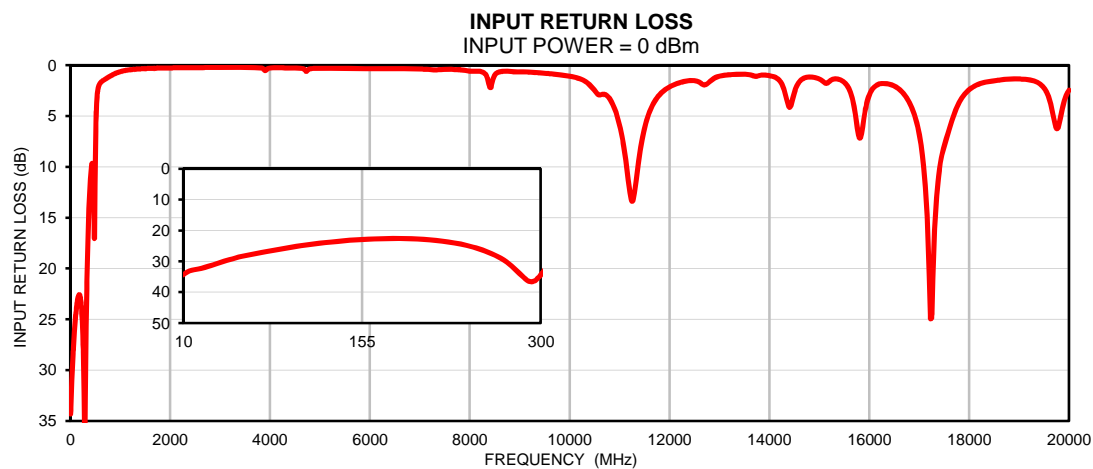
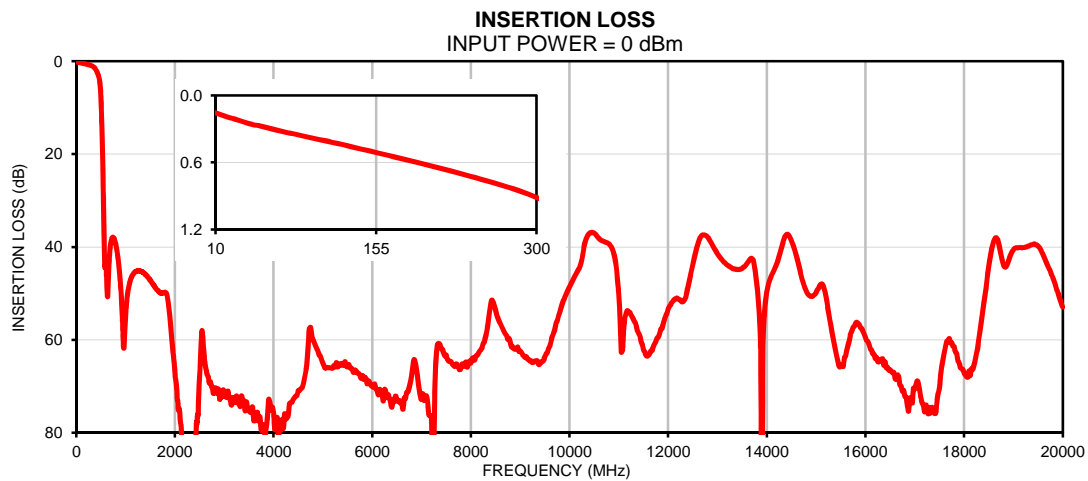
Note: Please refer to case style drawing for details

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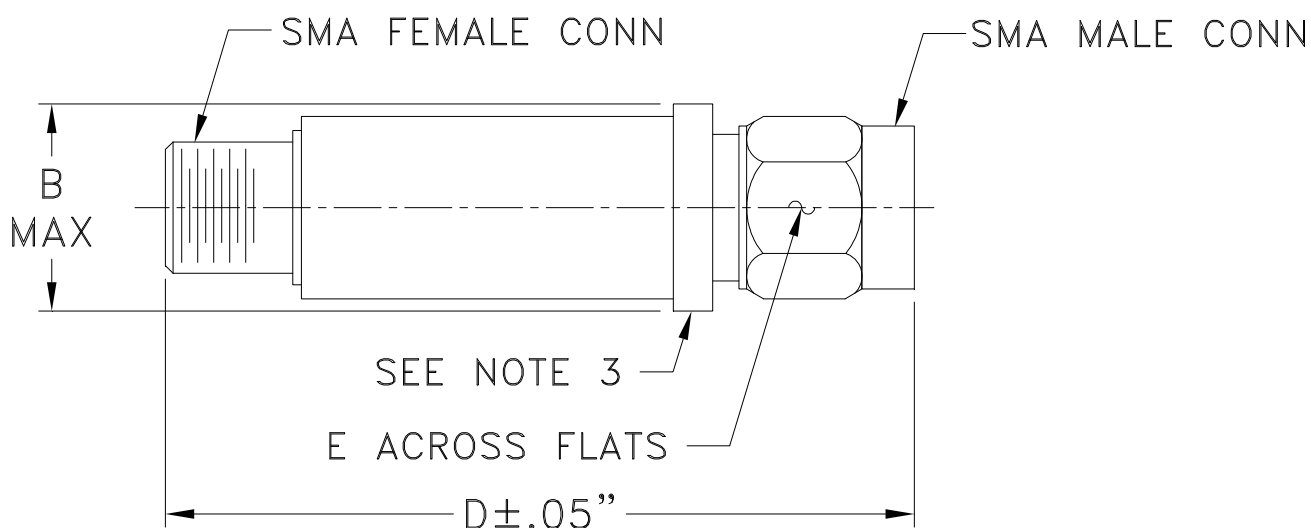
## Typical Performance Data

| FREQ. | INSERTION LOSS | INPUT RETURN LOSS | OUTPUT RETURN LOSS |
|-------|----------------|-------------------|--------------------|
| (MHz) | (dB)           | (dB)              | (dB)               |
| 10    | 0.16           | 34.33             | 33.70              |
| 50    | 0.27           | 29.22             | 31.97              |
| 75    | 0.34           | 27.07             | 33.59              |
| 100   | 0.39           | 25.23             | 36.82              |
| 200   | 0.62           | 22.77             | 31.97              |
| 250   | 0.75           | 25.96             | 30.91              |
| 275   | 0.82           | 31.06             | 33.31              |
| 300   | 0.91           | 34.38             | 33.54              |
| 310   | 0.96           | 29.45             | 30.58              |
| 320   | 1.01           | 25.63             | 27.45              |
| 350   | 1.21           | 18.24             | 19.94              |
| 400   | 1.87           | 11.61             | 12.23              |
| 425   | 2.40           | 9.98              | 9.85               |
| 450   | 3.09           | 9.89              | 8.28               |
| 500   | 7.64           | 11.16             | 4.31               |
| 525   | 15.98          | 4.25              | 2.14               |
| 530   | 18.12          | 3.71              | 1.94               |
| 535   | 20.40          | 3.30              | 1.79               |
| 540   | 22.81          | 2.99              | 1.68               |
| 550   | 28.08          | 2.55              | 1.51               |
| 555   | 31.02          | 2.40              | 1.46               |
| 560   | 34.19          | 2.27              | 1.41               |
| 575   | 43.45          | 2.01              | 1.31               |
| 580   | 44.40          | 1.95              | 1.29               |
| 600   | 43.91          | 1.77              | 1.23               |
| 625   | 48.85          | 1.64              | 1.20               |
| 650   | 47.50          | 1.54              | 1.20               |
| 675   | 41.85          | 1.46              | 1.21               |
| 700   | 39.23          | 1.38              | 1.23               |
| 750   | 37.94          | 1.22              | 1.26               |
| 1000  | 54.95          | 0.64              | 1.13               |
| 1250  | 45.10          | 0.42              | 1.27               |
| 1500  | 47.18          | 0.34              | 1.88               |
| 2000  | 66.68          | 0.27              | 1.92               |
| 2500  | 68.21          | 0.24              | 1.06               |
| 3000  | 71.39          | 0.22              | 0.94               |
| 4000  | 75.57          | 0.28              | 1.17               |
| 5000  | 64.99          | 0.31              | 1.78               |
| 6000  | 70.03          | 0.33              | 1.20               |
| 7000  | 72.86          | 0.38              | 0.63               |
| 8000  | 64.99          | 0.58              | 0.54               |
| 9000  | 62.39          | 0.64              | 0.57               |
| 10000 | 48.55          | 1.08              | 0.60               |
| 11000 | 50.33          | 5.88              | 0.75               |
| 11500 | 62.14          | 6.19              | 0.79               |
| 12000 | 53.39          | 2.14              | 2.47               |
| 12500 | 43.81          | 1.52              | 3.80               |
| 13000 | 41.52          | 1.08              | 0.88               |
| 13500 | 44.65          | 0.89              | 0.52               |
| 14000 | 49.65          | 1.03              | 0.48               |
| 14500 | 38.63          | 2.69              | 0.52               |
| 15000 | 49.85          | 1.36              | 0.44               |
| 15500 | 65.54          | 1.69              | 0.45               |
| 16000 | 59.41          | 2.92              | 0.51               |
| 16500 | 66.45          | 2.05              | 0.62               |
| 17000 | 70.61          | 6.79              | 0.71               |
| 18500 | 44.35          | 1.55              | 1.52               |
| 19000 | 40.60          | 1.36              | 1.96               |
| 19500 | 39.82          | 2.25              | 2.74               |
| 20000 | 52.94          | 2.47              | 2.42               |

## Typical Performance Curves



## Outline Dimensions



| CASE #. | A  | B               | C  | D               | E              | WT GRAMS |
|---------|----|-----------------|----|-----------------|----------------|----------|
| FF1118  | -- | .410<br>(10.41) | -- | 2.67<br>(67.82) | .312<br>(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



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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<br>Ambient Environment   | Individual Model Data Sheet          |
| Storage Temperature        | -55° to 100° C<br>Ambient Environment  | Individual Model Data Sheet          |
| Barometric Pressure        | 100,000 Feet   | MIL-STD-202, Method 105, Condition D |
| Humidity                   | 90% RH, 65°C<br>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 |