

# Coaxial Low Pass Filter

50Ω

\*DC to 1500 MHz

VLF-1500+

## Maximum Ratings

|                            |                   |
|----------------------------|-------------------|
| Operating Temperature      | -55°C to 100°C    |
| Storage Temperature        | -55°C to 100°C    |
| RF Power Input*            | 10W max. at 25°C  |
| DC Current Input to Output | 0.5A max. at 25°C |

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

## Features

- rugged uni-body construction, small size
- 7 sections
- excellent power handling, 10W
- temperature stable
- low cost
- protected by U.S. Patent 6,943,646

## Applications

- harmonic rejection
- transmitters/receivers
- lab use

Generic photo used for illustration purposes only

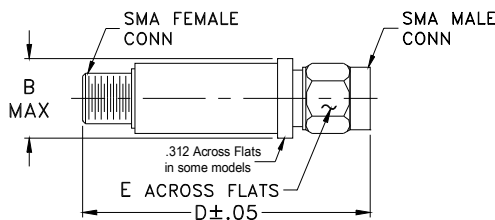
CASE STYLE: FF704

| Connectors | Model     |
|------------|-----------|
| SMA        | VLF-1500+ |

+RoHS Compliant

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

## Outline Drawing



## Outline Dimensions (inch/mm)

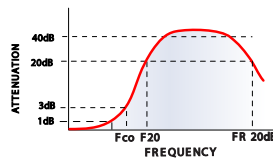
| B     | D     | E    | wt    |
|-------|-------|------|-------|
| .410  | 1.43  | .312 | grams |
| 10.41 | 36.32 | 7.92 | 10.0  |

## Electrical Specifications at 25°C

| PASSBAND (MHz)<br>(loss < 1 dB) | fco, MHz<br>Nom.<br>(loss 3 dB) | STOP BAND (MHz)<br>(loss, dB) |            |               | VSWR (:1)        |                  | NO. OF SECTIONS |
|---------------------------------|---------------------------------|-------------------------------|------------|---------------|------------------|------------------|-----------------|
| Max.                            | Typ.                            | f 20<br>Min.                  | 30<br>Typ. | fr 20<br>Typ. | Stopband<br>Typ. | Passband<br>Typ. |                 |
| *DC-1500                        | 1825                            | 2100                          | 2150-6600  | 6800          | 20               | 1.2              |                 |

\* Not for use with DC voltage at input and output ports

## typical frequency response

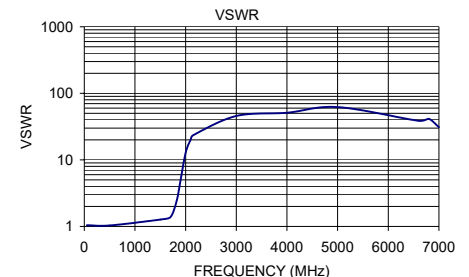


## electrical schematic



## Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 50              | 0.07                | 1.04      |
| 500             | 0.18                | 1.04      |
| 1500            | 0.67                | 1.27      |
| 1700            | 1.16                | 1.38      |
| 1825            | 2.84                | 2.46      |
| 1900            | 6.24                | 4.93      |
| 2000            | 16.20               | 12.80     |
| 2100            | 36.11               | 20.22     |
| 2150            | 34.78               | 23.49     |
| 3000            | 31.36               | 45.72     |
| 4000            | 42.21               | 51.10     |
| 5000            | 45.73               | 62.05     |
| 6600            | 31.36               | 38.61     |
| 6800            | 34.26               | 41.37     |
| 7000            | 24.02               | 31.03     |



## Notes

- 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.
- 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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VLF-1500+  
ED-11960/3  
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# Coaxial Low Pass Filter

VLF-1500+

## Typical Performance Data

| FREQ.<br>(MHz) | INSERTION LOSS<br>(dB) |          |           | INPUT RETURN LOSS<br>(dB) |          |           | OUTPUT RETURN LOSS<br>(dB) |          |           |
|----------------|------------------------|----------|-----------|---------------------------|----------|-----------|----------------------------|----------|-----------|
|                | @ -55° C               | @ +25° C | @ +100° C | @ -55° C                  | @ +25° C | @ +100° C | @ -55° C                   | @ +25° C | @ +100° C |
| 50             | 0.05                   | 0.07     | 0.07      | 35.17                     | 33.67    | 32.67     | 34.80                      | 33.41    | 32.48     |
| 100            | 0.06                   | 0.08     | 0.09      | 36.47                     | 34.69    | 33.54     | 36.36                      | 34.54    | 33.27     |
| 500            | 0.13                   | 0.18     | 0.22      | 33.19                     | 35.27    | 38.78     | 29.43                      | 29.51    | 29.98     |
| 1000           | 0.24                   | 0.33     | 0.40      | 23.38                     | 23.18    | 23.19     | 22.34                      | 21.85    | 21.44     |
| 1500           | 0.52                   | 0.67     | 0.79      | 18.29                     | 18.55    | 18.74     | 17.93                      | 17.95    | 17.94     |
| 1560           | 0.59                   | 0.75     | 0.88      | 18.75                     | 19.05    | 19.34     | 18.08                      | 18.09    | 18.18     |
| 1650           | 0.74                   | 0.94     | 1.11      | 18.15                     | 18.26    | 18.46     | 16.95                      | 16.84    | 16.95     |
| 1710           | 0.98                   | 1.22     | 1.43      | 15.57                     | 15.36    | 15.27     | 14.65                      | 14.45    | 14.44     |
| 1825           | 2.36                   | 2.84     | 3.31      | 7.82                      | 7.50     | 7.24      | 8.01                       | 7.85     | 7.74      |
| 1870           | 3.83                   | 4.52     | 5.20      | 5.11                      | 4.91     | 4.73      | 5.54                       | 5.48     | 5.43      |
| 1940           | 8.31                   | 9.42     | 10.50     | 2.29                      | 2.31     | 2.34      | 2.86                       | 2.97     | 3.07      |
| 2025           | 18.20                  | 19.84    | 21.47     | 1.00                      | 1.16     | 1.30      | 1.54                       | 1.73     | 1.88      |
| 2055           | 23.24                  | 25.17    | 27.12     | 0.82                      | 0.99     | 1.15      | 1.34                       | 1.53     | 1.67      |
| 2100           | 34.06                  | 36.11    | 37.04     | 0.68                      | 0.86     | 1.01      | 1.13                       | 1.32     | 1.45      |
| 2120           | 38.88                  | 38.03    | 36.75     | 0.62                      | 0.80     | 0.96      | 1.06                       | 1.24     | 1.36      |
| 2150           | 35.95                  | 34.78    | 34.03     | 0.56                      | 0.74     | 0.90      | 0.98                       | 1.15     | 1.28      |
| 2210           | 32.35                  | 32.43    | 32.59     | 0.48                      | 0.66     | 0.81      | 0.85                       | 1.00     | 1.12      |
| 2345           | 38.24                  | 39.38    | 40.48     | 0.37                      | 0.54     | 0.68      | 0.66                       | 0.80     | 0.92      |
| 2365           | 40.50                  | 41.89    | 43.24     | 0.36                      | 0.53     | 0.67      | 0.64                       | 0.78     | 0.90      |
| 2415           | 49.87                  | 50.57    | 49.58     | 0.33                      | 0.50     | 0.64      | 0.59                       | 0.73     | 0.86      |
| 2495           | 41.20                  | 40.27    | 39.50     | 0.30                      | 0.47     | 0.60      | 0.52                       | 0.66     | 0.79      |
| 2850           | 31.13                  | 31.28    | 31.39     | 0.24                      | 0.40     | 0.54      | 0.39                       | 0.53     | 0.68      |
| 3830           | 38.98                  | 39.42    | 39.88     | 0.19                      | 0.37     | 0.52      | 0.27                       | 0.43     | 0.56      |
| 4020           | 41.98                  | 42.55    | 43.08     | 0.14                      | 0.31     | 0.45      | 0.32                       | 0.45     | 0.56      |
| 4210           | 46.11                  | 46.85    | 47.56     | 0.17                      | 0.34     | 0.46      | 0.26                       | 0.40     | 0.50      |
| 4400           | 52.64                  | 53.94    | 55.34     | 0.17                      | 0.33     | 0.44      | 0.27                       | 0.41     | 0.50      |
| 4470           | 56.89                  | 59.04    | 61.81     | 0.17                      | 0.34     | 0.45      | 0.24                       | 0.38     | 0.47      |
| 4640           | 62.82                  | 59.70    | 57.51     | 0.14                      | 0.31     | 0.42      | 0.24                       | 0.37     | 0.45      |
| 5060           | 44.99                  | 44.66    | 44.18     | 0.14                      | 0.32     | 0.45      | 0.21                       | 0.34     | 0.43      |
| 6600           | 27.62                  | 27.68    | 28.03     | 0.57                      | 0.81     | 1.13      | 0.45                       | 0.64     | 0.82      |
| 6800           | 33.07                  | 34.26    | 35.23     | 0.18                      | 0.42     | 0.73      | 0.19                       | 0.39     | 0.61      |
| 6940           | 34.89                  | 31.72    | 28.43     | 0.22                      | 0.47     | 0.79      | 0.31                       | 0.59     | 0.97      |
| 7000           | 27.48                  | 24.02    | 20.83     | 0.26                      | 0.56     | 0.97      | 0.63                       | 1.13     | 1.95      |
| 7070           | 18.37                  | 15.25    | 13.71     | 0.59                      | 1.15     | 1.64      | 1.78                       | 3.61     | 5.32      |
| 7750           | 19.66                  | 19.82    | 19.97     | 0.15                      | 0.36     | 0.55      | 0.13                       | 0.36     | 0.66      |
| 8440           | 19.35                  | 19.39    | 19.52     | 0.02                      | 0.31     | 0.59      | 0.21                       | 0.43     | 0.69      |
| 10000          | 16.31                  | 16.62    | 16.92     | 0.11                      | 0.37     | 0.64      | 0.77                       | 0.89     | 1.01      |
| 12380          | 8.12                   | 8.26     | 8.82      | 1.45                      | 2.29     | 3.35      | 1.72                       | 2.38     | 3.20      |
| 12620          | 11.88                  | 14.15    | 14.24     | 2.34                      | 2.07     | 2.35      | 2.88                       | 2.09     | 1.98      |
| 14000          | 9.92                   | 10.46    | 10.98     | 1.34                      | 1.87     | 2.51      | 1.27                       | 1.65     | 2.04      |
| 15000          | 10.14                  | 9.90     | 10.64     | 1.22                      | 2.06     | 2.76      | 4.04                       | 7.26     | 10.93     |

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VLF-1500+  
080720  
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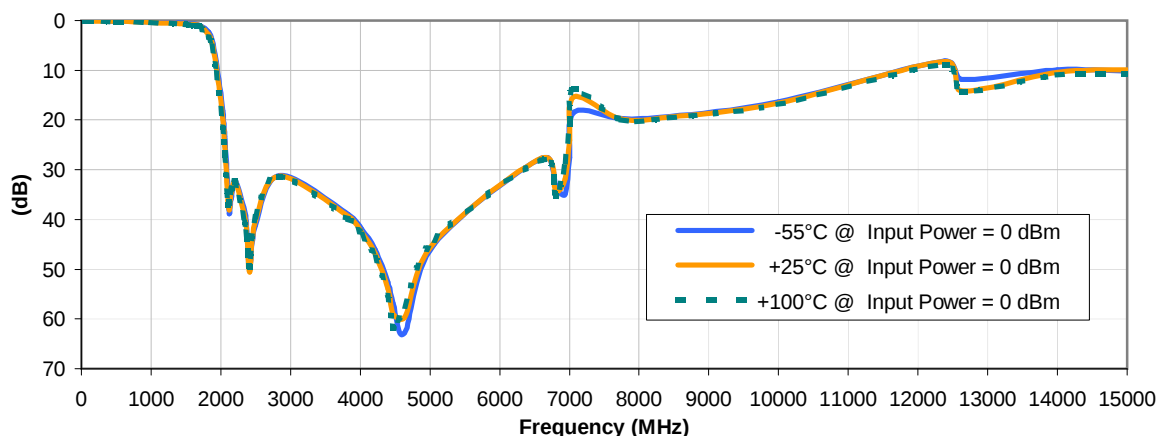


# Coaxial Low Pass Filter

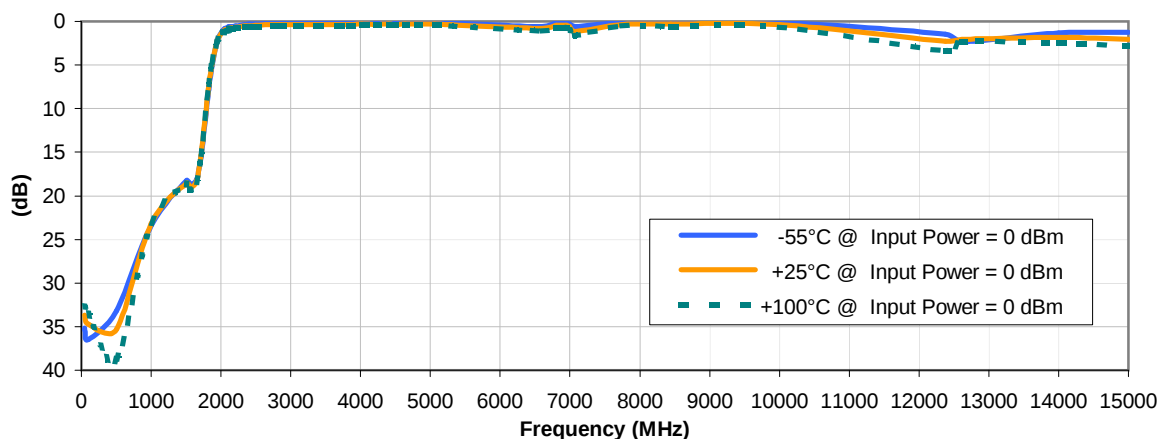
## Typical Performance Curves

VLF-1500+

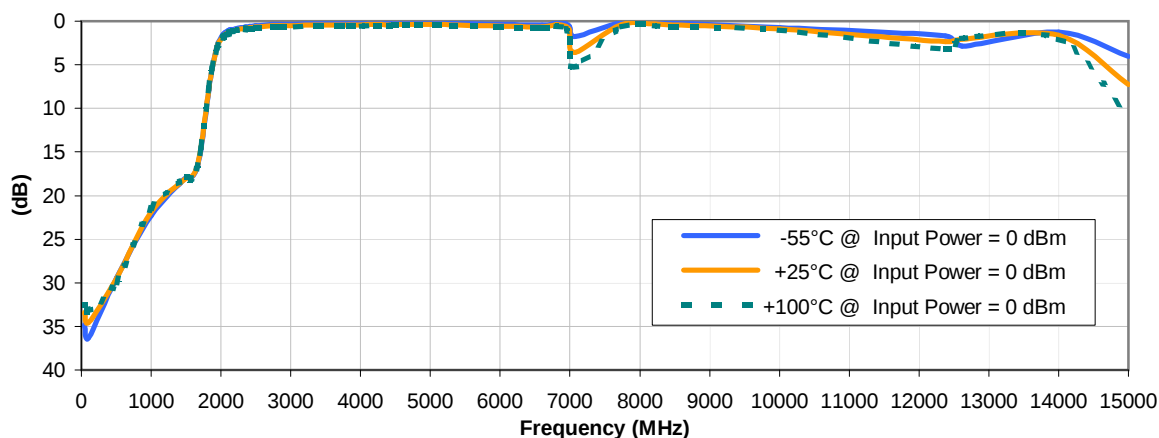
INSERTION LOSS vs. TEMPERATURE



INPUT RETURN LOSS vs. TEMPERATURE



OUTPUT RETURN LOSS vs. TEMPERATURE



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### Outline Dimensions



| CASE #. | A  | B               | C  | D               | E              | WT GRAMS |
|---------|----|-----------------|----|-----------------|----------------|----------|
| FF704   | -- | .410<br>(10.41) | -- | 1.43<br>(36.32) | .312<br>(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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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 |