

# Coaxial High Pass Filter

50Ω 700 to 3000 MHz

## Maximum Ratings

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature   | -55°C to 100°C |
| RF Power Input        | 0.5W max.      |

Permanent damage may occur if any of these limits are exceeded.

## Features

- rugged shielded case
- other standard and custom SHP models available with wide selection of fco

## Applications

- lab use
- transmitters/receivers
- radio communications

## SHP-700+



Generic photo used for illustration purposes only

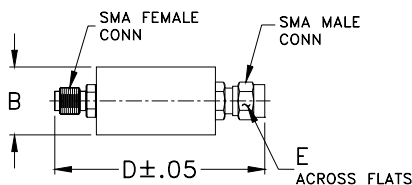
CASE STYLE: FF99

|            |          |
|------------|----------|
| Connectors | Model    |
| SMA        | SHP-700+ |

**+RoHS Compliant**

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

## Outline Drawing



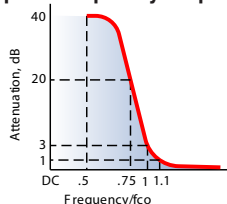
## Outline Dimensions (inch)

|       |       |      |       |
|-------|-------|------|-------|
| B     | D     | E    | wt    |
| .67   | 1.98  | .312 | grams |
| 17.02 | 50.29 | 7.92 | 42.0  |

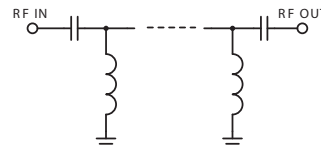
## High Pass Filter Electrical Specifications

| STOPBAND (MHz) | fco (MHz) Nom. | PASSBAND (MHz) | VSWR (:1)                   |
|----------------|----------------|----------------|-----------------------------|
| (loss > 40 dB) | (loss > 20 dB) | (loss < 3 dB)  | (loss < 1 dB)               |
| DC-400         | 400-520        | 640            | 700-3000                    |
|                |                |                | Stopband Typ. Passband Typ. |
|                |                |                | 17 1.6                      |

## typical frequency response

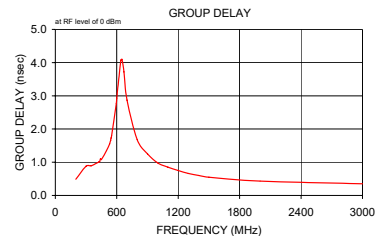
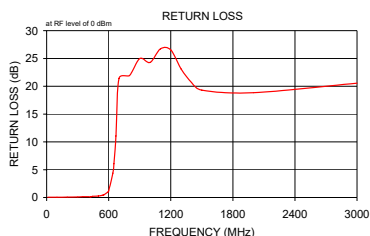
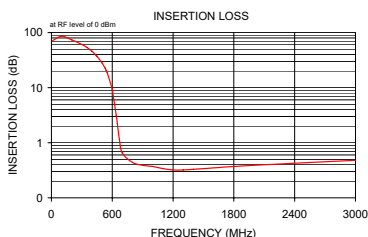


## electrical schematic



## Typical Performance Data

| Frequency (MHz) | Insertion Loss (dB) $\bar{x}$ | Insertion Loss (dB) $\sigma$ | Return Loss (dB) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|-------------------------------|------------------------------|------------------|-----------------|--------------------|
| 10.00           | 71.13                         | 3.73                         | 0.05             | 200.00          | 0.49               |
| 100.00          | 86.10                         | 2.60                         | 0.05             | 300.00          | 0.88               |
| 200.00          | 73.72                         | 0.25                         | 0.07             | 350.00          | 0.89               |
| 300.00          | 60.72                         | 0.42                         | 0.10             | 400.00          | 0.97               |
| 350.00          | 53.62                         | 0.27                         | 0.15             | 425.00          | 1.01               |
| 400.00          | 45.60                         | 0.35                         | 0.15             | 433.00          | 1.02               |
| 425.00          | 41.41                         | 0.44                         | 0.12             | 441.00          | 1.10               |
| 441.00          | 38.65                         | 0.51                         | 0.20             | 450.00          | 1.08               |
| 450.00          | 37.09                         | 0.54                         | 0.22             | 500.00          | 1.35               |
| 500.00          | 28.11                         | 0.74                         | 0.26             | 530.00          | 1.55               |
| 530.00          | 22.58                         | 0.88                         | 0.36             | 535.00          | 1.61               |
| 540.00          | 20.70                         | 0.93                         | 0.40             | 540.00          | 1.66               |
| 545.00          | 19.75                         | 0.96                         | 0.42             | 545.00          | 1.73               |
| 550.00          | 18.80                         | 0.98                         | 0.44             | 550.00          | 1.80               |
| 595.00          | 10.16                         | 1.20                         | 1.01             | 595.00          | 2.77               |
| 600.00          | 9.24                          | 1.21                         | 1.17             | 600.00          | 2.92               |
| 640.00          | 3.13                          | 0.83                         | 4.36             | 640.00          | 4.07               |
| 650.00          | 2.21                          | 0.63                         | 6.07             | 650.00          | 4.10               |
| 670.00          | 1.15                          | 0.28                         | 11.07            | 670.00          | 3.72               |
| 700.00          | 0.65                          | 0.04                         | 21.39            | 700.00          | 2.87               |
| 800.00          | 0.44                          | 0.01                         | 21.92            | 800.00          | 1.68               |
| 900.00          | 0.39                          | 0.02                         | 24.99            | 900.00          | 1.25               |
| 1000.00         | 0.37                          | 0.02                         | 24.30            | 1000.00         | 0.98               |
| 1100.00         | 0.34                          | 0.01                         | 26.73            | 1100.00         | 0.85               |
| 1200.00         | 0.32                          | 0.01                         | 26.52            | 1200.00         | 0.75               |
| 1300.00         | 0.32                          | 0.01                         | 23.09            | 1300.00         | 0.66               |
| 1400.00         | 0.33                          | 0.02                         | 20.67            | 1400.00         | 0.60               |
| 1500.00         | 0.34                          | 0.02                         | 19.29            | 1500.00         | 0.55               |
| 2000.00         | 0.39                          | 0.02                         | 18.85            | 2000.00         | 0.43               |
| 3000.00         | 0.48                          | 0.02                         | 20.55            | 3000.00         | 0.35               |



## 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.
- 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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REV. D  
M151107  
SHP-700+  
200522

# Coaxial High Pass Filter

**SHP-700+**

## Typical Performance Data

| FREQUENCY<br>(MHz) | INSERTION<br>LOSS<br>(dB) | RETURN<br>LOSS<br>(dB) | FREQUENCY<br>(MHz) | GROUP<br>DELAY<br>(nsec) |
|--------------------|---------------------------|------------------------|--------------------|--------------------------|
| 10.0               | 71.13                     | 0.05                   | 200.0              | 0.49                     |
| 100.0              | 86.10                     | 0.05                   | 300.0              | 0.88                     |
| 200.0              | 73.72                     | 0.07                   | 350.0              | 0.89                     |
| 300.0              | 60.72                     | 0.10                   | 400.0              | 0.97                     |
| 350.0              | 53.62                     | 0.15                   | 425.0              | 1.01                     |
| 400.0              | 45.60                     | 0.15                   | 433.0              | 1.02                     |
| 425.0              | 41.41                     | 0.12                   | 441.0              | 1.10                     |
| 450.0              | 37.09                     | 0.22                   | 450.0              | 1.08                     |
| 500.0              | 28.11                     | 0.26                   | 500.0              | 1.35                     |
| 530.0              | 22.58                     | 0.36                   | 530.0              | 1.55                     |
| 535.0              | 21.64                     | 0.38                   | 535.0              | 1.61                     |
| 540.0              | 20.70                     | 0.40                   | 540.0              | 1.66                     |
| 545.0              | 19.75                     | 0.42                   | 545.0              | 1.73                     |
| 550.0              | 18.80                     | 0.44                   | 550.0              | 1.80                     |
| 580.0              | 13.02                     | 0.70                   | 580.0              | 2.38                     |
| 585.0              | 12.06                     | 0.78                   | 585.0              | 2.50                     |
| 590.0              | 11.10                     | 0.88                   | 590.0              | 2.63                     |
| 595.0              | 10.16                     | 1.01                   | 595.0              | 2.77                     |
| 600.0              | 9.24                      | 1.17                   | 600.0              | 2.92                     |
| 605.0              | 8.33                      | 1.35                   | 605.0              | 3.07                     |
| 620.0              | 5.79                      | 2.20                   | 620.0              | 3.57                     |
| 625.0              | 5.03                      | 2.61                   | 625.0              | 3.72                     |
| 630.0              | 4.33                      | 3.09                   | 630.0              | 3.87                     |
| 640.0              | 3.13                      | 4.36                   | 640.0              | 4.07                     |
| 650.0              | 2.21                      | 6.07                   | 650.0              | 4.10                     |
| 660.0              | 1.57                      | 8.30                   | 660.0              | 3.97                     |
| 670.0              | 1.15                      | 11.07                  | 670.0              | 3.72                     |
| 680.0              | 0.89                      | 14.38                  | 680.0              | 3.42                     |
| 700.0              | 0.65                      | 21.39                  | 700.0              | 2.87                     |
| 800.0              | 0.44                      | 21.92                  | 800.0              | 1.68                     |
| 900.0              | 0.39                      | 24.99                  | 900.0              | 1.25                     |
| 1000.0             | 0.37                      | 24.30                  | 1000.0             | 0.98                     |
| 1100.0             | 0.34                      | 26.73                  | 1100.0             | 0.85                     |
| 1200.0             | 0.32                      | 26.52                  | 1200.0             | 0.75                     |
| 1300.0             | 0.32                      | 23.09                  | 1300.0             | 0.66                     |
| 1350.0             | 0.33                      | 21.69                  | 1350.0             | 0.63                     |
| 1400.0             | 0.33                      | 20.67                  | 1400.0             | 0.60                     |
| 1450.0             | 0.33                      | 19.84                  | 1450.0             | 0.58                     |
| 1500.0             | 0.34                      | 19.29                  | 1500.0             | 0.55                     |
| 2000.0             | 0.39                      | 18.85                  | 2000.0             | 0.43                     |
| 2500.0             | 0.40                      | 21.19                  | 2500.0             | 0.38                     |
| 3000.0             | 0.48                      | 20.55                  | 3000.0             | 0.35                     |
| 3500.0             | 0.59                      | 17.44                  | 3500.0             | 0.33                     |
| 4000.0             | 0.70                      | 14.35                  | 4000.0             | 0.32                     |
| 4500.0             | 0.83                      | 12.11                  | 4500.0             | 0.31                     |
| 5000.0             | 0.88                      | 11.27                  | 5000.0             | 0.31                     |
| 5500.0             | 0.89                      | 12.02                  | 5500.0             | 0.31                     |
| 6000.0             | 0.91                      | 15.60                  | 6000.0             | 0.32                     |
| 6500.0             | 0.95                      | 31.72                  | 6500.0             | 0.33                     |
| 7000.0             | 1.11                      | 15.72                  | 7000.0             | 0.34                     |
| 7500.0             | 1.55                      | 11.42                  | 7500.0             | 0.36                     |
| 8500.0             | 3.14                      | 8.18                   | 8500.0             | 0.37                     |
| 9000.0             | 2.26                      | 11.67                  | 9000.0             | 0.43                     |
| 9500.0             | 2.69                      | 14.93                  | 9500.0             | 0.62                     |
| 10000.0            | 8.7                       | 7.31                   | 10000.0            | 0.95                     |

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SHP-700+  
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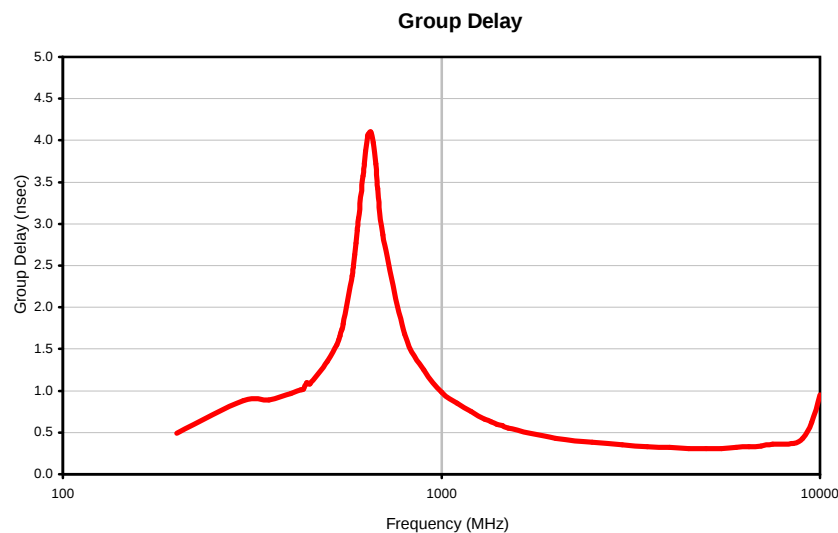
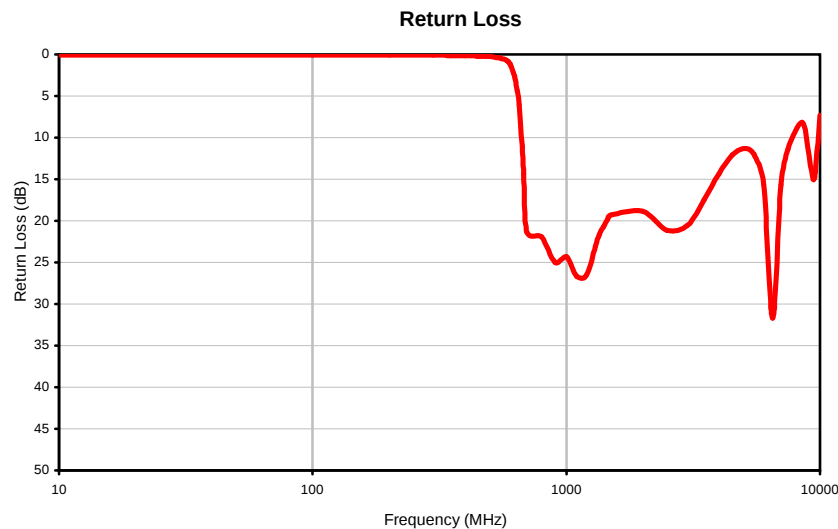
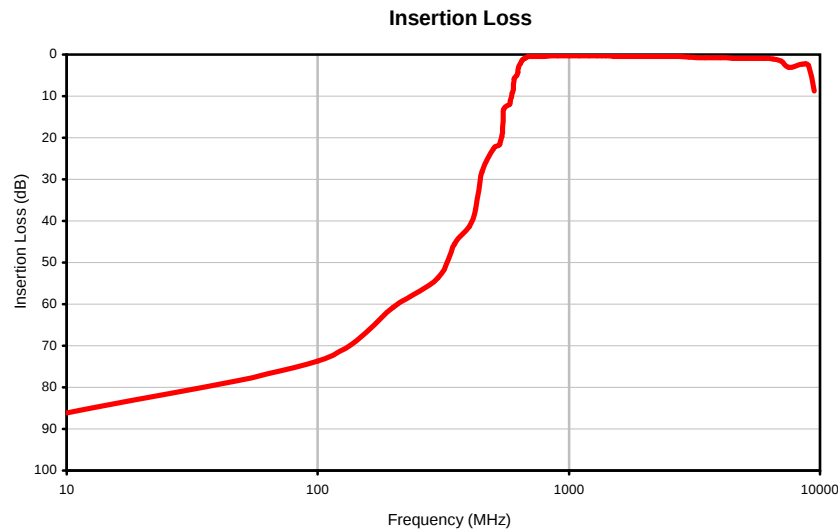
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## Typical Performance Curves



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**FF56**  
**FF99**

## Outline Dimensions



| CASE #. | A  | B              | C  | D               | E              | WT GRAMS |
|---------|----|----------------|----|-----------------|----------------|----------|
| FF56    | -- | .46<br>(11.68) | -- | 1.70<br>(43.18) | .312<br>(7.92) | 18.0     |
| FF99    | -- | .70<br>(17.78) | -- | 1.98<br>(50.29) |                | 42.0     |

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015

### Notes:

1. Case material: Brass.
2. Case finish: Nickel plate.



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 |