

Cavity Bandpass Filters

ZVBP Model Series

50Ω 24.25 to 43.5 GHz

The Big Deal

- Very low insertion loss with excellent power handling
- Sharp roll-off with wide stopband
- Passbands from 24.25 to 43.5 GHz covering 5G bands*.
- Stopbands up to 57 GHz



Product Overview

Mini-Circuits' cavity filters are designed by implementing resonant structures with very high Q and are ideal for narrow-band, high-selectivity applications. These designs can provide bandwidths as narrow as 3% with very high selectivity and excellent low noise floor. Low insertion loss combined with excellent power handling makes them well-suited for transmitter and receiver front end. Advanced filter design and construction enables stopband width greater than 3x the center frequency.

Key Features

| Feature | Advantages |
|---------------------|---|
| 5G bands | Use in various 5G applications, covering n257, n258, n259, n260, and n261 bands. |
| Low insertion loss | Low signal loss results in better SNR in receiver front end and better power delivery to antenna in transmitter |
| Sharp roll-off | Higher selectivity results in better adjacent channel rejection and dynamic range |
| Wide stopband | Wide spur free band results in better receiver sensitivity |
| High power handling | Well suited for transmitter application |
| Protective assembly | Prevents accidental de-tuning of precisely tuned resonant circuit |

*High frequency models operating above 40 GHz are available with 2.4mm connectors.

Cavity Bandpass Filter

ZVBP-38500-V+

50Ω 37000 to 40000 MHz



Generic photo used for illustration purposes only

CASE STYLE: UH3129

Connectors Model
2.4mm-F ZVBP-38500-V+

Features

- Low insertion loss, 2.1 dB typical
- Good return loss, 25 dB typical
- High rejection
- Broad stopband performance up to 55 GHz
- Sharp roll-off

Applications

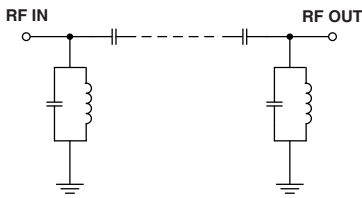
- 5G band n260

Electrical Specifications¹ at 25°C

| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|---------------|-------|------|------|
| Pass Band | Center Frequency | - | - | 38500 | - | MHz |
| | Insertion Loss | F1-F2 | 37000 - 40000 | - | 2.0 | dB |
| | Return Loss | F1-F2 | 37000 - 40000 | 15 | 26 | dB |
| Stop Band, Lower | Insertion Loss | DC-F3 | DC - 36500 | 80 | 114 | dB |
| | Return Loss | DC-F3 | DC - 36500 | - | 0.19 | dB |
| Stop Band, Upper | Insertion Loss | F4-F5 | 40500 - 55000 | 80 | 103 | dB |
| | Return Loss | F4-F5 | 40500 - 55000 | - | 1.01 | dB |

1. Data measured after calibrating using 2.4mm cal kit.

Simplified Functional Schematic



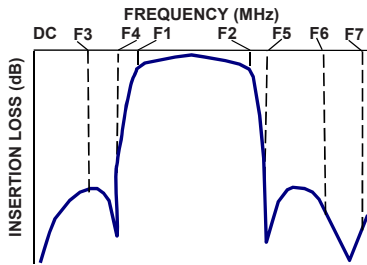
| Maximum Ratings | |
|-----------------------|---------------|
| Operating Temperature | -30°C to 70°C |
| Storage Temperature | -30°C to 70°C |
| RF Power Input | 2.5 W |

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

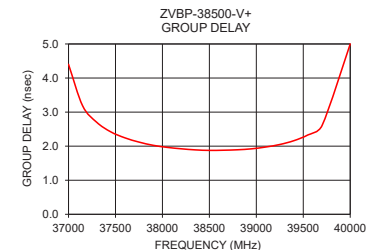
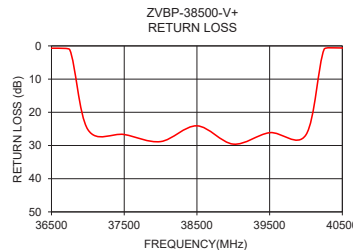
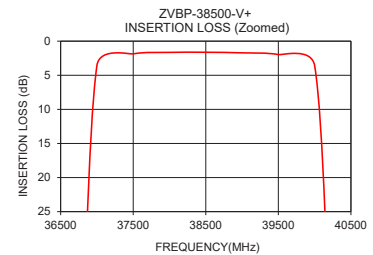
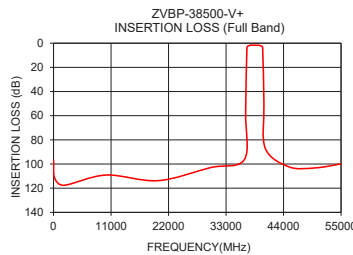
Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | Return Loss (dB) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|------------------|-----------------|--------------------|
| 10 | 96.9 | 0.05 | 37000 | 4.40 |
| 200 | 111.4 | 0.00 | 37150 | 3.19 |
| 2000 | 117.6 | 0.08 | 37300 | 2.70 |
| 10000 | 109.1 | 0.11 | 37450 | 2.42 |
| 20000 | 113.8 | 0.10 | 37600 | 2.25 |
| 30000 | 103.0 | 0.17 | 37750 | 2.12 |
| 36500 | 96.3 | 0.70 | 37900 | 2.03 |
| 36750 | 57.1 | 1.09 | 38050 | 1.97 |
| 37000 | 3.6 | 25.20 | 38200 | 1.92 |
| 37500 | 1.9 | 26.69 | 38350 | 1.89 |
| 38000 | 1.6 | 28.82 | 38500 | 1.88 |
| 38500 | 1.6 | 24.08 | 38650 | 1.88 |
| 39000 | 1.7 | 29.59 | 38800 | 1.89 |
| 39500 | 2.0 | 26.14 | 38950 | 1.92 |
| 40000 | 3.6 | 26.77 | 39100 | 1.98 |
| 40250 | 50.1 | 0.99 | 39250 | 2.05 |
| 40500 | 86.9 | 0.63 | 39400 | 2.16 |
| 45000 | 102.3 | 0.36 | 39550 | 2.33 |
| 50000 | 103.2 | 0.74 | 39700 | 2.61 |
| 55000 | 99.9 | 0.51 | 40000 | 5.00 |

Typical Frequency Response



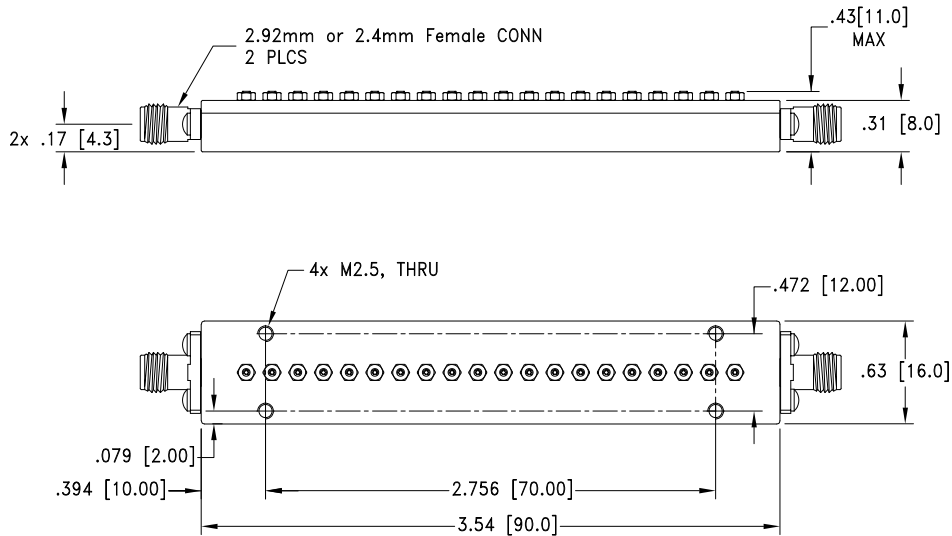
+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



Coaxial Connections

| | |
|--------|--------------|
| PORT 1 | 2.4mm-FEMALE |
| PORT 2 | 2.4mm-FEMALE |

Outline Drawing



Weight: 85 grams \pm 5 grams ;
 Dimensions are in inches [mm]. Tolerances: 2 Pl. \pm .03; 3 Pl. \pm .015

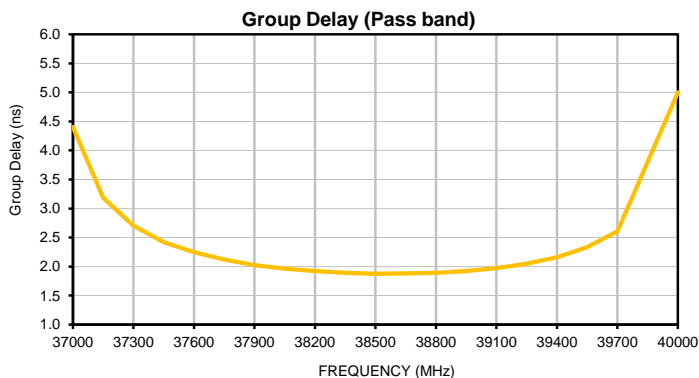
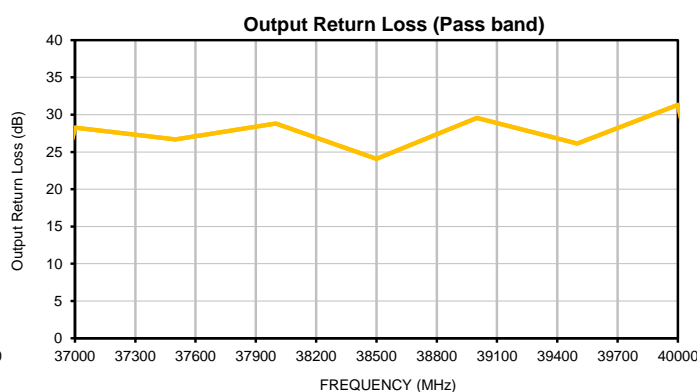
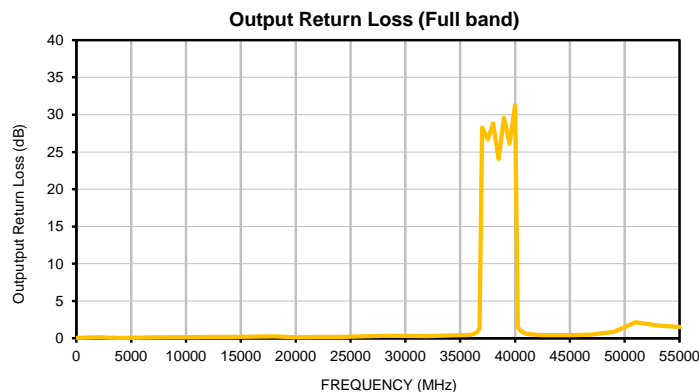
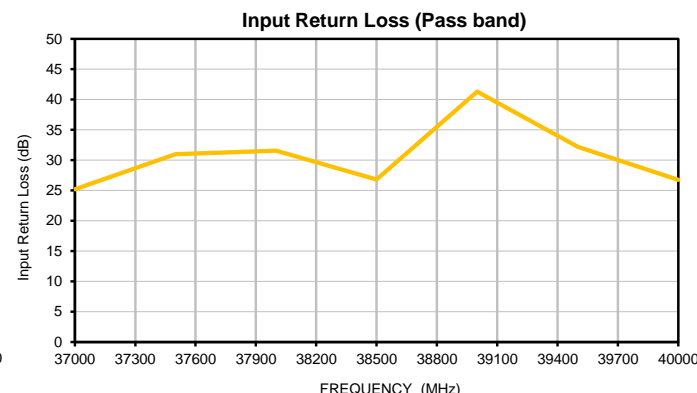
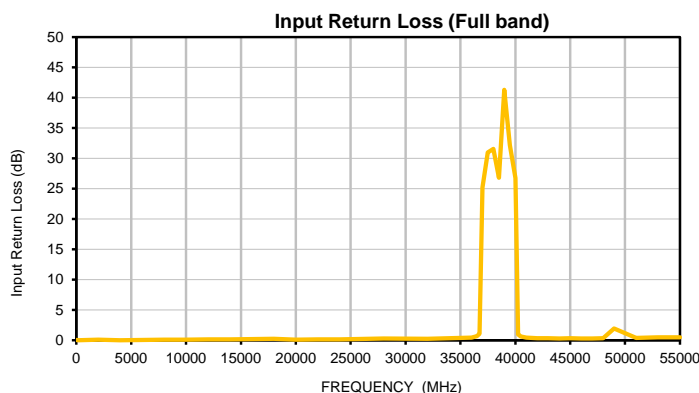
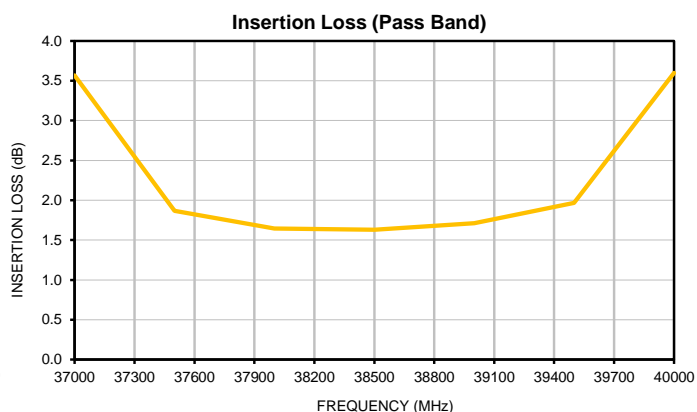
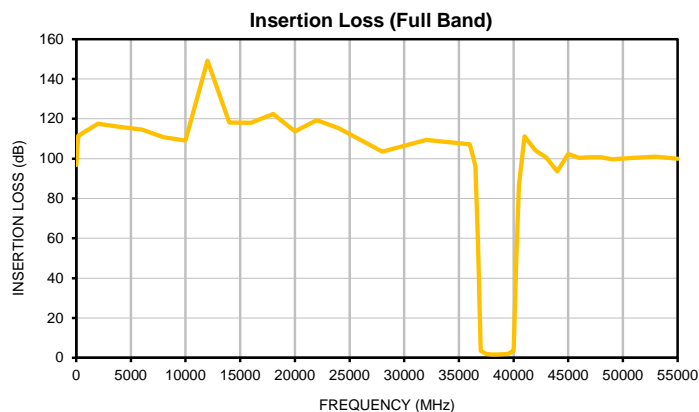
Additional Notes

- 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

Typical Performance Data

| FREQUENCY (MHz) | INSERTION LOSS (dB) | INPUT RETURN LOSS (dB) | OUTPUT RETURN LOSS (dB) | FREQUENCY (MHz) | Group Delay (ns) |
|--------------------|------------------------|---------------------------|----------------------------|--------------------|---------------------|
| 10 | 96.91 | 0.06 | 0.05 | 37000 | 4.40 |
| 200 | 111.43 | 0.00 | 0.06 | 37150 | 3.19 |
| 2000 | 117.57 | 0.08 | 0.12 | 37300 | 2.70 |
| 4000 | 115.93 | 0.02 | 0.04 | 37450 | 2.42 |
| 6000 | 114.59 | 0.05 | 0.08 | 37600 | 2.25 |
| 8000 | 110.70 | 0.10 | 0.13 | 37750 | 2.12 |
| 10000 | 109.12 | 0.11 | 0.12 | 37900 | 2.03 |
| 12000 | 149.20 | 0.16 | 0.19 | 38050 | 1.97 |
| 14000 | 118.13 | 0.15 | 0.17 | 38200 | 1.92 |
| 16000 | 118.06 | 0.20 | 0.22 | 38350 | 1.89 |
| 18000 | 122.48 | 0.25 | 0.27 | 38500 | 1.88 |
| 20000 | 113.77 | 0.10 | 0.13 | 38650 | 1.88 |
| 22000 | 119.34 | 0.14 | 0.17 | 38800 | 1.89 |
| 24000 | 115.29 | 0.13 | 0.18 | 38950 | 1.92 |
| 28000 | 103.47 | 0.27 | 0.32 | 39100 | 1.98 |
| 32000 | 109.40 | 0.25 | 0.30 | 39250 | 2.05 |
| 36000 | 107.21 | 0.44 | 0.44 | 39400 | 2.16 |
| 36500 | 96.34 | 0.70 | 0.76 | 39550 | 2.33 |
| 36750 | 57.09 | 1.09 | 1.32 | 39700 | 2.61 |
| 37000 | 3.57 | 25.20 | 28.27 | 40000 | 5.00 |
| 37500 | 1.87 | 30.97 | 26.69 | | |
| 38000 | 1.65 | 31.54 | 28.82 | | |
| 38500 | 1.63 | 26.78 | 24.08 | | |
| 39000 | 1.71 | 41.30 | 29.59 | | |
| 39500 | 1.97 | 32.19 | 26.14 | | |
| 40000 | 3.60 | 26.77 | 31.32 | | |
| 40250 | 50.11 | 0.99 | 1.56 | | |
| 40500 | 86.95 | 0.63 | 1.01 | | |
| 41000 | 111.18 | 0.46 | 0.61 | | |
| 42000 | 104.11 | 0.34 | 0.44 | | |
| 43000 | 100.53 | 0.35 | 0.40 | | |
| 44000 | 93.58 | 0.30 | 0.40 | | |
| 45000 | 102.29 | 0.36 | 0.43 | | |
| 46000 | 100.37 | 0.29 | 0.45 | | |
| 47000 | 100.72 | 0.31 | 0.49 | | |
| 48000 | 100.72 | 0.33 | 0.68 | | |
| 49000 | 99.60 | 1.96 | 0.85 | | |
| 51000 | 100.40 | 0.38 | 2.15 | | |
| 53000 | 100.93 | 0.49 | 1.73 | | |
| 55000 | 99.90 | 0.51 | 1.50 | | |

Typical Performance Curves

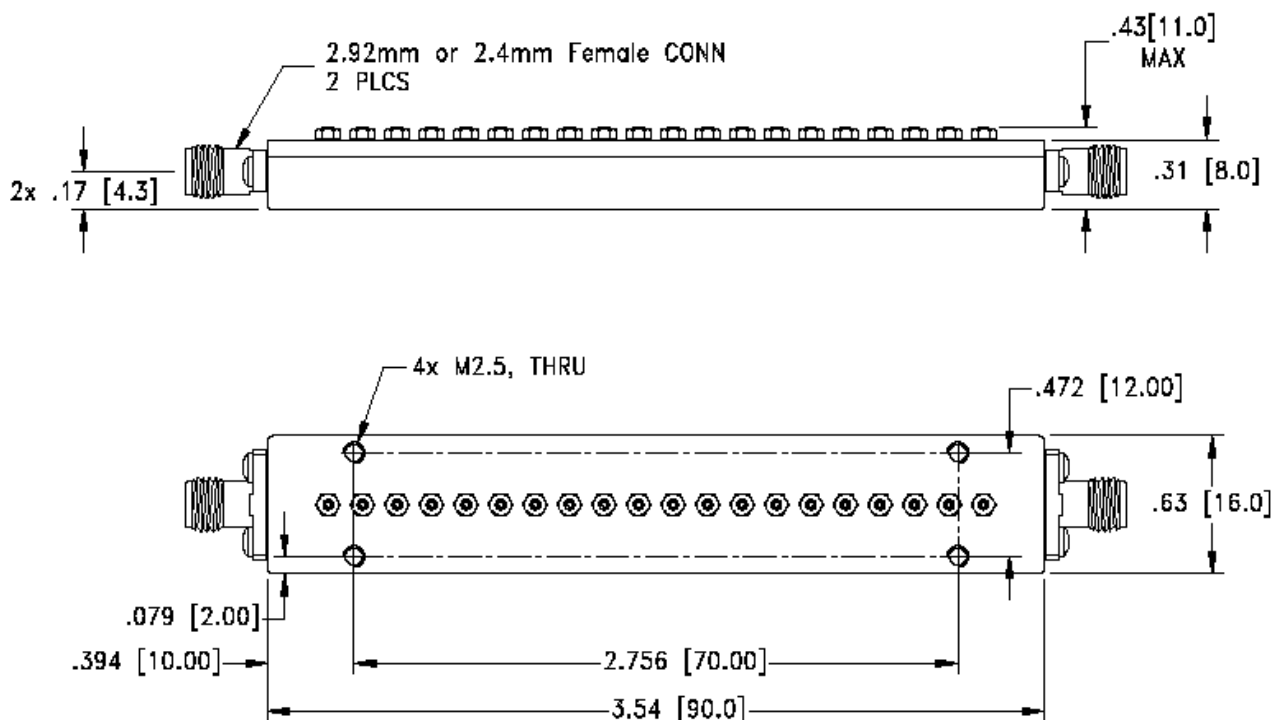


Case Style

UH

Outline Dimensions

UH3129



Weight: 85 grams \pm 5 grams;
Dimensions are in inches (mm). Tolerances: 2 Pl. \pm .03; 3 Pl. \pm .015

Notes:

1. Case material: H62 Copper Alloy
2. Case Finish: Black Painting

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RF/IF MICROWAVE COMPONENTS



Environmental Specifications ENV77T1

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 | -30° to 70°C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -30° to 70° C Ambient Environment | Individual Model Data Sheet |
| Thermal Shock | -55° to 100°C, 100 cycles | MIL-STD-202, Method 107, Condition A-3, except +100°C |