

# 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

50Ω 37700 to 43500 MHz

## ZVBP-40600-V+



Generic photo used for illustration purposes only

CASE STYLE: UH3130

Connectors	Model
2.4mm-F	ZVBP-40600-V+

### Features

- Low insertion loss, 1.6 dB typical
- Good return loss, 22 dB typical
- High rejection
- Broad stopband performance up to 57 GHz
- Sharp roll-off

### Applications

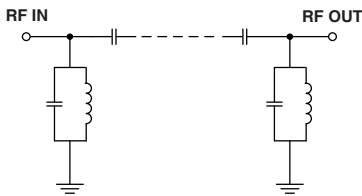
- 5G bands n259 and n260

### Electrical Specifications<sup>1</sup> at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	-	-	40600	-	MHz	
	Insertion Loss	F1-F2	37700 - 43500	-	1.4	3.0	dB
	Return Loss	F1-F2	37700 - 43500	15	26	-	dB
Stop Band, Lower	Insertion Loss	DC-F3	DC - 36600	80	112	-	dB
	Return Loss	DC-F3	DC - 36600	-	0.22	-	dB
Stop Band, Upper	Insertion Loss	F4-F5	44600 - 57000	80	102	-	dB
	Return Loss	F4-F5	44600 - 57000	-	0.98	-	dB

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

### Simplified Functional Schematic



### Maximum Ratings

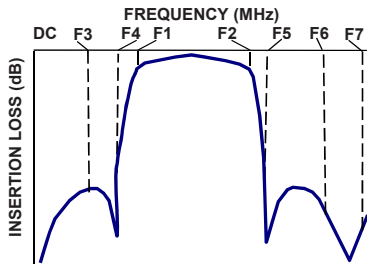
Operating Temperature	-30°C to 70°C
Storage Temperature	-30°C to 70°C
RF Power Input	2.5 W

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

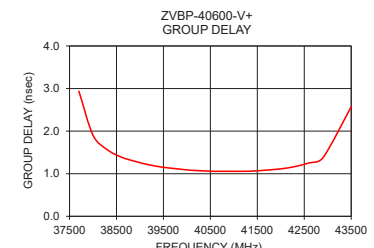
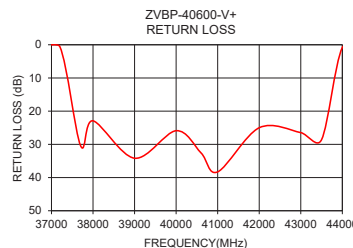
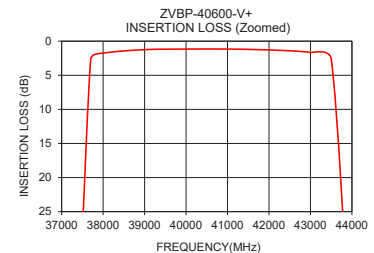
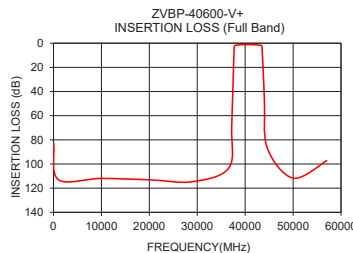
### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	Group Delay (nsec)
10	82.5	0.05	37700	2.94
1000	112.9	0.06	38000	1.90
10000	111.9	0.11	38300	1.57
20000	113.1	0.11	38600	1.39
29000	114.6	0.21	38900	1.29
36600	103.2	0.31	39200	1.21
37200	67.6	0.52	39500	1.15
37700	2.69	30.40	39800	1.11
38000	1.76	22.92	40100	1.08
39000	1.25	34.18	40400	1.07
40000	1.16	25.89	40600	1.06
40600	1.15	32.59	40800	1.06
41000	1.16	38.29	41100	1.06
42000	1.29	24.99	41400	1.06
43000	1.66	26.47	41700	1.09
43500	2.61	28.60	42000	1.11
44000	45.7	0.82	42300	1.17
44600	86.6	0.37	42600	1.25
50000	111.7	0.28	42900	1.38
57000	97.3	0.50	43500	2.58

### Typical Frequency Response



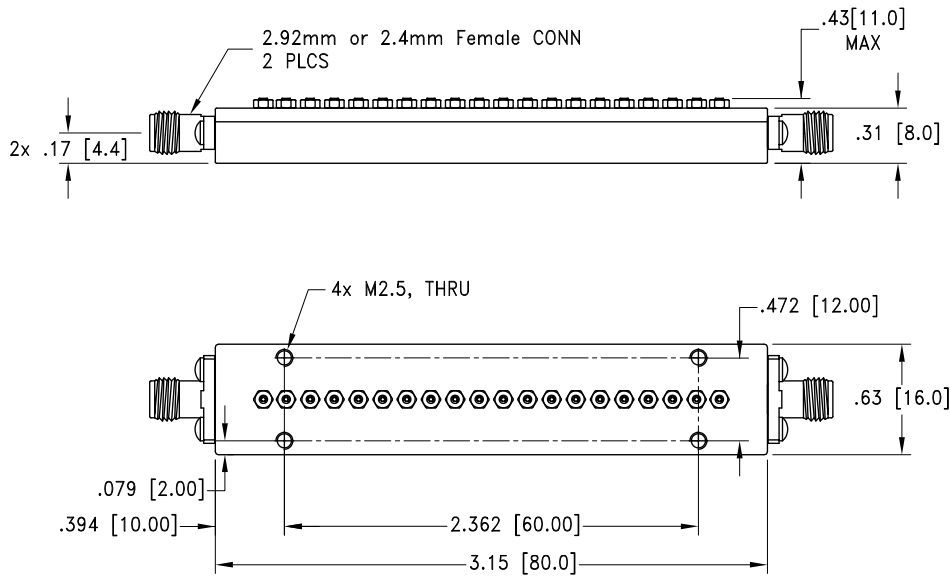
**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



## Coaxial Connections

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

## Outline Drawing



Weight: 77.5 grams  $\pm$  5 grams;  
 Dimensions are in inches [mm]. Tolerances: 2 Pl.  $\pm$ .03; 3 Pl.  $\pm$ .015

## Additional Notes

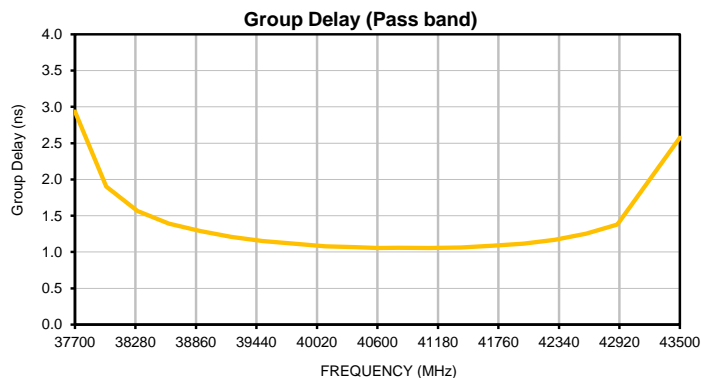
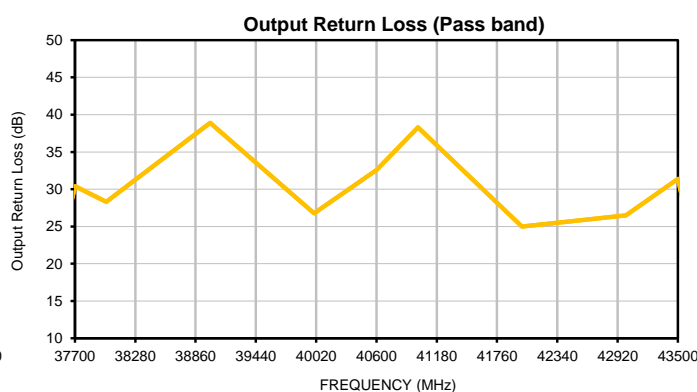
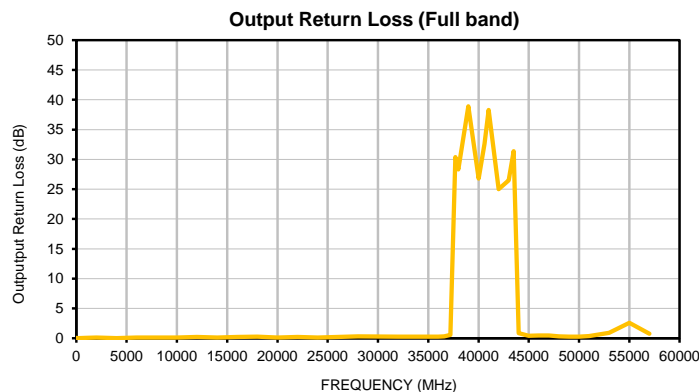
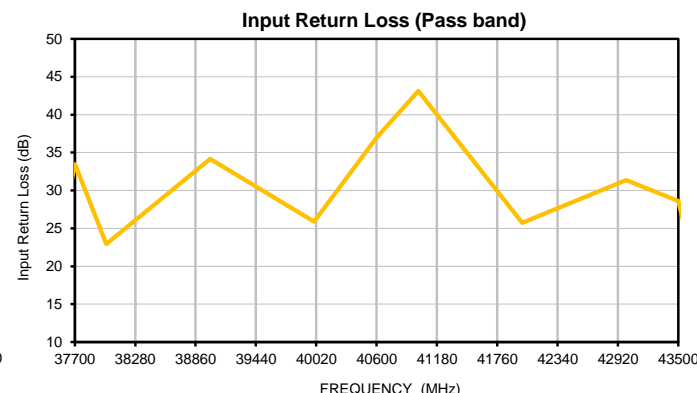
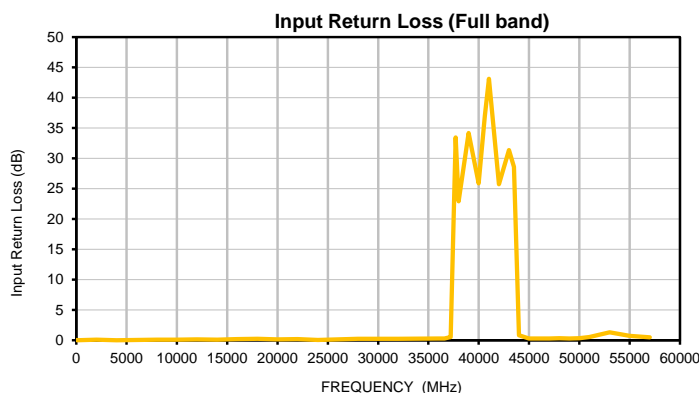
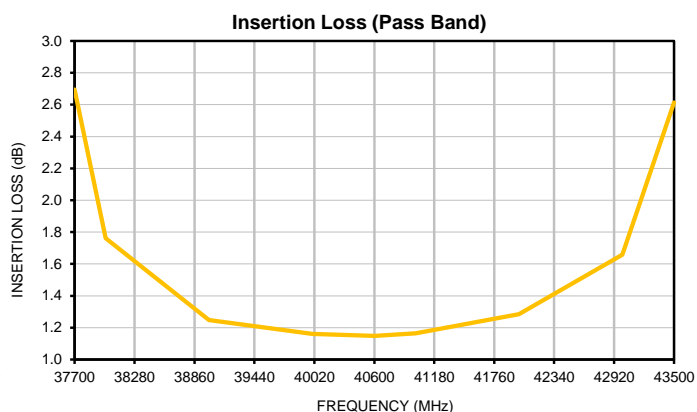
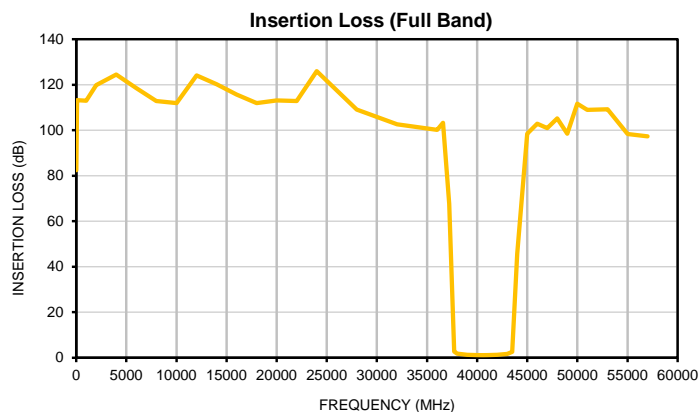
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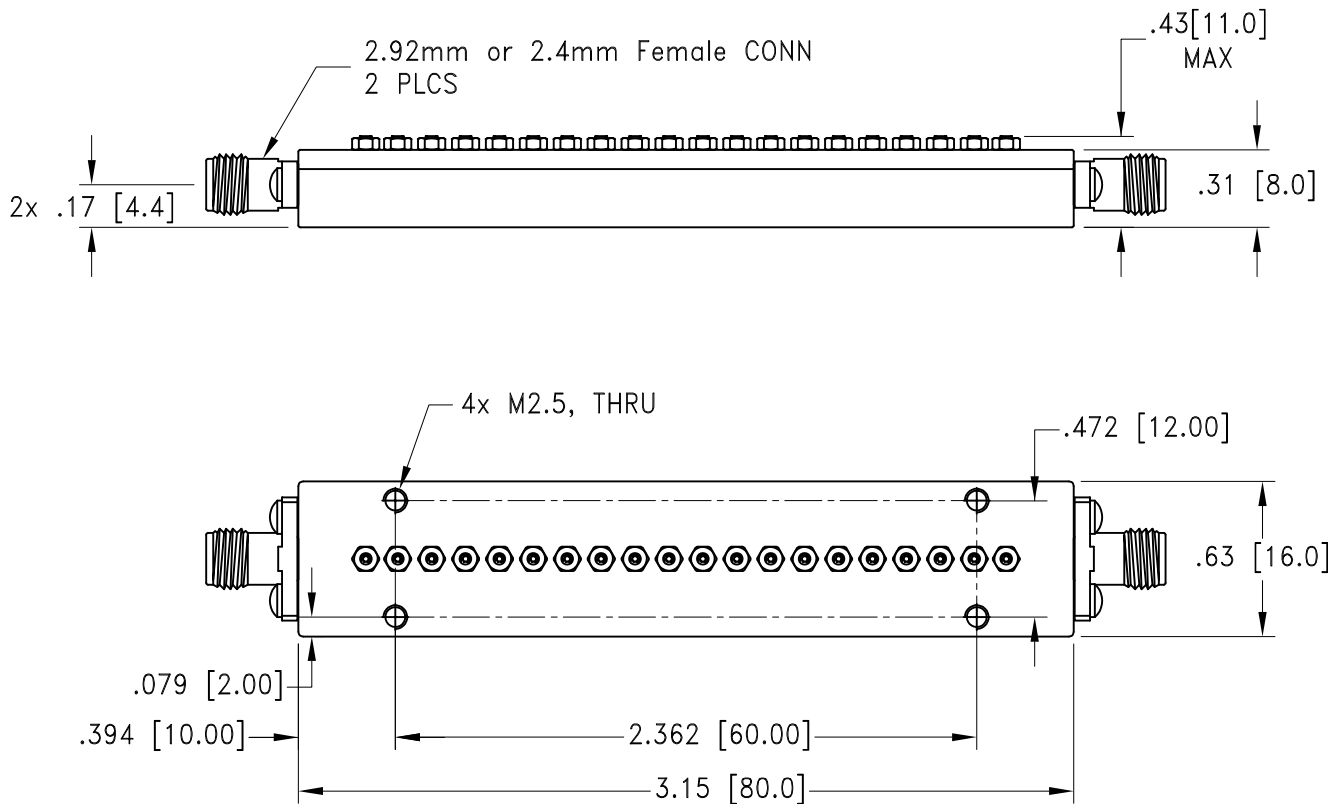
## Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT RETURN LOSS (dB)	OUTPUT RETURN LOSS (dB)	FREQUENCY (MHz)	Group Delay (ns)
10	82.46	0.05	0.05	37700	2.94
100	113.18	0.01	0.02	38000	1.90
1000	112.91	0.06	0.09	38300	1.57
2000	119.75	0.08	0.11	38600	1.39
4000	124.46	0.02	0.03	38900	1.29
6000	118.58	0.05	0.10	39200	1.21
8000	112.77	0.09	0.12	39500	1.15
10000	111.93	0.11	0.11	39800	1.11
12000	124.07	0.15	0.20	40100	1.08
14000	120.23	0.12	0.14	40400	1.07
16000	115.61	0.18	0.22	40600	1.06
18000	111.98	0.23	0.27	40800	1.06
20000	113.08	0.13	0.11	41100	1.06
22000	112.78	0.18	0.20	41400	1.06
24000	125.96	0.04	0.12	41700	1.09
28000	109.09	0.24	0.34	42000	1.11
32000	102.67	0.25	0.25	42300	1.17
36000	100.14	0.27	0.27	42600	1.25
36600	103.19	0.31	0.34	42900	1.38
37200	67.62	0.52	0.55	43500	2.58
37700	2.69	33.46	30.40		
38000	1.76	22.92	28.29		
39000	1.25	34.18	38.91		
40000	1.16	25.89	26.78		
40600	1.15	36.95	32.59		
41000	1.16	43.12	38.29		
42000	1.29	25.72	24.99		
43000	1.66	31.35	26.47		
43500	2.61	28.60	31.38		
44000	45.69	0.82	0.85		
45000	98.48	0.29	0.41		
46000	102.92	0.28	0.45		
47000	100.93	0.30	0.45		
48000	105.23	0.33	0.31		
49000	98.40	0.28	0.27		
50000	111.69	0.33	0.28		
51000	108.99	0.55	0.37		
53000	109.24	1.30	0.92		
55000	98.36	0.73	2.59		
57000	97.26	0.50	0.78		



## Typical Performance Curves





Weight: 77.5 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



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



# 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