



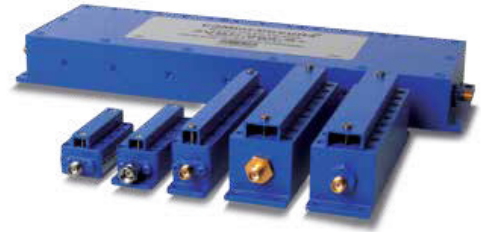
CAVITY

# Bandpass Filter ZVBP MODEL SERIES

50Ω DC to 57 GHz

## THE BIG DEAL

- Very low insertion loss with excellent power handling
- Sharp roll-off with wide stopband
- Passbands upto 36 GHz
- Stopband 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.

Mini-Circuits' cavity filters feature a special protective assembly to prevent accidental de-tuning that would otherwise require expensive replacement or return to factory for re-tuning. Precise machining allows realization of cavity filters with small form factors for applications where size is critical. Excellent repeatability across units is achieved through precise tuning and process control.

## KEY FEATURES

Feature	Advantages
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

REV. B  
 ECO-015165  
 ZVBP-25875-K+  
 EDU4315  
 URJ  
 221001





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# Bandpass Filter

## ZVBP-25875-K+

50Ω 24.25 to 27.5 GHz 2.92mm-Female

### FEATURES

- Low insertion loss, 2.4 dB typ.
- Good return loss, 18 dB typ.
- Great Rejection (60 to 100 dB typ.)
- Broad stopband performance up to 50 GHz
- Sharp roll-off



Generic photo used for illustration purposes only

Model No.	ZVBP-25875-K+
Case Style	UH3126
Connectors	2.92mm-F

### APPLICATIONS

- Test & Measurement Equipment
- Radar, EW, and ECM Defense Systems

**+RoHS Compliant**

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

### ELECTRICAL SPECIFICATIONS AT<sup>1</sup> 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	Fc	—	—	25875	—	MHz
	Insertion Loss	F1-F2	24250 - 27500	—	2.4	3.0	dB
	Return Loss	F1-F2	24250 - 27500	15	18	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 23875	60	63	—	dB
Stop Band, Upper	Rejection	F4-F5	27875 - 43500	60	63	—	dB
		F5-F6	43500 - 50000	—	60	—	dB

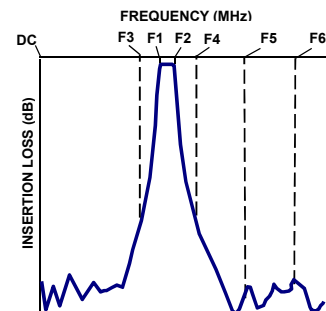
1. Data measured after calibrating using 2.92mm cal kit.

### MAXIMUM RATINGS

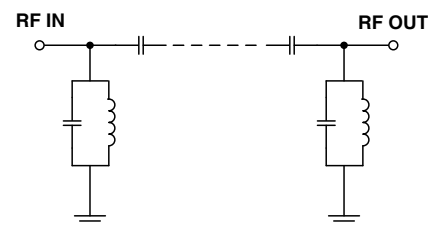
Parameter	Ratings
Operating temperature	-30°C to +70°C
Storage temperature	-30°C to +70°C
RF Power Input	2.5W max. at 25°C

Permanent damage may occur if any of these limits are exceeded  
Input and output ports are DC short to ground.

### TYPICAL FREQUENCY RESPONSE



### FUNCTIONAL SCHEMATIC





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# Bandpass Filter

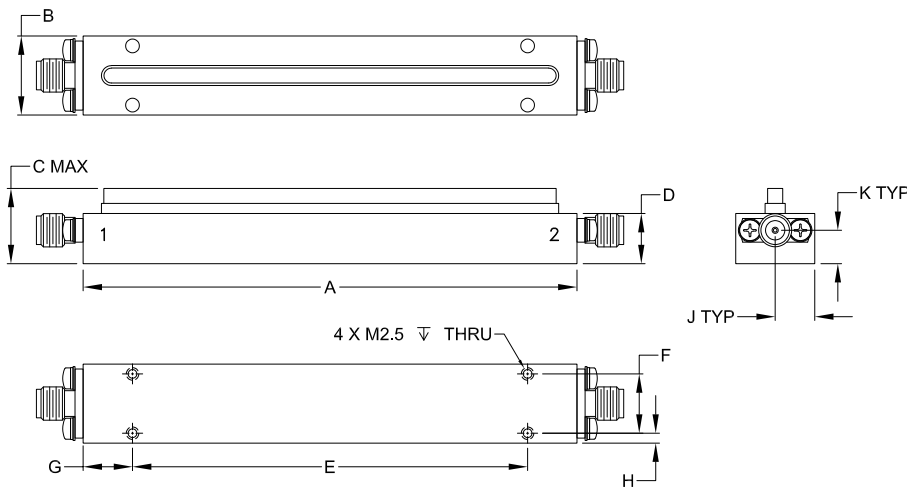
## ZVBP-25875-K+

Mini-Circuits

### COAXIAL CONNECTIONS

PORT 1	2.92mm-Female
PORT 2	2.92mm-Female

### OUTLINE DRAWING



### OUTLINE DIMENSIONS (Inches)

A	B	C	D	E	F
<b>3.94</b>	<b>.63</b>	<b>.60</b>	<b>.40</b>	<b>3.150</b>	<b>.472</b>
100.0	16.0	15.2	10.2	80.00	12.00
G	H	J	K	Wt.	
<b>.39</b>	<b>.08</b>	<b>.32</b>	<b>.26</b>	grams	
10.0	2.0	8.0	6.7	122	

Note. Please refer to case style drawing for details





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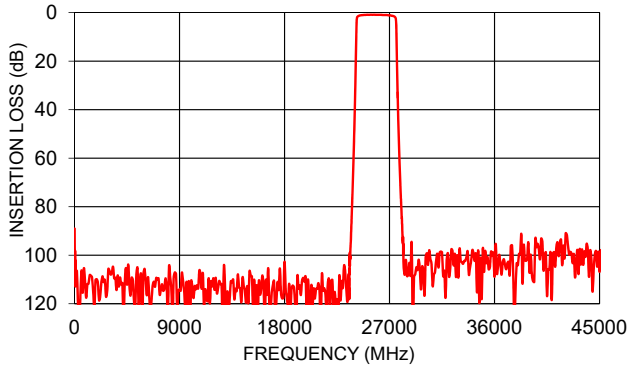
# Bandpass Filter

## ZVBP-25875-K+

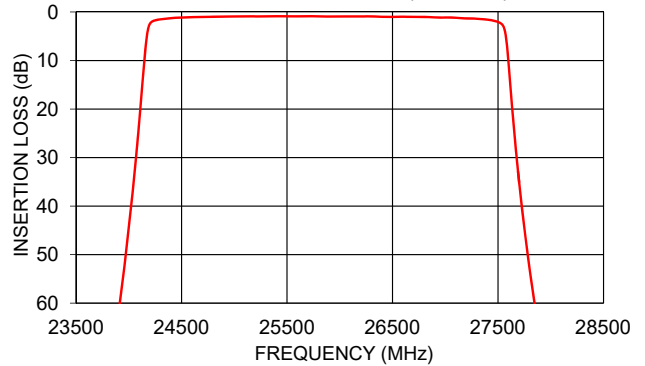
### TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	Group Delay (ns)
10	89.05	0.00	24250	4.17
10000	110.61	0.16	24500	2.64
23875	66.55	0.60	24700	2.27
24100	22.35	1.60	24900	2.05
24180	3.81	9.07	25100	1.92
24250	1.72	26.86	25300	1.83
25000	0.94	22.87	25500	1.79
25875	0.93	19.04	25700	1.73
27000	1.14	20.65	25875	1.72
27500	2.05	31.65	26000	1.72
27640	21.25	1.40	26250	1.74
27690	32.92	0.89	26500	1.79
27875	63.93	0.50	26750	1.89
43500	97.60	0.29	27000	2.07
50000	94.58	0.38	27500	4.04

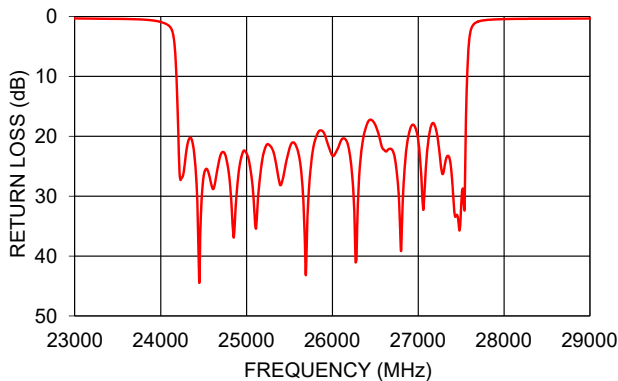
ZVBP-25875-K+  
INSERTION LOSS



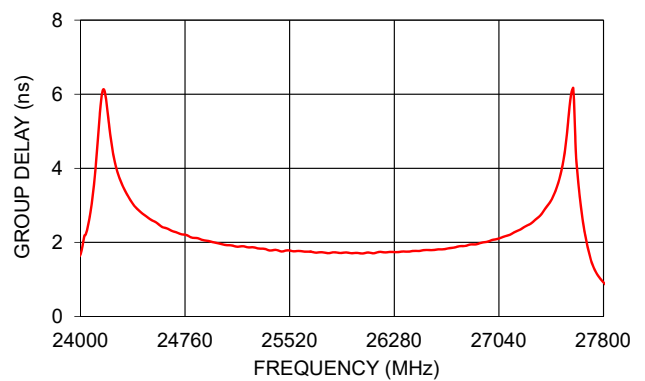
ZVBP-25875-K+  
INSERTION LOSS (Zoomed)



ZVBP-25875-K+  
RETURN LOSS



ZVBP-25875-K+  
GROUP DELAY



#### 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)



# Cavity Band Pass Filter

# ZVBP-25875-K+

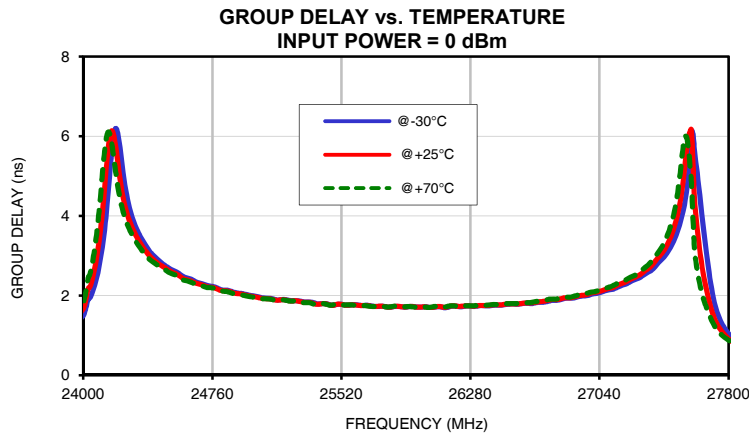
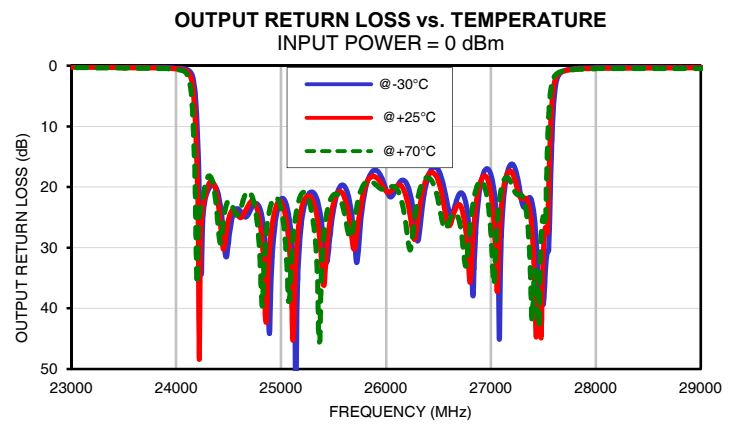
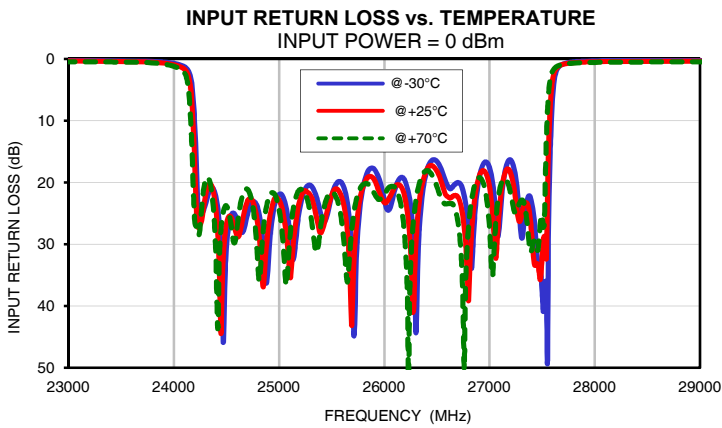
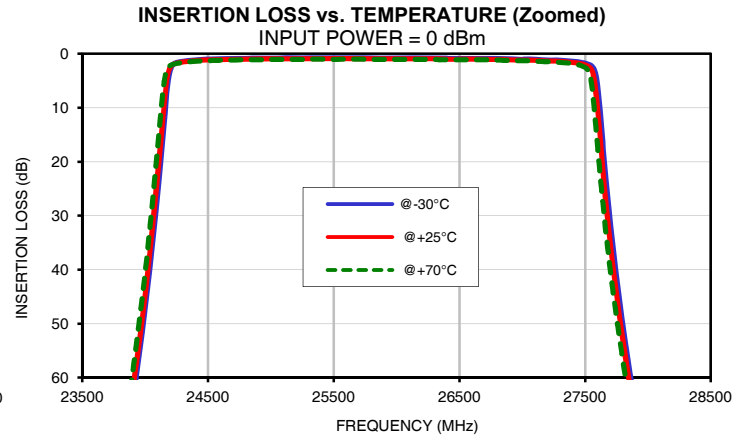
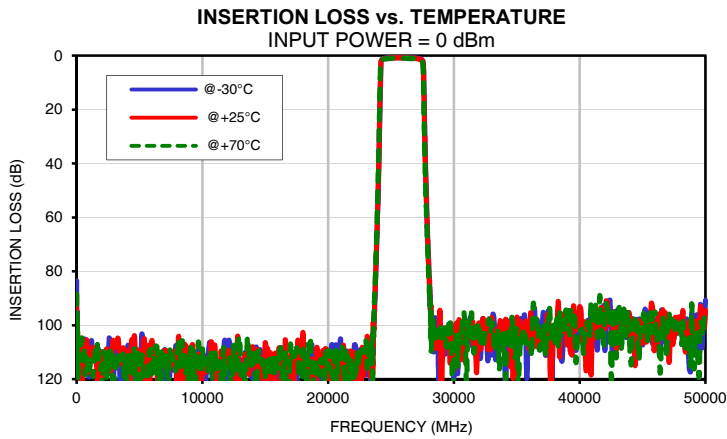
## Typical Performance Data

FREQ.  (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C
10	83.54	89.05	88.48	0.00	0.00	0.00	0.01	0.00	0.00
100	108.39	107.09	120.84	0.02	0.02	0.03	0.01	0.02	0.02
1000	119.06	117.50	117.54	0.09	0.11	0.12	0.08	0.10	0.11
2000	109.89	111.28	114.82	0.10	0.12	0.14	0.10	0.11	0.13
3000	110.34	106.43	123.04	0.08	0.11	0.13	0.08	0.11	0.12
4000	112.03	112.08	121.14	0.05	0.08	0.10	0.04	0.07	0.09
5000	113.37	110.32	115.89	0.01	0.05	0.08	0.00	0.03	0.05
6000	111.63	105.62	115.59	0.01	0.05	0.08	0.01	0.02	0.05
7000	109.13	109.38	115.08	0.03	0.07	0.10	0.00	0.03	0.05
8000	112.09	124.94	110.32	0.06	0.11	0.14	0.05	0.09	0.11
9000	109.88	114.12	122.92	0.09	0.15	0.18	0.07	0.12	0.14
10000	110.60	110.61	108.68	0.11	0.16	0.19	0.10	0.14	0.16
11000	124.40	107.44	109.77	0.09	0.16	0.19	0.10	0.14	0.17
12000	127.29	114.27	116.33	0.07	0.14	0.18	0.06	0.11	0.15
13000	117.49	133.63	107.48	0.05	0.13	0.17	0.05	0.12	0.16
14000	113.26	107.90	108.99	0.07	0.15	0.19	0.06	0.13	0.16
15000	121.63	106.61	118.96	0.13	0.20	0.24	0.13	0.19	0.21
16000	119.75	113.95	116.35	0.19	0.26	0.29	0.19	0.26	0.27
20000	119.82	110.13	115.75	0.03	0.08	0.16	0.03	0.11	0.17
22000	114.08	110.50	124.54	0.06	0.17	0.24	0.03	0.11	0.17
23875	68.61	66.55	63.37	0.45	0.60	0.74	0.29	0.40	0.47
24060	35.11	31.91	27.14	0.94	1.22	1.59	0.46	0.62	0.80
24100	25.91	22.35	17.11	1.23	1.60	2.18	0.62	0.86	1.31
24150	12.98	9.39	5.30	2.28	3.44	6.79	1.49	2.63	6.12
24180	5.79	3.81	2.61	5.28	9.07	17.92	4.42	8.53	19.29
24250	1.63	1.72	1.78	26.20	26.86	27.28	26.63	23.75	22.21
24500	0.99	1.14	1.27	30.75	26.62	23.78	28.78	25.23	22.29
25000	0.80	0.94	1.05	21.96	22.87	24.34	21.97	22.40	23.56
25500	0.75	0.89	1.02	22.16	22.02	21.56	23.67	22.66	21.29
25875	0.80	0.93	1.03	17.67	19.04	20.89	17.34	18.21	19.23
26000	0.77	0.91	1.03	22.80	23.23	21.95	20.37	20.67	20.31
26500	0.88	1.00	1.10	16.55	18.11	20.65	17.21	19.05	22.45
27000	1.01	1.14	1.26	17.57	20.65	27.55	17.96	21.05	27.60
27400	1.37	1.58	1.82	23.12	28.31	30.90	23.15	29.02	39.66
27500	1.72	2.05	2.54	37.92	31.65	25.35	39.30	30.74	24.87
27560	2.42	3.46	7.16	28.14	14.79	5.66	25.68	14.58	5.78
27640	16.26	21.25	27.46	1.70	1.40	1.18	1.73	1.42	1.19
27690	28.83	32.92	38.08	0.86	0.89	0.89	0.88	0.89	0.86
27875	61.65	63.93	67.32	0.36	0.50	0.60	0.39	0.49	0.55
28000	77.43	79.37	82.67	0.28	0.43	0.53	0.32	0.42	0.48
28500	97.19	108.56	105.25	0.21	0.37	0.47	0.24	0.35	0.44
29000	103.17	131.97	106.06	0.19	0.34	0.43	0.21	0.34	0.44
29500	103.12	101.84	104.84	0.12	0.28	0.38	0.16	0.27	0.38
30000	119.76	116.64	107.55	0.04	0.21	0.32	0.07	0.19	0.29
30500	102.45	101.52	106.70	0.03	0.14	0.26	0.02	0.10	0.21
31000	102.32	101.85	121.28	0.07	0.23	0.36	0.10	0.02	0.12
31500	108.08	98.87	104.13	2.54	2.69	2.67	0.14	0.03	0.06
32000	100.29	99.19	99.25	0.00	0.16	0.29	0.14	0.03	0.02
32500	98.73	104.21	102.19	0.13	0.01	0.09	0.09	0.01	0.03
33000	110.92	97.31	100.17	0.11	0.02	0.04	0.00	0.09	0.09
33500	107.02	102.31	101.88	0.04	0.02	0.05	0.22	0.31	0.29
34000	108.44	102.31	102.62	0.06	0.10	0.11	1.30	1.60	1.98
34500	100.43	115.33	108.06	0.82	0.41	0.26	0.50	0.56	0.55
35000	106.60	97.18	101.16	0.20	0.25	0.26	0.21	0.28	0.25
35500	100.39	105.80	102.65	0.25	0.31	0.34	0.24	0.32	0.29
40000	93.48	93.14	101.46	0.00	0.14	0.24	0.02	0.14	0.19
42000	109.34	101.32	94.19	0.09	0.16	0.19	0.05	0.14	0.12
43500	98.09	97.60	93.70	0.21	0.29	0.31	0.17	0.27	0.26
48000	98.58	98.94	101.04	0.23	0.44	0.58	0.23	0.41	0.56
50000	90.73	94.58	98.13	0.02	0.38	0.64	0.14	0.37	0.59

## Typical Performance Data

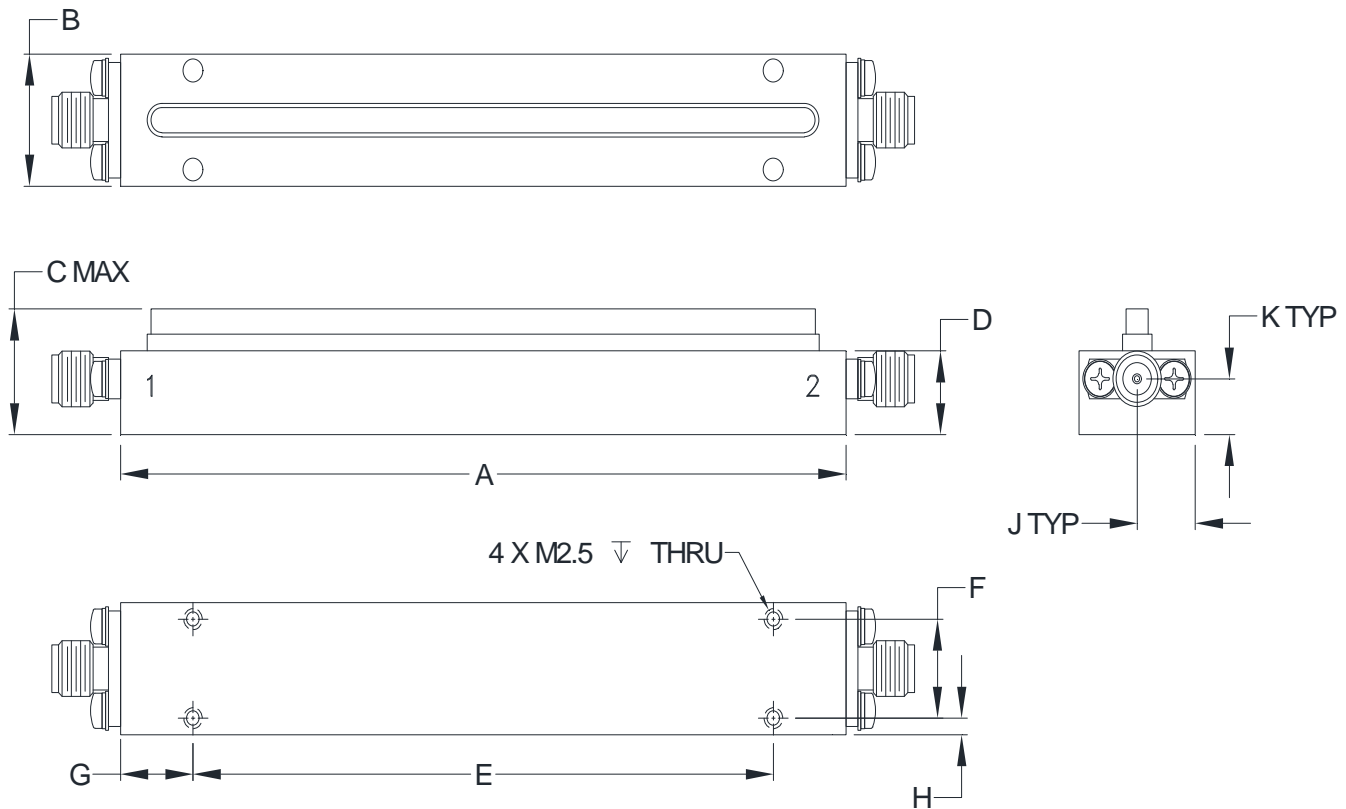
FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-30°C	@+25°C	@+70°C
24250	4.65	4.17	3.89
24300	3.81	3.58	3.43
24350	3.38	3.22	3.11
24400	3.06	2.95	2.87
24450	2.86	2.78	2.73
24500	2.70	2.64	2.59
24550	2.59	2.54	2.49
24600	2.45	2.41	2.38
24650	2.38	2.34	2.31
24700	2.30	2.27	2.24
24750	2.24	2.21	2.20
24800	2.17	2.14	2.12
24850	2.13	2.11	2.09
24900	2.07	2.05	2.04
24950	2.04	2.02	2.00
25000	1.99	1.98	1.96
25100	1.93	1.92	1.91
25200	1.89	1.88	1.87
25300	1.84	1.83	1.82
25400	1.80	1.79	1.79
25500	1.78	1.79	1.79
25600	1.77	1.77	1.76
25700	1.74	1.73	1.73
25800	1.71	1.71	1.71
25875	1.72	1.72	1.72
26000	1.71	1.72	1.72
26100	1.72	1.72	1.73
26200	1.73	1.73	1.73
26300	1.73	1.74	1.74
26400	1.75	1.76	1.77
26500	1.78	1.79	1.80
26600	1.81	1.81	1.82
26700	1.83	1.85	1.86
26800	1.89	1.91	1.93
26900	1.95	1.98	2.00
27000	2.04	2.07	2.09
27100	2.15	2.18	2.22
27200	2.30	2.36	2.41
27300	2.52	2.59	2.68
27400	2.88	3.02	3.17
27500	3.62	4.04	4.57

## Typical Performance Curves



## Outline Dimensions

UH3126



CASE#	A	B	C	D	E	F
UH3126	3.94 (100.0)	.63 (16.0)	.60 (15.2)	.40 (10.2)	3.150 (80.00)	.472 (12.00)

CASE#	G	H	J	K	WT.GRAMS
UH3126	.39 (10.0)	.08 (2.0)	.32 (8.0)	.26 (6.7)	122

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .100$ ; 3 Pl.  $\pm .015$

### Notes:

1. Case material: Brass.
2. Case Finish: Powder coated.
3. Refer to the individual model data sheet for the type of connectors available.



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



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

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