

# Cavity Bandpass Filters

50Ω DC to 27.125 GHz



## The Big Deal

- Very low insertion loss with excellent power handling
- Very fast roll-off with wide stopband
- Passbands up to 27.125 GHz
- Stopbands up to 37 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 1% 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
Fast 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

### 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)



# Bandpass Filter

## ZVBP-K26R25G+

50Ω 25375 to 27125 MHz



Generic photo used for illustration purposes only

CASE STYLE: VB3048

Connectors Model  
2.92mm-F ZVBP-K26R25G+

### Features

- Low insertion loss, 1 dB typical
- Stopband up to 37 GHz
- High rejection
- Good VSWR, 1.22:1 typical
- Small size

### Applications

- Mobile communication
- Space research
- Satellite communication

### Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Center Frequency	Fc	26250	-	1.0	1.5	dB
	Insertion Loss	F1-F2	25375 - 27125	-	2.0	2.5	dB
	VSWR	F1-F2	25375 - 27125	-	1.22	1.49	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 24500	55	63	-	dB
		F3-F4	24500 - 24935	30	35	-	dB
Stop Band, Upper	Insertion Loss	F5-F6	27565 - 28000	30	36	-	dB
		F6-F7	28000 - 37000	55	63	-	dB

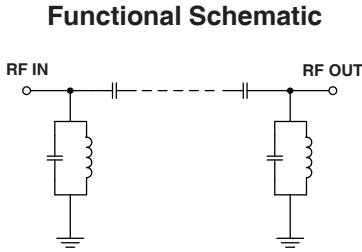
### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	5 W max.

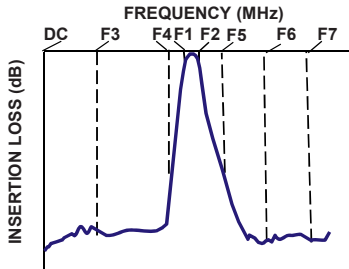
Permanent damage may occur if any of these limits are exceeded.

### Typical Performance Data at 25°C

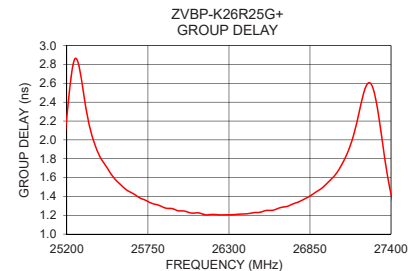
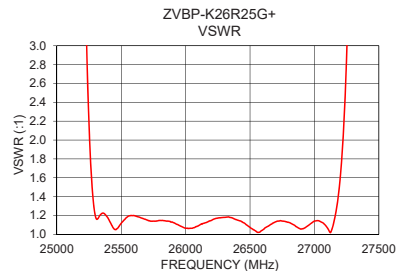
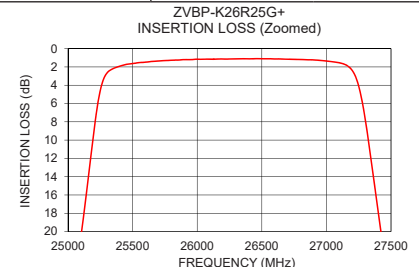
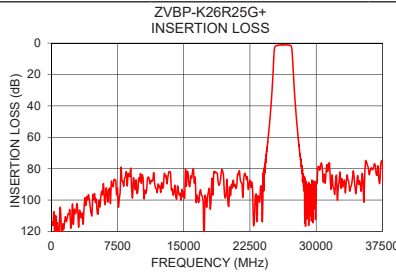
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
100	113.79	155.40	25375	2.02
500	109.95	51.79	25400	1.91
1000	104.69	41.41	25500	1.64
5000	101.58	64.66	25600	1.47
10000	87.95	638.20	25700	1.38
24500	63.59	40.61	25800	1.32
24935	35.85	25.58	25900	1.27
25100	20.51	15.55	26000	1.24
25280	3.16	1.39	26100	1.22
25375	2.04	1.21	26250	1.20
25400	1.92	1.16	26300	1.21
26250	1.13	1.17	26400	1.21
27000	1.36	1.14	26500	1.23
27125	1.64	1.02	26600	1.25
27240	3.61	2.52	26700	1.30
27480	25.66	27.27	26800	1.36
27565	33.17	31.48	26900	1.46
28000	62.39	40.29	27000	1.59
30000	88.18	51.12	27100	1.85
37000	78.23	1485.78	27125	1.95



### Typical Frequency Response



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



### Notes

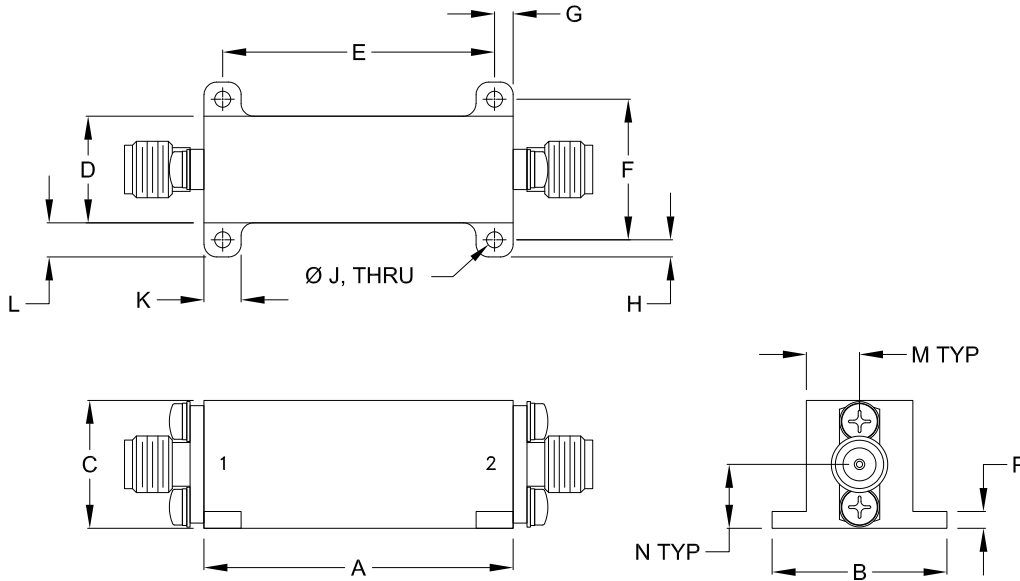
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## Coaxial Connections

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

## Outline Drawing



## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
1.45	.82	.60	.50	1.275	.660	.09	.08
36.8	20.8	15.2	12.7	32.39	16.76	2.2	2.0
J	K	L	M	N	P		Wt.
.075	.17	.16	.25	.30	.08		grams
1.90	4.4	4.1	6.4	7.6	2.0		60

Note: Please refer to case style drawing for details

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# Cavity Bandpass Filter

# ZVBP-K26R25G+

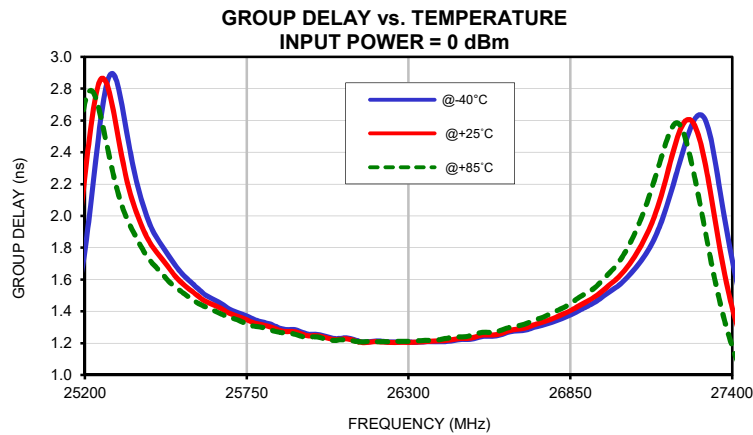
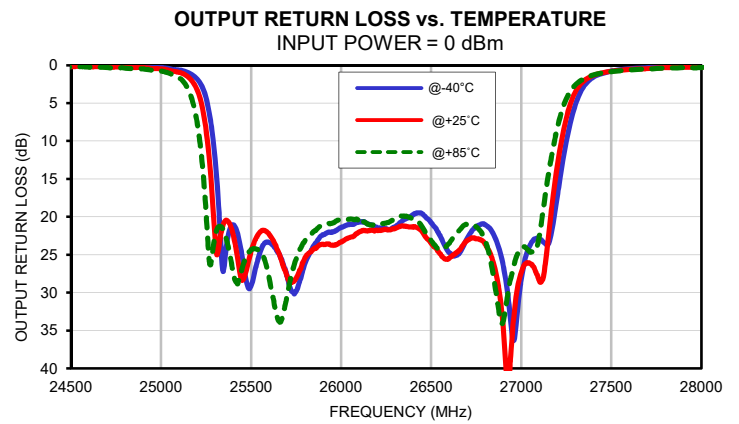
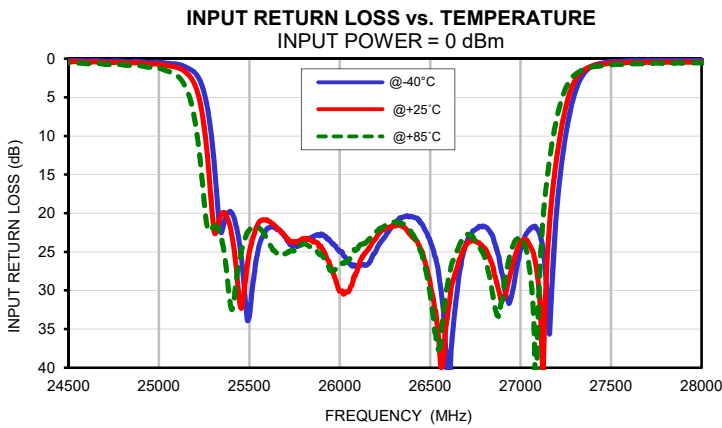
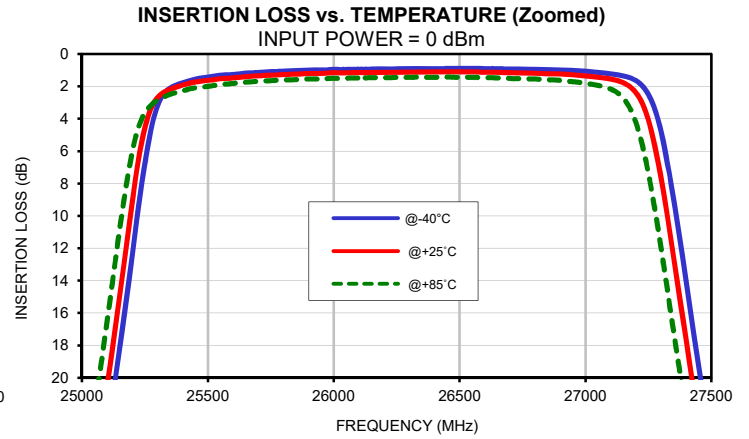
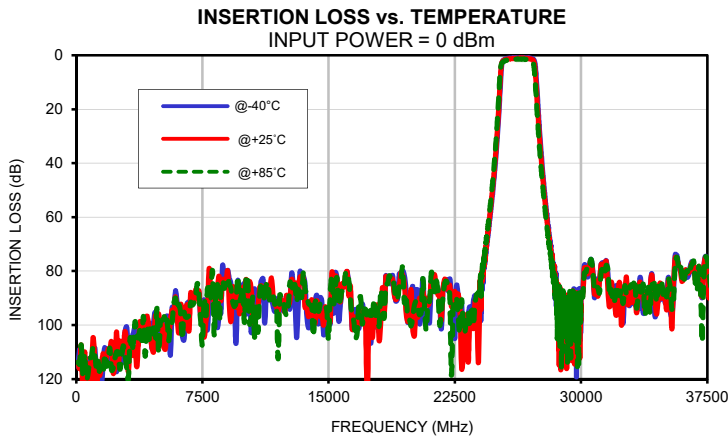
## Typical Performance Data

FREQ.  (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	115.40	113.79	113.85	0.08	0.11	0.13	0.10	0.13	0.15
200	109.01	115.87	114.48	0.19	0.24	0.26	0.18	0.23	0.26
500	114.50	109.95	110.75	0.26	0.34	0.38	0.24	0.31	0.37
1000	118.57	104.69	108.28	0.33	0.42	0.48	0.19	0.28	0.33
5000	102.34	101.58	99.04	0.18	0.27	0.30	0.22	0.28	0.29
8000	89.79	87.49	89.91	0.03	0.13	0.05	0.06	0.11	0.07
10000	84.64	87.95	99.05	0.07	0.03	0.05	0.06	0.10	0.09
10100	95.99	83.07	81.77	0.07	0.03	0.05	0.06	0.10	0.09
10200	84.96	89.35	84.06	0.07	0.03	0.05	0.05	0.10	0.08
10300	84.82	83.89	99.48	0.08	0.02	0.05	0.05	0.08	0.08
11000	83.55	85.34	84.15	0.08	0.02	0.06	0.02	0.07	0.06
12000	89.98	95.25	112.53	0.06	0.04	0.09	0.05	0.01	0.02
13000	91.09	84.38	85.05	0.14	0.04	0.03	0.17	0.10	0.08
15000	98.08	94.66	105.23	0.14	0.02	0.04	0.07	0.01	0.02
17000	92.16	96.82	99.58	0.10	0.02	0.09	0.02	0.08	0.11
19000	91.18	90.62	90.41	0.08	0.05	0.12	0.05	0.04	0.07
21000	98.93	91.00	91.20	0.01	0.18	0.26	0.05	0.16	0.21
23000	107.78	112.32	98.54	0.01	0.19	0.29	0.11	0.21	0.25
24000	86.20	85.12	84.01	0.11	0.27	0.38	0.02	0.14	0.19
24500	65.01	63.59	61.78	0.26	0.43	0.59	0.05	0.18	0.25
24900	40.76	38.60	35.70	0.37	0.57	0.91	0.17	0.31	0.49
24935	38.13	35.85	32.77	0.47	0.68	1.09	0.25	0.40	0.61
25000	32.77	30.26	26.84	0.46	0.72	1.24	0.30	0.48	0.78
25100	23.42	20.51	16.46	0.70	1.12	2.18	0.64	0.94	1.67
25200	12.34	9.06	6.01	1.84	3.42	8.12	1.80	3.22	7.53
25280	4.26	3.16	3.08	8.08	15.70	22.30	8.12	15.76	25.68
25375	1.91	2.04	2.38	20.21	20.40	27.70	22.20	20.67	24.16
25400	1.78	1.92	2.28	19.90	22.44	32.40	21.05	22.28	27.23
25500	1.42	1.63	2.00	33.42	25.13	22.17	29.10	24.55	24.32
26000	0.95	1.15	1.50	24.98	30.12	26.98	21.39	23.32	20.32
26250	0.92	1.13	1.45	23.04	22.00	21.61	21.56	21.67	20.81
26500	0.90	1.11	1.44	23.56	29.04	30.49	20.77	23.50	23.14
27000	1.07	1.36	1.82	24.59	23.62	23.19	28.27	27.30	24.09
27125	1.28	1.64	2.38	24.82	40.73	20.57	23.36	27.69	18.60
27200	1.64	2.39	4.24	19.50	12.76	7.69	17.33	13.32	8.31
27240	2.24	3.61	6.63	11.33	7.29	4.37	11.36	8.03	5.04
27400	14.08	17.73	22.17	0.90	0.91	1.04	1.59	1.33	1.29
27480	22.41	25.66	29.64	0.44	0.64	0.82	0.89	0.88	0.92
27500	24.38	27.42	31.41	0.37	0.59	0.78	0.78	0.81	0.86
27565	30.36	33.17	36.90	0.32	0.55	0.74	0.55	0.64	0.69
27600	33.42	36.07	39.65	0.25	0.49	0.68	0.46	0.55	0.62
27800	48.53	50.52	53.51	0.22	0.45	0.59	0.16	0.33	0.39
28000	60.82	62.39	64.95	0.19	0.43	0.52	0.10	0.26	0.30
29000	100.93	96.40	98.28	0.21	0.43	0.45	0.10	0.20	0.25
29500	92.41	94.03	89.13	0.12	0.36	0.35	0.13	0.21	0.28
30000	90.82	88.18	89.36	0.08	0.34	0.30	0.15	0.21	0.26
30500	77.69	78.05	78.02	0.03	0.24	0.19	0.10	0.15	0.19
31000	86.59	89.35	86.14	0.09	0.18	0.14	0.02	0.11	0.14
31500	76.11	76.37	77.81	0.09	0.19	0.12	0.12	0.00	0.03
32000	93.00	92.76	90.85	0.12	0.15	0.11	0.18	0.04	0.01
32500	99.40	91.92	92.03	0.11	0.19	0.14	0.25	0.06	0.04
33000	85.70	91.58	85.00	0.14	0.15	0.14	0.32	0.13	0.09
33500	82.51	84.06	85.69	0.12	0.15	0.16	0.26	0.13	0.08
34000	87.96	90.50	86.14	0.12	0.17	0.20	0.25	0.09	0.05
34500	93.70	95.94	91.55	0.16	0.12	0.19	0.17	0.04	0.01
35000	91.73	90.18	88.76	0.19	0.07	0.16	0.10	0.01	0.05
35500	88.36	84.15	90.66	0.26	0.01	0.12	0.13	0.02	0.06
36000	79.75	83.81	82.16	0.28	0.02	0.10	0.13	0.00	0.07
36500	78.28	79.14	78.94	0.31	0.02	0.10	0.11	0.02	0.08
37000	79.09	78.23	78.24	0.29	0.01	0.10	0.15	0.01	0.03

## Typical Performance Data

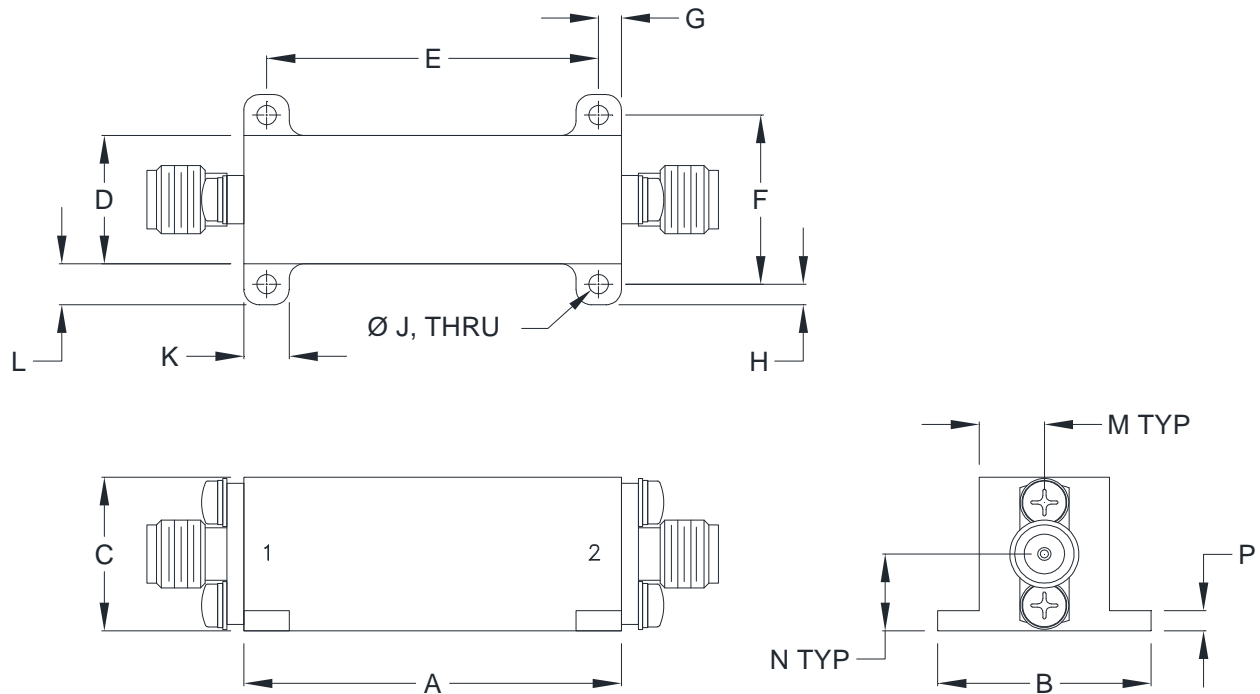
FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
25375	2.22	2.02	1.86
25400	2.05	1.91	1.78
25440	1.88	1.78	1.68
25480	1.76	1.69	1.60
25520	1.66	1.60	1.53
25560	1.58	1.53	1.48
25600	1.52	1.47	1.44
25640	1.47	1.44	1.40
25680	1.43	1.40	1.37
25720	1.39	1.37	1.34
25760	1.36	1.34	1.31
25800	1.33	1.32	1.30
25840	1.31	1.30	1.28
25880	1.29	1.27	1.26
25920	1.28	1.27	1.25
25960	1.26	1.25	1.24
26000	1.25	1.24	1.23
26040	1.23	1.22	1.22
26080	1.23	1.23	1.22
26120	1.22	1.21	1.21
26160	1.21	1.20	1.21
26200	1.21	1.21	1.21
26250	1.21	1.20	1.21
26280	1.21	1.21	1.21
26320	1.21	1.20	1.21
26360	1.21	1.21	1.22
26400	1.21	1.21	1.22
26440	1.21	1.22	1.23
26480	1.22	1.23	1.24
26520	1.23	1.23	1.25
26560	1.24	1.25	1.27
26600	1.25	1.25	1.27
26640	1.27	1.28	1.30
26680	1.28	1.29	1.31
26720	1.29	1.31	1.34
26760	1.32	1.33	1.37
26800	1.34	1.36	1.40
26840	1.37	1.39	1.44
26880	1.40	1.44	1.49
27000	1.54	1.59	1.67
27125	1.82	1.95	2.16

## Typical Performance Curves



## Outline Dimensions

VB3048



CASE#	A	B	C	D	E	F	G	H
VB3048	1.45 (36.8)	.82 (20.8)	.60 (15.2)	.50 (12.7)	1.275 (32.39)	.660 (16.76)	.09 (2.2)	.08 (2.0)

CASE#	J	K	L	M	N	P	WT. GRAMS
VB3048	.075 (1.90)	.17 (4.4)	.16 (4.1)	.25 (6.4)	.30 (7.6)	.08 (2.0)	60

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

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.

<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
Operating Temperature	-40° to 85° C Ambient Temperature	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet