

# Coaxial Bandpass Filter

## ZABP-16+

50Ω 3 to 30 MHz

### The Big Deal

- Low insertion loss, 1.5 dB typical
- Good VSWR, 1.43:1 typical
- High rejection
- Fast roll-off
- Connectorized package



CASE STYLE: UU1842

### Product Overview

ZBPF-16+ is a 50Ω bandpass filter in a rugged connectorized package covering 3 to 30 MHz. These units offers good matching within the passband and high rejection. This filter has miniature high Q capacitors and wire welded inductors for high reliability. It has repeatable performance across lots and consistent performance across temperature

### Key Features

Feature	Advantages
Fast roll-off	Wide bandwidth filter with fast-roll off, which increases selectivity on the adjacent channel.
Good matching and low loss in pass band	This filter has good matching and low loss in the pass band
Connectorized package	Connectorized package is easy to interface with other devices and well suited for test setups.

#### 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)



# Coaxial Bandpass Filter

50Ω 3 to 30 MHz

## ZABP-16+



CASE STYLE: UU1842  
Connectors Model  
SMA-MF ZABP-16+

### Features

- Low insertion loss, 1.5 dB typical
- Good VSWR, 1.43:1 typical
- High rejection
- Fast roll-off
- Connectorized package

### Applications

- CATV networks
- Aerospace and defence
- Digital radio networks

### Electrical Specifications at 25°C

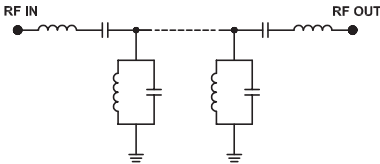
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
<b>Pass Band</b>	Center Frequency	-	-	16	-	MHz
	Insertion Loss	F1-F2	3-30	1.50	3.00	dB
	VSWR	F1-F2	3-30	1.43	2.32	:1
<b>Stop Band, Lower</b>	Insertion Loss	DC-F3	DC - 1.4	20	33	dB
	VSWR	DC-F3	DC - 1.4	-	20	:1
<b>Stop Band, Upper</b>	Insertion Loss	F4-F5	35-1600	20	32	dB
	VSWR	F4-F5	35-1600	-	20	:1

### Maximum Ratings

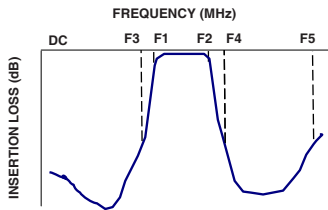
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5 W max.

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

### Functional Schematic



### Typical Frequency Response

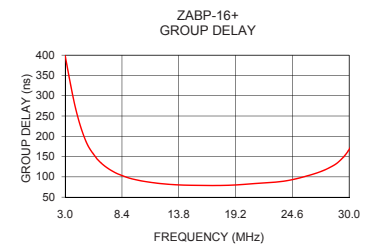
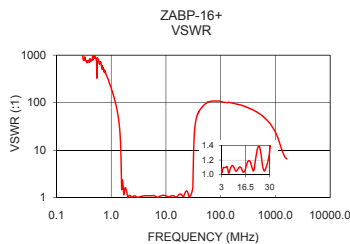
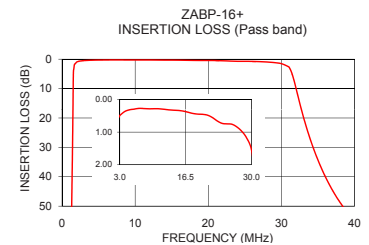
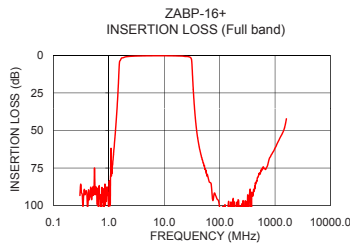


### Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
0.30	93.23	976.09	3.00	399.61
0.50	88.76	1037.72	4.00	268.38
1.00	94.61	202.49	5.00	186.50
1.20	67.76	97.76	6.00	145.49
1.40	35.93	35.24	8.00	107.59
1.43	30.38	27.55	10.00	91.53
1.48	19.99	14.58	12.00	83.85
1.52	10.48	5.13	14.00	80.14
1.62	3.13	2.27	16.00	79.14
3.00	0.49	1.01	18.00	79.08
16.00	0.36	1.05	20.00	81.67
30.00	1.54	1.34	22.00	85.43
31.20	3.43	2.19	23.00	87.22
32.00	9.98	8.25	24.00	90.34
33.10	20.51	22.25	25.00	95.65
34.40	30.51	35.46	26.00	102.55
35.00	34.37	40.03	27.00	110.41
500.00	80.16	59.46	28.00	121.17
1000.00	61.65	23.96	29.00	137.25
1600.00	42.23	6.62	30.00	167.56

### +RoHS Compliant

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



### Notes

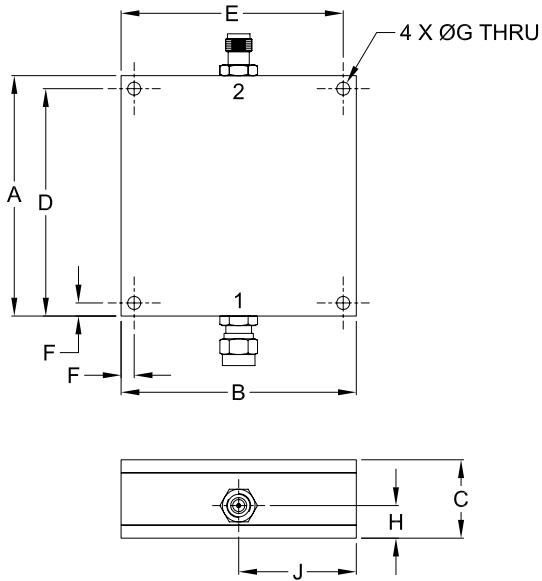
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## Coaxial Connections

INPUT	SMA-MALE
OUTPUT	SMA-FEMALE

## Outline Drawing



## Outline Dimensions ( $\frac{\text{inch}}{\text{mm}}$ )

A	B	C	D	E
2.300	2.250	.750	2.175	2.125
58.42	57.15	19.05	55.25	53.98
F	G	H	J	wt.
.125	.125	.312	1.125	grams
3.18	3.18	7.93	28.58	124

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*Typical Performance Data*

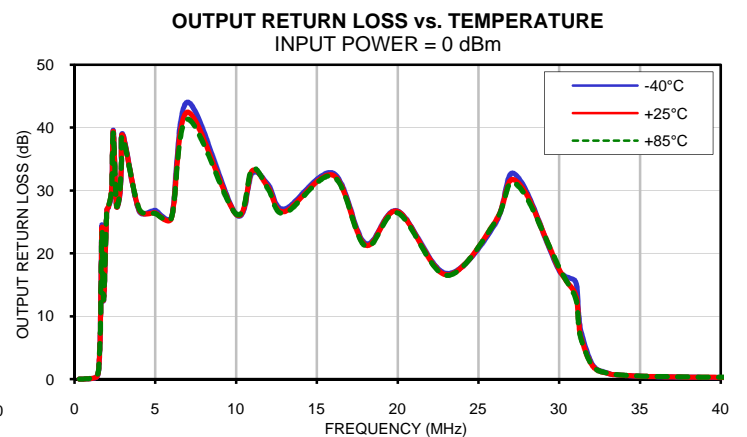
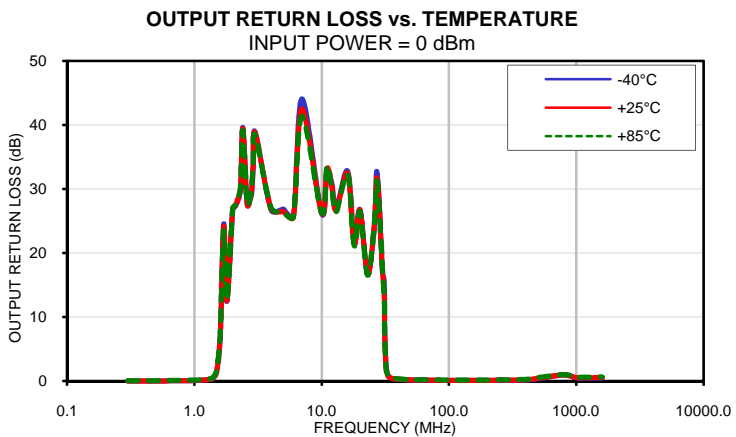
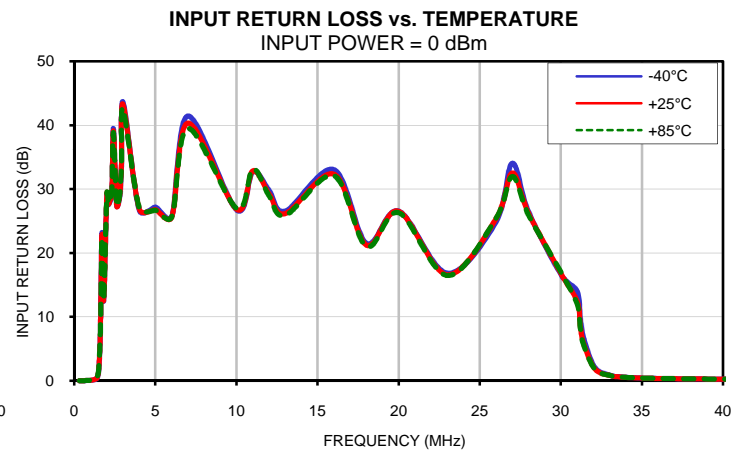
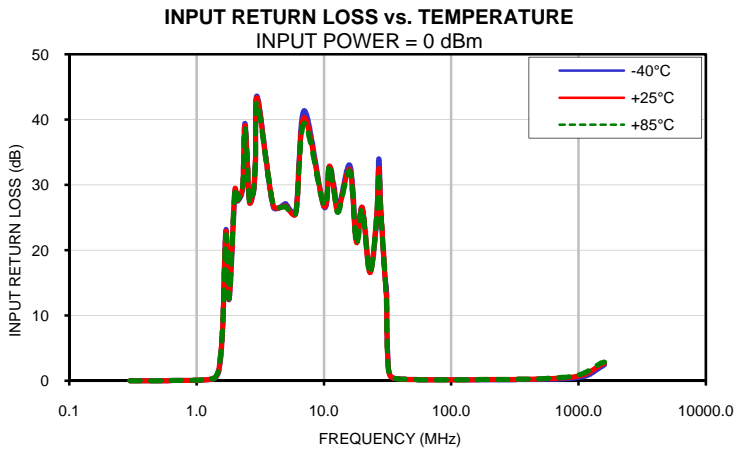
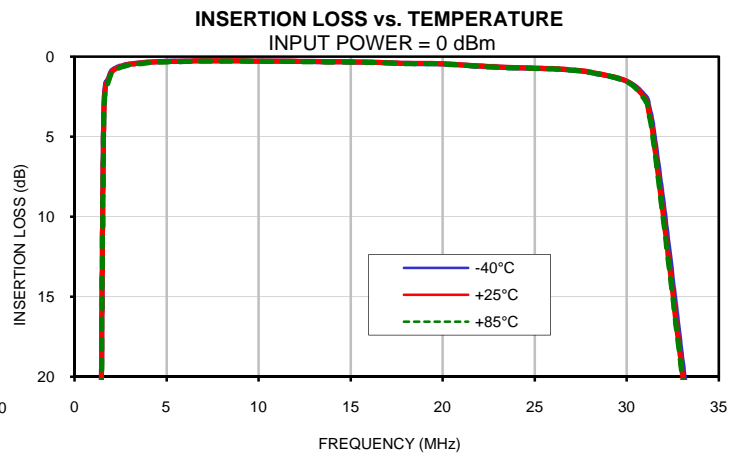
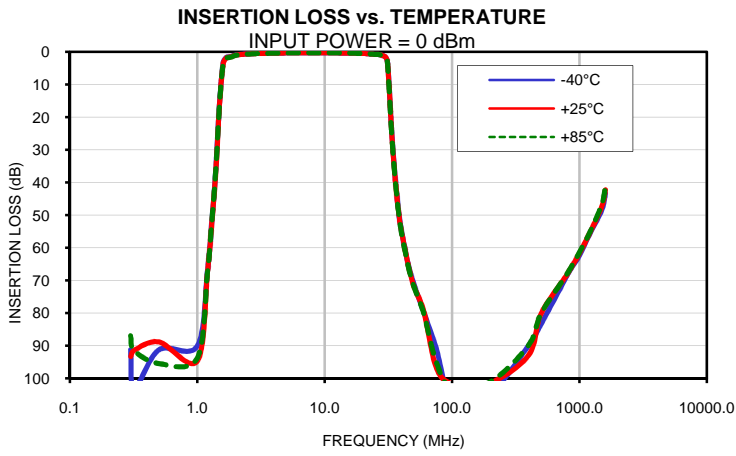
FREQ.  (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
0.30	91.23	93.23	86.97	0.01	0.02	0.02	0.03	0.02	0.03
0.32	103.17	91.33	91.46	0.02	0.02	0.03	0.03	0.03	0.03
0.50	91.26	88.76	95.43	0.02	0.02	0.03	0.03	0.03	0.04
1.00	90.11	94.61	93.81	0.08	0.09	0.10	0.09	0.10	0.12
1.20	67.54	67.76	68.24	0.16	0.18	0.21	0.17	0.19	0.22
1.30	52.61	52.52	52.64	0.24	0.27	0.31	0.25	0.28	0.32
1.40	35.96	35.93	36.03	0.44	0.49	0.55	0.43	0.48	0.54
1.50	15.26	15.31	15.55	1.69	1.84	2.00	1.51	1.64	1.79
1.60	3.28	3.46	3.70	7.81	7.94	8.11	7.47	7.58	7.72
1.70	1.65	1.78	1.95	23.17	22.89	22.33	24.53	24.15	23.44
1.80	1.50	1.59	1.72	12.47	12.56	12.67	12.44	12.54	12.64
2.00	0.93	0.99	1.08	29.02	29.33	29.38	26.84	26.94	26.86
2.10	0.82	0.87	0.95	27.53	27.63	27.74	27.30	27.41	27.49
2.30	0.69	0.73	0.79	29.32	29.68	29.73	29.72	30.19	30.29
2.40	0.63	0.68	0.73	39.45	39.09	38.81	39.59	39.44	39.15
2.60	0.57	0.60	0.65	27.41	27.42	27.52	27.56	27.57	27.67
2.80	0.51	0.54	0.58	28.91	29.17	29.33	29.10	29.40	29.56
2.90	0.48	0.51	0.55	33.53	34.05	34.25	33.42	33.96	34.15
3.00	0.46	0.49	0.53	43.55	43.21	42.53	38.90	38.70	38.37
4.00	0.35	0.37	0.40	26.65	26.83	26.98	26.74	26.92	27.07
5.00	0.30	0.32	0.34	27.16	26.79	26.67	26.86	26.48	26.36
6.00	0.28	0.30	0.31	25.72	25.60	25.63	25.72	25.61	25.65
7.00	0.26	0.27	0.29	41.41	40.32	39.47	44.06	42.49	41.35
10.00	0.28	0.28	0.30	26.71	26.82	26.95	26.22	26.23	26.27
11.00	0.28	0.28	0.30	32.70	32.85	33.10	32.77	33.17	33.48
12.00	0.29	0.30	0.32	29.79	29.27	28.93	30.89	30.47	30.17
13.00	0.31	0.32	0.33	26.52	26.16	25.87	27.06	26.67	26.39
16.00	0.35	0.36	0.37	33.03	32.33	32.08	32.78	32.46	32.28
18.00	0.43	0.43	0.44	21.53	21.23	21.02	21.59	21.35	21.16
20.00	0.46	0.46	0.47	26.54	26.52	26.28	26.75	26.70	26.44
23.00	0.66	0.66	0.68	16.84	16.57	16.45	16.83	16.61	16.51
26.00	0.77	0.76	0.77	24.84	25.36	25.42	24.53	24.89	24.84
27.00	0.85	0.84	0.86	34.02	32.52	31.94	32.66	31.70	31.22
28.00	0.98	0.97	0.99	26.42	26.22	25.95	29.78	29.34	28.83
30.00	1.54	1.54	1.57	16.64	16.78	16.96	17.27	17.49	17.73
31.00	2.47	2.63	2.72	14.04	12.45	12.01	15.58	13.55	12.99
31.20	3.15	3.43	3.57	9.82	8.58	8.28	10.52	9.15	8.80
31.40	4.19	4.63	4.81	6.76	5.87	5.66	7.16	6.22	6.01
32.10	10.23	10.98	11.24	2.07	1.85	1.81	2.21	2.00	1.98
33.10	19.78	20.51	20.75	0.83	0.78	0.78	0.89	0.88	0.90
33.60	23.97	24.66	24.89	0.65	0.62	0.63	0.70	0.70	0.72
34.00	27.04	27.70	27.92	0.57	0.55	0.55	0.61	0.62	0.64
34.40	29.89	30.51	30.73	0.50	0.49	0.50	0.54	0.56	0.58
35.10	34.40	34.97	35.18	0.43	0.43	0.43	0.46	0.48	0.51
36.10	39.96	40.48	40.65	0.37	0.37	0.37	0.39	0.41	0.44
38.00	48.26	48.71	48.86	0.31	0.30	0.31	0.32	0.34	0.36
40.00	54.39	54.67	54.90	0.27	0.27	0.28	0.28	0.30	0.32
45.00	64.53	64.66	65.04	0.22	0.22	0.23	0.21	0.23	0.25
50.00	70.93	71.57	71.58	0.19	0.19	0.20	0.18	0.19	0.21
60.00	79.64	79.36	80.06	0.16	0.17	0.17	0.15	0.16	0.18
75.00	90.56	96.51	94.81	0.15	0.16	0.16	0.14	0.14	0.16
100.00	106.09	101.49	102.96	0.15	0.16	0.16	0.13	0.13	0.14
200.00	104.43	101.29	101.04	0.16	0.19	0.20	0.12	0.14	0.14
400.00	89.85	92.76	89.79	0.19	0.25	0.28	0.17	0.21	0.23
500.00	83.41	80.16	80.15	0.21	0.29	0.33	0.36	0.45	0.50
800.00	68.50	68.09	67.99	0.33	0.48	0.57	0.97	0.97	0.97
1000.00	62.35	61.65	61.36	0.52	0.73	0.89	0.50	0.56	0.60
1200.00	55.86	55.64	55.49	0.90	1.25	1.55	0.45	0.53	0.57
1500.00	48.42	47.36	46.66	2.11	2.44	2.71	0.47	0.56	0.61
1600.00	43.40	42.23	41.48	2.45	2.64	2.86	0.49	0.58	0.63



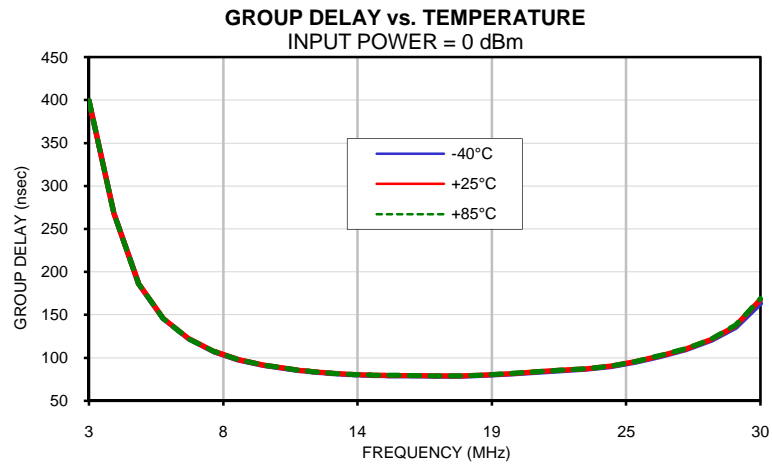
*Typical Performance Data*

FREQ.  (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
3.00	399.59	399.61	399.65
4.00	268.42	268.38	268.40
5.00	186.49	186.50	186.51
6.00	145.46	145.49	145.51
7.00	122.29	122.36	122.38
8.00	107.53	107.59	107.63
9.00	97.81	97.90	97.94
10.00	91.42	91.53	91.57
11.40	85.57	85.68	85.76
11.50	85.23	85.37	85.40
11.60	84.92	85.05	85.09
11.70	84.60	84.75	84.78
11.80	84.32	84.43	84.48
11.90	84.04	84.14	84.20
12.00	83.74	83.85	83.91
12.10	83.42	83.54	83.61
12.20	83.19	83.32	83.36
12.30	82.95	83.05	83.13
12.40	82.65	82.82	82.84
12.50	82.45	82.58	82.61
12.60	82.22	82.35	82.38
12.70	81.99	82.12	82.16
12.80	81.78	81.92	81.96
12.90	81.60	81.73	81.75
13.00	81.41	81.53	81.59
13.10	81.21	81.34	81.37
13.20	81.06	81.18	81.22
13.30	80.87	81.02	81.05
13.40	80.73	80.86	80.91
13.50	80.59	80.73	80.76
13.60	80.47	80.61	80.62
13.70	80.32	80.46	80.51
13.80	80.20	80.35	80.37
13.90	80.11	80.25	80.31
14.00	79.99	80.14	80.19
14.10	79.85	80.04	80.09
14.20	79.80	79.96	79.99
14.30	79.74	79.88	79.96
14.40	79.65	79.81	79.87
14.50	79.54	79.72	79.76
14.60	79.52	79.69	79.73
14.70	79.43	79.60	79.68
14.80	79.39	79.57	79.63
14.90	79.32	79.50	79.56
15.00	79.27	79.45	79.54
16.00	78.95	79.14	79.22
17.00	78.72	78.90	78.96
18.00	78.88	79.08	79.13
19.00	79.73	79.96	80.03
20.00	81.36	81.67	81.79
21.00	83.35	83.68	83.82
22.00	85.10	85.43	85.57
23.00	86.88	87.22	87.33
24.00	89.89	90.34	90.49
25.00	95.02	95.65	95.83
26.00	101.78	102.55	102.84
27.00	109.48	110.41	110.74
28.00	119.90	121.17	121.57
29.00	135.41	137.25	137.88
30.00	163.54	167.56	168.84

Typical Performance Curves

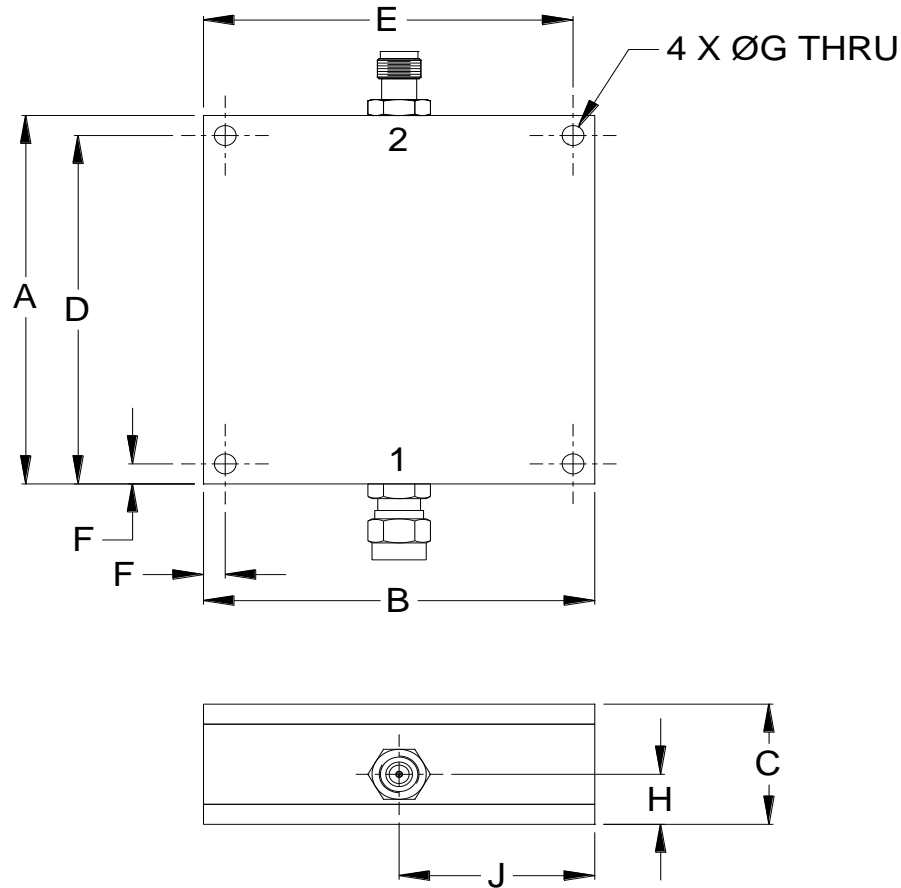


## Typical Performance Curves



## Outline Dimensions

UU1842



CASE#	A	B	C	D	E	F	G	H	J	WT.GRAMS
UU1842	2.300 (58.42)	2.250 (57.15)	0.750 (19.05)	2.175 (55.25)	2.125 (53.98)	0.125 (3.18)	0.125 (3.18)	0.312 (7.93)	1.125 (28.58)	124

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

### Notes:

1. Case material: Aluminum alloy.
2. Case finish:  
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.



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



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 Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 40°C, 96 hours; Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103, Condition B
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
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	50g, 11ms half-sine, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition A