Coaxial

Bandpass Filter

ZABP-450-S+

50Ω 400 to 510 MHz

Generic photo used for illustration purposes only
CASE STYLE: UU1842

The Big Deal

- High rejection
- Good VSWR
- Connectorized package

Product Overview

ZABP-450-S+ is a 50Ω bandpass filter with a rugged connectorized package covering the passband of 400 to 510 MHz. The bandpass filter offers good matching within the passband and provides 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
High rejection	ZABP-450-S+ has sharper transition and rejects spurious signals in the stopband.
Good VSWR	This filter maintains typical VSWR over passband frequency range making this filter easier to integrate into receiver and transmitter RF chains with less concerns for in band frequency ripple.
Connectorized package	Connectorized package is easy to interface with other devices and well suited for test setups.

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Bandpass Filter

ZABP-450-S+

50Ω 400 to 510 MHz

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CASE STYLE: UU1842

Connectors	Model
SMA-M\F	ZABP-450-S+

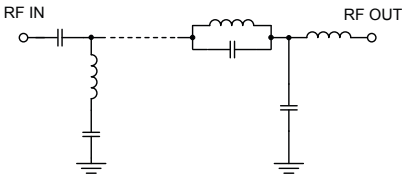
Features

- High rejection
- Good VSWR, 1.25:1 @ passband
- Connectorized package

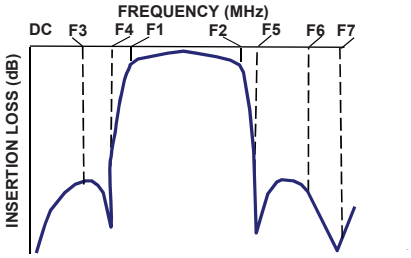
Applications

- Military and avionics
- Receiver / transmitters
- Harmonic rejection
- Test equipment

Functional Schematic



Typical Frequency Response



+RoHS Compliant

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

Electrical Specifications at 25°C

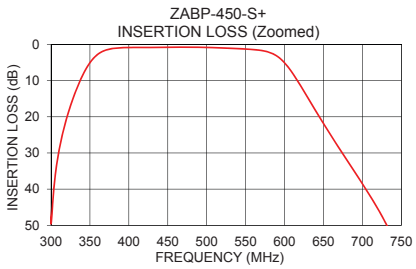
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	-	-	-	450	-	MHz
	Insertion Loss	F1-F2	400 - 510	-	1.0	2	dB
	VSWR	F1-F2	400 - 510	-	1.25	1.9	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 150	40	50	-	dB
		F3-F4	150 - 310	20	30	-	dB
	VSWR	DC-F4	DC - 310	-	18	-	:1
Stop Band, Upper	Insertion Loss	F5-F6	700 - 760	20	35	-	dB
		F6-F7	760 - 1200	-	50	-	dB
	VSWR	F5-F7	700 - 1200	-	18	-	:1

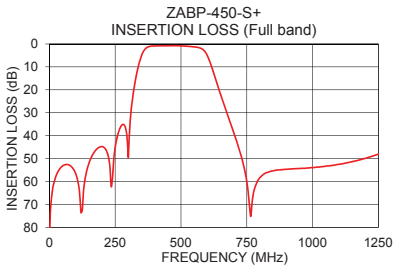
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	0.5 W max.

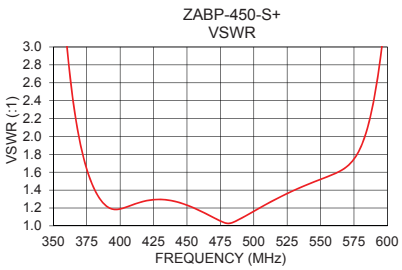
Permanent damage may occur if any of these limits are exceeded.

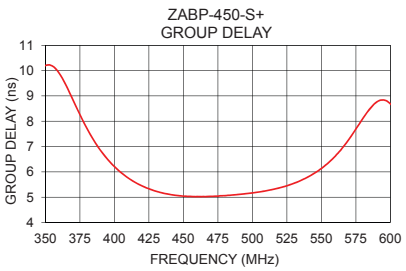
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (ns)
1	83.94	6881.00	400	6.21
50	53.22	2353.20	405	5.96
150	52.15	239.30	410	5.76
310	29.67	36.53	415	5.58
320	20.49	29.37	420	5.45
330	13.93	19.92	425	5.33
342	7.94	9.69	430	5.24
355	3.72	4.06	435	5.16
400	0.85	1.19	440	5.11
450	0.79	1.23	445	5.07
455	0.78	1.20	450	5.04
510	0.90	1.25	455	5.03
590	3.19	2.42	460	5.03
630	14.76	11.44	465	5.02
645	20.10	16.08	470	5.04
675	30.28	23.07	475	5.04
700	38.51	26.37	480	5.06
760	70.06	29.19	490	5.11
1000	53.97	32.23	500	5.17
1200	49.91	33.45	510	5.25









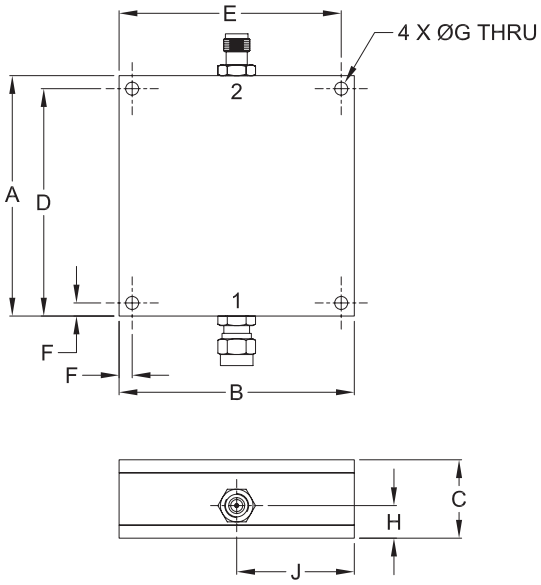
Notes

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

Coaxial Connections

PORT - 1	SMA-MALE
PORT - 2	SMA-FEMALE

Outline Drawing



Outline Dimensions (inch / 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

Note: Please refer to case style drawing for details

Coaxial Band Pass Filter ZABP-450-S+

Typical Performance Data

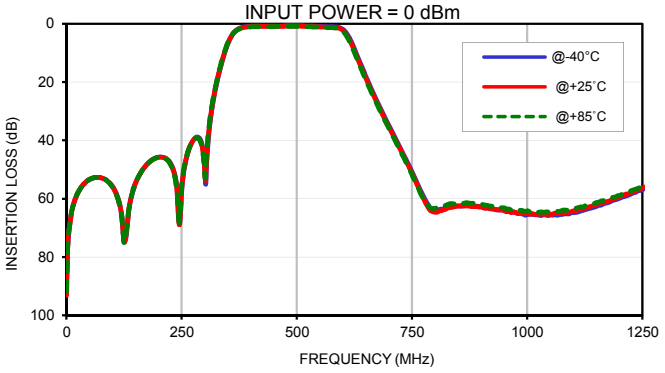
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	85.24	84.65	84.05	0.00	0.00	0.00	0.00	0.00	0.00
5	71.34	71.46	71.30	0.00	0.00	0.00	0.01	0.01	0.01
25	58.05	57.82	57.84	0.01	0.01	0.01	0.02	0.03	0.03
50	53.43	53.37	53.36	0.01	0.02	0.02	0.05	0.07	0.08
100	55.86	55.96	55.98	0.02	0.04	0.04	0.16	0.19	0.21
150	54.63	54.62	54.64	0.05	0.08	0.08	0.28	0.31	0.33
200	45.71	45.74	45.80	0.13	0.16	0.16	0.33	0.39	0.43
250	57.20	56.37	55.42	0.23	0.28	0.28	0.45	0.54	0.61
275	39.93	39.99	39.98	0.31	0.37	0.38	0.59	0.68	0.74
300	49.20	50.41	51.52	0.41	0.49	0.52	0.69	0.79	0.84
305	46.02	44.34	42.86	0.44	0.52	0.56	0.70	0.80	0.86
310	35.75	34.98	34.27	0.47	0.56	0.61	0.72	0.82	0.88
314	30.74	30.15	29.62	0.50	0.60	0.65	0.72	0.83	0.89
320	25.05	24.57	24.15	0.56	0.68	0.75	0.75	0.87	0.94
326	20.43	19.99	19.62	0.65	0.78	0.87	0.80	0.93	1.01
340	11.75	11.41	11.09	1.19	1.41	1.58	1.20	1.40	1.55
350	6.97	6.79	6.56	2.29	2.61	2.92	2.17	2.46	2.72
360	3.72	3.73	3.66	4.58	4.96	5.38	4.27	4.63	4.99
380	1.31	1.45	1.53	11.53	11.64	11.82	10.87	11.04	11.32
400	0.84	0.97	1.07	17.18	17.05	16.53	17.17	17.15	16.82
425	0.76	0.88	0.97	17.23	17.51	16.98	17.37	17.57	16.93
450	0.77	0.88	0.95	16.37	17.05	17.38	15.73	16.22	16.38
475	0.72	0.84	0.91	19.56	20.43	21.94	18.29	18.90	19.99
500	0.69	0.82	0.91	35.71	37.56	43.87	31.92	33.15	38.68
510	0.70	0.84	0.94	32.82	32.47	28.96	33.90	32.62	28.72
550	0.92	1.08	1.19	17.25	17.26	17.52	16.25	16.12	16.11
600	1.93	2.31	2.65	11.37	10.84	10.25	10.21	9.58	8.84
605	2.68	3.14	3.57	7.98	7.67	7.31	7.15	6.73	6.23
625	8.67	9.32	9.94	2.13	2.24	2.27	1.75	1.75	1.71
655	20.02	20.59	21.16	0.79	0.94	1.02	0.55	0.62	0.65
680	28.61	29.12	29.63	0.60	0.74	0.82	0.38	0.44	0.47
685	30.24	30.74	31.24	0.58	0.72	0.79	0.36	0.42	0.44
700	35.02	35.51	35.97	0.55	0.67	0.75	0.31	0.37	0.39
725	42.81	43.30	43.74	0.52	0.64	0.71	0.26	0.32	0.34
750	50.88	51.34	51.86	0.51	0.62	0.69	0.22	0.28	0.30
760	54.25	54.82	55.21	0.51	0.61	0.69	0.21	0.26	0.29
770	57.67	58.33	58.71	0.51	0.61	0.68	0.20	0.26	0.28
780	60.92	61.57	61.49	0.50	0.61	0.68	0.19	0.25	0.27
790	63.44	64.06	63.15	0.51	0.61	0.68	0.18	0.24	0.26
800	64.17	64.63	63.29	0.50	0.60	0.68	0.17	0.23	0.25
820	63.34	63.69	62.43	0.49	0.59	0.67	0.16	0.21	0.23
840	62.57	62.77	61.81	0.49	0.59	0.66	0.15	0.21	0.23
860	62.28	62.59	61.60	0.49	0.59	0.66	0.14	0.20	0.22
880	62.44	62.72	61.55	0.47	0.58	0.66	0.13	0.19	0.21
900	62.78	62.81	61.83	0.46	0.57	0.65	0.13	0.18	0.21
920	63.47	63.41	62.58	0.46	0.57	0.64	0.12	0.18	0.20
940	63.78	63.87	63.06	0.44	0.56	0.64	0.12	0.18	0.20
960	64.28	64.37	63.53	0.43	0.55	0.63	0.11	0.17	0.20
980	65.07	65.06	63.96	0.42	0.54	0.62	0.11	0.17	0.20
1000	65.46	65.08	64.14	0.40	0.53	0.61	0.11	0.17	0.20
1020	65.55	65.43	64.53	0.39	0.52	0.61	0.11	0.17	0.20
1040	65.53	65.47	64.55	0.38	0.52	0.61	0.11	0.18	0.20
1060	65.51	64.92	64.47	0.37	0.51	0.60	0.11	0.18	0.20
1080	65.24	64.74	63.87	0.36	0.51	0.60	0.11	0.18	0.20
1100	64.80	64.20	63.49	0.36	0.51	0.60	0.11	0.18	0.20
1120	63.98	63.34	62.91	0.35	0.50	0.60	0.11	0.18	0.20
1150	62.62	61.92	61.33	0.34	0.51	0.61	0.12	0.18	0.21
1180	60.99	60.67	59.88	0.34	0.51	0.62	0.12	0.19	0.22
1200	59.85	59.35	58.86	0.35	0.52	0.63	0.13	0.20	0.22
1250	56.88	56.25	55.85	0.37	0.55	0.67	0.13	0.20	0.23

Typical Performance Data

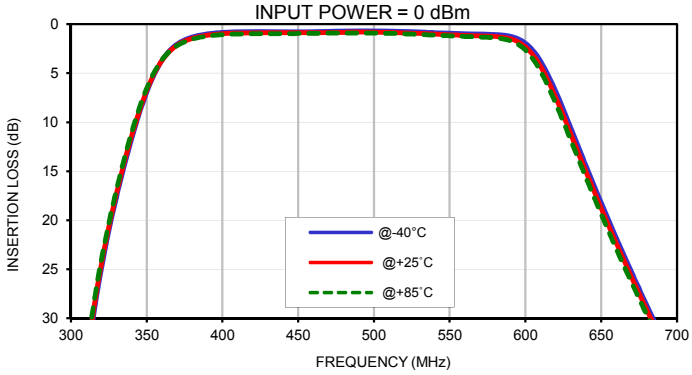
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
400	6.62	6.57	6.52
402	6.51	6.47	6.41
404	6.40	6.35	6.31
406	6.29	6.25	6.21
408	6.20	6.16	6.12
410	6.11	6.07	6.03
412	6.02	5.99	5.95
414	5.94	5.91	5.87
416	5.86	5.83	5.80
418	5.79	5.76	5.73
420	5.72	5.70	5.67
422	5.65	5.63	5.60
424	5.59	5.57	5.55
426	5.53	5.52	5.49
428	5.48	5.46	5.44
430	5.43	5.42	5.40
432	5.38	5.36	5.35
434	5.34	5.33	5.31
436	5.29	5.29	5.28
438	5.25	5.25	5.24
440	5.22	5.22	5.21
442	5.18	5.18	5.18
444	5.15	5.16	5.15
446	5.12	5.12	5.12
448	5.10	5.10	5.11
450	5.08	5.08	5.09
452	5.06	5.06	5.07
454	5.04	5.04	5.05
456	5.03	5.03	5.04
458	5.02	5.02	5.03
460	5.00	5.01	5.03
462	5.00	5.00	5.02
464	5.00	5.00	5.02
466	4.99	4.99	5.01
468	4.98	4.99	5.01
470	4.99	4.99	5.01
472	4.98	4.99	5.01
474	4.99	4.99	5.01
476	4.99	4.99	5.01
478	4.99	4.99	5.01
480	5.00	5.01	5.02
482	5.00	5.01	5.03
484	5.01	5.02	5.03
486	5.02	5.02	5.04
488	5.03	5.03	5.05
490	5.04	5.04	5.06
492	5.05	5.05	5.06
494	5.06	5.06	5.08
496	5.07	5.08	5.09
498	5.08	5.08	5.10
500	5.09	5.10	5.11
502	5.11	5.11	5.12
504	5.12	5.13	5.14
506	5.14	5.14	5.15
508	5.15	5.16	5.17
510	5.17	5.18	5.18

Typical Performance Curves

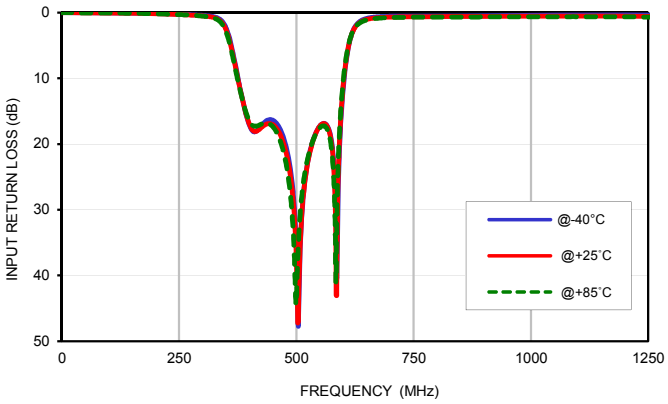
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



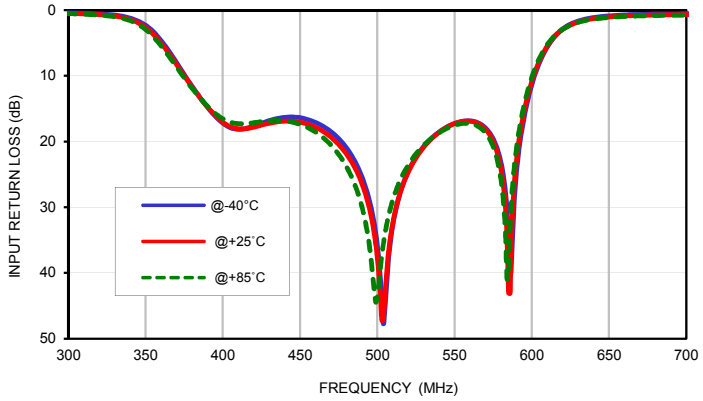
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



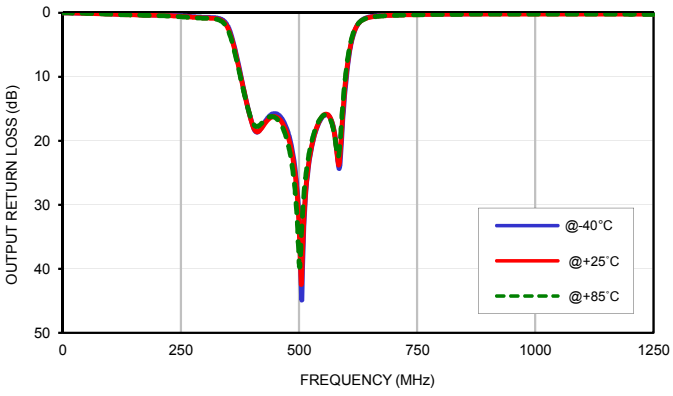
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



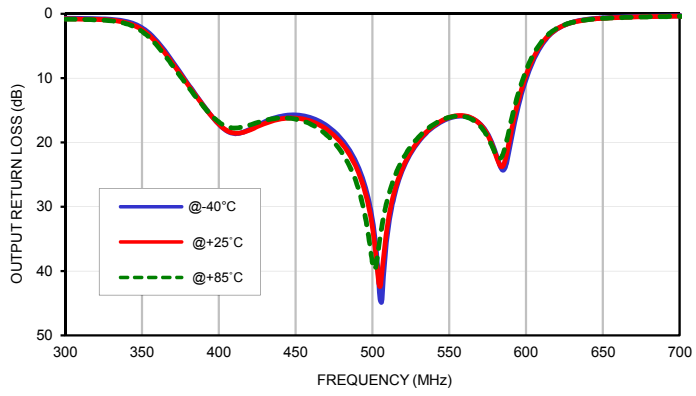
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



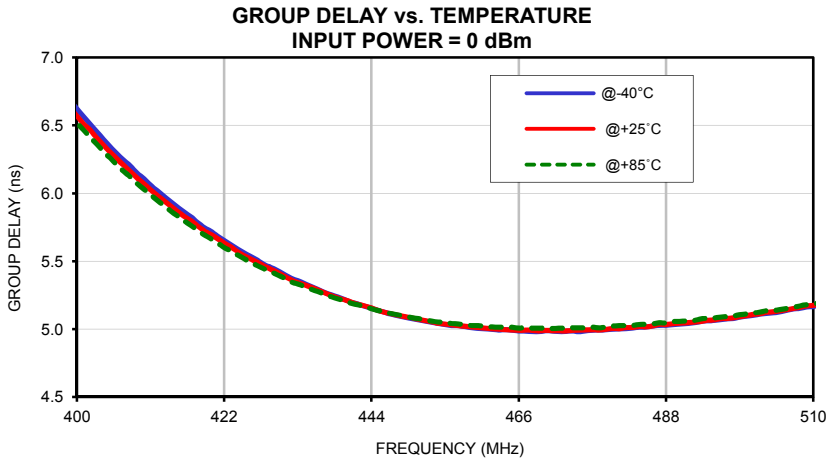
OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



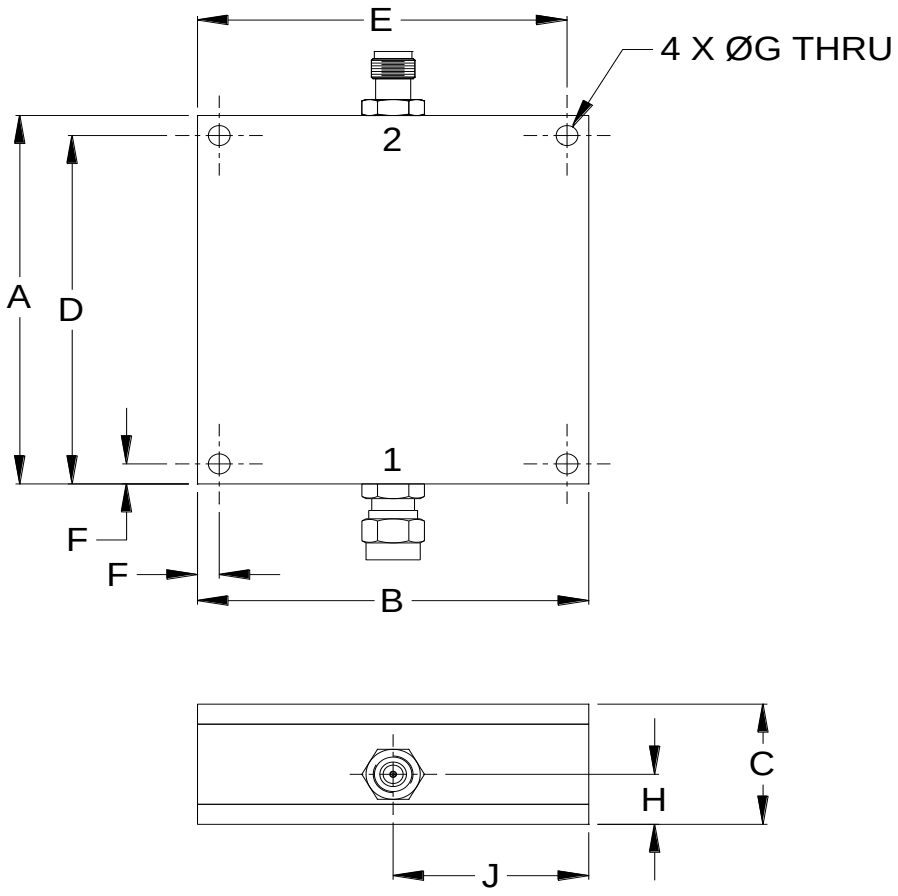
Typical Performance Curves



Case Style UU

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. ± .03; 3 Pl. ± .015

Notes:

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

Mini-Circuits

Environmental Specifications ENV46

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, Condintion 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