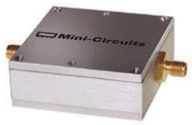
Coaxial

Bandpass Filter

ZBPF-75-S+

50Ω 0.063 to 0.087 MHz



Generic photo used for illustration purposes only

CASE STYLE: CC1397

The Big Deal

- Very low frequency band pass filter (KHz Range) of fractional bandwidth 32%.
- Good ultimate rejection of 30dB Typical from 50 – 800MHz
- Compact connectorized package for this frequency range

Product Overview

ZBPF-75-S+ is a 50Ω bandpass filter into a rugged shielded case of (2.0" x 2.0" x 0.75") size. The passband range for this is 63 KHz to 87 KHz. The model has good passband IL, roll-off and ultimate rejection. This will find its application in wire line broadband access.

Key Features

Feature	Advantages
Good passband insertion loss and roll-off	Low insertion loss will be used in designs optimized for high performance applications. Good roll-off will attenuate frequencies closer to the passband with good rejection value of >20dB.
Good ultimate rejection	This enables the filters to attenuate spurious signals and reject harmonics for broad band frequency.
Connectorized package	The connectorized packages are easily to interface with other devices and well suited for test set-ups.

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Bandpass Filter

50Ω 0.063 to 0.087 MHz

ZBPF-75-S+

Generic photo used for illustration purposes only

CASE STYLE: CC1397

Connectors	Model
SMA-FEMALE	ZBPF-75-S+

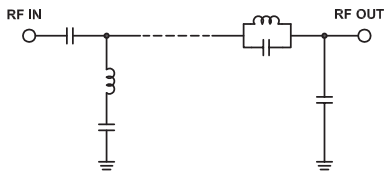
Features

- Low frequency passband 63 to 87KHz
- Wide stopband Rejection
- Rugged shielded case

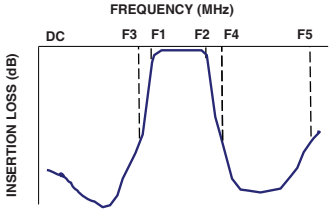
Applications

- Fiber optics network
- Wire line broadband access
- Harmonic and sub-harmonic Rejection
- Transmitters / Receivers
- Lab Use

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

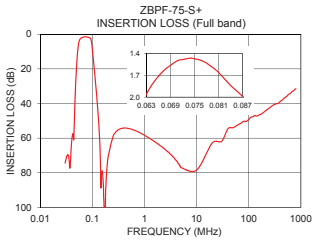
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	—	0.075	—	MHz
	Insertion Loss	F1-F2	0.063-0.087	—	2.4	4.0	dB
	VSWR	F1-F2	0.063-0.087	—	2.0	2.5	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC-0.045	20	37	—	dB
	VSWR	DC-F3	DC-0.045	—	4.2	—	:1
Stop Band, Upper	Insertion Loss	F4-F5	0.125-800	20	31	—	dB
	VSWR	F4-F5	0.125-800	—	13	—	:1

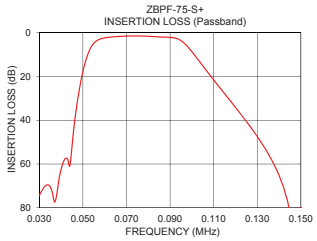
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	+5dBm max.

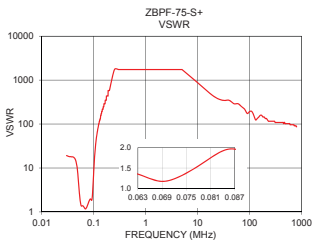
Permanent damage may occur if any of these limits are exceeded.

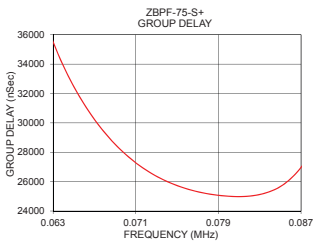
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
0.030	74.40	19.11	0.063	35498.20
0.040	62.40	17.75	0.064	33868.40
0.045	52.06	14.74	0.065	32469.60
0.048	28.16	9.90	0.066	31281.20
0.051	13.79	4.50	0.067	30233.50
0.054	6.14	2.09	0.068	29330.10
0.056	3.86	1.52	0.069	28543.10
0.059	2.56	1.36	0.070	27868.90
0.063	1.96	1.35	0.072	26790.40
0.075	1.47	1.37	0.074	26018.30
0.087	1.99	1.96	0.075	25732.40
0.095	3.59	2.82	0.076	25495.80
0.098	6.29	5.51	0.078	25167.10
0.106	16.44	24.83	0.079	25067.40
0.120	34.11	78.97	0.080	25006.90
0.125	40.56	102.19	0.081	24979.00
0.150	79.89	217.15	0.082	25015.30
50.000	53.97	289.53	0.083	25122.40
500.000	36.46	102.19	0.085	25663.50
800.000	31.49	86.86	0.087	26970.10









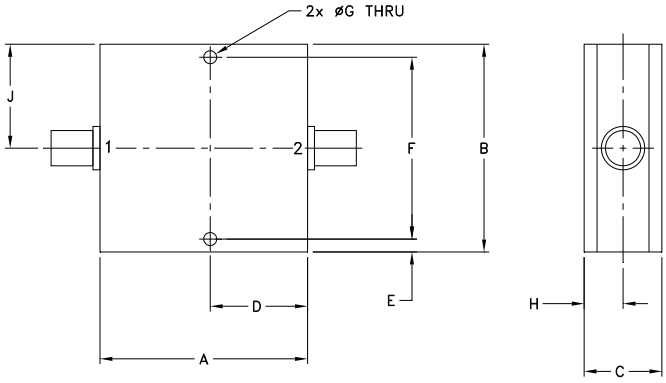
Notes

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 female
PORT - 2	SMA female

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F
2.00	2.00	.75	.938	.13	1.750
50.80	50.80	19.05	23.83	3.30	44.45

G	H	J	wt
.125	.38	1.00	grams
3.18	9.65	25.40	100.0

Note: Please refer to case style drawing for details

Coaxial Band Pass Filter ZBPF-75-S+

Typical Performance Data

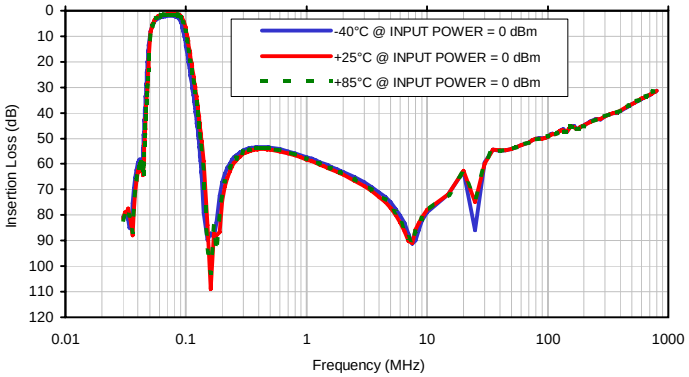
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
0.0300	80.61	81.48	81.81	0.51	0.29	0.31	1.12	0.83	1.02
0.0340	85.04	79.87	80.42	0.67	0.38	0.42	1.15	0.90	1.08
0.0380	65.40	71.16	70.45	0.91	0.52	0.59	1.15	0.94	1.10
0.0406	58.94	61.98	61.68	1.17	0.65	0.75	1.19	0.96	1.10
0.0410	58.33	61.15	60.70	1.23	0.68	0.79	1.20	0.97	1.10
0.0414	58.17	60.43	60.00	1.29	0.71	0.82	1.22	0.97	1.10
0.0418	58.16	60.08	59.54	1.36	0.75	0.86	1.24	0.98	1.11
0.0422	58.43	60.00	59.39	1.43	0.79	0.91	1.26	0.99	1.12
0.0426	59.28	60.27	59.47	1.51	0.83	0.95	1.29	1.01	1.13
0.0430	60.31	60.80	59.85	1.61	0.87	1.01	1.32	1.02	1.14
0.0434	60.52	62.22	60.69	1.72	0.93	1.07	1.35	1.04	1.15
0.0438	57.29	63.77	62.20	1.85	0.98	1.13	1.39	1.05	1.17
0.0445	49.69	60.74	62.05	2.13	1.10	1.27	1.49	1.10	1.21
0.0450	44.77	54.49	56.17	2.39	1.21	1.39	1.57	1.15	1.25
0.0458	37.75	46.36	47.56	2.99	1.44	1.64	1.74	1.23	1.33
0.0466	31.25	39.59	40.61	3.97	1.78	1.99	2.00	1.37	1.45
0.0474	24.82	33.30	34.35	5.90	2.34	2.54	2.43	1.57	1.63
0.0486	15.72	23.18	24.97	15.00	4.75	4.42	3.80	2.17	2.16
0.0490	13.49	19.00	21.54	23.73	7.47	5.92	4.54	2.54	2.48
0.0560	3.67	3.13	3.59	21.78	11.82	12.69	16.50	12.90	12.73
0.0600	2.75	1.97	2.33	22.50	23.87	25.45	18.32	23.59	21.16
0.0610	2.63	1.87	2.21	21.38	20.48	21.24	18.18	19.44	18.66
0.0620	2.51	1.80	2.12	21.27	18.18	18.93	18.46	17.36	17.15
0.0630	2.42	1.74	2.04	21.90	16.89	17.77	19.12	16.30	16.39
0.0640	2.33	1.68	1.96	23.23	16.25	17.32	20.13	15.86	16.18
0.0650	2.26	1.62	1.89	25.38	16.09	17.41	21.41	15.90	16.40
0.0660	2.19	1.56	1.82	28.67	16.30	17.91	22.80	16.31	17.01
0.0670	2.14	1.51	1.76	34.34	16.84	18.80	23.98	17.08	17.98
0.0680	2.10	1.45	1.70	50.29	17.65	20.08	24.52	18.19	19.35
0.0690	2.06	1.40	1.64	37.18	18.74	21.78	24.33	19.70	21.17
0.0700	2.03	1.35	1.60	31.33	20.11	23.99	23.72	21.68	23.54
0.0730	1.98	1.26	1.51	26.03	25.83	34.04	22.59	33.58	34.38
0.0740	1.97	1.24	1.49	25.79	27.98	34.44	22.89	43.87	33.17
0.0750	1.97	1.23	1.49	26.04	29.64	32.12	23.65	37.78	30.41
0.0760	1.97	1.22	1.48	26.73	30.39	30.18	25.01	32.64	28.57
0.0770	1.99	1.22	1.48	27.71	30.36	29.01	27.15	30.28	27.70
0.0780	2.00	1.22	1.48	28.54	30.07	28.47	30.11	29.35	27.68
0.0790	2.04	1.22	1.49	28.39	29.75	28.37	31.27	29.50	28.58
0.0800	2.08	1.23	1.50	26.86	29.34	28.40	27.55	30.76	30.80
0.0810	2.14	1.25	1.52	24.66	28.49	28.09	23.40	33.44	35.94
0.0830	2.32	1.30	1.59	20.49	24.86	25.02	17.40	32.45	32.59
0.0840	2.45	1.34	1.64	18.74	22.59	22.80	15.16	26.97	26.01
0.0850	2.61	1.40	1.71	17.15	20.39	20.61	13.24	22.82	21.80
0.0860	2.81	1.47	1.79	15.66	18.36	18.62	11.54	19.59	18.63
0.0870	3.06	1.56	1.92	14.21	16.53	16.83	10.03	16.93	16.06
0.0900	4.19	2.02	2.47	10.09	12.07	12.42	6.36	11.05	10.35
0.0980	11.39	5.76	6.95	3.47	4.72	4.82	1.63	3.14	2.80
0.1020	16.32	9.64	11.20	2.44	2.87	2.99	0.91	1.61	1.44
0.1060	21.38	14.22	15.98	1.96	1.92	2.09	0.58	0.88	0.82
0.1100	26.48	19.00	20.89	1.70	1.43	1.62	0.41	0.54	0.53
0.1180	36.95	28.70	30.79	1.40	0.98	1.16	0.25	0.28	0.29
0.1200	39.70	31.16	33.31	1.34	0.91	1.09	0.22	0.25	0.26
0.1500	89.72	83.90	93.88	0.73	0.48	0.63	0.08	0.09	0.09
0.2000	67.06	74.47	71.66	0.34	0.25	0.32	0.03	0.03	0.03
0.4000	53.38	54.20	53.78	0.22	0.15	0.16	0.00	0.00	0.00
0.6000	54.22	55.08	54.65	0.21	0.14	0.14	0.00	0.00	0.00
0.8000	55.76	56.70	56.26	0.19	0.13	0.13	0.00	0.00	0.00
1.0000	57.26	58.29	57.83	0.17	0.12	0.12	0.00	0.00	0.01
5.0000	74.84	77.24	76.32	0.08	0.07	0.08	0.01	0.02	0.01
10.0000	78.80	77.82	78.27	0.07	0.07	0.08	0.02	0.02	0.02
50.0000	54.16	54.13	54.05	0.12	0.14	0.16	0.05	0.06	0.07
100.0000	49.26	49.24	49.14	0.15	0.18	0.20	0.08	0.10	0.10
200.0000	44.95	45.00	45.01	0.26	0.28	0.31	0.12	0.13	0.14
300.0000	41.32	41.25	41.30	0.35	0.39	0.41	0.15	0.17	0.17
400.0000	39.29	39.13	39.06	0.39	0.43	0.46	0.15	0.18	0.19
500.0000	36.68	36.55	36.46	0.40	0.47	0.51	0.15	0.18	0.20
600.0000	34.48	34.44	34.34	0.48	0.56	0.62	0.17	0.20	0.21
700.0000	32.98	32.93	32.79	0.71	0.79	0.86	0.17	0.20	0.22
800.0000	31.44	31.41	31.28	0.88	0.99	1.08	0.18	0.21	0.23

Typical Performance Data

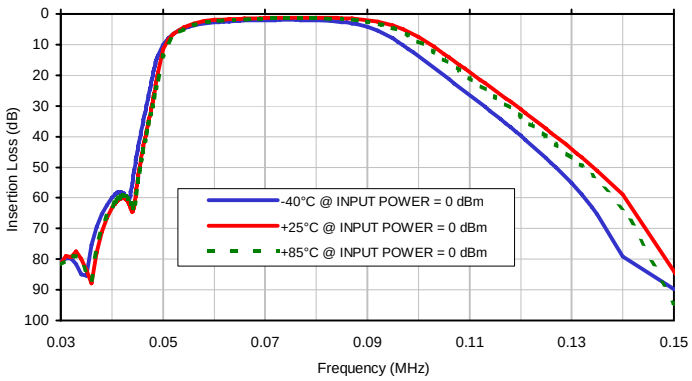
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
0.0630	33425.10	34492.40	34959.90
0.0640	32272.10	32860.70	33345.00
0.0650	31275.60	31540.10	32048.60
0.0660	30419.70	30453.30	30960.80
0.0670	29644.00	29533.10	30040.70
0.0680	28974.30	28766.60	29263.00
0.0690	28377.40	28120.30	28585.00
0.0700	27856.70	27532.60	27989.90
0.0710	27431.10	27030.70	27454.40
0.0720	27103.30	26592.00	26983.20
0.0730	26845.30	26187.80	26564.10
0.0740	26689.80	25839.50	26204.60
0.0750	26651.60	25560.10	25916.80
0.0760	26689.80	25338.40	25711.00
0.0770	26817.40	25173.60	25564.80
0.0780	27026.00	25089.80	25498.60
0.0790	27335.20	25087.00	25542.40
0.0800	27685.40	25157.80	25639.30
0.0810	28095.20	25293.70	25829.30
0.0820	28576.70	25521.00	26109.60
0.0830	29108.40	25807.80	26462.60
0.0840	29659.80	26141.20	26850.90
0.0850	30259.60	26550.10	27315.60
0.0860	30905.00	26998.10	27842.80
0.0870	31512.20	27451.60	28347.60

Typical Performance Curves

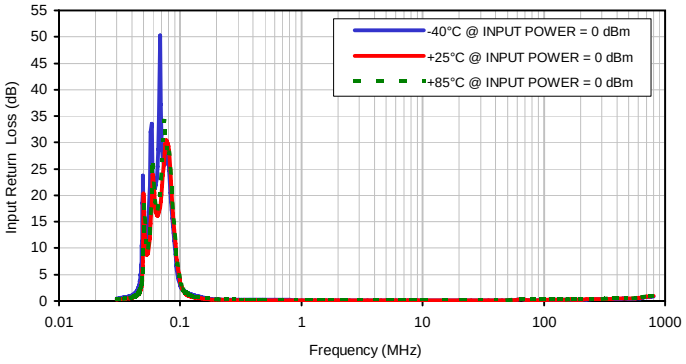
Insertion Loss vs. Temperature (Full band)



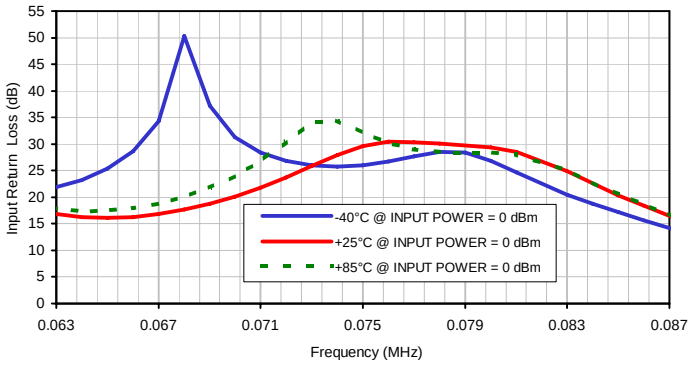
Insertion Loss vs. Temperature (Pass band)



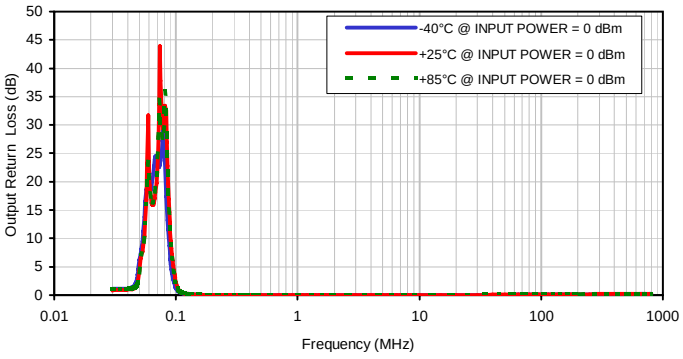
Input Return Loss vs. Temperature



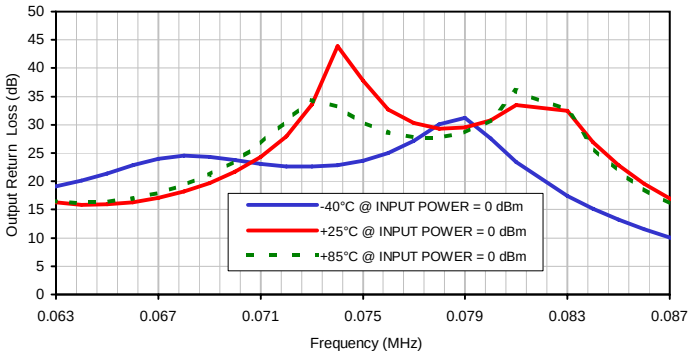
Input Return Loss vs. Temperature



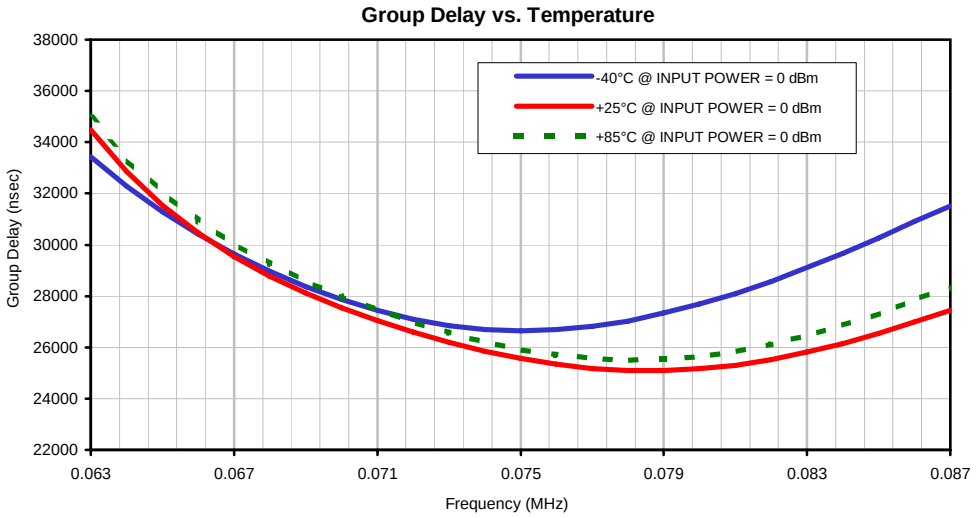
Output Return Loss vs. Temperature



Output Return Loss vs. Temperature



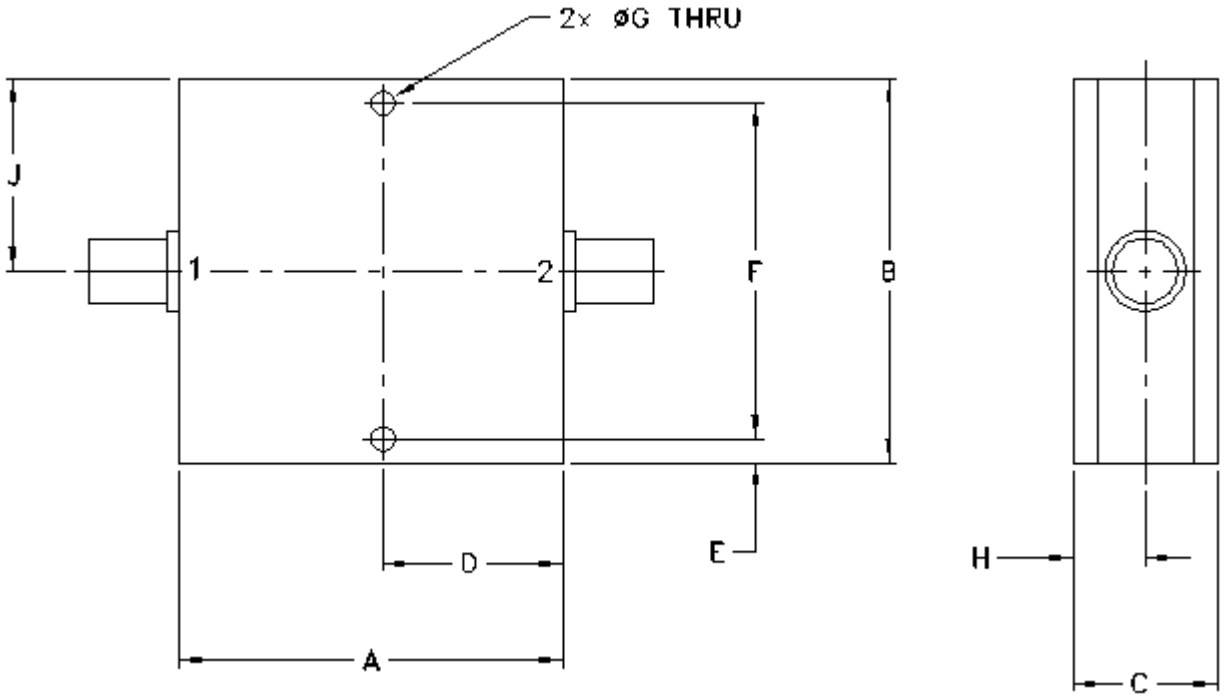
Typical Performance Curves



Case Style CC

Outline Dimensions

CC1397



CASE#	A	B	C	D	E	F	G	H	J	WT. GRAMS
CC1397	2.00 (50.80)	2.00 (50.80)	.75 (19.05)	.938 (23.83)	.13 (3.30)	1.750 (44.45)	.125 (3.17)	.38 (9.65)	1.00 (25.4)	100

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.
3. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits

Environmental Specifications **ENV28T5**

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	-40° to 85°C	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I