

Coaxial High Pass Filter

ZFHP-0R23-S+

50Ω 0.23 to 1000 MHz



Generic photo used for illustration purposes only
CASE STYLE: H16

The Big Deal

- Low insertion loss
- High rejection
- Connectorized package

Product Overview

ZFHP-0R23-S+ is a High pass filter in a connectorized package. This low frequency cut-off high pass filter eliminates noise that feed into RF / base band circuits from low frequency sources.

Key Features

Feature	Advantages
Low insertion loss	Can be used in high performance applications.
Excellent low frequency rejection	Filters out low frequency noise from sources such as electric motors and generators. SMDS noise filtering and IF noise filtering.
Connectorized package	The 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



Coaxial High Pass Filter

50Ω 0.23 to 1000 MHz

ZFHP-0R23-S+



Generic photo used for illustration purposes only
CASE STYLE: H16

Connectors Model
SMA-FEMALE ZFHP-0R23-S+
BRACKET (OPTION "B")

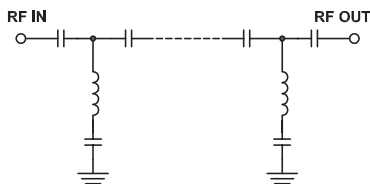
Features

- Wide band, 0.23 MHz to 1000 MHz
- High rejection
- Connectorized package

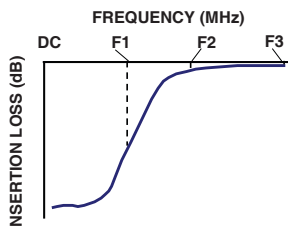
Applications

- Wire-line broad band access
- Fiber optic networks
- Receivers \ transmitters
- Electrical equipment noise elimination

Functional Schematic



Typical Frequency Response



Electrical Specifications at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Stop Band	Rejection Loss	DC-F1	DC-0.12	25	40	dB
	VSWR	DC-F1	DC-0.12	-	102	:1
Pass Band	Insertion Loss	F2-F3	0.23-1000	-	1.3	dB
	VSWR	F2-F3	0.23-1000	-	1.4	:1

Maximum Ratings

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

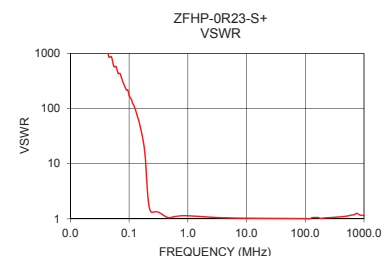
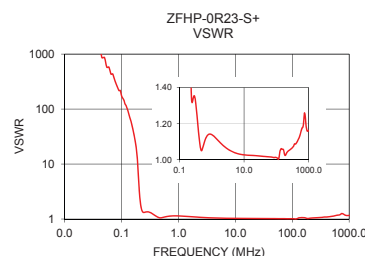
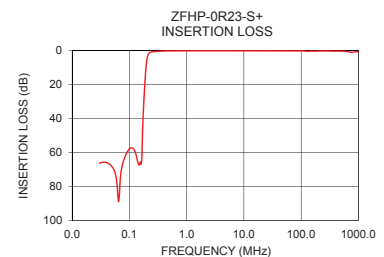
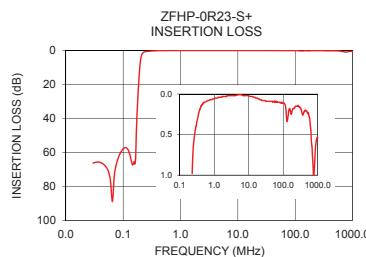
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
0.030	66.25	1737.18
0.120	58.09	115.81
0.170	47.32	29.46
0.180	28.26	20.70
0.190	14.79	11.85
0.195	9.85	7.73
0.200	6.29	4.87
0.205	4.04	3.25
0.210	2.71	2.39
0.215	1.94	1.92
0.230	0.98	1.40
0.300	0.40	1.35
0.500	0.10	1.05
1.000	0.06	1.14
5.000	0.01	1.04
50.000	0.10	1.02
250.000	0.15	1.05
500.000	0.23	1.12
750.000	1.01	1.26
1000.000	0.54	1.16

+RoHS Compliant

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



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-Circuits' 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



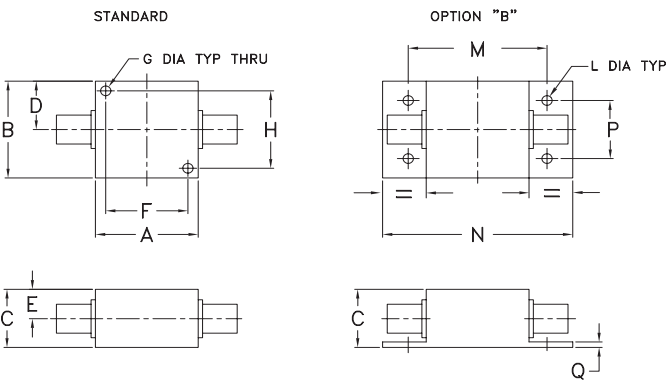
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

REV.B
M171494
ZFHP-0R23-S+
EDU1021
URJ
200526
Page 2 of 3

Coaxial Connections

PORT - 1	SMA-Female
PORT - 2	SMA-Female

Outline Drawing



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

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.000	.125	1.000
31.75	31.75	19.05	16.00	9.65	25.40	3.18	25.40

J	K	L	M	N	P	Q	wt
--	--	.125	1.688	2.18	.750	.06	grams
--	--	3.18	42.88	55.37	19.05	1.52	70.0

Note: Please refer to case style drawing for details

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

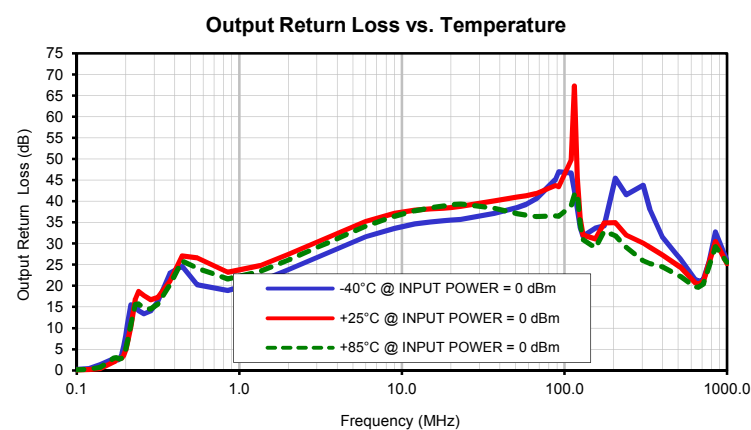
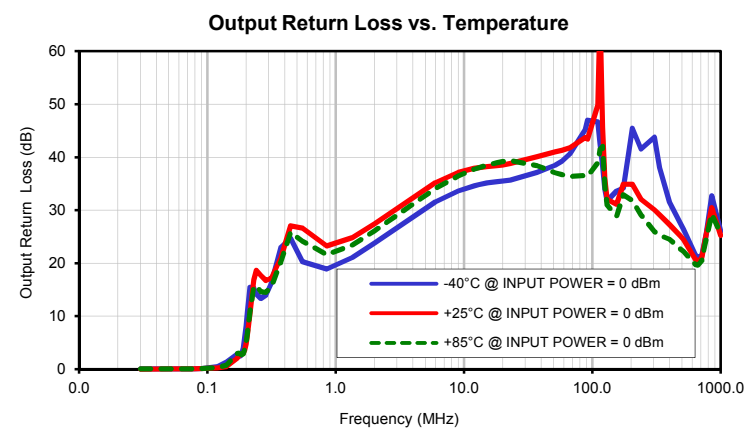
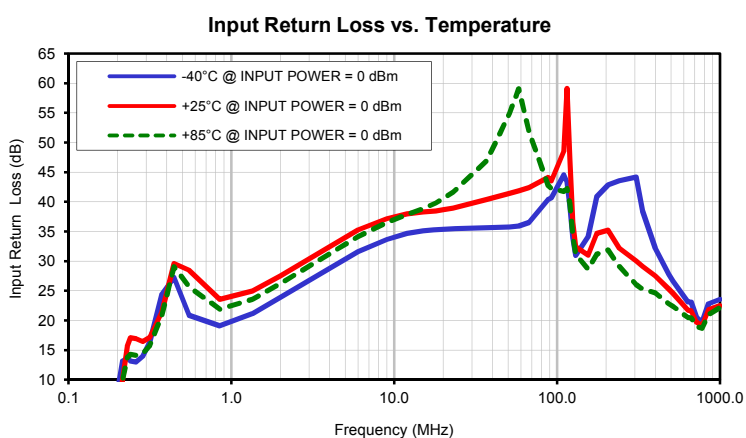
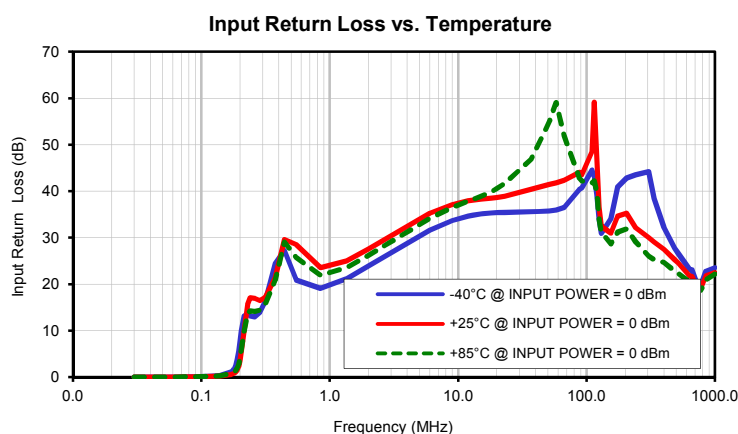
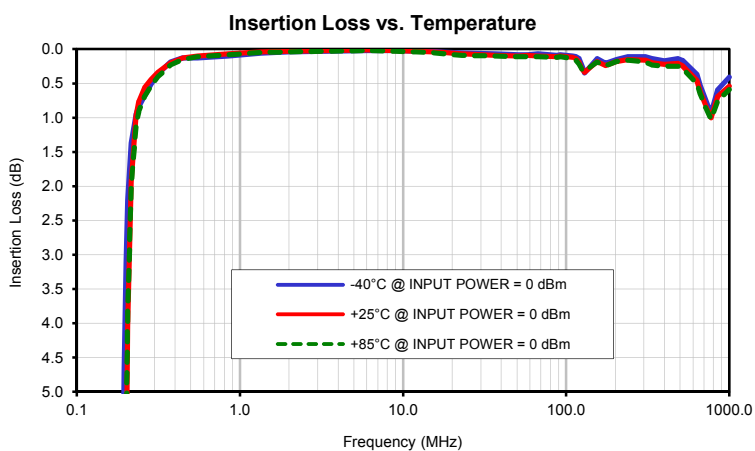
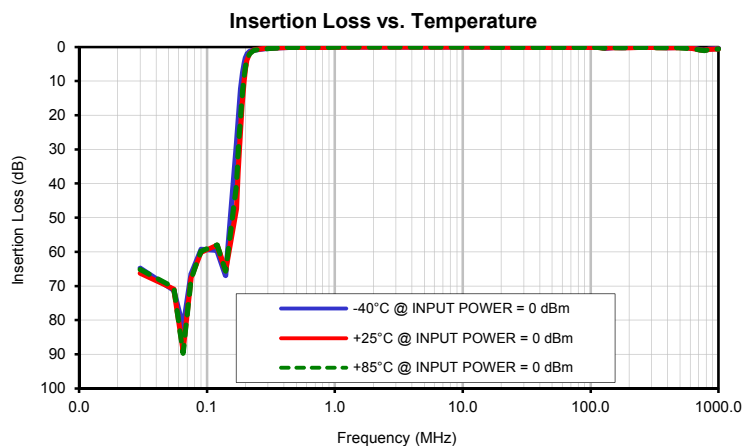
Typical Performance Data

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
0.030	64.77	66.25	65.14	0.02	0.00	0.01	0.02	0.01	0.02
0.055	71.28	70.89	70.45	0.03	0.03	0.02	0.03	0.02	0.02
0.065	82.16	88.90	89.77	0.04	0.04	0.03	0.05	0.04	0.03
0.075	66.35	67.68	67.96	0.06	0.05	0.05	0.07	0.05	0.05
0.090	59.29	60.17	59.79	0.09	0.08	0.08	0.13	0.08	0.08
0.120	59.50	58.09	57.98	0.21	0.15	0.17	0.45	0.21	0.27
0.140	66.99	65.57	65.64	0.39	0.25	0.30	1.34	0.45	0.72
0.170	28.04	47.32	40.22	1.09	0.59	0.76	2.83	2.05	2.96
0.175	21.10	36.79	31.31	1.35	0.70	0.91	2.55	2.47	2.99
0.180	15.35	28.26	23.93	1.77	0.84	1.10	2.46	2.73	2.84
0.185	10.68	20.97	17.74	2.50	1.07	1.40	2.82	2.81	2.71
0.190	7.11	14.79	12.66	3.73	1.47	1.91	3.92	2.93	2.89
0.195	4.65	9.85	8.68	5.51	2.26	2.78	5.79	3.50	3.64
0.200	3.11	6.29	5.79	7.71	3.62	4.14	8.15	4.75	4.99
0.205	2.20	4.04	3.89	9.97	5.52	5.93	10.77	6.45	6.73
0.215	1.37	1.94	2.00	13.13	10.04	9.92	15.46	10.44	10.86
0.230	0.96	0.98	1.12	13.57	15.62	13.72	15.31	16.82	15.58
0.240	0.84	0.76	0.91	13.17	17.10	14.28	14.16	18.67	15.71
0.260	0.68	0.56	0.69	12.99	16.93	14.12	13.34	17.67	14.62
0.285	0.51	0.44	0.54	13.95	16.44	14.37	14.03	16.70	14.48
0.315	0.36	0.34	0.40	16.33	17.15	15.73	16.23	17.21	15.66
0.375	0.19	0.20	0.23	24.40	21.45	20.87	23.00	21.06	20.26
0.445	0.13	0.13	0.15	27.23	29.62	29.06	24.67	27.07	25.83
0.550	0.13	0.10	0.11	20.88	28.49	25.66	20.27	26.64	24.17
0.850	0.10	0.07	0.08	19.06	23.55	21.90	18.88	23.25	21.61
1.350	0.06	0.04	0.05	21.16	24.98	23.57	21.06	24.84	23.43
2.000	0.04	0.03	0.04	23.87	27.52	26.19	23.79	27.42	26.09
6.000	0.02	0.01	0.02	31.62	35.26	34.16	31.58	35.22	34.14
9.000	0.02	0.02	0.03	33.67	37.15	36.51	33.62	37.13	36.48
12.000	0.03	0.03	0.04	34.65	37.94	37.87	34.61	37.92	37.74
15.000	0.03	0.04	0.05	35.11	38.29	38.84	35.11	38.24	38.44
18.000	0.04	0.05	0.07	35.32	38.47	39.81	35.39	38.38	38.92
20.000	0.05	0.06	0.08	35.37	38.65	40.55	35.52	38.54	39.16
23.000	0.06	0.07	0.09	35.41	38.94	41.66	35.71	38.81	39.34
37.000	0.07	0.09	0.10	35.64	40.41	46.93	37.11	40.11	38.39
51.000	0.08	0.10	0.11	35.75	41.44	54.87	38.47	40.97	37.07
58.000	0.08	0.09	0.11	35.94	41.83	59.07	39.23	41.29	36.68
67.000	0.07	0.10	0.11	36.51	42.37	51.90	40.61	41.81	36.37
88.000	0.09	0.11	0.12	40.41	44.10	42.78	45.20	43.71	36.50
92.000	0.08	0.10	0.11	40.68	43.51	42.25	46.97	43.42	36.43
110.000	0.10	0.12	0.14	44.53	48.55	41.76	46.70	49.81	38.92
115.000	0.11	0.14	0.16	43.28	59.12	42.21	42.51	67.27	41.51
120.000	0.14	0.19	0.22	39.21	47.08	39.71	38.35	45.70	42.02
125.000	0.24	0.29	0.30	33.94	36.63	34.21	33.92	36.04	34.74
130.000	0.35	0.34	0.32	30.96	32.43	31.18	31.76	32.03	30.95
155.000	0.14	0.18	0.19	34.12	30.99	28.65	33.64	31.09	28.93
175.000	0.21	0.24	0.24	40.90	34.67	31.18	34.19	34.89	32.89
205.000	0.15	0.18	0.18	42.83	35.24	31.89	45.45	34.92	31.84
240.000	0.11	0.15	0.16	43.50	32.19	29.13	41.52	32.03	29.09
305.000	0.11	0.16	0.19	44.19	30.05	26.03	43.77	30.07	25.97
335.000	0.14	0.20	0.23	38.43	29.10	25.28	38.02	29.13	25.29
400.000	0.17	0.22	0.25	32.16	27.50	24.63	31.51	27.30	24.52
485.000	0.14	0.21	0.25	27.79	25.28	22.80	27.55	25.13	22.68
515.000	0.16	0.24	0.28	26.66	24.59	22.35	26.38	24.42	22.21
635.000	0.37	0.46	0.50	23.12	21.75	20.49	21.58	20.72	19.76
665.000	0.53	0.62	0.65	23.09	21.60	20.41	21.03	20.38	19.62
715.000	0.73	0.82	0.85	20.62	19.72	19.03	21.43	21.01	20.44
775.000	0.94	1.00	1.02	19.68	19.16	18.64	25.54	25.50	24.67
850.000	0.59	0.69	0.75	22.79	21.79	20.95	32.72	30.47	29.28
1000.000	0.41	0.54	0.59	23.58	22.46	22.18	26.03	25.24	25.55

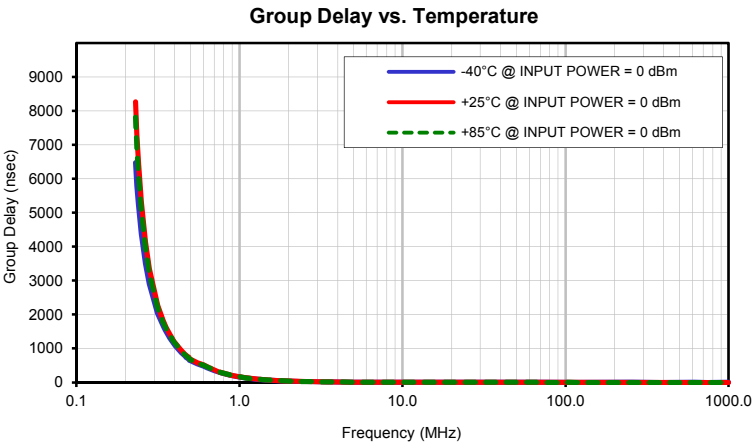
Typical Performance Data

FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
0.230	6474.79	8262.23	7809.61
0.235	5798.18	7299.24	6913.21
0.240	5243.58	6516.00	6180.96
0.250	4383.04	5327.86	5065.46
0.265	3502.82	4139.96	3953.23
0.280	2904.21	3352.88	3215.74
0.315	2035.52	2269.52	2205.49
0.340	1662.88	1820.21	1775.80
0.355	1488.60	1617.53	1580.63
0.375	1294.83	1400.13	1373.41
0.385	1209.56	1306.88	1282.02
0.395	1135.11	1225.10	1199.78
0.410	1035.46	1115.84	1094.94
0.425	947.56	1018.93	1000.65
0.435	894.91	962.64	945.41
0.460	783.07	843.95	826.26
0.475	725.70	779.40	765.66
0.490	674.89	726.46	710.74
0.495	647.12	696.13	682.86
0.550	544.59	584.73	572.71
0.600	478.93	511.44	503.64
0.650	405.14	435.15	427.10
0.750	289.66	310.22	304.64
0.900	193.63	206.24	202.72
1.000	154.05	163.85	160.86
1.100	125.77	133.54	131.13
1.300	88.86	93.96	92.39
1.400	76.21	80.47	79.21
1.500	66.16	70.02	68.85
1.600	58.07	61.00	60.18
1.700	51.16	53.83	52.98
1.800	45.62	48.00	47.45
1.950	38.80	40.89	40.31
2.100	33.37	35.32	34.73
2.300	27.78	29.11	28.79
2.450	24.40	25.68	25.59
2.700	20.29	21.24	20.87
3.050	15.90	16.60	16.54
3.450	12.63	13.17	13.12
3.700	10.77	11.35	11.11
5.000	6.98	7.18	7.20
7.000	4.29	4.49	4.44
9.000	2.48	2.60	2.56
12.000	1.45	1.51	1.47
17.000	0.85	0.84	0.81
26.000	0.49	0.47	0.45
33.000	0.41	0.38	0.37
45.000	0.37	0.34	0.33
59.000	0.33	0.31	0.30
75.000	0.32	0.30	0.29
88.000	0.30	0.27	0.28
95.000	0.35	0.31	0.31
130.000	0.16	0.13	0.12
160.000	0.34	0.30	0.27
235.000	0.31	0.28	0.27
305.000	0.30	0.28	0.26
385.000	0.25	0.24	0.23
620.000	0.31	0.27	0.26
740.000	0.17	0.16	0.16
1000.000	0.31	0.27	0.26

Typical Performance Curves



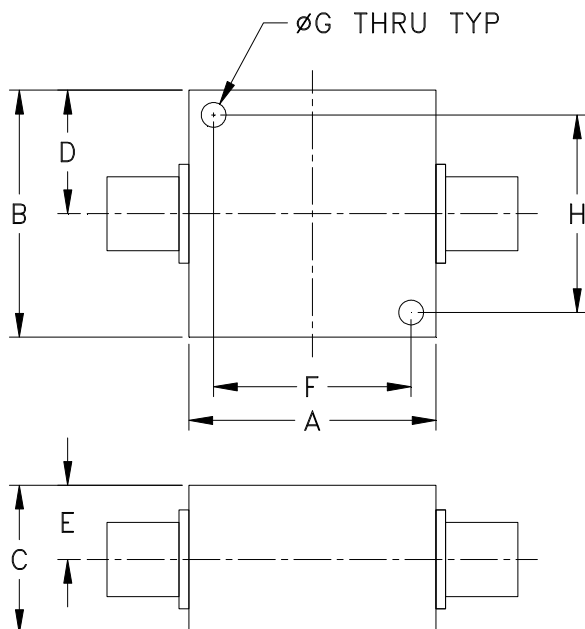
Typical Performance Curves



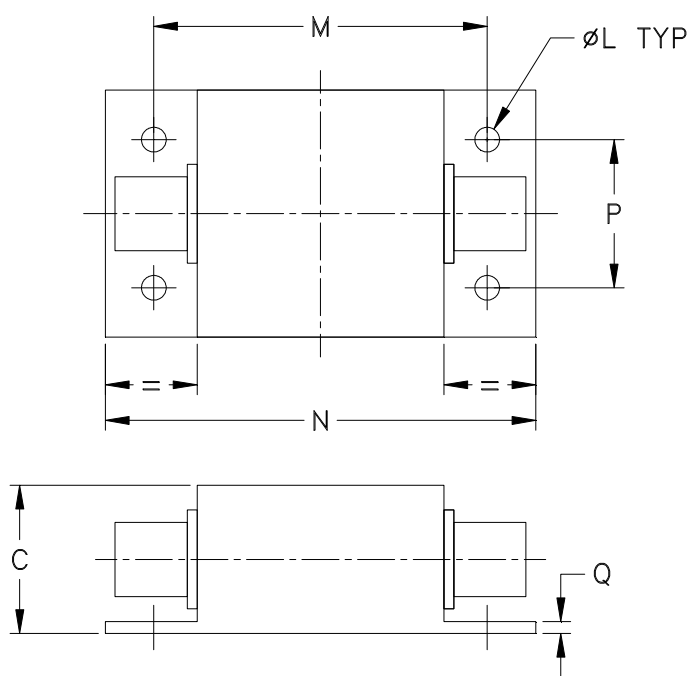
Outline Dimensions

H16

STANDARD



OPTION "B"



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
H16	1.25 (31.75)	1.25 (31.75)	.75 (19.05)	.63 (16.00)	.38 (9.65)	1.000 (25.40)	.125 (3.18)	1.000 (25.40)	--	--	.125 (3.18)	1.688 (42.88)	2.18 (55.37)

CASE#	P	Q	WT.GRAMS
H16	.750 (19.05)	.06 (1.52)	70

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Mounting bracket available on request. Add suffix B to part number.
4. Bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
5. 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

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