Coaxial

Coaxial-Ceramic Resonator Filters and Multiplexers

50Ω DC to 6 GHz

The Big Deal

- Low insertion loss with excellent power handling
- Passbands up to 6 GHz
- Fractional bandwidth from <1 to 25%
- Excellent temperature stability
- Rugged construction to handle demanding environmental conditions

Product Overview

Mini-Circuits' *Coaxial-Ceramic Resonator filters* offer low insertion loss in very small form factors, using ceramic material with high dielectric constant and superior Q factor. Bandpass and bandstop filters,diplexer and multiplexer designs can be constructed using this technology. Low insertion loss combined with excellent power handling makes these filters well suited for transmitter and receiver signal chains. Advanced filter design and construction can achieve stopband width greater than 3x the center frequency

All our coaxial-ceramic resonator filters are built with rugged construction. 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 signal chain
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stop band	Wide spur-free stopband results in better receiver sensitivity
Excellent power handling	Well suited for transmitter applications
Rugged Construction	These filter assemblies have been qualified over a wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles
Small Size	Very well suited for high performance applications where size is a constraint.
Temperature stability	Very minimal change in electrical performance across temperature makes these filters suitable for a wide range of operating conditions.

Coaxial

Bandpass Filter

ZX75BP-A1060-S+

50Ω 1015 to 1105 MHz

Generic photo used for illustration purposes only

CASE STYLE: HY1238

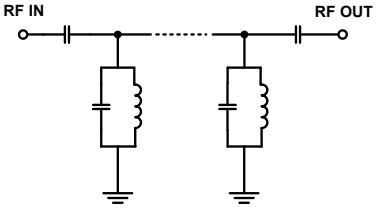
Features

- Low insertion loss
- High selectivity
- Connectorized package

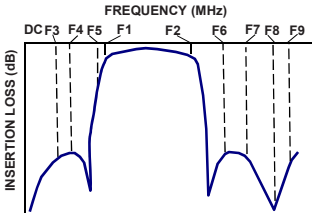
Applications

- Aeronautical navigation
- Mobile radio
- Radar system
- Aviation

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

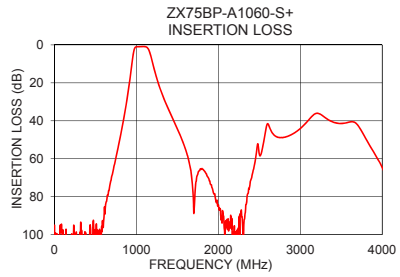
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	—	1060	—	MHz
	Insertion Loss	F1-F2	1015 - 1105	—	1.2	2.0	dB
	VSWR	F1-F2	1015 - 1105	—	1.3	2.0	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 680	60	70	—	dB
		F3-F4	680 - 800	40	45	—	dB
		F4-F5	800 - 880	20	25	—	dB
	VSWR	DC-F5	DC - 880	—	20	—	:1
Stop Band, Upper	Insertion Loss	F6-F7	1350 - 1700	25	30	—	dB
		F7-F8	1700 - 2300	50	60	—	dB
		F8-F9	2300 - 4000	—	30	—	dB
	VSWR	F6-F9	1350 - 4000	—	20	—	:1

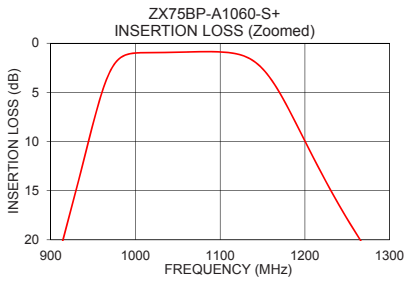
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	5 W

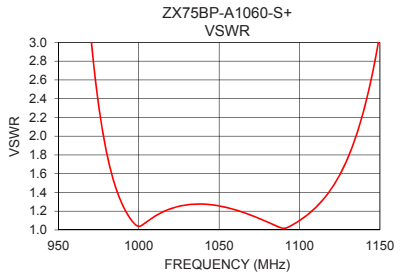
Permanent damage may occur if any of these limits are exceeded.

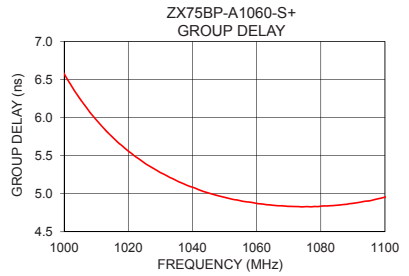
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nSec)
1	97.42	27530.55	1015	5.75
100	102.99	1873.98	1020	5.56
680	73.12	140.92	1025	5.40
800	49.03	97.72	1030	5.28
880	30.01	65.16	1035	5.17
910	21.39	45.99	1040	5.09
969	3.06	3.30	1045	5.01
1015	0.96	1.19	1050	4.95
1060	0.90	1.21	1055	4.91
1105	0.92	1.16	1060	4.87
1340	28.85	77.36	1065	4.85
1350	29.89	78.53	1070	4.83
1400	34.83	82.68	1075	4.83
1700	88.68	87.81	1080	4.84
1750	67.88	87.63	1085	4.85
2000	84.29	85.23	1090	4.87
2300	100.08	72.19	1095	4.91
3000	44.07	26.43	1100	4.95
3500	41.44	18.11	1102	4.98
4000	64.70	44.14	1105	5.01









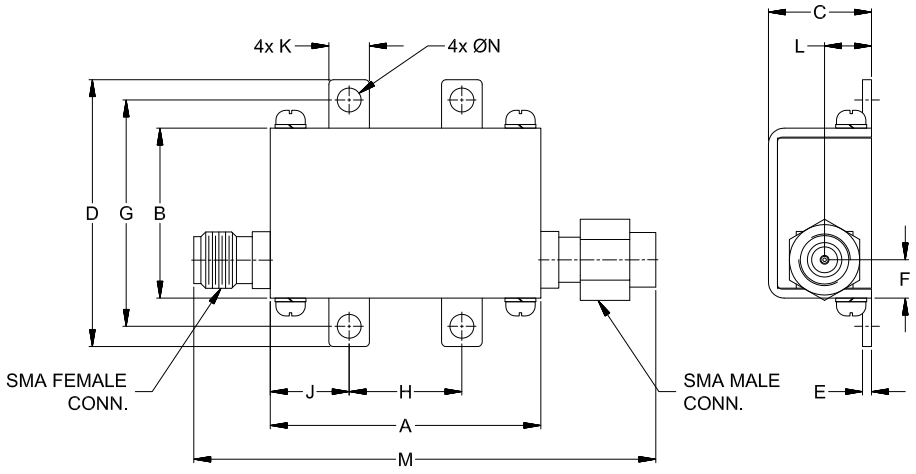
Notes

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	F	G
1.20	**.75**	**.46**	**1.18**	**.04**	**.17**	**1.00**
30.48	19.05	11.68	29.97	1.02	4.32	25.40

H	J	K	L	M	N	Wt.
.50	**.35**	**.18**	**.21**	**2.05**	**.106**	grams
12.70	8.89	4.57	5.28	52.07	2.69	35.0

Note: Please refer to case style drawing for details

Coaxial Band Pass Filter ZX75BP-A1060-S+

Typical Performance Data

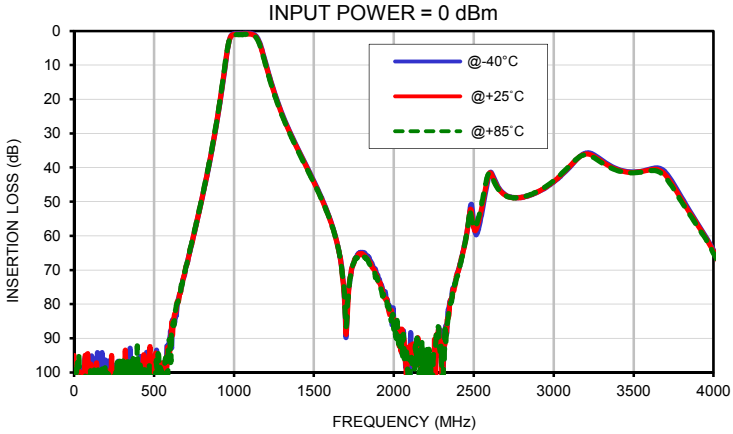
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	110.00	97.42	105.26	0.00	0.00	0.00	0.00	0.00	0.00
5	97.94	101.88	98.71	0.01	0.00	0.00	0.01	0.00	0.00
10	100.69	116.50	109.29	0.01	0.00	0.01	0.01	0.00	0.00
50	99.80	111.50	107.06	0.01	0.01	0.01	0.01	0.02	0.02
90	98.98	98.80	109.41	0.00	0.01	0.01	0.01	0.02	0.03
130	99.41	103.00	107.48	0.01	0.02	0.02	0.03	0.05	0.06
200	100.58	105.31	101.10	0.01	0.02	0.03	0.07	0.09	0.11
270	100.88	102.09	97.06	0.01	0.03	0.04	0.12	0.15	0.17
340	96.31	100.45	106.21	0.02	0.04	0.06	0.19	0.23	0.26
410	95.72	105.44	97.76	0.03	0.05	0.07	0.26	0.32	0.35
480	95.12	99.12	103.60	0.04	0.07	0.09	0.33	0.40	0.44
550	97.95	97.33	100.55	0.05	0.09	0.11	0.40	0.48	0.53
620	85.27	85.74	85.41	0.07	0.11	0.13	0.46	0.55	0.62
680	72.84	73.12	72.83	0.08	0.12	0.15	0.51	0.62	0.69
760	57.51	57.27	57.22	0.11	0.15	0.18	0.57	0.69	0.78
800	49.15	49.03	48.84	0.13	0.18	0.21	0.60	0.73	0.82
880	30.26	30.01	29.74	0.21	0.27	0.31	0.66	0.81	0.92
910	21.70	21.39	21.07	0.30	0.38	0.44	0.72	0.90	1.01
950	8.48	8.18	7.88	1.31	1.58	1.81	1.71	2.05	2.31
969	3.11	3.06	2.98	4.76	5.44	6.06	5.22	5.96	6.58
1015	0.77	0.96	1.08	21.72	21.15	20.94	20.89	20.32	20.02
1060	0.72	0.90	1.01	19.74	20.27	21.33	20.31	20.96	22.08
1105	0.71	0.92	1.05	23.88	22.47	21.68	22.27	20.76	19.88
1350	29.57	29.89	30.15	0.14	0.22	0.28	0.95	1.19	1.34
1460	40.16	40.49	40.71	0.14	0.20	0.25	1.04	1.23	1.36
1530	46.99	47.25	47.48	0.14	0.20	0.24	1.08	1.26	1.38
1600	54.96	55.16	55.31	0.14	0.20	0.24	1.19	1.38	1.54
1670	68.19	68.23	68.18	0.14	0.20	0.24	1.54	1.85	2.12
1700	89.64	88.68	86.68	0.14	0.20	0.24	1.88	2.29	2.67
1810	64.87	65.57	65.94	0.14	0.20	0.24	4.40	4.93	5.25
1880	69.59	70.25	70.79	0.14	0.20	0.24	2.61	2.73	2.80
1950	77.71	78.77	79.26	0.14	0.20	0.25	1.43	1.57	1.66
2000	85.37	84.29	87.39	0.14	0.20	0.25	1.07	1.22	1.31
2090	93.12	92.65	106.06	0.14	0.21	0.26	0.77	0.92	1.02
2160	97.85	96.90	104.03	0.14	0.22	0.27	0.64	0.80	0.91
2230	95.62	108.69	98.40	0.14	0.23	0.29	0.57	0.74	0.85
2300	94.57	100.08	99.18	0.15	0.24	0.31	0.56	0.72	0.83
2370	75.27	75.65	75.44	0.18	0.29	0.37	0.47	0.65	0.78
2440	63.11	63.30	63.38	0.39	0.56	0.73	0.44	0.62	0.75
2510	59.16	58.47	57.49	1.08	1.17	1.23	0.42	0.61	0.74
2580	45.73	44.53	43.55	2.76	4.19	5.98	0.40	0.59	0.72
2650	45.45	45.82	46.14	0.95	1.05	1.10	0.39	0.58	0.71
2720	48.47	48.64	48.64	0.33	0.46	0.57	0.38	0.57	0.71
2790	48.78	48.84	48.76	0.26	0.40	0.52	0.37	0.56	0.70
2860	47.99	47.92	47.81	0.26	0.42	0.55	0.36	0.56	0.69
2930	46.45	46.34	46.13	0.30	0.49	0.65	0.36	0.55	0.68
3000	44.29	44.07	43.83	0.41	0.66	0.87	0.35	0.54	0.68
3050	42.25	42.03	41.76	0.58	0.89	1.17	0.35	0.54	0.67
3100	39.88	39.67	39.43	0.90	1.35	1.73	0.34	0.53	0.66
3200	35.77	36.04	36.27	2.13	2.71	3.05	0.34	0.53	0.66
3300	37.76	38.22	38.60	1.14	1.38	1.54	0.33	0.52	0.64
3350	39.31	39.65	39.93	0.79	1.03	1.21	0.32	0.52	0.64
3400	40.45	40.70	40.91	0.63	0.89	1.10	0.32	0.51	0.63
3450	41.12	41.28	41.42	0.59	0.87	1.12	0.32	0.51	0.62
3500	41.31	41.44	41.56	0.62	0.96	1.25	0.32	0.51	0.62
3550	41.06	41.19	41.31	0.73	1.17	1.55	0.31	0.49	0.60
3600	40.47	40.67	40.92	0.98	1.56	2.04	0.32	0.50	0.61
3650	40.09	40.60	41.10	1.32	1.96	2.38	0.31	0.50	0.60
3900	56.38	56.77	57.36	0.26	0.42	0.55	0.30	0.47	0.57
4000	64.20	64.70	65.23	0.22	0.39	0.55	0.29	0.46	0.55

Typical Performance Data

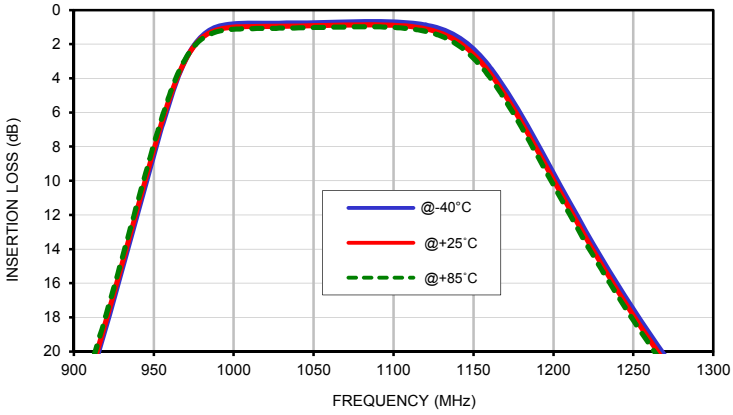
FREQ. (MHz)	GROUP DELAY (ns)		
	@-40°C	@+25°C	@+85°C
1015	5.81	5.75	5.69
1017	5.73	5.66	5.61
1019	5.65	5.59	5.55
1021	5.58	5.53	5.48
1023	5.51	5.47	5.42
1025	5.45	5.40	5.37
1027	5.40	5.35	5.32
1029	5.34	5.30	5.27
1031	5.30	5.26	5.23
1033	5.25	5.21	5.19
1035	5.21	5.17	5.15
1037	5.17	5.14	5.11
1039	5.13	5.10	5.08
1041	5.10	5.07	5.05
1043	5.06	5.04	5.02
1045	5.03	5.01	4.99
1047	5.01	4.98	4.97
1049	4.98	4.96	4.95
1051	4.96	4.94	4.93
1053	4.94	4.92	4.91
1055	4.92	4.91	4.90
1057	4.91	4.89	4.89
1059	4.89	4.88	4.87
1061	4.88	4.87	4.86
1063	4.87	4.86	4.85
1065	4.86	4.85	4.85
1067	4.85	4.84	4.84
1069	4.84	4.84	4.83
1071	4.84	4.83	4.83
1073	4.84	4.83	4.83
1075	4.84	4.83	4.83
1077	4.83	4.83	4.83
1079	4.84	4.83	4.83
1081	4.84	4.84	4.84
1083	4.85	4.84	4.84
1085	4.85	4.85	4.85
1087	4.86	4.86	4.86
1089	4.87	4.87	4.87
1091	4.88	4.88	4.88
1093	4.89	4.89	4.89
1095	4.90	4.91	4.90
1096	4.92	4.91	4.92
1097	4.92	4.93	4.92
1098	4.93	4.93	4.93
1099	4.94	4.94	4.94
1100	4.95	4.95	4.96
1101	4.96	4.97	4.97
1102	4.97	4.98	4.98
1103	4.98	4.99	4.99
1104	5.00	5.00	5.00
1105	5.01	5.01	5.02

Typical Performance Curves

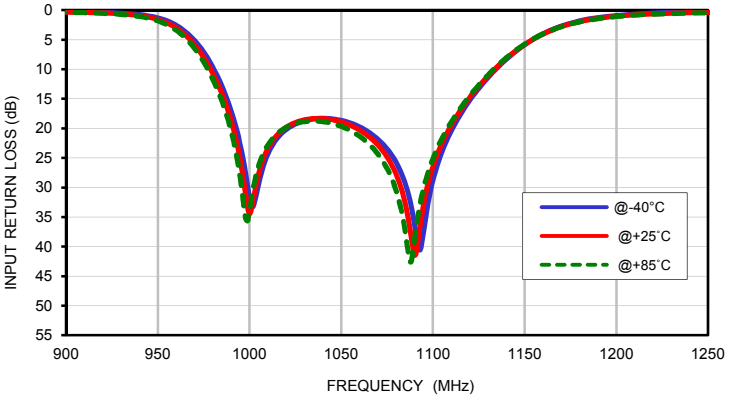
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



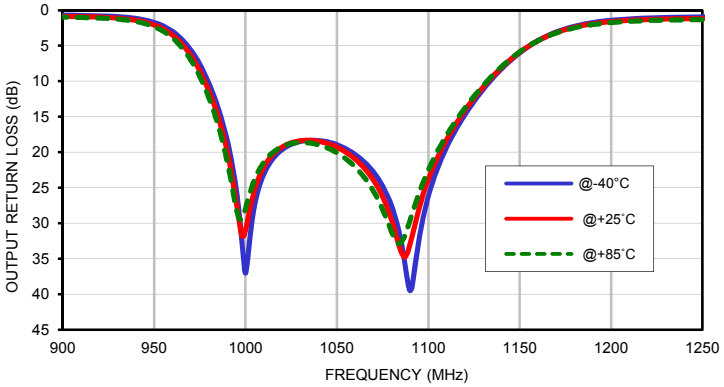
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



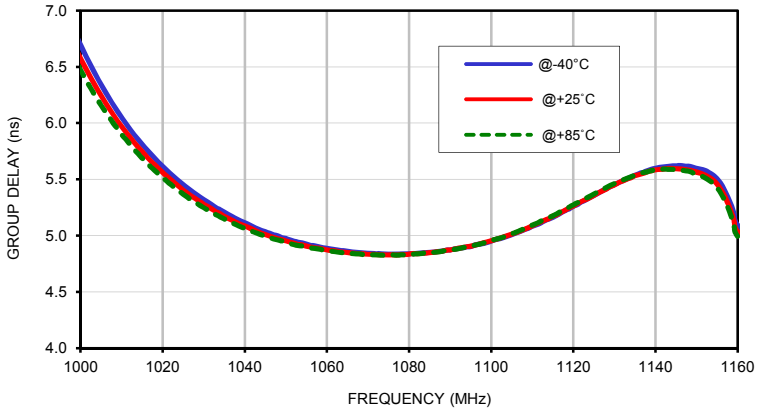
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



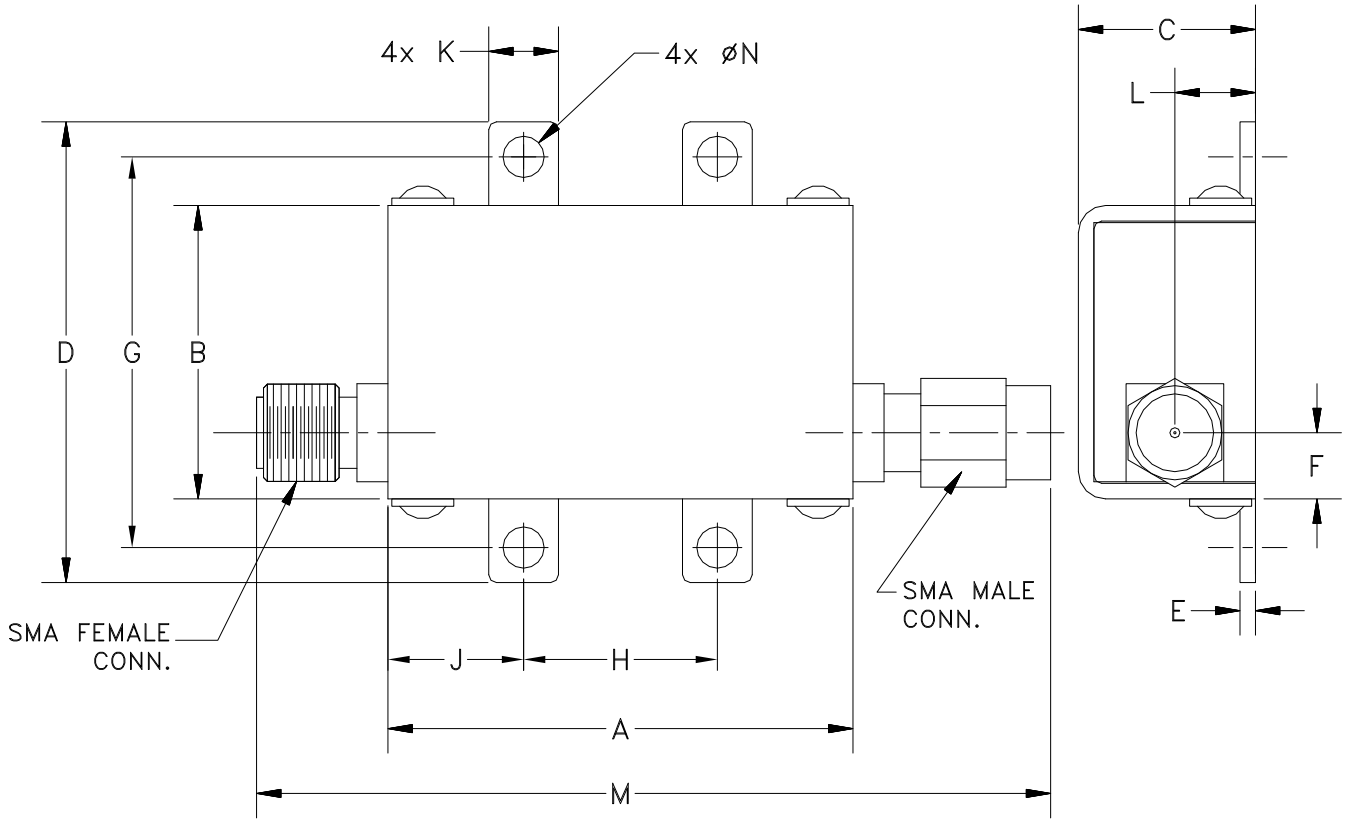
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style HY

Outline Dimensions

HY1238



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N	WT GRAMS
HY1238	1.20 (30.48)	.75 (19.05)	.46 (11.68)	1.18 (29.97)	.04 (1.02)	.17 (4.32)	1.00 (25.40)	.50 (12.70)	.35 (8.89)	.18 (4.57)	.21 (5.28)	2.05 (52.07)	.106 (2.69)	35.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015
Tolerance on hole size and interaxes dimensions to be ± .005.

Note:

1. Case material: Brass
2. Case finish: Nickel plate

Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

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