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-A1230-S+

50Ω 1160 to 1300 MHz

Generic photo used for illustration purposes only

CASE STYLE: HY1238

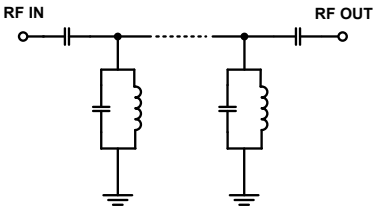
Features

- Low insertion loss
- High selectivity
- Connectorized package

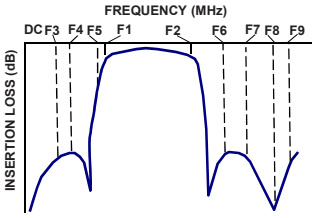
Applications

- 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

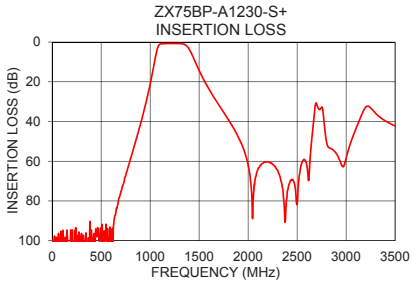
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	—	1230	—	MHz
	Insertion Loss	F1-F2	1160 - 1300	—	0.9	1.8	dB
	VSWR	F1-F2	1160 - 1300	—	1.3	2.0	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 720	60	70	—	dB
		F3-F4	720 - 840	40	45	—	dB
		F4-F5	840 - 950	20	30	—	dB
	VSWR	DC-F5	DC - 950	—	20	—	:1
Stop Band, Upper	Insertion Loss	F6-F7	1670 - 2000	25	30	—	dB
		F7-F8	2000 - 2400	45	60	—	dB
		F8-F9	2400 -3500	—	20	—	dB
	VSWR	F6-F9	1670 - 3500	—	20	—	:1

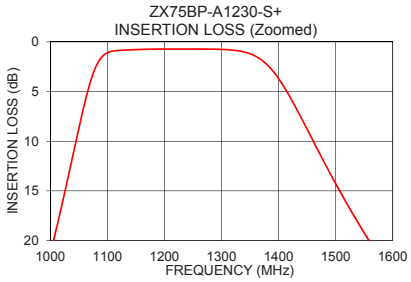
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	5 W

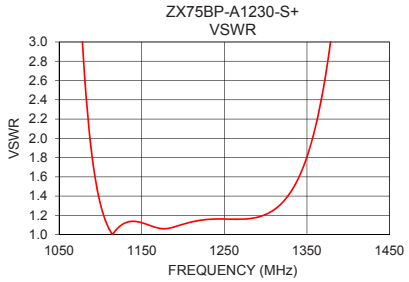
Permanent damage may occur if any of these limits are exceeded.

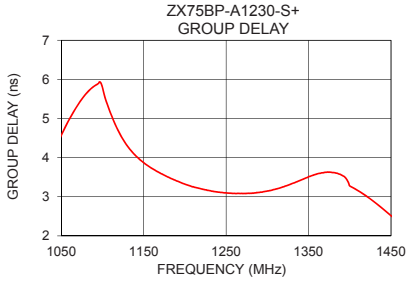
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nSec)
1	99.71	16293.17	1160	3.72
100	96.17	1884.35	1165	3.66
210	101.34	928.48	1170	3.61
400	94.83	327.87	1175	3.55
700	75.66	135.91	1180	3.50
720	72.53	132.20	1185	3.45
840	52.12	97.83	1190	3.40
950	32.08	68.62	1195	3.36
1005	20.13	43.06	1200	3.32
1075	3.17	3.52	1205	3.29
1160	0.76	1.10	1210	3.26
1230	0.72	1.16	1215	3.23
1300	0.75	1.21	1220	3.20
1320	0.83	1.33	1225	3.18
1570	21.06	59.13	1230	3.16
1600	23.67	66.82	1235	3.13
1670	29.30	74.66	1240	3.12
2000	61.70	89.50	1280	3.09
2400	75.03	86.28	1290	3.11
3500	42.26	37.05	1300	3.15









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.

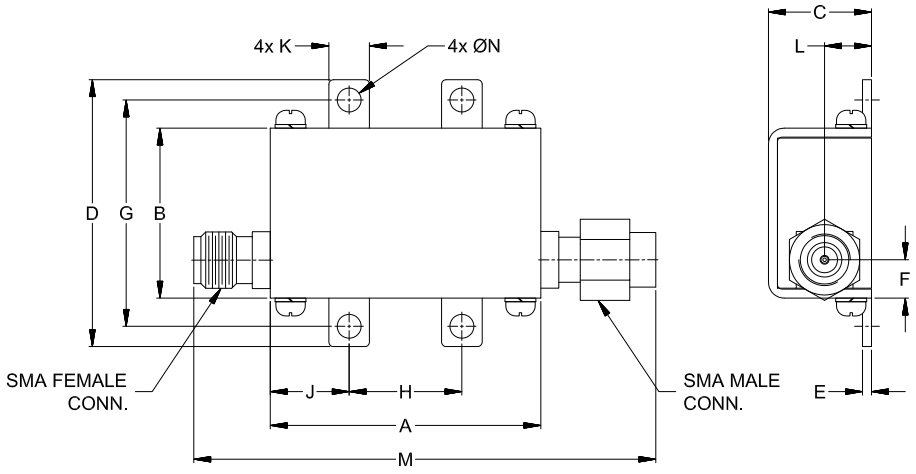
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.

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-A1230-S+

Typical Performance Data

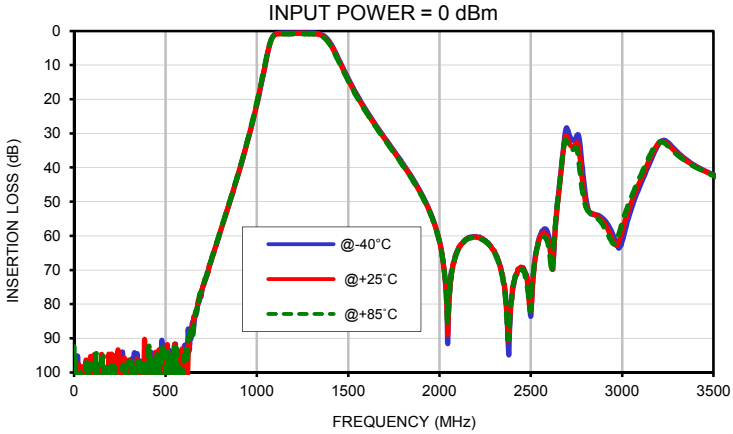
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	106.50	99.71	99.20	0.00	0.00	0.00	0.00	0.00	0.00
5	105.82	105.70	96.09	0.01	0.00	0.00	0.01	0.00	0.00
10	101.19	109.84	99.74	0.01	0.00	0.00	0.01	0.00	0.00
50	102.44	101.82	101.72	0.01	0.01	0.01	0.01	0.02	0.02
90	101.07	95.28	97.55	0.00	0.01	0.01	0.01	0.02	0.03
130	110.12	103.26	109.87	0.01	0.01	0.02	0.03	0.04	0.05
170	109.72	111.97	109.11	0.00	0.02	0.02	0.03	0.05	0.07
210	104.60	101.34	102.40	0.00	0.02	0.03	0.05	0.08	0.10
250	95.50	98.79	105.15	0.01	0.03	0.04	0.07	0.10	0.12
290	98.85	104.29	106.64	0.01	0.03	0.05	0.10	0.13	0.15
330	94.27	105.76	101.61	0.02	0.04	0.05	0.13	0.17	0.19
370	110.28	98.86	99.68	0.02	0.05	0.06	0.15	0.20	0.23
410	113.48	99.41	92.37	0.03	0.05	0.07	0.19	0.24	0.27
450	95.48	97.94	102.67	0.03	0.06	0.08	0.22	0.28	0.31
490	96.43	95.46	94.97	0.04	0.07	0.09	0.25	0.31	0.35
530	112.01	106.98	97.09	0.05	0.08	0.10	0.28	0.35	0.39
720	72.73	72.53	72.38	0.09	0.13	0.16	0.42	0.51	0.58
810	57.19	57.13	56.97	0.11	0.16	0.19	0.47	0.58	0.66
840	52.17	52.12	51.86	0.13	0.18	0.20	0.48	0.59	0.68
930	36.16	36.00	35.68	0.18	0.23	0.27	0.50	0.63	0.73
950	32.27	32.08	31.75	0.20	0.25	0.29	0.50	0.64	0.74
960	30.26	30.05	29.70	0.20	0.26	0.31	0.50	0.65	0.75
1005	20.43	20.13	19.74	0.31	0.40	0.47	0.56	0.73	0.84
1075	3.21	3.17	3.07	4.39	5.07	5.67	4.48	5.14	5.68
1090	1.39	1.52	1.58	9.75	10.81	11.72	9.74	10.64	11.37
1100	0.89	1.08	1.19	15.82	17.24	18.47	15.59	16.50	17.23
1110	0.71	0.91	1.03	26.74	29.54	32.24	24.53	24.41	24.25
1120	0.65	0.85	0.97	32.14	30.98	30.20	26.95	25.66	24.88
1130	0.63	0.82	0.94	24.57	24.81	25.00	22.96	22.92	22.84
1140	0.61	0.80	0.92	23.20	23.76	24.23	21.87	22.22	22.41
1150	0.59	0.78	0.89	23.94	24.67	25.35	22.51	23.03	23.35
1160	0.57	0.76	0.87	26.13	26.86	27.81	24.47	25.08	25.52
1210	0.54	0.72	0.83	24.43	24.21	24.55	27.02	27.86	28.82
1230	0.54	0.72	0.83	22.43	22.69	23.06	23.69	24.64	25.20
1290	0.55	0.74	0.86	21.00	21.64	21.65	20.52	21.00	20.84
1300	0.57	0.75	0.88	19.99	20.47	20.38	19.45	19.74	19.49
1340	0.79	1.02	1.17	12.89	12.84	12.59	12.79	12.61	12.31
1345	0.86	1.10	1.26	11.89	11.82	11.58	11.87	11.68	11.40
1450	8.36	8.80	9.12	1.01	1.11	1.17	1.56	1.76	1.90
1490	12.81	13.22	13.52	0.46	0.57	0.64	1.03	1.27	1.44
1530	16.94	17.32	17.61	0.27	0.37	0.44	0.86	1.10	1.27
1570	20.71	21.06	21.33	0.20	0.29	0.36	0.79	1.04	1.20
1610	24.18	24.51	24.77	0.17	0.26	0.31	0.76	1.00	1.16
1650	27.43	27.74	27.99	0.16	0.24	0.29	0.74	0.97	1.12
1670	28.99	29.30	29.55	0.15	0.23	0.29	0.73	0.96	1.11
1730	33.55	33.86	34.10	0.15	0.22	0.27	0.72	0.92	1.06
1750	35.05	35.37	35.61	0.14	0.21	0.26	0.72	0.92	1.06
1810	39.67	39.98	40.21	0.14	0.21	0.26	0.72	0.90	1.02
1850	42.93	43.24	43.45	0.14	0.21	0.26	0.73	0.89	1.01
1890	46.52	46.84	47.03	0.13	0.20	0.25	0.74	0.90	1.01
1930	50.71	50.96	51.14	0.13	0.20	0.25	0.75	0.89	1.00
1970	55.95	56.28	56.26	0.13	0.20	0.25	0.76	0.91	1.02
2000	61.51	61.70	61.87	0.12	0.19	0.25	0.78	0.93	1.04
2050	80.78	81.10	80.35	0.12	0.19	0.24	0.83	0.98	1.10
2090	65.35	65.38	65.82	0.12	0.20	0.25	0.87	1.04	1.16
2130	61.68	62.08	62.01	0.12	0.19	0.25	0.94	1.12	1.26
2170	60.35	60.47	60.66	0.12	0.19	0.25	1.01	1.22	1.39
2300	64.51	64.43	64.87	0.11	0.19	0.26	1.47	1.85	2.17
2400	75.90	75.03	75.66	0.11	0.20	0.27	2.31	2.87	3.36
3500	42.09	42.26	42.37	0.28	0.47	0.62	0.56	0.81	1.01

Typical Performance Data

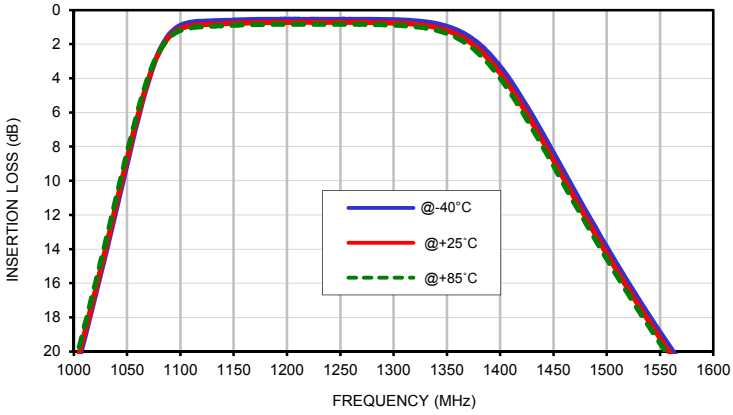
FREQ. (MHz)	GROUP DELAY (ns)		
	@-40°C	@+25°C	@+85°C
1160	3.75	3.72	3.70
1162	3.73	3.70	3.67
1164	3.70	3.68	3.65
1166	3.68	3.65	3.62
1168	3.65	3.63	3.60
1170	3.63	3.61	3.58
1172	3.61	3.58	3.56
1174	3.59	3.56	3.54
1176	3.57	3.54	3.52
1178	3.54	3.52	3.50
1180	3.53	3.50	3.48
1182	3.50	3.48	3.46
1184	3.49	3.46	3.44
1186	3.46	3.44	3.42
1188	3.45	3.43	3.41
1190	3.43	3.40	3.39
1192	3.41	3.39	3.37
1194	3.39	3.37	3.35
1196	3.37	3.36	3.34
1198	3.36	3.34	3.32
1200	3.34	3.32	3.31
1202	3.33	3.31	3.29
1204	3.31	3.29	3.28
1206	3.30	3.28	3.27
1208	3.28	3.26	3.25
1210	3.27	3.26	3.24
1212	3.26	3.24	3.23
1214	3.25	3.23	3.22
1216	3.24	3.22	3.21
1218	3.23	3.21	3.20
1220	3.21	3.20	3.19
1222	3.20	3.19	3.18
1224	3.19	3.18	3.17
1226	3.19	3.18	3.17
1228	3.17	3.16	3.15
1230	3.17	3.16	3.15
1232	3.16	3.15	3.14
1234	3.15	3.14	3.13
1236	3.14	3.13	3.12
1238	3.14	3.12	3.12
1240	3.13	3.12	3.12
1242	3.12	3.12	3.11
1244	3.12	3.11	3.11
1246	3.11	3.11	3.10
1248	3.11	3.10	3.09
1250	3.10	3.10	3.09
1252	3.10	3.09	3.09
1254	3.10	3.09	3.08
1256	3.10	3.09	3.08
1280	3.09	3.09	3.09
1300	3.14	3.15	3.15

Typical Performance Curves

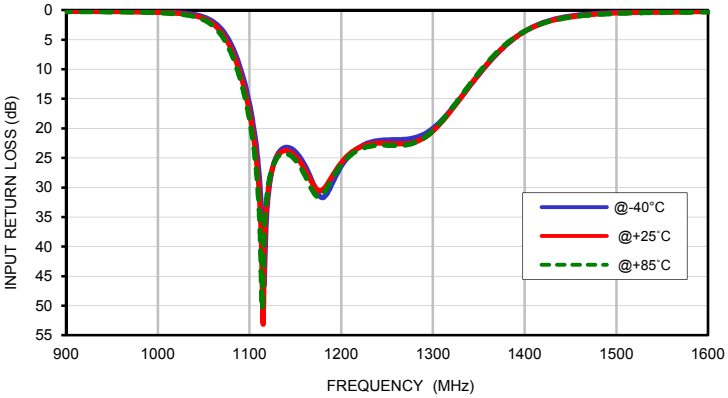
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



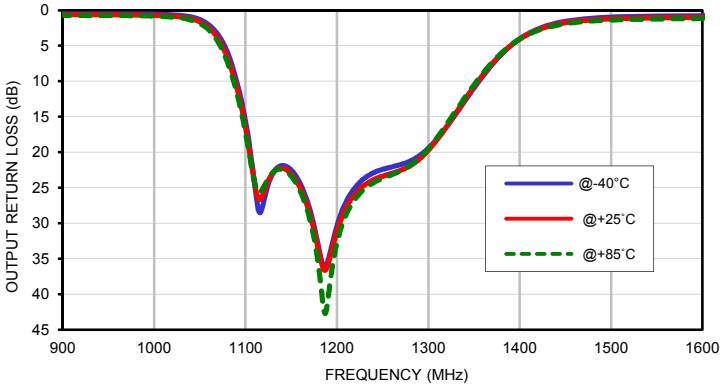
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



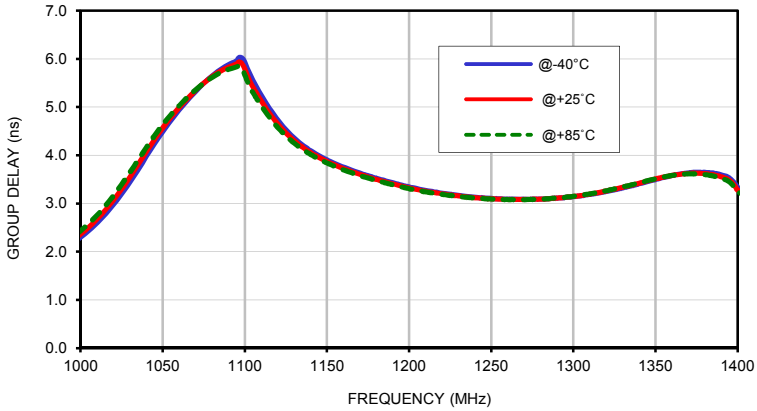
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



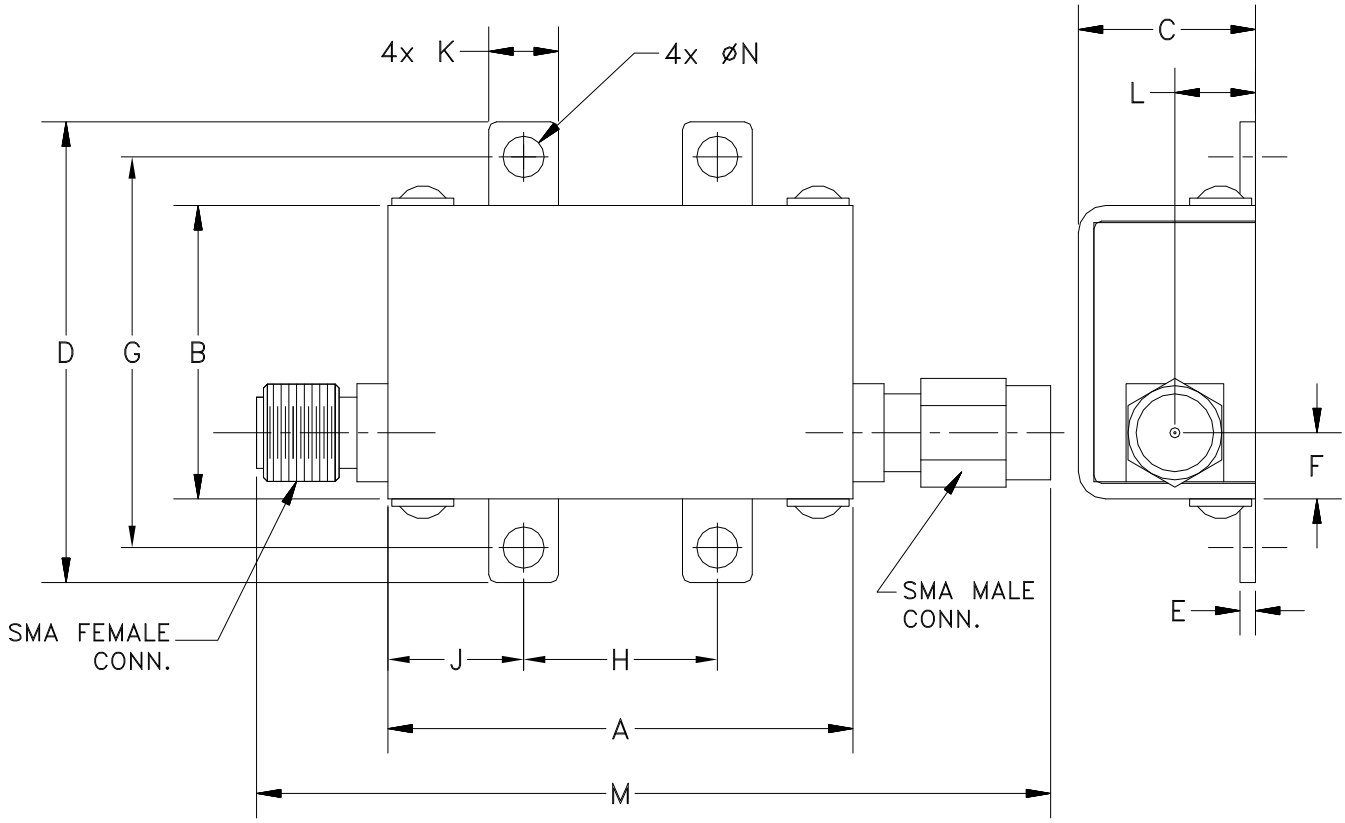
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



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®
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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