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, qualified to withstand multiple demanding reflow cycles. Custom integrated assembly with LNA in greatly simplifying system integration. They can be realized in small form factors with high-quality, precise machining for applications where size is critical. 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.

Notes
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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.
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Coaxial

Bandpass Filter

ZX75BP-770-S+

50Ω 760 to 780 MHz

Generic photo used for illustration purposes only

CASE STYLE: HY1238

Connectors	Model
SMA-M\F	ZX75BP-770-S+

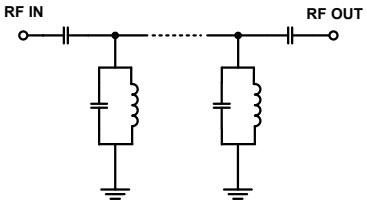
Features

- Narrow bandwidth
- Excellent rejection
- High selectivity
- High power handling
- Connectorized package

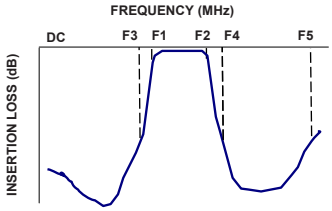
Applications

- Wireless control systems (WCS)
- Amateur radio bands
- Mobile test systems
- Public safety services

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	-	-	-	770	-	MHz
	Insertion Loss	F1-F2	760-780	-	1.4	2	dB
	VSWR	F1-F2	760-780	-	1.2	-	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 705	20	35	-	dB
	VSWR	DC-F3	DC - 705	-	20	-	:1
Stop Band, Upper	Insertion Loss	F4-F5	840-1700	20	27	-	dB
	VSWR	F4-F5	840-1700	-	20	-	:1

Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input*	10 W max.

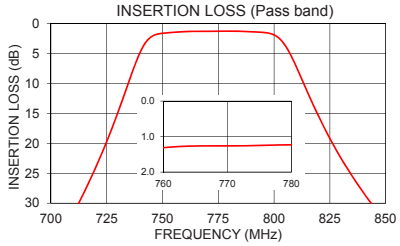
* Passband rating, derate linearly to 3.5W at 85.°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

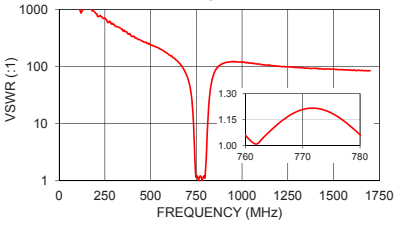
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	98.97	15791.09	760	16.13
500	66.12	238.55	761	15.94
705	35.30	59.87	762	15.76
712	30.34	49.55	763	15.60
724	20.61	29.28	764	15.43
732	12.78	14.22	765	15.29
742	3.37	2.44	766	15.15
750	1.59	1.17	767	15.02
760	1.31	1.06	768	14.90
770	1.26	1.21	769	14.80
780	1.23	1.06	770	14.71
790	1.34	1.21	771	14.64
805	3.64	3.01	772	14.59
815	11.46	14.85	773	14.56
827	20.55	40.22	774	14.54
840	28.23	64.96	775	14.53
845	30.78	72.96	776	14.55
1000	55.78	117.80	777	14.58
1500	45.48	89.88	778	14.62
1700	43.63	84.64	780	14.73

ZX75BP-770-S+
INSERTION LOSS (Full band)

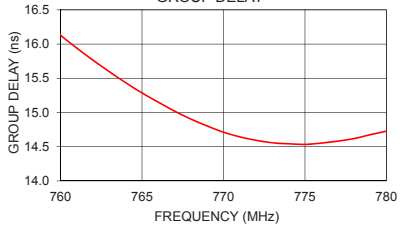
ZX75BP-770-S+
INSERTION LOSS (Pass band)



ZX75BP-770-S+
VSWR



ZX75BP-770-S+
GROUP DELAY



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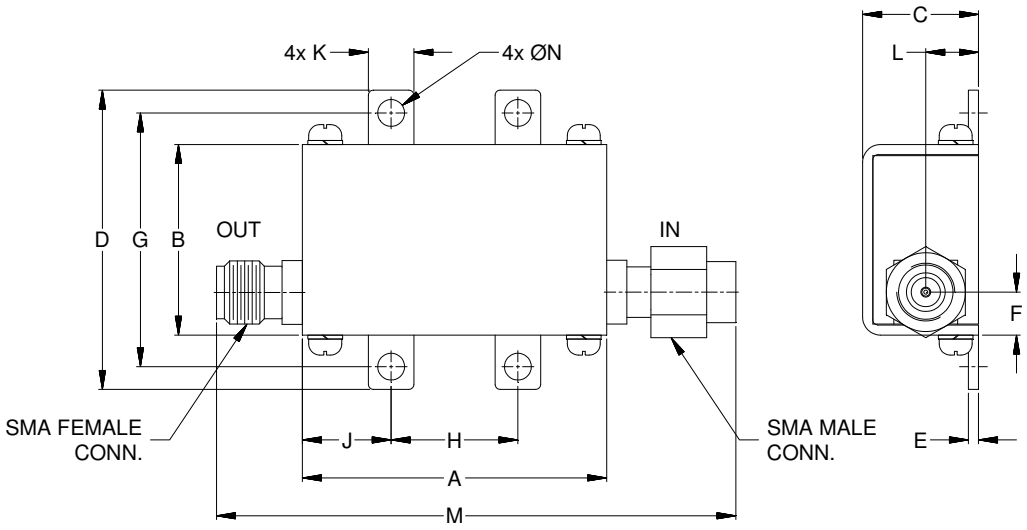
Coaxial Connections

INPUT	SMA-MALE
OUTPUT	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

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Coaxial Band Pass Filter ZX75BP-770-S+

Typical Performance Data

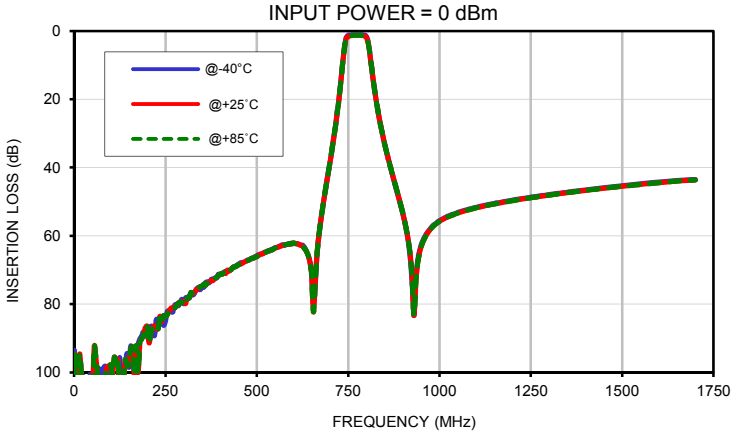
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1	93.56	98.97	98.97	0.00	0.00	0.00	0.00	0.00	0.00
10	101.17	103.84	103.84	0.00	0.00	0.00	0.00	0.00	0.00
50	111.82	106.89	106.89	0.01	0.01	0.01	0.02	0.02	0.02
100	99.90	97.87	97.87	0.01	0.01	0.01	0.02	0.03	0.03
150	98.52	97.04	97.04	0.01	0.01	0.02	0.02	0.04	0.05
200	87.70	86.49	86.49	0.02	0.02	0.03	0.04	0.07	0.08
225	84.53	87.27	87.27	0.02	0.02	0.03	0.05	0.09	0.10
250	84.99	83.65	83.65	0.02	0.02	0.03	0.07	0.10	0.12
275	80.43	81.15	81.15	0.03	0.03	0.04	0.09	0.12	0.14
300	79.88	79.11	79.11	0.03	0.03	0.04	0.10	0.14	0.16
325	77.31	76.87	76.87	0.04	0.04	0.04	0.13	0.17	0.19
350	74.77	74.83	74.83	0.04	0.04	0.05	0.15	0.20	0.22
375	72.83	73.12	73.12	0.05	0.05	0.06	0.17	0.22	0.24
400	71.32	71.20	71.20	0.05	0.05	0.06	0.19	0.25	0.27
500	65.78	66.12	66.12	0.07	0.07	0.09	0.27	0.35	0.38
600	62.29	62.08	62.08	0.11	0.11	0.13	0.38	0.47	0.51
700	38.63	38.65	38.65	0.26	0.26	0.30	0.58	0.71	0.78
705	35.27	35.30	35.30	0.29	0.29	0.33	0.61	0.74	0.81
712	30.32	30.34	30.34	0.35	0.35	0.39	0.66	0.81	0.88
715	28.06	28.09	28.09	0.39	0.39	0.43	0.69	0.84	0.92
725	19.65	19.70	19.70	0.63	0.63	0.70	0.89	1.08	1.18
735	9.47	9.60	9.60	1.89	1.89	2.01	1.98	2.30	2.47
740	4.51	4.75	4.75	4.92	4.92	5.11	4.81	5.29	5.52
742	3.08	3.37	3.37	7.56	7.56	7.76	7.36	7.91	8.15
750	1.31	1.59	1.59	22.10	22.10	22.11	26.98	27.38	28.00
760	1.07	1.31	1.31	30.81	30.81	32.22	27.97	30.13	33.19
770	1.03	1.26	1.26	20.49	20.49	19.91	22.07	21.46	20.72
780	1.00	1.23	1.23	30.38	30.38	28.92	28.45	26.98	25.85
785	1.03	1.26	1.26	26.65	26.65	27.30	23.58	23.01	22.75
790	1.10	1.34	1.34	20.50	20.50	20.28	20.37	19.82	19.24
805	3.47	3.64	3.64	6.01	6.01	6.72	5.47	5.98	6.59
815	11.47	11.46	11.46	1.17	1.17	1.33	1.16	1.36	1.49
820	15.55	15.52	15.52	0.69	0.69	0.79	0.77	0.94	1.02
825	19.23	19.18	19.18	0.48	0.48	0.55	0.62	0.76	0.83
830	22.53	22.49	22.49	0.37	0.37	0.43	0.55	0.68	0.74
840	28.29	28.23	28.23	0.27	0.27	0.31	0.50	0.62	0.67
845	30.84	30.78	30.78	0.24	0.24	0.28	0.49	0.61	0.66
850	33.21	33.15	33.15	0.22	0.22	0.25	0.48	0.60	0.65
900	53.72	53.49	53.49	0.15	0.15	0.18	0.49	0.61	0.67
925	73.16	72.17	72.17	0.15	0.15	0.17	0.50	0.63	0.69
950	62.65	63.12	63.12	0.14	0.14	0.17	0.51	0.64	0.71
975	57.87	58.08	58.08	0.14	0.14	0.17	0.52	0.66	0.73
1000	55.53	55.78	55.78	0.15	0.15	0.17	0.53	0.67	0.74
1025	54.22	54.33	54.33	0.15	0.15	0.17	0.54	0.68	0.76
1050	53.10	53.32	53.32	0.15	0.15	0.17	0.54	0.69	0.77
1075	52.35	52.53	52.53	0.16	0.16	0.18	0.55	0.71	0.79
1100	51.65	51.77	51.77	0.16	0.16	0.18	0.56	0.72	0.81
1150	50.52	50.69	50.69	0.16	0.16	0.19	0.57	0.73	0.82
1200	49.56	49.71	49.71	0.17	0.17	0.20	0.58	0.75	0.84
1250	48.67	48.89	48.89	0.18	0.18	0.20	0.58	0.75	0.85
1300	47.94	48.07	48.07	0.18	0.18	0.21	0.58	0.76	0.86
1350	47.22	47.35	47.35	0.19	0.19	0.21	0.58	0.76	0.85
1400	46.57	46.70	46.70	0.19	0.19	0.21	0.58	0.77	0.86
1450	45.94	46.06	46.06	0.19	0.19	0.22	0.59	0.77	0.85
1500	45.31	45.48	45.48	0.19	0.19	0.22	0.59	0.77	0.85
1550	44.74	44.95	44.95	0.20	0.20	0.22	0.60	0.78	0.85
1600	44.27	44.43	44.43	0.20	0.20	0.23	0.62	0.79	0.86
1650	43.80	43.96	43.96	0.20	0.20	0.24	0.64	0.80	0.87
1675	43.64	43.79	43.79	0.20	0.20	0.24	0.65	0.81	0.87
1700	43.49	43.63	43.63	0.21	0.21	0.24	0.66	0.82	0.88

Typical Performance Data

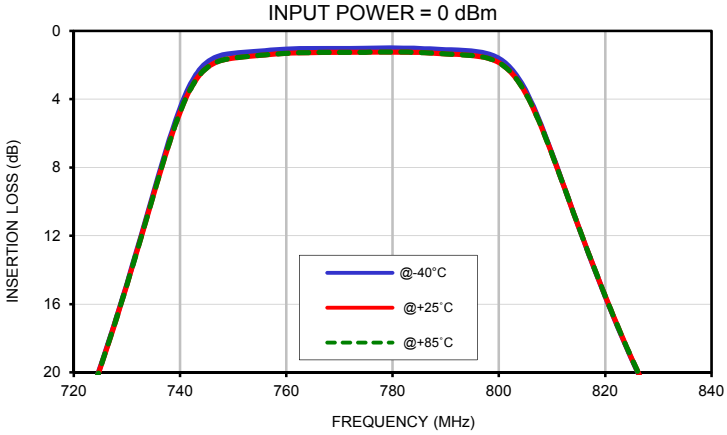
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25˚C	@+85˚C
760	16.19	16.13	16.08
761	16.00	15.94	15.89
762	15.83	15.76	15.71
763	15.67	15.60	15.54
764	15.51	15.43	15.38
765	15.36	15.29	15.22
766	15.22	15.15	15.08
767	15.09	15.02	14.95
768	14.98	14.90	14.84
769	14.88	14.80	14.73
770	14.79	14.71	14.64
771	14.72	14.64	14.57
772	14.67	14.59	14.51
773	14.63	14.56	14.48
774	14.62	14.54	14.46
775	14.61	14.53	14.46
776	14.62	14.55	14.47
777	14.65	14.58	14.49
778	14.69	14.62	14.53
779	14.75	14.68	14.58
780	14.80	14.73	14.63

Typical Performance Curves

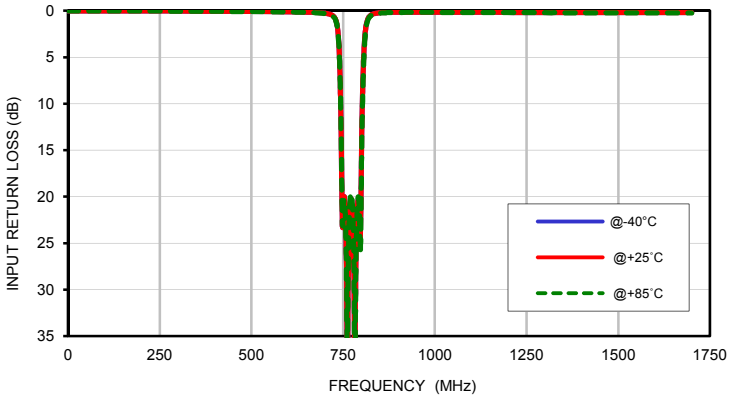
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



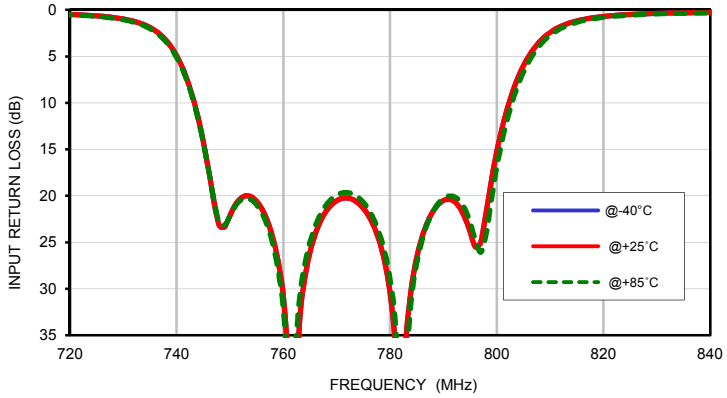
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



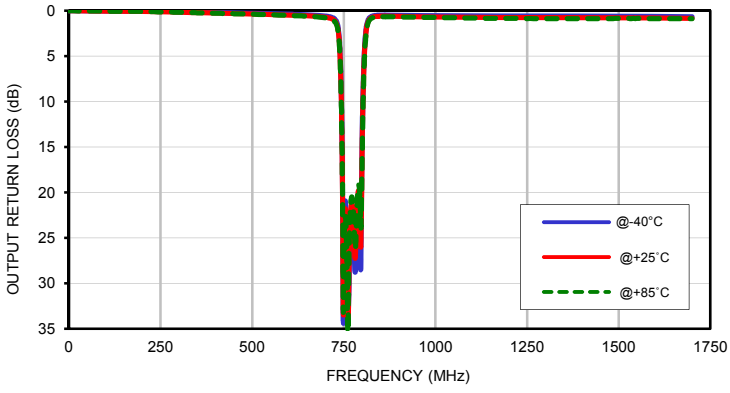
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



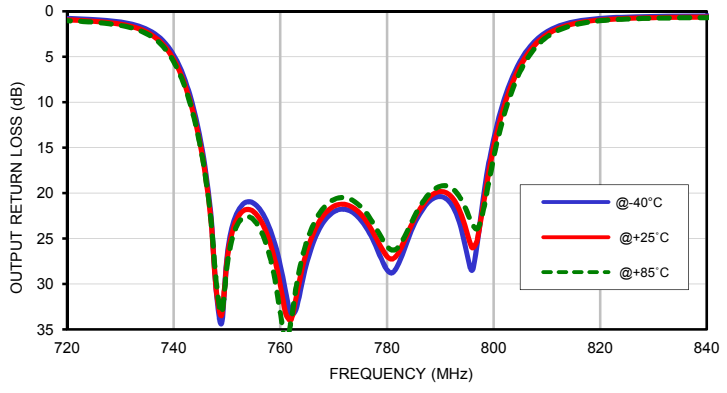
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



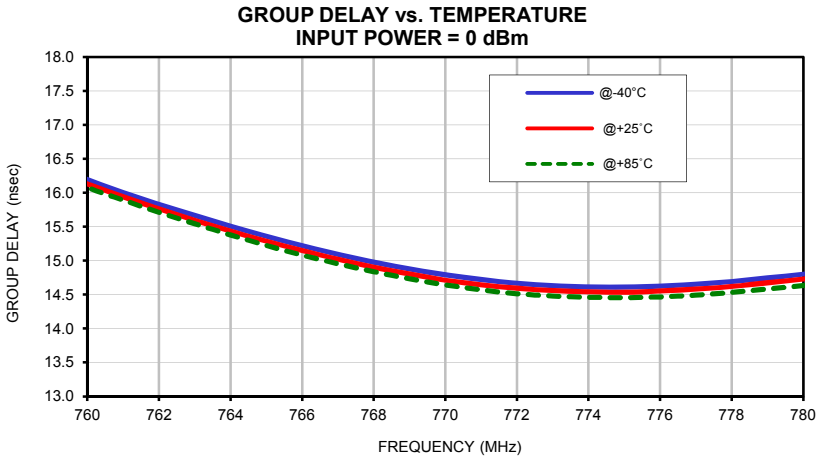
OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



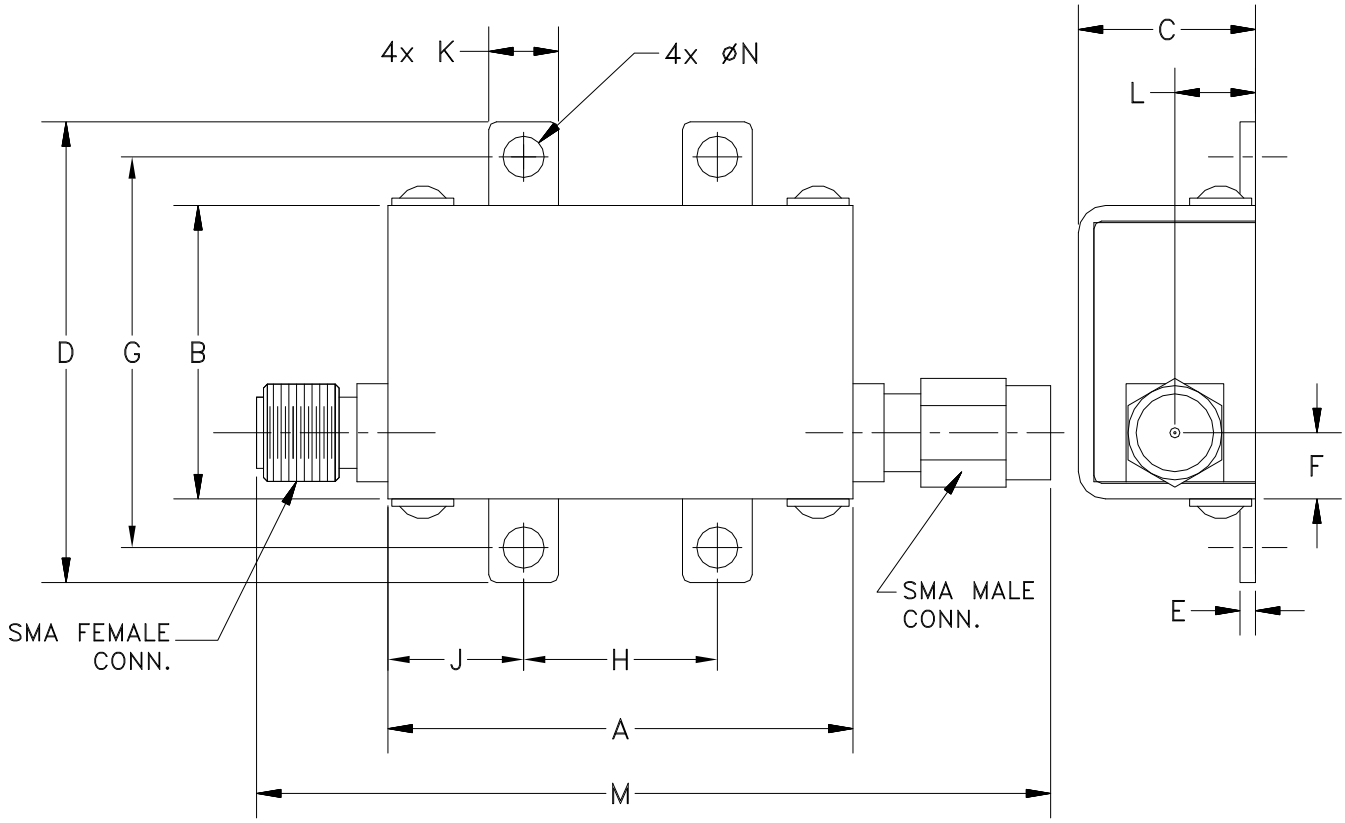
Typical Performance Curves



Case Style 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

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