CAVITY

Bandpass Filter ZVBP MODEL SERIES

50Ω DC to 57 GHz

THE BIG DEAL

- Very low insertion loss with excellent power handling
- Fast roll-off with wide stopband
- Passbands upto 36 GHz
- Stopband up to 57 GHz

PRODUCT OVERVIEW

Mini-Circuits' cavity filters are designed by implementing resonant structures with very high Q and are ideal for narrow-band, high-selectivity applications. These designs can provide bandwidths as narrow as 0.5% with very high selectivity and excellent low noise floor. Low insertion loss combined with excellent power handling makes them well-suited for transmitter and receiver front end. Advanced filter design and construction enables stopband width greater than 3x the center frequency.

Mini-Circuits' cavity filters feature a special protective assembly to prevent accidental de-tuning that would otherwise require expensive replacement or return to factory for re-tuning. Precise machining allows realization of cavity filters with small form factors 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 receiver front end and better power delivery to antenna in transmitter.
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stopband	Wide spur free band results in better receiver sensitivity
High power handling	Well suited for transmitter application
Protective assembly	Prevents accidental de-tuning of precisely tuned resonant circuit

CAVITY

Bandpass Filter

ZVBP-3260-S+

50Ω 3180 to 3340 MHz SMA-Female

FEATURES

- Low Insertion loss, 1.7dB typ.
- Good Return loss, 20dB typ.
- Great Rejection (40 to 100 dB typ.)
- Stopband up to 7000 MHz

Generic photo used for illustration purposes only

Model No.	ZVBP-3260-S+
Case Style	WZ3389
Connectors	SMA-FEMALE

APPLICATIONS

- Test & Measurement Equipment
- Radar, EW, and ECM Defense Systems

+RoHS Compliant

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

ELECTRICAL SPECIFICATIONS AT 25°C

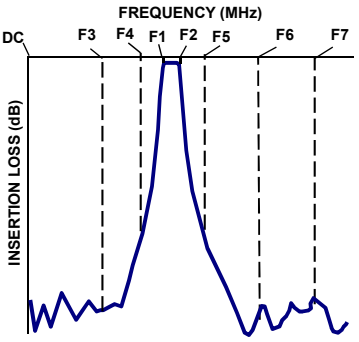
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	Fc	-	-	3260	-	MHz
	Insertion Loss	F1-F2	3180 - 3340	-	1.7	2.2	dB
	Return Loss	F1-F2	3180 - 3340	14	20	-	dB
Stop Band, Lower	Rejection	DC-F3	DC - 3135	40	44	-	dB
		F3-F4	3135 - 3160	14	18	-	dB
Stop Band, Upper	Rejection	F5-F6	3360 - 3380	15	23	-	dB
		F6-F7	3380 - 7000	40	46	-	dB

MAXIMUM RATINGS

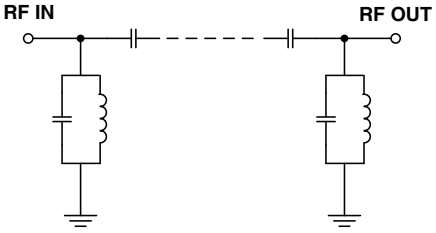
Parameter	Ratings
Operating temperature	-40°C to +85°C
Storage temperature	-55°C to +100°C
RF Power Input	20W max. at 25°C

Permanent damage may occur if any of these limits are exceeded
Input and output ports are DC short to ground.

TYPICAL FREQUENCY RESPONSE



FUNCTIONAL SCHEMATIC



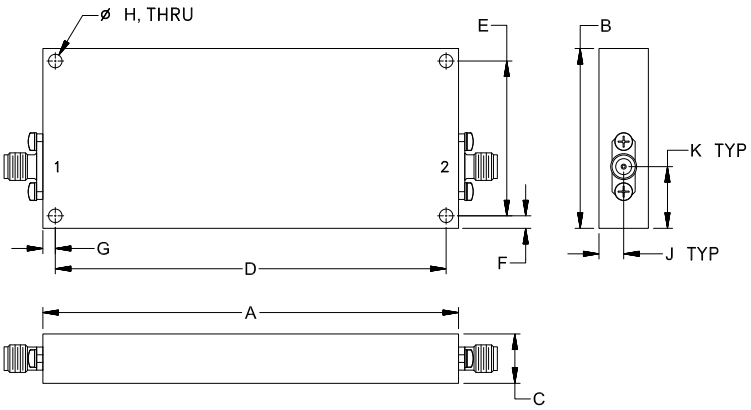
Bandpass Filter

ZVBP-3260-S+

COAXIAL CONNECTIONS

PORT 1	SMA-Female
PORT 2	SMA-Female

OUTLINE DRAWING



OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E	F
4.00	**1.73**	**.48**	**3.760**	**1.490**	**.12**
101.6	43.9	12.1	95.50	37.85	3.0
G	H	J	K		Wt.
.12	**.130**	**.24**	**.59**		grams
3.0	3.3	6.0	15.1		210

Note. Please refer to case style drawing for details

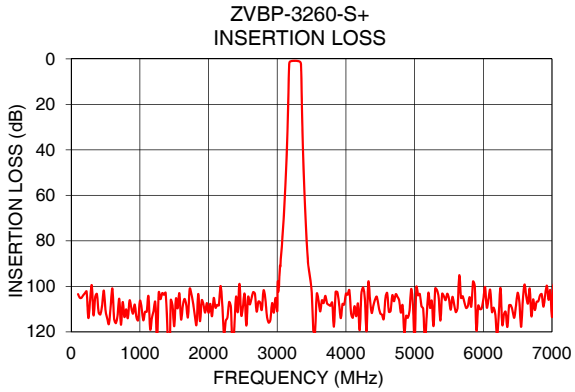
CAVITY

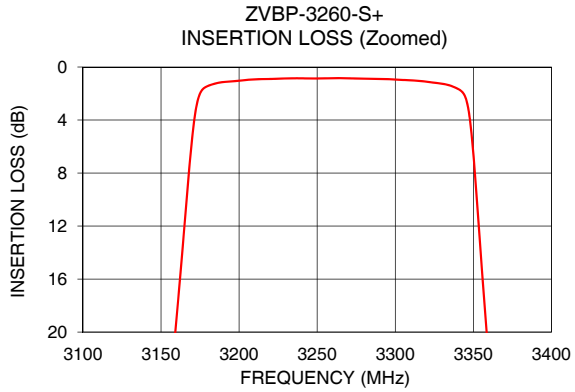
Bandpass Filter

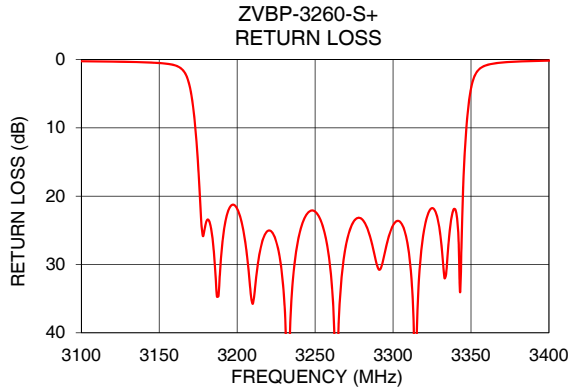
ZVBP-3260-S+

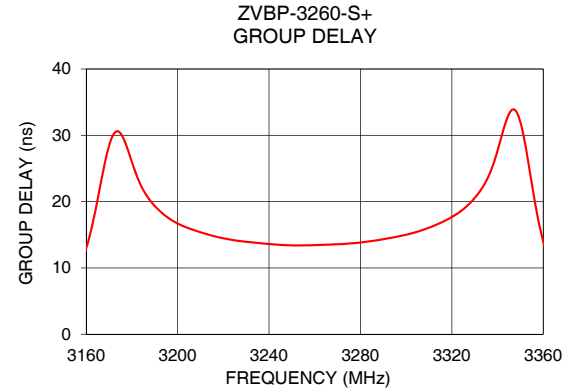
TYPICAL PERFORMANCE DATA AT 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)	Frequency (MHz)	GROUP DELAY (ns)
100	103.43	0.03	3180	25.96
1000	106.47	0.07	3190	19.34
3135	43.96	0.38	3200	16.70
3150	30.45	0.52	3210	15.38
3160	18.88	0.85	3220	14.46
3172	3.43	7.43	3230	13.95
3180	1.43	23.87	3240	13.61
3260	0.85	31.14	3250	13.40
3340	1.65	21.98	3260	13.44
3347	3.32	10.08	3270	13.58
3360	22.20	0.83	3280	13.83
3370	34.90	0.44	3290	14.33
3380	45.23	0.30	3300	15.01
5000	124.16	0.20	3320	17.67
7000	113.48	0.04	3340	27.69









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

Cavity Bandpass Filter ZVBP-3260-S+

Typical Performance Data

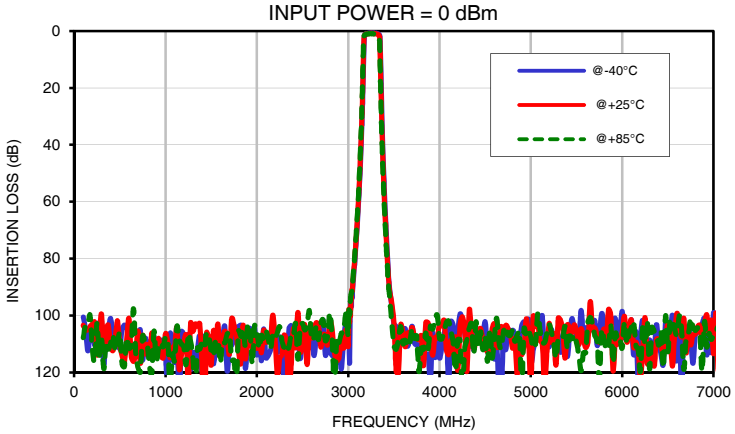
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	100.60	103.43	107.75	0.02	0.03	0.04	0.03	0.04	0.03
200	105.93	103.00	111.93	0.04	0.05	0.06	0.05	0.06	0.06
300	102.01	99.58	108.20	0.05	0.06	0.08	0.06	0.07	0.07
400	101.08	111.51	109.66	0.06	0.07	0.09	0.07	0.08	0.09
500	111.44	110.54	106.13	0.06	0.08	0.09	0.06	0.08	0.09
600	107.37	100.99	111.60	0.06	0.08	0.10	0.06	0.09	0.09
700	108.70	105.49	118.38	0.06	0.08	0.10	0.06	0.08	0.09
800	109.97	110.13	110.10	0.06	0.08	0.10	0.06	0.08	0.09
900	112.27	111.98	115.75	0.05	0.07	0.09	0.05	0.08	0.08
1000	114.30	106.47	107.51	0.04	0.07	0.09	0.05	0.07	0.07
1200	106.69	110.65	110.90	0.03	0.07	0.09	0.04	0.06	0.07
1400	119.65	117.94	109.59	0.03	0.06	0.09	0.03	0.06	0.07
1600	108.29	114.54	116.65	0.03	0.07	0.09	0.03	0.07	0.07
1800	104.09	112.78	105.50	0.03	0.07	0.10	0.03	0.07	0.08
2000	113.90	111.61	105.13	0.03	0.08	0.11	0.03	0.08	0.09
2200	107.21	108.18	107.93	0.04	0.10	0.13	0.04	0.09	0.11
2300	123.31	106.86	111.45	0.05	0.10	0.14	0.05	0.09	0.12
2400	106.35	104.55	107.60	0.05	0.11	0.15	0.06	0.10	0.13
2500	108.68	109.03	102.77	0.06	0.12	0.16	0.06	0.11	0.14
2600	103.54	107.93	108.65	0.06	0.12	0.17	0.07	0.12	0.14
2700	110.05	111.07	102.78	0.07	0.13	0.18	0.07	0.12	0.15
3135	46.51	43.96	41.70	0.30	0.38	0.44	0.29	0.36	0.40
3150	33.76	30.45	27.46	0.40	0.52	0.63	0.40	0.51	0.60
3160	23.03	18.88	15.08	0.59	0.85	1.20	0.59	0.84	1.19
3166	15.25	10.57	6.78	0.96	1.79	3.43	0.97	1.80	3.49
3172	6.75	3.43	2.19	2.89	7.43	14.91	2.94	7.54	15.78
3180	1.46	1.43	1.42	22.14	23.87	25.39	25.24	24.96	25.93
3200	0.92	1.04	1.09	20.56	21.84	24.14	20.71	21.92	24.39
3220	0.77	0.90	0.99	25.63	25.04	25.60	25.19	24.73	25.34
3240	0.72	0.85	0.95	32.51	25.45	23.13	32.22	25.46	23.06
3260	0.72	0.85	0.94	24.93	31.14	59.07	24.29	29.15	34.47
3280	0.74	0.88	0.99	24.16	23.36	24.24	24.49	23.90	25.03
3300	0.79	0.95	1.08	27.28	24.25	23.26	29.40	24.66	23.08
3320	0.91	1.11	1.28	31.02	24.82	22.50	25.58	22.83	21.55
3340	1.27	1.65	2.15	23.70	21.98	31.70	23.84	21.51	23.70
3347	1.71	3.32	7.34	36.26	10.08	4.01	25.12	9.59	3.76
3352	4.25	9.63	15.30	6.49	2.57	1.52	6.26	2.42	1.37
3360	16.55	22.20	26.95	1.07	0.83	0.73	0.99	0.75	0.63
3370	30.45	34.90	38.73	0.43	0.44	0.45	0.39	0.39	0.38
3380	41.50	45.23	48.51	0.25	0.30	0.33	0.22	0.26	0.28
3500	102.82	102.00	110.55	0.03	0.05	0.12	0.02	0.04	0.09
3600	106.65	106.08	109.89	0.04	0.03	0.10	0.04	0.03	0.07
3700	103.79	104.20	104.67	0.05	0.03	0.09	0.05	0.02	0.07
3800	112.62	107.18	111.52	0.05	0.02	0.09	0.05	0.02	0.06
3900	122.61	107.64	103.82	0.05	0.02	0.08	0.05	0.02	0.06
4000	114.95	103.22	108.05	0.05	0.02	0.08	0.05	0.02	0.06
4100	123.95	113.79	102.02	0.04	0.03	0.09	0.04	0.03	0.06
4200	105.54	119.27	108.52	0.03	0.04	0.10	0.03	0.03	0.07
4300	114.82	119.67	108.49	0.02	0.05	0.11	0.02	0.05	0.08
4400	106.01	108.36	102.23	0.00	0.07	0.12	0.00	0.06	0.09
4500	102.31	111.89	107.62	0.02	0.09	0.14	0.02	0.08	0.11
4600	115.27	102.96	108.15	0.04	0.11	0.16	0.04	0.10	0.13
4700	105.89	106.53	105.83	0.06	0.13	0.18	0.06	0.12	0.15
4800	105.15	111.53	105.33	0.09	0.15	0.20	0.08	0.14	0.17
4900	103.47	113.82	124.97	0.11	0.18	0.23	0.11	0.16	0.19
5000	116.51	124.16	107.59	0.14	0.20	0.25	0.13	0.18	0.21
5200	111.08	102.80	103.16	0.18	0.24	0.28	0.17	0.22	0.24
5500	107.10	105.52	109.47	0.20	0.26	0.31	0.20	0.24	0.27
6000	98.57	105.64	111.44	0.15	0.21	0.25	0.14	0.19	0.20
7000	99.02	113.48	106.82	0.02	0.04	0.07	0.02	0.03	0.03

Typical Performance Data

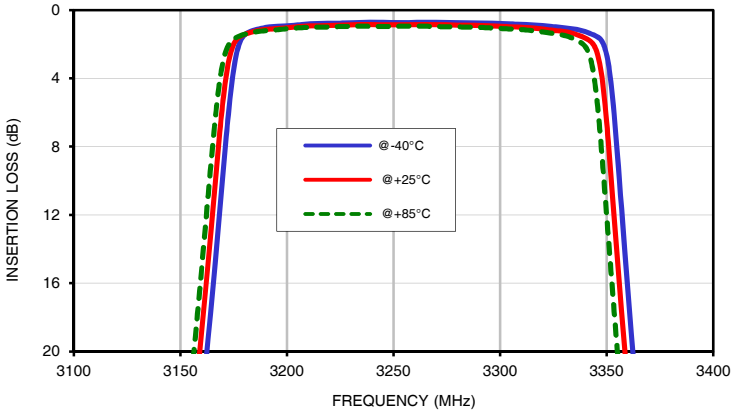
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
3180	29.51	25.96	23.26
3185	24.44	21.72	20.23
3190	20.83	19.34	18.39
3195	18.77	17.78	17.14
3200	17.36	16.70	16.28
3205	16.42	15.96	15.65
3210	15.75	15.38	15.11
3215	15.21	14.88	14.65
3220	14.72	14.46	14.31
3225	14.33	14.16	14.06
3230	14.06	13.95	13.88
3235	13.87	13.77	13.71
3240	13.70	13.61	13.56
3245	13.55	13.48	13.46
3250	13.43	13.40	13.43
3255	13.37	13.40	13.47
3260	13.38	13.44	13.53
3265	13.43	13.51	13.59
3270	13.50	13.58	13.67
3275	13.58	13.67	13.80
3280	13.70	13.83	14.00
3285	13.87	14.05	14.27
3290	14.10	14.33	14.57
3295	14.39	14.64	14.92
3300	14.71	15.01	15.34
3305	15.10	15.47	15.89
3310	15.60	16.07	16.58
3314	16.09	16.64	17.23
3316	16.37	16.96	17.60
3318	16.66	17.30	18.00
3320	16.98	17.67	18.47
3322	17.33	18.10	19.00
3324	17.71	18.58	19.62
3326	18.14	19.14	20.34
3328	18.65	19.80	21.18
3330	19.23	20.55	22.17
3332	19.90	21.43	23.40
3334	20.67	22.48	24.97
3336	21.56	23.79	26.99
3338	22.63	25.50	29.37
3340	24.00	27.69	31.68

Typical Performance Curves

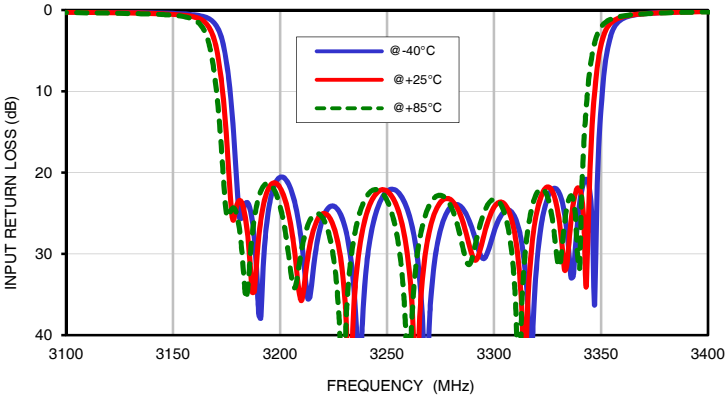
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



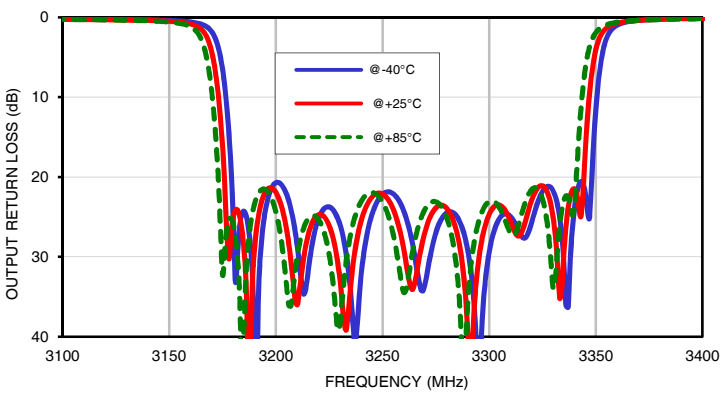
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



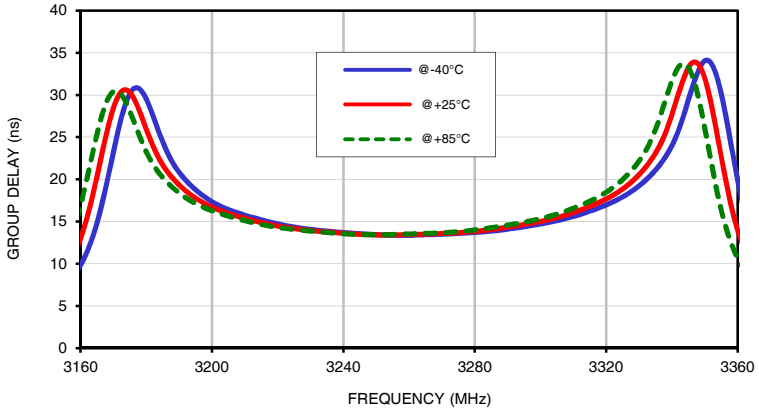
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



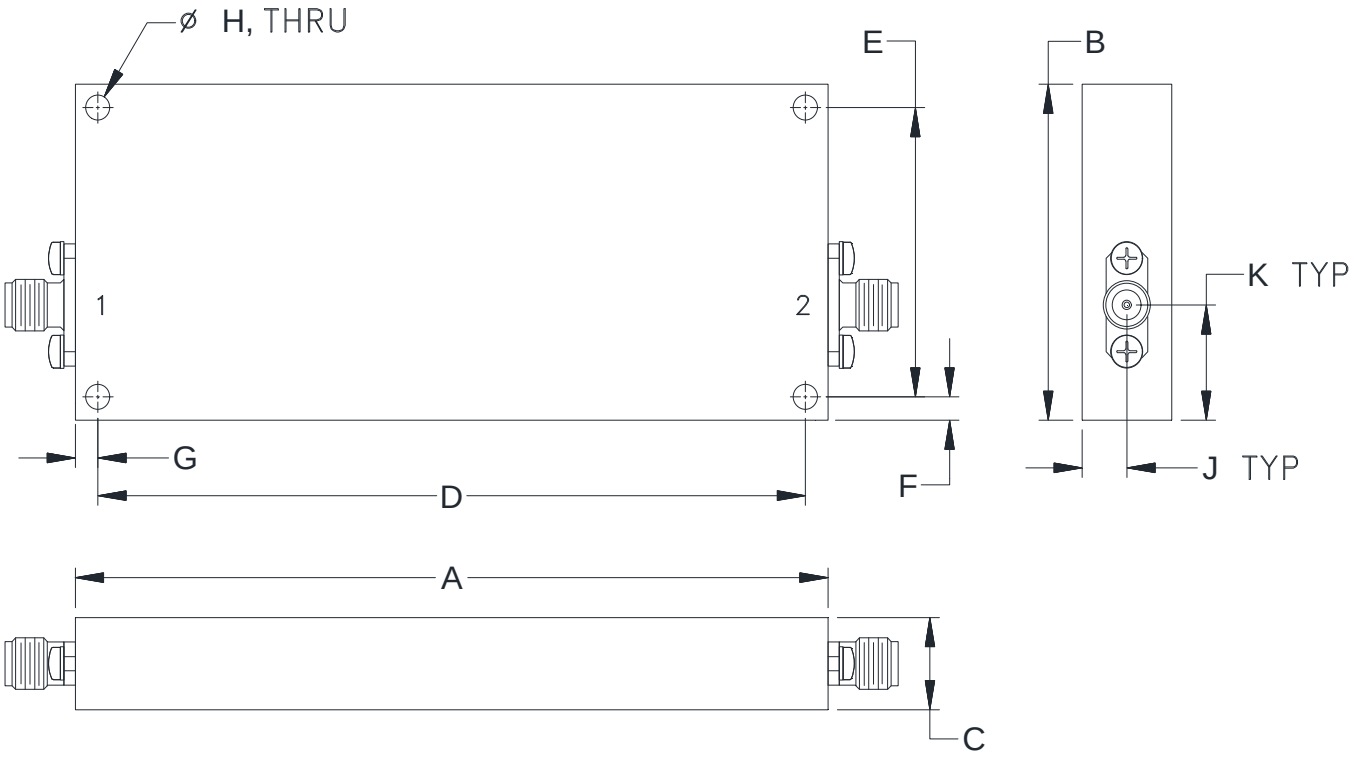
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style WZ

Outline Dimensions

WZ3389



CASE#	A	B	C	D	E	F
WE3389	4.00 (101.6)	1.73 (43.9)	.48 (12.1)	3.760 (95.50)	1.490 (37.85)	.12 (3.0)

CASE#	G	H	J	K	WT. GRAMS
WE3389	.12 (3.0)	.130 (3.30)	.24 (6.0)	.59 (15.1)	210

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .100; 3 Pl. ± .015

Notes:

1. Case material: Brass.
2. Case Finish: Powder coated over silver plating.
3. Refer to the individual model data sheet for the type of connectors available.

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