CAVITY COAXIAL

Bandpass Filter

ZVBP-2250-S+

50Ω 2200 to 2300 MHz SMA Female

KEY FEATURES

- Low Insertion Loss, 0.7 dB Typ.
- Good Return Loss, 21 dB Typ.
- High Rejection, 89 dB Typ.
- Stopband up to 10.5 GHz
- Power Handling 25 Watts

Generic photo used for illustration purposes only

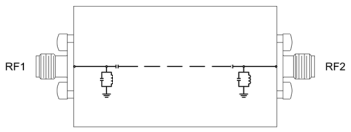
APPLICATIONS

- Aerospace
- Defense

PRODUCT OVERVIEW

Mini-Circuits' ZVBP-2250-S+ is a coaxial cavity filter designed by implementing resonant structures with very high Q and are ideal for narrow-band, high-selectivity applications.Mini-Circuits' coaxial 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.

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS[1] AT +25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	—	—	—	2250	—	MHz
	Insertion Loss	F1-F2	2200 - 2300	—	0.7	1.1	dB
	Return Loss	F1-F2	2200 - 2300	14	21	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 1800	75	84	—	dB
		F3-F4	1800 - 2115	30	36	—	
Stop Band, Upper	Rejection	F5-F6	2380 - 2650	30	36	—	dB
		F6-F7	2650 - 10500	75	89	—	

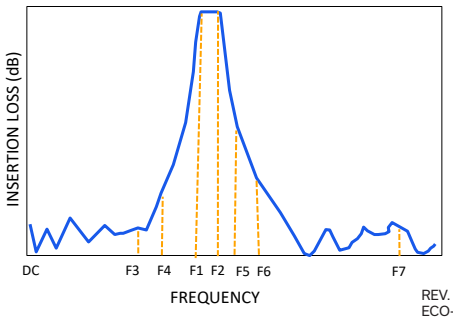
1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

ABSOLUTE MAXIMUM RATINGS[2,3]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[4]	25 W max. at +25°C

2. Permanent damage may occur if any of these limits are exceeded.
3. Input and output ports are DC short to ground.
4. Power rating applies only to signals within the passband.

TYPICAL FREQUENCY RESPONSE AT +25°C



REV. OR
ECO-026012
ZVBP-2250-S+
EDU4966
URJ
250626

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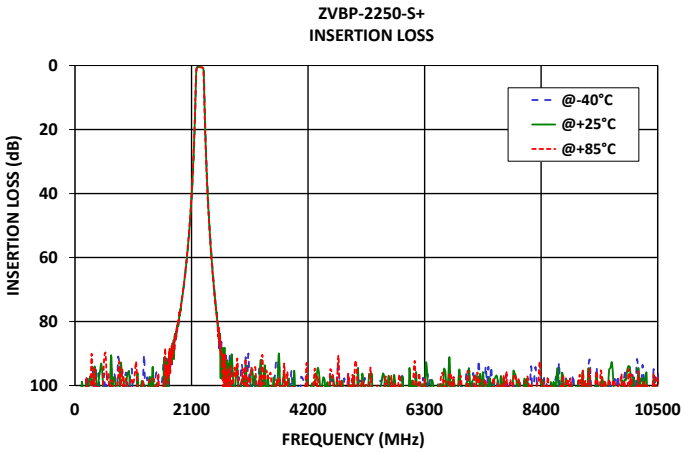
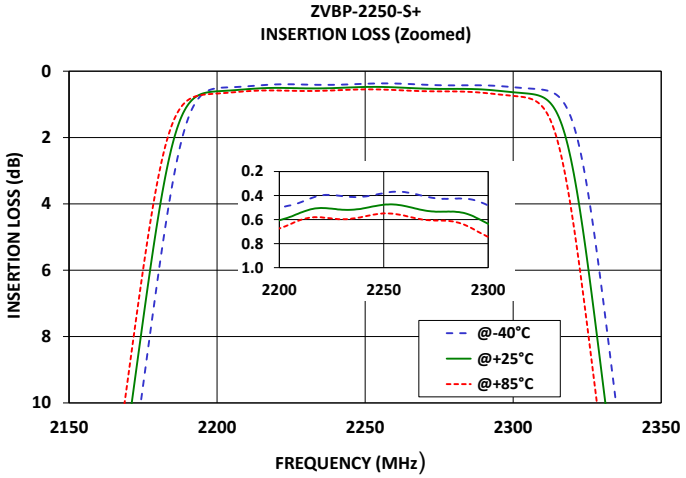
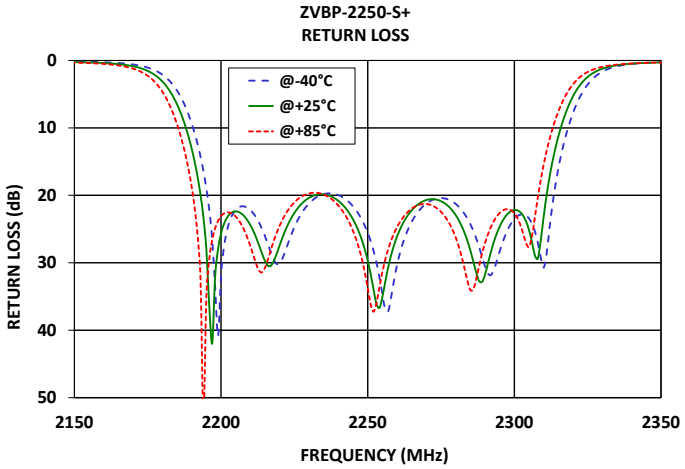
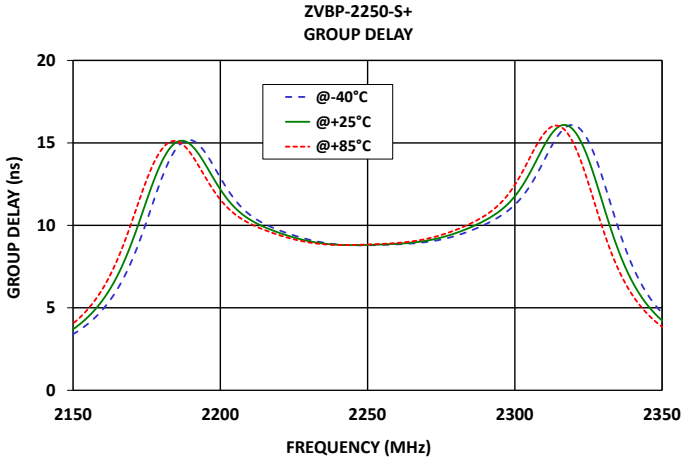
TYPICAL PERFORMANCE GRAPHS









Bandpass Filter

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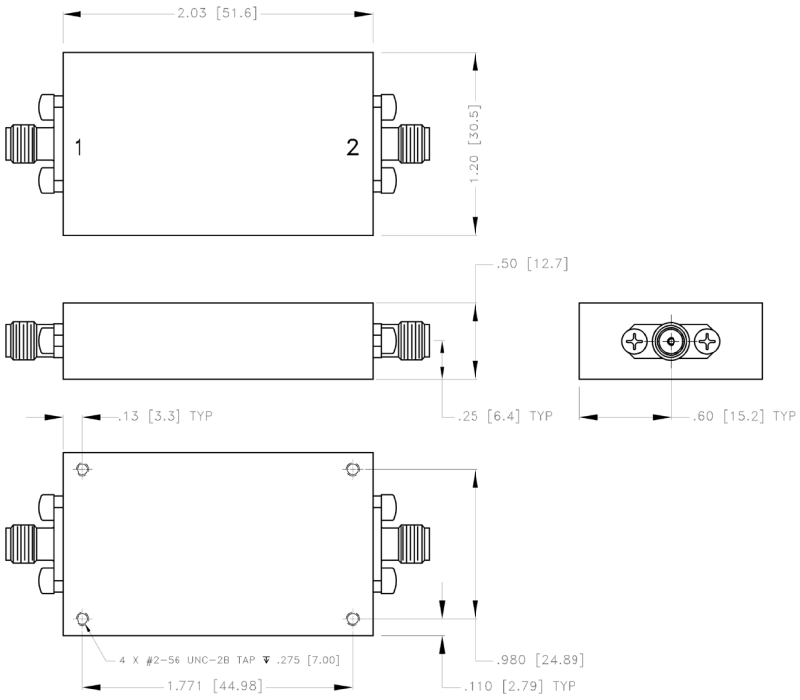
50Ω 2200 to 2300 MHz SMA Female

CONNECTOR DESCRIPTION

Function	Marking on Unit	Connector
RF1[1]	1	SMA Female
RF2[1]	2	SMA Female

CASE STYLE DRAWING



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

Unit weight : 114 Grams

PRODUCT MARKING*: ZVBP-2250-S+

*Marking may contain other features or characters for internal lot control.

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50Ω 2200 to 2300 MHz SMA Female

ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
Case Style	BAQ3693
RoHS Status	Compliant
Environmental Ratings	ENV46

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/terms/viewterm.html

Cavity Band Pass Filter ZVBP-2250-S+

Typical Performance Data

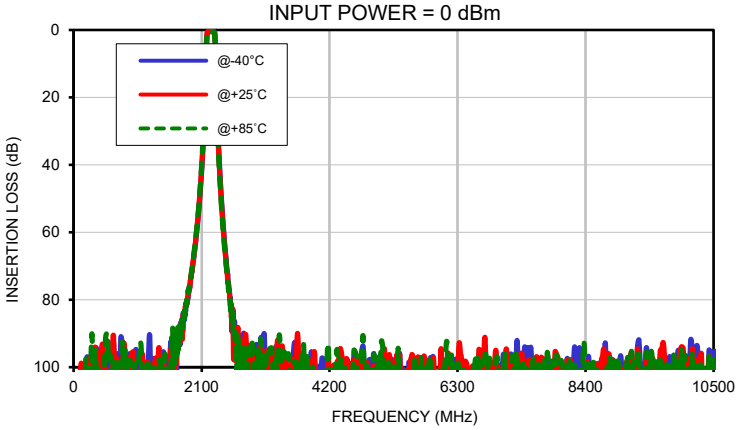
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	104.77	104.86	112.05	0.01	0.02	0.03	0.01	0.03	0.04
200	104.53	98.71	97.54	0.02	0.03	0.04	0.03	0.04	0.06
300	104.91	98.91	90.09	0.03	0.04	0.05	0.03	0.05	0.07
500	108.66	98.41	101.81	0.04	0.05	0.07	0.04	0.06	0.09
1000	95.95	105.23	99.08	0.02	0.05	0.07	0.04	0.07	0.10
1200	99.94	98.66	104.67	0.02	0.05	0.07	0.04	0.07	0.10
1500	98.05	100.63	96.16	0.02	0.05	0.08	0.03	0.07	0.10
1800	83.84	84.46	85.84	0.01	0.05	0.09	0.02	0.07	0.11
2000	63.35	62.98	62.39	0.02	0.07	0.11	0.03	0.08	0.13
2115	37.37	36.38	35.60	0.06	0.12	0.17	0.07	0.13	0.19
2200	0.51	0.61	0.67	31.91	25.67	23.08	30.42	25.18	22.92
2210	0.46	0.54	0.60	22.19	24.42	27.51	22.54	25.10	29.08
2220	0.40	0.50	0.58	30.06	27.39	24.48	37.69	29.55	25.20
2230	0.40	0.52	0.60	21.21	20.38	19.71	21.49	20.55	19.79
2240	0.41	0.51	0.58	19.96	20.82	21.52	19.95	20.81	21.50
2250	0.38	0.48	0.55	25.54	29.66	33.71	25.47	29.98	35.35
2260	0.37	0.49	0.57	30.36	26.11	24.71	31.92	26.85	25.10
2270	0.41	0.53	0.60	21.20	20.70	21.29	21.41	20.79	21.24
2280	0.43	0.53	0.61	21.27	22.93	26.24	21.13	22.46	24.91
2290	0.43	0.55	0.65	30.52	31.76	27.08	27.30	27.58	25.28
2300	0.48	0.64	0.74	23.51	22.17	22.66	22.92	22.00	23.00
2324	3.00	5.06	6.97	4.17	2.84	1.96	4.19	2.87	2.01
2340	13.69	16.11	17.92	0.52	0.47	0.45	0.54	0.49	0.48
2350	20.06	22.16	23.73	0.26	0.28	0.30	0.28	0.31	0.33
2380	34.71	36.21	37.37	0.10	0.15	0.19	0.12	0.17	0.22
2400	42.19	43.48	44.46	0.07	0.12	0.16	0.09	0.14	0.19
2650	88.61	91.26	92.72	0.01	0.07	0.12	0.03	0.09	0.15
3500	104.65	105.04	97.50	0.02	0.09	0.16	0.02	0.10	0.18
3700	102.18	101.97	101.36	0.02	0.10	0.17	0.03	0.10	0.19
3900	95.40	115.29	117.15	0.03	0.11	0.18	0.03	0.11	0.20
4000	104.75	108.06	106.86	0.03	0.11	0.18	0.04	0.11	0.20
4500	103.68	98.42	103.09	0.05	0.13	0.20	0.05	0.12	0.21
5000	104.15	101.40	96.66	0.06	0.13	0.20	0.06	0.13	0.22
5500	98.57	100.48	104.58	0.06	0.14	0.20	0.07	0.13	0.20
5800	105.80	113.77	106.99	0.07	0.14	0.19	0.07	0.13	0.20
6000	104.77	121.09	101.07	0.06	0.13	0.18	0.06	0.12	0.19
6200	99.65	101.61	96.46	0.06	0.12	0.17	0.06	0.12	0.18
6400	98.34	102.49	100.78	0.05	0.11	0.16	0.05	0.11	0.17
6500	104.37	103.64	100.71	0.04	0.11	0.16	0.05	0.11	0.16
6800	100.87	99.09	102.04	0.03	0.10	0.14	0.03	0.09	0.14
7000	107.31	103.09	104.32	0.02	0.09	0.12	0.02	0.08	0.13
7200	100.57	97.39	96.57	0.01	0.07	0.11	0.01	0.07	0.12
7400	94.04	113.30	98.41	0.00	0.06	0.10	0.00	0.07	0.11
7600	100.51	96.95	103.73	0.02	0.05	0.08	0.01	0.06	0.11
7800	102.54	102.45	109.44	0.03	0.03	0.07	0.02	0.05	0.11
8000	104.20	98.43	97.99	0.04	0.02	0.05	0.02	0.05	0.11
8200	99.31	110.59	106.16	0.05	0.01	0.05	0.03	0.05	0.12
8400	99.84	105.10	104.82	0.07	0.01	0.04	0.03	0.06	0.13
8600	102.91	102.45	102.39	0.08	0.00	0.03	0.02	0.07	0.15
8800	107.97	97.79	97.09	0.08	0.01	0.04	0.02	0.08	0.17
9000	102.02	105.25	101.82	0.09	0.01	0.04	0.01	0.10	0.21
9200	108.84	99.81	98.41	0.10	0.02	0.04	0.01	0.13	0.25
9400	94.17	96.32	95.62	0.11	0.02	0.04	0.03	0.16	0.29
9500	101.46	97.34	98.93	0.10	0.02	0.05	0.04	0.18	0.32
9800	99.83	102.37	99.96	0.10	0.00	0.08	0.08	0.23	0.39
10000	101.26	94.34	101.15	0.08	0.02	0.11	0.11	0.26	0.44
10200	102.71	97.82	99.88	0.07	0.04	0.15	0.14	0.29	0.48
10300	102.61	96.04	99.36	0.06	0.05	0.17	0.15	0.30	0.49
10400	105.63	112.48	115.00	0.05	0.06	0.19	0.16	0.31	0.50
10500	99.77	103.54	97.35	0.04	0.08	0.21	0.17	0.32	0.51

Typical Performance Data

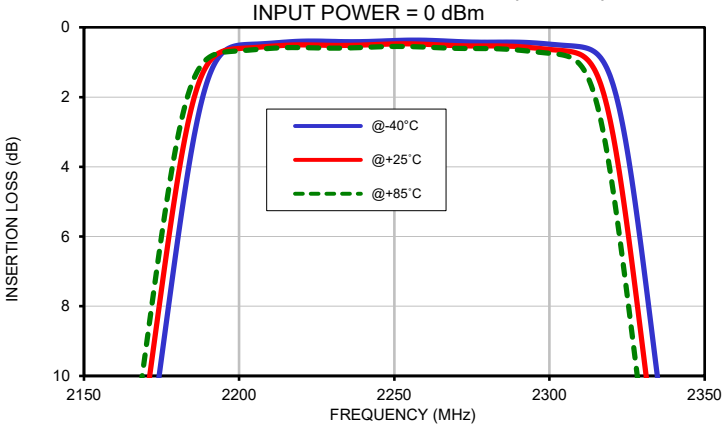
FREQ.	GROUP DELAY		
	(nsec)		
(MHz)	@-40°C	@+25°C	@+85°C
2200	12.90	12.19	11.56
2202	12.30	11.68	11.16
2204	11.78	11.25	10.82
2206	11.33	10.89	10.54
2208	10.95	10.60	10.31
2210	10.65	10.36	10.11
2212	10.39	10.15	9.94
2214	10.18	9.97	9.79
2216	10.00	9.82	9.65
2218	9.84	9.68	9.53
2220	9.70	9.55	9.41
2222	9.57	9.43	9.30
2224	9.45	9.32	9.20
2226	9.34	9.22	9.11
2228	9.23	9.13	9.03
2230	9.14	9.05	8.97
2232	9.06	8.98	8.92
2234	8.98	8.92	8.87
2236	8.93	8.88	8.84
2238	8.88	8.85	8.82
2240	8.84	8.82	8.81
2242	8.82	8.81	8.81
2244	8.80	8.80	8.81
2246	8.79	8.80	8.82
2248	8.79	8.81	8.83
2250	8.79	8.81	8.84
2255	8.82	8.84	8.88
2260	8.85	8.88	8.93
2265	8.90	8.95	9.03
2270	8.99	9.07	9.18
2272	9.04	9.14	9.27
2274	9.11	9.22	9.36
2278	9.27	9.42	9.59
2280	9.37	9.53	9.73
2285	9.68	9.88	10.11
2289	9.98	10.22	10.50
2290	10.06	10.31	10.61
2295	10.55	10.89	11.32
2300	11.25	11.76	12.46

Typical Performance Curves

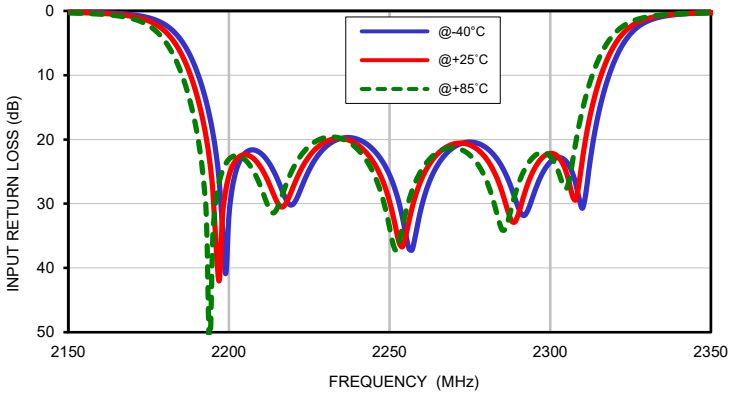
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



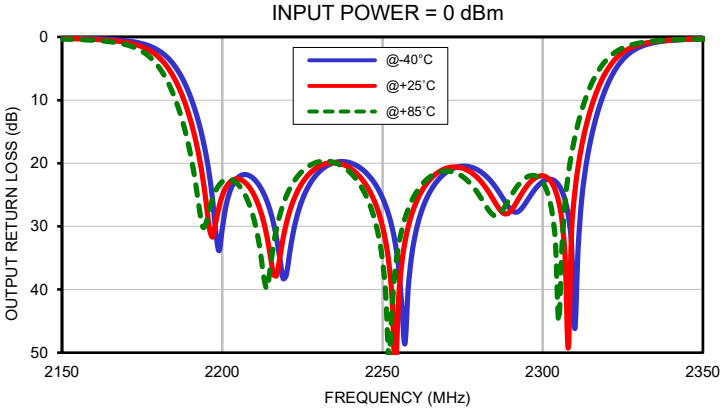
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



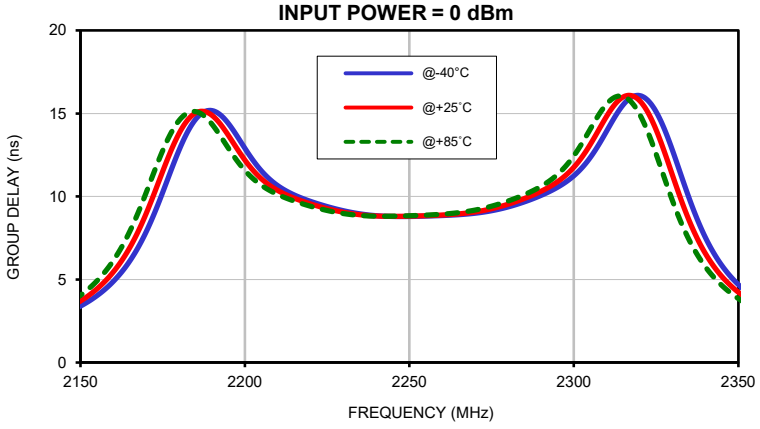
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



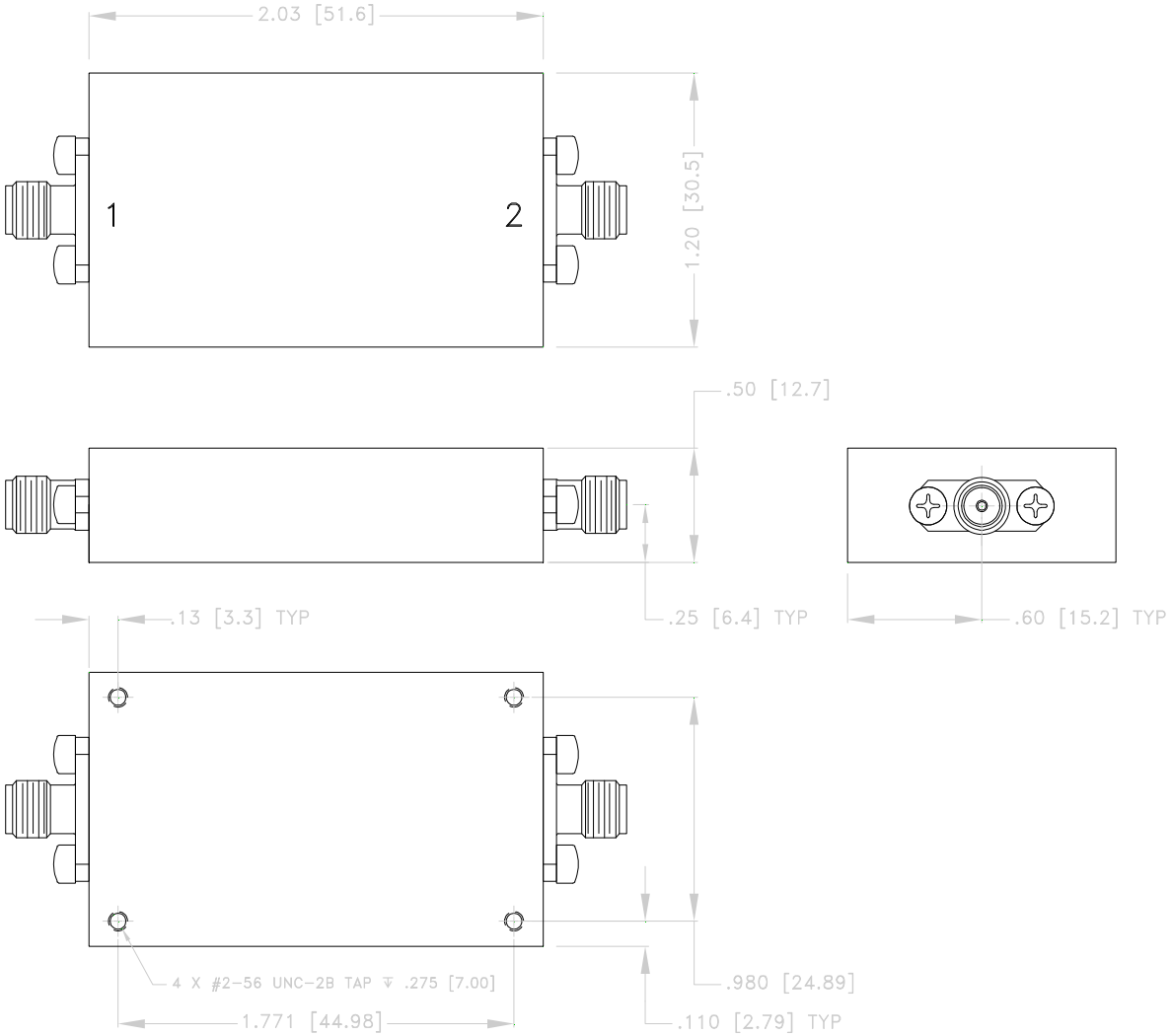
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style BAQ

Outline Dimensions

BAQ3693



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

Notes:

1. Case Material: Brass.
2. Case Finish: Powder coated.
3. Unit Weight: 114 Grams.
4. 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