



Mini-Circuits

CAVITY COAXIAL

Bandpass Filter

ZVBP-K23R7G+

50 Ω

23.3 to 24.1 GHz

2.92mm Female

KEY FEATURES

- Low Insertion Loss, 0.7 dB Typ.
- Good Return Loss, 22 dB Typ.
- High Rejection, 81 dB Typ.
- Power Handling: 2.5 W
- Wide Stopband up to 43.5 GHz

APPLICATIONS

- 6G FR3 Local Oscillator (LO) Band

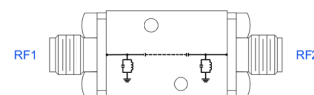


Generic photo used for illustration purposes only

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 3% 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.

FUNCTIONAL DIAGRAM

ELECTRICAL SPECIFICATIONS^{1,2} AT +25°C

Parameter		F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	Fc	—	—	23.7	—	GHz
	Insertion Loss	F1-F2	23.3 - 24.1	—	0.7	1.1	dB
	Return Loss	F1-F2	23.3 - 24.1	14	22	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 17.45	70	81	—	dB
		F3-F4	17.45 - 22	30	35	—	
Stop Band, Upper	Rejection	F5-F6	25.5 - 30	30	35	—	dB
		F6-F7	30 - 43.5	70	76	—	

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

2. Data measured after calibrating using 2.92mm cal kit.

ABSOLUTE MAXIMUM RATINGS^{3,4}

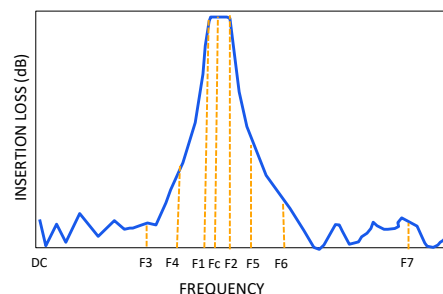
Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power ⁵	2.5 W at +25°C

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

4. Input and output ports are DC short to ground.

5. Power rating applies only to signals within the passband.

TYPICAL FREQUENCY RESPONSE AT +25°C



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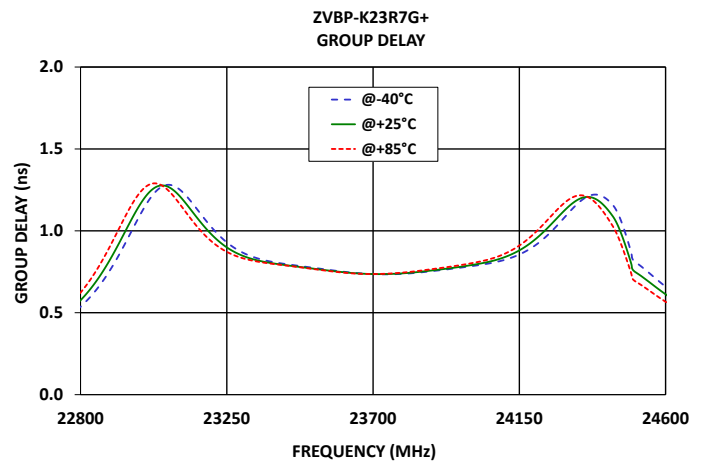
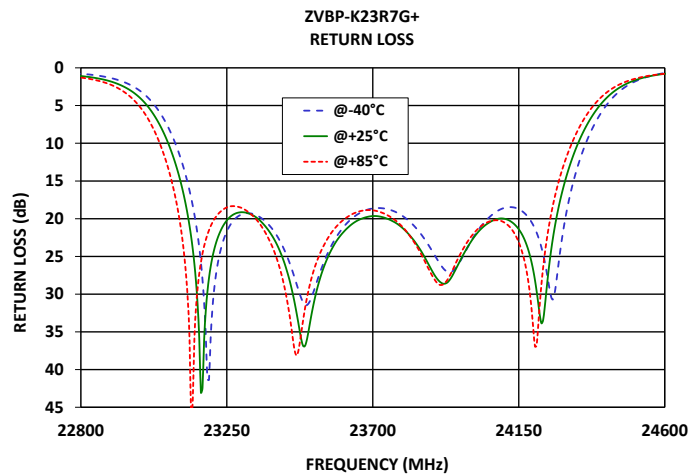
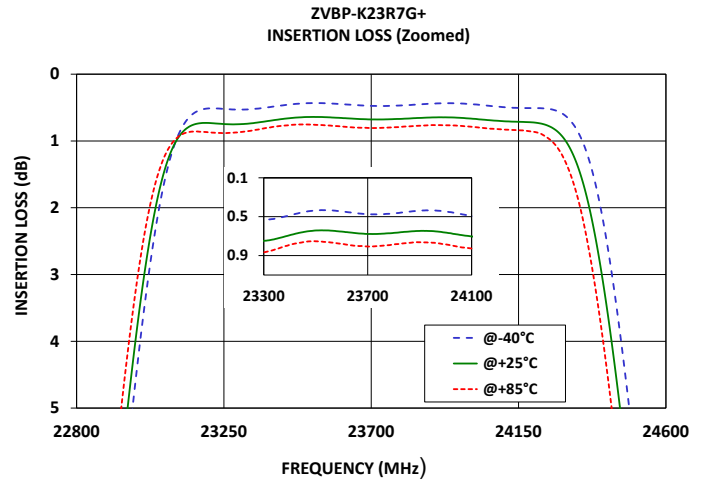
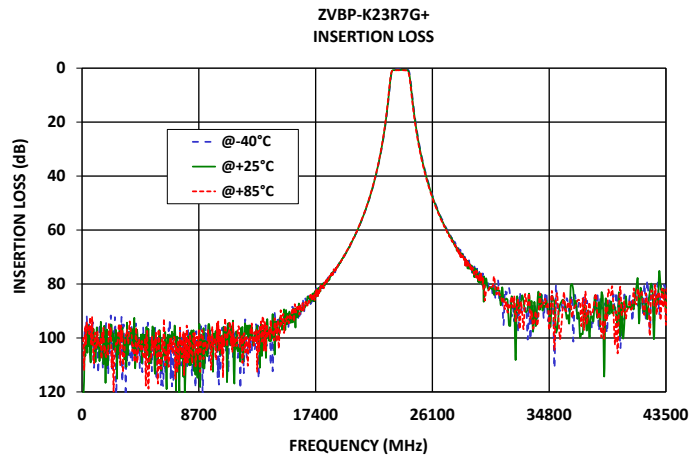
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2.92mm Female

TYPICAL PERFORMANCE GRAPHS





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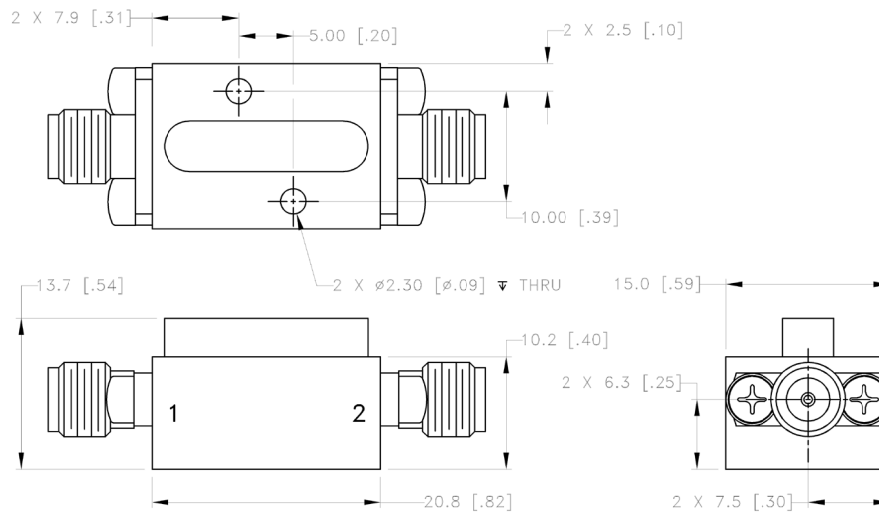
23.3 to 24.1 GHz

2.92mm Female

CONNECTOR DESCRIPTION

Function	Marking on Unit	Connector
RF1 ¹	1	2.92mm Female
RF2 ¹	2	2.92mm Female

CASE STYLE DRAWING



Unit Weight: 30 Grams.

Dimensions are in mm (inches). Tolerances: 1 Pl. ± 1.5 (0.06); 2 Pl. ± 0.38(0.015)

PRODUCT MARKING*: ZVBP-K23R7G+

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





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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD

[CLICK HERE](#)

Performance Data & Graphs	Data
	Graphs
	S-Parameter (S2P Files) Data Set (.zip file)
Case Style	BAW3708
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



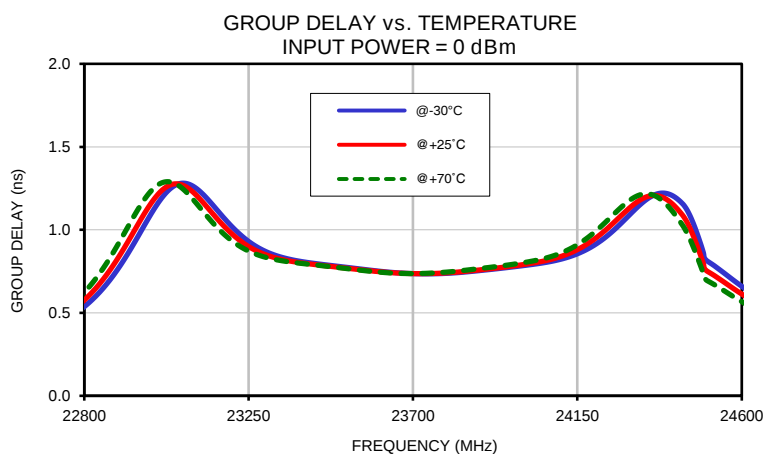
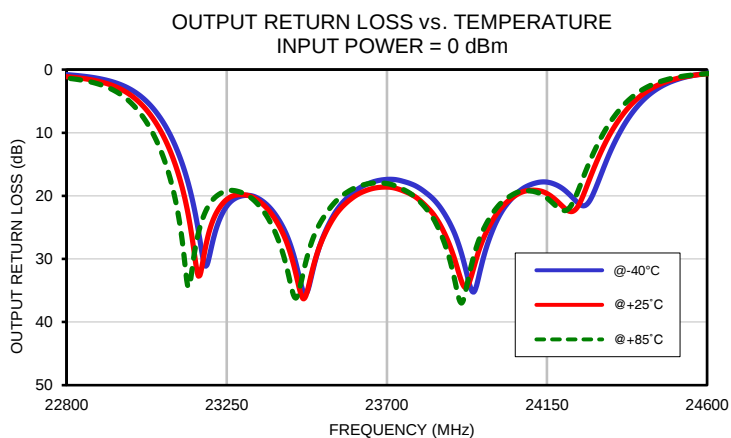
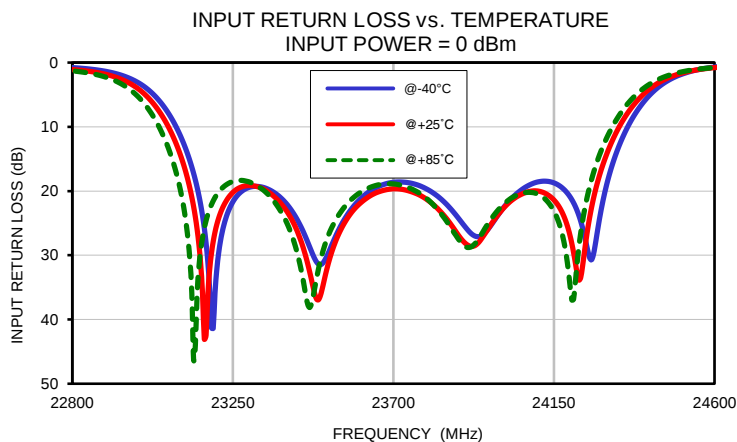
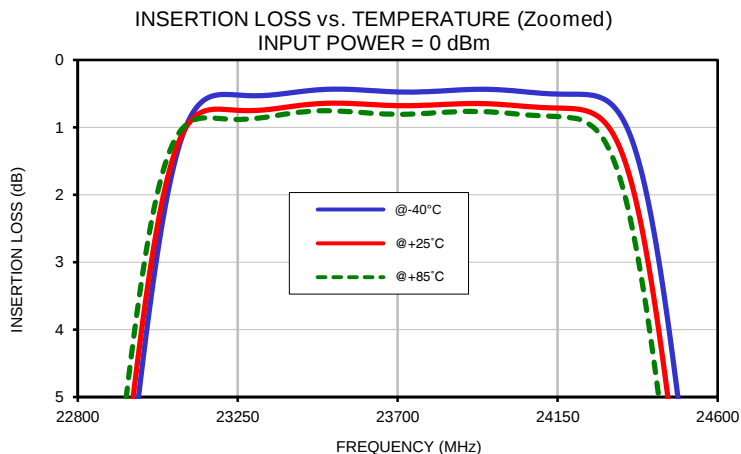
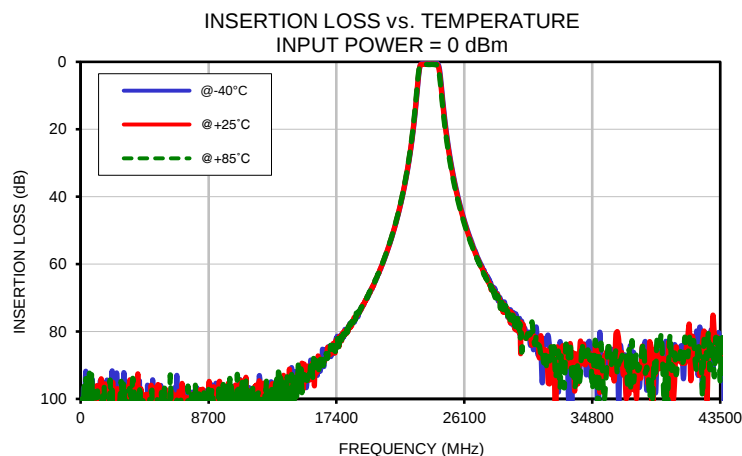
Typical Performance Data

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
100	102.89	121.30	99.96	0.14	0.18	0.21	0.12	0.17	0.20
200	96.74	102.19	102.11	0.19	0.24	0.28	0.17	0.22	0.26
400	98.71	105.48	96.02	0.24	0.31	0.36	0.23	0.30	0.35
800	94.23	101.58	99.37	0.30	0.39	0.45	0.30	0.37	0.44
1000	103.13	108.93	97.99	0.32	0.41	0.48	0.31	0.40	0.47
1500	100.98	100.86	98.02	0.34	0.44	0.51	0.34	0.43	0.51
2000	102.26	101.64	94.38	0.35	0.45	0.52	0.35	0.45	0.52
2400	104.96	104.28	106.80	0.34	0.45	0.51	0.35	0.45	0.52
3000	116.41	96.15	97.49	0.33	0.44	0.50	0.33	0.44	0.51
3500	110.06	100.35	97.22	0.31	0.42	0.48	0.33	0.44	0.50
4500	112.22	98.61	105.66	0.28	0.38	0.44	0.30	0.40	0.46
5500	104.02	102.60	98.06	0.24	0.34	0.39	0.25	0.35	0.40
9000	122.54	110.99	98.45	0.24	0.34	0.38	0.19	0.29	0.34
9500	102.34	96.42	102.14	0.25	0.34	0.39	0.19	0.29	0.34
11000	102.15	101.19	94.00	0.24	0.34	0.38	0.20	0.30	0.35
12000	99.87	109.03	100.58	0.21	0.31	0.35	0.19	0.29	0.34
13000	97.01	96.55	97.34	0.17	0.27	0.31	0.16	0.26	0.31
14500	97.58	94.00	101.50	0.09	0.20	0.25	0.08	0.19	0.23
15000	91.96	94.31	91.15	0.06	0.17	0.23	0.04	0.16	0.20
16000	91.20	90.39	88.56	0.02	0.14	0.20	0.02	0.10	0.14
17450	81.41	83.20	83.43	0.00	0.13	0.19	0.10	0.02	0.07
19200	72.31	72.14	72.10	0.03	0.17	0.24	0.13	0.01	0.08
20000	65.51	65.32	65.37	0.06	0.22	0.30	0.12	0.05	0.13
20200	63.46	63.21	63.10	0.06	0.23	0.31	0.11	0.06	0.14
20300	62.58	62.55	62.20	0.07	0.24	0.32	0.10	0.07	0.15
20400	61.55	61.22	61.12	0.08	0.25	0.33	0.10	0.07	0.16
20500	60.33	60.27	60.13	0.08	0.25	0.34	0.10	0.08	0.17
20600	59.14	58.95	58.96	0.09	0.26	0.35	0.09	0.09	0.18
20700	58.09	57.85	57.74	0.09	0.27	0.36	0.09	0.10	0.19
20800	56.81	56.61	56.55	0.10	0.28	0.37	0.08	0.11	0.21
20900	55.56	55.42	55.25	0.11	0.29	0.38	0.08	0.12	0.22
21000	54.38	54.15	53.93	0.11	0.30	0.39	0.07	0.13	0.23
21200	51.50	51.35	51.16	0.13	0.32	0.41	0.05	0.16	0.26
22310	30.10	29.68	29.29	0.29	0.51	0.62	0.20	0.44	0.57
22630	20.01	19.42	18.80	0.46	0.70	0.82	0.42	0.68	0.82
23020	3.01	2.58	2.07	4.57	5.91	7.78	4.78	6.09	7.93
23000	3.76	3.23	2.61	3.67	4.78	6.26	3.87	4.95	6.42
23300	0.53	0.75	0.87	19.36	19.15	18.67	19.94	19.84	19.68
23400	0.49	0.69	0.79	21.96	23.05	24.81	24.13	25.06	27.76
23500	0.44	0.64	0.75	31.34	35.35	29.87	30.07	29.88	25.73
23600	0.45	0.65	0.78	21.65	22.26	20.50	19.73	20.47	19.04
23700	0.47	0.68	0.81	18.64	19.66	18.89	17.40	18.61	18.05
23800	0.47	0.67	0.78	19.90	21.57	21.50	19.09	21.07	21.34
23900	0.44	0.65	0.76	25.50	28.06	28.59	27.40	31.79	35.70
24000	0.45	0.66	0.78	23.22	23.23	22.56	25.08	23.61	22.55
24100	0.49	0.70	0.83	18.65	19.97	20.38	18.32	19.14	19.21
25500	36.87	37.46	38.16	0.15	0.36	0.47	0.03	0.26	0.37
30000	76.91	80.71	86.14	0.58	0.79	0.88	0.38	0.59	0.70
31000	78.89	82.45	81.20	0.58	0.80	0.86	0.38	0.58	0.66
32000	92.00	84.67	84.56	0.52	0.76	0.80	0.35	0.54	0.61
33000	89.93	90.13	83.97	0.41	0.66	0.69	0.30	0.49	0.56
34000	88.12	82.80	91.88	0.23	0.51	0.53	0.22	0.43	0.51
35000	83.11	84.54	82.56	0.02	0.34	0.35	0.13	0.37	0.45
36000	91.29	87.87	89.91	0.20	0.15	0.16	0.06	0.31	0.39
36500	84.53	80.01	92.36	0.28	0.06	0.07	0.02	0.27	0.35
37000	87.02	90.72	85.85	0.37	0.02	0.02	0.01	0.24	0.31
40000	87.00	83.04	88.74	0.51	0.24	0.12	0.22	0.04	0.15
41000	94.04	87.39	88.58	0.35	0.15	0.02	0.24	0.03	0.18
42000	93.05	86.96	83.51	0.99	0.63	0.57	0.27	0.05	0.23
43500	85.00	89.08	95.19	0.21	0.02	0.30	0.03	0.35	0.50

Typical Performance Data

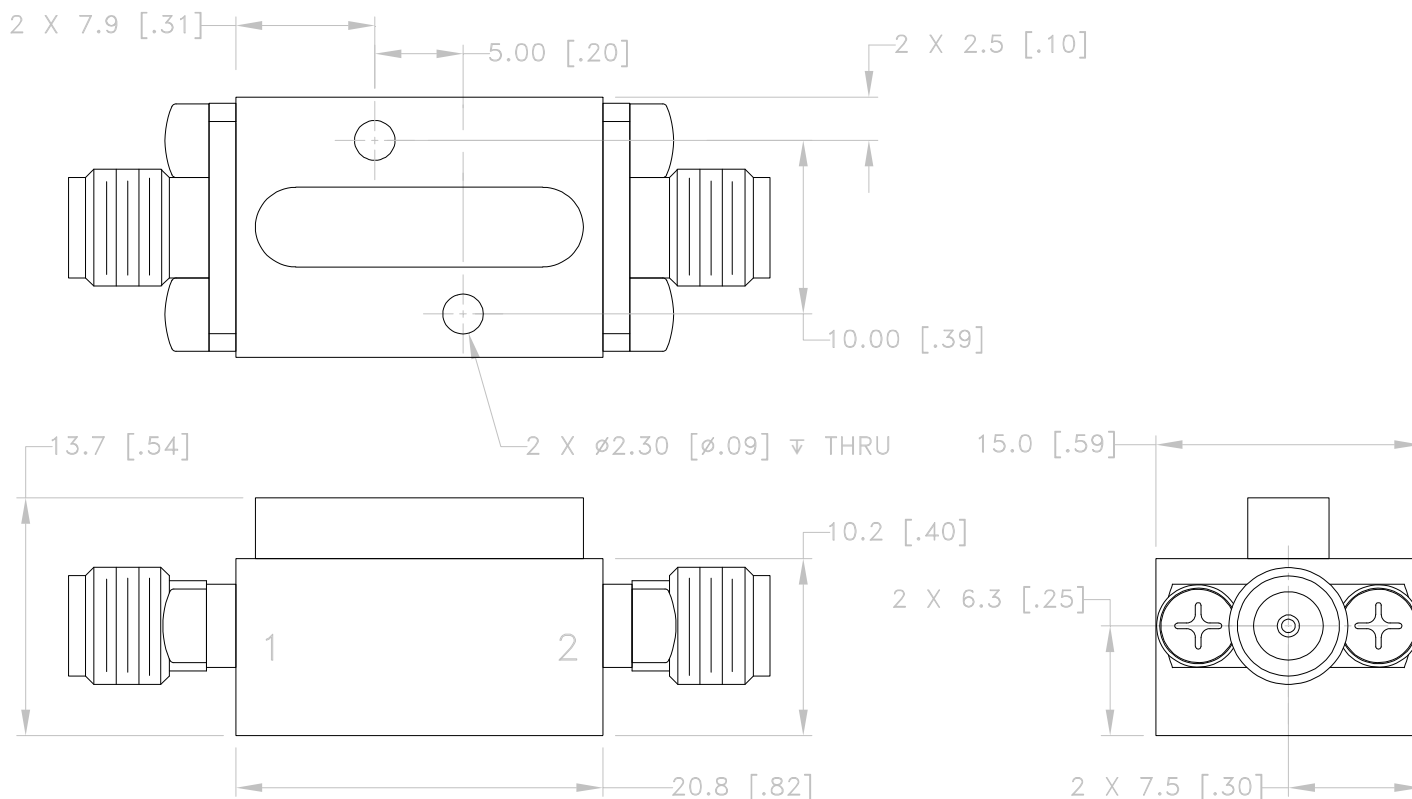
FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-40°C	@+25°C	@+85°C
23300	0.87	0.85	0.83
23305	0.86	0.84	0.83
23310	0.86	0.84	0.83
23315	0.85	0.84	0.82
23320	0.85	0.83	0.82
23325	0.84	0.83	0.82
23330	0.84	0.83	0.82
23335	0.84	0.82	0.82
23340	0.83	0.82	0.81
23345	0.83	0.82	0.81
23350	0.83	0.82	0.81
23355	0.83	0.82	0.81
23360	0.82	0.81	0.81
23365	0.82	0.81	0.81
23370	0.82	0.81	0.80
23375	0.82	0.81	0.80
23380	0.81	0.81	0.80
23390	0.81	0.80	0.80
23395	0.81	0.80	0.80
24000	0.78	0.79	0.80
24005	0.79	0.79	0.80
24010	0.79	0.79	0.81
24015	0.79	0.80	0.81
24020	0.79	0.80	0.81
24025	0.79	0.80	0.81
24030	0.79	0.80	0.81
24035	0.79	0.80	0.82
24040	0.80	0.80	0.82
24045	0.80	0.81	0.82
24050	0.80	0.81	0.82
24055	0.80	0.81	0.83
24060	0.80	0.81	0.83
24065	0.80	0.82	0.83
24070	0.81	0.82	0.83
24075	0.81	0.82	0.84
24080	0.81	0.82	0.84
24085	0.81	0.83	0.84
24090	0.82	0.83	0.85
24095	0.82	0.83	0.85
24100	0.82	0.84	0.86

Typical Performance Curves



Outline Dimensions

BAW3708



Dimensions are in mm [inches]. Tolerances: 1 Pl. ± 1.5 [0.06]; 2 Pl. ± 0.38 [0.015]

Notes:

1. Case material: Brass alloy.
2. Case Finish: Powder coated.
3. Unit Weight: 30 grams.
4. Refer to the individual model data sheet for the type of connectors available.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS





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