CAVITY COAXIAL

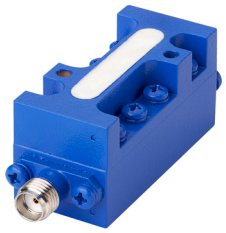
Bandpass Filter

ZVBP-8500-S+

50Ω 8000 to 9000 MHz SMA Female

KEY FEATURES

- Low Insertion Loss, 0.4 dB Typ.
- Good Return Loss, 18 dB Typ.
- High Rejection, 68 dB Typ.
- Stopband up to 17 GHz
- Power Handling 10 Watts



Generic photo used for illustration purposes only

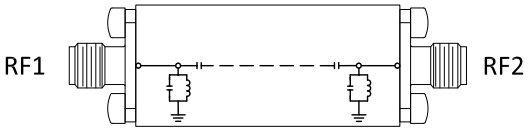
APPLICATIONS

- Test and Measurement
- Aerospace and Defense

PRODUCT OVERVIEW

Mini-Circuits' ZVBP-8500-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	—	—	—	8500	—	MHz
	Insertion Loss	F1-F2	8000 - 9000	—	0.4	0.7	dB
	Return Loss	F1-F2	8000 - 9000	14	18	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 3000	60	66	—	dB
		F3-F4	3000 - 6400	35	41	—	
Stop Band, Upper	Rejection	F5-F6	10250 - 12000	35	41	—	dB
		F6-F7	12000 - 17000	60	68	—	

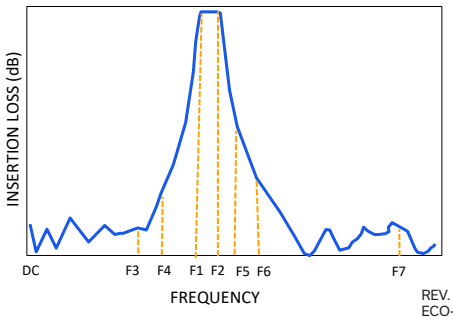
1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

ABSOLUTE MAXIMUM RATINGS[2,3]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[4]	10 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-8500-S+
EDU4946
URJ
250626

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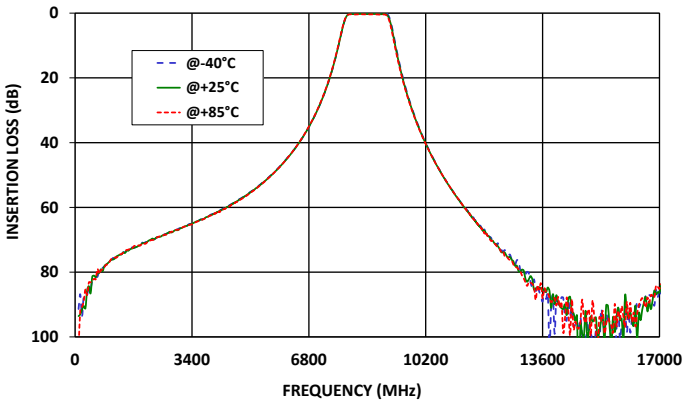
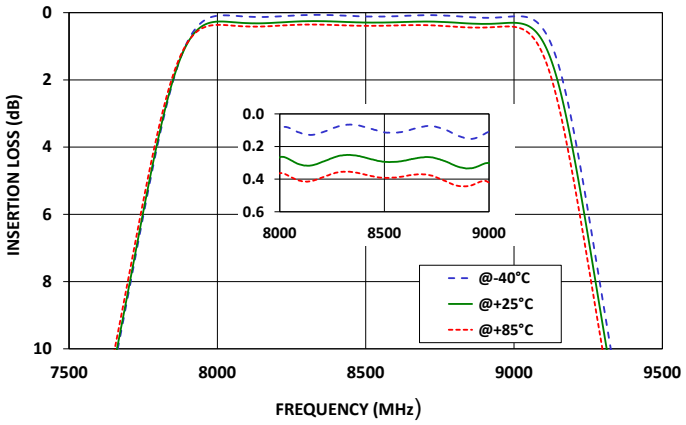
50Ω 8000 to 9000 MHz SMA Female

TYPICAL PERFORMANCE GRAPHS

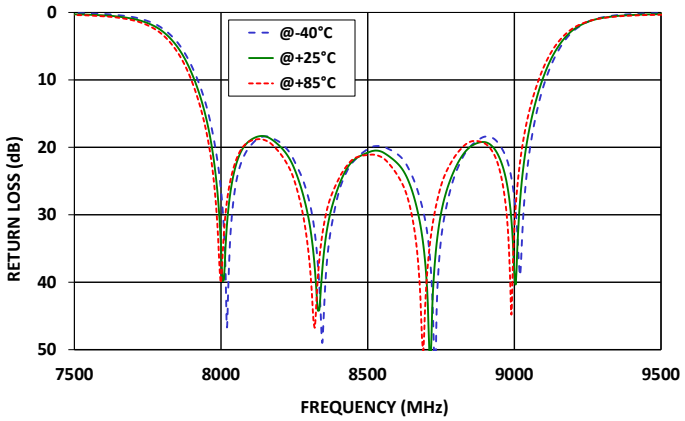
ZVBP-8500-S+
INSERTION LOSS



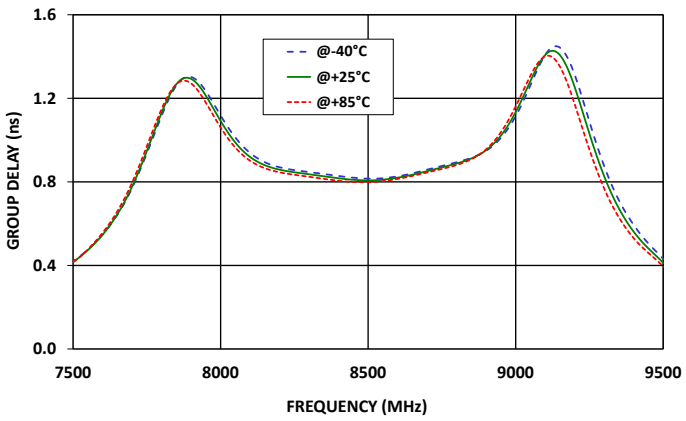
ZVBP-8500-S+
INSERTION LOSS (Zoomed)



ZVBP-8500-S+
RETURN LOSS



ZVBP-8500-S+
GROUP DELAY



Bandpass Filter

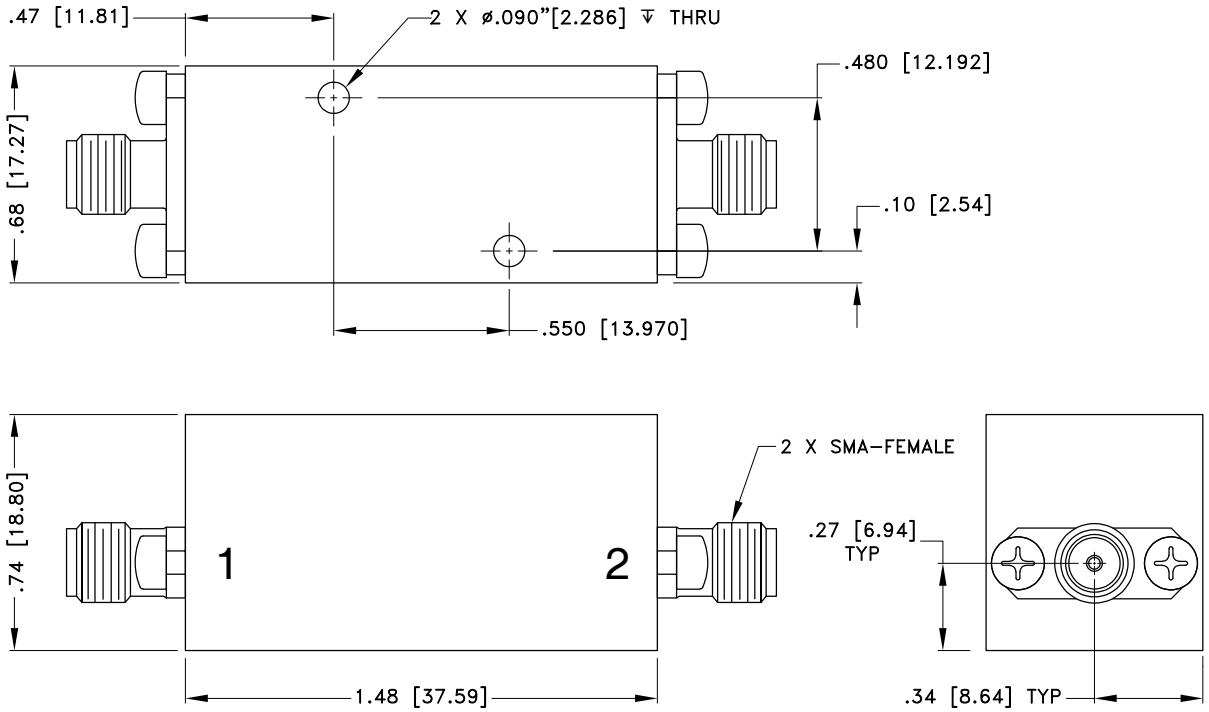
ZVBP-8500-S+

50Ω 8000 to 9000 MHz SMA Female

CONNECTOR DESCRIPTION

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

CASE STYLE DRAWING



Unit weight : 35 grams.
Dimensions are in inches (mm). Tolerances: 2 Pl. + .100; 3 Pl. + .015

PRODUCT MARKING*: ZVBP-8500-S+

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

Bandpass Filter

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50Ω 8000 to 9000 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	AAU3648
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-8500-S+

Typical Performance Data

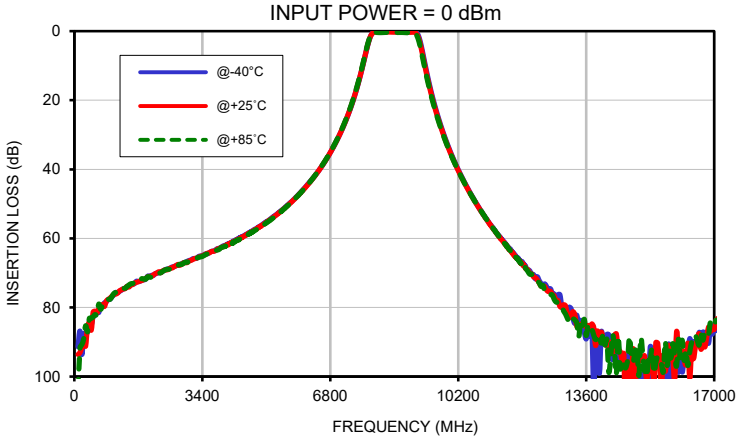
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	91.39	93.58	103.85	0.03	0.04	0.05	0.04	0.05	0.05
200	93.63	91.66	90.73	0.05	0.06	0.06	0.05	0.06	0.06
300	87.82	91.18	85.30	0.06	0.07	0.08	0.06	0.08	0.08
500	82.67	81.35	82.68	0.06	0.08	0.09	0.06	0.09	0.09
1000	76.89	76.72	76.83	0.05	0.09	0.10	0.05	0.09	0.10
1200	75.32	75.18	75.56	0.04	0.09	0.10	0.04	0.09	0.10
1500	73.53	73.38	73.14	0.02	0.08	0.10	0.02	0.08	0.09
1600	73.08	72.93	72.73	0.01	0.07	0.10	0.02	0.07	0.09
2000	71.08	70.99	71.16	0.02	0.06	0.09	0.01	0.06	0.09
2500	68.79	68.98	68.92	0.04	0.05	0.09	0.03	0.05	0.09
3000	66.63	66.99	66.93	0.06	0.04	0.11	0.04	0.06	0.10
4000	62.02	62.22	62.29	0.05	0.07	0.15	0.02	0.09	0.15
5000	56.00	56.12	56.29	0.01	0.11	0.17	0.03	0.15	0.19
5500	51.92	52.00	52.11	0.00	0.13	0.18	0.05	0.17	0.21
6000	46.81	46.94	46.93	0.01	0.14	0.18	0.08	0.19	0.22
6200	44.36	44.49	44.46	0.02	0.15	0.18	0.08	0.19	0.22
6400	41.74	41.77	41.70	0.02	0.15	0.19	0.08	0.20	0.22
6600	38.70	38.68	38.59	0.02	0.16	0.19	0.07	0.20	0.22
7000	31.09	31.04	30.89	0.03	0.18	0.22	0.08	0.21	0.23
7200	26.26	26.17	25.96	0.02	0.17	0.23	0.08	0.22	0.24
8000	0.09	0.27	0.36	26.39	34.74	40.04	26.31	33.57	39.09
8500	0.11	0.29	0.39	20.26	20.79	21.14	20.11	20.53	20.69
9000	0.11	0.30	0.42	27.50	38.64	32.05	27.59	39.86	32.74
9500	18.40	18.98	19.47	0.09	0.25	0.34	0.16	0.33	0.37
10000	35.17	35.46	35.62	0.02	0.17	0.23	0.05	0.22	0.24
10250	41.24	41.49	41.52	0.02	0.14	0.21	0.03	0.21	0.23
11000	55.15	55.19	55.30	0.06	0.15	0.22	0.01	0.18	0.21
12000	68.59	68.80	68.78	0.07	0.15	0.26	0.02	0.20	0.26
12500	73.16	73.94	75.16	0.14	0.15	0.33	0.04	0.21	0.30
13000	80.40	79.21	81.02	0.13	0.18	0.41	0.05	0.23	0.35
13200	80.40	82.18	83.08	0.10	0.20	0.41	0.05	0.23	0.36
13400	85.82	84.97	88.59	0.14	0.19	0.47	0.04	0.25	0.39
13600	89.08	85.66	88.12	0.13	0.21	0.49	0.04	0.26	0.41
13800	103.40	85.79	88.04	0.10	0.21	0.50	0.06	0.26	0.44
14000	87.16	87.11	90.31	0.14	0.21	0.55	0.06	0.26	0.44
14500	96.77	92.65	97.63	0.11	0.23	0.57	0.06	0.28	0.49
15000	99.10	93.65	99.73	0.07	0.25	0.60	0.04	0.29	0.53
15200	97.92	100.67	102.93	0.10	0.26	0.63	0.04	0.29	0.55
15400	97.58	101.48	98.91	0.04	0.28	0.61	0.04	0.30	0.56
15600	101.19	102.48	96.49	0.02	0.33	0.64	0.02	0.31	0.57
15800	90.58	90.93	91.93	0.07	0.28	0.63	0.03	0.30	0.56
16000	92.03	87.06	96.92	0.01	0.31	0.62	0.02	0.30	0.57
16100	92.24	94.15	94.52	0.03	0.30	0.63	0.02	0.31	0.58
16150	98.68	92.47	89.45	0.06	0.29	0.63	0.00	0.31	0.57
16200	94.78	95.00	95.27	0.04	0.32	0.64	0.00	0.31	0.58
16250	96.16	96.48	92.47	0.03	0.33	0.64	0.01	0.30	0.57
16300	92.57	90.36	96.80	0.00	0.36	0.67	0.01	0.32	0.58
16350	89.02	100.42	92.83	0.01	0.33	0.65	0.00	0.31	0.57
16400	90.85	92.57	90.15	0.01	0.32	0.63	0.00	0.32	0.58
16450	89.87	94.86	88.83	0.05	0.29	0.60	0.01	0.30	0.56
16500	90.16	91.49	88.01	0.06	0.29	0.60	0.01	0.32	0.57
16550	89.82	89.38	89.54	0.07	0.30	0.62	0.01	0.30	0.55
16600	87.24	87.64	90.88	0.03	0.34	0.63	0.02	0.33	0.58
16650	87.89	92.13	87.84	0.01	0.37	0.64	0.00	0.30	0.56
16700	87.09	88.98	89.47	0.01	0.35	0.63	0.00	0.32	0.56
16750	87.39	91.47	87.07	0.03	0.35	0.61	0.01	0.32	0.55
16800	87.40	88.64	87.29	0.04	0.32	0.60	0.00	0.31	0.54
16850	90.38	85.66	87.84	0.05	0.32	0.59	0.01	0.31	0.55
16900	85.55	86.89	84.16	0.08	0.32	0.61	0.02	0.30	0.53
17000	84.97	86.34	85.15	0.01	0.39	0.65	0.00	0.31	0.52

Typical Performance Data

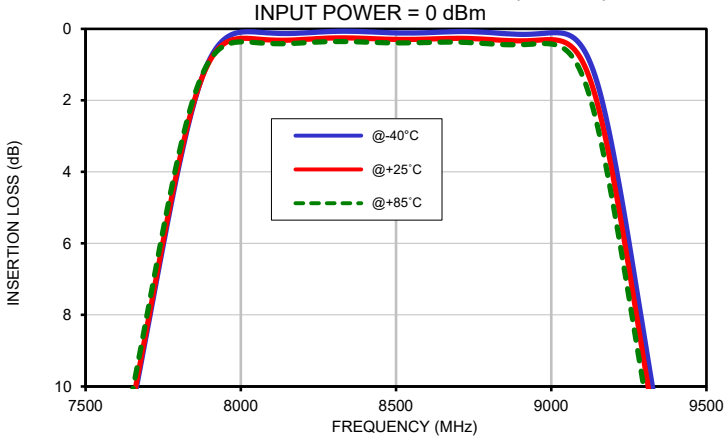
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
8000	1.12	1.09	1.06
8050	1.01	0.99	0.96
8100	0.94	0.92	0.90
8120	0.92	0.90	0.88
8140	0.90	0.89	0.87
8160	0.89	0.87	0.86
8180	0.88	0.87	0.85
8200	0.87	0.86	0.85
8210	0.87	0.86	0.84
8140	0.90	0.89	0.87
8160	0.89	0.87	0.86
8180	0.88	0.87	0.85
8190	0.87	0.86	0.85
8200	0.87	0.86	0.85
8210	0.87	0.86	0.84
8220	0.86	0.85	0.84
8230	0.86	0.85	0.84
8240	0.86	0.85	0.84
8250	0.86	0.85	0.83
8260	0.85	0.84	0.83
8270	0.85	0.84	0.83
8280	0.85	0.84	0.83
8290	0.85	0.84	0.83
8300	0.85	0.84	0.82
8350	0.84	0.83	0.81
8400	0.83	0.82	0.81
8450	0.82	0.81	0.80
8500	0.82	0.81	0.80
8550	0.82	0.81	0.80
8600	0.83	0.82	0.81
8620	0.83	0.83	0.82
8640	0.84	0.83	0.83
8660	0.84	0.84	0.83
8680	0.85	0.84	0.84
8700	0.86	0.85	0.85
8750	0.88	0.87	0.86
8800	0.89	0.89	0.88
8900	0.95	0.95	0.96
9000	1.11	1.13	1.16

Typical Performance Curves

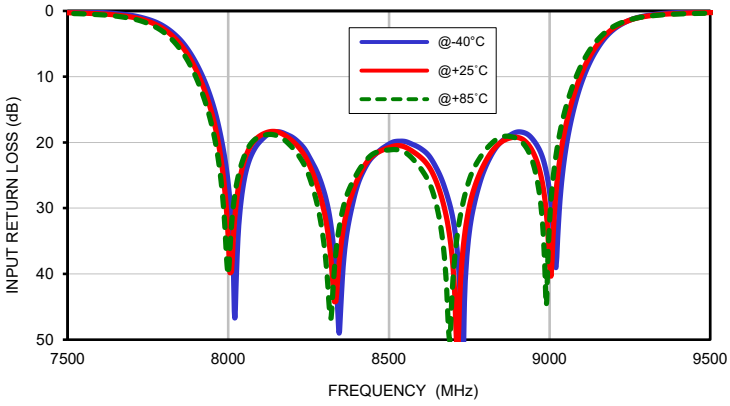
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



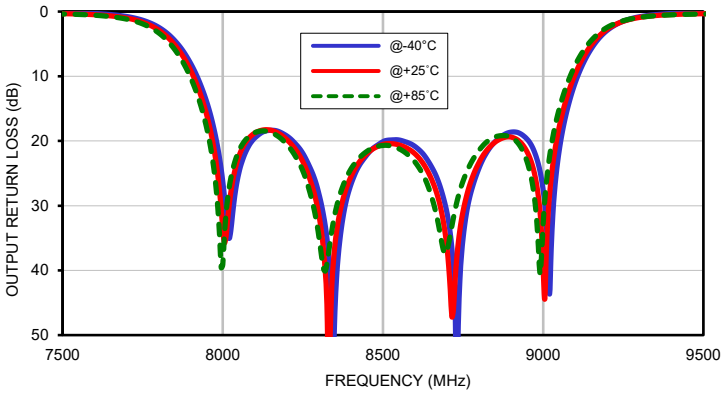
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



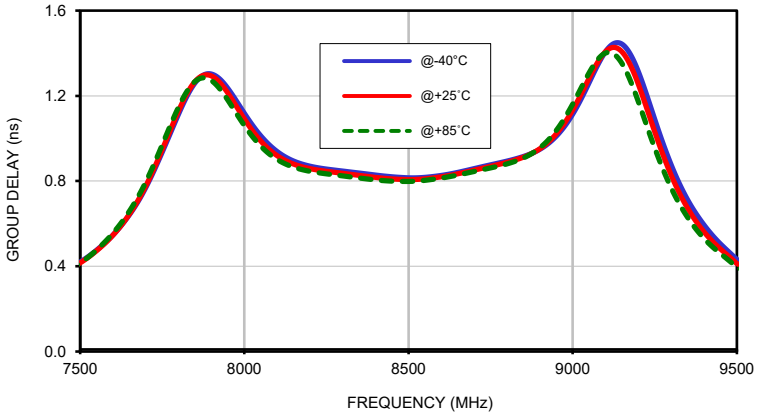
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



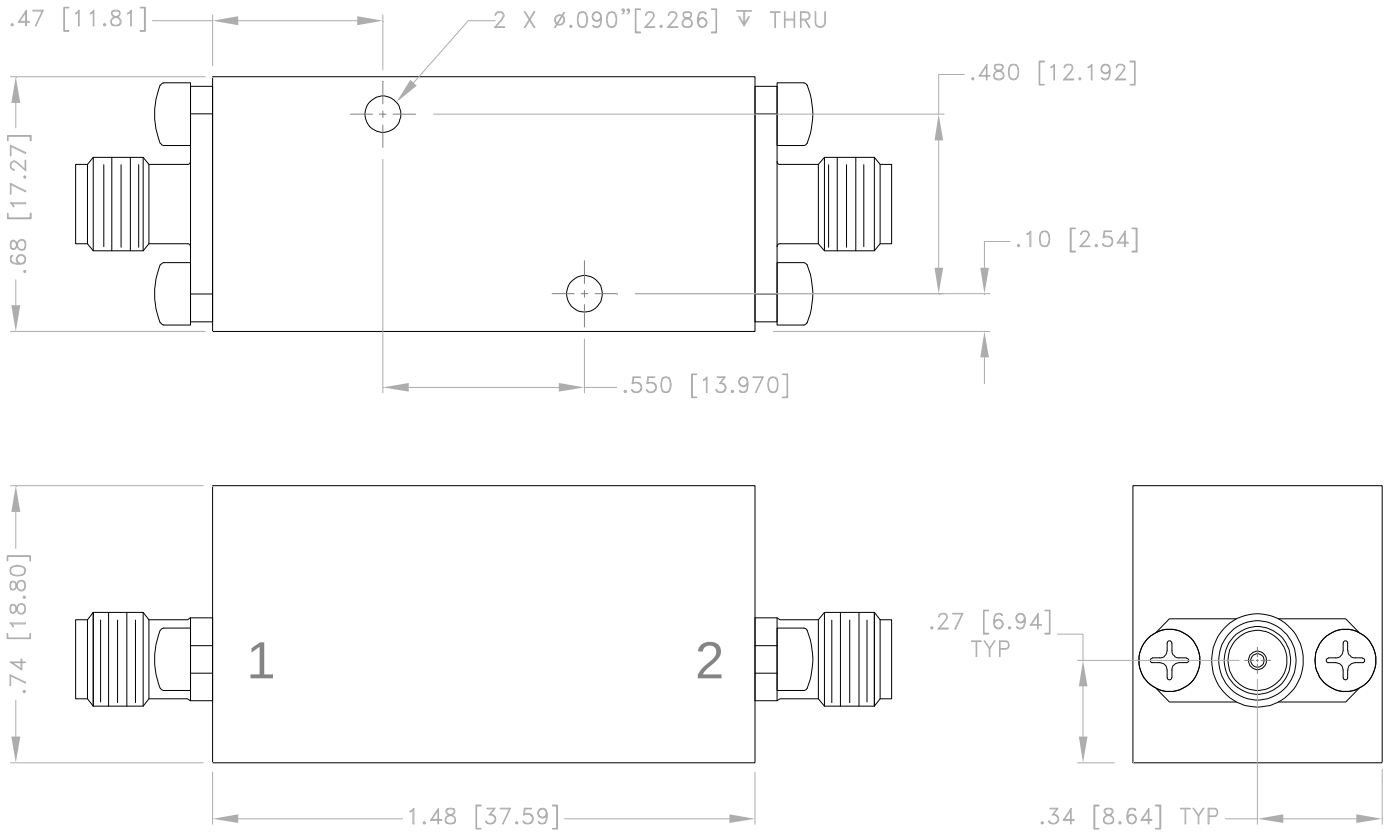
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style AAU

Outline Dimensions

AAU3648



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

Notes:

1. Case material: Aluminum.
2. Case Finish: Powder coated.
3. Unit Weight: 35 grams.
4. Refer to the individual model data sheet for the type of connectors available.

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RF/IF MICROWAVE COMPONENTS

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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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