CAVITY COAXIAL

Bandpass Filter

ZVBP-3500-S+

50Ω 3400 to 3600 MHz SMA Female

KEY FEATURES

- Low Insertion Loss, 0.6 dB Typ.
- Good Return Loss, 22 dB Typ.
- Great Rejection, 85 dB Typ.
- Wide Stopband up to 11000 MHz
- Power Handling : 20 Watts

Generic photo used for illustration purposes only

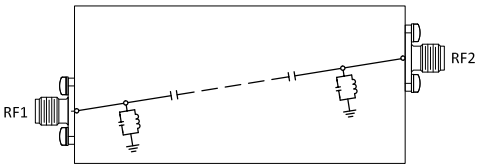
APPLICATIONS

- 5G-N78 Band

PRODUCT OVERVIEW

Mini-Circuits' ZVBP-3500-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 AT +25°C

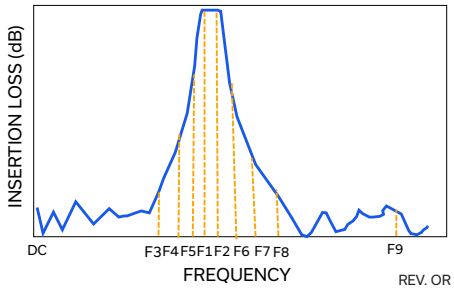
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	—	—	—	3500	—	MHz
	Insertion Loss	F1-F2	3400 - 3600	—	0.6	1.0	dB
	Return Loss	F1-F2	3400 - 3600	14	22	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 2690	70	85	—	dB
		F3-F4	2690 - 3200	40	45	—	
		F4-F5	3200 - 3300	20	25	—	
Stopband, Upper	Rejection	F6-F7	3640 - 3700	20	25	—	dB
		F7-F8	3700 - 4000	40	45	—	
		F8-F9	4000 - 11000	70	85	—	

ABSOLUTE MAXIMUM RATINGS[1,2]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[3]	20W at +25°C

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

TYPICAL FREQUENCY RESPONSE AT +25°C



REV. OR
ECO-023797
ZVBP-3500-S+
EDU4709
URJ
241203

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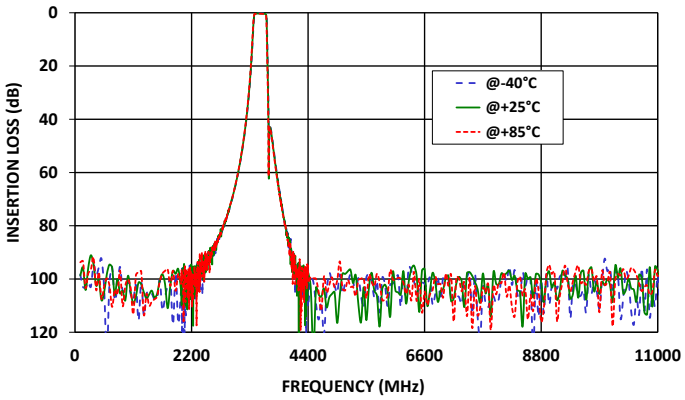
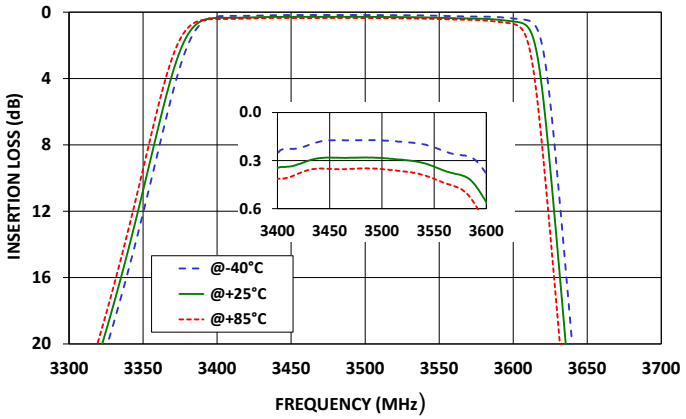
TYPICAL PERFORMANCE GRAPHS

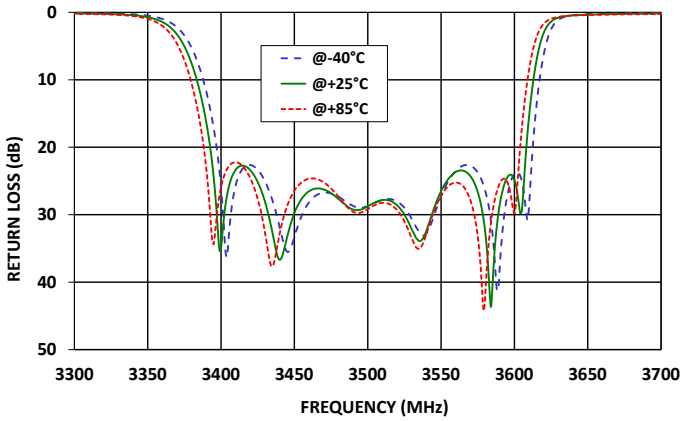
ZVBP-3500-S+
INSERTION LOSS



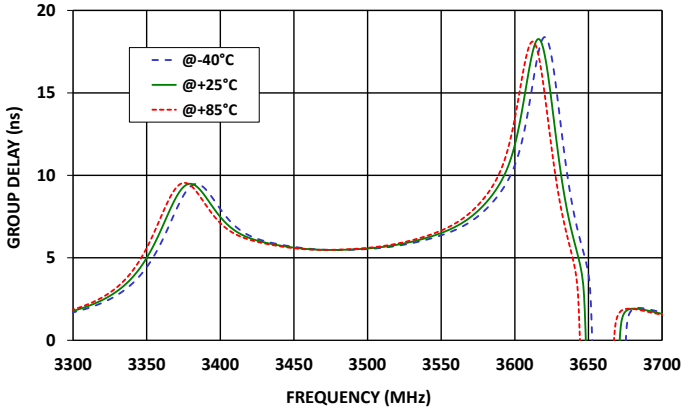
ZVBP-3500-S+
INSERTION LOSS (Zoomed)



ZVBP-3500-S+
RETURN LOSS



ZVBP-3500-S+
GROUP DELAY



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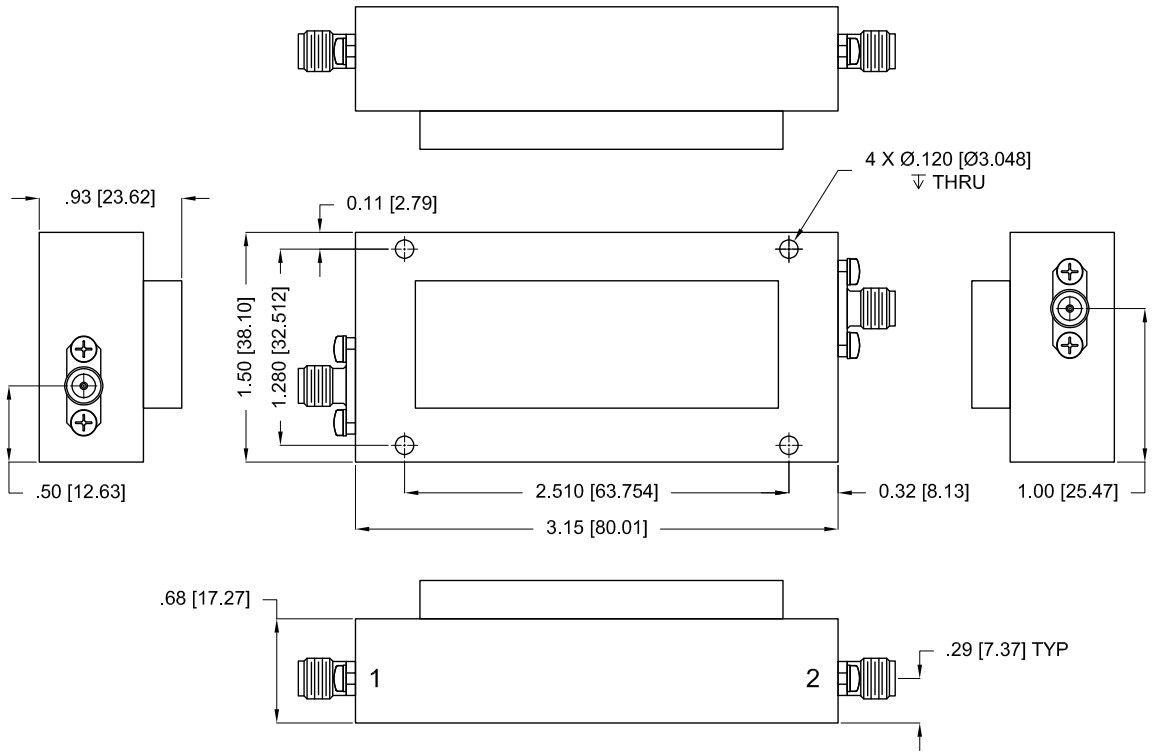
ZVBP-3500-S+

50Ω 3400 to 3600 MHz SMA Female

CONNECTOR DESCRIPTION

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

CASE STYLE DRAWING



Unit weight: 115 grams

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .100(2.540); 3 Pl. ± .015(0.381)

PRODUCT MARKING*: ZVBP-3500-S+

*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	AAW3655
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-3500-S+

Typical Performance Data

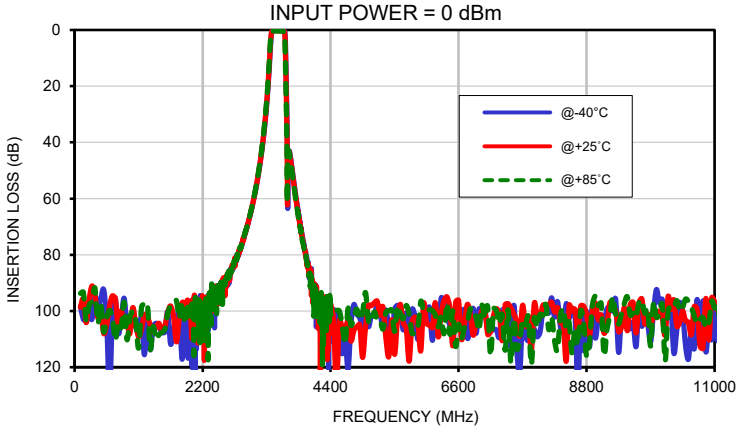
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	98.26	98.69	93.73	0.00	0.02	0.02	0.01	0.02	0.01
150	102.97	95.71	93.33	0.01	0.02	0.03	0.00	0.03	0.02
200	103.14	104.15	103.40	0.01	0.02	0.04	0.00	0.03	0.03
300	102.89	91.07	96.51	0.01	0.03	0.04	0.00	0.03	0.03
400	98.73	102.50	104.22	0.01	0.04	0.06	0.01	0.03	0.04
500	92.41	107.99	107.43	0.00	0.03	0.06	0.00	0.02	0.04
1000	101.01	98.80	100.03	0.01	0.05	0.08	0.01	0.04	0.04
1200	115.58	101.32	97.41	0.00	0.05	0.08	0.02	0.04	0.04
1400	104.36	105.80	110.07	0.01	0.06	0.09	0.00	0.06	0.07
1600	100.24	100.58	100.93	0.02	0.07	0.11	0.02	0.08	0.09
1800	100.41	102.38	102.60	0.02	0.08	0.13	0.02	0.08	0.10
2000	104.99	104.02	101.86	0.03	0.09	0.14	0.02	0.09	0.11
2400	93.68	94.83	96.43	0.04	0.11	0.17	0.02	0.10	0.13
2690	85.49	86.41	85.94	0.03	0.11	0.17	0.01	0.08	0.11
3000	67.29	67.14	67.08	0.00	0.09	0.16	0.06	0.04	0.07
3200	45.81	45.38	44.99	0.00	0.09	0.15	0.08	0.01	0.04
3300	27.01	26.16	25.36	0.07	0.16	0.22	0.02	0.07	0.10
3400	0.26	0.35	0.41	26.02	34.95	25.91	26.82	34.11	25.14
3420	0.22	0.32	0.38	22.64	23.42	24.63	21.87	22.63	23.67
3460	0.17	0.28	0.35	28.17	26.52	24.66	28.67	26.53	24.38
3480	0.17	0.28	0.35	27.34	27.67	27.34	29.60	29.87	28.93
3500	0.17	0.28	0.35	28.74	28.77	29.18	38.41	35.97	35.50
3520	0.18	0.29	0.37	28.03	28.60	29.31	30.49	30.49	30.84
3540	0.20	0.32	0.39	32.79	32.38	32.83	30.80	31.01	32.04
3550	0.22	0.34	0.41	27.28	26.50	27.18	26.18	26.03	27.00
3580	0.27	0.40	0.50	26.38	32.41	42.47	25.47	30.25	34.26
3590	0.30	0.46	0.58	37.75	28.52	25.36	32.77	28.13	25.51
3600	0.38	0.56	0.71	23.92	24.85	29.79	24.15	25.85	49.29
3622	3.26	6.65	10.41	4.36	2.16	1.31	4.30	2.14	1.26
3640	20.20	24.77	29.19	0.42	0.44	0.48	0.40	0.44	0.44
3649	30.05	35.64	42.18	0.28	0.35	0.40	0.27	0.35	0.37
3700	43.86	44.44	44.97	0.07	0.17	0.25	0.06	0.17	0.21
3800	58.80	59.49	60.18	0.03	0.08	0.16	0.05	0.06	0.11
3900	71.96	72.19	72.66	0.07	0.03	0.12	0.10	0.01	0.06
4000	82.72	83.90	83.64	0.09	0.02	0.11	0.12	0.01	0.04
4100	90.06	97.43	92.90	0.09	0.01	0.10	0.13	0.02	0.03
4200	105.76	105.65	97.84	0.09	0.01	0.10	0.14	0.03	0.02
4300	107.43	96.97	102.98	0.08	0.02	0.10	0.12	0.02	0.03
4400	110.61	97.47	101.22	0.08	0.02	0.11	0.12	0.01	0.03
4500	101.12	127.77	99.75	0.07	0.03	0.12	0.11	0.00	0.04
5000	98.23	105.85	93.42	0.01	0.11	0.19	0.01	0.09	0.13
5200	98.23	96.50	102.95	0.04	0.13	0.21	0.02	0.11	0.15
5400	106.20	116.26	99.89	0.04	0.13	0.21	0.03	0.12	0.16
5600	100.25	97.64	101.00	0.04	0.13	0.20	0.03	0.12	0.15
6000	101.76	97.25	100.19	0.01	0.07	0.14	0.01	0.07	0.10
6400	100.87	94.98	97.28	0.06	0.02	0.08	0.06	0.02	0.04
6600	101.74	96.24	104.77	0.08	0.00	0.06	0.09	0.00	0.02
6800	105.74	101.08	99.18	0.08	0.00	0.05	0.08	0.00	0.02
7000	100.00	99.73	97.98	0.07	0.01	0.06	0.06	0.03	0.04
7200	106.61	101.59	99.17	0.05	0.03	0.08	0.04	0.05	0.06
7600	113.92	103.80	113.52	0.01	0.10	0.15	0.04	0.13	0.14
7800	110.57	102.05	101.93	0.04	0.13	0.17	0.06	0.15	0.17
8000	107.52	101.97	101.22	0.06	0.15	0.20	0.08	0.18	0.19
8400	107.51	104.93	99.09	0.08	0.17	0.23	0.07	0.17	0.19
9000	102.61	103.16	98.10	0.04	0.15	0.23	0.01	0.11	0.15
9500	106.24	107.05	94.97	0.02	0.14	0.25	0.01	0.12	0.18
10000	92.37	102.39	102.16	0.01	0.16	0.29	0.03	0.18	0.27
10500	112.19	103.47	95.79	0.02	0.19	0.35	0.06	0.23	0.34
10800	96.38	113.23	102.38	0.00	0.18	0.37	0.05	0.22	0.35
11000	98.62	96.70	98.97	0.00	0.19	0.39	0.03	0.20	0.35

Typical Performance Data

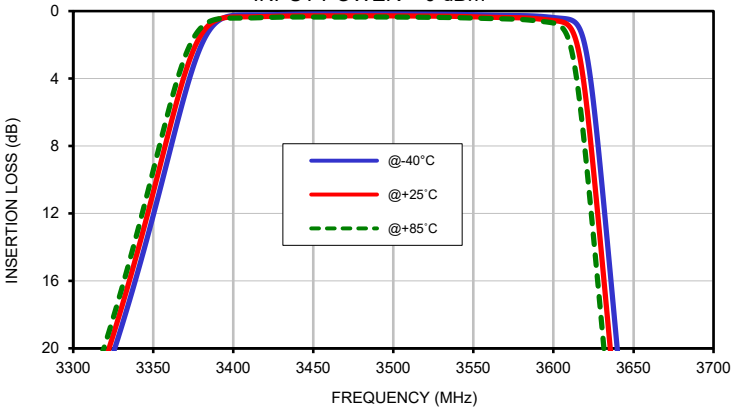
FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-40°C	@+25°C	@+85°C
3400	7.96	7.48	7.11
3405	7.39	7.00	6.72
3410	6.93	6.65	6.45
3415	6.59	6.39	6.24
3420	6.34	6.19	6.09
3425	6.16	6.05	5.97
3430	6.02	5.93	5.87
3435	5.91	5.84	5.78
3440	5.81	5.75	5.71
3445	5.73	5.68	5.64
3450	5.66	5.62	5.58
3455	5.60	5.57	5.54
3460	5.56	5.53	5.51
3465	5.52	5.50	5.49
3470	5.49	5.48	5.48
3475	5.48	5.48	5.48
3480	5.47	5.48	5.49
3485	5.48	5.49	5.51
3490	5.49	5.51	5.54
3495	5.51	5.54	5.57
3500	5.53	5.57	5.61
3505	5.57	5.61	5.65
3510	5.61	5.66	5.71
3515	5.66	5.72	5.78
3520	5.73	5.79	5.86
3525	5.80	5.88	5.96
3530	5.89	5.97	6.06
3535	5.99	6.09	6.19
3540	6.10	6.21	6.32
3545	6.23	6.35	6.48
3550	6.37	6.51	6.66
3555	6.52	6.69	6.86
3560	6.71	6.90	7.11
3565	6.93	7.16	7.41
3570	7.20	7.47	7.77
3575	7.52	7.85	8.20
3580	7.91	8.30	8.72
3585	8.38	8.85	9.37
3590	8.94	9.53	10.23
3595	9.64	10.45	11.50
3600	10.62	11.84	13.45

Typical Performance Curves

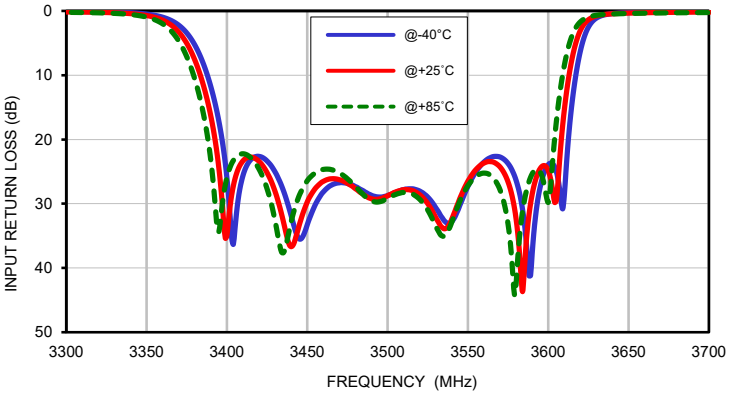
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



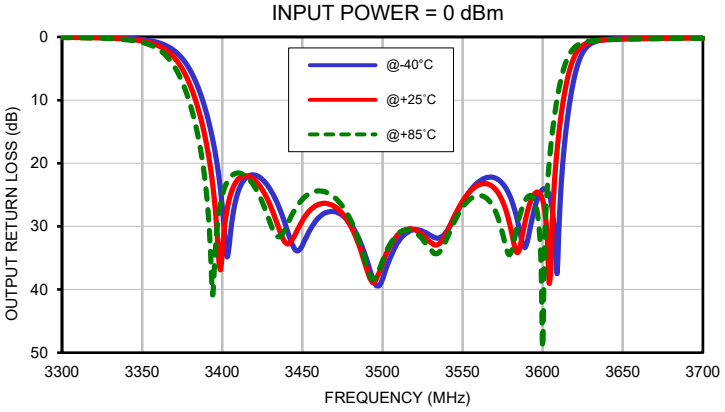
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



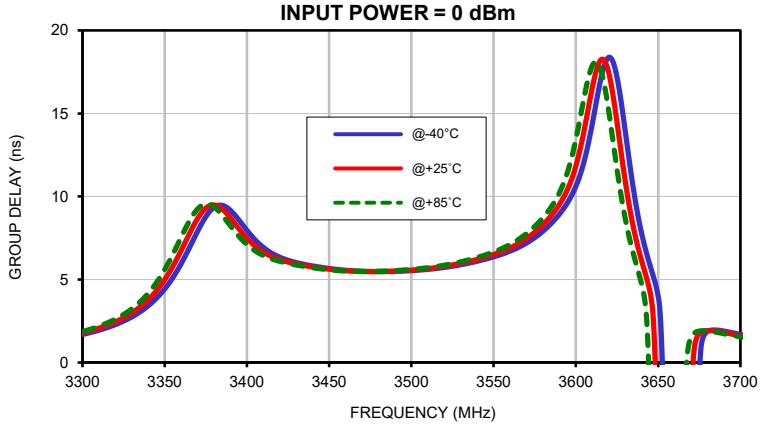
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



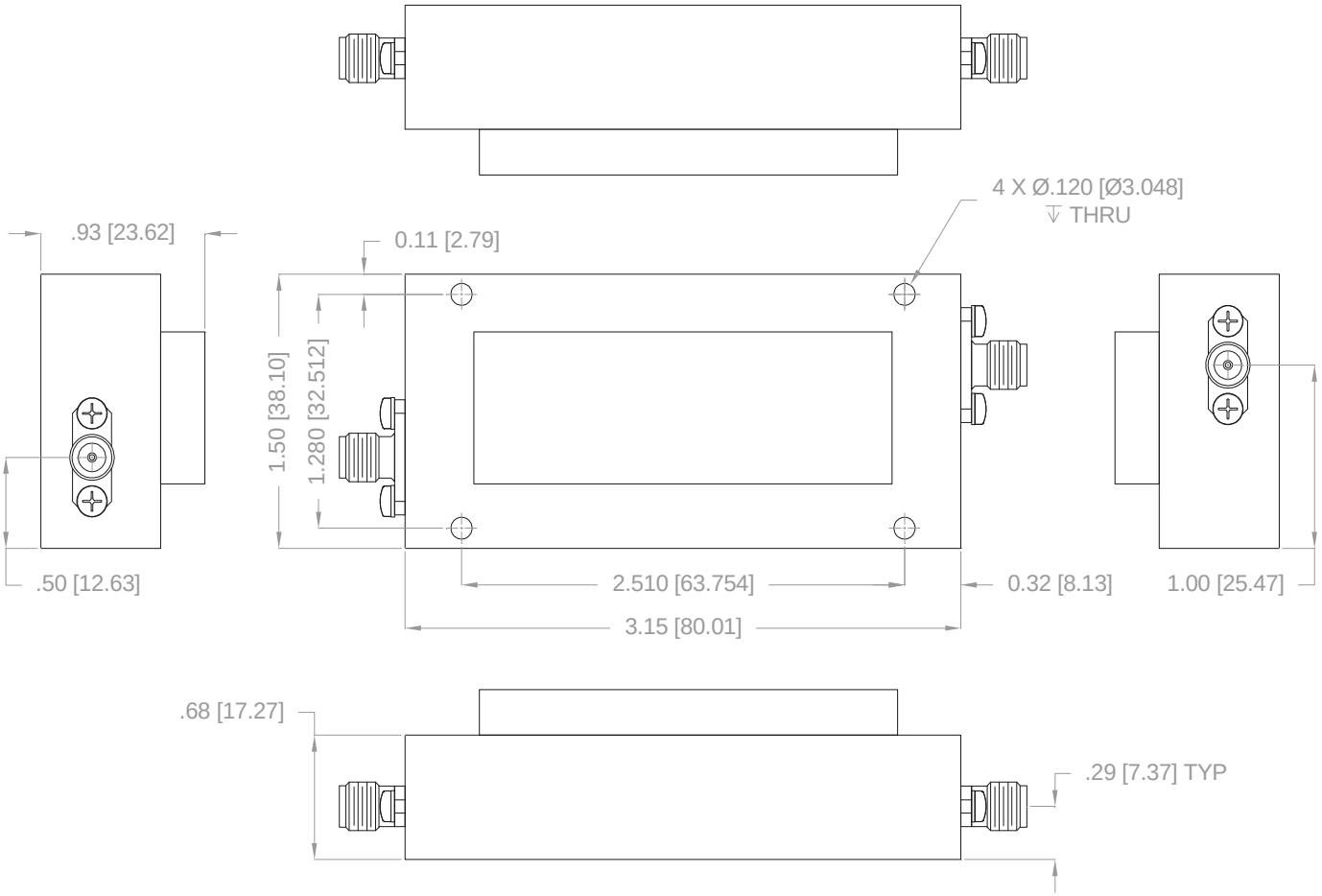
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style AAW

Outline Dimensions

AAW3655



Dimensions are in inches (mm). Tolerances: 2 Pl. ± .100 [2.540]; 3 Pl. ± .015 [0.381]

Notes:

1. Case material: Aluminum.
2. Case Finish: Powder coated.
3. Unit Weight: 115 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