CAVITY COAXIAL

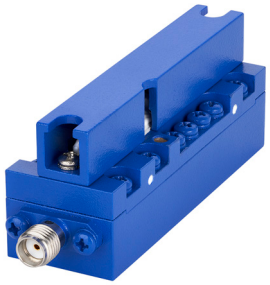
Bandpass Filter

ZVBP-4700-S+

50Ω 4200 to 5200 MHz SMA Female

KEY FEATURES

- Low Insertion Loss, 0.4 dB Typ.
- Good Return Loss, 19 dB Typ.
- High Rejection, 80 dB Typ.
- Wide Stopband up to 16000 MHz
- Power Handling 10 Watts



Generic photo used for illustration purposes only

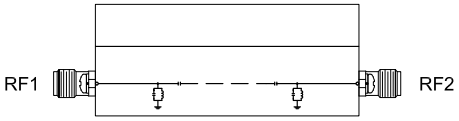
APPLICATIONS

- Radar

PRODUCT OVERVIEW

Mini-Circuits' ZVBP-4700-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	—	—	—	4700	—	MHz
	Insertion Loss	F1-F2	4200 - 5200	—	0.4	0.8	dB
	Return Loss	F1-F2	4200 - 5200	14	19	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 2700	70	80	—	dB
		F3-F4	2700 - 3600	40	50	—	
Stop Band, Upper	Rejection	F5-F6	5650 - 6100	40	50	—	dB
		F6-F7	6100 - 16000	70	80	—	

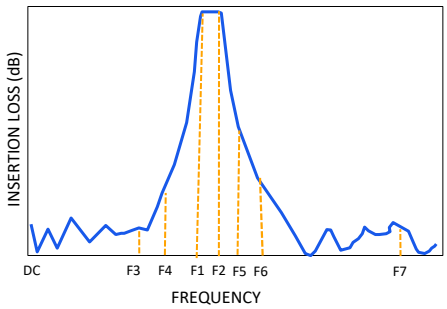
1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

ABSOLUTE MAXIMUM RATINGS[2,3]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[4]	10W 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-021986
ZVBP-4700-S+
EDU4683
URJ
240604

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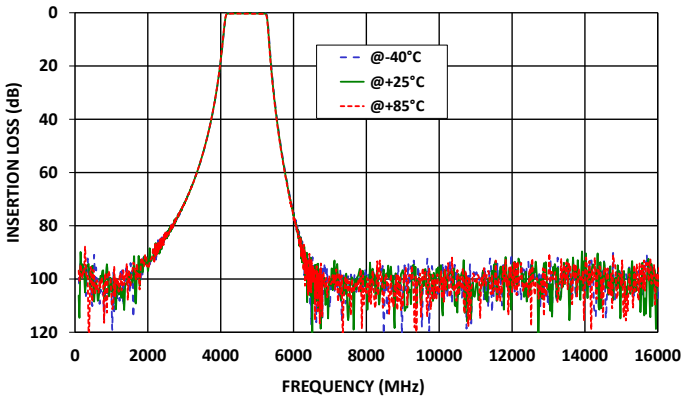
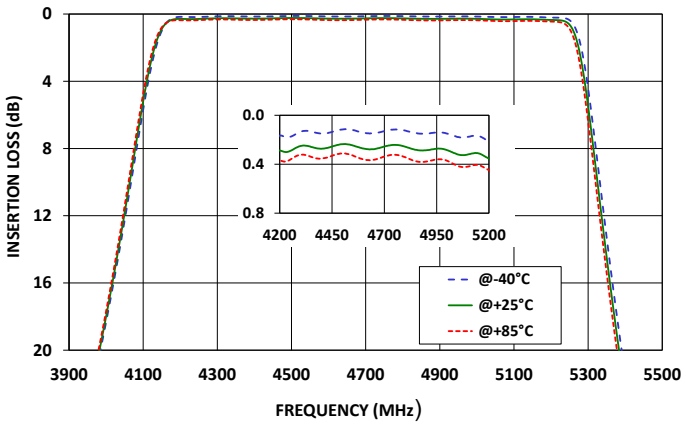
TYPICAL PERFORMANCE GRAPHS

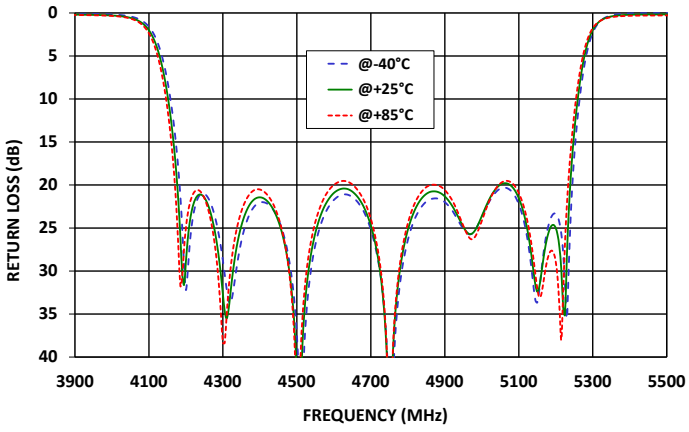
ZVBP-4700-S+
INSERTION LOSS



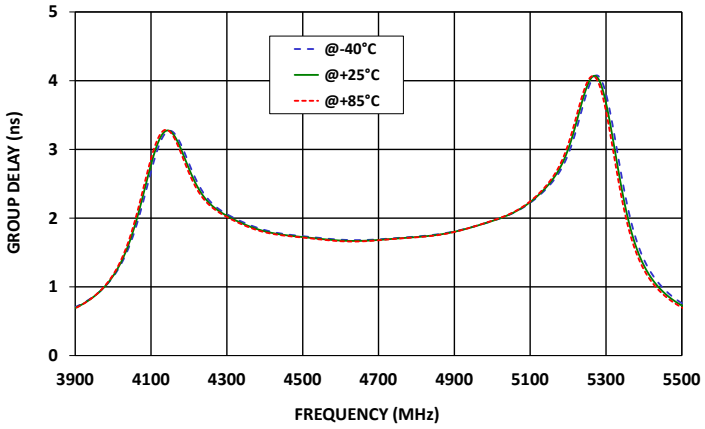
ZVBP-4700-S+
INSERTION LOSS (Zoomed)



ZVBP-4700-S+
RETURN LOSS



ZVBP-4700-S+
GROUP DELAY



Bandpass Filter

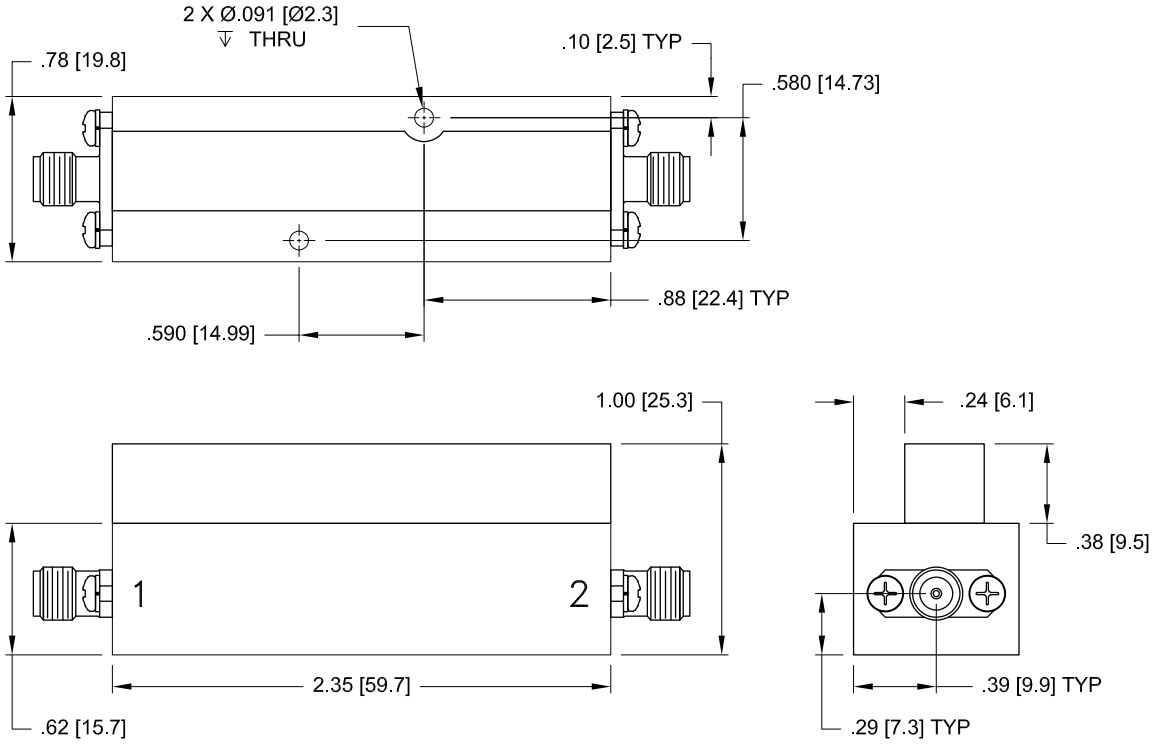
ZVBP-4700-S+

50Ω 4200 to 5200 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: 58 Grams.
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .100; 3 Pl. ± .015

PRODUCT MARKING*: ZVBP-4700-S+

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

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Bandpass Filter

ZVBP-4700-S+

50Ω 4200 to 5200 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	AAJ3617
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-4700-S+

Typical Performance Data

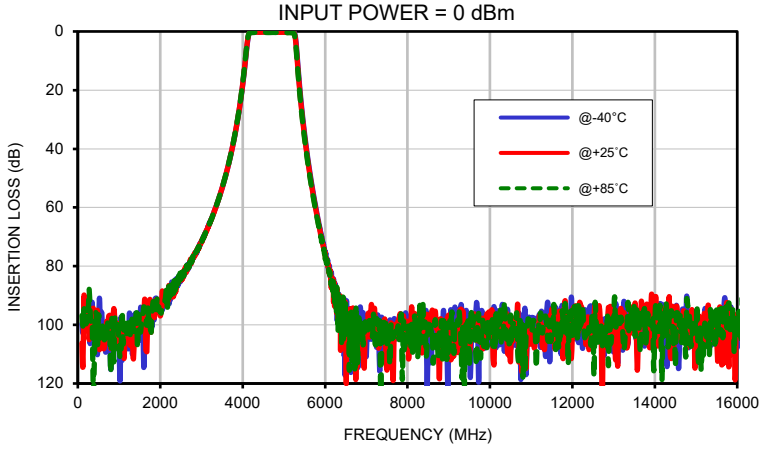
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25˚C	@+85˚C	@-40°C	@+25˚C	@+85˚C	@-40°C	@+25˚C	@+85˚C
100	99.62	106.21	96.83	0.04	0.05	0.05	0.03	0.04	0.04
125	102.56	114.07	100.69	0.04	0.05	0.06	0.03	0.04	0.04
175	98.61	98.59	96.98	0.06	0.06	0.06	0.04	0.05	0.05
275	95.16	105.06	87.83	0.06	0.08	0.08	0.06	0.07	0.07
525	90.91	108.48	97.71	0.06	0.09	0.10	0.06	0.08	0.09
600	100.53	102.57	100.52	0.06	0.09	0.10	0.06	0.08	0.09
675	109.34	102.76	100.77	0.06	0.09	0.10	0.06	0.09	0.09
800	115.26	107.99	116.46	0.06	0.09	0.10	0.05	0.08	0.10
875	104.23	94.45	112.64	0.05	0.09	0.10	0.05	0.08	0.09
900	106.64	99.24	98.00	0.05	0.09	0.10	0.05	0.09	0.10
975	102.93	99.53	100.26	0.05	0.09	0.11	0.05	0.08	0.09
1000	105.75	103.63	106.54	0.05	0.09	0.11	0.05	0.08	0.10
1025	119.12	104.94	111.30	0.04	0.09	0.11	0.05	0.08	0.10
1075	112.13	98.59	95.25	0.04	0.09	0.10	0.04	0.08	0.10
1100	101.09	106.36	106.58	0.04	0.09	0.10	0.04	0.08	0.09
1150	106.09	101.93	102.41	0.04	0.08	0.10	0.04	0.08	0.09
1500	105.31	97.96	102.48	0.02	0.07	0.10	0.02	0.07	0.09
1575	97.19	101.34	97.02	0.01	0.07	0.10	0.02	0.07	0.09
2000	92.12	96.94	95.06	0.02	0.06	0.10	0.01	0.06	0.09
2700	79.65	79.99	80.16	0.02	0.07	0.13	0.01	0.07	0.12
3000	71.57	71.86	71.48	0.01	0.09	0.15	0.00	0.08	0.14
3600	48.50	48.41	48.34	0.03	0.14	0.20	0.06	0.14	0.20
4000	18.31	17.99	17.67	0.18	0.29	0.34	0.21	0.30	0.34
4200	0.17	0.29	0.37	32.21	28.91	24.98	29.43	27.47	24.30
4700	0.13	0.26	0.34	25.20	24.73	23.94	25.56	25.02	24.09
5200	0.21	0.35	0.45	23.34	25.01	28.95	23.52	25.17	28.81
5295	3.68	4.67	5.53	2.88	2.44	2.13	2.96	2.47	2.14
5395	20.71	21.79	22.66	0.06	0.22	0.33	0.09	0.22	0.33
5465	30.42	31.36	32.13	0.02	0.17	0.29	0.03	0.17	0.28
5650	49.77	50.53	51.14	0.02	0.17	0.28	0.04	0.16	0.28
6100	80.42	81.78	82.28	0.06	0.19	0.28	0.09	0.20	0.29
7500	98.97	115.46	106.42	0.04	0.21	0.26	0.10	0.22	0.27
8000	98.63	98.96	105.14	0.02	0.21	0.27	0.08	0.22	0.27
8500	106.39	103.48	101.60	0.01	0.21	0.27	0.06	0.22	0.28
9000	105.85	96.73	110.39	0.04	0.21	0.29	0.03	0.21	0.29
9200	102.30	104.22	98.41	0.05	0.21	0.30	0.02	0.21	0.30
9400	100.11	100.91	101.69	0.07	0.21	0.30	0.00	0.21	0.31
9500	103.03	109.85	114.22	0.06	0.22	0.31	0.00	0.21	0.31
9800	95.08	102.05	101.92	0.09	0.22	0.32	0.02	0.20	0.32
10000	98.46	100.60	104.34	0.10	0.22	0.33	0.03	0.20	0.33
10500	108.19	112.38	96.65	0.11	0.23	0.36	0.07	0.19	0.36
10700	96.02	112.71	112.66	0.11	0.22	0.38	0.08	0.19	0.37
11000	98.09	103.89	100.57	0.11	0.22	0.40	0.09	0.19	0.39
11200	96.76	96.87	102.74	0.11	0.23	0.41	0.10	0.19	0.41
11400	92.27	99.77	104.94	0.11	0.23	0.43	0.11	0.18	0.42
11600	94.13	104.79	108.43	0.10	0.23	0.45	0.13	0.17	0.43
11800	94.44	95.56	101.28	0.10	0.24	0.47	0.14	0.17	0.45
12000	99.06	102.41	104.80	0.10	0.23	0.48	0.15	0.17	0.46
12200	102.75	93.46	99.97	0.07	0.24	0.50	0.14	0.16	0.46
12400	95.89	108.21	100.89	0.07	0.24	0.52	0.14	0.16	0.47
12600	95.99	96.33	102.38	0.05	0.24	0.53	0.13	0.15	0.47
12800	97.95	100.12	100.91	0.04	0.23	0.54	0.12	0.15	0.48
13000	100.88	101.94	98.51	0.02	0.23	0.55	0.11	0.15	0.48
13500	100.67	95.34	93.97	0.00	0.24	0.60	0.09	0.14	0.49
14000	95.48	96.40	100.56	0.05	0.23	0.59	0.06	0.14	0.47
14500	102.42	101.09	114.39	0.07	0.22	0.59	0.05	0.11	0.42
15000	97.77	99.07	102.70	0.12	0.24	0.55	0.02	0.11	0.37
15500	98.40	102.22	94.03	0.15	0.21	0.47	0.03	0.13	0.32
15800	104.83	113.92	92.66	0.16	0.22	0.44	0.06	0.14	0.30
16000	107.77	101.63	103.36	0.15	0.23	0.41	0.06	0.15	0.28

Typical Performance Data

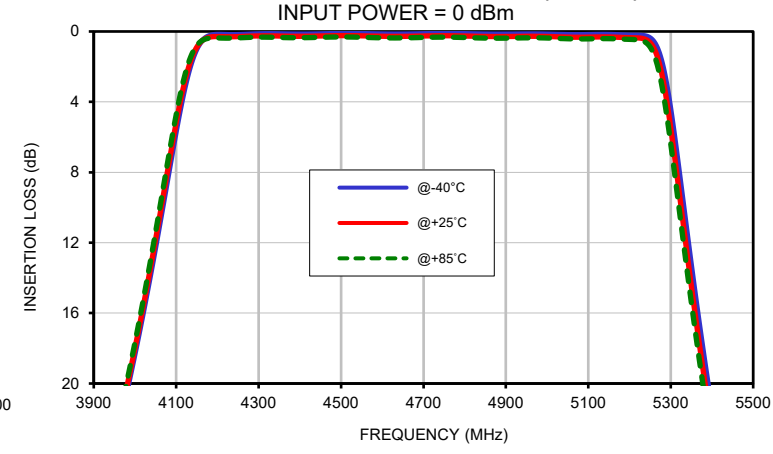
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
4200.0	2.80	2.72	2.66
4210.0	2.66	2.59	2.54
4240.0	2.35	2.31	2.27
4260.0	2.22	2.19	2.16
4300.0	2.06	2.03	2.02
4320.0	2.00	1.98	1.96
4340.0	1.95	1.92	1.91
4360.0	1.90	1.88	1.86
4400.0	1.83	1.81	1.79
4420.0	1.80	1.78	1.77
4440.0	1.78	1.76	1.75
4460.0	1.76	1.75	1.74
4500.0	1.74	1.72	1.72
4520.0	1.73	1.71	1.71
4560.0	1.70	1.69	1.68
4580.0	1.69	1.68	1.67
4600.0	1.69	1.67	1.66
4620.0	1.68	1.67	1.66
4640.0	1.68	1.67	1.66
4680.0	1.69	1.68	1.67
4700.0	1.69	1.68	1.68
4720.0	1.70	1.69	1.69
4740.0	1.71	1.70	1.70
4780.0	1.72	1.72	1.71
4800.0	1.73	1.72	1.72
4840.0	1.75	1.75	1.74
4860.0	1.77	1.76	1.76
4880.0	1.79	1.78	1.77
4900.0	1.81	1.80	1.80
4940.0	1.86	1.86	1.86
4980.0	1.92	1.92	1.93
5000.0	1.96	1.96	1.96
5020.0	1.99	2.00	2.00
5040.0	2.04	2.04	2.05
5060.0	2.09	2.09	2.10
5100.0	2.22	2.23	2.24
5120.0	2.31	2.33	2.34
5140.0	2.41	2.44	2.46
5160.0	2.54	2.57	2.60
5180.0	2.70	2.74	2.79
5200.0	2.92	3.00	3.07

Typical Performance Curves

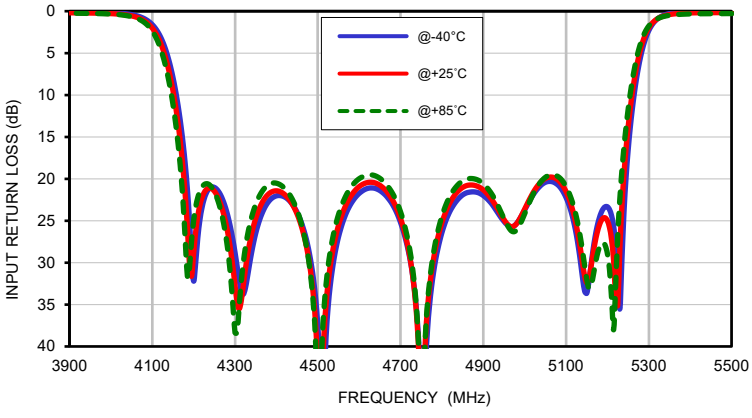
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



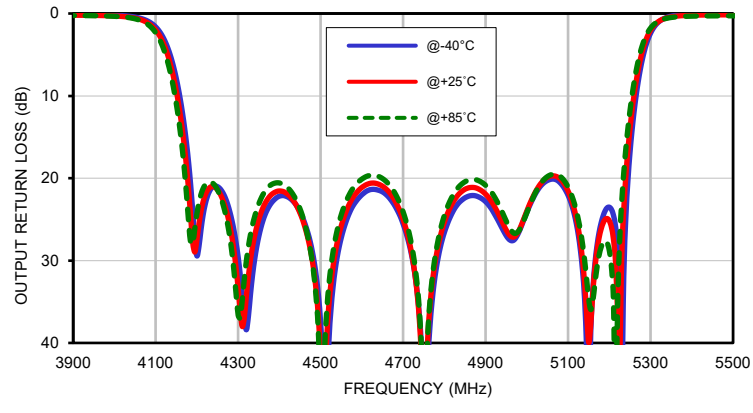
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



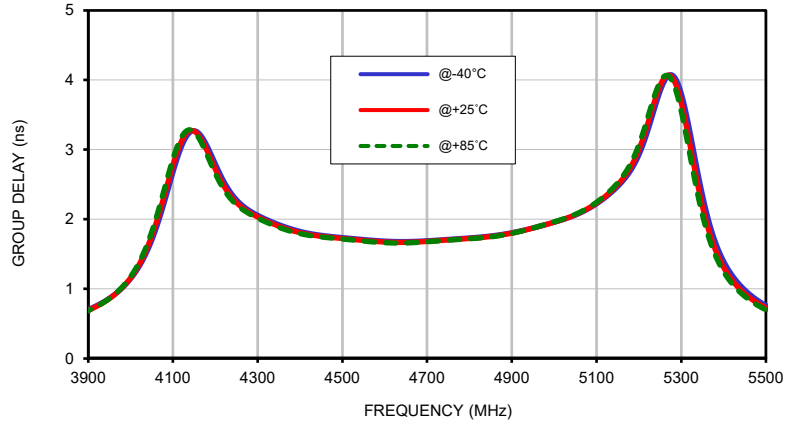
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



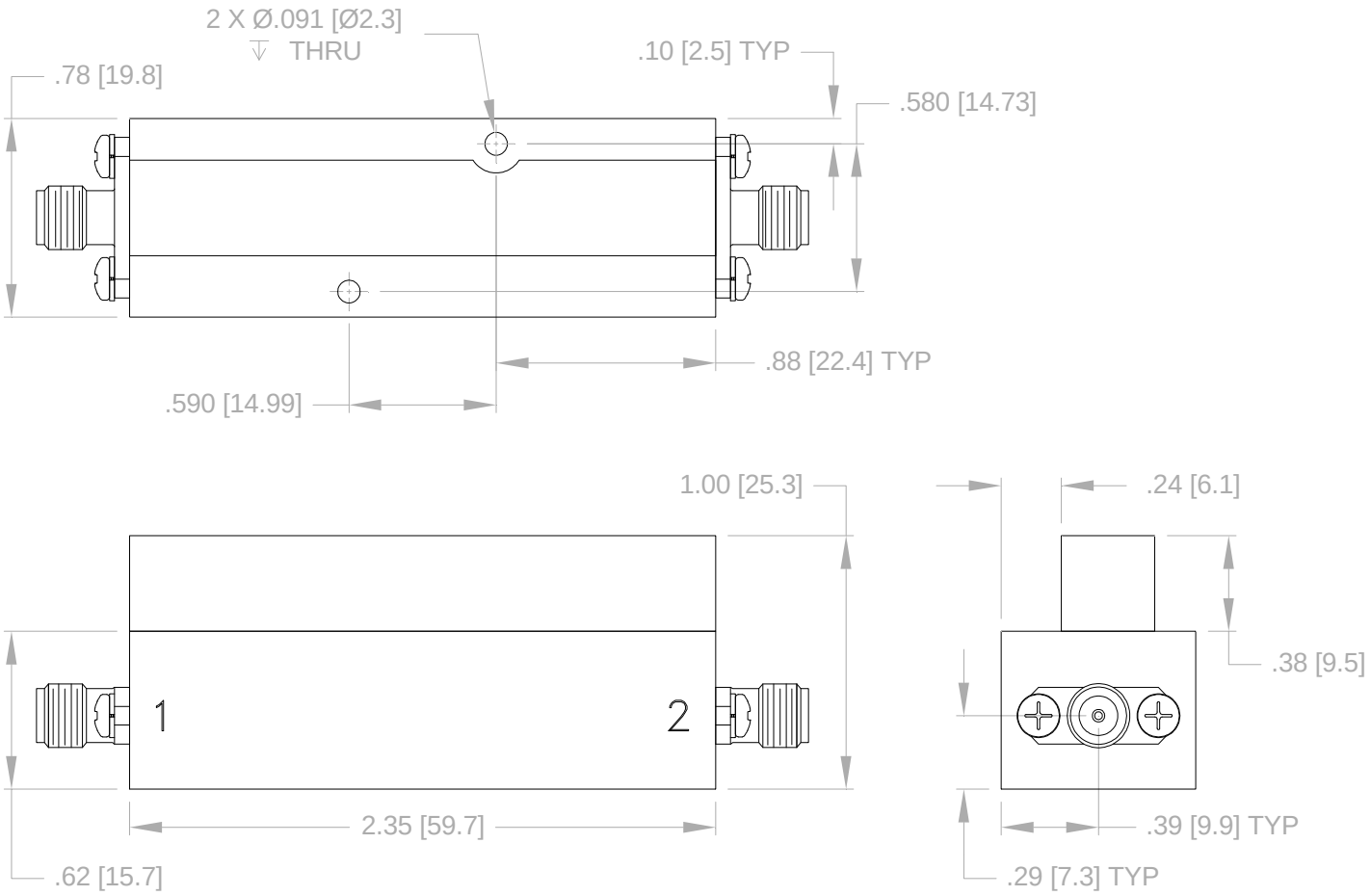
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style AAJ

Outline Dimensions

AAJ3617



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: 58 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