CAVITY COAXIAL

Bandpass Filter

ZVBP-7220-S+

50Ω 7120 to 7320 MHz SMA Female

KEY FEATURES

- Low Insertion Loss, 1.5 dB Typ.
- Good Return Loss, 18 dB Typ.
- High Rejection, 80 dB Typ.
- Wide Stopband up to 13000 MHz
- Power Handling : 5 Watts

Generic photo used for illustration purposes only

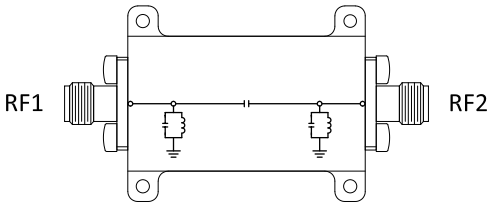
APPLICATIONS

- Telecommunication
- Satellite Communications
- Radar Systems

PRODUCT OVERVIEW

Mini-Circuits' ZVBP-7220-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	—	—	—	7220	—	MHz
	Insertion Loss	F1-F2	7120 - 7320	—	1.5	2.5	dB
	Return Loss	F1-F2	7120 - 7320	10	18	—	dB
Stopband, Lower	Rejection	DC-F3	DC - 6400	70	80	—	dB
		F3-F4	6400 - 6850	40	50	—	
		F4-F5	6850 - 7020	10	20	—	
Stopband, Upper	Rejection	F6-F7	7420 - 7600	10	20	—	dB
		F7-F8	7600 - 8000	40	50	—	
		F8-F9	8000 - 13000	70	80	—	

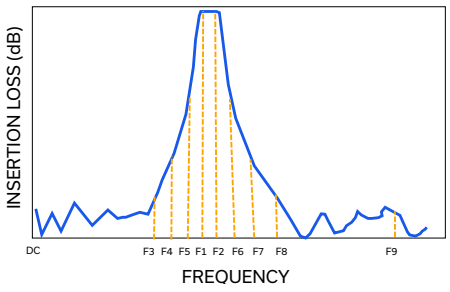
1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.

ABSOLUTE MAXIMUM RATINGS[2,3]

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power[4]	5 W 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-023942
ZVBP-7220-S+
EDU4813
URJ
241216

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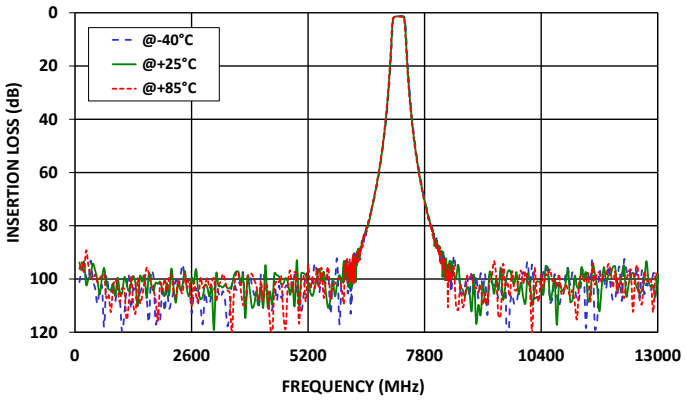
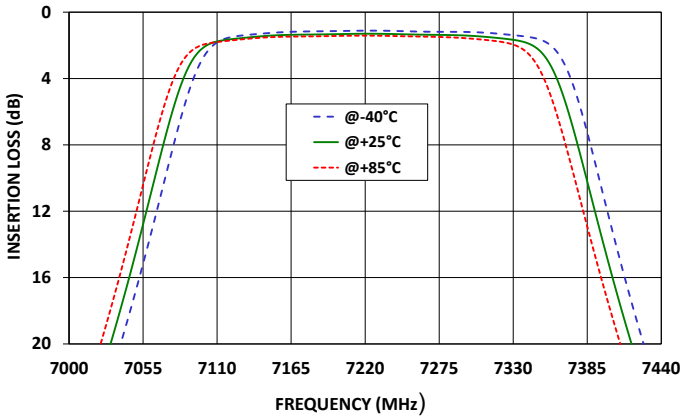
TYPICAL PERFORMANCE GRAPHS

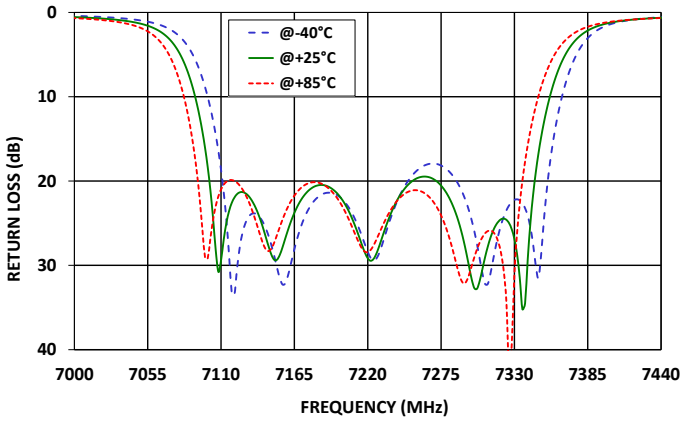
ZVBP-7220-S+
INSERTION LOSS



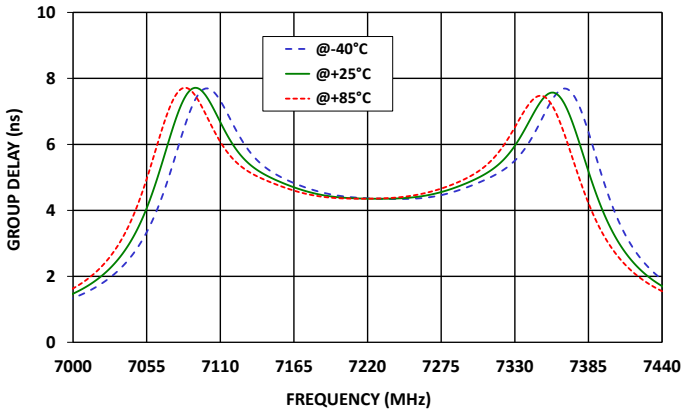
ZVBP-7220-S+
INSERTION LOSS (Zoomed)



ZVBP-7220-S+
RETURN LOSS



ZVBP-7220-S+
GROUP DELAY



Bandpass Filter

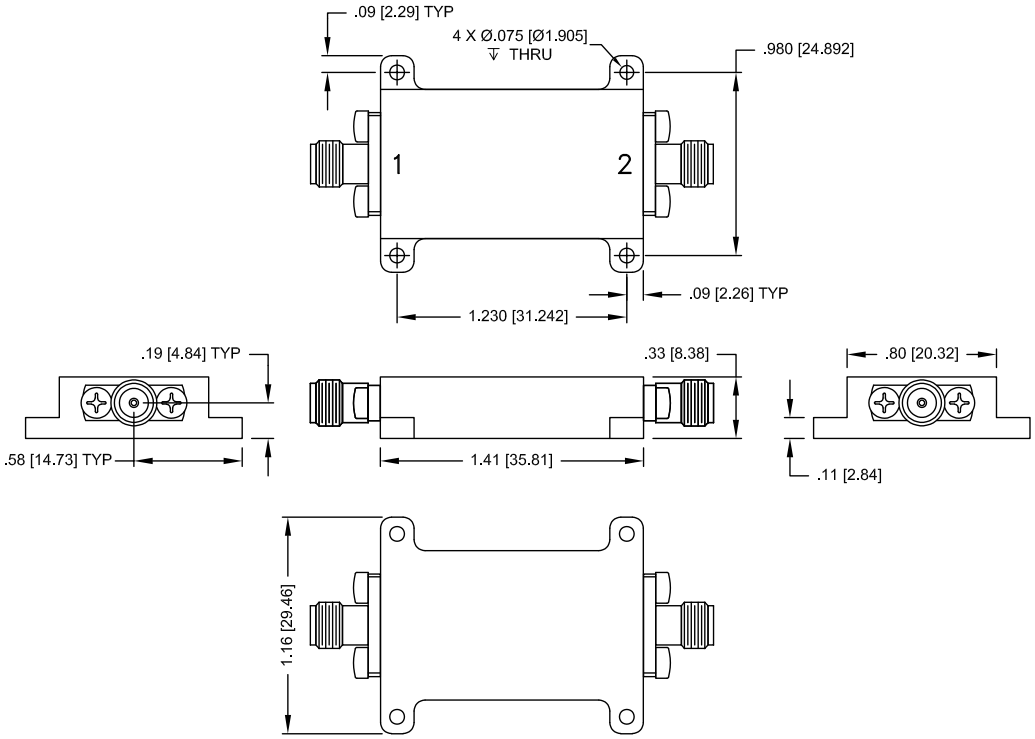
ZVBP-7220-S+

50Ω 7120 to 7320 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: 21 grams

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

PRODUCT MARKING*: ZVBP-7220-S+

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

Bandpass Filter

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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	AAV3653
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-7220-S+

Typical Performance Data

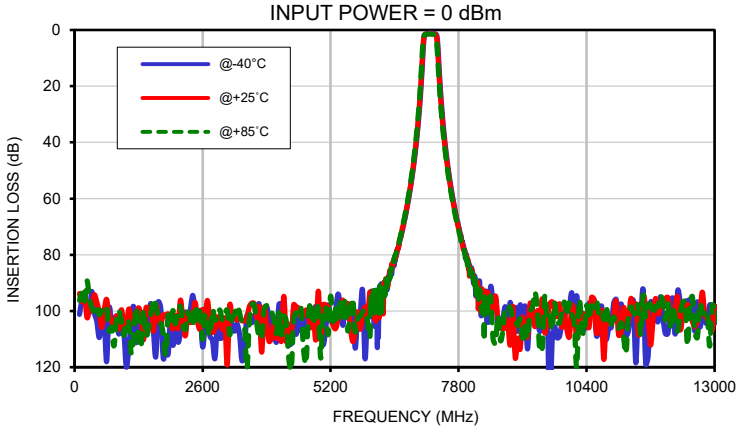
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	101.21	93.80	96.24	0.14	0.19	0.23	0.10	0.17	0.19
200	95.32	93.52	97.29	0.19	0.25	0.30	0.14	0.21	0.25
300	100.51	99.89	94.98	0.22	0.28	0.34	0.16	0.23	0.28
500	109.45	100.34	101.32	0.25	0.33	0.40	0.18	0.26	0.32
800	105.09	103.96	112.43	0.28	0.36	0.43	0.20	0.29	0.35
1000	107.13	104.74	108.65	0.28	0.37	0.44	0.20	0.30	0.35
1200	98.55	104.56	109.32	0.27	0.36	0.43	0.20	0.31	0.35
1400	108.28	110.28	99.70	0.28	0.36	0.43	0.21	0.31	0.36
1600	106.99	107.20	95.73	0.27	0.36	0.42	0.21	0.31	0.36
1800	116.73	101.41	107.98	0.27	0.35	0.41	0.21	0.31	0.36
2000	112.25	106.36	99.84	0.25	0.34	0.39	0.21	0.31	0.35
2300	103.11	100.92	100.37	0.23	0.31	0.36	0.18	0.30	0.33
2600	112.76	99.51	110.11	0.18	0.26	0.31	0.14	0.26	0.28
2800	110.41	107.58	99.53	0.14	0.22	0.27	0.10	0.21	0.24
3000	109.35	106.59	103.28	0.10	0.18	0.22	0.06	0.16	0.19
3100	104.06	119.19	99.73	0.09	0.16	0.21	0.04	0.14	0.17
3300	104.57	103.19	98.16	0.05	0.12	0.17	0.01	0.09	0.12
3600	104.18	97.20	97.67	0.01	0.09	0.13	0.06	0.05	0.07
3700	101.74	102.36	104.43	0.01	0.09	0.13	0.07	0.04	0.06
4000	106.06	109.53	100.43	0.01	0.09	0.13	0.09	0.02	0.04
4100	111.01	109.80	108.05	0.02	0.10	0.14	0.09	0.02	0.04
4300	106.20	110.81	103.64	0.05	0.12	0.16	0.08	0.02	0.04
4500	108.34	98.53	100.64	0.06	0.14	0.17	0.07	0.03	0.05
4700	102.71	99.62	118.57	0.09	0.16	0.20	0.06	0.05	0.07
4900	98.31	110.23	97.35	0.10	0.17	0.21	0.05	0.06	0.08
5000	105.95	110.26	116.77	0.10	0.17	0.21	0.05	0.06	0.08
5100	106.30	97.83	98.74	0.09	0.17	0.20	0.06	0.05	0.07
5300	100.28	106.31	99.20	0.08	0.15	0.19	0.07	0.05	0.07
5500	97.80	100.65	95.80	0.05	0.12	0.16	0.10	0.01	0.04
5700	113.25	107.14	107.33	0.01	0.08	0.13	0.12	0.01	0.02
5900	116.96	98.55	99.85	0.02	0.06	0.10	0.14	0.03	0.00
6000	102.08	93.20	109.30	0.04	0.04	0.08	0.16	0.04	0.01
6400	86.22	85.61	86.11	0.04	0.04	0.08	0.14	0.02	0.01
6850	52.98	52.13	51.23	0.10	0.19	0.25	0.02	0.16	0.21
6996	30.15	28.57	26.91	0.38	0.52	0.64	0.32	0.52	0.66
7020	24.72	22.87	20.94	0.53	0.72	0.89	0.48	0.73	0.94
7038	20.08	17.97	15.79	0.73	0.99	1.29	0.69	1.03	1.38
7096	3.31	2.42	2.07	7.82	14.12	25.74	7.98	14.69	30.02
7120	1.51	1.63	1.71	33.51	21.96	19.99	35.78	22.05	20.39
7180	1.16	1.35	1.46	22.31	20.65	20.13	21.91	20.01	19.29
7200	1.14	1.32	1.43	22.03	22.03	22.74	20.98	20.70	21.25
7220	1.11	1.30	1.41	28.39	29.16	28.43	24.32	24.66	25.04
7240	1.13	1.32	1.44	23.20	22.92	22.77	21.44	21.54	21.64
7260	1.17	1.35	1.47	18.38	19.51	21.22	17.87	18.98	20.43
7280	1.19	1.38	1.51	18.70	21.67	26.13	18.43	21.07	24.53
7300	1.20	1.43	1.60	26.00	32.71	29.01	25.67	28.87	27.28
7320	1.31	1.57	1.78	25.20	24.53	28.56	24.30	23.62	27.23
7340	1.48	1.85	2.41	24.14	29.27	15.73	23.27	30.67	16.19
7400	12.02	14.87	17.36	1.51	1.28	1.15	1.45	1.28	1.19
7420	18.09	20.56	22.71	0.83	0.83	0.83	0.76	0.83	0.84
7600	50.74	51.78	52.73	0.18	0.26	0.31	0.11	0.26	0.30
8000	83.55	85.03	83.95	0.08	0.17	0.22	0.05	0.19	0.22
9000	107.25	109.71	105.06	0.09	0.19	0.24	0.06	0.20	0.23
9500	105.73	95.67	113.15	0.15	0.24	0.29	0.09	0.23	0.26
10000	97.49	106.76	101.73	0.17	0.27	0.32	0.12	0.26	0.30
10500	98.01	95.20	98.22	0.15	0.26	0.31	0.14	0.29	0.33
11000	95.87	96.46	104.39	0.09	0.21	0.26	0.10	0.25	0.29
11500	100.97	105.64	108.48	0.13	0.25	0.30	0.10	0.26	0.30
12000	108.04	95.57	103.28	0.23	0.36	0.41	0.15	0.32	0.36
13000	103.97	98.29	99.17	0.21	0.34	0.41	0.11	0.30	0.35

Typical Performance Data

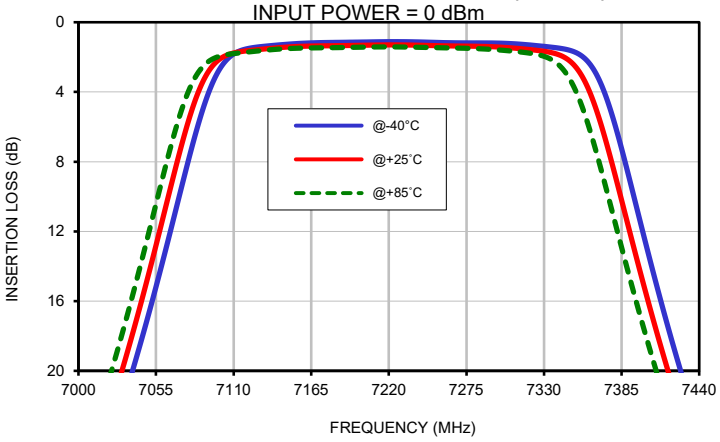
FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-40°C	@+25°C	@+85°C
7120	6.57	5.96	5.54
7126	6.13	5.64	5.32
7130	5.88	5.47	5.20
7136	5.58	5.27	5.06
7140	5.43	5.16	4.98
7146	5.23	5.03	4.88
7150	5.13	4.95	4.81
7156	4.99	4.84	4.72
7160	4.92	4.77	4.66
7166	4.81	4.68	4.59
7170	4.75	4.63	4.54
7176	4.66	4.56	4.48
7180	4.61	4.52	4.45
7186	4.54	4.47	4.41
7190	4.51	4.44	4.39
7196	4.46	4.41	4.37
7200	4.43	4.39	4.36
7204	4.41	4.38	4.36
7206	4.41	4.37	4.36
7210	4.39	4.37	4.35
7212	4.39	4.36	4.35
7216	4.37	4.36	4.35
7220	4.37	4.35	4.35
7226	4.36	4.35	4.36
7230	4.35	4.35	4.36
7240	4.34	4.36	4.38
7250	4.35	4.38	4.43
7260	4.37	4.43	4.50
7280	4.51	4.61	4.73
7290	4.64	4.76	4.90
7296	4.72	4.86	5.02
7300	4.79	4.93	5.11
7304	4.86	5.02	5.22
7306	4.89	5.06	5.28
7308	4.93	5.11	5.34
7310	4.97	5.16	5.42
7312	5.01	5.21	5.49
7314	5.05	5.27	5.58
7316	5.09	5.33	5.67
7318	5.14	5.40	5.77
7320	5.19	5.47	5.87

Typical Performance Curves

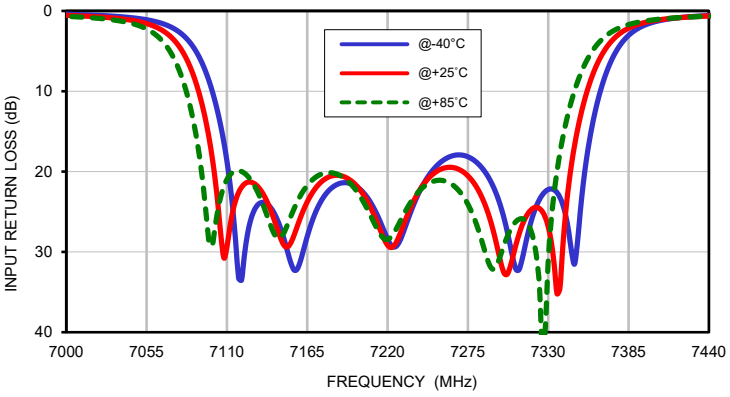
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



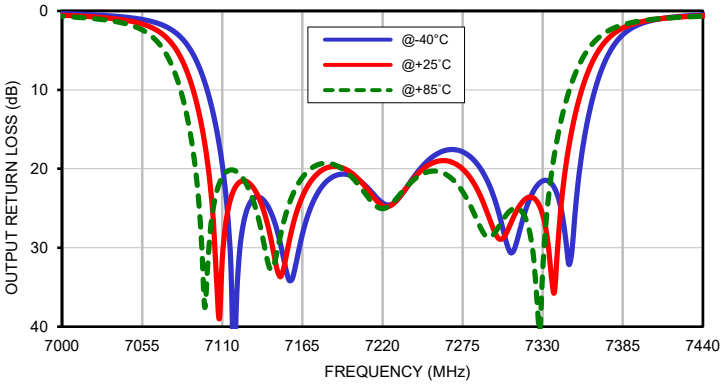
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



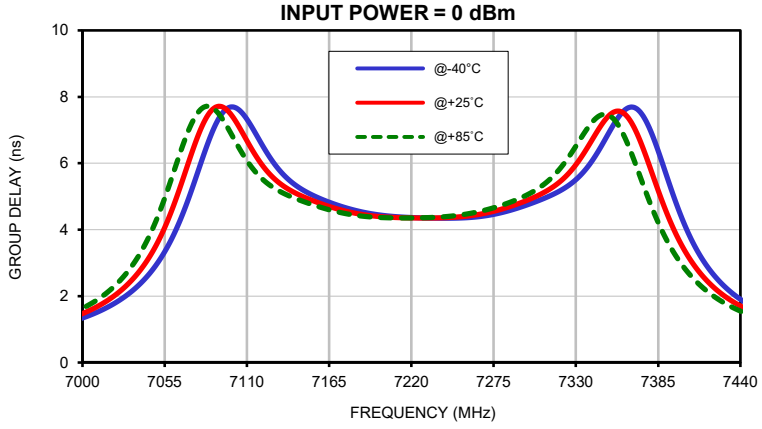
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



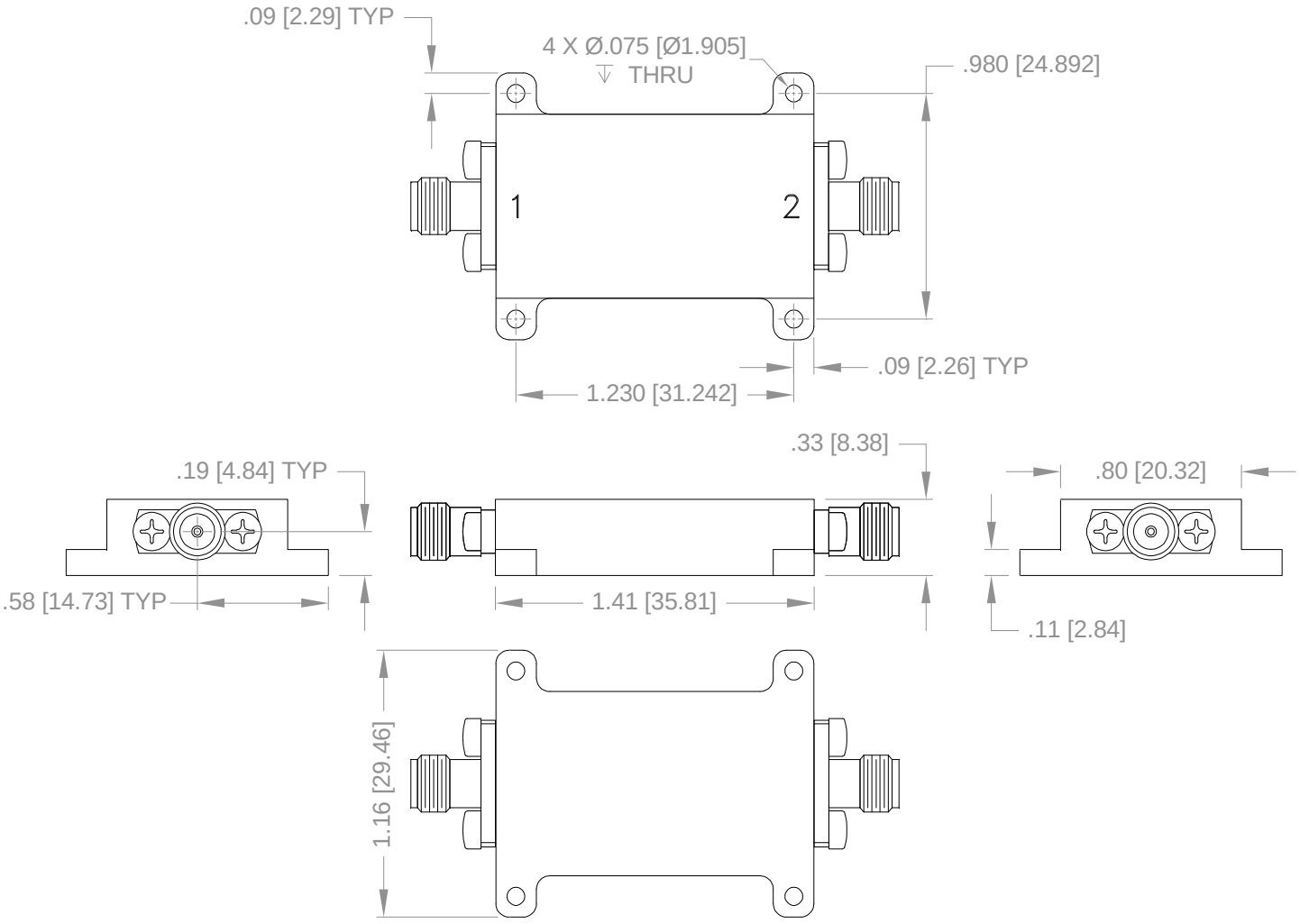
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style AAV

Outline Dimensions

AAV3653



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: 21 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