(CAVITY) COAXIAL

Diplexer

ZVDP-902-252-S+

50Ω (902 to 928, 2400-2500) MHz SMA Female

KEY FEATURES

- Low Insertion Loss, 0.4 dB Typ.
- Good Return Loss, 20 dB Typ.
- High Rejection, 90 dB Typ.
- Power Handling 75 W

APPLICATIONS

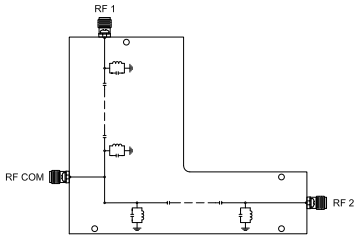
- Test and Measurement
- Electronic Counter Measures
- Bluetooth ISM Band

Generic photo used for illustration purposes only

PRODUCT OVERVIEW

Mini-Circuits' ZVDP-902-252-S+ is a coaxial cavity diplexer designed by implementing resonant structures with very high Q and are ideal for narrow-band, high-selectivity applications.
Bandpass, diplexer, and multiplexer designs can be realized with this technology with passband, up to 50GHz, and stopband width greater than 3x cut-off frequency.
Mini-Circuits' coaxial cavity filters feature a special protective assembly to prevent accidental de-tuning that would otherwise require expensive replacement or return to the factory for re-tuning. Precise machining allows the realization of cavity filters with small form factors for applications where size is critical.

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS AT +25°C

Parameter		Function (Port)	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	Band Pass 1 (RF COM-RF1)	902 - 928	—	0.5	1.0	dB
		Band Pass 2 (RF COM-RF2)	2400 - 2500	—	0.4	1.0	
	Return Loss	Band Pass 1 (RF1)	902 - 928	14	18	—	dB
		Band Pass 2 (RF2)	2400 - 2500	14	20	—	
		Common (RF COM)	902 - 928	14	18	—	
			2400 - 2500	14	20	—	
Stop Band	Rejection	Band Pass 1 (RF COM - RF1)	DC - 830	27	33	—	dB
			1000 - 1200	28	34	—	
			1200 - 3000	50	62	—	
		Band Pass 2 (RF COM - RF2)	DC - 1800	70	90	—	
			1800 - 2300	25	31	—	
			2600 - 3000	34	41	—	
			3000 - 6000	70	90	—	

ABSOLUTE MAXIMUM RATINGS[1]

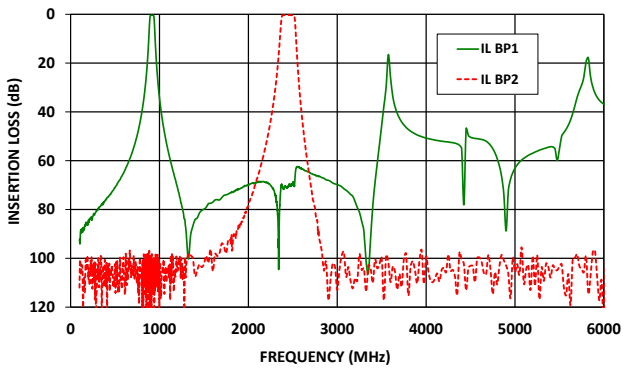
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input Power (RF COM - RF1)[2]	75 W @25°C
Input Power (RF COM - RF2)[2]	75 W @25°C

1. Permanent damage may occur if any of these limits are exceeded.
2. Power rating applies only to signals within the passband.

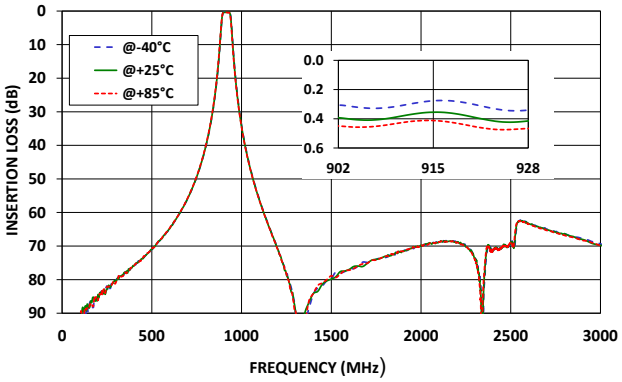
REV. A
ECO-023134
EDU4679
ZVDP-902-252-S+
URJ
240925

TYPICAL PERFORMANCE GRAPHS

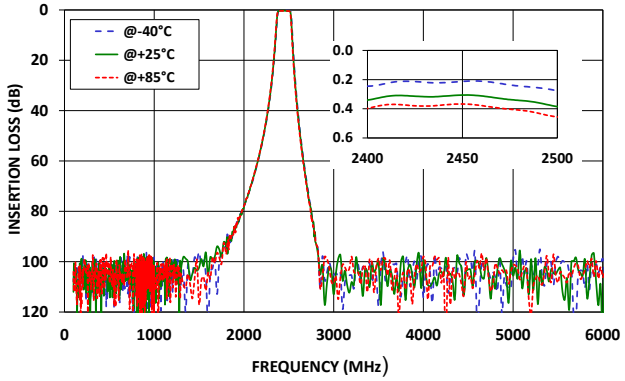
ZVDP-902-252-S+
INSERTION LOSS BANDPASS 1 vs BANDPASS 2



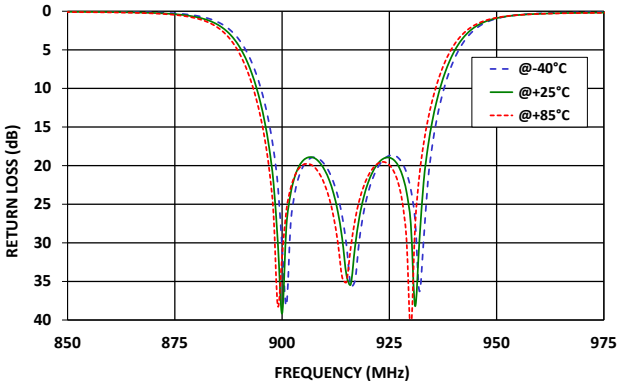
ZVDP-902-252-S+
INSERTION LOSS BANDPASS 1



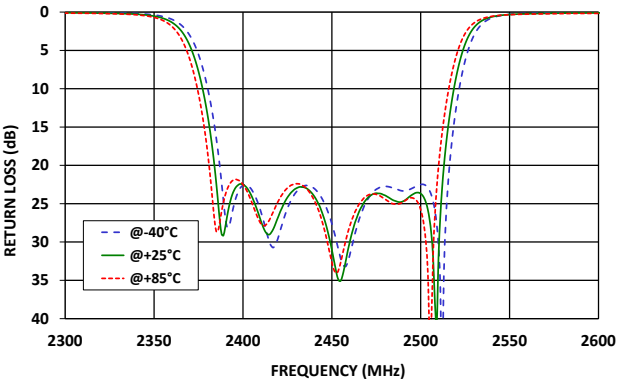
ZVDP-902-252-S+
INSERTION LOSS BANDPASS 2



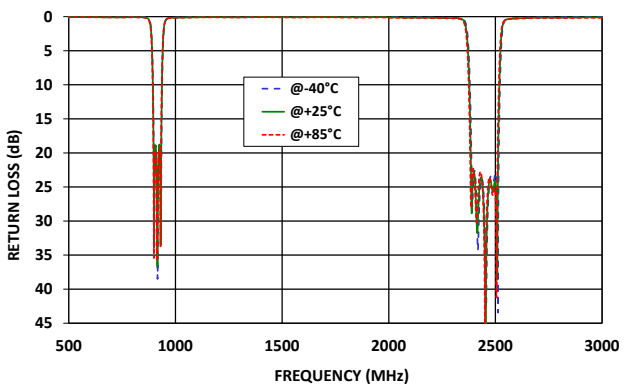
ZVDP-902-252-S+
RETURN LOSS BANDPASS 1



ZVDP-902-252-S+
RETURN LOSS BANDPASS 2



ZVDP-902-252-S+
COMMON PORT



Diplexer

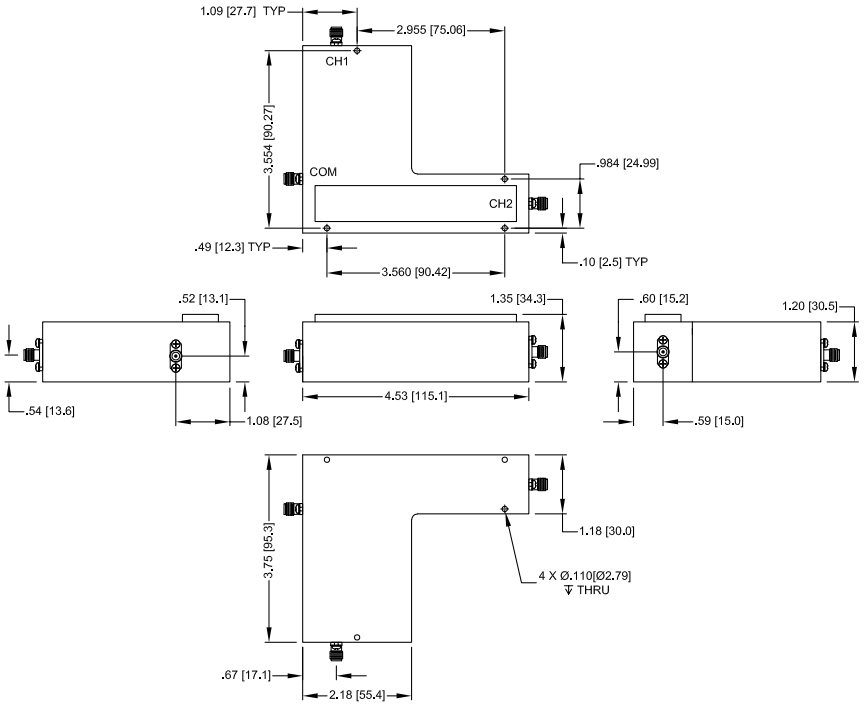
ZVDP-902-252-S+

50Ω (902 to 928, 2400-2500) MHz SMA Female

CONNECTOR DESCRIPTION

Function	Marking on Unit	Connector
RF COM	COM	SMA Female
RF1	CH1	SMA Female
RF2	CH2	SMA Female

CASE STYLE DRAWING



Unit Weight: 320 Grams.
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .100; 3 Pl. ± .015

PRODUCT MARKING*: ZVDP-902-252-S+

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

Diplexer

ZVDP-902-252-S+

50Ω (902 to 928, 2400-2500) MHz SMA Female

ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD CLICK HERE

Performance Data & Graphs	Data Graphs S-Parameter (S3P Files) Data Set (.zip file)
Case Style	AAF3613
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 Diplexer ZVDP-902-252-S+

Typical Performance Data

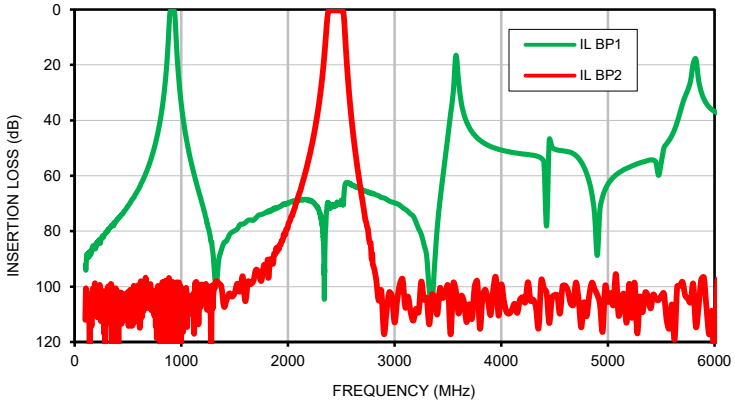
FREQUENCY (MHz)	Bandpass 1					
	Insertion loss			Return loss		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	92.23	92.22	91.74	0.03	0.04	0.05
150	87.82	88.49	88.50	0.05	0.06	0.06
200	85.15	84.44	86.20	0.04	0.05	0.06
250	81.90	82.85	82.11	0.02	0.04	0.05
300	80.19	80.51	80.83	0.02	0.05	0.05
350	77.92	77.87	77.77	0.04	0.07	0.07
400	76.05	75.93	75.95	0.05	0.08	0.09
450	73.52	73.78	73.50	0.04	0.08	0.09
500	70.99	71.02	70.85	0.03	0.06	0.08
550	68.14	67.95	67.88	0.01	0.05	0.07
600	64.71	64.76	64.61	0.02	0.07	0.08
650	60.75	60.60	60.56	0.03	0.07	0.09
700	55.82	55.78	55.64	0.03	0.08	0.10
750	49.48	49.40	49.22	0.02	0.07	0.10
800	40.57	40.43	40.20	0.01	0.04	0.07
830	32.99	32.77	32.46	0.00	0.06	0.09
839	30.15	29.90	29.55	0.00	0.06	0.09
863	20.37	19.98	19.49	0.06	0.13	0.18
889	3.58	3.11	2.72	3.03	3.74	4.47
902	0.31	0.39	0.45	27.53	23.61	22.91
915	0.28	0.36	0.41	30.27	34.16	35.07
928	0.34	0.41	0.47	19.66	21.21	24.64
1000	33.95	34.33	34.57	0.07	0.13	0.17
1200	70.51	70.69	70.85	0.01	0.06	0.10
1250	77.64	78.56	78.20	0.01	0.06	0.10
1300	89.48	89.28	89.01	0.00	0.07	0.12
1350	93.74	90.55	94.12	0.03	0.05	0.10
1400	84.33	84.14	84.11	0.05	0.03	0.08
1450	81.85	81.38	80.98	0.04	0.04	0.09
1500	79.67	79.85	78.86	0.02	0.05	0.10
1550	78.04	77.61	78.39	0.01	0.07	0.13
1600	76.79	76.97	77.19	0.04	0.05	0.11
1650	76.00	75.96	75.88	0.07	0.02	0.09
1700	74.85	75.18	75.13	0.06	0.04	0.10
1750	73.96	73.97	74.17	0.06	0.04	0.10
1800	73.43	73.03	73.11	0.04	0.05	0.12
1850	72.34	72.48	72.11	0.03	0.07	0.14
1900	71.55	71.51	71.57	0.06	0.05	0.12
1950	70.12	70.64	70.79	0.08	0.03	0.11
2000	69.71	69.75	69.72	0.07	0.03	0.11
2050	69.29	69.08	69.09	0.07	0.04	0.11
2100	68.88	68.71	68.73	0.05	0.06	0.14
2150	68.35	68.57	68.68	0.04	0.07	0.15
2200	68.84	68.89	68.97	0.07	0.05	0.14
2250	70.18	70.24	70.12	0.09	0.03	0.12
2300	73.36	73.57	74.07	0.09	0.03	0.12
2350	83.95	81.33	79.63	0.07	0.05	0.14
2400	71.56	71.09	71.26	0.05	0.07	0.16
2450	70.20	70.67	70.16	0.06	0.07	0.17
2500	68.95	68.97	69.07	0.07	0.06	0.16
2550	62.37	62.60	62.62	0.09	0.04	0.14
2600	63.20	63.44	63.41	0.09	0.04	0.14
2650	64.09	64.16	64.34	0.07	0.06	0.16
2700	64.96	65.20	65.33	0.05	0.08	0.18
2750	65.78	65.76	65.93	0.06	0.08	0.19
2800	66.33	66.32	66.83	0.08	0.07	0.17
2850	67.25	67.18	67.46	0.08	0.05	0.16
2900	67.79	68.02	68.35	0.07	0.05	0.15
2950	68.64	69.15	68.95	0.05	0.08	0.18
3000	69.37	69.78	69.91	0.04	0.09	0.20

Typical Performance Data

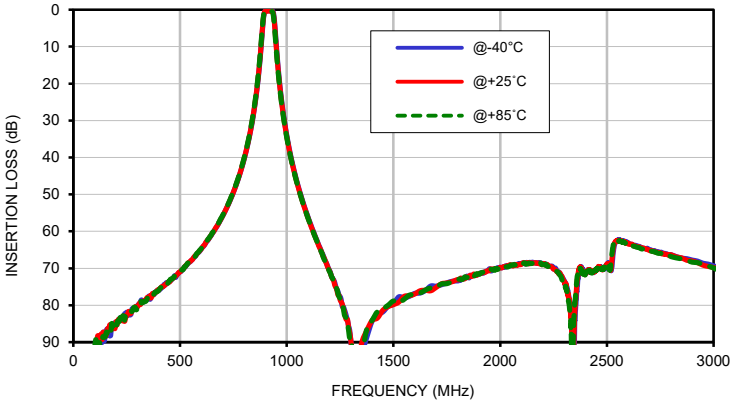
FREQUENCY (MHz)	Bandpass 2						Common port		
	Insertion loss			Return loss			Reurn loss		
	@-40°C	@+25˚C	@+85˚C	@-40°C	@+25˚C	@+85˚C	@-40°C	@+25˚C	@+85˚C
100	107.88	112.01	103.98	0.04	0.05	0.05	0.03	0.04	0.03
150	106.99	107.53	108.56	0.05	0.07	0.07	0.05	0.06	0.05
200	107.88	108.69	103.05	0.05	0.06	0.06	0.05	0.06	0.05
250	109.00	103.16	101.64	0.03	0.05	0.05	0.04	0.04	0.04
300	105.38	104.51	108.54	0.04	0.05	0.05	0.04	0.05	0.04
350	106.09	123.91	103.52	0.06	0.08	0.08	0.06	0.07	0.06
400	104.15	112.14	106.25	0.07	0.09	0.09	0.07	0.08	0.08
450	107.93	104.57	101.67	0.07	0.09	0.09	0.08	0.10	0.10
500	102.47	102.36	106.89	0.05	0.07	0.08	0.06	0.08	0.08
550	115.49	107.87	105.53	0.04	0.06	0.07	0.05	0.07	0.07
600	102.96	108.97	111.87	0.05	0.07	0.08	0.06	0.08	0.09
650	111.95	100.31	108.25	0.06	0.08	0.10	0.06	0.08	0.09
700	97.23	107.19	105.48	0.07	0.09	0.11	0.08	0.10	0.11
750	112.32	108.20	100.43	0.06	0.08	0.10	0.08	0.10	0.12
830	105.15	99.81	109.68	0.04	0.06	0.08	0.06	0.09	0.11
902	113.20	105.18	102.78	0.05	0.08	0.09	26.81	23.20	22.56
928	103.46	101.74	105.79	0.04	0.07	0.09	19.55	20.99	24.16
950	102.74	101.91	102.55	0.05	0.08	0.10	0.98	0.90	0.83
1000	101.48	108.21	104.48	0.04	0.07	0.10	0.12	0.15	0.17
1100	99.50	103.17	100.86	0.00	0.03	0.06	0.05	0.08	0.11
1200	104.91	105.07	102.15	0.02	0.05	0.08	0.04	0.08	0.10
1300	109.84	102.76	104.87	0.03	0.07	0.10	0.06	0.10	0.12
1400	106.19	107.24	108.99	0.02	0.02	0.05	0.02	0.06	0.09
1500	96.08	102.36	117.02	0.01	0.05	0.09	0.02	0.07	0.10
1600	124.69	105.30	104.39	0.01	0.04	0.08	0.02	0.07	0.11
1700	112.88	93.97	96.45	0.02	0.03	0.07	0.00	0.06	0.10
1800	94.12	92.88	96.90	0.00	0.05	0.09	0.02	0.08	0.12
1900	86.53	87.20	85.78	0.02	0.04	0.08	0.01	0.07	0.12
2000	78.00	78.13	77.73	0.03	0.02	0.07	0.04	0.10	0.15
2300	32.24	31.39	30.66	0.03	0.09	0.14	0.17	0.22	0.26
2307	30.18	29.27	28.49	0.04	0.10	0.15	0.18	0.22	0.27
2336	20.06	18.77	17.67	0.15	0.23	0.30	0.21	0.29	0.36
2372	3.14	2.08	1.43	3.85	5.49	7.68	3.72	5.35	7.56
2400	0.25	0.34	0.40	22.62	22.50	22.50	22.70	22.77	23.20
2450	0.21	0.31	0.37	27.59	30.99	32.64	30.16	34.84	41.49
2500	0.28	0.39	0.46	22.50	23.70	25.80	22.98	24.10	26.40
2600	39.59	41.02	42.20	0.04	0.11	0.17	0.21	0.26	0.29
2800	92.49	92.38	92.45	0.00	0.08	0.15	0.08	0.15	0.20
2900	107.48	117.10	98.06	0.02	0.05	0.12	0.03	0.11	0.17
3000	105.24	112.97	108.79	0.02	0.09	0.16	0.03	0.11	0.17
3100	118.88	107.55	101.11	0.00	0.08	0.15	0.03	0.12	0.20
3200	105.47	108.03	97.96	0.02	0.05	0.12	0.01	0.09	0.17
3300	106.93	104.03	108.99	0.01	0.09	0.16	0.03	0.12	0.20
3400	100.47	110.08	99.11	0.01	0.07	0.14	0.02	0.12	0.20
3500	117.56	99.70	98.74	0.02	0.05	0.12	0.03	0.11	0.18
3600	105.82	109.75	105.49	0.01	0.08	0.15	0.10	0.17	0.23
3700	100.76	106.35	102.57	0.01	0.07	0.14	0.07	0.14	0.19
3800	100.21	115.21	111.00	0.01	0.06	0.13	0.11	0.17	0.21
3900	99.86	110.25	105.79	0.02	0.09	0.16	0.11	0.18	0.21
4000	114.42	99.29	97.87	0.00	0.08	0.16	0.12	0.17	0.20
4200	102.65	103.85	108.40	0.04	0.11	0.18	0.12	0.19	0.24
4400	98.52	100.58	105.07	0.02	0.09	0.15	0.13	0.24	0.34
4800	106.04	110.74	100.85	0.06	0.14	0.19	0.32	0.42	0.47
5000	99.15	105.53	101.35	0.05	0.12	0.17	0.20	0.31	0.40
5200	101.28	98.96	121.03	0.04	0.12	0.18	0.16	0.29	0.43
5400	98.67	107.90	105.33	0.07	0.15	0.19	0.14	0.29	0.43
5600	99.83	106.48	108.28	0.06	0.12	0.16	0.30	0.45	0.58
5800	110.64	99.05	103.24	0.02	0.10	0.15	0.78	1.49	2.93
5900	105.44	96.70	105.89	0.05	0.11	0.15	0.12	0.25	0.38
6000	99.00	131.16	106.19	0.04	0.12	0.17	0.08	0.19	0.28

Typical Performance Curves

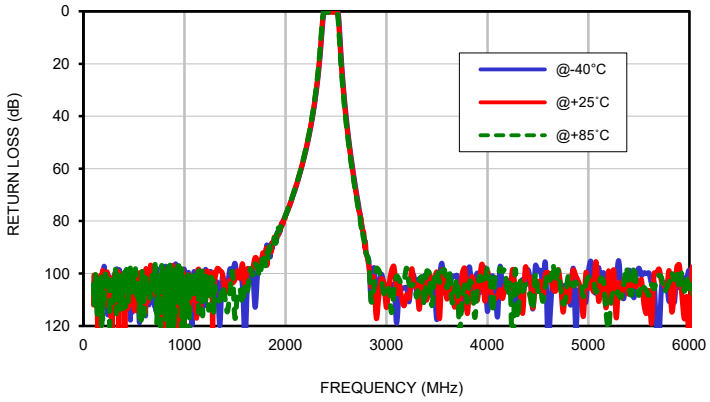
BP 1 INSERTION LOSS vs. BP 2 INSERTION LOSS
INPUT POWER = 0 dBm



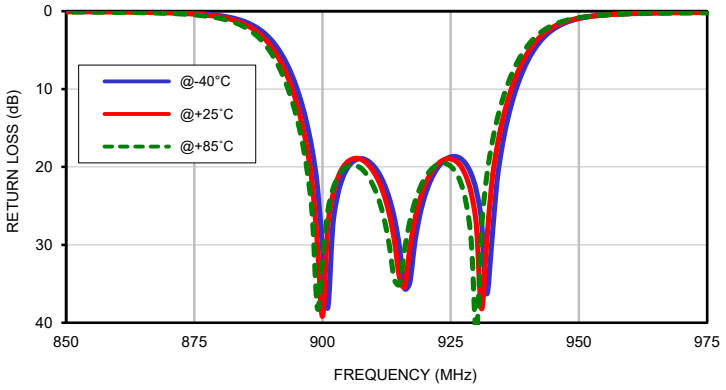
BANDPASS 1 INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



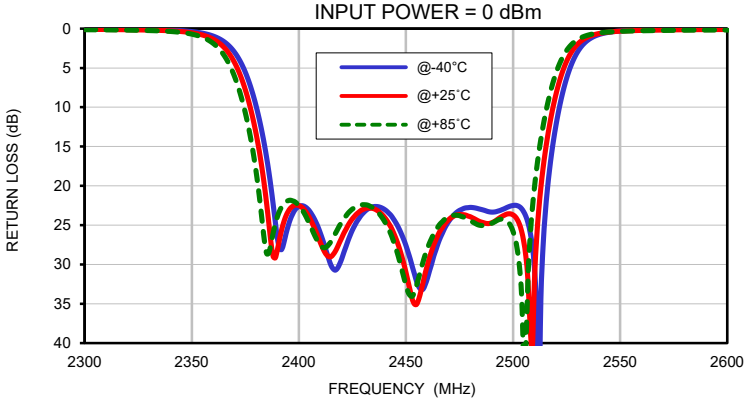
BANDPASS 2 INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



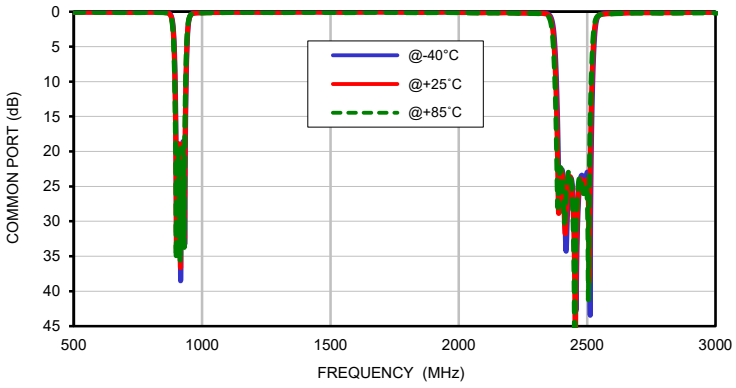
BANDPASS 1 RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



BANDPASS 2 RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



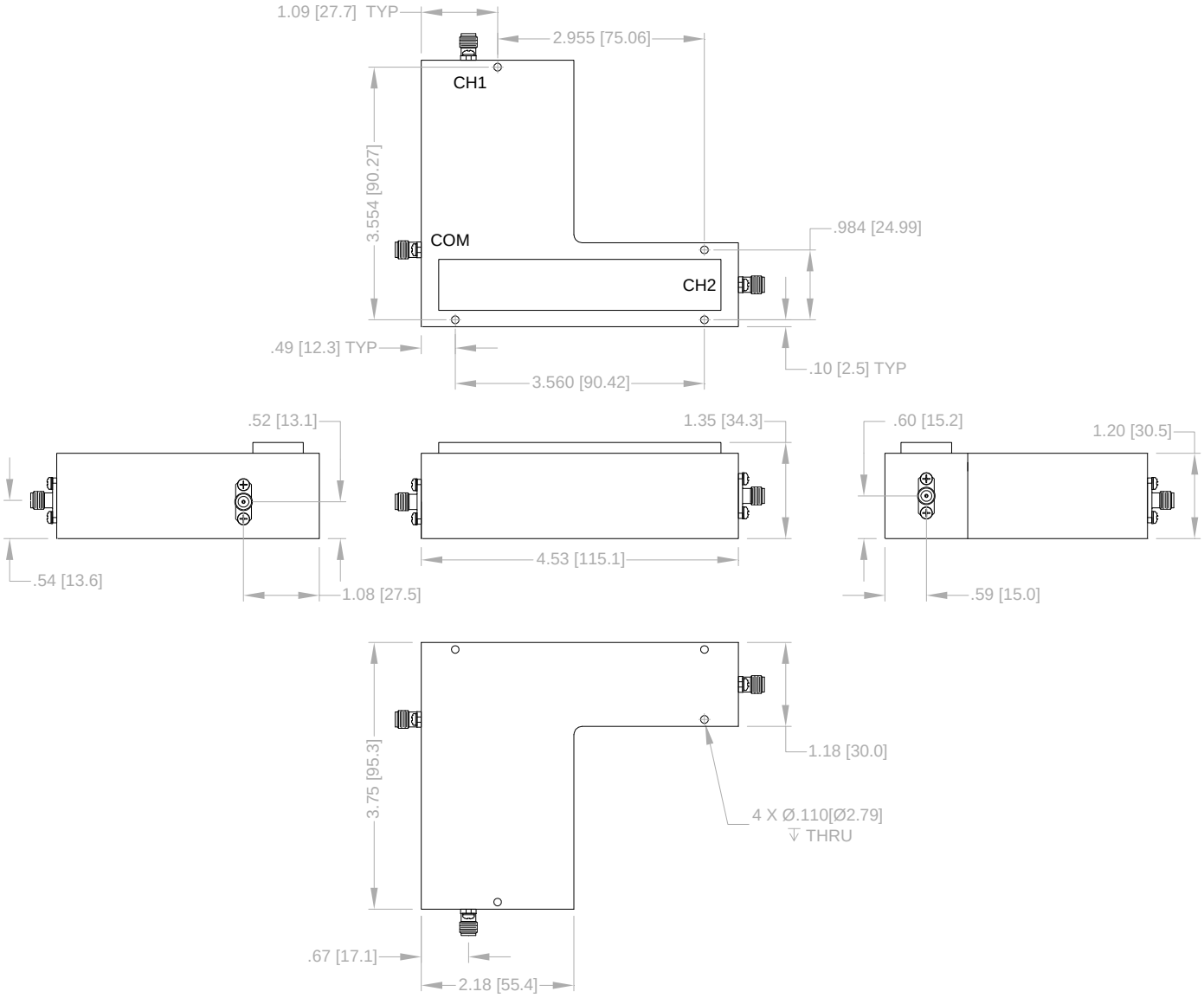
COMMON PORT vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style AAF

Outline Dimensions

AAF3613



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: 320 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