CAVITY COAXIAL

Bandpass Filter

ZVBP-V48R5G+

50Ω 47 to 50 GHz 2.4mm Female

KEY FEATURES

- Low Insertion Loss, 0.8dB Typ.
- Good Return Loss, 17dB Typ.
- High Rejection, 80dB Typ.
- Power Handling: 2.5W
- Stopband up to 65GHz

Generic photo used for illustration purposes only

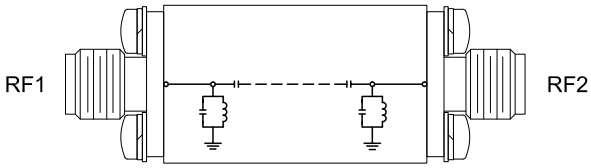
APPLICATIONS

- Telecommunication

PRODUCT OVERVIEW

Mini-Circuits' cavity filters are designed by implementing resonant structures with very high Q and are ideal for narrow-band, high-selectivity applications. These designs can provide bandwidths as narrow as 3% with very high selectivity and excellent low noise floor. Low insertion loss combined with excellent power handling makes them well-suited for transmitter and receiver front end. Advanced filter design and construction enables stopband width greater than 3x the center frequency.

FUNCTIONAL DIAGRAM



ELECTRICAL SPECIFICATIONS[1,2] AT +25°C

Parameter		F#	Frequency (GHz)	Min.	Typ.	Max.	Units
Passband	Center Frequency	Fc	—	—	48.5	—	GHz
	1dB Bandwidth	—	—	3	—	—	GHz
	Insertion Loss	Fc	48.5	—	0.8	1.3	dB
	Return Loss	F1-F2	47 - 50	—	17	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 32	70	80	—	dB
		F3-F4	32 - 40	65	76	—	
Stop Band, Upper	Rejection	F5-F6	57 - 65	40	48	—	dB

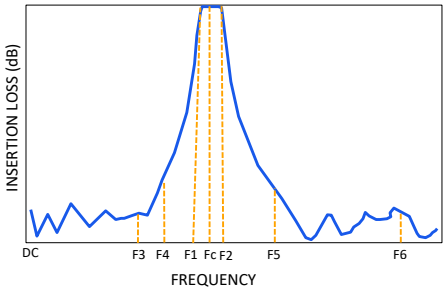
1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
2. Data measured after calibrating using 1.85mm cal kit.

ABSOLUTE MAXIMUM RATINGS[3,4]

Parameter	Ratings
Operating Temperature	-30°C to +70°C
Storage Temperature	-30°C to +70°C
Input Power[5]	2.5W at 25°C

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

TYPICAL FREQUENCY RESPONSE AT +25°C



REV. OR
ECO-019871
ZVBP-V48R5G+
EDU4656
URJ
231219

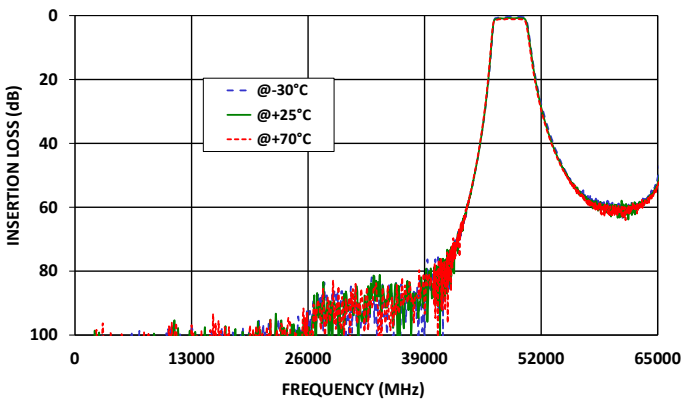
Bandpass Filter

ZVBP-V48R5G+

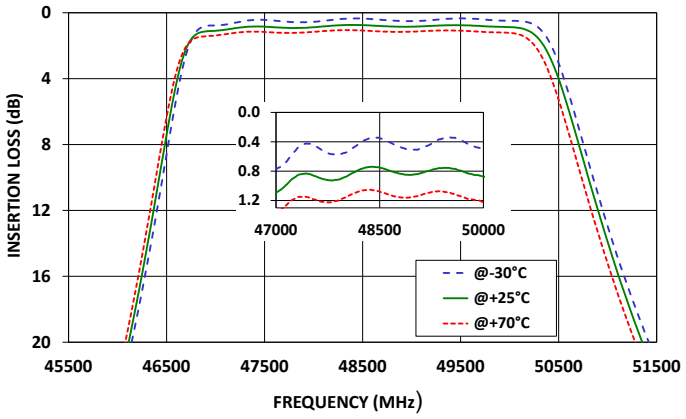
50Ω 47 to 50 GHz 2.4mm Female

TYPICAL PERFORMANCE GRAPHS

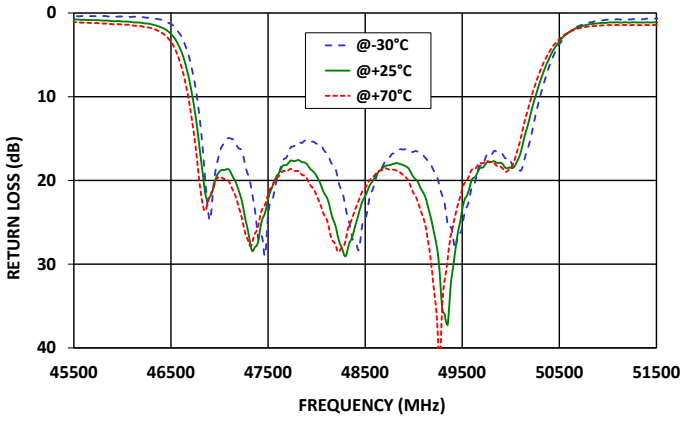
ZVBP-V48R5G+
INSERTION LOSS



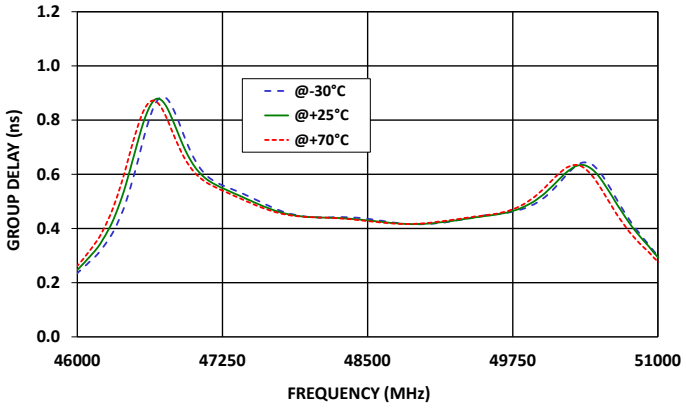
ZVBP-V48R5G+
INSERTION LOSS (Zoomed)



ZVBP-V48R5G+
RETURN LOSS



ZVBP-V48R5G+
GROUP DELAY



CAVITY COAXIAL

Bandpass Filter

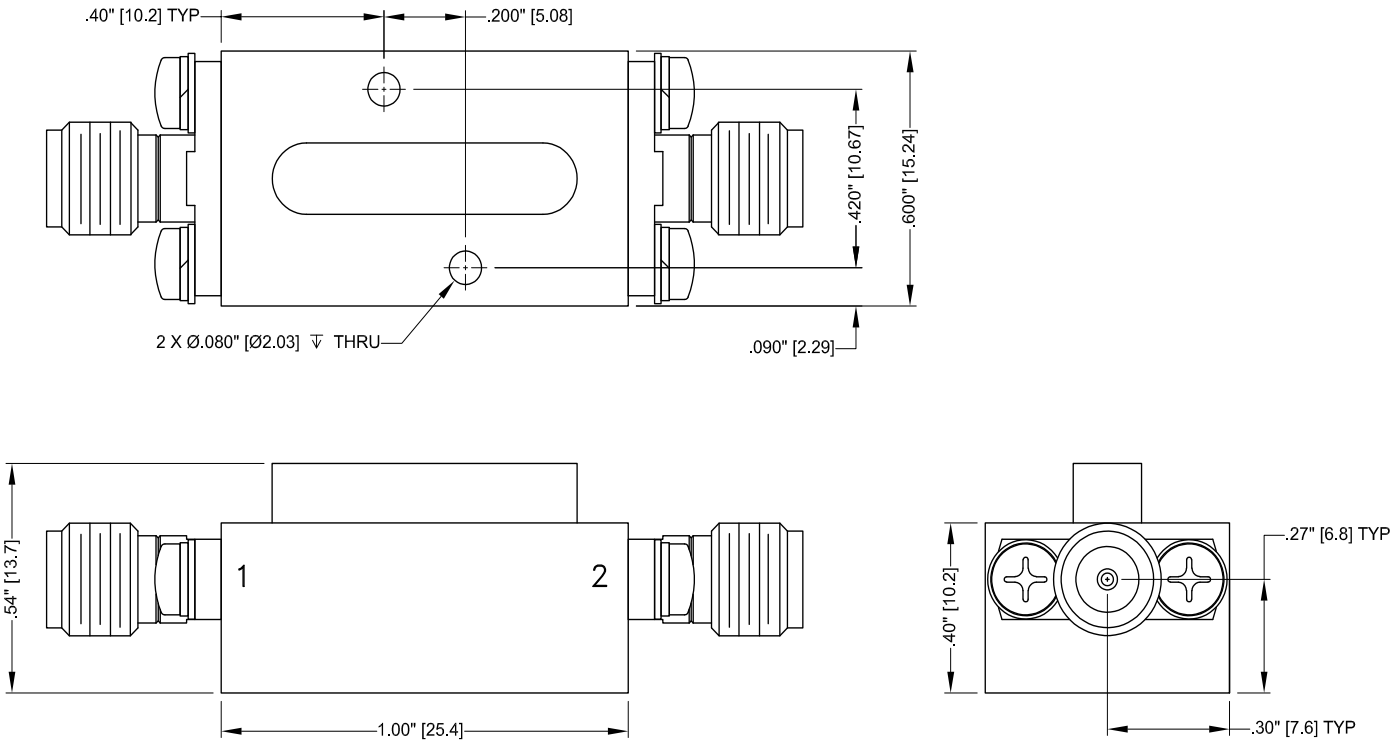
ZVBP-V48R5G+

50Ω 47 to 50 GHz 2.4mm Female

CONNECTOR DESCRIPTION

Function	Marking on Unit	Connector
RF1[1]	1	2.4mm Female
RF2[1]	2	2.4mm Female

CASE STYLE DRAWING



Unit Weight: 36 Grams.
Dimensions are in inches (mm). Tolerances: 2 Pl. ± .100; 3 Pl. ± .015

PRODUCT MARKING*: ZVBP-V48R5G+

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

CAVITY COAXIAL

Bandpass Filter

ZVBP-V48R5G+

50Ω 47 to 50 GHz 2.4mm 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	ZL3534
RoHS Status	Compliant
Environmental Ratings	ENV001

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-V48R5G+

Typical Performance Data

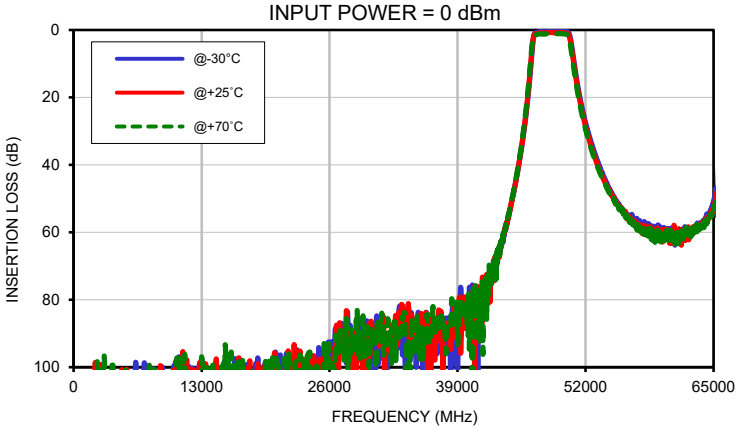
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C
100	108.40	116.61	117.59	0.01	0.03	0.04	0.01	0.03	0.03
200	120.58	123.06	114.67	0.04	0.05	0.06	0.03	0.04	0.05
400	110.75	122.39	103.42	0.07	0.09	0.10	0.06	0.08	0.09
800	106.71	106.65	102.41	0.09	0.13	0.15	0.09	0.12	0.14
1000	112.27	130.32	106.11	0.10	0.14	0.16	0.10	0.13	0.15
1500	110.51	117.80	108.71	0.11	0.16	0.19	0.11	0.15	0.18
2000	120.55	108.78	105.19	0.12	0.17	0.21	0.12	0.17	0.19
2400	102.43	113.38	98.36	0.12	0.18	0.22	0.12	0.17	0.20
3000	100.34	105.85	101.43	0.12	0.18	0.23	0.12	0.18	0.21
3500	114.34	103.43	112.17	0.11	0.18	0.23	0.11	0.18	0.21
4500	112.78	123.15	111.40	0.08	0.16	0.22	0.10	0.17	0.21
5500	101.57	104.10	101.41	0.05	0.14	0.19	0.07	0.15	0.20
9000	99.96	110.46	106.15	0.12	0.02	0.11	0.09	0.02	0.09
9500	108.08	101.87	110.87	0.14	0.00	0.10	0.12	0.00	0.08
10000	101.77	107.08	111.86	0.16	0.01	0.08	0.14	0.02	0.06
12000	107.39	108.91	121.03	0.11	0.06	0.04	0.19	0.07	0.01
13000	97.68	103.45	96.92	0.08	0.04	0.07	0.16	0.05	0.04
14500	115.81	97.71	106.82	0.47	0.07	0.20	0.03	0.07	0.18
15000	106.26	108.53	103.15	0.38	0.13	0.26	0.02	0.13	0.24
16000	108.62	101.98	95.72	0.12	0.27	0.41	0.16	0.28	0.40
17000	110.13	105.31	99.58	0.25	0.41	0.56	0.30	0.43	0.56
18500	98.92	112.02	102.25	0.44	0.58	0.73	0.43	0.61	0.73
20000	107.65	106.75	106.42	0.39	0.60	0.74	0.40	0.63	0.76
22000	100.94	101.87	102.23	0.06	0.37	0.53	0.12	0.39	0.53
22500	99.39	99.63	98.41	0.04	0.29	0.44	0.02	0.30	0.44
23000	100.43	95.43	96.38	0.14	0.20	0.36	0.06	0.20	0.35
23500	102.72	125.19	108.42	0.22	0.12	0.28	0.15	0.12	0.25
24000	105.34	99.65	95.61	0.30	0.03	0.20	0.24	0.03	0.16
25500	98.61	94.90	91.76	0.47	0.15	0.03	0.40	0.15	0.01
26000	99.53	100.41	108.57	0.45	0.16	0.04	0.41	0.16	0.00
26500	93.35	94.11	108.24	0.44	0.16	0.04	0.40	0.17	0.01
27000	93.67	87.30	91.78	0.41	0.14	0.08	0.37	0.14	0.05
28500	89.93	89.44	93.76	0.19	0.03	0.25	0.16	0.03	0.21
29000	85.75	90.60	91.67	0.10	0.11	0.32	0.07	0.10	0.29
29500	97.12	90.15	96.55	0.01	0.19	0.40	0.01	0.18	0.36
32000	94.48	95.63	87.51	0.16	0.46	0.69	0.17	0.41	0.60
32500	93.04	95.64	87.47	0.13	0.48	0.72	0.16	0.44	0.64
35000	83.70	89.63	92.95	0.07	0.49	0.73	0.10	0.46	0.68
38000	88.50	87.00	87.46	0.09	0.32	0.54	0.01	0.31	0.51
40000	83.39	84.40	87.37	0.34	0.15	0.43	0.23	0.17	0.44
42000	79.19	72.81	73.67	0.27	0.08	0.37	0.20	0.09	0.36
43000	67.69	67.28	68.28	0.14	0.14	0.41	0.08	0.13	0.37
43500	62.31	62.45	62.38	0.05	0.21	0.47	0.00	0.18	0.42
43800	59.64	58.85	59.36	0.04	0.28	0.54	0.04	0.23	0.44
46500	8.59	7.41	6.34	1.31	2.50	3.46	1.45	2.46	3.40
46900	0.81	1.13	1.43	24.76	21.98	21.89	16.55	19.37	19.33
47000	0.77	1.09	1.38	16.71	18.93	19.58	15.20	18.07	18.60
48500	0.35	0.75	1.08	24.50	21.89	20.88	23.73	21.37	20.31
49000	0.51	0.85	1.15	16.55	19.61	21.55	15.96	18.85	20.59
50000	0.49	0.87	1.22	17.74	18.49	18.47	22.90	32.92	34.97
50500	3.06	4.01	5.28	3.74	3.40	3.11	3.53	3.21	2.84
52000	27.53	28.67	29.50	0.53	1.08	1.39	0.68	1.05	1.30
51450	20.41	21.45	22.51	0.71	1.13	1.45	0.67	0.96	1.24
52250	30.19	31.39	32.16	0.47	1.04	1.35	0.65	1.03	1.30
56000	54.17	54.49	55.16	0.67	0.04	0.38	0.35	0.14	0.43
57000	56.48	57.74	57.95	0.52	0.02	0.30	0.03	0.13	0.29
60000	60.72	59.70	59.59	0.11	0.43	0.84	0.07	0.43	0.81
62000	60.15	59.38	60.70	0.12	0.58	0.99	0.22	0.41	0.73
63000	59.17	58.24	58.95	0.09	0.50	0.84	0.23	0.30	0.60
65000	50.74	52.62	53.17	0.08	0.50	0.81	0.28	0.13	0.43

Typical Performance Data

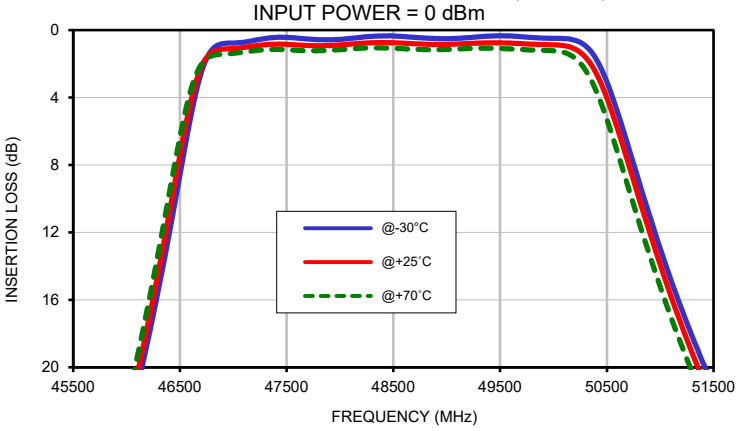
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-30°C	@+25°C	@+70°C
47000	0.66	0.63	0.61
47100	0.60	0.59	0.57
47200	0.57	0.56	0.55
47300	0.55	0.54	0.53
47400	0.53	0.52	0.51
47500	0.51	0.50	0.49
47600	0.49	0.48	0.48
47700	0.47	0.47	0.46
47800	0.46	0.45	0.45
47900	0.45	0.45	0.45
48000	0.44	0.44	0.44
48100	0.44	0.44	0.44
48150	0.44	0.44	0.44
48200	0.44	0.44	0.44
48250	0.44	0.44	0.44
48300	0.44	0.44	0.44
48350	0.44	0.44	0.43
48400	0.44	0.43	0.43
48450	0.44	0.43	0.43
48500	0.44	0.43	0.43
48550	0.43	0.43	0.43
48600	0.43	0.43	0.42
48650	0.43	0.42	0.42
48700	0.42	0.42	0.42
48750	0.42	0.42	0.42
48800	0.42	0.42	0.42
48850	0.42	0.42	0.42
48900	0.42	0.42	0.42
48950	0.42	0.42	0.42
49000	0.42	0.42	0.42
49100	0.42	0.42	0.42
49150	0.42	0.42	0.43
49200	0.42	0.43	0.43
49250	0.43	0.43	0.43
49300	0.43	0.43	0.44
49350	0.44	0.44	0.44
49400	0.44	0.44	0.44
49450	0.44	0.44	0.45
49500	0.45	0.45	0.45
49700	0.46	0.46	0.46
50000	0.51	0.52	0.54

Typical Performance Curves

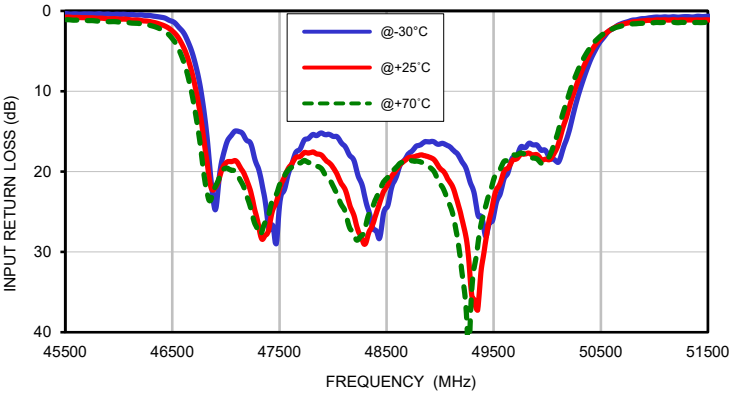
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



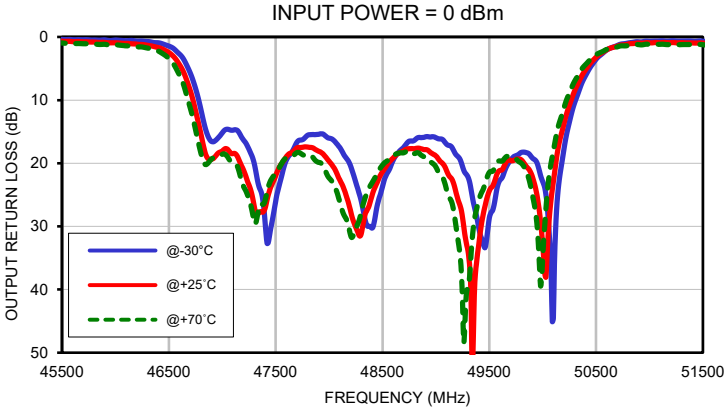
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



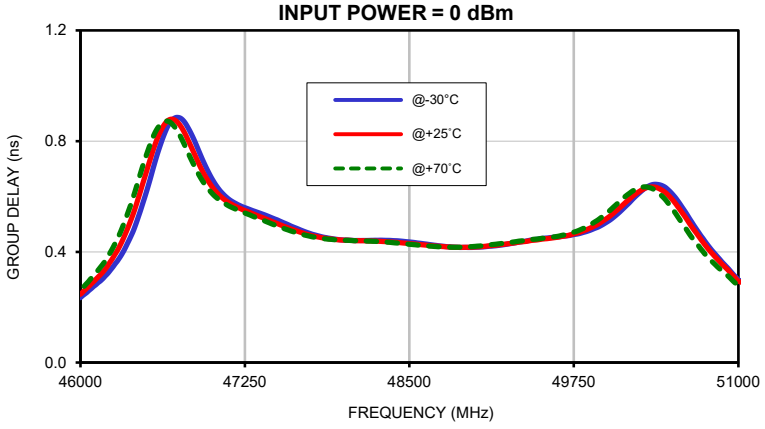
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



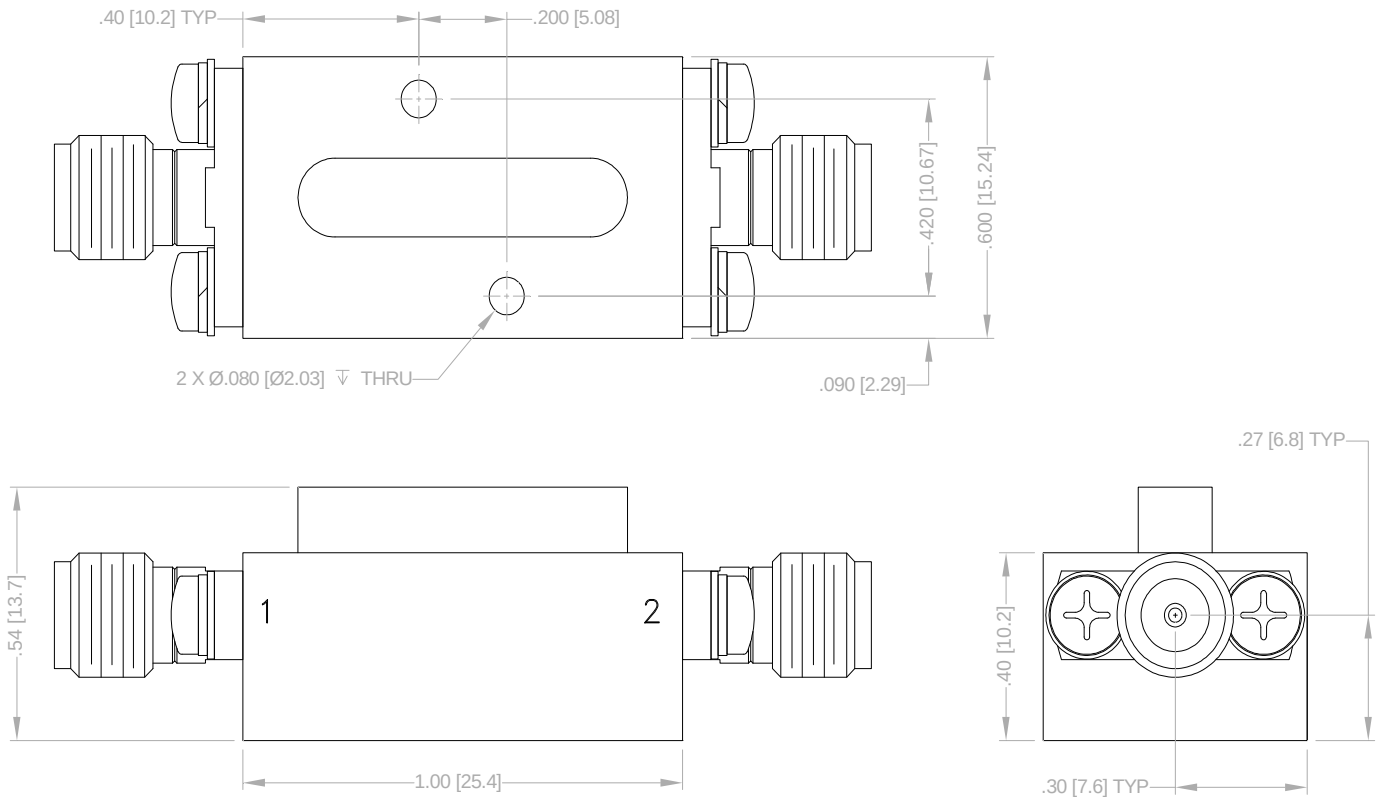
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style ZL

Outline Dimensions

ZL3534



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

Notes:

1. Case material: Brass.
2. Case Finish: Powder coated.
3. Unit Weight: 36 Grams.
4. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits®
ISO 9001 ISO 14001 CERTIFIED
ALL NEW minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com
RF/IF MICROWAVE COMPONENTS

This document and its contents are the property of Mini-Circuits

Mini-Circuits

Environmental Specifications ENV001

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	-40° to 85° C Ambient Temperature	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet

This document and its contents are the property of Mini-Circuits.