CAVITY COAXIAL

Bandpass Filter

ZVBP-V40R5G+

50Ω 37 to 44 GHz 2.4mm Female

KEY FEATURES

- Low Insertion Loss, 0.7dB Typ.
- Good Return Loss, 14dB Typ.
- High Rejection, 80dB Typ.
- Power Handling: 2.5W
- Stopband Up to 59GHz

Generic photo used for illustration purposes only

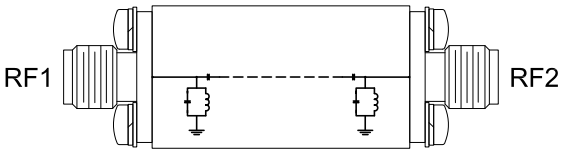
APPLICATIONS

- 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	—	—	40.5	—	GHz
	1dB Bandwidth	—	—	7	—	—	GHz
	Insertion Loss	Fc	40.5	—	0.7	1.2	dB
	Return Loss	F1-F2	37 - 44	—	14	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 22	75	89	—	dB
		F3-F4	22 - 30	65	75	—	
Stop Band, Upper	Rejection	F5-F6	51 - 59	40	47	—	dB

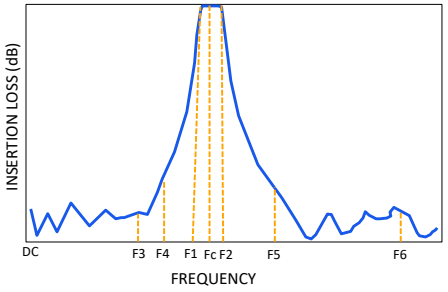
1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
2. Data measured after calibrating using 1.85mm cal kit.

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-019638
ZVBP-V40R5G+
EDU4655
URJ
231219

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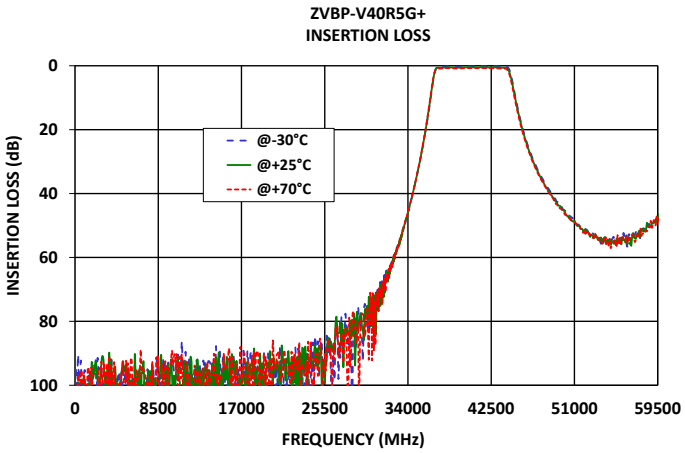
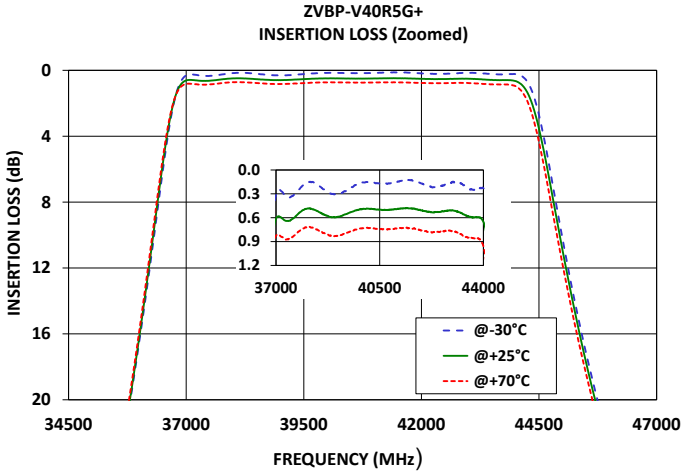
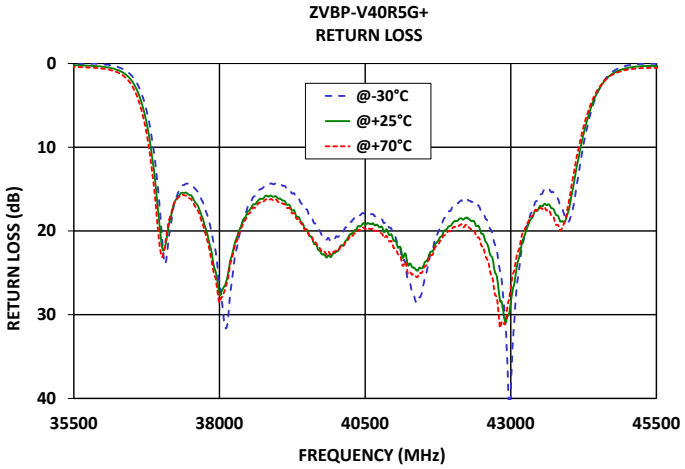
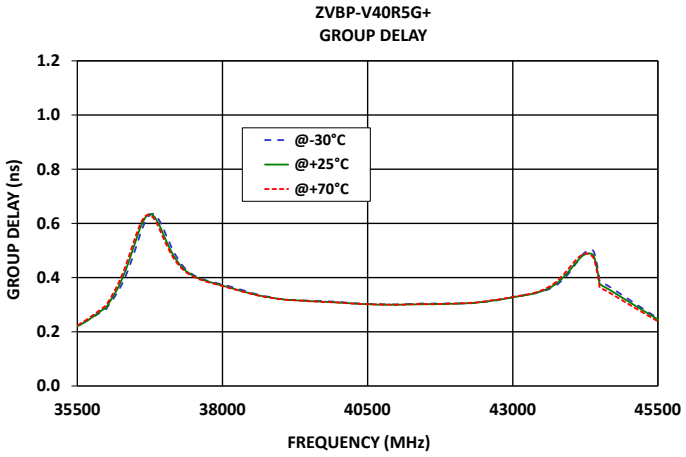
TYPICAL PERFORMANCE GRAPHS









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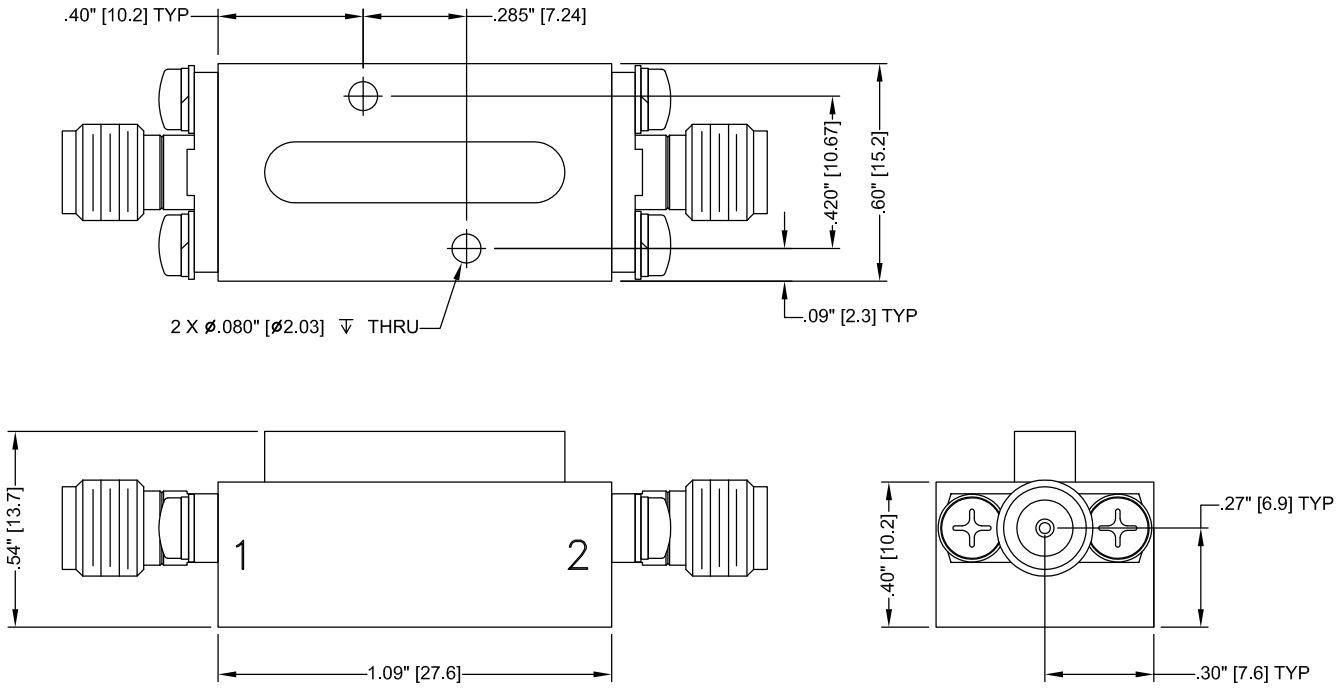
50Ω 37 to 44 GHz 2.4mm Female

CONNECTOR DESCRIPTION

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

CASE STYLE DRAWING



Unit Weight: 40 Grams.
Dimensions are in inches (mm). Tolerances: 2 Pl. + .100; 3 Pl. + .015

PRODUCT MARKING*: ZVBP-V40R5G+

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

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Bandpass Filter

ZVBP-V40R5G+

50Ω 37 to 44 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	ZL3533
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-V40R5G+

Typical Performance Data

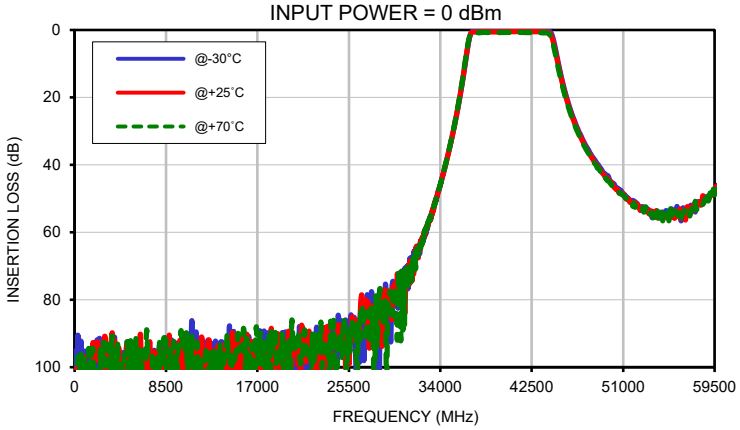
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C
100	95.15	100.92	105.10	0.02	0.05	0.05	0.01	0.03	0.04
200	108.61	108.94	104.90	0.05	0.08	0.08	0.03	0.05	0.05
400	100.06	101.74	97.91	0.08	0.09	0.10	0.07	0.08	0.09
800	99.08	105.17	111.52	0.10	0.13	0.14	0.10	0.13	0.14
1000	95.39	103.62	99.41	0.10	0.14	0.16	0.11	0.14	0.16
1500	96.63	114.68	100.44	0.11	0.16	0.18	0.12	0.16	0.18
2000	97.17	94.91	103.79	0.12	0.17	0.19	0.12	0.17	0.20
2400	95.16	97.30	95.11	0.12	0.17	0.20	0.11	0.17	0.20
3000	94.73	96.36	93.16	0.11	0.17	0.20	0.11	0.17	0.21
3500	108.99	89.78	90.72	0.10	0.16	0.20	0.10	0.16	0.20
4500	95.72	104.37	110.09	0.07	0.14	0.18	0.08	0.14	0.19
5500	102.37	95.90	101.68	0.02	0.11	0.15	0.05	0.12	0.16
9000	91.86	96.59	103.52	0.11	0.01	0.08	0.12	0.00	0.09
9500	93.08	93.54	102.85	0.12	0.00	0.07	0.13	0.01	0.08
10000	93.96	103.79	93.63	0.13	0.01	0.07	0.14	0.01	0.07
12000	99.10	109.22	107.12	0.06	0.05	0.13	0.03	0.04	0.13
13000	96.46	95.84	94.81	0.03	0.14	0.22	0.06	0.12	0.22
14500	118.54	102.78	103.75	0.19	0.32	0.42	0.18	0.29	0.41
15000	97.82	96.49	95.11	0.25	0.39	0.49	0.22	0.36	0.48
16000	103.52	90.63	91.33	0.33	0.50	0.62	0.31	0.48	0.61
17000	97.84	100.38	97.10	0.36	0.56	0.67	0.35	0.54	0.66
18500	99.33	95.26	90.25	0.25	0.47	0.58	0.29	0.50	0.62
20000	91.53	96.45	116.54	0.00	0.22	0.33	0.03	0.27	0.39
21000	95.56	102.50	99.03	0.21	0.02	0.14	0.21	0.07	0.19
22000	94.30	97.53	112.54	0.37	0.14	0.01	0.38	0.10	0.04
23000	93.06	90.33	100.01	0.44	0.22	0.07	0.44	0.20	0.04
23500	105.67	87.88	96.75	0.45	0.22	0.07	0.42	0.22	0.05
24000	109.69	91.67	92.22	0.42	0.21	0.05	0.39	0.20	0.04
25500	92.92	99.31	90.27	0.19	0.01	0.15	0.16	0.02	0.16
26000	85.31	88.56	90.55	0.09	0.09	0.25	0.04	0.07	0.29
26500	98.53	88.61	91.97	0.01	0.19	0.36	0.02	0.17	0.35
27000	86.82	83.50	87.53	0.11	0.29	0.46	0.13	0.26	0.48
28500	79.22	77.78	82.15	0.27	0.49	0.67	0.28	0.49	0.67
29000	80.08	81.14	105.71	0.28	0.53	0.70	0.33	0.53	0.74
29500	76.41	85.69	79.80	0.26	0.53	0.70	0.26	0.54	0.71
30000	76.19	72.30	92.01	0.24	0.52	0.70	0.28	0.56	0.76
32500	60.52	60.50	60.27	0.04	0.37	0.55	0.00	0.40	0.57
35100	31.60	31.61	31.34	0.12	0.17	0.36	0.15	0.15	0.35
35800	20.26	20.07	19.74	0.02	0.27	0.48	0.03	0.25	0.46
36660	3.13	2.89	2.73	3.54	4.63	5.54	3.69	4.87	5.78
37000	0.32	0.61	0.83	19.53	21.21	22.86	19.32	21.74	21.91
37500	0.34	0.63	0.86	14.38	15.71	16.13	14.58	15.73	16.41
38000	0.17	0.49	0.72	26.32	27.66	28.56	29.80	33.55	33.36
39000	0.31	0.60	0.83	14.45	16.10	16.49	13.62	15.06	15.30
40000	0.16	0.49	0.73	20.67	22.52	22.33	21.58	23.08	22.92
40500	0.17	0.50	0.74	18.00	19.27	19.77	20.18	21.68	22.58
44000	0.23	0.65	0.96	18.81	17.37	16.38	32.11	23.45	19.13
45000	10.23	10.92	11.78	0.23	0.53	0.73	0.37	0.57	0.75
47000	30.82	31.52	31.91	0.39	0.66	0.88	0.50	0.70	1.11
49000	41.48	42.19	42.36	0.40	0.91	1.19	0.33	0.89	1.18
51000	48.50	48.47	49.09	0.08	0.47	0.73	0.13	0.43	0.72
52000	50.70	51.55	51.29	0.30	0.18	0.41	0.32	0.18	0.47
53000	53.17	53.91	53.75	0.44	0.02	0.20	0.49	0.01	0.26
54000	54.18	54.60	53.94	0.52	0.11	0.13	0.54	0.08	0.21
55000	53.54	55.33	55.65	0.46	0.05	0.23	0.36	0.03	0.33
56000	52.32	54.29	54.55	0.41	0.04	0.35	0.21	0.10	0.42
56500	53.05	53.82	54.61	0.14	0.15	0.41	0.01	0.15	0.59
57000	53.45	52.37	53.00	0.16	0.25	0.55	0.03	0.27	0.48
58000	50.93	51.80	52.42	0.05	0.44	0.77	0.14	0.44	0.77
59000	49.74	49.32	49.82	0.15	0.56	0.89	0.18	0.56	0.94

Typical Performance Data

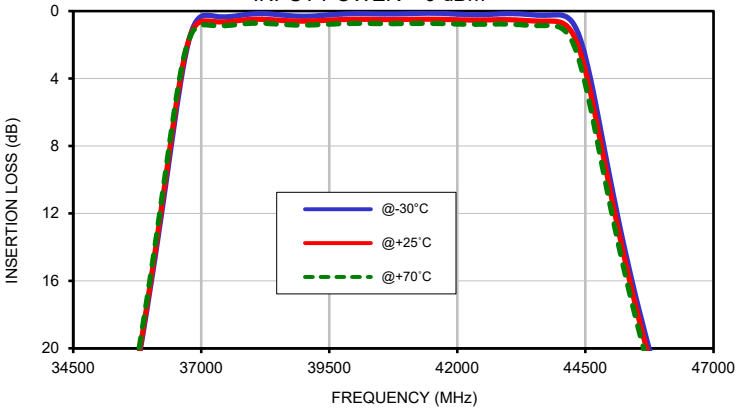
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-30°C	@+25°C	@+70°C
37000	0.57	0.55	0.54
37100	0.52	0.50	0.49
37200	0.48	0.47	0.46
37300	0.45	0.44	0.43
37400	0.42	0.42	0.42
37500	0.41	0.41	0.40
37600	0.40	0.40	0.39
37700	0.39	0.39	0.39
37800	0.38	0.38	0.38
37900	0.38	0.38	0.37
38000	0.37	0.37	0.37
38100	0.37	0.36	0.36
38200	0.36	0.36	0.36
38400	0.35	0.35	0.35
38600	0.34	0.34	0.33
38800	0.33	0.33	0.33
39000	0.32	0.32	0.32
39200	0.32	0.32	0.32
39400	0.32	0.31	0.31
39600	0.31	0.31	0.31
39800	0.31	0.31	0.31
40000	0.31	0.31	0.31
40100	0.31	0.31	0.31
40400	0.30	0.30	0.30
40500	0.30	0.30	0.30
40800	0.30	0.30	0.30
41000	0.30	0.30	0.30
41100	0.30	0.30	0.30
41300	0.30	0.30	0.30
41600	0.30	0.30	0.30
41900	0.30	0.30	0.30
42000	0.30	0.30	0.30
42200	0.30	0.31	0.31
42600	0.31	0.31	0.32
43000	0.33	0.33	0.33
43100	0.33	0.33	0.33
43500	0.35	0.35	0.35
43600	0.36	0.36	0.36
43800	0.38	0.39	0.40
43900	0.40	0.41	0.42
44000	0.43	0.43	0.44

Typical Performance Curves

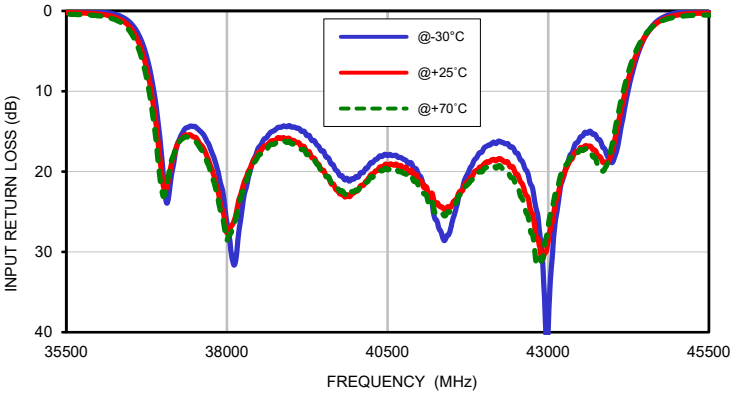
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



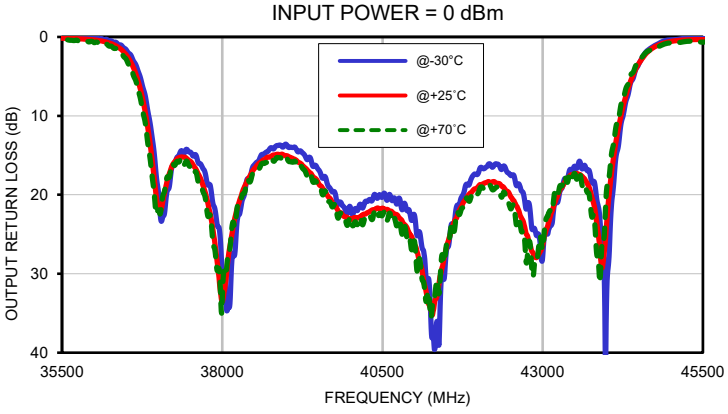
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



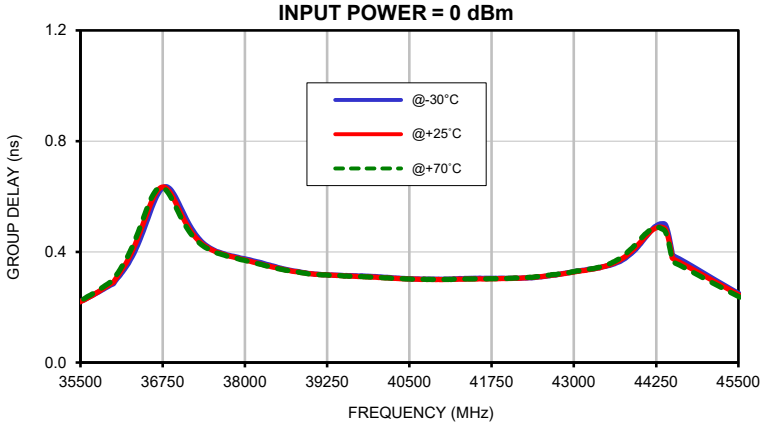
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



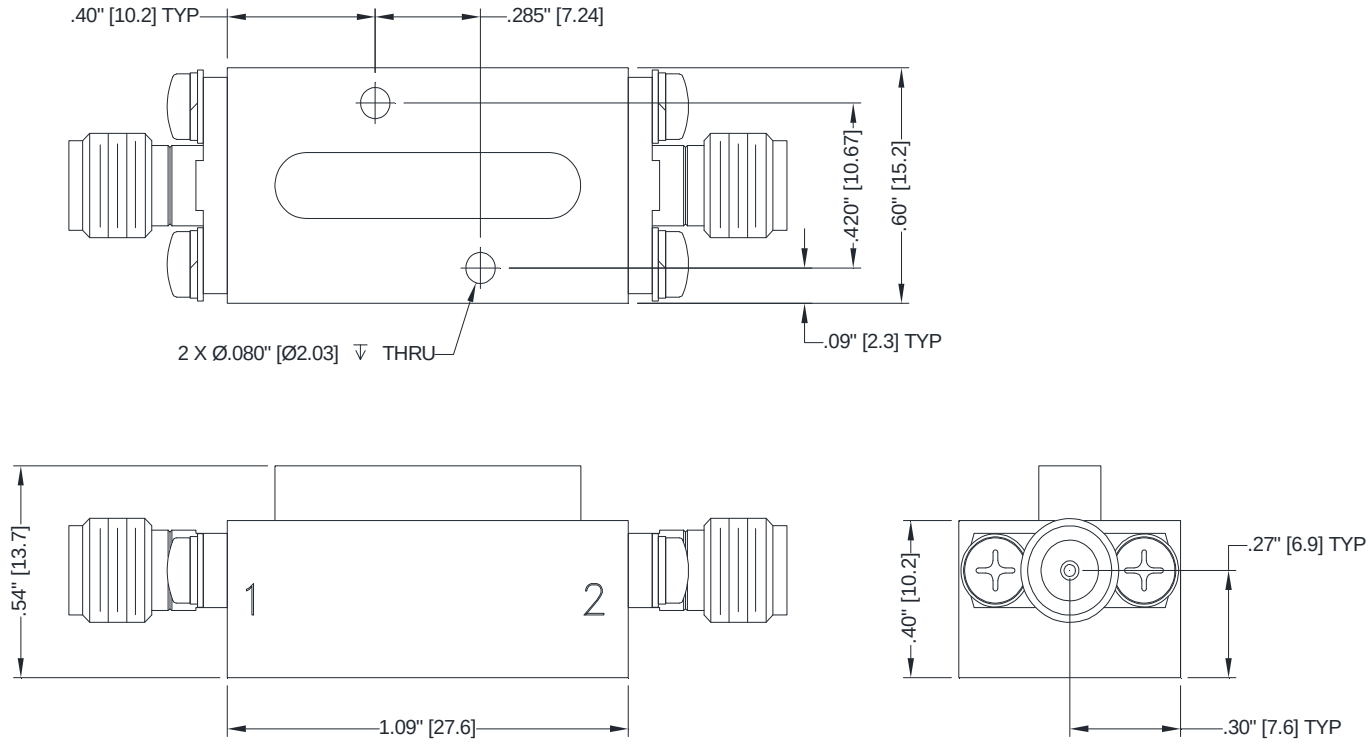
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style ZL

Outline Dimensions

ZL3533



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: 40 Grams.
4. Refer to the individual model data sheet for the type of connectors available.

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