CAVITY COAXIAL

Bandpass Filter

ZVBP-40600-K1+

50Ω 37.7 to 43.5 GHz 2.92mm Female

KEY FEATURES

- Low Insertion Loss, 1.8dB Typ.
- Good Return Loss, 18dB Typ.
- High Rejection, 90dB Typ.
- Power Handling: 2.5W.
- Stopband up to 55GHz.

APPLICATIONS

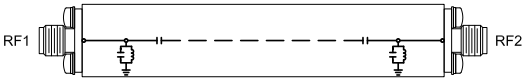
- 5G bands n259 and n260.

Generic photo used for illustration purposes only

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	—	—	—	40.6	—	GHz
	Insertion Loss	F1-F2	37.7 - 43.5	—	1.8	3	dB
	Return Loss	F1-F2	37.7 - 43.5	15	18	—	dB
Stop Band, Lower	Rejection	DC-F3	DC - 36.6	70	88	—	dB
Stop Band, Upper	Rejection	F4-F5	44.6 - 55	70	79	—	dB

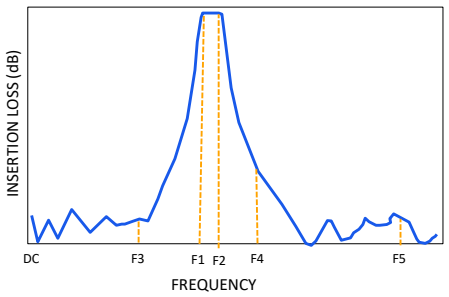
1. This filter is bi-directional RF1 and RF2 ports may be interchanged, see S-Parameters for actual performance.
2. Data measured after calibrating using 2.92mm cal kit.

ABSOLUTE MAXIMUM RATINGS[2,3]

Parameter	Ratings
Operating Temperature	-30°C to +70°C
Storage Temperature	-30°C to +70°C
Input Power[4]	2.5W 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-019871
ZVBP-40600-K1+
EDU4349
URJ
231219

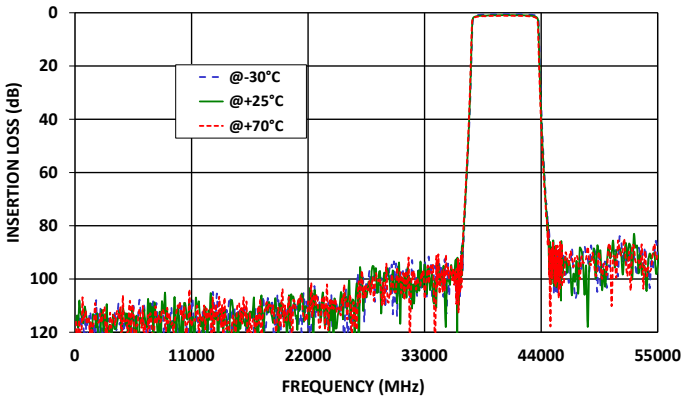
Bandpass Filter

ZVBP-40600-K1+

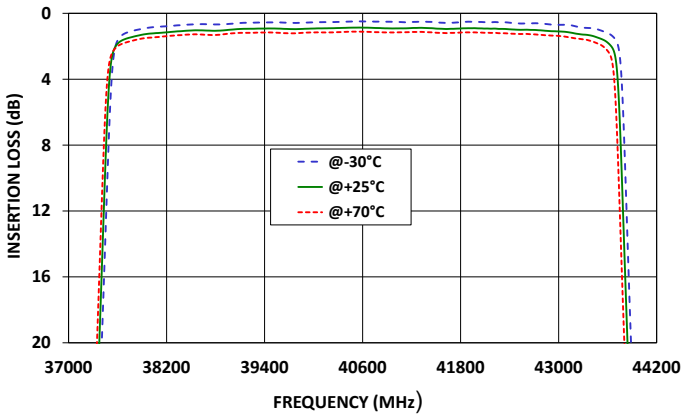
50Ω 37.7 to 43.5 GHz 2.92mm Female

TYPICAL PERFORMANCE GRAPHS

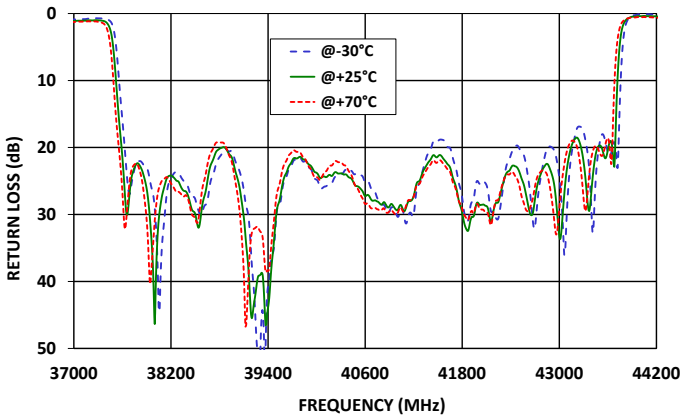
ZVBP-40600-K1+
INSERTION LOSS



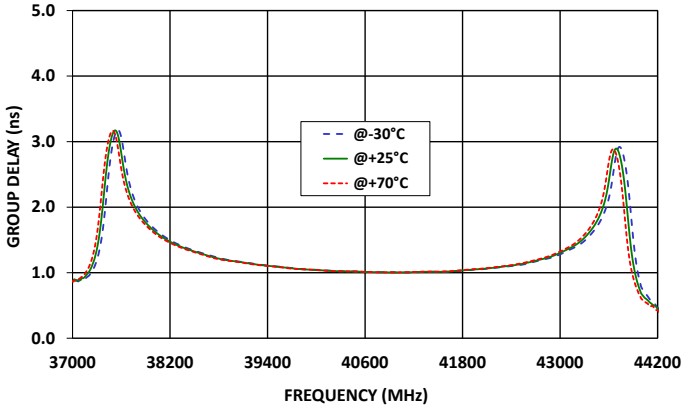
ZVB-40600-K1+
INSERTION LOSS (Zoomed)



ZVBP-40600-K1+
RETURN LOSS



ZVBP-40600-K1+
GROUP DELAY



Bandpass Filter

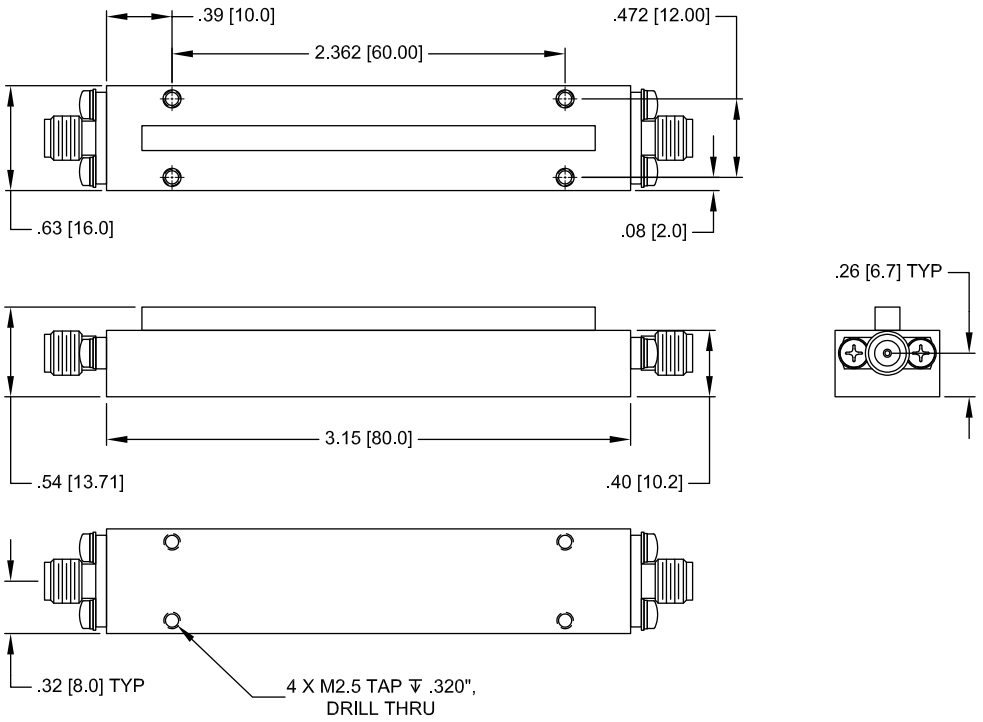
ZVBP-40600-K1+

50Ω 37.7 to 43.5 GHz 2.92mm Female

CONNECTOR DESCRIPTION

Function	Marking on Unit	Connector
RF1[1]	1	2.92mm Female
RF2[1]	2	2.92mm Female

CASE STYLE DRAWING



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

PRODUCT MARKING*: ZVBP-40600-K1+

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

Bandpass Filter

ZVBP-40600-K1+

50Ω 37.7 to 43.5 GHz 2.92mm 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	ZT3578
RoHS Status	Compliant
Environmental Ratings	ENV77T1

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-40600-K1+

Typical Performance Data

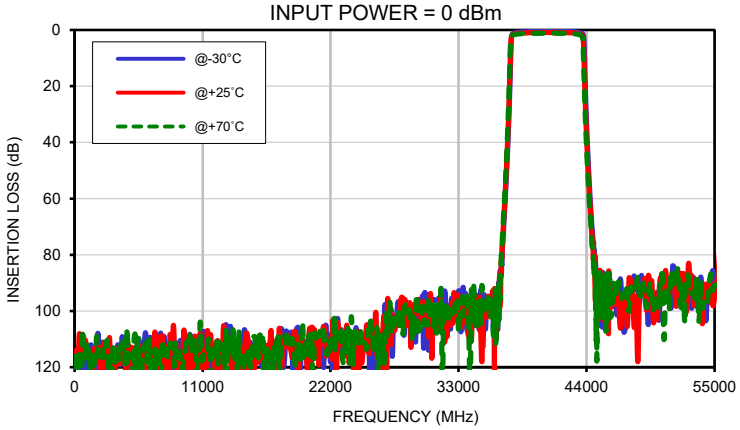
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C	@-30°C	@+25°C	@+70°C
100	120.62	115.70	116.05	0.01	0.02	0.02	0.01	0.02	0.03
200	123.62	113.76	134.63	0.03	0.04	0.04	0.03	0.04	0.05
400	124.89	108.21	115.44	0.05	0.06	0.07	0.05	0.07	0.08
800	118.07	116.48	115.37	0.06	0.08	0.09	0.06	0.10	0.12
1000	112.17	111.93	111.88	0.06	0.08	0.09	0.07	0.11	0.13
1500	114.31	123.51	115.75	0.05	0.08	0.10	0.07	0.12	0.15
2000	107.93	118.25	115.17	0.05	0.08	0.10	0.07	0.14	0.16
2400	111.25	121.15	112.91	0.04	0.08	0.10	0.06	0.14	0.16
3000	124.00	109.42	116.43	0.03	0.07	0.09	0.07	0.13	0.17
3500	118.59	118.83	116.63	0.01	0.06	0.08	0.08	0.10	0.17
4500	114.12	110.41	107.01	0.00	0.05	0.08	0.00	0.07	0.14
5500	110.31	114.20	109.83	0.01	0.07	0.10	0.01	0.09	0.15
9000	113.91	115.81	115.55	0.08	0.15	0.20	0.04	0.21	0.28
9500	114.66	120.49	113.68	0.07	0.14	0.19	0.02	0.19	0.26
11000	111.36	115.70	117.71	0.00	0.08	0.13	0.02	0.12	0.24
12000	112.47	114.72	116.09	0.07	0.03	0.09	0.10	0.09	0.23
13000	104.99	117.16	106.85	0.10	0.02	0.08	0.16	0.06	0.21
14500	109.95	130.23	116.06	0.03	0.07	0.13	0.16	0.05	0.16
15000	115.24	116.57	114.38	0.00	0.11	0.17	0.11	0.10	0.22
16000	111.63	116.54	112.46	0.09	0.20	0.27	0.03	0.20	0.33
17000	113.02	122.39	121.26	0.15	0.27	0.34	0.06	0.28	0.40
18500	112.63	112.72	109.93	0.14	0.27	0.35	0.04	0.27	0.42
20000	119.36	120.75	115.54	0.02	0.15	0.23	0.10	0.16	0.31
22000	118.23	111.07	108.51	0.14	0.02	0.06	0.26	0.00	0.15
22500	117.16	122.90	107.05	0.18	0.04	0.05	0.30	0.01	0.16
23000	109.78	112.31	116.15	0.21	0.04	0.06	0.33	0.02	0.17
23500	113.11	111.04	106.28	0.20	0.01	0.09	0.33	0.00	0.19
24000	108.71	121.04	111.97	0.16	0.03	0.13	0.28	0.03	0.22
25500	111.07	105.97	108.22	0.01	0.19	0.28	0.07	0.19	0.37
26000	119.16	116.30	106.09	0.07	0.24	0.34	0.02	0.25	0.43
26500	112.80	106.37	110.56	0.12	0.30	0.39	0.01	0.31	0.50
27000	105.46	99.36	100.92	0.17	0.34	0.44	0.04	0.35	0.55
27500	101.72	106.97	102.68	0.20	0.38	0.48	0.07	0.40	0.59
28500	104.74	105.15	99.55	0.23	0.41	0.52	0.09	0.41	0.60
29000	99.88	103.39	109.67	0.22	0.40	0.51	0.07	0.38	0.58
29500	95.95	95.92	108.25	0.16	0.35	0.46	0.01	0.35	0.55
30000	113.28	96.76	101.48	0.11	0.30	0.41	0.05	0.30	0.51
31000	98.37	107.04	98.01	0.02	0.18	0.29	0.17	0.19	0.39
32000	99.09	109.23	96.90	0.11	0.08	0.19	0.22	0.12	0.32
33000	92.88	94.60	107.32	0.13	0.08	0.19	0.24	0.13	0.35
34000	95.13	100.60	128.42	0.07	0.19	0.32	0.20	0.20	0.44
36600	97.01	87.03	87.23	0.44	0.78	1.01	0.12	0.54	0.79
37700	1.20	1.55	1.77	26.49	25.55	24.08	29.06	25.36	24.39
40000	0.55	0.92	1.16	24.81	23.79	24.43	20.08	19.70	20.94
40600	0.49	0.87	1.12	25.19	27.24	28.43	45.25	45.91	34.22
42000	0.51	0.91	1.16	25.19	28.34	28.74	26.61	28.69	32.16
43000	0.70	1.10	1.37	24.58	33.23	29.08	21.05	26.49	29.49
43500	1.01	1.51	1.88	19.19	19.70	20.86	19.68	21.56	25.28
43760	3.21	7.99	13.68	9.44	3.27	1.66	9.89	3.67	2.09
43890	20.52	26.09	30.74	0.35	0.50	0.59	0.43	0.75	0.93
43970	30.50	35.19	39.11	0.14	0.38	0.53	0.10	0.52	0.77
44600	75.60	79.14	84.38	0.30	0.58	0.75	0.19	0.57	0.89
48100	87.56	105.94	93.55	0.23	0.14	0.37	0.47	0.15	0.43
49000	88.75	88.72	94.47	1.66	1.87	1.92	0.61	0.01	0.39
50200	103.33	94.27	98.52	0.21	0.11	0.29	0.84	1.28	1.47
50500	95.49	92.13	86.79	0.32	0.02	0.21	0.13	0.65	0.90
52000	95.20	86.43	94.28	0.17	0.23	0.46	0.32	0.40	0.79
53200	88.43	97.91	93.03	1.81	6.47	9.98	0.00	0.66	0.94
54400	92.07	92.50	95.98	0.21	0.15	0.30	0.42	0.26	0.51
55000	91.74	95.18	90.81	0.90	0.46	0.28	0.35	0.17	0.30

Typical Performance Data

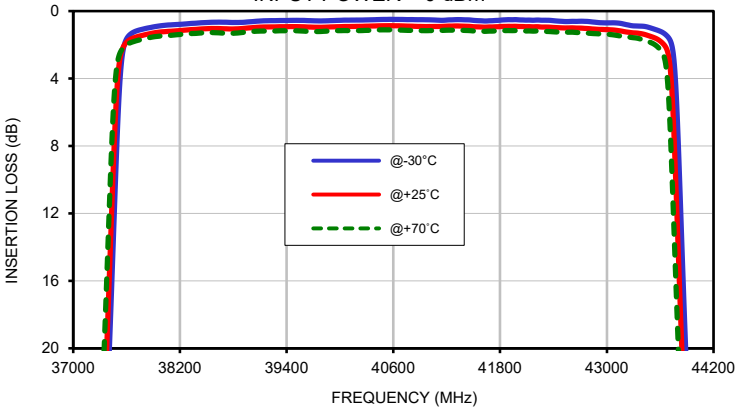
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-30°C	@+25°C	@+70°C
37700	2.36	2.22	2.11
37800	2.01	1.93	1.88
37900	1.81	1.76	1.72
38000	1.68	1.64	1.61
38100	1.58	1.55	1.52
39200	1.14	1.14	1.13
39300	1.12	1.12	1.11
39400	1.11	1.11	1.10
39500	1.10	1.09	1.09
39600	1.08	1.08	1.08
39700	1.07	1.07	1.06
39800	1.06	1.05	1.05
39900	1.05	1.05	1.05
40000	1.04	1.04	1.04
40100	1.04	1.03	1.03
40200	1.03	1.03	1.02
40300	1.02	1.02	1.02
40400	1.02	1.02	1.02
40500	1.02	1.02	1.02
40600	1.01	1.01	1.01
40700	1.01	1.01	1.01
40800	1.01	1.01	1.01
40900	1.01	1.00	1.00
41000	1.00	1.00	1.00
41100	1.00	1.00	1.01
41200	1.00	1.01	1.01
41300	1.01	1.01	1.01
41400	1.01	1.01	1.02
41500	1.01	1.01	1.02
41600	1.01	1.02	1.02
41700	1.02	1.02	1.03
42000	1.05	1.05	1.06
42500	1.12	1.13	1.14
42700	1.17	1.18	1.19
42900	1.23	1.25	1.27
43000	1.28	1.30	1.32
43100	1.34	1.36	1.39
43200	1.40	1.43	1.47
43300	1.49	1.53	1.58
43400	1.62	1.68	1.75
43500	1.80	1.91	2.03

Typical Performance Curves

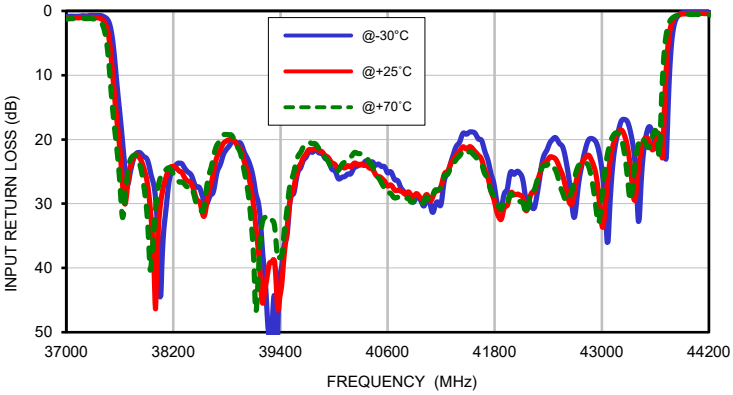
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



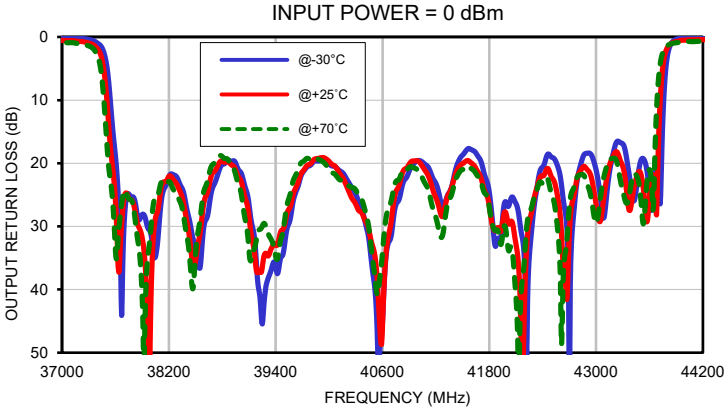
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



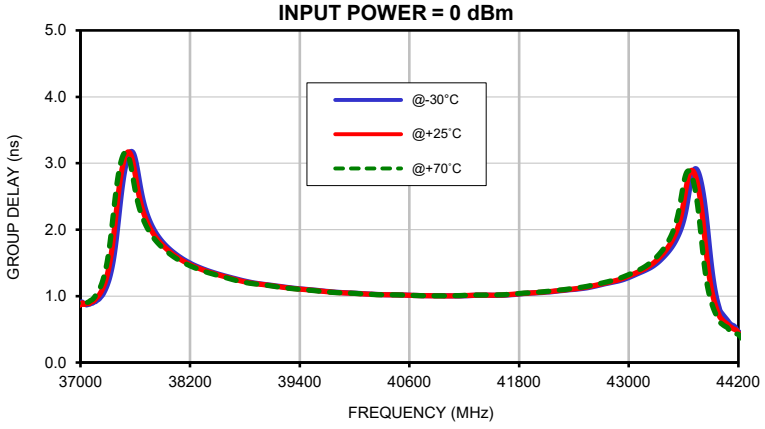
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



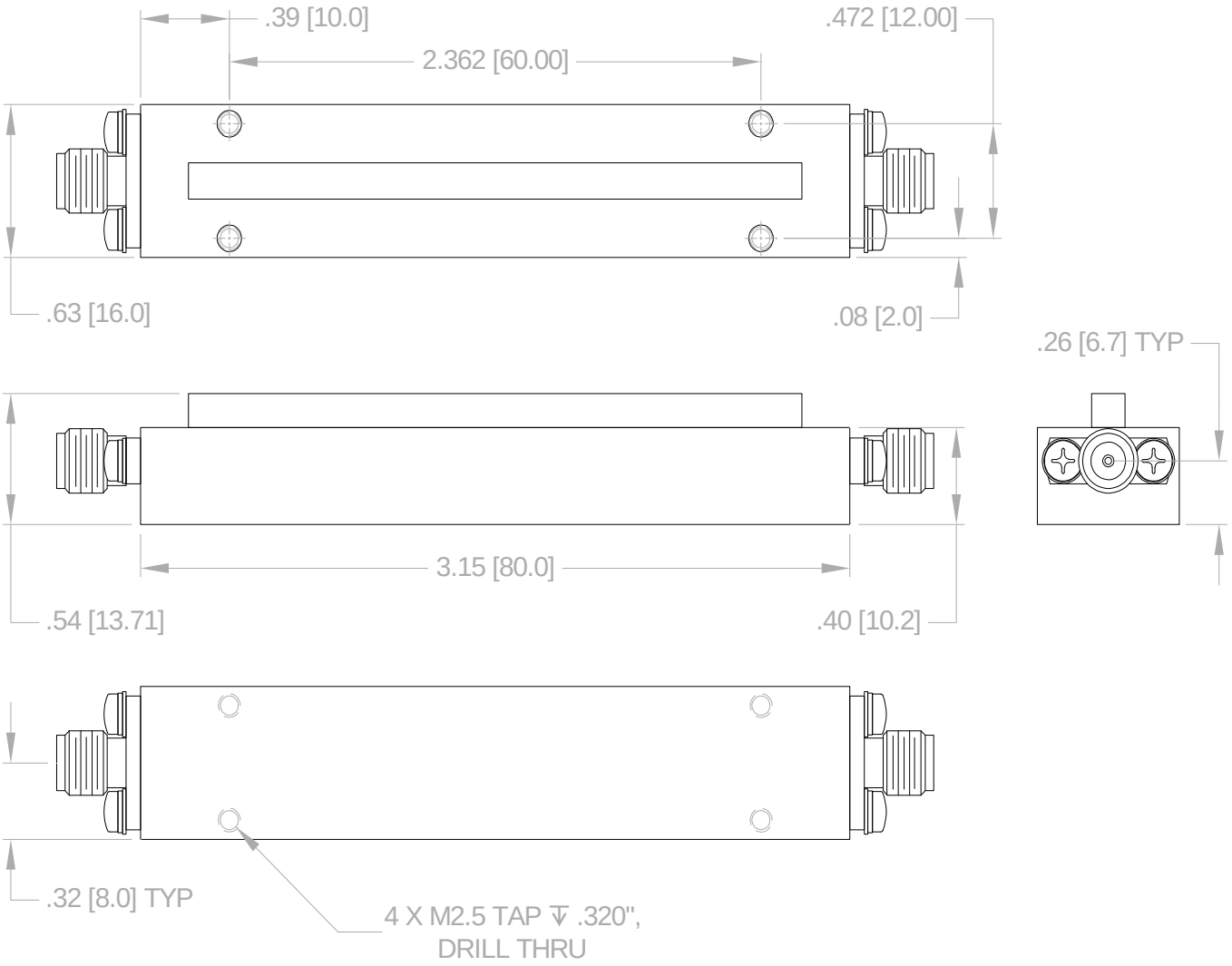
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style ZT

Outline Dimensions

ZT3578



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

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RF/IF MICROWAVE COMPONENTS

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Mini-Circuits

Environmental Specifications ENV77T1

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	-30° to 70°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-30° to 70° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C

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