Cavity

Bandpass Filters

50Ω DC to 27.125 GHz

The Big Deal

- Very low insertion loss with excellent power handling
- Very fast roll-off with wide stopband
- Passbands up to 27.125 GHz
- Stopbands up to 37 GHz

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 1% 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.

Mini-Circuits' 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. Excellent repeatability across units is achieved through precise tuning and process control.

Key Features

Feature	Advantages
Low insertion loss	Low signal loss results in better SNR in receiver front end and better power delivery to antenna in transmitter
Fast roll-off	Higher selectivity results in better adjacent channel rejection and dynamic range
Wide stopband	Wide spur free band results in better receiver sensitivity
High power handling	Well suited for transmitter application
Protective assembly	Prevents accidental de-tuning of precisely tuned resonant circuit

Cavity

Bandpass Filter

ZVBP-11R375G-S+

50Ω 11125 to 11625 MHz

Generic photo used for illustration purposes only

CASE STYLE: WJ3318

Connectors	Model
SMA-F	ZVBP-11R375G-S+

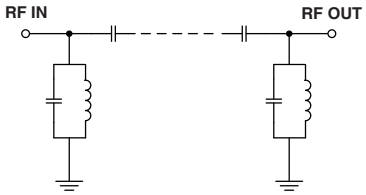
Features

- Low insertion loss,0.7 dB typ.
- Good VSWR, 1.2:1 typ.
- High rejection, 60 dB typ.

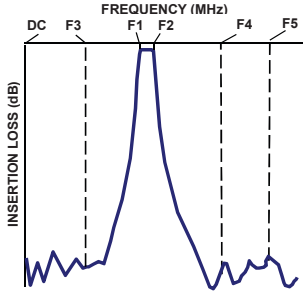
Applications

- Satellite communication
- Mobile communication

Functional Schematic



Typical Frequency Response



+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
	Center Frequency	Fc	-	-	11375	-	MHz
Pass Band	Insertion Loss	F1-F2	11125 - 11625	-	0.7	1.2	dB
	VSWR	F1-F2	11125 - 11625	-	1.2	1.4	:1
Stop Band, Lower	Insertion Loss	DC-F3	DC - 10250	55	62	-	dB
Stop Band, Upper	Insertion Loss	F4-F5	12500 - 20000	52	58	-	dB

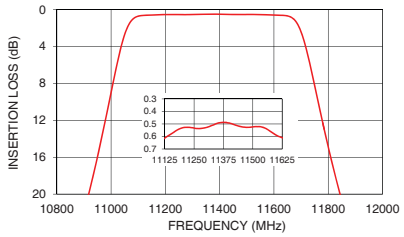
Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	10W max. @ 25°C

Permanent damage may occur if any of these limits are exceeded.

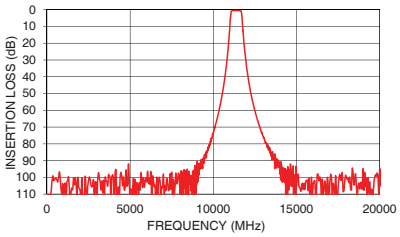
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
100	110.09	1313.06	11125	2.77
500	100.58	173.72	11150	2.49
1000	112.09	137.21	11175	2.32
5000	114.39	111.35	11200	2.20
10250	63.97	111.70	11225	2.12
10820	30.16	71.16	11250	2.05
10910	20.87	48.72	11275	2.00
11045	3.16	3.87	11300	1.96
11125	0.61	1.08	11325	1.94
11200	0.53	1.02	11350	1.93
11375	0.49	1.02	11375	1.93
11400	0.49	1.07	11400	1.93
11625	0.61	1.11	11425	1.93
11710	3.29	4.05	11450	1.94
11850	20.72	44.64	11475	1.97
11950	30.24	64.89	11500	2.01
12500	60.40	88.81	11525	2.07
15000	105.23	84.32	11600	2.37
18000	100.10	101.75	11620	2.55
20000	94.85	118.15	11625	2.60

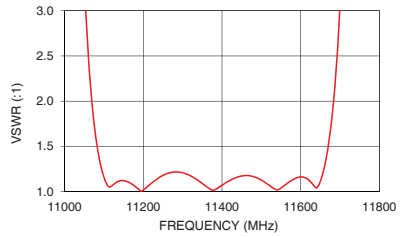
ZVBP-11R375G-S+
INSERTION LOSS (Zoomed)



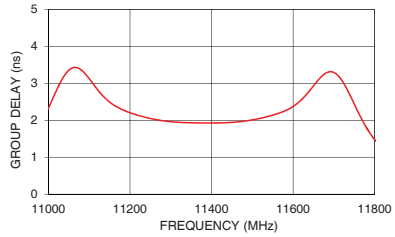
ZVBP-11R375G-S+
INSERTION LOSS



ZVBP-11R375G-S+
VSWR



ZVBP-11R375G-S+
GROUP DELAY



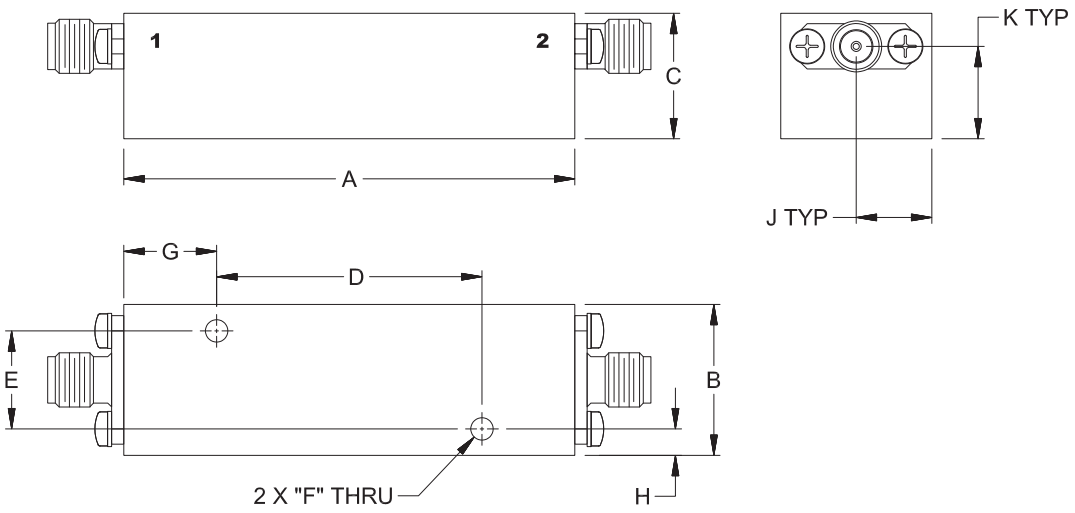
Notes

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-Circuit's 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/MCLStore/terms.jsp

Coaxial Connections

PORT-1	SMA-Female
PORT-2	SMA-Female

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F
2.21	**.74**	**.62**	**1.300**	**.480**	**.110**
56.1	18.8	15.6	33.02	12.19	2.79
G	H	J	K		Wt.
.46	**.13**	**.37**	**.45**		grams
11.6	3.3	9.4	11.5		46

Note: Please refer to case style drawing for details

Cavity Bandpass Filter ZVBP-11R375G-S+

Typical Performance Data

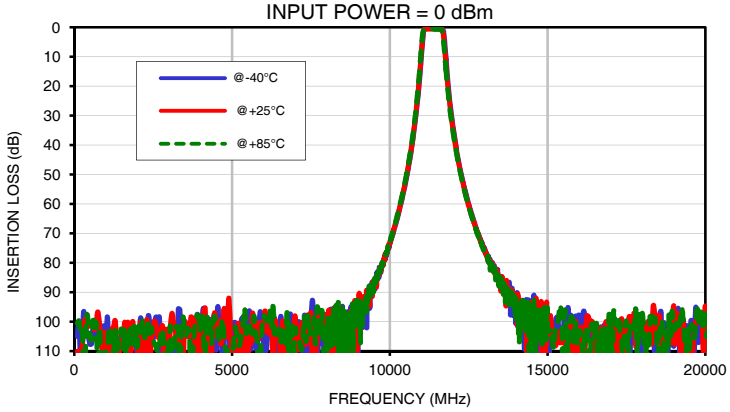
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
100	105.03	110.09	100.49	0.01	0.01	0.02	0.00	0.00	0.01
200	112.78	110.60	103.50	0.04	0.05	0.06	0.03	0.03	0.04
500	107.71	100.58	105.40	0.08	0.10	0.11	0.08	0.10	0.11
1000	109.81	112.09	109.31	0.10	0.13	0.14	0.10	0.13	0.15
1500	104.26	106.31	102.70	0.08	0.11	0.13	0.07	0.10	0.13
2000	115.27	108.04	108.64	0.05	0.09	0.12	0.03	0.07	0.10
2500	105.95	101.84	105.82	0.02	0.07	0.11	0.01	0.04	0.08
3000	108.11	114.15	107.13	0.00	0.06	0.11	0.02	0.03	0.09
3500	104.97	99.98	103.17	0.00	0.06	0.12	0.02	0.05	0.12
4000	106.32	101.05	103.39	0.01	0.09	0.15	0.00	0.08	0.15
4500	109.66	100.20	101.87	0.04	0.12	0.19	0.02	0.10	0.17
5000	100.66	114.39	114.33	0.08	0.16	0.22	0.05	0.13	0.20
5500	105.85	114.08	101.02	0.11	0.19	0.25	0.09	0.16	0.23
6000	107.04	102.56	98.04	0.15	0.22	0.28	0.12	0.19	0.26
6500	104.85	104.79	102.56	0.17	0.23	0.29	0.14	0.21	0.27
6800	103.38	102.76	110.00	0.16	0.24	0.29	0.15	0.22	0.27
7000	108.03	98.11	102.40	0.16	0.24	0.28	0.15	0.21	0.27
8000	97.51	109.27	105.40	0.15	0.22	0.25	0.11	0.18	0.22
10000	73.88	73.43	73.11	0.06	0.15	0.22	0.05	0.14	0.23
10200	66.63	66.20	65.50	0.05	0.16	0.23	0.04	0.13	0.22
10250	64.44	63.97	63.65	0.04	0.16	0.24	0.05	0.14	0.25
10500	52.89	52.36	51.76	0.02	0.15	0.25	0.05	0.15	0.28
10520	51.80	51.26	50.66	0.03	0.16	0.26	0.04	0.15	0.27
10820	30.97	30.16	29.17	0.10	0.24	0.39	0.06	0.20	0.36
10910	21.95	20.87	19.62	0.18	0.36	0.55	0.15	0.32	0.51
11000	10.42	8.98	7.43	0.80	1.26	1.86	0.80	1.24	1.85
11045	4.24	3.16	2.22	3.02	4.59	6.89	3.01	4.57	6.90
11125	0.48	0.61	0.73	30.66	28.16	22.06	31.04	29.48	22.77
11130	0.47	0.61	0.73	33.17	26.62	21.69	34.28	27.39	22.29
11135	0.46	0.60	0.72	32.57	25.63	21.57	33.28	26.09	22.05
11200	0.39	0.53	0.64	36.54	41.83	42.68	32.09	32.53	34.58
11375	0.34	0.49	0.60	37.26	42.25	36.95	47.66	40.64	45.87
11390	0.35	0.49	0.60	29.98	33.71	35.78	31.26	33.24	37.55
11400	0.35	0.49	0.61	26.35	29.33	31.69	26.88	28.96	32.16
11500	0.40	0.52	0.63	20.26	24.47	32.10	19.98	23.61	29.28
11600	0.43	0.59	0.72	21.50	22.49	25.63	21.39	22.50	25.94
11625	0.46	0.61	0.76	20.61	25.66	30.83	20.66	26.42	32.80
11700	1.29	2.41	3.97	9.03	5.92	3.82	9.04	5.82	3.77
11710	1.89	3.29	5.07	6.62	4.38	2.89	6.60	4.29	2.83
11760	7.62	9.59	11.52	1.42	1.14	0.93	1.39	1.09	0.90
11850	19.28	20.72	22.04	0.31	0.39	0.42	0.26	0.33	0.37
11900	24.60	25.80	26.88	0.21	0.31	0.36	0.18	0.26	0.33
11950	29.24	30.24	31.17	0.15	0.27	0.33	0.13	0.22	0.29
12000	33.38	34.22	35.04	0.12	0.24	0.31	0.11	0.20	0.29
12500	59.96	60.40	60.60	0.06	0.20	0.31	0.04	0.16	0.29
13000	74.89	75.69	76.09	0.05	0.20	0.33	0.03	0.18	0.34
13200	80.25	80.14	79.74	0.05	0.21	0.36	0.04	0.19	0.36
13500	86.10	85.92	89.16	0.02	0.19	0.35	0.03	0.19	0.37
14000	100.73	97.90	96.80	0.04	0.22	0.39	0.03	0.19	0.38
15000	105.28	105.23	101.44	0.02	0.21	0.37	0.03	0.20	0.40
15200	104.03	105.83	109.07	0.05	0.22	0.40	0.03	0.20	0.40
16000	97.76	104.24	103.46	0.04	0.21	0.38	0.03	0.19	0.39
16500	102.95	113.57	105.77	0.02	0.20	0.36	0.00	0.17	0.36
17000	103.02	104.03	98.53	0.03	0.21	0.35	0.01	0.15	0.33
17500	115.89	106.74	99.85	0.03	0.19	0.33	0.02	0.13	0.30
18000	102.17	100.10	97.21	0.03	0.17	0.30	0.02	0.13	0.28
18050	102.22	101.17	103.40	0.04	0.17	0.30	0.01	0.13	0.28
19000	108.37	94.64	102.84	0.03	0.17	0.27	0.00	0.13	0.24
19050	102.12	107.71	102.28	0.02	0.16	0.27	0.00	0.12	0.24
20000	101.63	94.85	96.22	0.00	0.15	0.23	0.02	0.13	0.24

Typical Performance Data

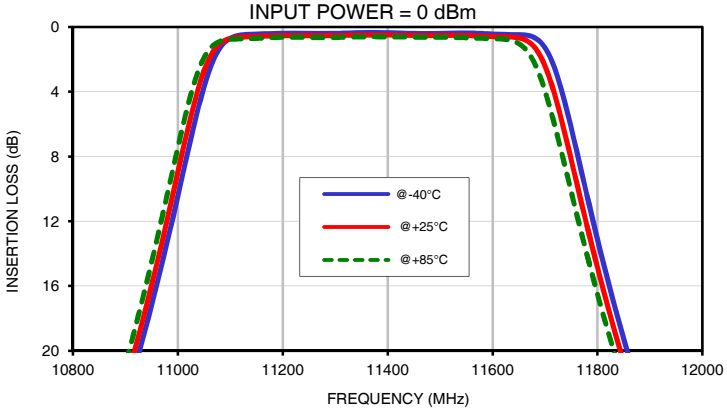
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-40°C	@+25°C	@+85°C
11125	2.93	2.77	2.61
11130	2.86	2.70	2.56
11135	2.79	2.64	2.51
11140	2.73	2.59	2.47
11145	2.67	2.54	2.43
11150	2.61	2.49	2.39
11155	2.56	2.45	2.36
11160	2.51	2.41	2.33
11165	2.47	2.38	2.30
11170	2.43	2.35	2.28
11175	2.39	2.32	2.26
11180	2.36	2.29	2.24
11185	2.33	2.27	2.22
11190	2.30	2.25	2.20
11195	2.28	2.22	2.18
11200	2.25	2.20	2.16
11210	2.21	2.17	2.13
11220	2.17	2.13	2.10
11230	2.14	2.10	2.07
11240	2.10	2.07	2.05
11250	2.07	2.05	2.02
11260	2.05	2.03	2.00
11270	2.03	2.00	1.99
11280	2.01	1.99	1.97
11290	1.99	1.97	1.96
11300	1.98	1.96	1.95
11310	1.96	1.95	1.94
11375	1.93	1.93	1.93
11400	1.93	1.93	1.93
11410	1.92	1.93	1.93
11420	1.92	1.93	1.94
11430	1.92	1.93	1.94
11440	1.92	1.94	1.95
11450	1.93	1.94	1.96
11460	1.93	1.95	1.97
11470	1.94	1.96	1.99
11480	1.95	1.98	2.00
11490	1.97	1.99	2.02
11500	1.98	2.01	2.04
11600	2.29	2.37	2.50
11625	2.46	2.60	2.78

Typical Performance Curves

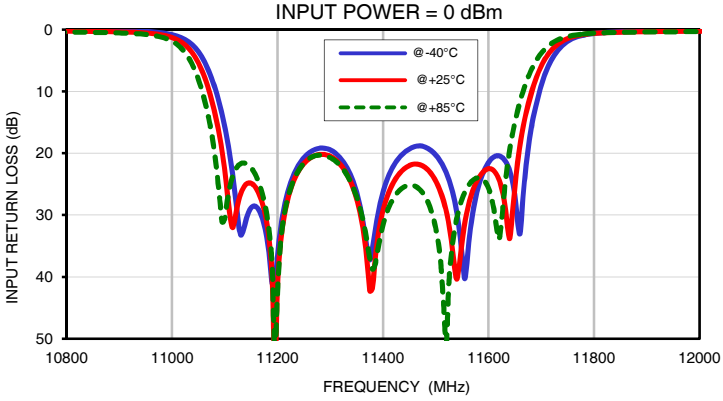
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



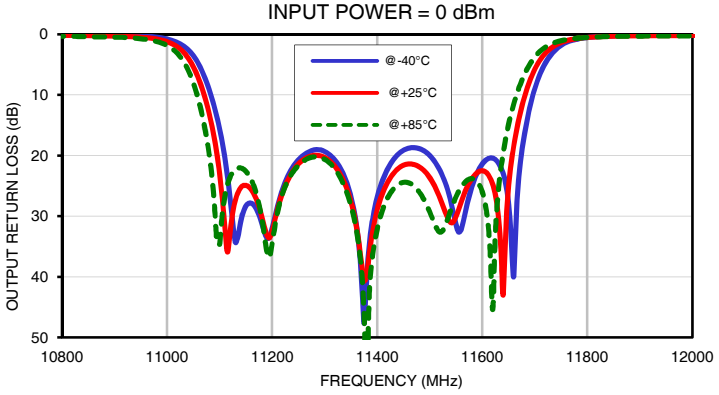
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



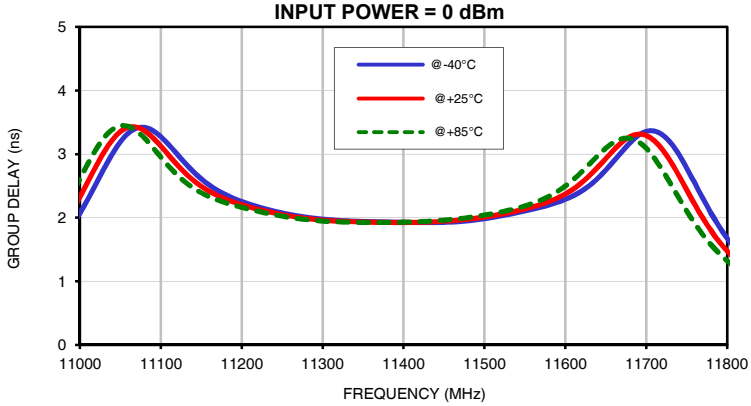
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



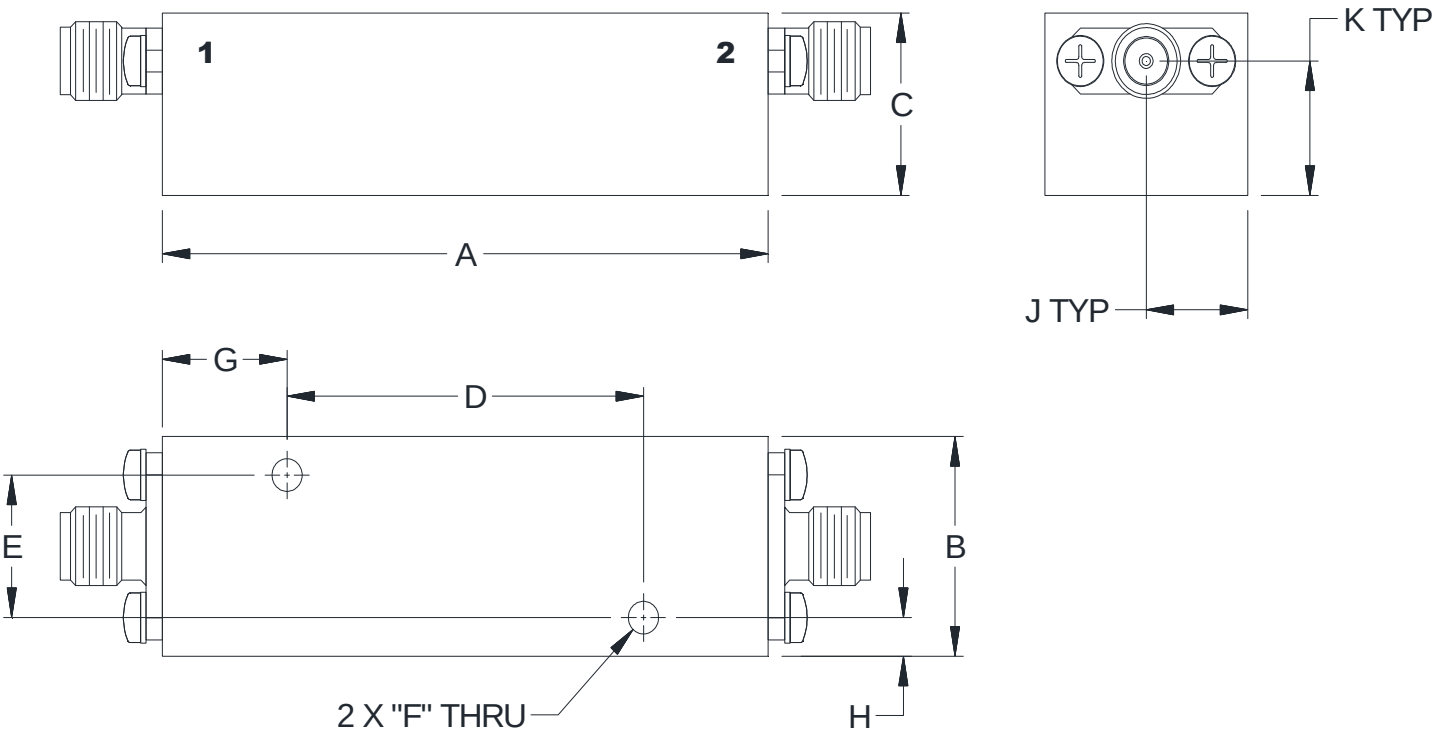
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style WJ

Outline Dimensions

WJ3318



CASE#	A	B	C	D	E	F
WJ3318	2.21 (56.1)	.74 (18.8)	.62 (15.6)	1.300 (33.02)	.480 (12.19)	.110 (2.79)

CASE#	G	H	J	K	WT. GRAMS
WJ3318	.46 (11.6)	.13 (3.3)	.37 (9.4)	.45 (11.5)	46

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

Notes:

1. Case material: Aluminum.
2. Case Finish: Powder coated over silver plating.
3. 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