Coaxial

Band Stop Filter

ZBSF-95+

50Ω 88 to 105 MHz

CASE STYLE: CC1524

The Big Deal

- High rejection
- Stopband (88 to 105 MHz)
- High power, 15 W
- Connectorized package

Product Overview

The ZBSF-95+ is band stop filter built into a rugged connectorized package (size of 2.0"x 2.0" x 1.3"). Covering 88 to 105 MHz stop band, this units offer good rejection. It has repeatable performance across production lots and consistent performance across temperature. Useful in Radio broadcast systems to minimize spurious signal and avoid system jamming.

Key Features

Feature	Advantages
High rejection	ZBSF-95+ enables the filter to attenuate spurious signals and reject harmonics for broadband of frequencies.
High power, 15 W	Suitable for high power application and lab test equipment
Connectorized package	Connectorized package reduce interference with and from the surrounding components.

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Band Stop Filter

ZBSF-95+

50Ω 88 to 105 MHz

CASE STYLE: CC1524

Connectors	Model
N M/F	ZBSF-95-N+

Features

- High rejection
- Fast roll-off
- Connectorized package

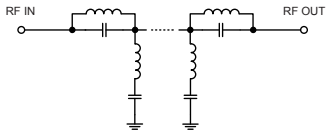
Applications

- FM radio
- Receivers / Transmitters
- Lab use

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band, Lower	Insertion Loss	DC-F1	DC - 60	-	0.4	1.0	dB
	VSWR	DC-F1	DC - 60	-	1.4	2.1	:1
Stop Band	Rejection	F4-F5	88 - 105	30	38	-	dB
	VSWR	F4-F5	88 - 105	-	48	-	:1
Pass Band, Upper	Insertion Loss	F2-F3	125 -1000	-	0.6	1.5	dB
	VSWR	F2-F3	125 -1000	-	1.6	2.1	:1

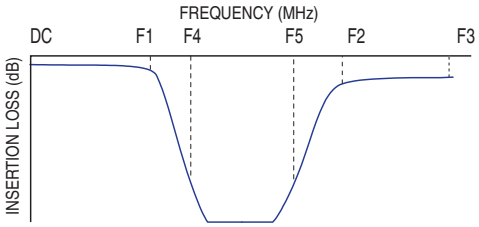
Functional Schematic



Maximum Ratings	
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	15 W max.

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

Typical Frequency Response

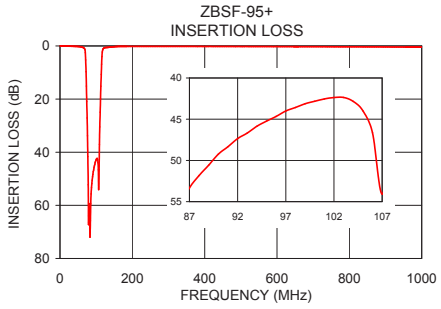


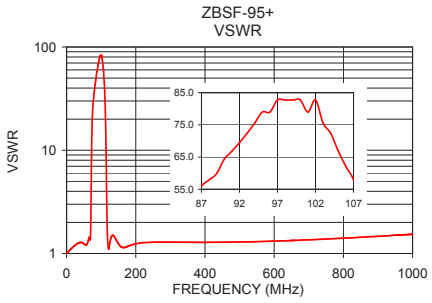
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
1	0.01	1.01
30	0.12	1.24
50	0.21	1.24
60	0.39	1.25
71	5.27	4.25
72	9.71	8.51
75	27.10	22.87
85	59.40	49.64
88	51.83	57.91
95	45.23	78.97
105	43.98	66.82
107	54.08	57.91
112	19.90	23.49
115	6.88	6.05
119	1.15	1.28
125	0.62	1.25
150	0.27	1.24
650	0.27	1.34
960	0.43	1.51
1000	0.46	1.54

+RoHS Compliant

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





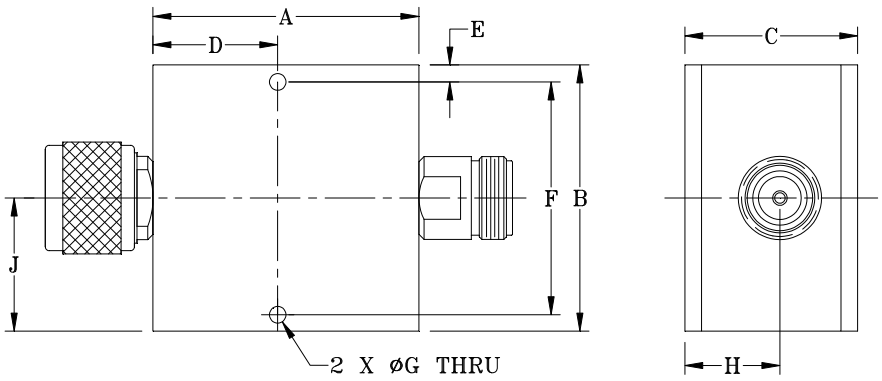
Notes

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

INPUT	N-Male
OUTPUT	N-Female

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	wt
2.000	2.000	1.300	0.938	0.125	1.750	0.125	0.715	1.000	grams
(50.80)	(50.80)	(33.02)	(23.83)	(3.18)	(44.45)	(3.18)	(18.16)	(25.4)	183.6

Band Stop Filter ZBSF-95+

Typical Performance Data

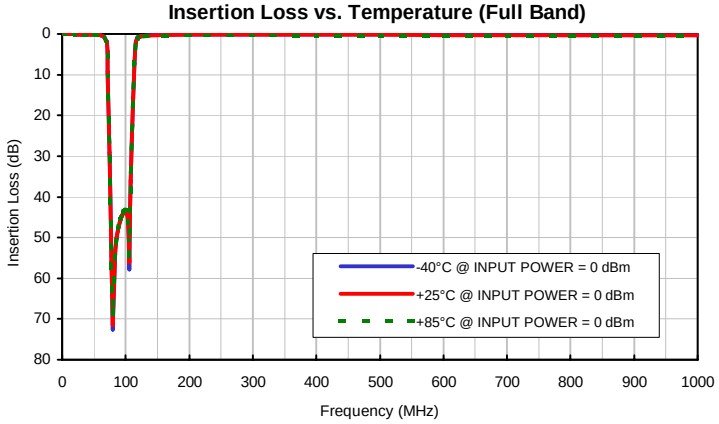
FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
1.0	0.01	0.01	0.01	46.86	46.10	45.58	46.91	46.19	45.61
5.0	0.02	0.02	0.02	34.10	33.44	32.91	34.11	33.41	32.89
10.0	0.05	0.05	0.05	28.33	27.77	27.28	28.31	27.74	27.25
15.0	0.05	0.06	0.06	24.97	24.54	24.10	24.95	24.49	24.07
20.0	0.06	0.07	0.08	22.64	22.32	22.02	22.60	22.28	21.99
25.0	0.09	0.10	0.10	20.92	20.77	20.57	20.88	20.73	20.55
30.0	0.11	0.12	0.12	19.68	19.71	19.69	19.66	19.67	19.68
35.0	0.13	0.14	0.14	18.94	19.17	19.38	18.89	19.10	19.34
40.0	0.15	0.16	0.16	18.81	19.27	19.79	18.76	19.21	19.74
45.0	0.15	0.16	0.16	19.61	20.37	21.33	19.54	20.30	21.28
50.0	0.17	0.18	0.20	22.21	23.52	25.33	22.12	23.47	25.31
55.0	0.20	0.23	0.25	29.86	32.38	34.38	30.06	33.45	37.03
60.0	0.30	0.35	0.37	26.27	25.31	24.16	27.38	26.06	24.60
65.0	0.58	0.66	0.70	17.14	17.12	16.97	17.33	17.21	16.97
70.0	1.81	2.06	2.28	11.06	10.66	10.18	13.68	13.11	12.31
71.0	4.28	4.71	5.15	4.71	4.55	4.33	5.40	5.21	4.91
72.0	9.22	9.76	10.31	1.94	1.95	1.93	2.14	2.15	2.09
74.0	22.14	22.66	23.21	0.74	0.80	0.83	0.72	0.78	0.81
75.0	29.10	29.62	30.21	0.61	0.66	0.69	0.56	0.62	0.65
76.0	36.54	37.04	37.64	0.53	0.58	0.61	0.46	0.52	0.55
78.0	54.60	55.92	56.53	0.44	0.48	0.50	0.37	0.42	0.44
80.0	72.63	71.59	69.57	0.38	0.41	0.43	0.30	0.35	0.38
84.0	53.29	53.27	52.95	0.30	0.33	0.35	0.24	0.28	0.31
85.0	51.72	51.47	51.34	0.29	0.32	0.34	0.23	0.27	0.30
86.0	50.22	49.99	49.94	0.27	0.31	0.33	0.22	0.27	0.29
88.0	48.36	48.22	48.09	0.26	0.29	0.31	0.21	0.25	0.27
89.0	47.62	47.45	47.31	0.26	0.29	0.30	0.20	0.25	0.27
90.0	47.02	46.82	46.69	0.25	0.27	0.29	0.19	0.24	0.26
91.0	46.42	46.20	46.07	0.24	0.27	0.29	0.20	0.24	0.26
92.0	45.81	45.71	45.61	0.23	0.27	0.28	0.20	0.24	0.26
93.0	45.29	45.21	45.04	0.24	0.27	0.29	0.20	0.24	0.27
94.0	44.85	44.73	44.67	0.23	0.26	0.28	0.19	0.24	0.27
95.0	44.44	44.41	44.21	0.23	0.26	0.29	0.20	0.25	0.27
96.0	44.10	44.02	44.00	0.24	0.26	0.29	0.21	0.25	0.27
97.0	43.83	43.73	43.57	0.23	0.27	0.29	0.20	0.25	0.27
98.0	43.60	43.51	43.32	0.24	0.28	0.30	0.21	0.26	0.28
99.0	43.28	43.24	43.26	0.24	0.28	0.30	0.22	0.27	0.28
100.0	43.17	43.24	43.21	0.25	0.29	0.31	0.23	0.28	0.30
101.0	43.31	43.25	43.22	0.26	0.30	0.32	0.24	0.29	0.31
102.0	43.55	43.65	43.58	0.27	0.31	0.33	0.26	0.30	0.32
103.0	44.35	44.43	44.48	0.29	0.33	0.35	0.27	0.32	0.33
104.0	45.86	46.19	46.27	0.30	0.33	0.36	0.29	0.34	0.35
105.0	49.54	50.21	50.62	0.31	0.36	0.38	0.31	0.36	0.38
106.0	57.81	56.12	54.57	0.34	0.39	0.42	0.34	0.39	0.40
107.0	44.51	43.64	42.84	0.38	0.43	0.46	0.37	0.42	0.44
108.0	36.46	35.98	35.41	0.42	0.48	0.51	0.41	0.46	0.49
110.0	25.24	24.94	24.55	0.55	0.62	0.67	0.54	0.61	0.64
112.0	15.83	15.58	15.24	0.93	1.04	1.13	0.91	1.02	1.09
114.0	7.32	7.17	6.92	2.58	2.86	3.12	2.53	2.81	3.07
115.0	4.07	4.02	3.87	5.15	5.62	6.13	5.04	5.53	6.05
116.0	2.11	2.15	2.13	10.24	11.04	11.98	10.03	10.92	11.97
118.0	0.98	1.10	1.15	25.89	23.26	21.12	26.16	23.96	21.83
119.0	0.87	0.98	1.04	19.21	18.27	17.32	19.33	18.34	17.35
120.0	0.80	0.89	0.95	17.54	16.97	16.35	17.53	16.86	16.16
122.0	0.66	0.74	0.78	18.52	18.08	17.63	18.19	17.64	17.11
124.0	0.53	0.60	0.64	22.23	21.72	21.21	21.24	20.59	19.98
125.0	0.49	0.55	0.58	24.58	24.00	23.43	23.03	22.35	21.65
150.0	0.20	0.24	0.24	21.69	22.11	22.64	23.12	23.70	24.25
200.0	0.16	0.19	0.19	18.43	18.68	19.13	18.37	18.65	19.16
300.0	0.14	0.20	0.22	18.31	17.51	16.77	18.21	17.45	16.74
400.0	0.15	0.21	0.24	17.87	17.38	16.79	17.85	17.40	16.78
500.0	0.17	0.23	0.26	17.18	17.02	16.59	17.22	17.06	16.58
600.0	0.20	0.26	0.28	16.43	16.50	16.25	16.43	16.51	16.21
650.0	0.21	0.28	0.31	16.25	16.22	16.02	16.27	16.25	16.03
700.0	0.22	0.29	0.32	15.96	15.91	15.82	15.97	15.96	15.85
800.0	0.24	0.33	0.35	15.72	15.41	15.37	15.76	15.52	15.52
900.0	0.27	0.36	0.39	15.31	15.08	15.05	15.43	15.22	15.26
960.0	0.29	0.38	0.41	15.13	15.02	15.04	15.28	15.18	15.28
1000.0	0.30	0.39	0.42	15.08	15.09	15.13	15.25	15.29	15.37

Typical Performance Data

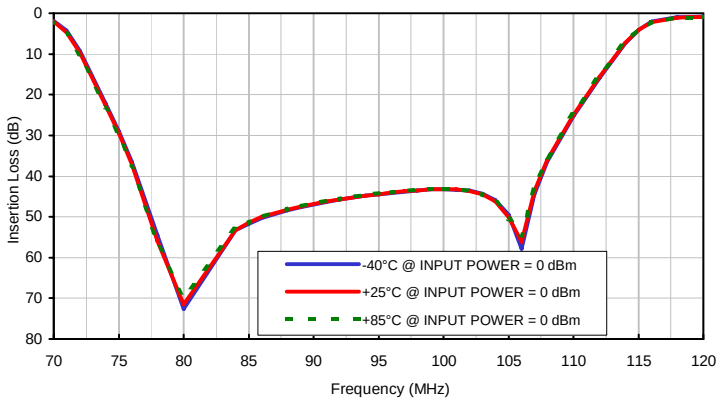
FREQ. (MHz)	GROUP DELAY-1 (nsec)			FREQ. (MHz)	GROUP DELAY-2 (nsec)		
	@-40°C	@+25°C	@+85°C		@-40°C	@+25°C	@+85°C
1.0	5.24	5.15	5.24	125.0	26.65	26.40	26.11
1.5	5.25	5.16	5.21	126.0	24.39	24.20	23.95
2.0	5.23	5.15	5.21	127.0	22.50	22.34	22.13
2.5	5.22	5.16	5.22	128.0	20.87	20.73	20.57
3.0	5.23	5.19	5.22	129.0	19.45	19.32	19.17
3.5	5.22	5.21	5.22	130.0	18.19	18.07	17.93
4.0	5.23	5.23	5.22	131.0	17.03	16.94	16.80
4.5	5.24	5.24	5.23	132.0	16.01	15.91	15.79
5.0	5.25	5.26	5.24	133.0	15.07	14.99	14.87
6.0	5.28	5.24	5.26	134.0	14.23	14.16	14.06
7.0	5.26	5.23	5.26	135.0	13.46	13.41	13.31
8.0	5.30	5.27	5.26	136.0	12.78	12.71	12.62
9.0	5.31	5.30	5.31	137.0	12.16	12.10	12.01
10.0	5.36	5.36	5.33	138.0	11.57	11.51	11.44
11.0	5.36	5.37	5.34	139.0	11.05	10.99	10.91
12.0	5.39	5.38	5.37	140.0	10.55	10.50	10.44
13.0	5.44	5.43	5.41	141.0	10.09	10.05	9.99
14.0	5.48	5.48	5.46	142.0	9.70	9.65	9.59
15.0	5.52	5.50	5.49	143.0	9.30	9.27	9.21
16.0	5.60	5.57	5.55	144.0	8.95	8.91	8.84
17.0	5.64	5.64	5.61	145.0	8.60	8.57	8.51
18.0	5.71	5.70	5.67	146.0	8.30	8.24	8.20
19.0	5.76	5.76	5.75	147.0	8.00	7.97	7.91
20.0	5.84	5.83	5.82	148.0	7.71	7.67	7.64
21.0	5.91	5.90	5.90	149.0	7.46	7.42	7.38
22.0	6.04	6.02	6.00	150.0	7.20	7.17	7.12
23.0	6.12	6.11	6.08	151.0	6.98	6.95	6.91
24.0	6.22	6.21	6.19	152.0	6.76	6.73	6.69
25.0	6.31	6.30	6.28	153.0	6.54	6.52	6.48
26.0	6.45	6.44	6.42	154.0	6.34	6.30	6.27
27.0	6.56	6.55	6.54	155.0	6.16	6.12	6.09
28.0	6.69	6.68	6.66	156.0	5.99	5.95	5.92
29.0	6.82	6.81	6.79	157.0	5.80	5.79	5.75
30.0	6.98	6.96	6.94	158.0	5.65	5.62	5.58
31.0	7.12	7.13	7.11	159.0	5.50	5.47	5.44
32.0	7.31	7.29	7.28	160.0	5.34	5.31	5.28
33.0	7.47	7.46	7.45	170.0	4.17	4.16	4.12
34.0	7.66	7.66	7.66	180.0	3.39	3.38	3.36
35.0	7.87	7.86	7.86	190.0	2.86	2.85	2.84
36.0	8.09	8.09	8.08	200.0	2.46	2.45	2.43
37.0	8.30	8.29	8.29	300.0	1.15	1.11	1.09
38.0	8.56	8.56	8.56	400.0	0.85	0.84	0.81
39.0	8.82	8.83	8.84	500.0	0.76	0.75	0.73
40.0	9.12	9.12	9.13	600.0	0.70	0.68	0.67
41.0	9.41	9.43	9.45	700.0	0.70	0.68	0.66
42.0	9.75	9.76	9.77	800.0	0.70	0.68	0.65
45.0	10.92	10.94	10.97	900.0	0.72	0.70	0.68
50.0	13.65	13.69	13.72	960.0	0.74	0.73	0.71
60.0	25.74	25.84	25.95	1000.0	0.74	0.74	0.70

Typical Performance Curves

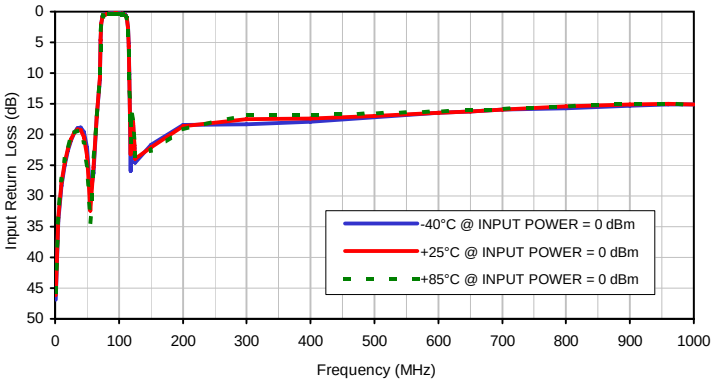
Insertion Loss vs. Temperature (Full Band)



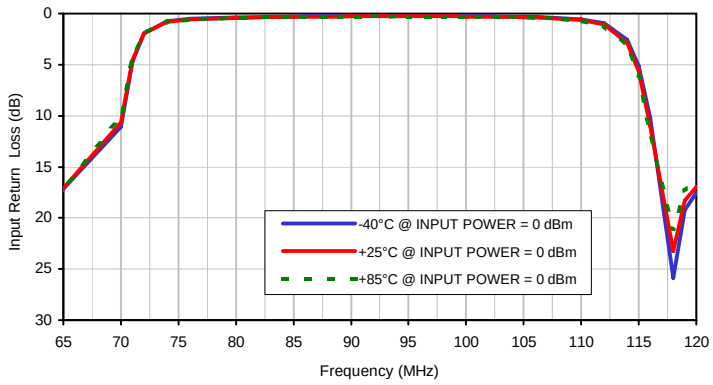
Insertion Loss vs. Temperature (Stop Band)



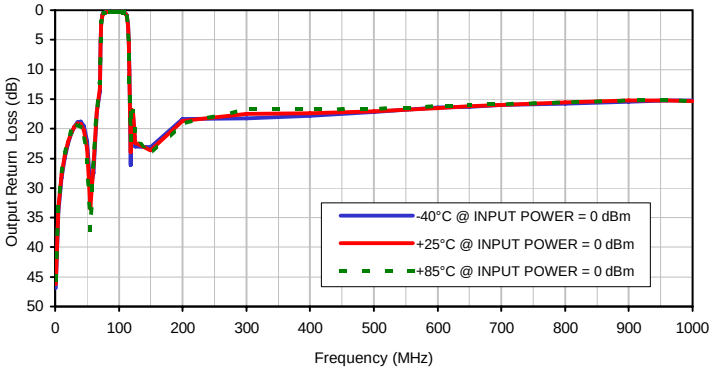
Input Return Loss vs. Temperature



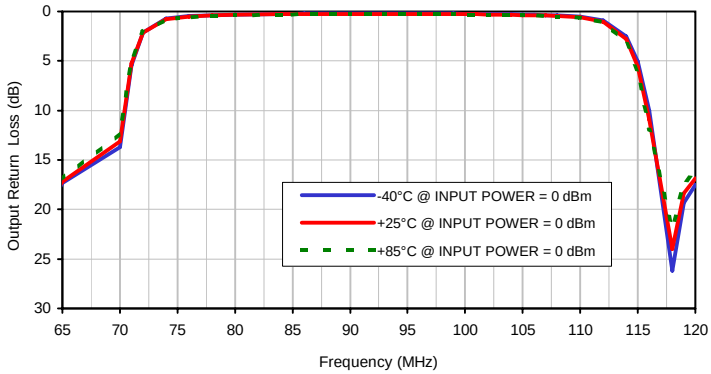
Input Return Loss vs. Temperature



Output Return Loss vs. Temperature

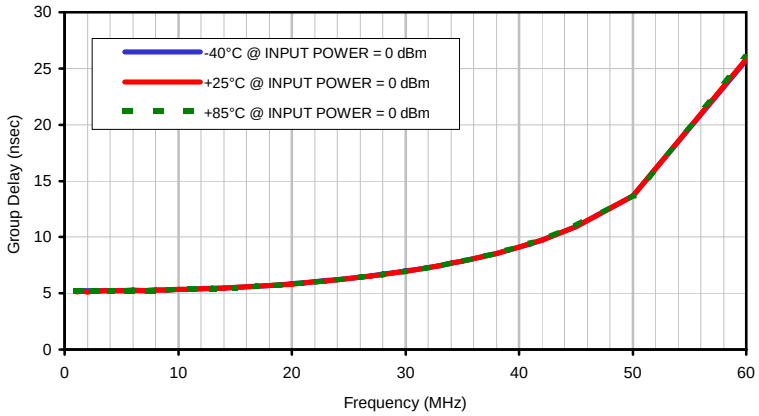


Output Return Loss vs. Temperature

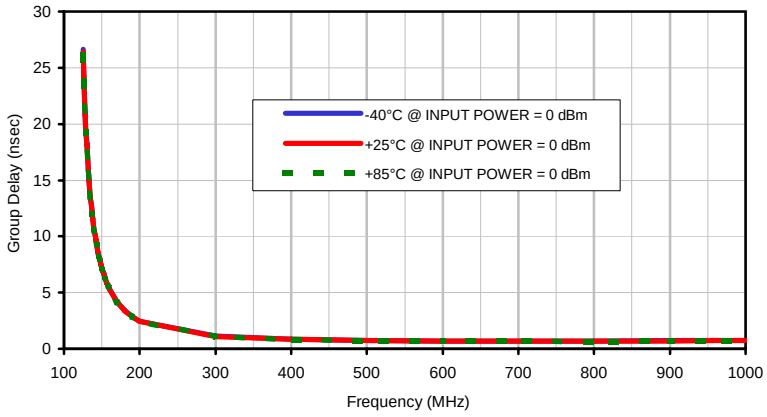


Typical Performance Curves

Group Delay-1 vs. Temperature



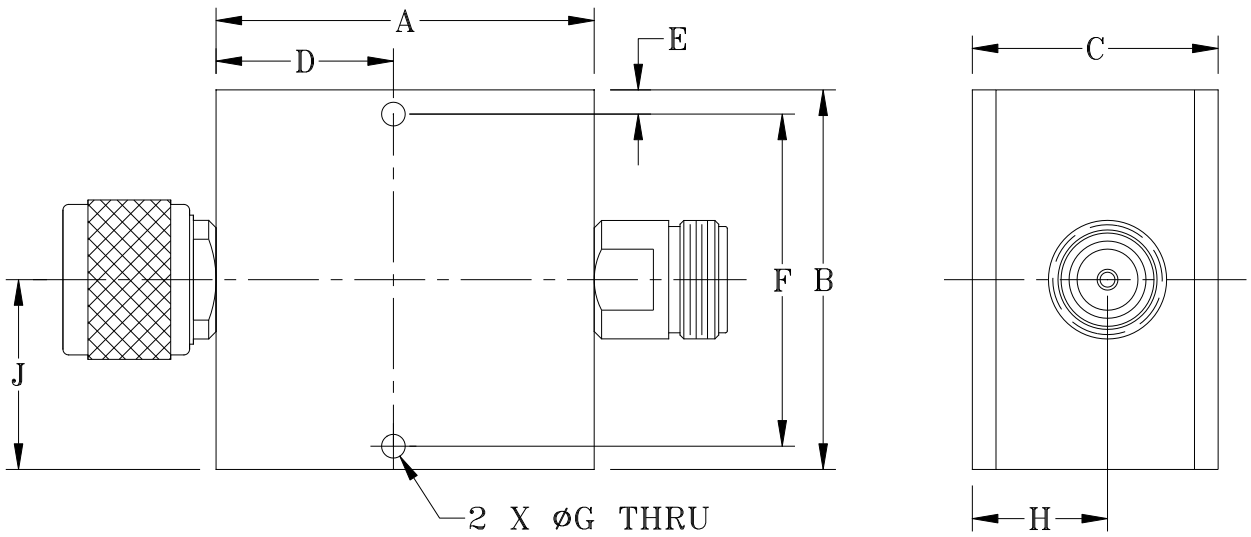
Group Delay-2 vs. Temperature



Case Style CC

Outline Dimensions

CC1524



CASE#	A	B	C	D	E	F	G	H	J	WT. GRAMS
CC1524	2.000 (50.80)	2.000 (50.80)	1.300 (33.02)	0.938 (23.83)	0.125 (3.18)	1.750 (44.45)	0.125 (3.18)	0.715 (18.16)	1.000 (25.4)	183.6

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits

Environmental Specifications ENV28

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
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
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	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I