

Coaxial Bandpass Filter

ZAFBP-2100-S+

50Ω 2050 to 2150 MHz



Generic photo used for illustration purposes only
CASE STYLE: CC1397

The Big Deal

- High Rejection
- Flat Group delay, 0.6 ns typical
- High power, 4.7W
- Good VSWR, 1.4:1 typical
- Connectorized package

Product Overview

ZAFBP-2100-S+ is a 50Ω filter built into a rugged connectorized package (size: 2.00" x 2.00" x 0.75") case. Covering the bandwidth of 2100 MHz $\pm$ 50 MHz, this bandpass filter offers good matching in the passband and high rejection in the stopband. Power handling capacity is as high as 4.7W at 25°C.

Key Features

Feature	Advantages
High rejection	This enables the filter to attenuate sub harmonics and spurious signals.
Flat group delay characteristics (0.6 ns typical)	This model has a group delay flatness of 0.6 ns which helps in minimizing the signal distortion.
High power (4.7W)	Suitable for base station and long-haul applications and test labs.
Good VSWR (1.4:1 typical in passband)	This provides good matching when used other devices.

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



Bandpass Filter

50Ω 2050 to 2150 MHz

ZAFBP-2100-S+



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Connectors Model
SMA-FEMALE ZAFBP-2100-S+

Features

- High rejection, 50 dB
- Flat group delay over passband, 0.6 ns typical
- Good VSWR, 1.4:1 typical in passband
- Connectorized package

Applications

- Harmonic rejection
- Transmitters / receivers
- Lab use

Electrical Specifications at 25°C

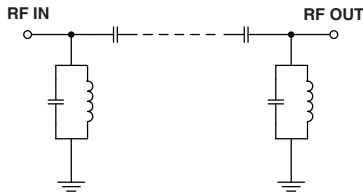
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Center Frequency	—	—	2100	—	MHz
	Insertion Loss	F1-F2	—	5.0	6.0	dB
	VSWR	F1-F2	—	1.4	1.7	:1
Stop Band, Lower	Insertion Loss	DC-F3	20	29	—	dB
	VSWR	DC-F3	—	29	—	:1
Stop Band, Upper	Insertion Loss	F4-F5	20	48	—	dB
	VSWR	F4-F5	—	12	—	:1

Maximum Ratings

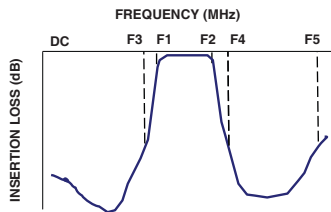
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	4.7W max. at 25°C

* Derate linearly to 2W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Functional Schematic



Typical Frequency Response

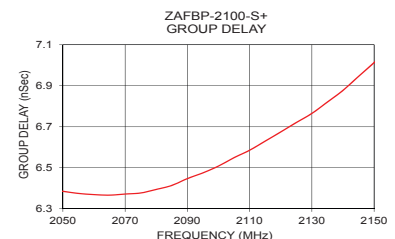
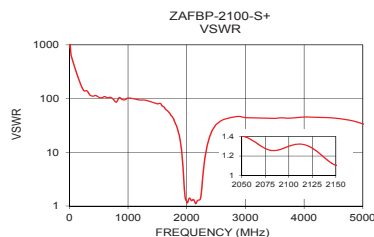
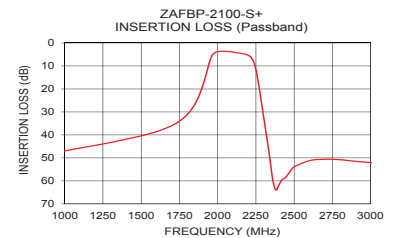
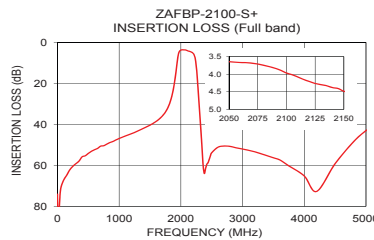


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
5	82.27	4585.90	2050	6.39
200	62.21	175.67	2055	6.37
1000	46.92	102.53	2060	6.37
1500	40.41	79.81	2065	6.37
1800	31.18	36.11	2070	6.37
1920	14.74	8.88	2075	6.38
1950	7.58	3.03	2080	6.39
2050	3.64	1.40	2085	6.41
2080	3.75	1.26	2090	6.45
2100	3.97	1.30	2095	6.48
2120	4.21	1.30	2100	6.51
2150	4.49	1.11	2105	6.55
2230	7.44	1.35	2110	6.59
2300	31.94	6.51	2115	6.63
2340	49.74	12.22	2120	6.67
2360	59.55	15.06	2125	6.72
2700	50.60	42.87	2130	6.77
3500	56.32	42.86	2140	6.88
4200	72.75	44.81	2145	6.95
5000	43.07	33.90	2150	7.01

+RoHS Compliant

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



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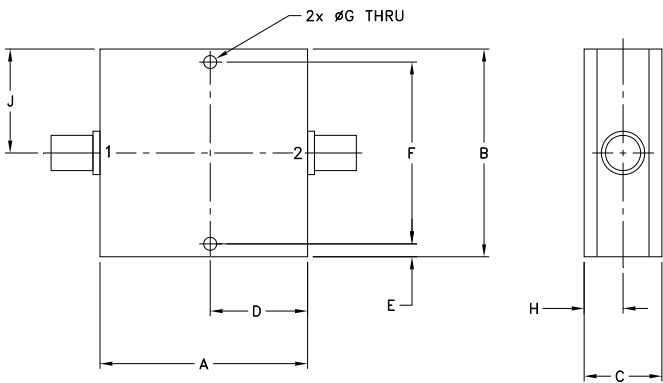
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Coaxial Connections

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

Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F
2.00	2.00	.75	.938	.13	1.750
50.80	50.80	19.05	23.83	3.30	44.45
G	H	J			wt
.125	.38	1.00			grams
3.18	9.65	25.40			100.0

Note: Please refer to case style drawing for details

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Coaxial Bandpass Filter

ZAFBP-2100-S+

Typical Performance Data

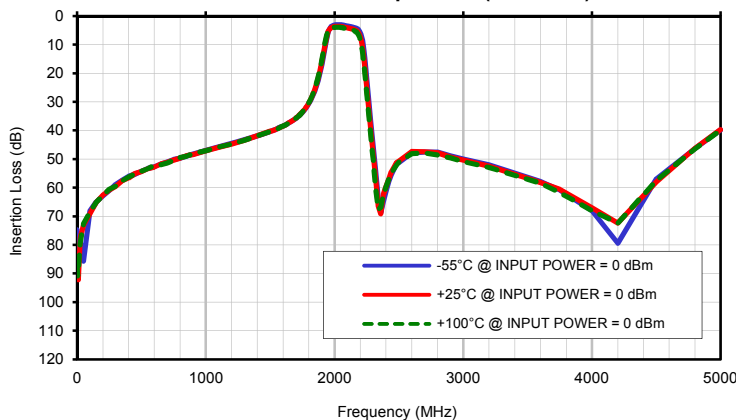
FREQ. (MHz)	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
0.3	74.71	86.68	87.37	0.06	0.03	0.03	0.01	0.01	0.00
5.0	88.42	89.46	90.83	0.00	0.01	0.02	0.00	0.02	0.03
10.0	86.05	92.15	89.06	0.00	0.00	0.02	0.02	0.04	0.05
50.0	85.67	73.15	72.60	0.04	0.06	0.07	0.05	0.08	0.11
100.0	68.21	69.11	68.47	0.08	0.09	0.09	0.06	0.08	0.09
200.0	62.87	62.59	62.63	0.07	0.11	0.13	0.13	0.18	0.18
300.0	58.84	59.54	59.46	0.09	0.13	0.16	0.07	0.12	0.16
400.0	56.11	56.65	56.28	0.08	0.13	0.16	0.17	0.22	0.23
500.0	54.26	54.34	54.22	0.08	0.14	0.18	0.07	0.12	0.17
600.0	52.68	52.84	52.21	0.08	0.12	0.17	0.16	0.24	0.26
700.0	51.07	51.10	51.31	0.08	0.16	0.20	0.06	0.15	0.18
800.0	49.64	49.66	49.49	0.06	0.16	0.21	0.15	0.24	0.26
900.0	48.25	48.50	48.13	0.08	0.16	0.21	0.04	0.16	0.19
1000.0	47.05	47.14	47.12	0.05	0.14	0.22	0.13	0.23	0.28
1200.0	44.59	44.79	44.72	0.03	0.16	0.24	0.12	0.23	0.29
1500.0	40.37	40.31	40.45	0.04	0.19	0.29	0.05	0.21	0.32
1600.0	38.51	38.48	38.52	0.10	0.24	0.35	0.14	0.30	0.41
1700.0	35.77	35.67	35.75	0.14	0.32	0.45	0.13	0.33	0.44
1750.0	33.79	33.62	33.60	0.20	0.40	0.53	0.28	0.49	0.60
1800.0	30.71	30.46	30.35	0.29	0.51	0.66	0.36	0.58	0.70
1850.0	25.88	25.31	25.01	0.50	0.78	0.96	0.53	0.79	0.96
1900.0	17.56	16.60	15.92	1.17	1.67	1.99	1.24	1.71	2.07
1950.0	5.89	5.59	5.49	7.34	9.88	11.70	8.84	12.59	15.78
2000.0	3.14	3.64	3.94	28.25	32.76	29.93	21.78	21.23	20.17
2020.0	3.05	3.60	3.92	23.35	21.77	20.60	20.84	20.47	19.63
2040.0	3.06	3.61	3.95	21.51	21.75	21.61	22.55	23.97	24.31
2045.0	3.07	3.62	3.96	22.03	22.40	22.40	24.65	26.95	27.74
2050.0	3.08	3.66	4.01	22.67	22.93	22.93	28.27	31.62	32.40
2060.0	3.15	3.74	4.09	23.39	22.87	22.56	35.42	29.52	27.51
2065.0	3.17	3.78	4.15	22.94	22.17	21.83	29.17	25.80	24.59
2070.0	3.23	3.86	4.20	22.12	21.42	21.12	25.58	23.59	22.81
2075.0	3.28	3.90	4.27	21.27	20.83	20.67	23.50	22.31	21.81
2080.0	3.34	3.97	4.32	20.67	20.57	20.58	22.25	21.72	21.39
2090.0	3.44	4.05	4.42	20.61	21.35	21.67	21.28	21.90	21.81
2095.0	3.48	4.11	4.47	21.25	22.56	23.02	21.34	22.45	22.54
2100.0	3.52	4.15	4.51	22.35	24.33	24.96	21.83	23.54	23.81
2110.0	3.60	4.23	4.61	26.65	30.08	31.01	24.49	27.30	27.99
2115.0	3.65	4.30	4.65	29.80	31.05	31.15	26.55	28.94	29.41
2120.0	3.70	4.34	4.71	30.58	28.18	27.98	27.92	28.13	28.15
2130.0	3.81	4.45	4.82	24.49	23.12	23.36	24.48	23.58	23.77
2140.0	3.89	4.54	4.94	20.74	20.73	21.48	21.20	21.23	21.75
2145.0	3.95	4.60	5.02	19.86	20.36	21.42	20.41	20.83	21.46
2150.0	4.00	4.67	5.09	19.47	20.44	21.73	20.05	20.84	21.44
2200.0	5.81	7.22	8.31	28.35	27.89	26.47	20.38	17.47	15.35
2240.0	16.83	19.93	22.25	7.00	5.88	5.26	5.23	4.64	4.31
2250.0	21.62	24.76	26.85	4.58	4.11	3.86	3.74	3.49	3.35
2280.0	36.06	38.88	40.71	1.88	1.93	1.98	1.67	1.75	1.82
2300.0	45.18	47.91	49.73	1.24	1.39	1.49	1.20	1.35	1.45
2340.0	63.51	66.32	67.75	0.69	0.88	1.02	0.63	0.84	0.97
2360.0	68.72	69.11	66.96	0.55	0.75	0.91	0.58	0.79	0.93
2400.0	61.46	59.91	59.87	0.38	0.59	0.75	0.34	0.58	0.73
2480.0	51.64	51.29	52.18	0.23	0.46	0.62	0.25	0.46	0.62
2500.0	51.28	50.71	50.98	0.22	0.43	0.61	0.29	0.51	0.67
2800.0	47.60	47.78	48.53	0.13	0.36	0.56	0.09	0.34	0.53
2900.0	48.91	49.35	49.57	0.11	0.34	0.52	0.16	0.40	0.58
3000.0	50.03	50.41	50.93	0.10	0.34	0.53	0.07	0.32	0.50
3500.0	56.41	56.69	57.07	0.09	0.33	0.51	0.12	0.37	0.54
4000.0	68.04	67.06	67.99	0.08	0.34	0.51	0.05	0.31	0.48
5000.0	39.84	39.68	40.00	0.12	0.51	0.78	0.06	0.45	0.72

Typical Performance Data

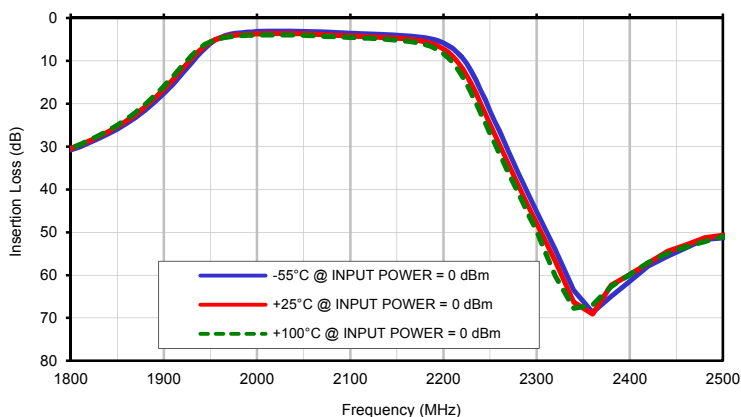
FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-40°C	@+25°C	@+85°C
2050	6.84	6.83	6.83
2055	6.84	6.84	6.85
2060	6.85	6.86	6.87
2065	6.86	6.88	6.90
2070	6.89	6.91	6.93
2075	6.91	6.94	6.96
2080	6.94	6.97	7.00
2085	6.97	7.01	7.04
2090	7.01	7.05	7.08
2095	7.05	7.09	7.13
2100	7.09	7.14	7.18
2105	7.13	7.19	7.24
2110	7.18	7.24	7.30
2115	7.24	7.30	7.36
2120	7.29	7.37	7.44
2125	7.36	7.45	7.52
2130	7.44	7.54	7.61
2135	7.52	7.63	7.72
2140	7.62	7.74	7.83
2145	7.73	7.86	7.97
2150	7.85	7.99	8.11

Typical Performance Curves

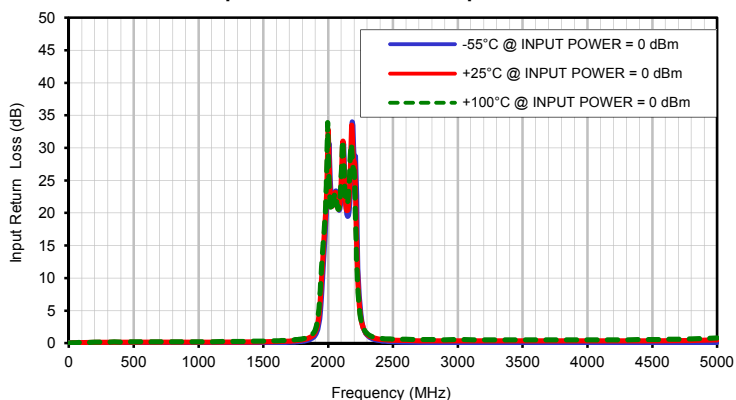
Insertion Loss vs. Temperature (Full Band)



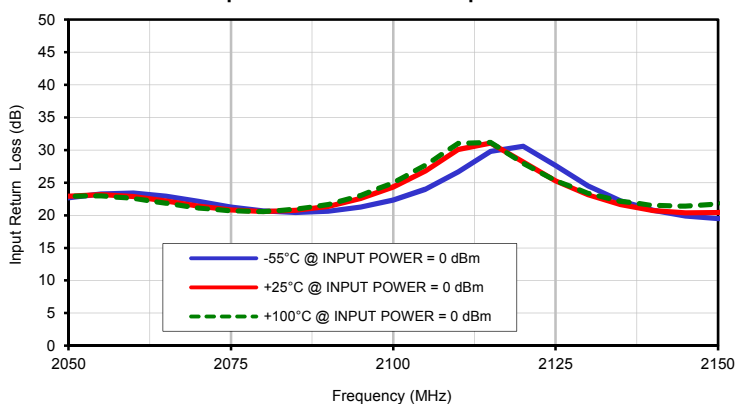
Insertion Loss vs. Temperature (Pass band)



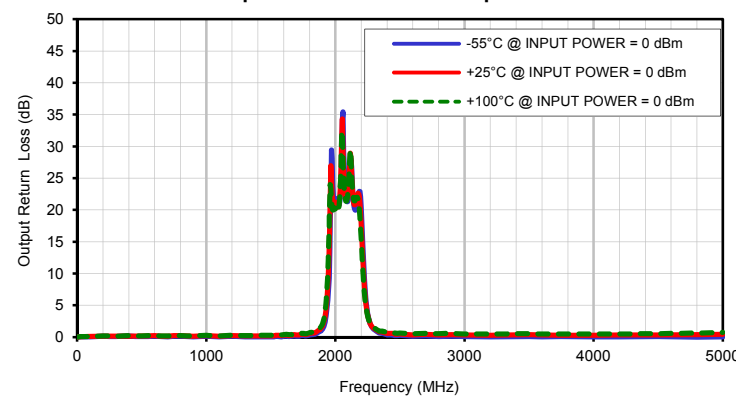
Input Return Loss vs. Temperature



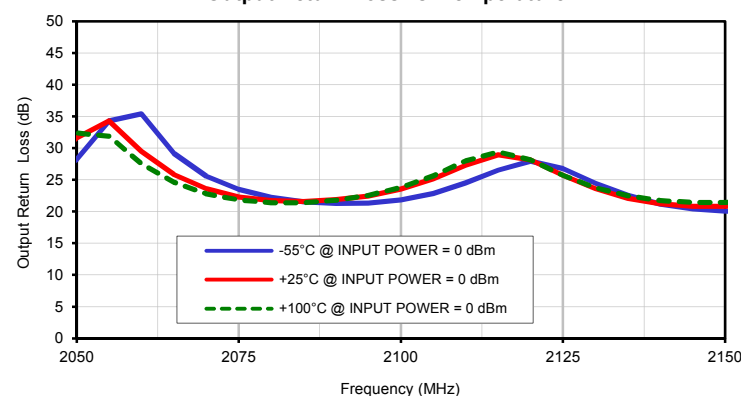
Input Return Loss vs. Temperature



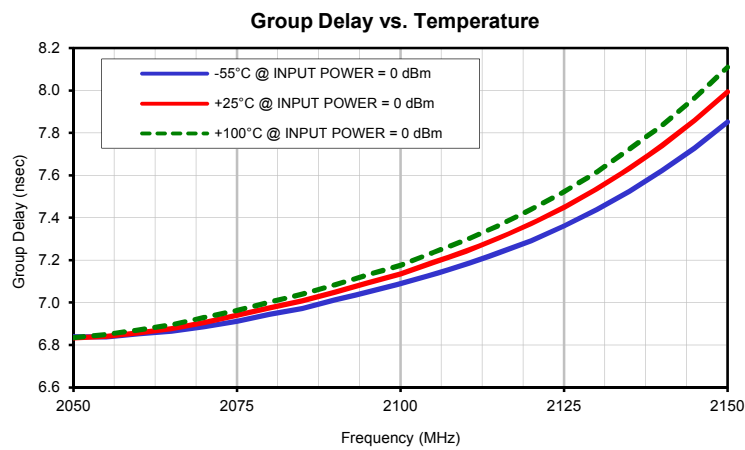
Output Return Loss vs. Temperature



Output Return Loss vs. Temperature

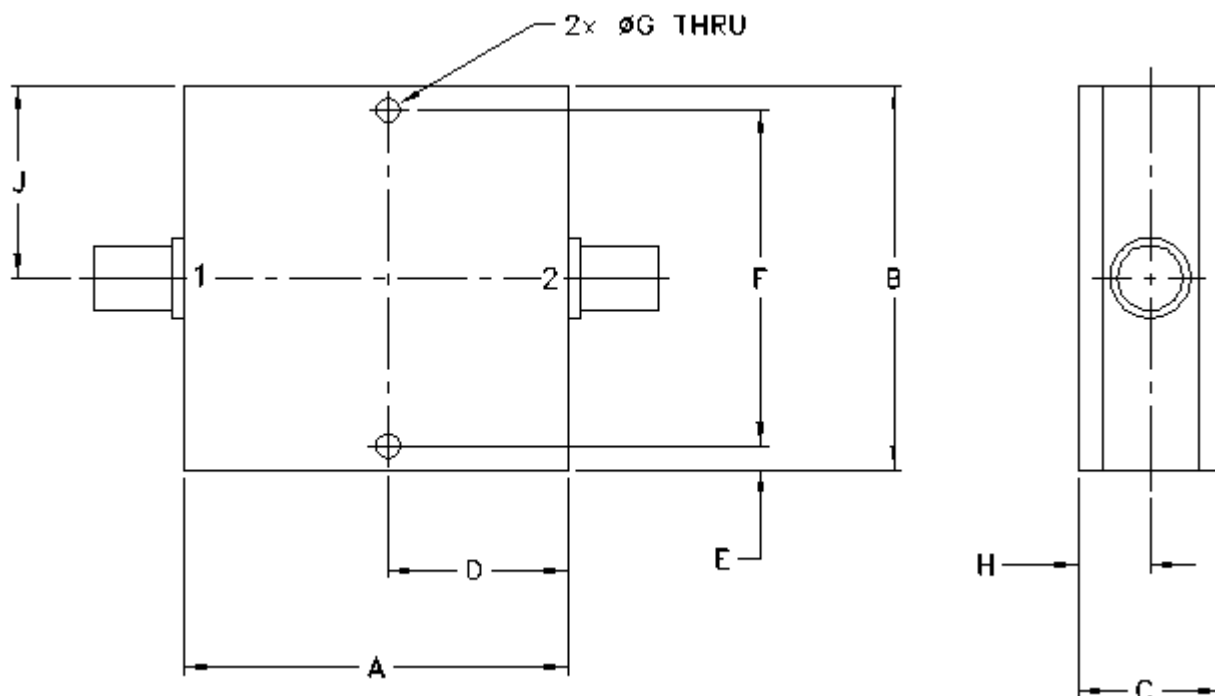


Typical Performance Curves



Outline Dimensions

CC1397



CASE#	A	B	C	D	E	F	G	H	J	WT. GRAMS
CC1397	2.00 (50.80)	2.00 (50.80)	.75 (19.05)	.938 (23.83)	.13 (3.30)	1.750 (44.45)	.125 (3.17)	.38 (9.65)	1.00 (25.4)	100

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

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.



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



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RF/IF MICROWAVE COMPONENTS



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, Condition 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