

Coaxial

Low Pass Filter

VLF-2350+

50Ω

DC to 2350 MHz

The Big Deal

- Excellent power handling, 9W
- 5 Sections
- Rugged unibody construction



CASE STYLE: FF704

Product Overview

VLF-2350+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-2350 MHz bandwidth, these units offer good matching within the passband and high rejection in stopband. VLF-2350+ offer low insertion loss, and excellent power handling capability.

Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application
9W Power handling	Supports a range of system power requirements.
Connectorized package	The connectorized package is easy to interface with other devices and well suited for test setups

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



Low Pass Filter

50Ω DC to 2350 MHz

VLF-2350+



Features

- Rugged uni-body construction, small size
- 5 Sections
- Excellent power handling, 9W
- Temperature stable
- Protected by US patent 6,943,646

Applications

- Harmonic rejection
- Transmitters / Receivers
- Lab use

CASE STYLE: FF704

Connectors	Model
SMA	VLF-2350+

Electrical Specifications⁽¹⁾ at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC-2350	—	1	dB
	Freq. Cut-Off	F2	2700	—	3.0	dB
	VSWR	DC-F1	DC-2350	—	1.5	:1
Stop Band	Insertion Loss	F3	3600	20	—	dB
		F4-F6	3700-4000	—	30	dB
		F5	3800	—	40	dB
		F7	5000	—	20	dB
	VSWR	F3-F7	3600-5000	—	20	:1

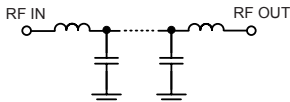
(1) In Application where DC voltage is present at either input or output ports, coupling capacitors are required.

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	9W max. at 25°C

*Passband rating derated linearly to 4W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

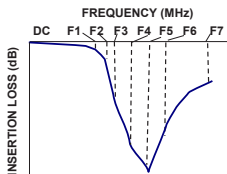
Functional Schematic



Typical Performance Data at 25°C

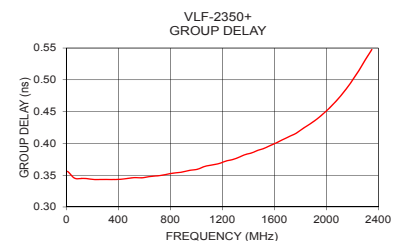
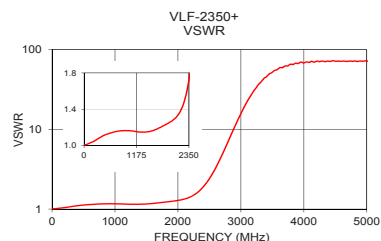
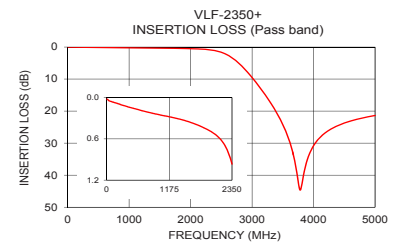
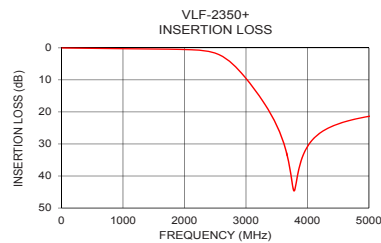
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
10	0.02	1.01	10	0.36
100	0.06	1.02	100	0.34
500	0.15	1.12	200	0.34
1000	0.25	1.16	300	0.34
2000	0.52	1.28	350	0.34
2700	3.71	4.77	400	0.34
2800	5.33	7.12	500	0.35
2900	7.30	10.70	750	0.35
3000	9.52	15.77	900	0.36
3100	11.95	22.39	1000	0.36
3200	14.57	30.13	1250	0.37
3390	20.20	44.90	1500	0.39
3500	24.21	52.23	1750	0.41
3600	28.93	58.20	1800	0.42
3620	30.10	59.76	1900	0.43
3700	36.22	62.49	2000	0.45
3800	43.86	65.86	2100	0.47
3900	35.07	67.13	2200	0.50
4000	30.79	68.35	2300	0.53
5000	21.37	72.48	2350	0.55

Typical Frequency Response



+RoHS Compliant

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



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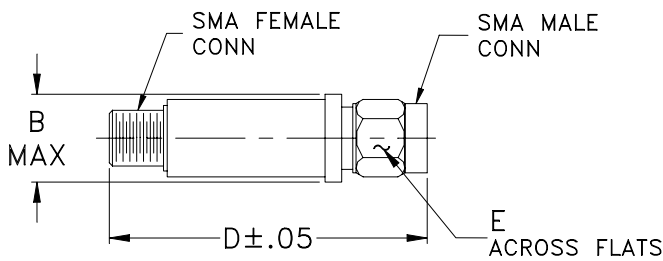


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Coaxial Connections

INPUT	SMA-Female
OUTPUT	SMA-Male

Outline Drawing



Outline Dimensions (inch
mm)

B	D	E	wt.
.410	1.43	.312	grams
10.41	36.32	7.92	10

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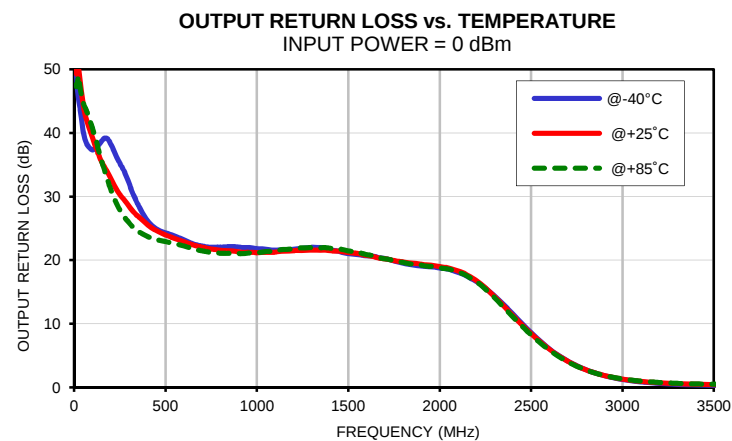
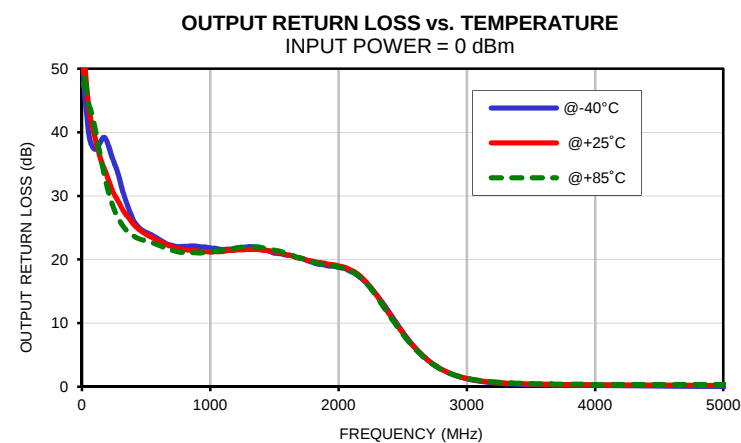
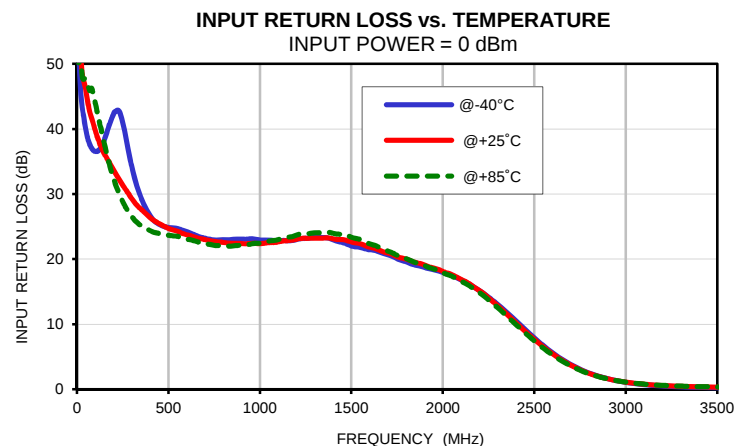
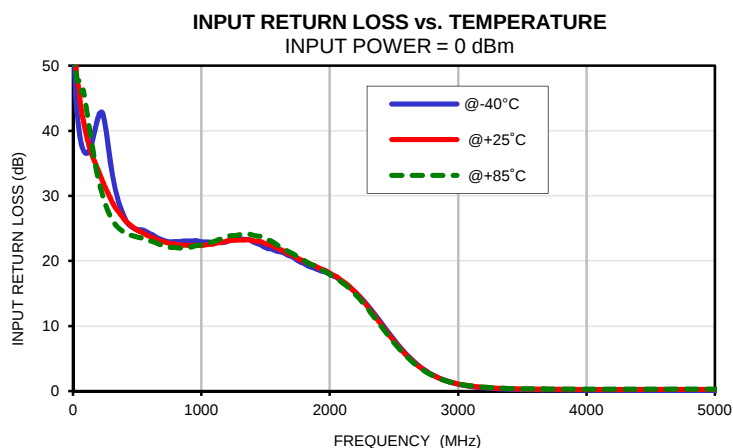
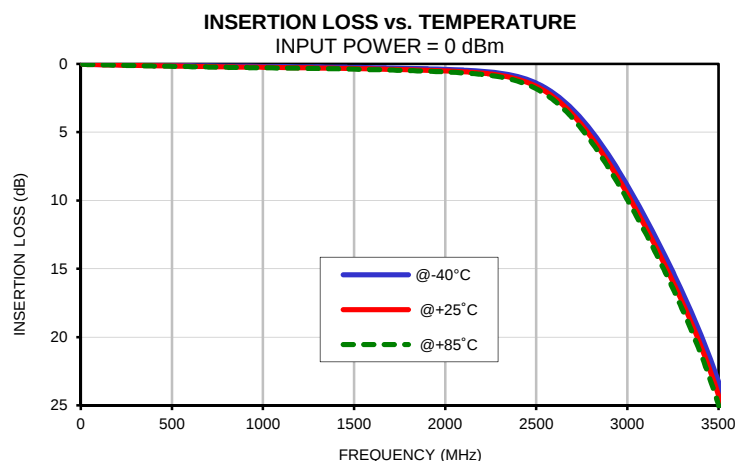
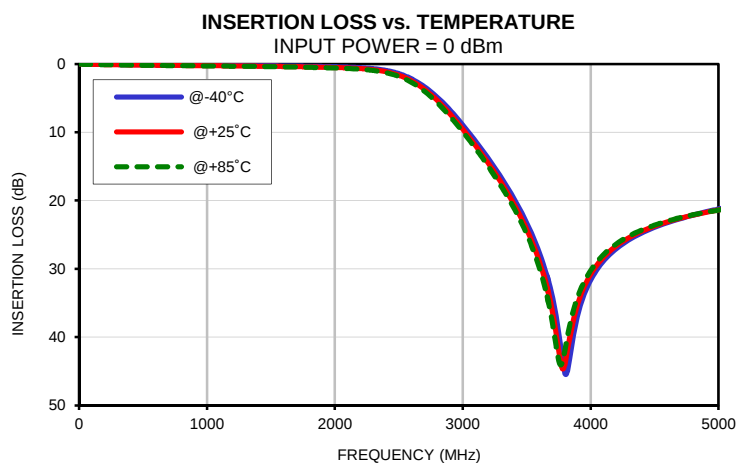
Typical Performance Data

FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
10	0.02	0.02	0.03	52.19	50.99	50.19	52.13	49.76	47.62
20	0.02	0.03	0.03	45.72	50.72	50.37	46.45	49.76	48.24
40	0.03	0.04	0.05	41.27	47.00	47.73	42.42	46.83	46.09
60	0.04	0.05	0.05	38.43	43.95	46.64	39.04	43.04	44.06
80	0.04	0.05	0.06	37.08	41.73	46.27	37.82	40.99	42.54
100	0.05	0.06	0.07	36.56	39.79	44.01	37.36	39.35	40.86
120	0.05	0.06	0.07	36.79	38.17	41.57	37.59	37.68	38.76
140	0.05	0.07	0.08	37.65	36.73	38.89	38.29	36.20	36.69
150	0.06	0.07	0.08	38.32	36.15	37.70	38.70	35.55	35.69
175	0.06	0.08	0.09	40.53	34.98	34.85	39.20	34.24	33.32
200	0.06	0.08	0.09	42.30	33.72	32.39	38.28	32.90	31.18
400	0.10	0.13	0.16	26.63	26.38	24.39	26.26	25.61	23.75
600	0.13	0.17	0.20	24.21	23.74	23.09	23.22	22.91	22.24
800	0.16	0.22	0.25	22.98	22.58	22.06	22.06	21.57	21.10
1000	0.18	0.25	0.28	22.95	22.38	22.45	21.82	21.20	21.18
1200	0.21	0.28	0.32	23.00	23.07	23.67	21.71	21.49	21.81
1400	0.24	0.32	0.36	22.98	23.14	23.99	21.71	21.50	21.89
1600	0.28	0.37	0.42	21.45	21.85	22.35	20.70	20.73	20.87
1800	0.33	0.43	0.49	19.60	20.01	20.09	19.54	19.73	19.64
2000	0.40	0.52	0.59	17.95	18.12	17.92	18.78	18.99	18.81
2200	0.54	0.67	0.77	15.18	15.18	14.86	16.66	16.82	16.63
2250	0.60	0.74	0.85	14.16	14.06	13.75	15.58	15.63	15.44
2300	0.68	0.84	0.95	13.07	12.87	12.56	14.40	14.30	14.11
2350	0.79	0.97	1.09	11.82	11.54	11.25	13.01	12.82	12.61
2400	0.94	1.13	1.27	10.54	10.24	9.96	11.54	11.31	11.11
2450	1.14	1.36	1.51	9.21	8.92	8.67	10.04	9.84	9.64
2500	1.40	1.65	1.82	7.92	7.68	7.45	8.60	8.44	8.26
2550	1.75	2.02	2.22	6.70	6.51	6.32	7.26	7.16	7.00
2600	2.19	2.48	2.70	5.60	5.45	5.29	6.07	6.00	5.87
2650	2.71	3.04	3.29	4.64	4.52	4.38	5.03	4.98	4.87
2700	3.33	3.71	3.99	3.80	3.70	3.59	4.14	4.10	4.02
2750	4.05	4.47	4.78	3.10	3.02	2.94	3.39	3.37	3.31
2800	4.86	5.33	5.67	2.51	2.46	2.40	2.77	2.76	2.72
2850	5.76	6.28	6.63	2.02	1.99	1.95	2.26	2.26	2.25
2900	6.73	7.30	7.67	1.64	1.63	1.61	1.84	1.86	1.87
2950	7.79	8.39	8.78	1.31	1.33	1.32	1.51	1.55	1.57
3000	8.90	9.52	9.93	1.07	1.10	1.11	1.24	1.30	1.33
3050	10.07	10.71	11.13	0.87	0.92	0.93	1.02	1.09	1.13
3100	11.29	11.95	12.39	0.71	0.78	0.79	0.85	0.94	0.98
3150	12.56	13.23	13.68	0.60	0.67	0.69	0.73	0.82	0.87
3200	13.88	14.57	15.03	0.50	0.58	0.60	0.62	0.72	0.77
3250	15.23	15.94	16.43	0.43	0.51	0.54	0.54	0.64	0.70
3300	16.65	17.39	17.90	0.37	0.46	0.48	0.47	0.58	0.63
3350	18.14	18.91	19.46	0.32	0.41	0.44	0.42	0.53	0.58
3400	19.71	20.53	21.11	0.30	0.38	0.41	0.38	0.48	0.54
3450	21.41	22.29	22.92	0.26	0.35	0.38	0.34	0.45	0.51
3500	23.24	24.21	24.92	0.24	0.33	0.37	0.32	0.43	0.48
3550	25.30	26.40	27.21	0.22	0.31	0.35	0.30	0.40	0.46
3600	27.66	28.93	29.91	0.21	0.30	0.33	0.28	0.38	0.44
3650	30.50	32.06	33.30	0.20	0.29	0.33	0.27	0.37	0.43
3700	34.15	36.22	37.88	0.18	0.28	0.31	0.26	0.36	0.41
3750	39.31	42.00	43.42	0.18	0.28	0.31	0.26	0.35	0.41
3800	45.39	43.86	41.75	0.17	0.26	0.30	0.24	0.33	0.39
3850	41.35	38.73	37.17	0.16	0.26	0.30	0.23	0.33	0.38
3900	36.67	35.07	34.05	0.16	0.26	0.30	0.22	0.32	0.38
4000	31.62	30.79	30.24	0.15	0.25	0.30	0.20	0.30	0.37
4250	26.35	25.99	25.74	0.13	0.25	0.30	0.16	0.28	0.35
4500	23.91	23.74	23.60	0.12	0.24	0.30	0.11	0.25	0.35
4750	22.39	22.35	22.29	0.11	0.24	0.31	0.06	0.23	0.34
5000	21.22	21.37	21.40	0.10	0.24	0.32	0.02	0.20	0.33

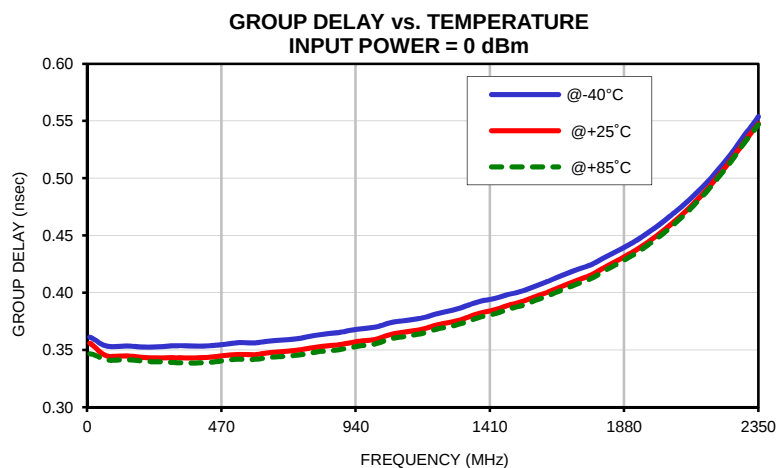
Typical Performance Data

FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
10	0.36	0.36	0.35
20	0.36	0.35	0.35
40	0.36	0.35	0.34
50	0.36	0.35	0.34
75	0.35	0.34	0.34
100	0.35	0.34	0.34
125	0.35	0.34	0.34
150	0.35	0.34	0.34
175	0.35	0.34	0.34
200	0.35	0.34	0.34
225	0.35	0.34	0.34
250	0.35	0.34	0.34
275	0.35	0.34	0.34
300	0.35	0.34	0.34
325	0.35	0.34	0.34
350	0.35	0.34	0.34
375	0.35	0.34	0.34
400	0.35	0.34	0.34
425	0.35	0.34	0.34
450	0.35	0.34	0.34
475	0.35	0.34	0.34
500	0.36	0.35	0.34
525	0.36	0.35	0.34
550	0.36	0.35	0.34
575	0.36	0.35	0.34
600	0.36	0.35	0.34
625	0.36	0.35	0.34
650	0.36	0.35	0.34
675	0.36	0.35	0.34
700	0.36	0.35	0.34
725	0.36	0.35	0.35
750	0.36	0.35	0.35
775	0.36	0.35	0.35
800	0.36	0.35	0.35
825	0.36	0.35	0.35
850	0.36	0.35	0.35
875	0.37	0.35	0.35
900	0.37	0.36	0.35
925	0.37	0.36	0.35
950	0.37	0.36	0.35
975	0.37	0.36	0.35
1000	0.37	0.36	0.35
1100	0.38	0.37	0.36
1200	0.38	0.37	0.37
1300	0.39	0.38	0.37
1400	0.39	0.38	0.38
1500	0.40	0.39	0.39
1600	0.41	0.40	0.40
1700	0.42	0.41	0.41
1800	0.43	0.42	0.42
1900	0.44	0.43	0.43
2000	0.46	0.45	0.45
2050	0.47	0.46	0.46
2100	0.48	0.47	0.47
2150	0.49	0.48	0.48
2200	0.50	0.50	0.50
2150	0.49	0.48	0.48
2200	0.50	0.50	0.50
2300	0.54	0.53	0.53
2350	0.55	0.55	0.55

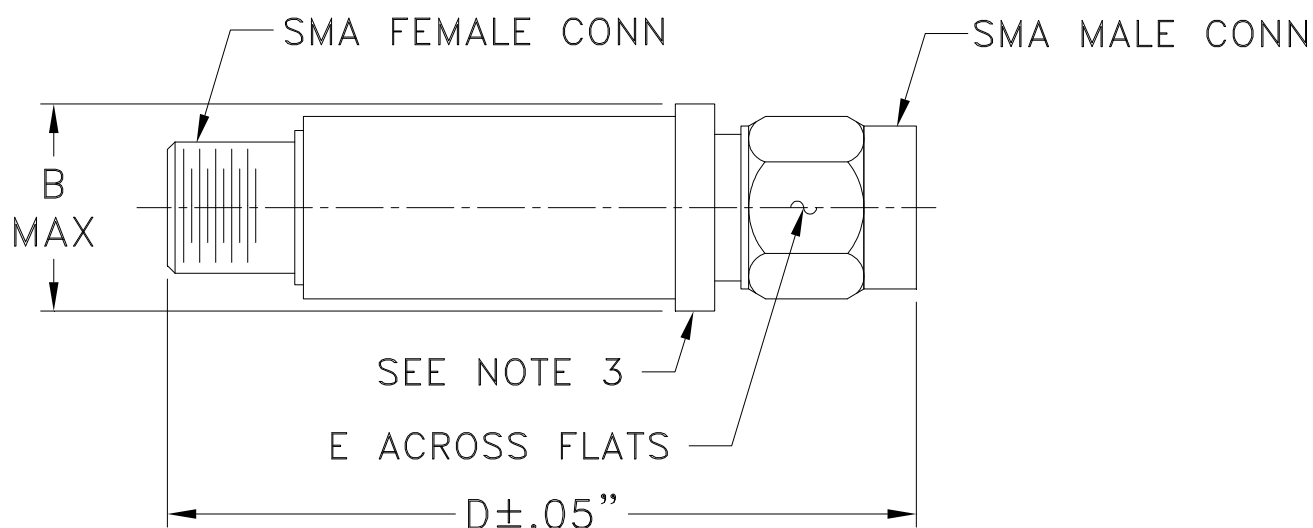
Typical Performance Curves



Typical Performance Curves



Outline Dimensions



CASE #.	A	B	C	D	E	WT GRAMS
FF704	--	.410 (10.41)	--	1.43 (36.32)	.312 (7.92)	10.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .04; 3Pl. ± .030

Notes:

1. Case material: Stainless steel.
2. Case finish: Gold plated.
3. Round Flange may have .312 Across Flats in some models.



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



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

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
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