

Coaxial Low Pass Filter

VLF-8400+

50Ω

DC to 8400 MHz

The Big Deal

- Excellent power handling, 8W
- Temperature stable
- Rugged unibody construction



CASE STYLE: FF704

Product Overview

VLF-8400+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-8400 MHz bandwidth, these units offer good matching within the passband and high rejection in stopband. VLF-8400+ offer low insertion loss, and excellent power handling capability.

Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application
8W 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 8400 MHz

VLF-8400+



CASE STYLE: FF704

Connectors	Model
SMA	VLF-8400+

Features

- Rugged uni-body construction, small size
- Excellent power handling, 8W
- Temperature stable
- Protected by US patent 6,943,646

Applications

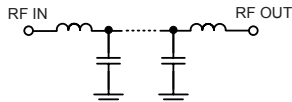
- Harmonic rejection
- VHF/UHF Transmitters / Receivers
- Lab use

Electrical Specifications⁽¹⁾ at 25°C

Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC-8400	—	1.6	1.8 dB
	Freq. Cut-Off	F2	9100	—	3.0	dB
	VSWR	DC-F1	DC-8400	—	1.6	:1
Stop Band	Insertion Loss	F3	10300	18	20	dB
		F3-F4	10300-15000	—	30	dB
	VSWR	F3-F4	10300-15000	—	17	:1

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

Functional Schematic



Maximum Ratings

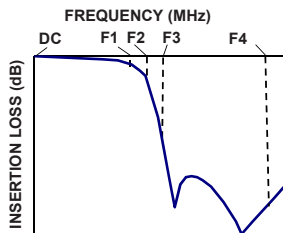
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	8W max. at 25°C

*Passband rating derated linearly to 3W at 100°C ambient.
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

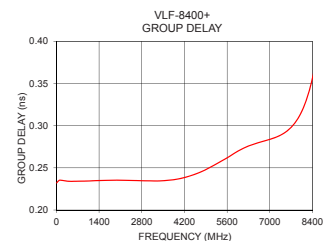
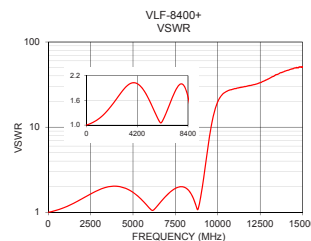
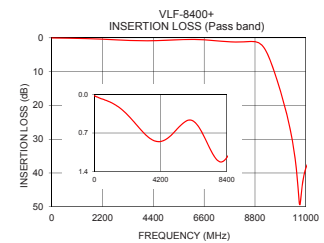
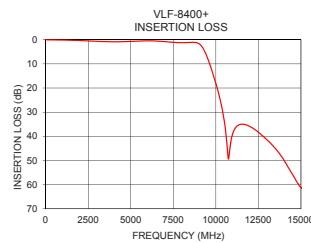
Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
10	0.02	1.00	10	0.23
100	0.04	1.01	100	0.24
500	0.08	1.06	750	0.23
1000	0.14	1.15	1500	0.23
2000	0.34	1.45	2000	0.24
4000	0.86	2.03	2500	0.23
8000	1.23	1.98	3000	0.23
8400	1.15	1.68	3500	0.23
9100	2.16	2.05	4000	0.24
9200	3.02	2.81	4500	0.24
9750	12.38	13.85	5000	0.25
10100	20.57	21.79	5500	0.26
10300	26.29	24.58	6000	0.27
10400	29.71	25.42	6500	0.28
11000	38.63	28.25	7000	0.28
11500	34.98	29.64	7500	0.29
12000	35.92	31.17	8000	0.31
13000	41.39	36.90	8100	0.32
14000	49.90	45.60	8200	0.33
15000	61.14	50.27	8400	0.36

Typical Frequency Response



+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-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/MCLStore/terms.jsp

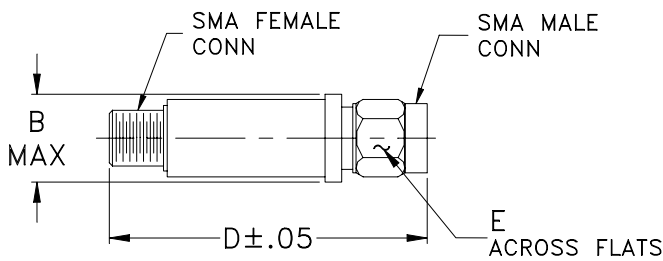


www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

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

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

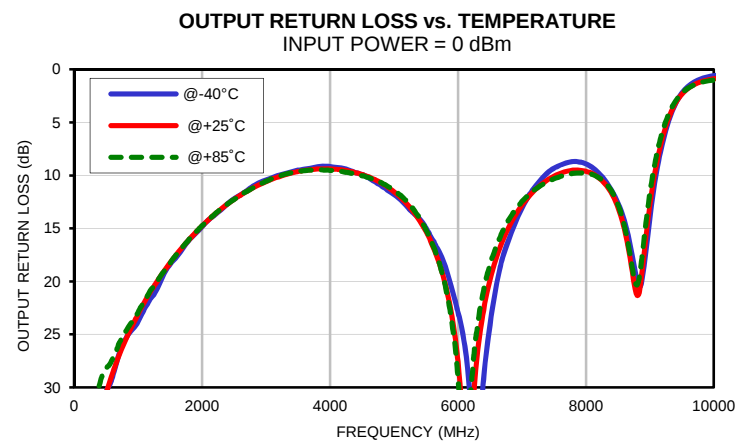
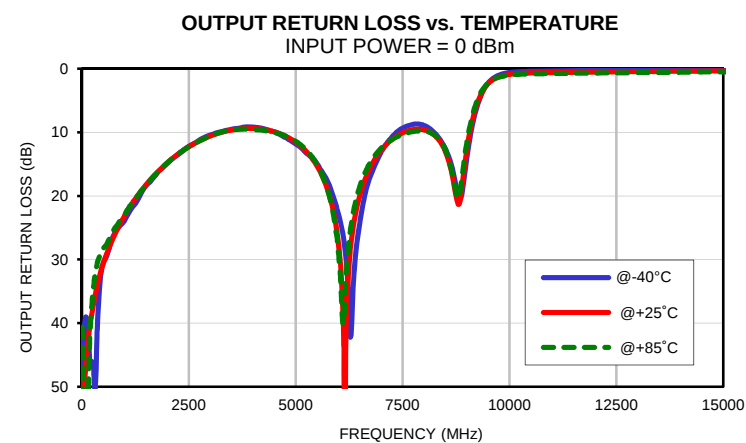
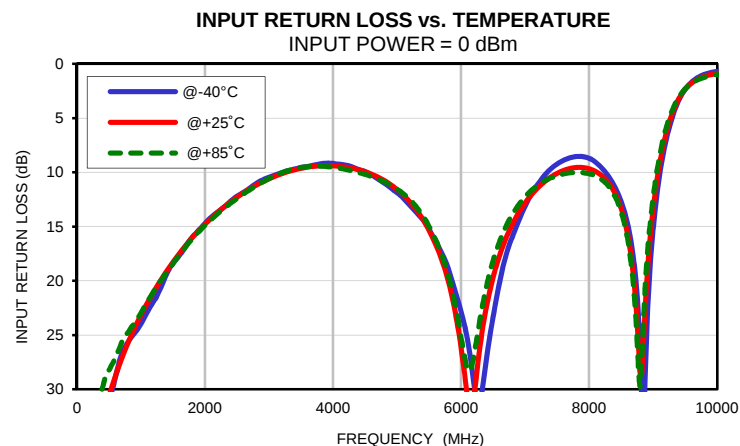
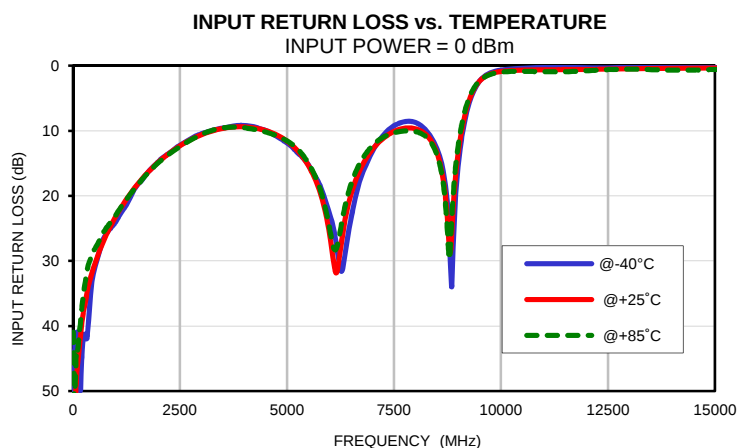
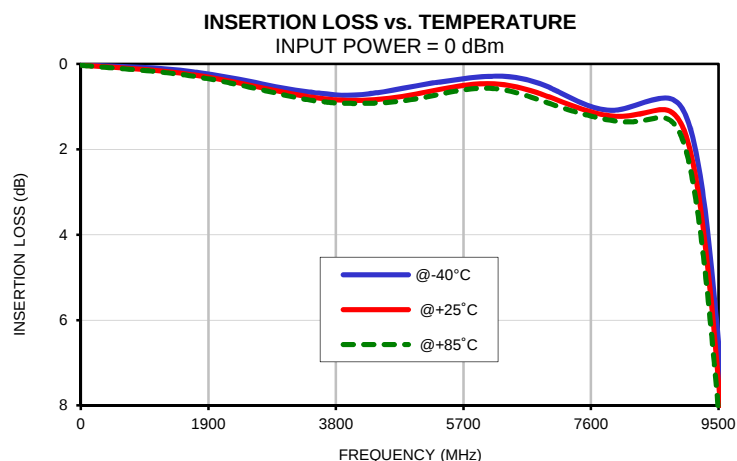
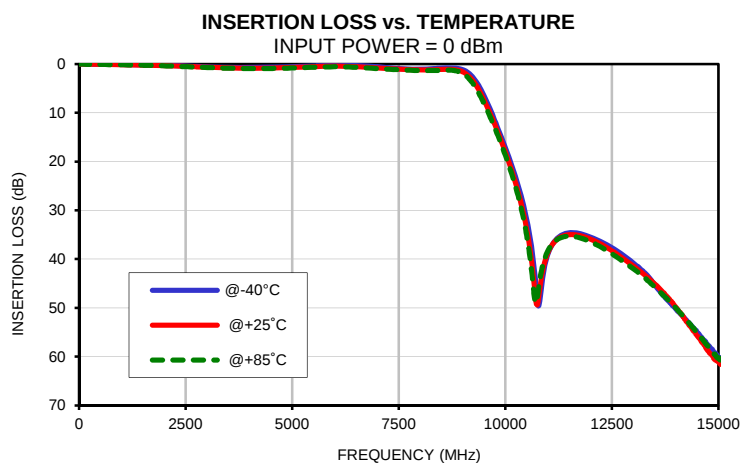
Typical Performance Data

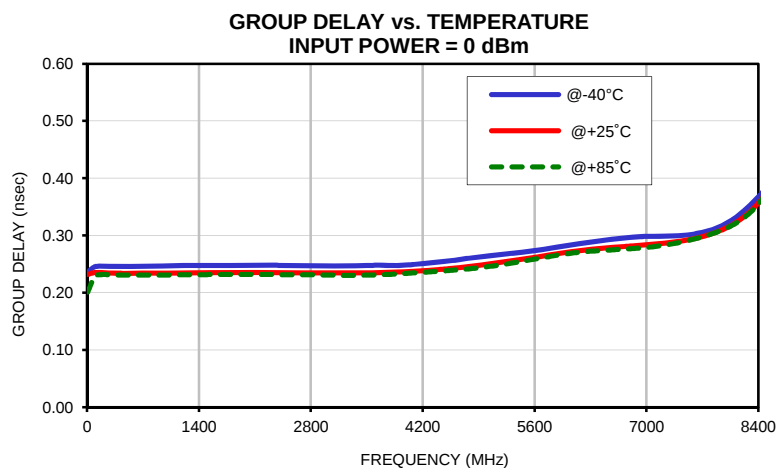
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C	@-40°C	@+25°C	@+85°C
10	0.02	0.02	0.03	76.87	55.19	40.97	52.62	50.60	40.66
20	0.01	0.02	0.03	47.84	56.20	47.27	45.32	52.03	45.92
40	0.02	0.03	0.04	43.73	53.53	50.12	43.00	53.22	53.91
60	0.03	0.03	0.04	41.98	50.89	47.52	40.31	49.65	52.14
80	0.03	0.04	0.04	41.07	48.82	44.10	39.30	47.71	50.56
100	0.03	0.04	0.04	41.32	46.32	43.99	39.14	46.11	61.57
150	0.03	0.04	0.05	49.77	43.13	40.79	42.46	42.51	51.38
200	0.03	0.05	0.06	45.64	40.03	37.69	46.67	39.61	40.29
250	0.04	0.05	0.06	41.71	37.57	34.82	46.23	37.85	35.76
300	0.04	0.06	0.07	41.66	35.98	32.71	50.38	36.01	32.70
350	0.04	0.07	0.08	40.38	34.05	30.80	42.72	34.33	30.85
400	0.05	0.07	0.09	36.21	32.89	29.84	35.64	32.94	29.74
500	0.05	0.08	0.10	31.25	30.70	28.24	30.48	30.61	28.25
750	0.07	0.11	0.13	26.12	26.41	25.23	26.05	26.28	25.29
1000	0.09	0.14	0.16	23.99	23.16	22.98	23.80	23.08	22.93
1500	0.15	0.22	0.25	18.39	18.29	18.43	18.40	18.27	18.29
2000	0.26	0.34	0.38	14.72	14.78	14.89	14.84	14.78	14.76
4000	0.74	0.86	0.92	9.18	9.39	9.53	9.16	9.38	9.52
6000	0.30	0.46	0.57	22.85	26.13	25.22	22.93	27.55	29.04
7000	0.57	0.79	0.94	13.10	12.81	12.23	13.06	12.81	12.46
8000	1.08	1.23	1.35	8.70	9.66	10.11	8.90	9.61	9.79
8500	0.85	1.11	1.29	12.69	13.31	13.62	12.61	13.00	12.75
9000	1.16	1.61	1.94	15.32	13.38	12.29	14.00	12.75	11.65
9100	1.62	2.16	2.60	10.33	9.27	8.52	9.82	9.02	8.20
9200	2.35	3.02	3.57	7.10	6.47	5.99	6.88	6.36	5.79
9300	3.41	4.20	4.84	4.89	4.53	4.25	4.76	4.48	4.12
9500	6.51	7.39	8.12	2.34	2.34	2.31	2.22	2.33	2.23
9750	11.56	12.38	13.08	1.09	1.26	1.32	0.99	1.27	1.32
10000	17.16	18.06	18.73	0.68	0.87	0.98	0.59	0.88	0.99
10100	19.56	20.57	21.25	0.59	0.80	0.92	0.52	0.80	0.92
10200	22.15	23.29	24.03	0.53	0.75	0.88	0.46	0.74	0.88
10300	24.95	26.29	27.14	0.47	0.71	0.86	0.43	0.71	0.85
10400	28.12	29.71	30.72	0.42	0.68	0.85	0.41	0.68	0.82
10500	31.87	33.86	35.17	0.39	0.66	0.85	0.39	0.65	0.79
10600	36.61	39.40	41.32	0.36	0.65	0.87	0.38	0.64	0.78
10700	43.78	47.51	48.89	0.33	0.64	0.88	0.38	0.63	0.78
10800	48.90	46.48	44.66	0.31	0.63	0.89	0.36	0.62	0.77
10900	42.46	41.38	40.53	0.27	0.62	0.90	0.35	0.61	0.75
11000	38.97	38.63	38.23	0.25	0.62	0.91	0.35	0.60	0.74
11250	35.47	35.71	35.81	0.24	0.60	0.93	0.33	0.58	0.72
11500	34.61	34.98	35.31	0.25	0.59	0.91	0.29	0.56	0.71
11750	34.78	35.19	35.64	0.29	0.57	0.86	0.25	0.54	0.69
12000	35.48	35.92	36.45	0.32	0.56	0.77	0.22	0.52	0.67
12250	36.50	36.97	37.59	0.34	0.54	0.68	0.19	0.50	0.66
12500	37.67	38.30	38.92	0.34	0.52	0.59	0.17	0.48	0.64
12750	39.10	39.79	40.42	0.30	0.50	0.54	0.15	0.45	0.62
13000	40.77	41.39	41.99	0.21	0.47	0.53	0.13	0.44	0.60
13250	42.71	43.13	43.71	0.13	0.44	0.55	0.13	0.42	0.58
13500	45.23	45.08	45.70	0.06	0.42	0.60	0.13	0.41	0.57
13750	47.90	47.29	47.83	0.01	0.40	0.65	0.13	0.40	0.56
14000	50.25	49.90	50.03	0.00	0.38	0.68	0.12	0.39	0.54
14250	52.55	52.87	52.51	0.02	0.37	0.68	0.11	0.37	0.52
14300	53.04	53.42	53.01	0.02	0.36	0.68	0.12	0.37	0.53
14400	54.01	54.64	54.05	0.04	0.36	0.67	0.12	0.36	0.52
14500	55.09	55.76	55.07	0.05	0.35	0.65	0.11	0.35	0.50
14600	56.04	56.97	56.22	0.06	0.35	0.64	0.11	0.34	0.49
14700	57.01	58.13	57.30	0.08	0.35	0.63	0.12	0.34	0.48
14800	58.07	59.37	58.49	0.09	0.34	0.60	0.12	0.34	0.48
14900	59.15	60.52	59.52	0.11	0.34	0.58	0.11	0.34	0.48
15000	60.17	61.14	60.43	0.12	0.35	0.57	0.10	0.34	0.47

Typical Performance Data

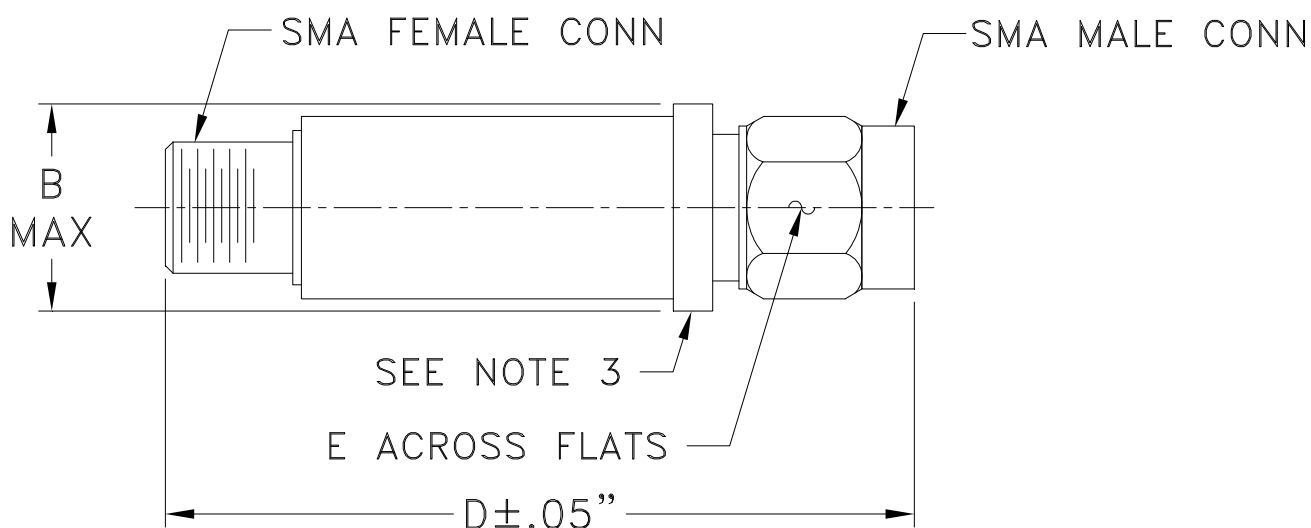
FREQ. (MHz)	GROUP DELAY		
	(nsec)		
	@-40°C	@+25°C	@+85°C
10	0.24	0.23	0.20
20	0.24	0.23	0.20
40	0.24	0.23	0.21
50	0.24	0.23	0.22
100	0.25	0.24	0.23
100	0.25	0.24	0.23
125	0.25	0.24	0.23
150	0.25	0.24	0.23
175	0.25	0.24	0.23
200	0.25	0.24	0.23
225	0.25	0.23	0.23
250	0.25	0.23	0.23
275	0.25	0.23	0.23
300	0.25	0.23	0.23
325	0.25	0.23	0.23
350	0.25	0.23	0.23
375	0.25	0.23	0.23
400	0.25	0.23	0.23
500	0.25	0.23	0.23
750	0.25	0.23	0.23
1000	0.25	0.23	0.23
1250	0.25	0.23	0.23
1500	0.25	0.23	0.23
1750	0.25	0.24	0.23
2000	0.25	0.24	0.23
2250	0.25	0.24	0.23
2500	0.25	0.23	0.23
2750	0.25	0.23	0.23
3000	0.25	0.23	0.23
3250	0.25	0.23	0.23
3500	0.25	0.23	0.23
3750	0.25	0.24	0.23
4000	0.25	0.24	0.23
4250	0.25	0.24	0.24
4500	0.26	0.24	0.24
4750	0.26	0.25	0.24
5000	0.26	0.25	0.25
5250	0.27	0.25	0.25
5500	0.27	0.26	0.26
5750	0.28	0.27	0.26
6000	0.28	0.27	0.27
6250	0.29	0.28	0.27
6500	0.29	0.28	0.27
6750	0.30	0.28	0.28
7000	0.30	0.28	0.28
7100	0.30	0.28	0.28
7200	0.30	0.29	0.28
7300	0.30	0.29	0.28
7400	0.30	0.29	0.29
7500	0.30	0.29	0.29
7600	0.30	0.29	0.29
7700	0.31	0.30	0.30
7800	0.31	0.30	0.30
7900	0.31	0.31	0.31
8000	0.32	0.31	0.31
8100	0.33	0.32	0.32
8200	0.34	0.33	0.33
8300	0.35	0.34	0.34
8350	0.36	0.35	0.35
8400	0.37	0.36	0.36

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