Coaxial

High Pass Filter

VHFG-1500+

50Ω 1600 to 6000 MHz

Generic photo used for illustration purposes only

CASE STYLE: FF704

The Big Deal

- Good power handling, 2.5W
- Temperature stable
- Rugged unibody construction
- Good rejection, 38 dB typical

Product Overview

VHFG-1500+ is a 50Ω high pass filter built in rugged unibody construction. Covering 1600-6000 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. VHFG-1500+ offer low insertion loss, and good power handling capability. It handles up to 2.5W RF input power and provides a wide operating temperature range from -55°C to 125°C.

Key Features

Feature	Advantages
Low passband insertion loss	Suitable for high performance application.
2.5W 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.

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

Features

- Temperature stable
- Good power handling, 2.5W
- Connectorized package
- Rugged unibody construction

Applications

- Transmitters / Receivers
- Test and measurement
- Military applications
- Telecommunications and broadband wireless systems

Functional Schematic

Electrical Specifications at 25°C

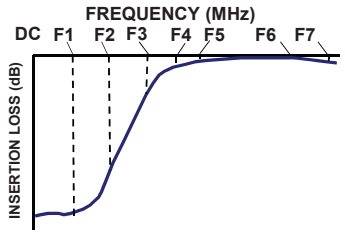
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Stop Band	Rejection Loss	DC-F1	DC - 800	30	38	-	dB
		F1-F2	800 - 1000	28	37	-	dB
	Freq. Cut-Off	F3*	1400	-	3.0	-	dB
Pass Band	Insertion Loss	F4-F5	1600 - 1900	-	2.0	-	dB
		F5-F6	1900 - 5000	-	1.2	1.9	dB
		F6-F7	5000 - 6000	-	2.0	-	dB
	Return Loss	F4-F7	1600 - 6000	-	9	-	dB

In Applications where DC voltage is present at either input or output ports, DC blocks are required.
* Typically, a ±5% frequency deviation from the stated value may occur on a unit-to-unit basis.

Maximum Ratings	
Operating Temperature	-55°C to 125°C
Storage Temperature	-55°C to 125°C
RF Power Input*	2.5W max.@25°C

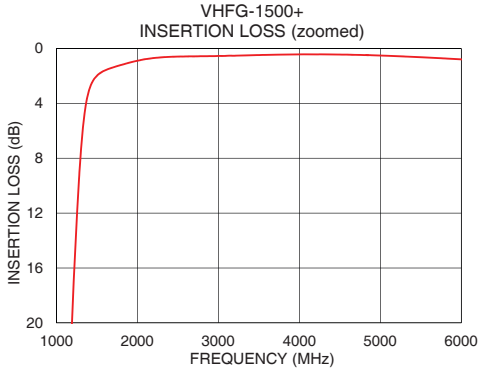
*Passband rating, derate linearly to 0.5W at 125°C ambient
Permanent damage may occur if any of these limits are exceeded.

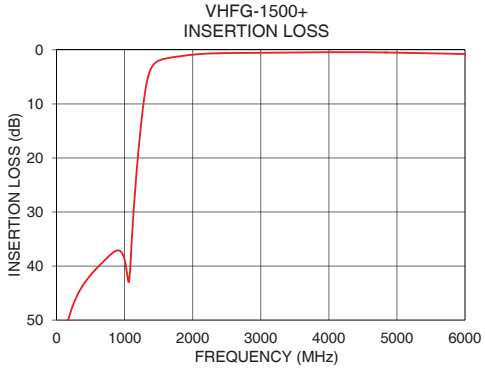
Typical Frequency Response

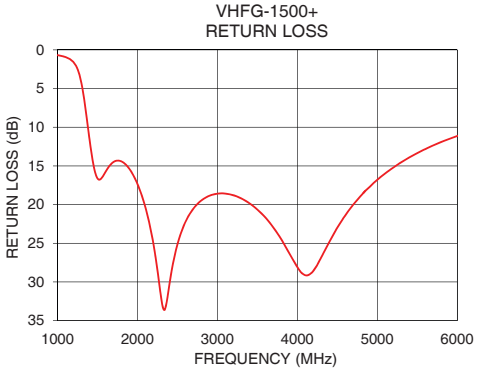


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	73.64	0.11
100	54.46	0.16
800	37.81	0.48
1000	38.93	0.68
1120	31.88	1.01
1180	21.76	1.39
1200	18.91	1.59
1300	7.74	4.39
1400	3.12	11.60
1500	1.99	16.63
1600	1.59	15.77
1900	1.03	15.40
2000	0.89	17.35
2500	0.59	25.13
3000	0.54	18.58
4000	0.43	28.09
5000	0.51	16.78
5500	0.63	13.34
5700	0.69	12.34
6000	0.79	11.14





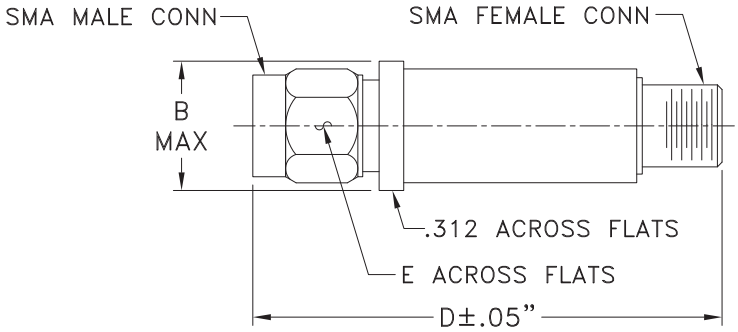


Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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-Male
PORT - 2	SMA-Female

Outline Drawing



Outline Dimensions (inch / mm)

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

Note: Please refer to case style drawing for details

Coaxial High Pass Filter VHFG-1500+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURN LOSS (dB)		
	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C	@-55°C	@+25°C	@+125°C
10	74.54	69.78	68.49	0.13	0.16	0.20	0.12	0.16	0.20
20	70.48	70.86	67.02	0.13	0.16	0.20	0.13	0.16	0.20
80	56.88	56.89	56.49	0.15	0.18	0.23	0.15	0.19	0.23
100	54.43	54.54	55.22	0.15	0.19	0.24	0.15	0.19	0.23
200	49.15	49.16	49.04	0.18	0.22	0.28	0.18	0.23	0.27
300	45.79	45.79	45.90	0.21	0.25	0.31	0.20	0.26	0.31
400	43.55	43.55	43.64	0.21	0.27	0.34	0.21	0.27	0.34
500	41.85	41.87	41.91	0.23	0.30	0.38	0.22	0.30	0.37
600	40.43	40.46	40.46	0.26	0.33	0.42	0.24	0.33	0.41
700	39.15	39.14	39.15	0.30	0.38	0.48	0.27	0.36	0.46
800	37.92	37.90	37.90	0.33	0.43	0.54	0.31	0.42	0.53
900	37.08	37.14	37.22	0.39	0.51	0.65	0.37	0.49	0.63
1000	38.15	38.67	39.29	0.49	0.65	0.84	0.47	0.62	0.81
1100	41.26	37.41	33.78	0.70	0.92	1.21	0.64	0.86	1.14
1130	34.17	31.12	28.24	0.80	1.06	1.41	0.74	0.99	1.32
1190	23.33	21.21	19.12	1.14	1.53	2.09	1.06	1.42	1.92
1280	11.40	10.03	8.84	2.74	3.75	5.18	2.47	3.35	4.55
1400	3.13	3.08	3.15	12.29	14.24	15.97	10.54	12.10	13.67
1450	2.18	2.30	2.48	17.20	17.58	17.40	15.01	15.85	16.49
1500	1.73	1.89	2.10	18.27	17.41	16.47	17.68	17.43	17.00
1560	1.44	1.61	1.83	16.95	15.95	15.03	17.88	16.86	15.93
1600	1.32	1.49	1.70	15.95	15.07	14.30	16.96	15.93	15.06
1700	1.11	1.28	1.47	14.29	13.77	13.39	14.99	14.36	13.88
1800	0.96	1.10	1.27	13.92	13.72	13.64	14.42	14.16	14.01
1900	0.81	0.93	1.08	14.74	14.80	14.96	15.13	15.15	15.25
2000	0.67	0.78	0.91	16.64	16.94	17.35	16.92	17.20	17.55
2100	0.55	0.66	0.78	19.72	20.37	21.12	19.85	20.45	21.11
2200	0.47	0.57	0.70	24.59	25.73	26.94	24.34	25.33	26.37
2300	0.42	0.52	0.64	29.69	29.50	29.05	27.01	27.13	27.14
2400	0.39	0.49	0.61	25.46	24.45	23.74	24.02	23.43	23.09
2500	0.37	0.48	0.60	21.37	20.69	20.27	20.71	20.22	20.00
2600	0.37	0.48	0.60	18.81	18.34	18.10	18.48	18.14	18.02
2700	0.38	0.49	0.60	17.24	16.88	16.73	16.96	16.70	16.66
2800	0.37	0.48	0.60	16.28	15.98	15.90	16.06	15.87	15.88
2900	0.37	0.48	0.60	15.70	15.44	15.40	15.53	15.38	15.41
3000	0.36	0.47	0.59	15.42	15.19	15.18	15.24	15.12	15.18
3100	0.34	0.46	0.58	15.35	15.16	15.16	15.23	15.15	15.22
3200	0.32	0.44	0.56	15.51	15.33	15.32	15.44	15.38	15.44
3300	0.30	0.41	0.54	15.86	15.70	15.67	15.84	15.81	15.85
3400	0.27	0.39	0.51	16.42	16.27	16.23	16.42	16.40	16.42
3500	0.24	0.36	0.49	17.19	17.04	16.95	17.28	17.29	17.28
3600	0.22	0.33	0.46	18.19	18.05	17.91	18.39	18.44	18.37
3700	0.19	0.31	0.44	19.53	19.40	19.17	19.73	19.85	19.69
3800	0.18	0.30	0.42	21.13	21.01	20.63	21.70	21.89	21.60
3900	0.15	0.28	0.41	23.33	23.24	22.69	24.22	24.57	24.00
4000	0.14	0.26	0.39	25.73	25.63	24.99	28.19	29.03	27.98
4100	0.13	0.25	0.38	27.86	27.56	27.16	33.27	35.35	33.99
4200	0.13	0.25	0.38	27.00	26.72	27.26	32.33	32.55	34.70
4300	0.12	0.25	0.37	24.39	24.11	25.04	26.69	26.45	27.96
4400	0.14	0.26	0.39	21.78	21.61	22.55	22.99	22.78	23.92
4500	0.15	0.27	0.40	19.56	19.36	20.19	20.32	20.10	20.97
4600	0.17	0.30	0.42	17.92	17.71	18.46	18.34	18.11	18.86
5000	0.29	0.44	0.56	13.15	13.02	13.46	13.31	13.19	13.61
5200	0.38	0.53	0.66	11.61	11.51	11.89	11.71	11.62	12.00
5300	0.42	0.57	0.71	10.98	10.90	11.23	11.06	11.00	11.32
5400	0.47	0.63	0.76	10.47	10.41	10.70	10.49	10.45	10.76
5500	0.52	0.67	0.82	9.96	9.93	10.17	10.00	9.98	10.23
5600	0.56	0.72	0.88	9.54	9.49	9.72	9.62	9.61	9.83
5800	0.65	0.82	0.99	8.83	8.82	8.99	8.83	8.87	9.04
6000	0.72	0.89	1.07	8.28	8.30	8.43	8.32	8.38	8.52

*** Temperature test data was based on the underlying chip**

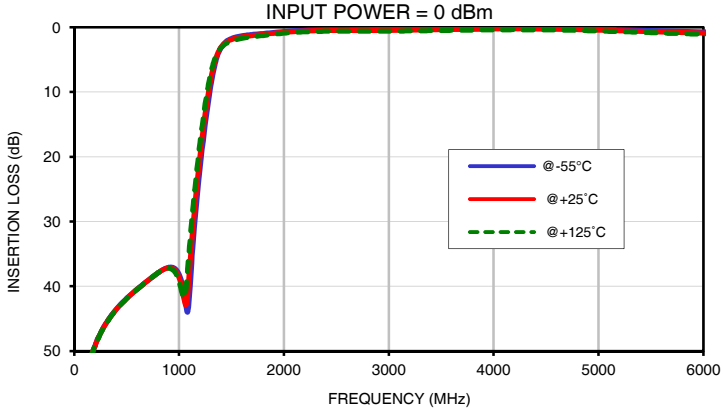
Typical Performance Data

FREQ. (MHz)	GROUP DELAY (nsec)		
	@-55°C	@+25°C	@+125°C
1600	0.86	0.82	0.78
1640	0.77	0.74	0.71
1680	0.69	0.66	0.64
1700	0.65	0.63	0.61
1760	0.59	0.57	0.56
1800	0.55	0.54	0.52
1840	0.52	0.50	0.49
1880	0.49	0.47	0.46
2000	0.41	0.40	0.39
2100	0.36	0.36	0.35
2200	0.32	0.32	0.31
2300	0.29	0.29	0.28
2400	0.26	0.26	0.25
2500	0.24	0.23	0.23
2600	0.22	0.21	0.21
2700	0.20	0.19	0.19
2800	0.18	0.18	0.18
2900	0.17	0.16	0.16
3000	0.16	0.15	0.15
3100	0.15	0.14	0.14
3200	0.14	0.14	0.14
3300	0.13	0.13	0.13
3400	0.13	0.12	0.12
3500	0.12	0.12	0.12
3600	0.12	0.11	0.11
3700	0.11	0.11	0.11
3800	0.11	0.11	0.11
3900	0.10	0.10	0.10
4000	0.10	0.10	0.10
4100	0.10	0.10	0.10
4200	0.10	0.09	0.10
4300	0.09	0.09	0.09
4400	0.09	0.09	0.09
4500	0.09	0.09	0.09
4600	0.09	0.08	0.09
4700	0.08	0.08	0.08
4800	0.08	0.08	0.08
4900	0.08	0.08	0.08
5000	0.07	0.07	0.08
5500	0.06	0.06	0.07
6000	0.06	0.06	0.06

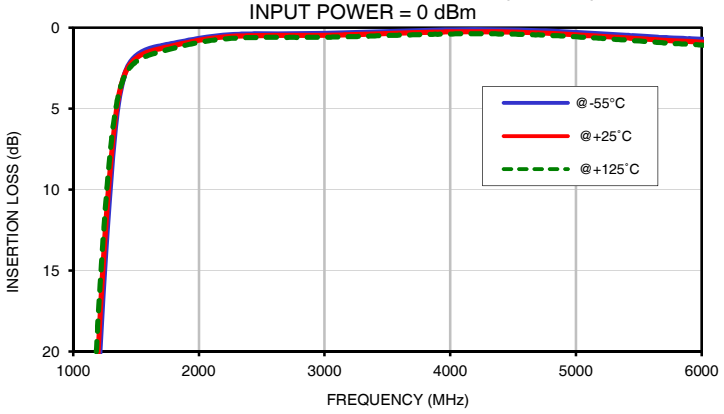
*** Temperature test data was based on the underlying chip**

Typical Performance Curves

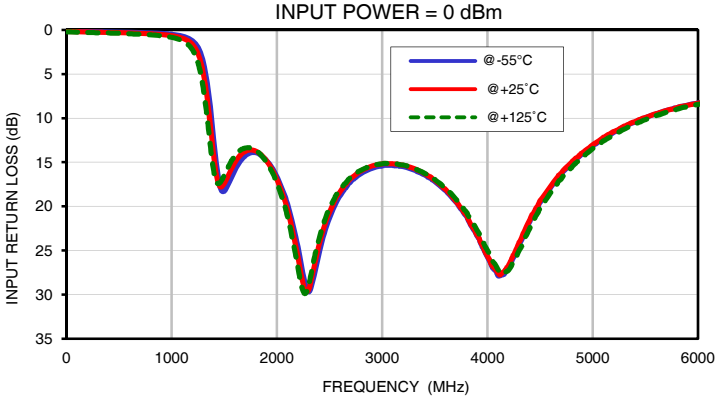
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



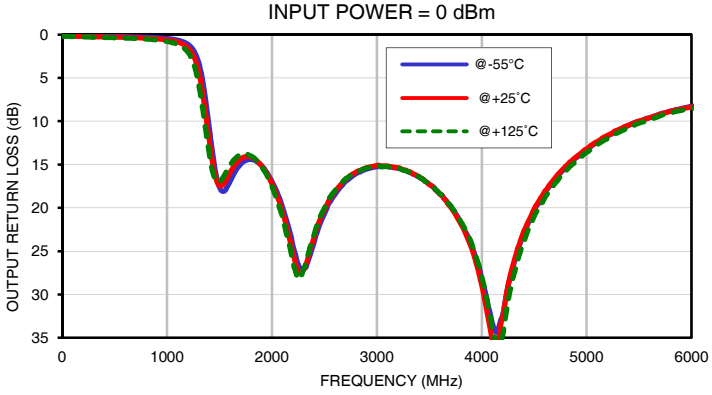
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



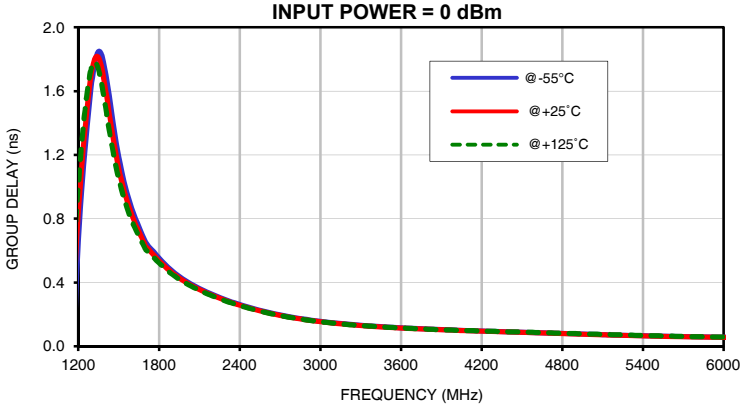
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



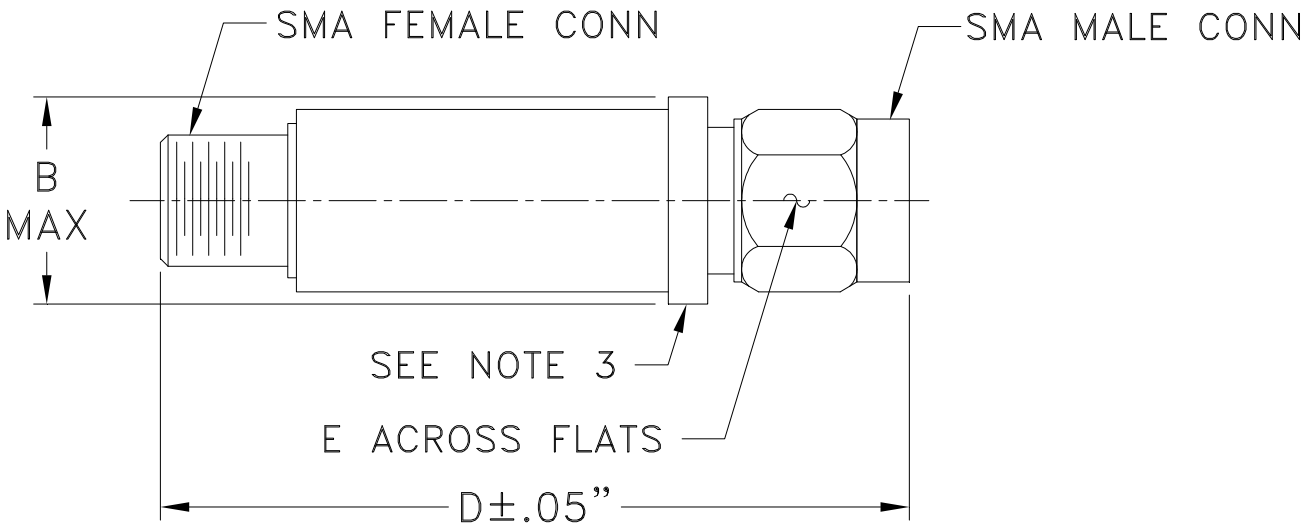
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



Case Style FF

FF704

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.

Mini-Circuits

Environmental Specifications ENV123

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 125° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 125° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
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, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Thermal Shock	-55° to 125°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, Except +125°C