

Coaxial Reflectionless High Pass Filter

VXHF-482M+

50Ω

4800 to 9000 MHz

The Big Deal

- Match to 50Ω in the stop band, eliminates undesired reflections
- Cascadable
- Temperature stable up to 100°C



Generic photo used for illustration purposes only
CASE STYLE: FF704

Product Overview

Mini-Circuits' VXHF-482M+ reflectionless filter employs a novel filter topology which absorbs and terminates stop band signals internally rather than reflecting them back to the source. This new capability enables unique applications for filter circuits beyond those suited to traditional approaches. Reflectionless filters eliminate stop band reflections, allowing them to be paired with sensitive devices and used in applications that otherwise require circuits such as isolation amplifiers or attenuators.

Key Features

Feature	Advantages
Easy integration with sensitive reflective components, e.g. mixers, multipliers	Reflectionless filters absorb unwanted signals, preventing reflections back to the source. This reduces generation of additional unwanted signals without the need for extra components like attenuators, improving system dynamic range.
Enables stable integration of wideband amplifiers	Because reflectionless filters maintain good impedance in the stop band; they can be integrated with high gain, wideband amplifiers without the risk of creating instabilities in these out of band regions.
Operating temperature up to 100°C	Suitable for operation close to high power components.
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



High Pass Filter

50Ω 4800 to 9000 MHz

VXHF-482M+



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Connectors	Model
SMA-M/F	VXHF-482M+

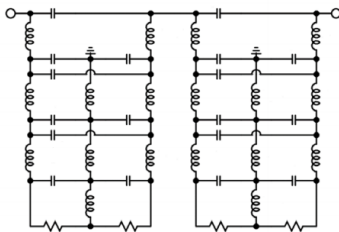
Features

- Match to 50Ω in the stop band, eliminates undesired reflections
- Cascadable
- Temperature stable up to 100°C
- Protected by US Patents 8,392,495; 9,705,467, additional patent pending
- Protected by China Patent 201080014266.1
- Protected by Taiwan Patent I581494

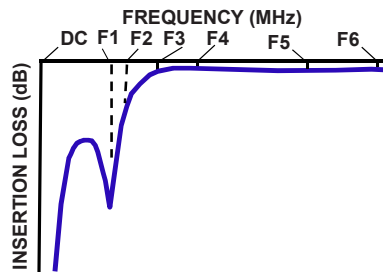
Applications

- Wi-Fi
- WiMax
- Microwave Radio
- Military & Space

Functional Schematic



Typical Frequency Response



+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Stop Band	Rejection	DC-F1	DC - 2400	16	37	-	dB
		F1-F2	2400 - 3600	14	36	-	dB
	Freq. Cut-Off	F3	4390	-	3.0	-	dB
	VSWR	DC-F1	DC - 2400	-	1.3	-	:1
Pass Band		F1-F2	2400 - 3600	-	1.3	-	:1
	Insertion Loss	F4-F6	4800 - 9000	-	1.5	3.0	dB
	VSWR	F4-F5	4800 - 6000	-	2.0	-	:1
		F5-F6	6000 - 9000	-	3.0	-	:1

Absolute Maximum Ratings³

Parameter	Ratings
Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +100°C
RF Power Input, Passband (F4-F6) ¹	1.3W at 25°C
RF Power Input, Stopband (DC-F4) ²	1.6W at 25°C

¹ Passband rating derates linearly to 0.6W at 100°C ambient

² Stopband rating derates linearly to 0.8W at 100°C ambient

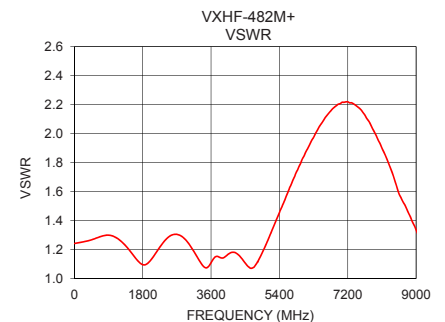
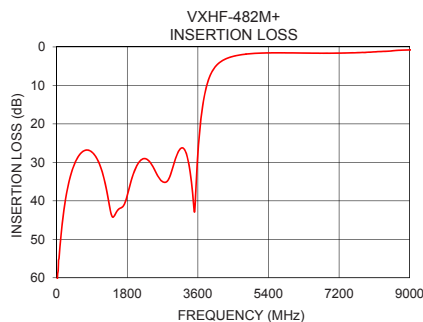
³ Permanent damage may occur if any of these limits are exceeded

ESD rating

Human body model (HBM): Class 2(Pass 2000 V) in accordance with ANSI/ESD STM 5.1-2001

Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
10	60.75	1.24
100	50.25	1.25
300	35.74	1.26
450	30.56	1.27
1000	28.54	1.29
2400	30.21	1.27
2500	31.98	1.29
3000	30.01	1.25
3600	27.73	1.11
4000	5.76	1.16
4335	3.00	1.16
4390	2.78	1.14
4800	1.90	1.10
4900	1.79	1.15
5000	1.70	1.21
6000	1.55	1.82
7000	1.62	2.21
8000	1.36	1.96
8500	1.08	1.62
9000	0.78	1.34



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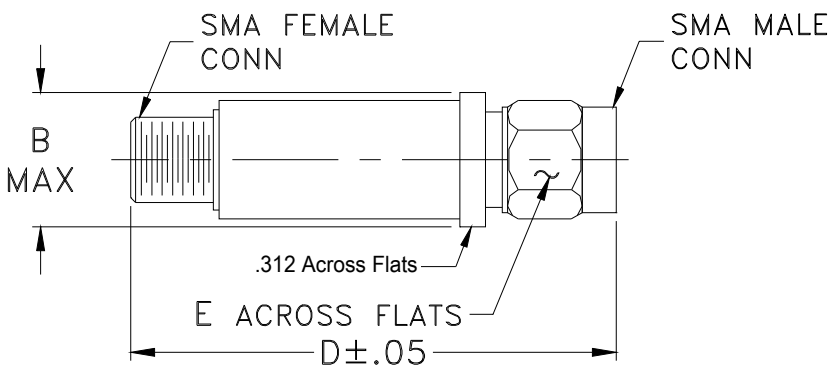
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Coaxial Connections

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

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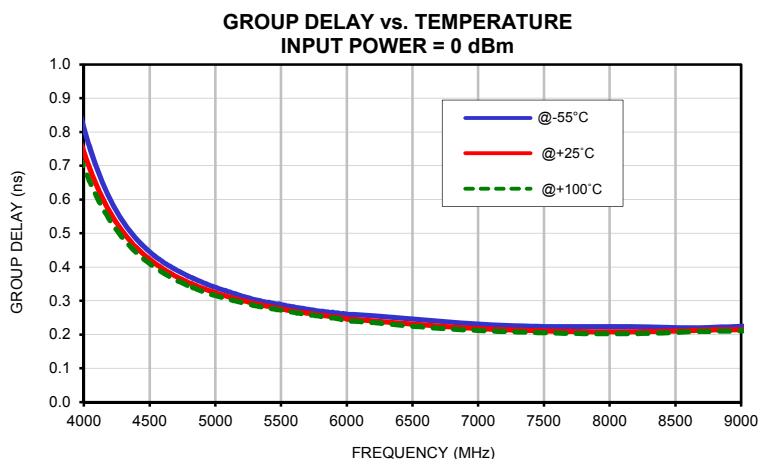
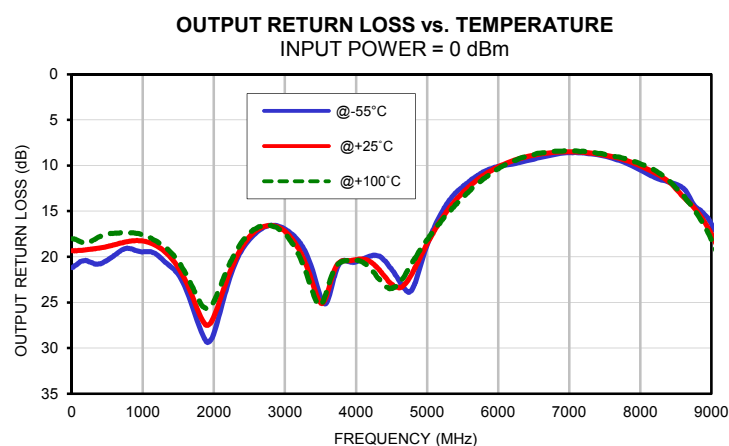
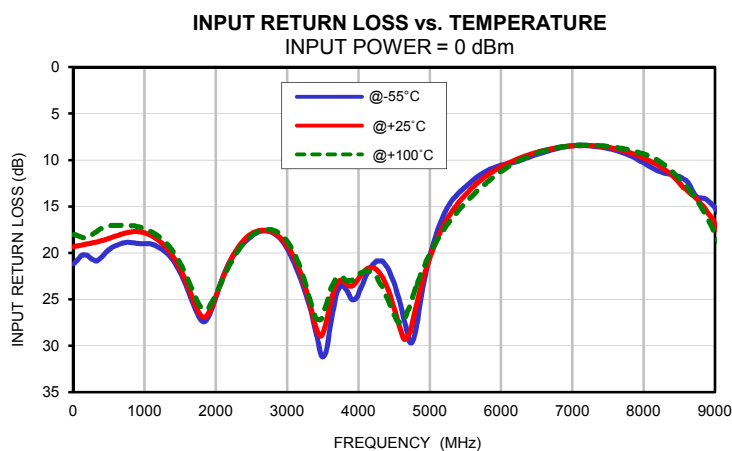
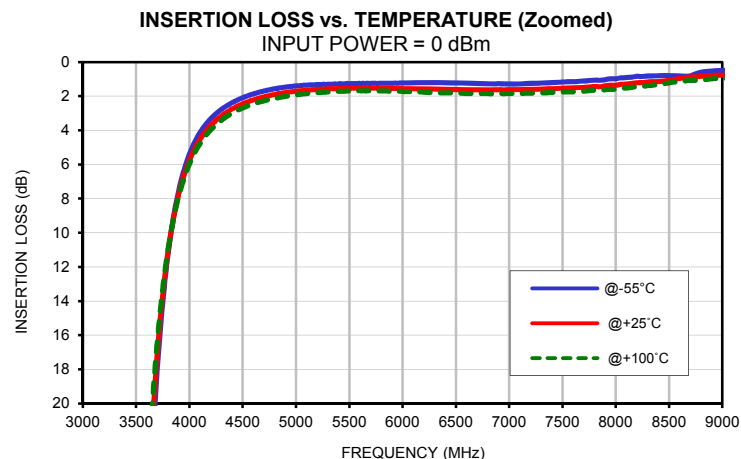
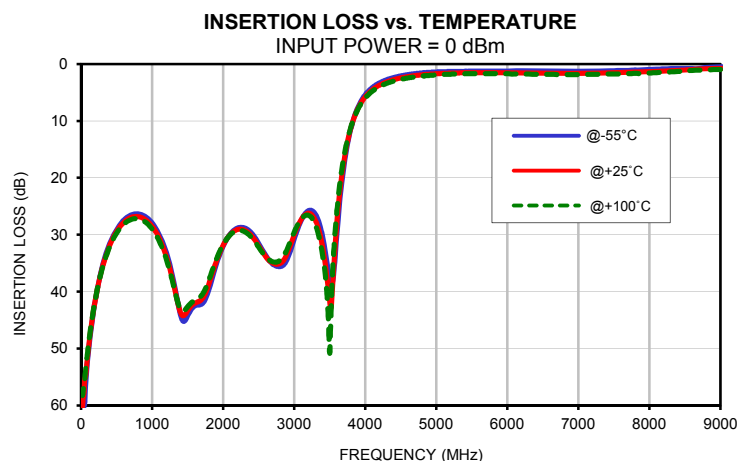
Typical Performance Data

FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
10	64.47	60.75	57.71	21.17	19.33	18.03	21.18	19.34	18.02
20	63.35	60.06	58.27	21.11	19.31	18.04	21.14	19.34	18.03
100	51.08	50.25	49.62	20.43	19.19	18.25	20.67	19.31	18.26
120	48.69	48.16	47.71	20.27	19.16	18.30	20.54	19.29	18.33
300	35.54	35.74	35.85	20.81	18.87	17.85	20.70	19.14	18.19
450	30.24	30.56	30.81	20.02	18.58	17.19	20.60	18.96	17.61
500	29.08	29.43	29.71	19.67	18.44	17.10	20.39	18.87	17.53
600	27.43	27.82	28.16	19.21	18.18	17.02	19.85	18.68	17.42
700	26.55	26.98	27.35	18.93	17.94	17.02	19.28	18.49	17.36
1000	27.97	28.54	29.00	18.99	17.83	17.39	19.46	18.26	17.61
1200	33.18	33.86	34.35	19.40	18.66	18.23	19.76	18.82	18.32
1300	38.02	38.62	38.92	19.92	19.39	18.90	20.47	19.37	18.87
1500	44.24	43.36	42.66	22.07	21.70	21.07	21.93	21.19	20.51
1600	42.53	42.04	41.53	23.81	23.41	22.66	23.38	22.58	21.75
1700	42.17	41.34	40.61	25.78	25.35	24.50	25.47	24.37	23.30
1800	39.57	38.62	37.93	27.27	26.79	25.94	27.75	26.35	24.89
1900	35.32	34.82	34.45	26.86	26.49	25.91	29.34	27.52	25.70
2000	31.98	31.83	31.72	24.83	24.70	24.50	28.44	26.59	24.92
2100	29.87	29.95	30.01	22.63	22.68	22.76	25.70	24.39	23.11
2400	29.74	30.21	30.51	18.90	18.58	18.92	19.17	18.88	18.30
2600	33.70	33.89	33.91	17.73	17.61	17.68	17.33	17.09	16.87
2800	35.61	35.06	34.52	17.82	17.80	17.54	16.55	16.58	16.57
3000	30.75	30.01	29.52	19.49	19.23	18.73	16.97	17.20	17.52
3200	25.78	26.22	26.59	23.02	22.38	21.90	18.34	19.24	19.88
3400	30.45	32.31	33.71	28.41	27.89	26.97	21.77	23.17	24.09
3600	29.95	27.73	25.82	28.18	25.71	24.20	24.82	23.91	23.46
3800	11.20	11.09	10.97	23.63	23.12	22.80	20.48	20.45	20.52
4000	5.39	5.76	5.97	24.44	22.79	22.38	20.56	20.32	20.39
4200	3.32	3.72	3.97	21.29	21.59	22.20	19.93	20.54	21.28
4390	2.41	2.78	3.03	21.41	23.45	24.67	20.34	22.03	23.08
4600	1.87	2.22	2.46	25.84	28.46	27.47	22.53	23.38	22.96
4700	1.69	2.04	2.27	29.06	28.91	26.11	23.67	22.89	21.86
4750	1.63	1.97	2.20	29.66	27.75	25.12	23.88	22.32	21.25
4800	1.56	1.90	2.13	28.47	26.06	23.83	23.40	21.67	20.50
4890	1.48	1.80	2.02	24.29	23.27	21.95	21.39	20.26	19.37
4900	1.47	1.79	2.01	23.89	23.01	21.79	21.14	20.09	19.28
4950	1.43	1.75	1.96	21.96	21.69	20.87	19.83	19.34	18.69
5000	1.39	1.70	1.91	20.38	20.54	20.14	18.69	18.57	18.12
5100	1.35	1.65	1.85	17.80	18.59	18.67	16.78	17.18	17.10
5200	1.32	1.60	1.79	15.85	16.97	17.46	15.19	15.92	16.05
5400	1.27	1.55	1.72	13.59	14.63	15.44	13.01	13.82	14.27
5600	1.25	1.53	1.68	12.22	12.94	13.86	11.70	12.24	12.76
5800	1.25	1.54	1.69	11.17	11.70	12.40	10.67	11.05	11.42
6000	1.23	1.55	1.72	10.55	10.70	11.23	10.12	10.14	10.37
6200	1.21	1.58	1.77	10.19	9.99	10.28	9.82	9.50	9.52
6400	1.21	1.59	1.80	9.68	9.41	9.56	9.49	9.03	8.99
6600	1.24	1.62	1.83	9.16	8.96	9.01	9.10	8.73	8.63
6800	1.27	1.63	1.85	8.72	8.65	8.64	8.77	8.55	8.43
7000	1.28	1.62	1.84	8.46	8.49	8.47	8.58	8.50	8.41
7200	1.24	1.60	1.82	8.44	8.43	8.39	8.63	8.55	8.44
7400	1.20	1.56	1.78	8.61	8.53	8.47	8.84	8.73	8.67
7600	1.15	1.52	1.74	8.94	8.77	8.61	9.17	9.02	8.91
7800	1.05	1.42	1.65	9.50	9.19	8.93	9.74	9.44	9.27
8000	0.98	1.36	1.59	10.29	9.81	9.34	10.51	10.04	9.83
8200	0.84	1.21	1.43	11.17	10.55	10.05	11.30	10.81	10.50
8400	0.81	1.14	1.32	11.59	11.65	11.27	11.82	11.78	11.67
8600	0.81	0.97	1.15	12.24	13.21	12.84	12.48	13.42	13.24
8800	0.60	0.83	1.04	14.09	14.70	15.03	14.68	15.07	15.34
8850	0.55	0.82	1.02	14.13	15.12	15.64	14.94	15.59	15.95
9000	0.48	0.78	0.96	15.15	16.86	18.02	16.41	17.54	18.17

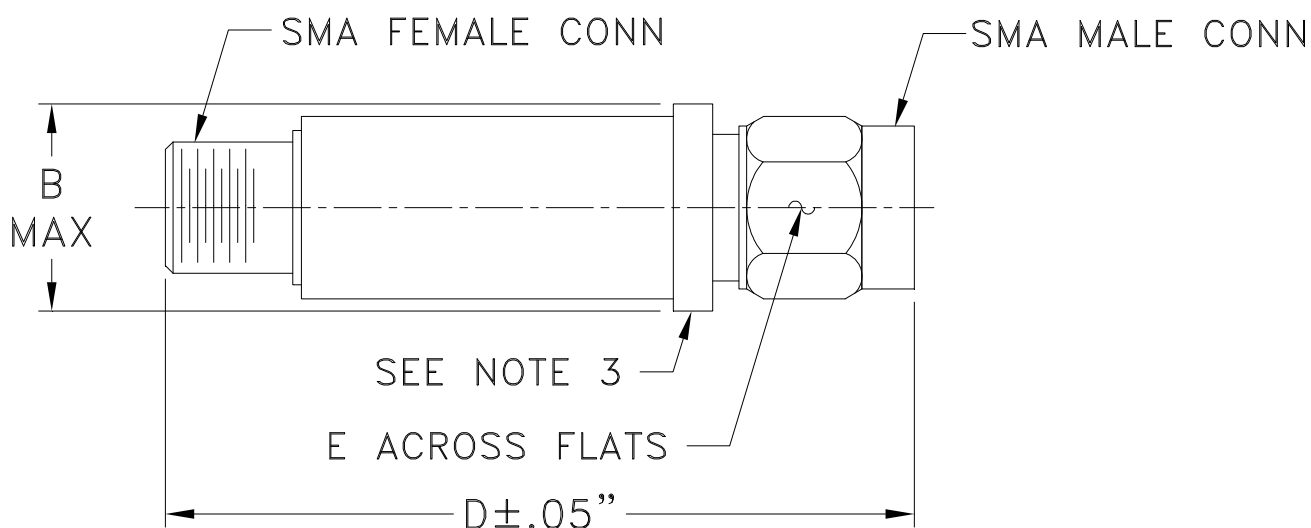
Typical Performance Data

FREQ.	GROUP DELAY		
(MHz)	(nsec)		
	@-55°C	@+25°C	@+100°C
4800	0.37	0.35	0.34
4880	0.36	0.34	0.33
4960	0.35	0.33	0.32
5040	0.33	0.32	0.31
5120	0.32	0.31	0.30
5200	0.31	0.30	0.29
5280	0.30	0.29	0.29
5360	0.30	0.29	0.28
5440	0.29	0.28	0.28
5520	0.29	0.27	0.27
5600	0.28	0.27	0.27
5680	0.28	0.26	0.26
5760	0.27	0.26	0.26
5840	0.27	0.26	0.25
5920	0.26	0.25	0.25
6000	0.26	0.25	0.24
6100	0.26	0.24	0.24
6200	0.26	0.24	0.24
6300	0.25	0.24	0.23
6400	0.25	0.23	0.23
6500	0.25	0.23	0.22
6600	0.24	0.23	0.22
6700	0.24	0.22	0.22
6800	0.24	0.22	0.22
6900	0.23	0.22	0.21
7000	0.23	0.22	0.21
7100	0.23	0.22	0.21
7200	0.23	0.21	0.21
7300	0.23	0.21	0.21
7400	0.22	0.21	0.21
7500	0.22	0.21	0.21
7600	0.22	0.21	0.20
7700	0.22	0.21	0.20
7800	0.22	0.21	0.20
7900	0.22	0.21	0.20
8000	0.22	0.21	0.20
8100	0.22	0.21	0.20
8200	0.22	0.21	0.20
8250	0.22	0.21	0.20
8300	0.22	0.21	0.20
8350	0.22	0.21	0.20
8400	0.22	0.21	0.20
8450	0.22	0.21	0.21
8500	0.22	0.21	0.21
8550	0.22	0.21	0.21
8600	0.22	0.21	0.21
8650	0.22	0.21	0.21
8700	0.22	0.21	0.21
8750	0.22	0.21	0.21
8800	0.22	0.21	0.21
9000	0.22	0.21	0.21

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. $\pm .04$; 3Pl. $\pm .030$

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
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, Except +100°C