Coaxial

Low Pass Filter

VLFG-630+

50Ω DC to 630 MHz

Generic photo used for illustration purposes only

CASE STYLE: FF704

The Big Deal

- Good power handling, 3.5 W
- Temperature stable
- Rugged unibody construction
- Good rejection, 46 dB typical

Product Overview

VLFG-630+ is a 50Ω low pass filter built in rugged unibody construction. Covering DC-630 MHz bandwidth, these units offer good matching within the passband and good rejection in stopband. VLFG-630+ offer low insertion loss, and good power handling capability. It handles up to 3.5W 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.
3.5 W 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
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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

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

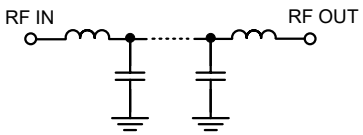
Features

- Low loss, 1.5 dB typical
- Good rejection 46 dB typical
- Good power handling, 3.5 W
- Temperature stable
- Connectorized package
- Rugged unibody construction

Applications

- Harmonic Rejection
- VHF/UHF transmitters / receivers
- Military radar applications
- Test and measurement
- Telecommunications & broadband wireless applications
- Satcom modems

Functional Schematic



Electrical Specifications at 25°C

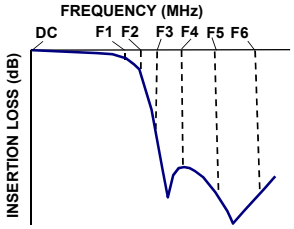
Parameter		F#	Frequency (MHz)	Min.	Typ.	Max.	Unit
Pass Band	Insertion Loss	DC-F1	DC - 630	—	1.5	2.1	dB
	Freq. Cut-Off	F2*	780	—	3.0	—	dB
	Return Loss	DC-F1	DC - 630	—	14	—	dB
Stop Band	Rejection Loss	F3-F4	1050 - 1500	20	50	—	dB
		F4-F5	1500 - 3800	35	46	—	dB
		F5-F6	3800 - 8500	—	21	—	dB

In Application where DC voltage is present at either input or output port, 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*	3.5 W max.@25°C

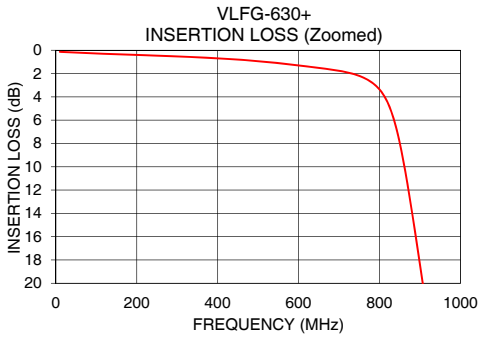
*Passband rating, derate linearly to 0.8 W at 125°C ambient
Permanent damage may occur if any of these limits are exceeded.

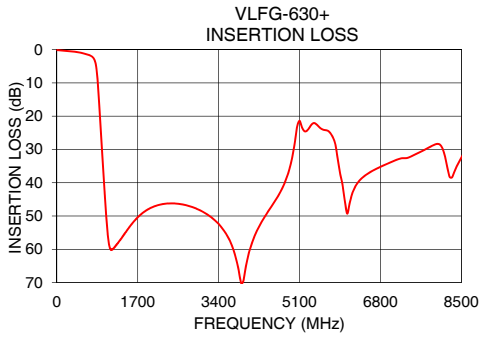
Typical Frequency Response

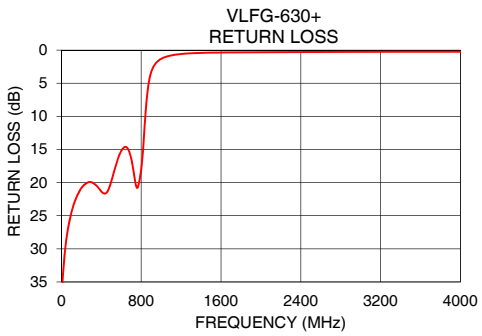


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	Return Loss (dB)
10	0.13	35.14
100	0.27	24.57
500	0.94	19.82
600	1.30	15.22
630	1.43	14.66
780	2.74	19.89
800	3.37	18.02
910	20.78	2.91
950	30.19	1.91
1000	41.66	1.32
1050	52.12	1.00
1500	53.83	0.38
2000	47.40	0.32
2400	46.22	0.30
3000	48.23	0.26
3800	64.87	0.24
4000	63.26	0.25
5000	27.91	0.75
7000	33.95	0.43
8500	32.39	2.06







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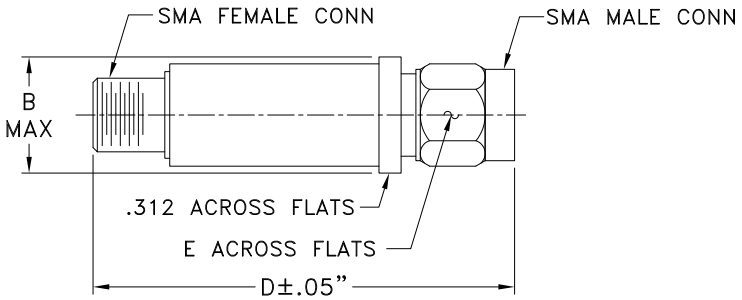
Coaxial Connections

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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Coaxial Low Pass Filter VLFG-630+

Typical Performance Data

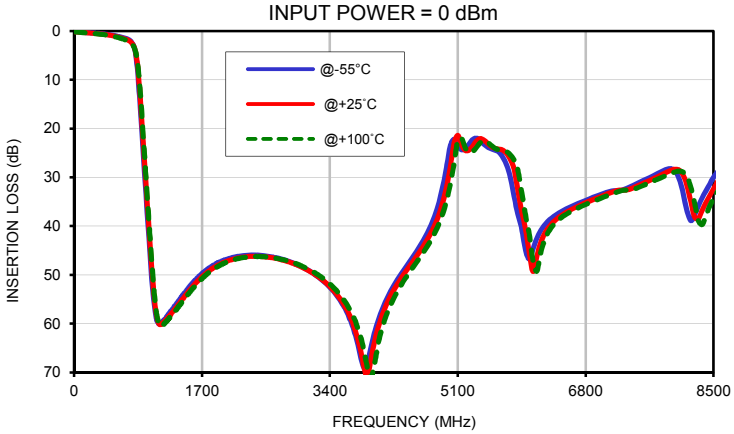
FREQ.	INSERTION LOSS			INPUT RETURN LOSS			OUTPUT RETURN LOSS		
(MHz)	(dB)			(dB)			(dB)		
	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C	@-55°C	@+25°C	@+100°C
10	0.10	0.13	0.16	37.70	35.58	33.57	36.69	35.14	32.97
40	0.15	0.18	0.21	33.69	30.66	28.73	32.32	29.80	28.06
100	0.24	0.27	0.30	28.30	26.74	25.33	25.61	24.57	23.60
200	0.36	0.40	0.43	24.08	25.01	26.51	20.65	20.83	21.38
300	0.46	0.53	0.57	25.05	24.40	25.27	20.88	19.94	19.93
400	0.61	0.69	0.75	21.00	22.15	22.61	20.77	21.33	21.00
420	0.65	0.73	0.79	20.23	21.38	22.05	20.69	21.60	21.60
460	0.73	0.82	0.89	18.87	19.69	20.58	20.27	21.40	22.35
490	0.80	0.91	0.97	17.86	18.37	19.22	19.43	20.32	21.62
500	0.83	0.94	1.00	17.53	17.95	18.75	19.05	19.82	21.12
590	1.12	1.26	1.36	15.15	15.02	15.30	15.54	15.51	15.93
600	1.16	1.30	1.40	15.05	14.87	15.09	15.32	15.22	15.56
630	1.27	1.43	1.54	15.06	14.71	14.78	15.00	14.66	14.80
700	1.58	1.76	1.91	18.89	17.62	16.90	17.59	16.37	15.72
720	1.72	1.90	2.05	22.40	20.32	18.94	19.53	17.96	16.92
780	2.66	2.74	2.87	18.40	21.89	25.04	18.88	19.89	19.82
800	3.45	3.37	3.44	12.71	15.50	17.69	15.86	18.02	18.68
820	4.92	4.49	4.40	8.18	10.55	12.33	11.70	14.75	16.43
850	9.29	7.97	7.36	3.83	5.22	6.44	6.20	8.31	10.19
910	22.89	20.78	19.44	1.37	1.75	2.10	2.32	2.91	3.50
950	32.39	30.19	28.79	0.97	1.23	1.44	1.56	1.91	2.24
960	34.73	32.51	31.11	0.91	1.15	1.35	1.43	1.76	2.05
1000	43.89	41.66	40.26	0.72	0.93	1.09	1.08	1.32	1.52
1050	53.91	52.12	50.93	0.58	0.76	0.89	0.82	1.00	1.14
1200	59.24	59.63	59.90	0.37	0.52	0.62	0.48	0.59	0.66
1300	57.18	57.80	58.27	0.31	0.44	0.54	0.39	0.48	0.53
1500	53.04	53.83	54.33	0.25	0.37	0.46	0.31	0.38	0.42
2000	46.94	47.40	47.56	0.26	0.35	0.41	0.25	0.32	0.35
2900	47.47	47.59	47.44	0.25	0.37	0.44	0.18	0.27	0.31
3000	48.16	48.23	48.04	0.25	0.37	0.45	0.18	0.26	0.31
3300	51.10	51.05	50.62	0.27	0.39	0.47	0.16	0.25	0.30
3500	54.38	54.18	53.46	0.29	0.41	0.49	0.15	0.25	0.31
3700	60.41	59.69	58.18	0.32	0.43	0.51	0.13	0.24	0.31
3800	66.22	64.87	62.32	0.33	0.44	0.53	0.13	0.24	0.32
4000	61.53	63.26	67.80	0.33	0.46	0.57	0.12	0.25	0.33
4200	53.63	54.57	56.40	0.34	0.49	0.62	0.11	0.25	0.34
4500	46.41	47.32	48.57	0.35	0.54	0.73	0.11	0.26	0.37
4700	41.32	42.66	44.01	0.40	0.61	0.84	0.14	0.28	0.40
4900	32.01	35.17	37.43	0.64	0.78	1.02	0.33	0.38	0.48
5000	23.61	27.91	31.55	1.13	1.06	1.22	1.25	0.75	0.67
5300	22.23	23.57	24.69	6.55	4.03	3.08	0.28	0.45	0.62
5500	23.84	23.10	22.87	2.98	3.89	5.54	0.18	0.39	0.58
5700	25.92	24.44	24.52	7.18	6.27	4.67	0.24	0.40	0.56
5900	37.54	32.74	28.58	1.52	2.41	3.82	0.32	0.56	0.78
6000	44.84	40.48	37.73	0.97	1.43	2.06	0.24	0.52	0.72
6300	39.03	40.43	41.33	0.57	0.78	1.07	0.14	0.35	0.53
6500	36.82	37.58	38.00	0.51	0.70	0.92	0.15	0.35	0.52
6700	35.36	35.90	36.26	0.49	0.67	0.85	0.17	0.36	0.53
6900	34.13	34.58	34.93	0.51	0.68	0.84	0.22	0.39	0.54
7000	33.54	33.95	34.30	0.54	0.71	0.85	0.30	0.43	0.56
7300	32.56	32.61	32.66	0.69	0.84	0.97	0.78	1.15	1.03
7500	31.16	31.69	32.10	0.98	1.06	1.18	0.42	0.66	0.92
7700	29.67	30.30	30.77	1.62	1.55	1.60	0.43	0.56	0.68
7900	28.26	28.79	29.42	3.36	2.74	2.56	0.65	0.66	0.71
8000	28.97	28.33	28.84	5.28	4.01	3.51	0.87	0.81	0.79
8100	33.53	29.66	29.00	8.60	6.16	5.10	0.96	1.01	0.96
8200	38.89	35.18	32.08	15.53	9.75	7.69	1.01	1.05	1.10
8300	35.74	38.40	38.97	15.23	16.40	12.34	1.27	1.11	1.11
8400	32.77	35.09	37.78	8.43	13.11	18.31	1.84	1.44	1.24
8500	30.01	32.39	34.35	5.25	7.67	11.23	2.09	2.06	1.67

Typical Performance Data

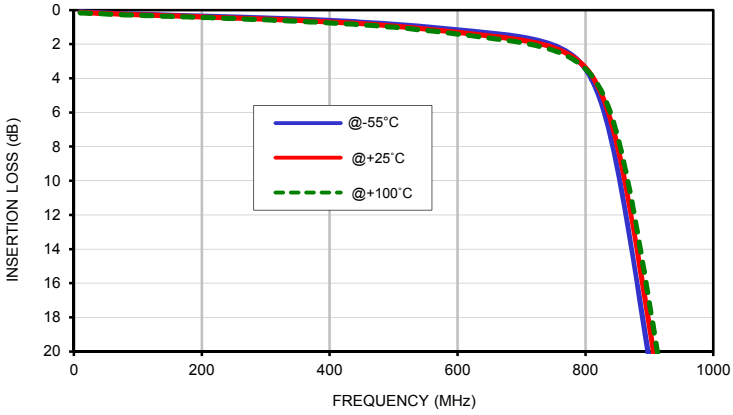
FREQ. (MHz)	GROUP DELAY (nsec)		
	@-55°C	@+25˚C	@+100˚C
10	0.98	1.00	0.96
20	1.00	0.98	0.97
30	0.99	0.98	0.96
40	0.99	0.98	0.96
50	0.99	0.98	0.96
60	0.99	0.97	0.96
70	0.99	0.97	0.96
80	0.99	0.97	0.96
90	0.99	0.97	0.96
100	0.99	0.97	0.95
110	0.99	0.97	0.96
120	0.99	0.97	0.96
130	0.99	0.97	0.96
140	0.99	0.97	0.96
150	0.99	0.98	0.96
160	1.00	0.98	0.97
170	1.00	0.98	0.97
180	1.00	0.99	0.97
190	1.01	0.99	0.98
200	1.01	0.99	0.98
220	1.02	1.00	0.99
240	1.04	1.01	1.00
260	1.05	1.03	1.01
280	1.06	1.04	1.02
300	1.08	1.06	1.04
320	1.10	1.07	1.05
340	1.12	1.09	1.07
360	1.14	1.11	1.09
380	1.16	1.13	1.11
400	1.19	1.16	1.14
420	1.22	1.19	1.17
440	1.25	1.22	1.19
460	1.28	1.25	1.23
480	1.32	1.28	1.26
500	1.36	1.32	1.30
520	1.40	1.36	1.34
540	1.45	1.41	1.38
560	1.51	1.46	1.43
580	1.57	1.52	1.49
600	1.65	1.59	1.55
630	1.78	1.71	1.67

Typical Performance Curves

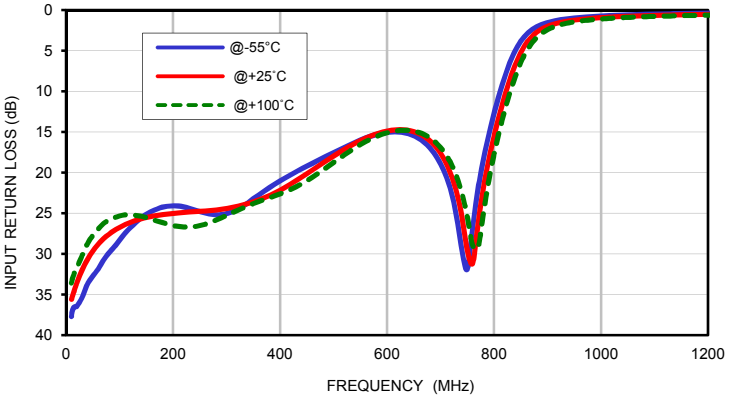
INSERTION LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



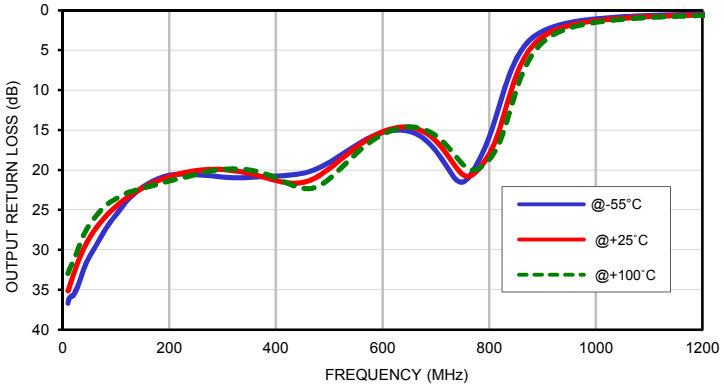
INSERTION LOSS vs. TEMPERATURE (Zoomed)
INPUT POWER = 0 dBm



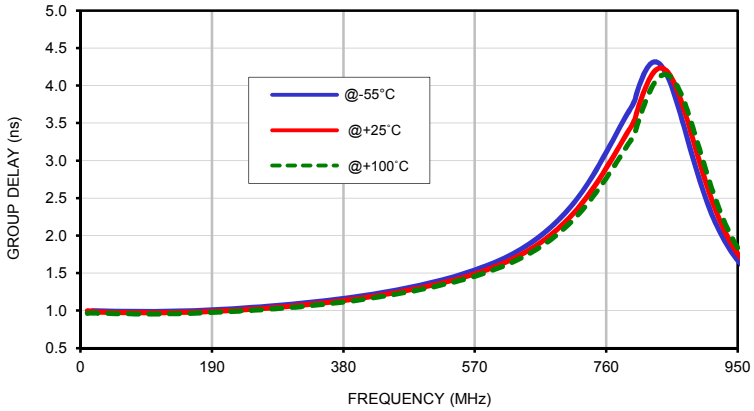
INPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



OUTPUT RETURN LOSS vs. TEMPERATURE
INPUT POWER = 0 dBm



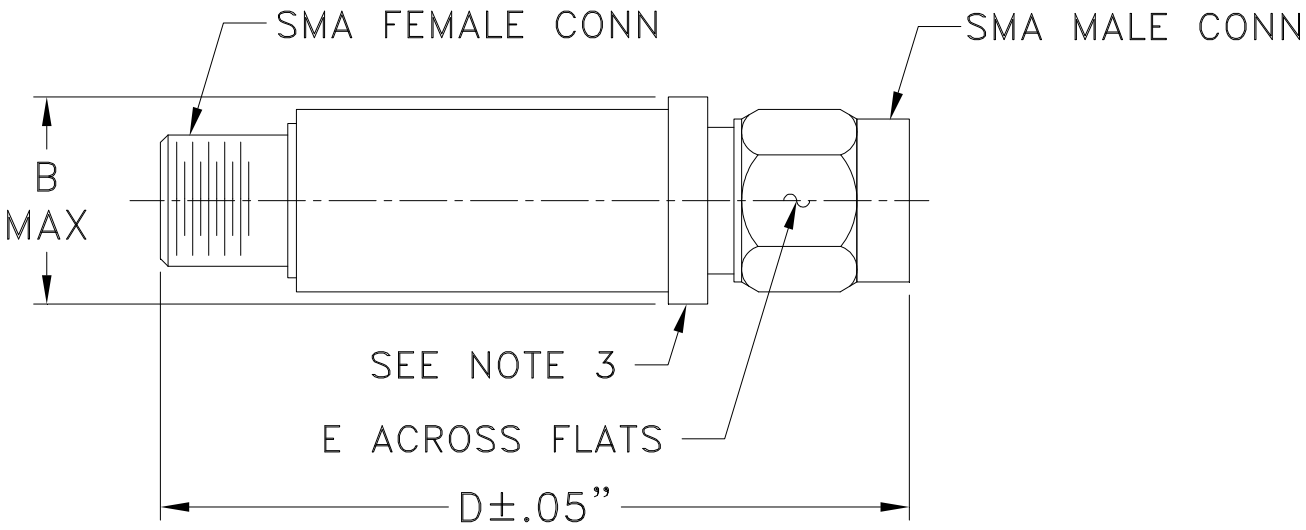
GROUP DELAY vs. TEMPERATURE
INPUT POWER = 0 dBm



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.

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Mini-Circuits

Environmental Specifications **ENV112**

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

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