

Low Pass Filter

50Ω

*DC to 190 MHz

VLF-190+

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power Input*	8W at 25°C
DC Current Input to Output	0.5A max. at 25°C

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

Features

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

Applications

- Harmonic rejection
- Transmitters/receivers
- Lab use



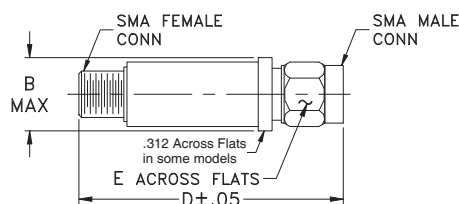
CASE STYLE: FF704

Connectors	Model
SMA	VLF-190+

+RoHS Compliant

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

Outline Drawing

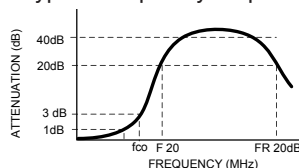


Low Pass Filter Electrical Specifications (T_{AMB} = 25°C)

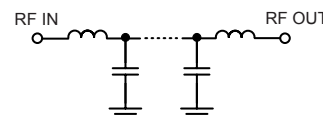
PASSBAND (MHz)	fco, MHz Nom.	STOP BAND (MHz) (loss, dB)			VSWR (:1)		NO. OF SECTIONS
		F 20 Min.	40 Typ.	FR 20 Typ.	Stopband Typ.	Passband Typ.	
*DC - 190 (loss < 1 dB) Max.	280 (loss 3 dB) Typ.	400	510 - 2850	6550	17	1.2	7

* Not for use with DC voltage at input and output ports

Typical frequency response



Electrical schematic



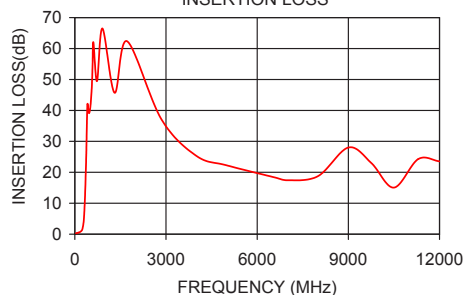
Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)
40	0.26	1.08
100	0.44	1.08
170	0.71	1.10
190	0.83	1.12
250	1.65	1.47
280	3.15	2.13
310	6.83	3.46
340	13.47	4.47
375	25.46	3.89
400	37.43	3.86
510	40.97	12.99
850	57.21	52.65
1500	48.19	64.35
2850	37.12	64.35
6550	18.42	32.18
9000	28.00	6.03
12000	23.53	4.26

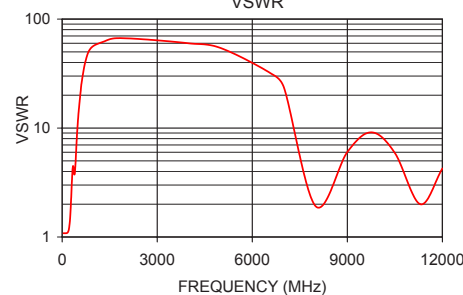
Outline Dimensions (inch mm)

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

VLF-190+
INSERTION LOSS



VLF-190+
VSWR



Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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 Low Pass Filter

VLF-190+

Typical Performance Data

FREQ. (MHz)	INSERTION LOSS (dB)			INPUT RETURN LOSS (dB)			OUTPUT RETURNLOSS (dB)		
	@ -55° C	@ +25° C	@ +100° C	@ -55° C	@ +25° C	@ +100° C	@ -55° C	@ +25° C	@ +100° C
40	0.22	0.27	0.31	32.57	30.41	28.51	32.71	30.33	28.46
50	0.24	0.29	0.32	31.81	29.78	27.84	32.02	29.69	27.83
70	0.29	0.35	0.39	30.69	28.77	26.99	30.69	28.56	26.90
85	0.33	0.39	0.43	30.29	28.56	26.97	29.95	28.06	26.69
100	0.37	0.43	0.48	30.14	28.56	27.23	29.48	27.80	26.71
120	0.43	0.50	0.54	30.17	28.71	27.76	29.01	27.55	26.82
130	0.46	0.53	0.58	30.21	28.81	28.06	28.76	27.41	26.84
145	0.51	0.59	0.64	30.27	29.03	28.65	28.29	27.18	26.84
155	0.55	0.63	0.69	30.25	29.21	29.16	27.83	26.94	26.74
170	0.61	0.70	0.77	30.01	29.40	30.14	26.84	26.27	26.25
185	0.69	0.79	0.86	28.71	28.65	30.18	25.37	25.07	25.16
190	0.72	0.82	0.89	27.93	28.01	29.62	24.77	24.52	24.64
200	0.78	0.89	0.97	25.87	26.10	27.48	23.38	23.25	23.38
210	0.86	0.98	1.06	23.38	23.64	24.58	21.76	21.72	21.83
260	1.88	2.00	2.12	10.84	11.22	11.43	11.78	12.34	12.61
280	3.11	3.18	3.28	6.88	7.34	7.58	8.04	8.77	9.21
300	5.44	5.36	5.38	4.04	4.48	4.72	5.32	6.03	6.55
330	11.43	11.07	10.92	1.90	2.21	2.39	3.51	4.02	4.47
345	15.56	15.05	14.82	1.46	1.71	1.87	3.42	3.83	4.21
360	20.61	19.90	19.58	1.22	1.44	1.58	3.69	4.03	4.33
375	26.86	25.87	25.42	1.08	1.29	1.42	4.08	4.45	4.73
385	31.78	30.60	30.03	1.03	1.22	1.35	4.17	4.66	4.98
400	39.44	38.56	38.05	0.96	1.15	1.27	3.87	4.55	5.02
450	40.03	40.44	40.74	0.84	1.00	1.12	2.08	2.53	2.94
510	41.80	41.48	41.24	0.72	0.87	0.99	1.14	1.34	1.52
570	53.10	51.33	50.37	0.62	0.76	0.86	0.73	0.86	0.97
600	61.92	61.66	60.13	0.58	0.70	0.81	0.61	0.72	0.81
700	48.72	48.85	49.05	0.46	0.56	0.65	0.39	0.46	0.53
900	68.23	66.12	63.34	0.30	0.38	0.45	0.27	0.31	0.36
1500	48.55	48.65	48.77	0.16	0.21	0.25	0.24	0.26	0.30
2000	46.55	47.05	47.34	0.16	0.22	0.24	0.21	0.25	0.29
2850	38.13	37.82	36.87	4.81	2.15	1.55	0.20	0.27	0.34
3100	24.90	25.59	28.72	0.73	1.13	1.25	0.54	0.64	0.65
5000	22.00	22.34	22.62	0.79	1.11	1.45	0.18	0.33	0.50
6550	17.77	17.96	18.25	0.18	0.34	0.52	0.37	0.43	0.49
8500	14.86	14.50	14.61	1.05	1.04	1.25	4.27	4.49	4.76
9200	30.46	32.01	31.73	0.37	0.50	0.68	2.17	2.29	2.53
10500	15.66	15.35	15.80	1.02	1.05	1.13	3.61	3.32	3.12
12000	22.67	24.95	23.91	4.40	6.74	6.03	4.58	4.08	4.33
14000	13.40	17.78	17.32	3.93	5.67	5.13	2.47	2.66	2.66
16000	14.92	17.50	18.10	1.15	1.46	2.11	10.13	10.73	11.67
18000	16.21	17.88	15.64	2.49	2.55	3.02	1.95	2.63	3.35

REV. X1
VLF-190+
071009
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IF/RF MICROWAVE COMPONENTS • ISO 9001 ISO 14001 AS9100 CERTIFIED RoHS compliant

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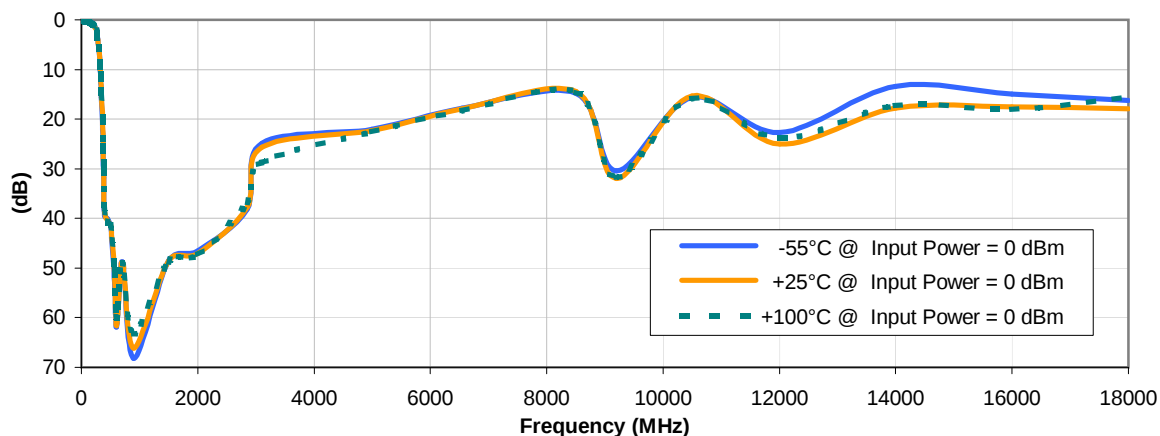


Coaxial Low Pass Filter

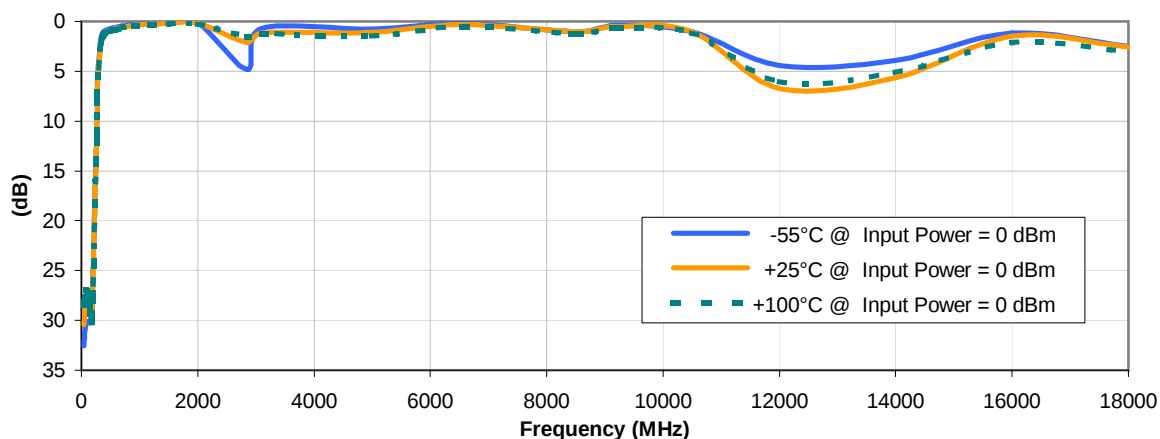
Typical Performance Curves

VLF-190+

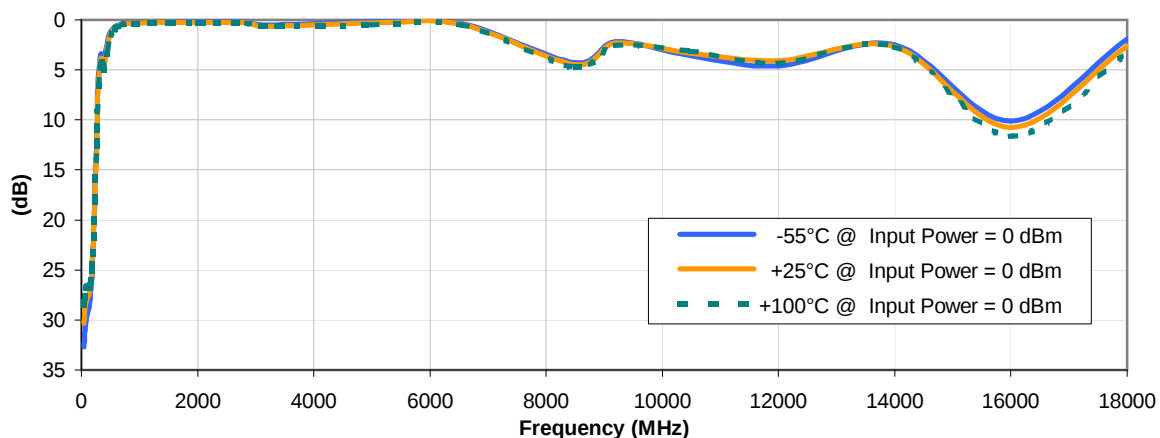
INSERTION LOSS vs. TEMPERATURE



INPUT RETURN LOSS vs. TEMPERATURE



OUTPUT RETURN LOSS vs. TEMPERATURE



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VLF-190+
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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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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