

+12 to +33dBm

# Limitter

## VLM-63-2W-S+

50Ω Broadband 30 to 6000 MHz



CASE STYLE: FF704

### The Big Deal

- Protection against up to 2.5 W of unwanted input signals
- Wide frequency range, 30 MHz-6 GHz
- Very fast recovery time, 5 nsec typ.

### Product Overview

The VLM-63-2W-S+ reacts almost instantaneously to protect sensitive devices from power surges and other unwanted signals at the device input. For inputs >12 dBm, the output power remains about 11.5 dBm, whereas lower-level input losses are only 0.4 dB typ. These units are housed in a patented, rugged unibody enclosure (1.43" x 0.410") specifically designed to function in tough environments such as manufacturing sites, train tunnels, weapon systems, or anywhere sensitive components, such as low noise amplifiers, need protection.

Feature	Advantages
High power handling, up to 2.5W max	Affords protection against peak voltages of multi-tone signals
Very fast recovery time, 5 nsec typ.	Back in operation almost instantaneously following signal spikes
Wideband, 30 MHz-6 GHz	Protection for a wide range of applications, from IF receivers to toll-booth operations

#### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



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## VLM-63-2W-S+



Generic photo used for illustration purposes only

CASE STYLE: FF704

Connectors Model  
SMA VLM-63-2W-S+

**+RoHS Compliant**

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

### Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Input Power	2.5W

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

### Features

- wideband, 30 to 6000 MHz
- low insertion loss 0.4 dB typ.
- fast recovery time, 5nsec typ.
- excellent VSWR 1.05:1 typ.
- low leakage power, 11.5 dBm typ.

### Applications

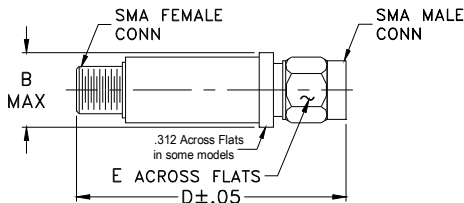
- protects low noise amplifiers and other devices from ESD or input power damage
- military, hi-rel applications

### Coaxial Connections\*

INPUT	SMA FEMALE
OUTPUT	SMA MALE

\*Suggested Connections. For reverse connections, consult Mini-Circuits.

### Outline Drawing



### Outline Dimensions (inch/mm)

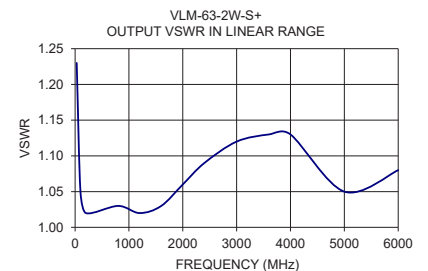
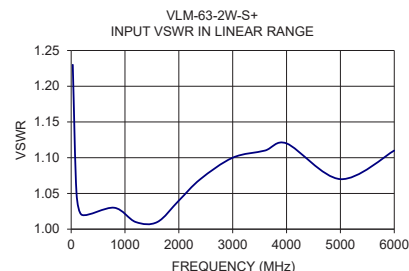
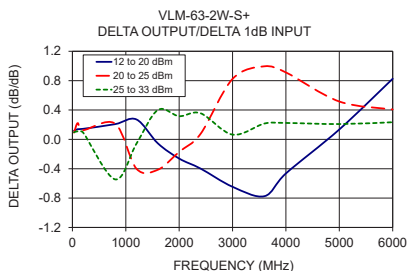
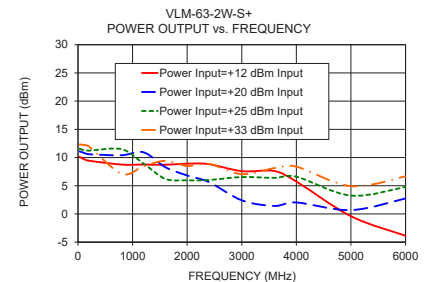
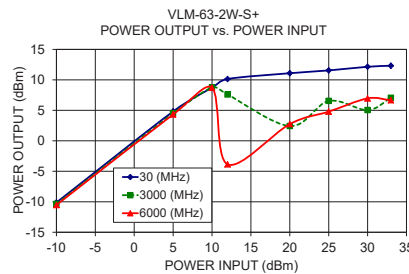
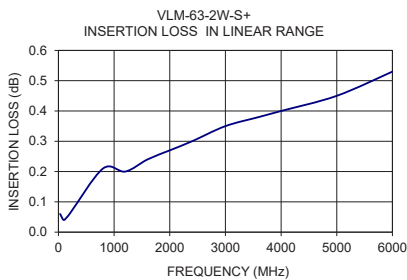
B	D	E	wt
.410	1.43	.312	grams
10.41	36.32	7.92	10.0

### Electrical Specifications

Parameter	Condition	Min.	Typ.	Max.	Units
Frequency Range		30		6000	MHz
Insertion Loss in Linear Range	<+4 dBm Input	—	0.4	1.2	dB
VSWR	<+4 dBm Input	—	1.05	1.5	:1
Input Power Limiting Range		+12	—	+33	dBm
Output Power	In limiting range	—	+11.5	—	dBm
Recovery Time	1 watt pulse 50 usec pw 1kHz duty cycle recovery to within 90% of final value.	—	5	—	nsec
Response Time	-30 to +33 dBm input 50 usec, BW 1 kHz duty cycle	—	7	—	nsec
Limiting $\Delta$ Output/1dB $\Delta$ Input	Input Power Range (dBm)				
	12 to 20	—	0.3	—	dB/dB
	20 to 25	—	0.5	—	
	25 to 33	—	0.6	—	

### Typical Performance Data

Freq. (MHz)	I. Loss in Linear Range (dB)	VSWR in Linear Range (:1)	Power Output (dBm)				$\Delta$ Output 1dB $\Delta$ Input		
			+12dBm Input	+20dBm Input	+25 dBm Input	+33dBm Input	+12 to +20dBm Input	+20 to +25 dBm Input	+25 to +33 dBm Input
30.00	0.06	1.23	10.14	11.09	11.55	12.32	0.12	0.09	0.10
100.00	0.04	1.05	9.75	10.86	11.33	12.23	0.14	0.22	0.11
200.00	0.06	1.02	9.44	10.59	11.22	11.97	0.14	0.13	0.09
800.00	0.21	1.03	8.75	10.41	11.48	7.12	0.21	0.21	-0.55
1200.00	0.20	1.01	8.76	10.93	8.93	8.46	0.27	-0.40	-0.06
1600.00	0.24	1.01	8.72	8.29	6.22	9.42	-0.05	-0.41	0.40
2000.00	0.27	1.04	8.91	6.82	5.97	8.50	-0.26	-0.17	0.32
2400.00	0.30	1.07	8.83	5.65	6.02	8.87	-0.40	0.07	0.36
3000.00	0.35	1.10	7.59	2.42	6.54	7.06	-0.65	0.82	0.06
3600.00	0.38	1.11	7.61	1.42	6.40	8.13	-0.77	1.00	0.22
4000.00	0.40	1.12	5.75	2.04	6.60	8.39	-0.46	0.91	0.22
5000.00	0.45	1.07	-0.40	0.68	3.26	4.93	0.14	0.52	0.21
6000.00	0.53	1.11	-3.86	2.75	4.79	6.66	0.83	0.41	0.23



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*Typical Performance Data*

FREQUENCY (MHz)	LOW INPUT POWER			POWER OUTPUT (dBm)				DELTA OUTPUT/1dB DELTA INPUT (dB/dB)		
	INSERTION LOSS (dB)	VSWR		+12 dBm INPUT	+20 dBm INPUT	+25 dBm INPUT	+33 dBm INPUT	+12 to +20 dBm INPUT	+20 to +25 dBm INPUT	+25 to +33 dBm INPUT
		INPUT	OUTPUT (:1)							
30	0.06	1.23	1.23	10.14	11.09	11.55	12.32	0.12	0.09	0.10
40	0.05	1.16	1.16	10.04	10.97	11.40	13.55	0.12	0.09	0.27
100	0.04	1.05	1.05	9.75	10.86	11.33	12.23	0.14	0.09	0.11
200	0.06	1.02	1.02	9.44	10.59	11.22	11.97	0.14	0.13	0.09
400	0.10	1.02	1.02	9.11	10.37	11.38	12.06	0.16	0.20	0.09
600	0.13	1.03	1.02	9.00	10.19	11.54	7.71	0.15	0.27	-0.48
800	0.21	1.03	1.03	8.75	10.41	11.48	7.12	0.21	0.21	-0.55
1000	0.18	1.02	1.02	8.61	10.81	10.82	8.53	0.28	0.00	-0.29
1200	0.20	1.01	1.02	8.76	10.93	8.93	8.46	0.27	-0.40	-0.06
1400	0.23	1.00	1.02	8.53	10.27	4.15	8.64	0.22	-1.22	0.56
1600	0.24	1.01	1.03	8.72	8.29	6.22	9.42	-0.05	-0.41	0.40
1800	0.25	1.03	1.04	8.49	5.91	6.74	8.79	-0.32	0.17	0.26
2000	0.27	1.04	1.06	8.91	6.82	5.97	8.50	-0.26	-0.17	0.32
2200	0.29	1.06	1.07	8.86	3.52	6.36	8.15	-0.67	0.57	0.22
2400	0.30	1.07	1.09	8.83	5.65	6.02	8.87	-0.40	0.07	0.36
2600	0.32	1.08	1.10	8.59	3.64	6.07	8.36	-0.62	0.49	0.29
2800	0.33	1.09	1.11	8.19	2.64	5.98	8.62	-0.69	0.67	0.33
3000	0.35	1.10	1.12	7.59	2.42	6.54	7.06	-0.65	0.82	0.06
3200	0.36	1.11	1.13	7.91	3.62	6.08	7.72	-0.54	0.49	0.21
3400	0.37	1.11	1.13	8.08	1.37	6.42	8.30	-0.84	1.01	0.24
3600	0.38	1.11	1.13	7.61	1.42	6.40	8.13	-0.77	1.00	0.22
3800	0.39	1.12	1.13	7.06	1.72	6.45	8.23	-0.67	0.95	0.22
4000	0.40	1.12	1.13	5.75	2.04	6.60	8.39	-0.46	0.91	0.22
5000	0.45	1.07	1.05	-0.40	0.68	3.26	4.93	0.14	0.52	0.21
6000	0.53	1.11	1.08	-3.86	2.75	4.79	6.66	0.83	0.41	0.23



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IF/RF MICROWAVE COMPONENTS

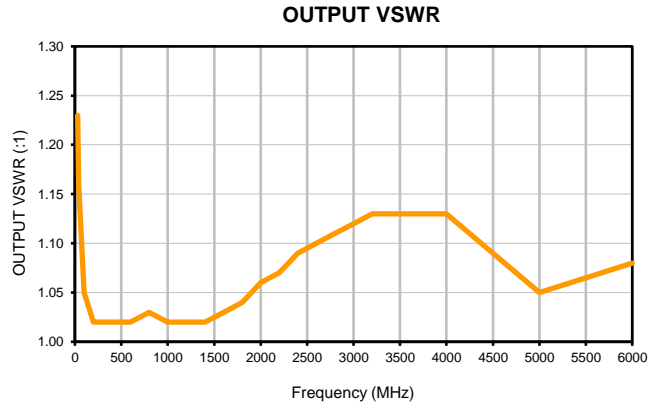
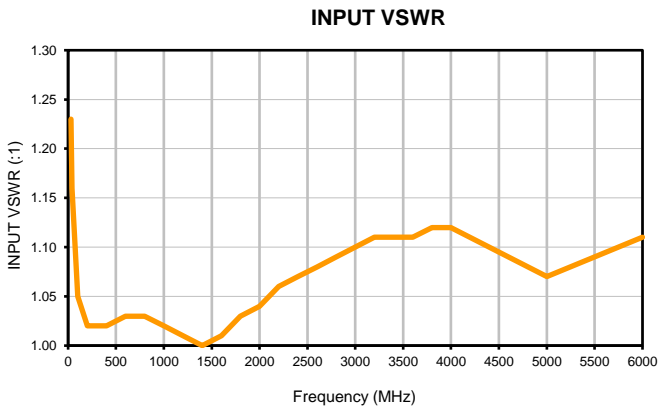
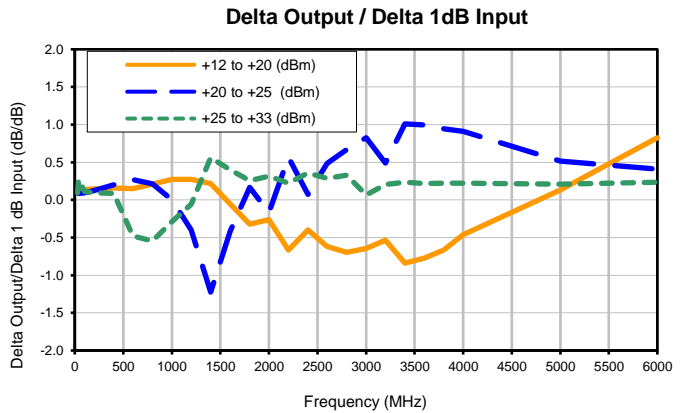
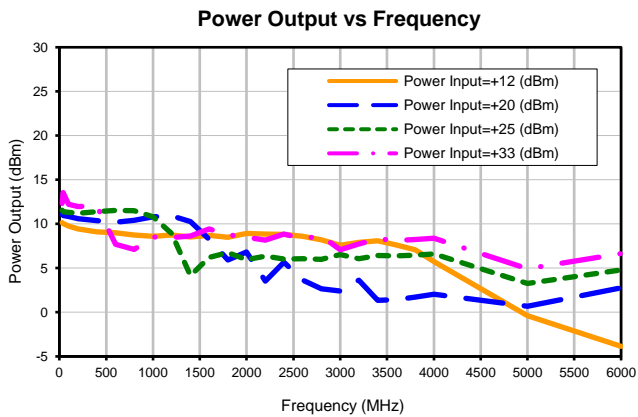
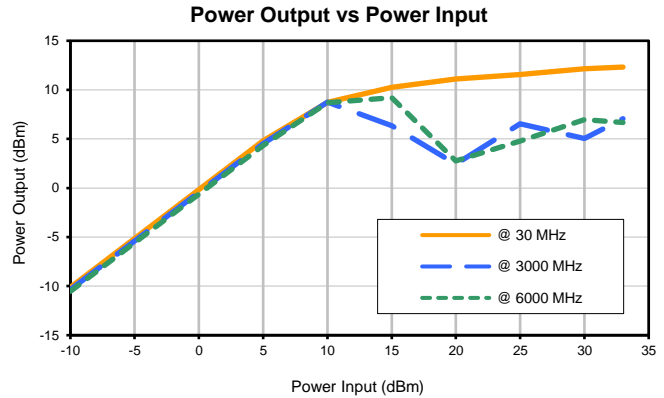
# LIMITER

# VLM-63-2W-S+

## Typical Performance Data

POWER INPUT	POWER OUTPUT	POWER INPUT	POWER OUTPUT	POWER INPUT	POWER OUTPUT
@ 30 MHz		@ 3000 MHz		@ 6000 MHz	
(dBm)		(dBm)		(dBm)	
-10	-10.12	-10	-10.35	-10	-10.53
5	4.82	5	4.51	5	4.33
10	8.72	10	8.75	10	8.70
15	10.27	15	6.35	15	9.20
20	11.09	20	2.42	20	2.75
25	11.55	25	6.54	25	4.79
30	12.15	30	5.04	30	6.96
33	12.32	33	7.06	33	6.66

## Typical Performance Curves

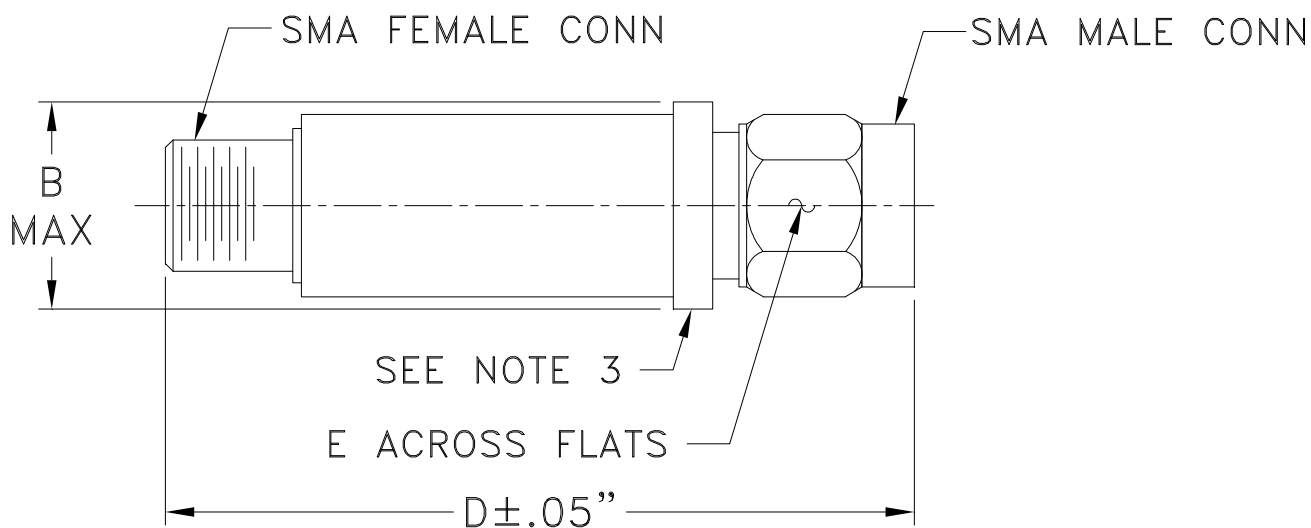


# Case Style

# 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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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