

# +12 to +30dBm Limiter

50Ω Broadband 30 to 3000 MHz

## VLM-33-S+



### Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Input Power	2W

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

### Features

- wideband, 30 to 3000 MHz
- low insertion loss 0.23 dB typ.
- fast recovery time, 10nsec typ.
- excellent VSWR 1.05:1 typ.
- low leakage power, 11.5 dBm typ.

CASE STYLE: FF704  
Connectors Model  
SMA VLM-33-S+

### +RoHS Compliant

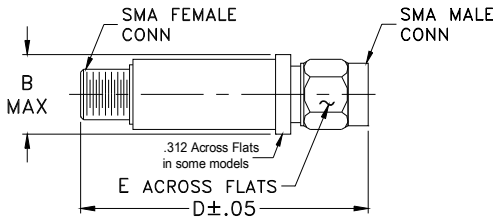
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### 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

### Applications

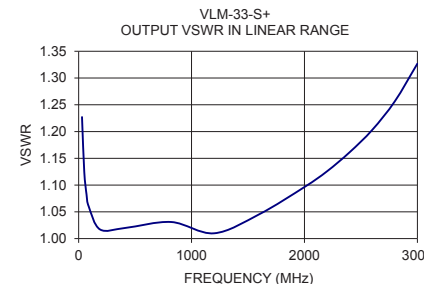
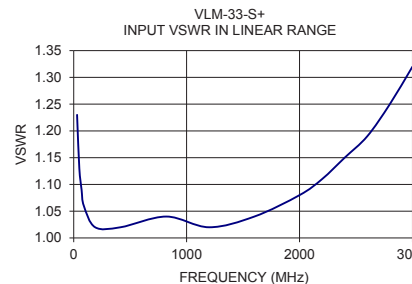
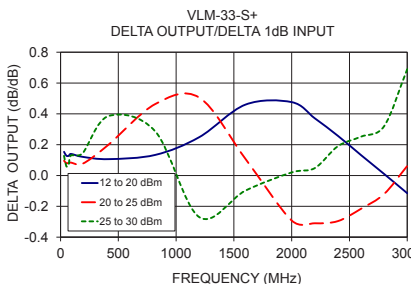
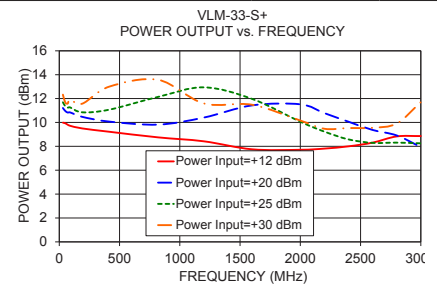
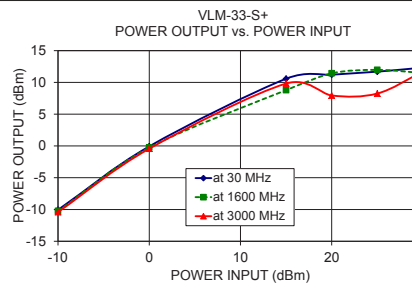
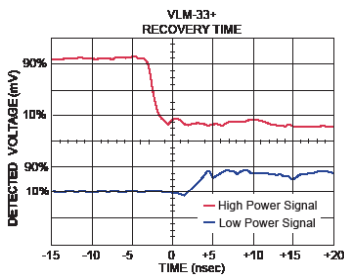
- protects low noise amplifiers and other devices from ESD or input power damage
- military, hi-rel applications

### Electrical Specifications

Parameter	Condition	Min.	Typ.	Max.	Units
Frequency Range		30		3000	MHz
Insertion Loss in Linear Range	<+5 dBm Input	—	0.23	0.7	dB
VSWR	<+5 dBm Input	—	1.05	1.5	:1
Input Power Limiting Range		+12	—	+30	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.	—	10	—	nsec
Response Time	-30 to +30 dBm input 50 usec, BW 1 kHz duty cycle	—	2	—	nsec
Limiting $\Delta$ Output/1dB $\Delta$ Input	Input Power Range (dBm)	12 to 20	0.2	—	dB/dB
		20 to 25	0.2	—	
		25 to 30	0.2	—	
		—	—	—	

### 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	+30dBm Input	+12 to +20dBm Input	+20 to +25 dBm Input	+25 to +30 dBm Input
30.00	0.06	1.23	9.98	11.21	11.69	12.33	0.15	0.10	0.13
50.00	0.04	1.13	9.93	10.96	11.36	11.66	0.13	0.08	0.06
70.00	0.04	1.09	9.81	10.83	11.24	11.58	0.13	0.08	0.07
90.00	0.04	1.06	9.72	10.84	11.26	11.91	0.14	0.08	0.13
190.00	0.06	1.02	9.50	10.47	10.85	11.57	0.12	0.08	0.14
415.00	0.10	1.02	9.22	10.07	11.07	13.00	0.11	0.20	0.39
820.00	0.21	1.04	8.75	9.82	12.14	13.57	0.13	0.46	0.29
1200.00	0.19	1.02	8.42	10.41	12.94	11.59	0.25	0.51	-0.27
1600.00	0.23	1.04	7.75	11.43	11.97	11.48	0.46	0.11	-0.10
2000.00	0.26	1.08	7.71	11.52	10.06	10.16	0.48	-0.29	0.02
2200.00	0.28	1.11	7.81	10.78	9.23	9.47	0.37	-0.31	0.05
2400.00	0.30	1.15	8.00	10.06	8.58	9.53	0.26	-0.30	0.19
2600.00	0.32	1.19	8.31	9.37	8.29	9.55	0.13	-0.22	0.25
2800.00	0.35	1.25	8.83	8.91	8.31	9.91	0.01	-0.12	0.32
3000.00	0.40	1.32	8.86	7.94	8.25	11.70	-0.12	0.06	0.69



### 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.
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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	+30 dBm INPUT	+12 to +20 dBm INPUT	+20 to +25 dBm INPUT	+25 to +30 dBm INPUT
		INPUT	OUTPUT							
		(:1)								
30	0.06	1.23	1.23	9.98	11.21	11.69	12.33	0.15	0.10	0.13
50	0.04	1.13	1.12	9.93	10.96	11.36	11.66	0.13	0.08	0.06
70	0.04	1.09	1.08	9.81	10.83	11.24	11.58	0.13	0.08	0.07
90	0.04	1.06	1.06	9.72	10.84	11.26	11.91	0.14	0.08	0.13
190	0.06	1.02	1.02	9.50	10.47	10.85	11.57	0.12	0.08	0.14
415	0.10	1.02	1.02	9.22	10.07	11.07	13.00	0.11	0.20	0.39
820	0.21	1.04	1.03	8.75	9.82	12.14	13.57	0.13	0.46	0.29
1200	0.19	1.02	1.01	8.42	10.41	12.94	11.59	0.25	0.51	-0.27
1600	0.23	1.04	1.05	7.75	11.43	11.97	11.48	0.46	0.11	-0.10
2000	0.26	1.08	1.10	7.71	11.52	10.06	10.16	0.48	-0.29	0.02
2200	0.28	1.11	1.13	7.81	10.78	9.23	9.47	0.37	-0.31	0.05
2400	0.30	1.15	1.16	8.00	10.06	8.58	9.53	0.26	-0.30	0.19
2600	0.32	1.19	1.20	8.31	9.37	8.29	9.55	0.13	-0.22	0.25
2800	0.35	1.25	1.26	8.83	8.91	8.31	9.91	0.01	-0.12	0.32
3000	0.40	1.32	1.33	8.86	7.94	8.25	11.70	-0.12	0.06	0.69



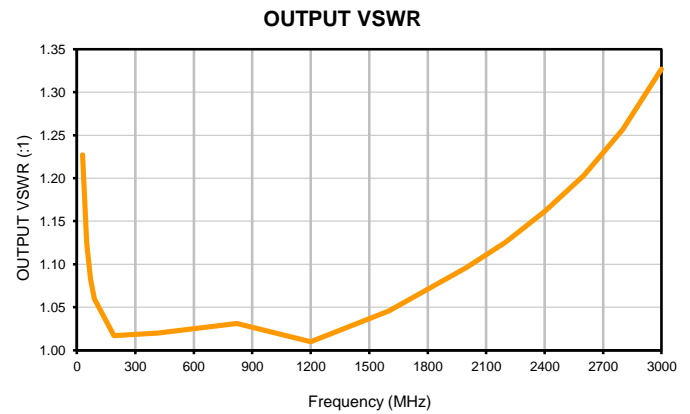
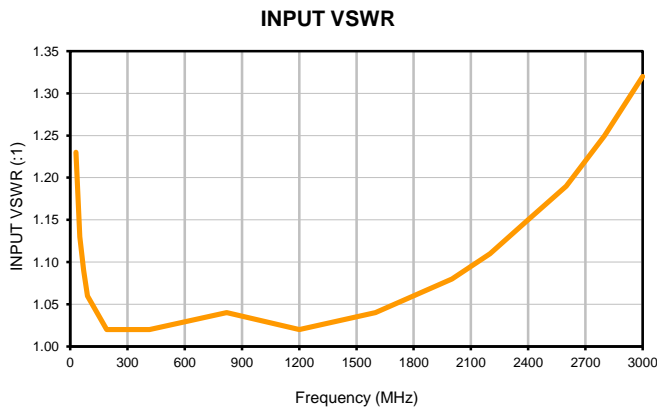
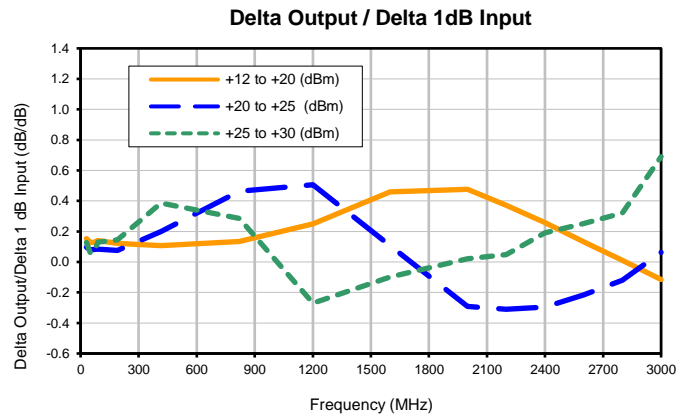
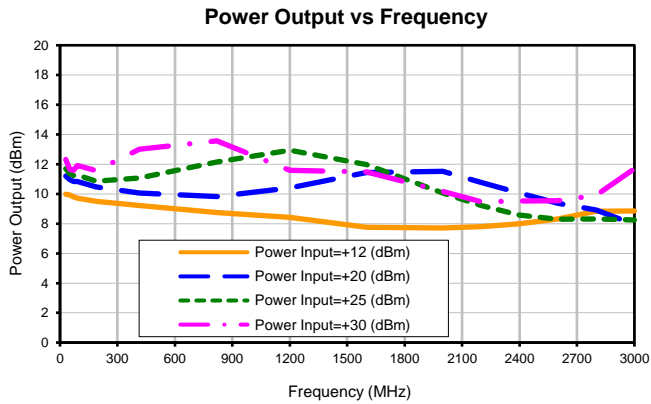
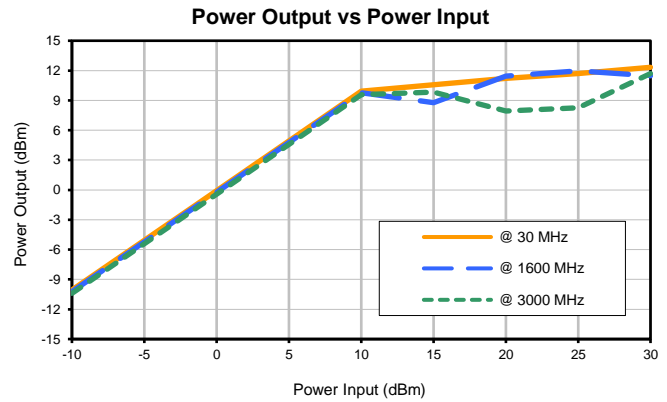
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## Typical Performance Data

POWER INPUT	POWER OUTPUT	POWER INPUT	POWER OUTPUT	POWER INPUT	POWER OUTPUT
@ 30 MHz		@ 1600 MHz		@ 3000 MHz	
(dBm)		(dBm)		(dBm)	
-10.0	-10.06	-10.0	-10.23	-10.0	-10.4
0.0	-0.07	0.0	-0.25	0.0	-0.43
10.0	9.94	10.0	9.76	10.0	9.59
15.0	10.58	15.0	8.78	15.0	9.82
20.0	11.21	20.0	11.43	20.0	7.94
25.0	11.69	25.0	11.97	25.0	8.25
30.0	12.33	30.0	11.48	30.0	11.70

## 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.

<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
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