

# Limiter

50Ω Broadband 100 to 2500 MHz

## ZFLM-252-1WL-S+



CASE STYLE: H16

Connectors Model  
**SMA** ZFLM-252-1WL-S+  
**BRACKET (OPTION "B")**

**+RoHS Compliant**

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

### Maximum Ratings

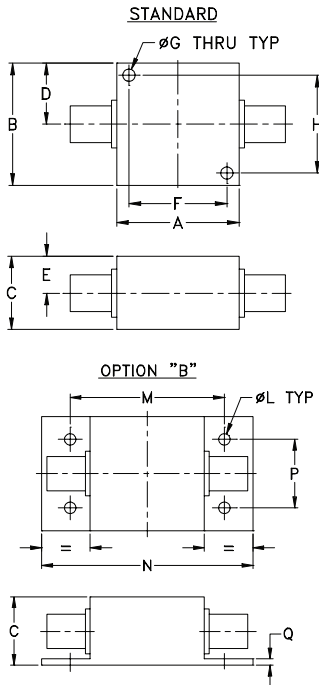
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input Power	1.5W

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

### Coaxial Connections

INPUT	SMA female
OUTPUT	SMA male

### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.000	.125	1.000
31.75	31.75	19.05	16.00	9.65	25.40	3.18	25.40
J	K	L	M	N	P	Q	wt
--	--	.125	1.688	2.18	.750	.06	grams
--	--	3.18	42.88	55.37	19.05	1.52	70.0

### Features

- low insertion loss, 0.7 dB typ.
- very low output power 0 dBm typ. at 30 dBm input
- low cost

### Applications

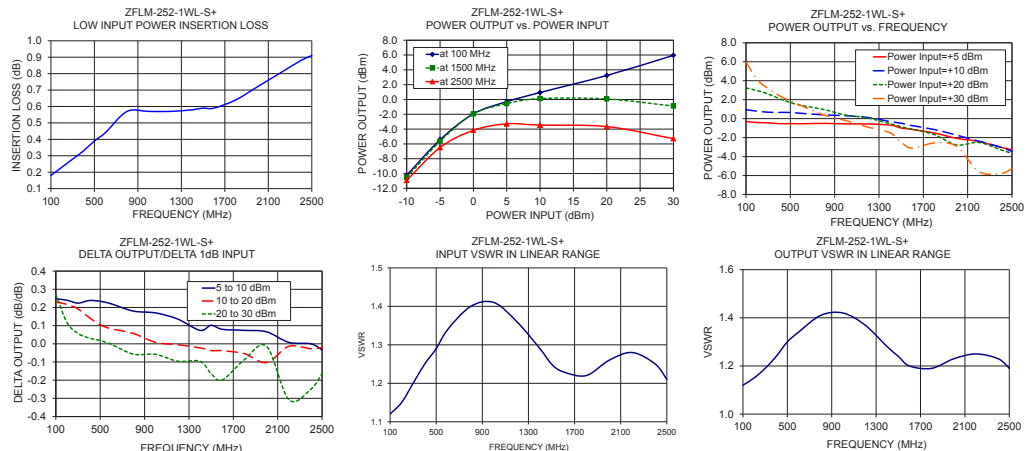
- stabilizing generator outputs
- reducing amplitude variations
- protects low noise amplifiers and other devices from ESD or input power damage

### Electrical Specifications

Parameter	Condition	Min.	Typ.	Max.	Units
<b>Frequency Range</b>		100	—	2500	MHz
<b>Linear Range</b>					
Max Input Power	<0.1 dB compression	—	—	-10	dBm
Insertion Loss	<-10 dBm	—	0.7	1.4	dB
VSWR	<-10 dBm	—	1.35	1.6	:1
<b>Limiting Range</b>					
Input Power	>1dB compression filtered signal frequency	+5	—	+30	dBm
Output Power		—	0	—	dBm
Δ Output/1dB Δ Input	Input Power Range (dBm)				
	5 to 10	—	0.1	—	
	10 to 20	—	0.05	—	dB/dB
	20 to 30	—	0.1	—	
Recovery Time	1 watt pulse 50 μsec pw 1kHz duty cycle recovery to within 90% of final value	—	8	—	nsec
Response Time	-30 to +30 dBm input 50 μsec PW 1 kHz duty cycle	—	2	—	nsec

### Typical Performance Data

Freq. (MHz)	I. Loss in Linear Range (dB)	VSWR in Linear Range (:1)	Power Output (dBm)				Δ Output / 1dB Δ Input		
			+5 dBm Input	+10 dBm Input	+20 dBm Input	+30 dBm Input	+5 to +10 dBm Input	+10 to +20 dBm Input	+20 to +30 dBm Input
100.00	0.18	1.12	-0.30	0.94	3.24	5.96	0.25	0.23	0.27
200.00	0.23	1.15	-0.41	0.79	2.96	4.14	0.24	0.22	0.12
300.00	0.28	1.20	-0.44	0.68	2.60	3.17	0.22	0.19	0.06
400.00	0.33	1.25	-0.53	0.66	2.11	2.43	0.24	0.15	0.03
500.00	0.39	1.29	-0.52	0.65	1.70	1.88	0.23	0.11	0.02
600.00	0.44	1.34	-0.54	0.56	1.39	1.36	0.22	0.08	0.00
800.00	0.57	1.40	-0.50	0.40	0.97	0.40	0.18	0.06	-0.06
1000.00	0.57	1.41	-0.55	0.30	0.38	-0.20	0.17	0.01	-0.06
1200.00	0.57	1.36	-0.56	0.12	0.07	-0.89	0.14	-0.01	-0.10
1400.00	0.58	1.29	-0.68	-0.31	-0.53	-1.49	0.07	-0.02	-0.10
1500.00	0.59	1.25	-0.99	-0.48	-0.85	-2.49	0.10	-0.04	-0.16
1600.00	0.59	1.23	-1.14	-0.74	-1.12	-3.11	0.08	-0.04	-0.20
1800.00	0.64	1.22	-1.52	-1.15	-1.69	-2.56	0.07	-0.05	-0.09
2000.00	0.72	1.26	-2.07	-1.74	-2.77	-2.91	0.07	-0.10	-0.01
2200.00	0.80	1.28	-2.41	-2.37	-2.51	-5.58	0.01	-0.01	-0.31
2400.00	0.88	1.25	-3.02	-3.02	-3.29	-5.78	0.00	-0.03	-0.25
2500.00	0.91	1.21	-3.29	-3.46	-3.66	-5.29	-0.03	-0.02	-0.16



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

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M171494  
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ED-14683  
DJ/CP/AM  
190110



## Typical Performance Data

FREQUENCY (MHz)	LOW INPUT POWER			POWER OUTPUT (dBm)				DELTA OUTPUT/1dB DELTA INPUT (dB/dB)		
	INSERTION LOSS (dB)	VSWR		+5 dBm INPUT	+10 dBm INPUT	+20 dBm INPUT	+30 dBm INPUT	+5 to +10 dBm INPUT	+10 to +20 dBm INPUT	+20 to +30 dBm INPUT
		Input (:1)	Output							
100	0.18	1.12	1.12	-0.30	0.94	3.24	5.96	0.25	0.23	0.27
200	0.23	1.15	1.15	-0.41	0.79	2.96	4.14	0.24	0.22	0.12
300	0.28	1.20	1.19	-0.44	0.68	2.60	3.17	0.22	0.19	0.06
400	0.33	1.25	1.24	-0.53	0.66	2.11	2.43	0.24	0.15	0.03
500	0.39	1.29	1.30	-0.52	0.65	1.70	1.88	0.23	0.11	0.02
600	0.44	1.34	1.34	-0.54	0.56	1.39	1.36	0.22	0.08	0.00
700	0.51	1.36	1.38	-0.52	0.48	1.17	0.82	0.20	0.07	-0.04
800	0.57	1.40	1.41	-0.50	0.40	0.97	0.40	0.18	0.06	-0.06
900	0.56	1.42	1.43	-0.38	0.36	0.45	0.03	0.15	0.01	-0.04
1000	0.57	1.41	1.42	-0.55	0.30	0.38	-0.20	0.17	0.01	-0.06
1100	0.57	1.39	1.40	-0.51	0.19	0.21	-0.61	0.14	0.00	-0.08
1200	0.57	1.36	1.37	-0.56	0.12	0.07	-0.89	0.14	-0.01	-0.10
1300	0.58	1.33	1.33	-0.72	-0.09	-0.21	-1.33	0.13	-0.01	-0.11
1400	0.58	1.29	1.28	-0.68	-0.31	-0.53	-1.49	0.07	-0.02	-0.10
1500	0.59	1.25	1.24	-0.99	-0.48	-0.85	-2.49	0.10	-0.04	-0.16
1600	0.59	1.23	1.20	-1.14	-0.74	-1.12	-3.11	0.08	-0.04	-0.20
1700	0.61	1.21	1.18	-1.32	-0.94	-1.33	-3.01	0.08	-0.04	-0.17
1800	0.64	1.22	1.19	-1.52	-1.15	-1.69	-2.56	0.07	-0.05	-0.09
1900	0.68	1.24	1.20	-1.78	-1.36	-2.43	-2.42	0.08	-0.11	0.00
2000	0.72	1.26	1.23	-2.07	-1.74	-2.77	-2.91	0.07	-0.10	-0.01
2100	0.76	1.28	1.24	-2.24	-2.04	-2.93	-4.50	0.04	-0.09	-0.16
2200	0.80	1.28	1.25	-2.41	-2.37	-2.51	-5.58	0.01	-0.01	-0.31
2300	0.84	1.28	1.25	-2.78	-2.74	-3.51	-7.65	0.01	-0.08	-0.41
2400	0.88	1.25	1.23	-3.02	-3.02	-3.29	-5.78	0.00	-0.03	-0.25
2500	0.91	1.21	1.19	-3.29	-3.46	-3.66	-5.29	-0.03	-0.02	-0.16



# Coaxial Limiter

# ZFLM-252-1WL+

## Typical Performance Data

POWER INPUT	POWER OUTPUT	POWER INPUT	POWER OUTPUT	POWER INPUT	POWER OUTPUT
@ 100 MHz		@ 1500 MHz		@ 2500 MHz	
(dBm)		(dBm)		(dBm)	
-10	-10.23	-10	-10.51	-10	-10.92
-5	-5.44	-5	-5.65	-5	-6.49
0	-1.94	0	-1.95	0	-4.17
5	-0.30	5	-0.56	5	-3.29
10	0.94	10	0.12	10	-3.46
20	3.24	20	0.07	20	-3.66
30	5.96	30	-0.89	30	-5.29



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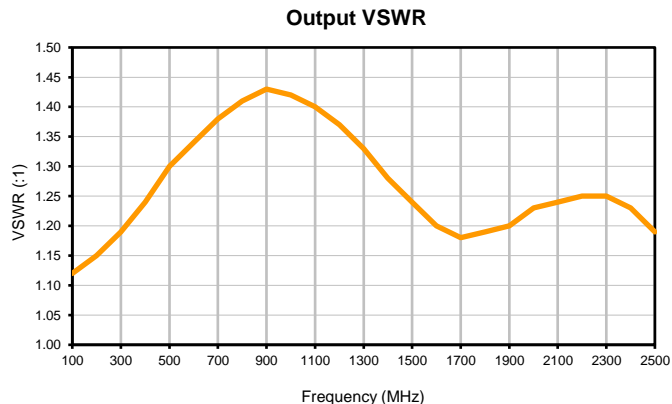
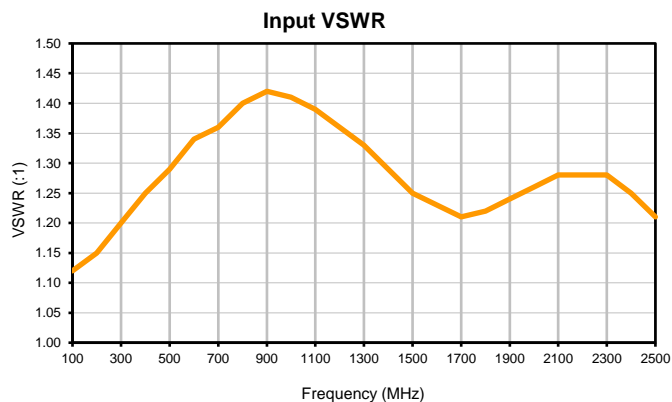
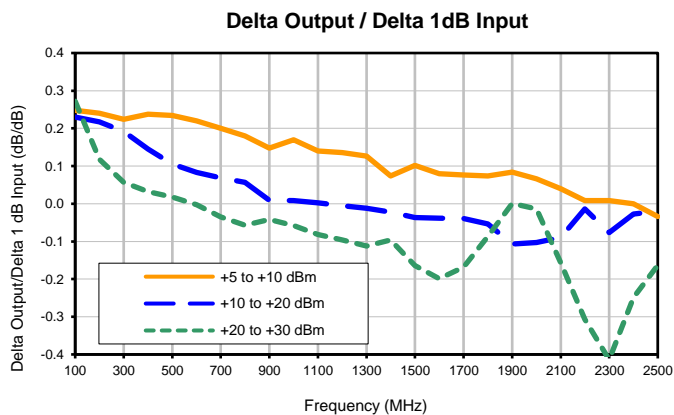
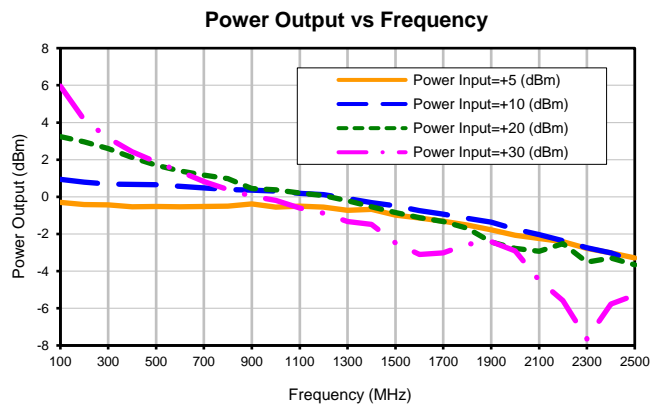
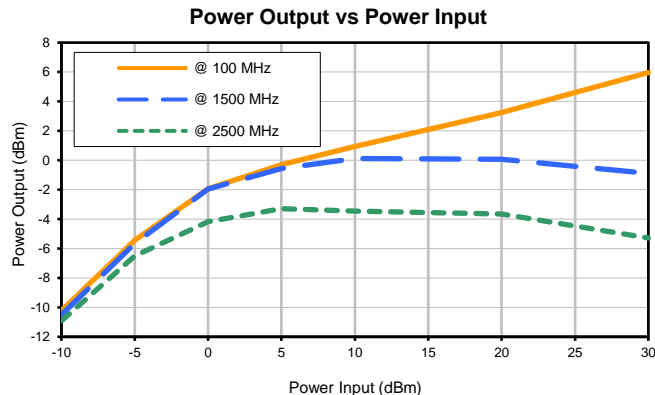
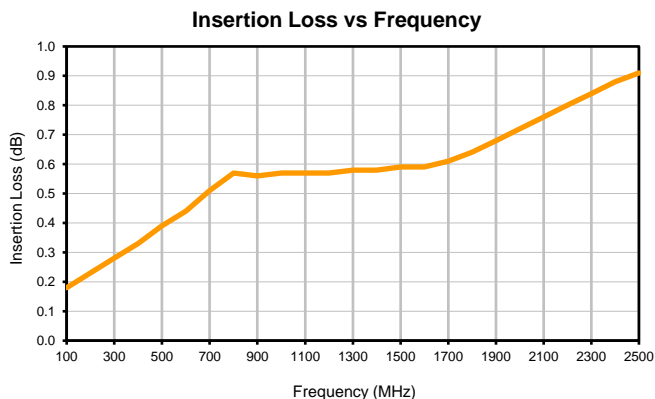


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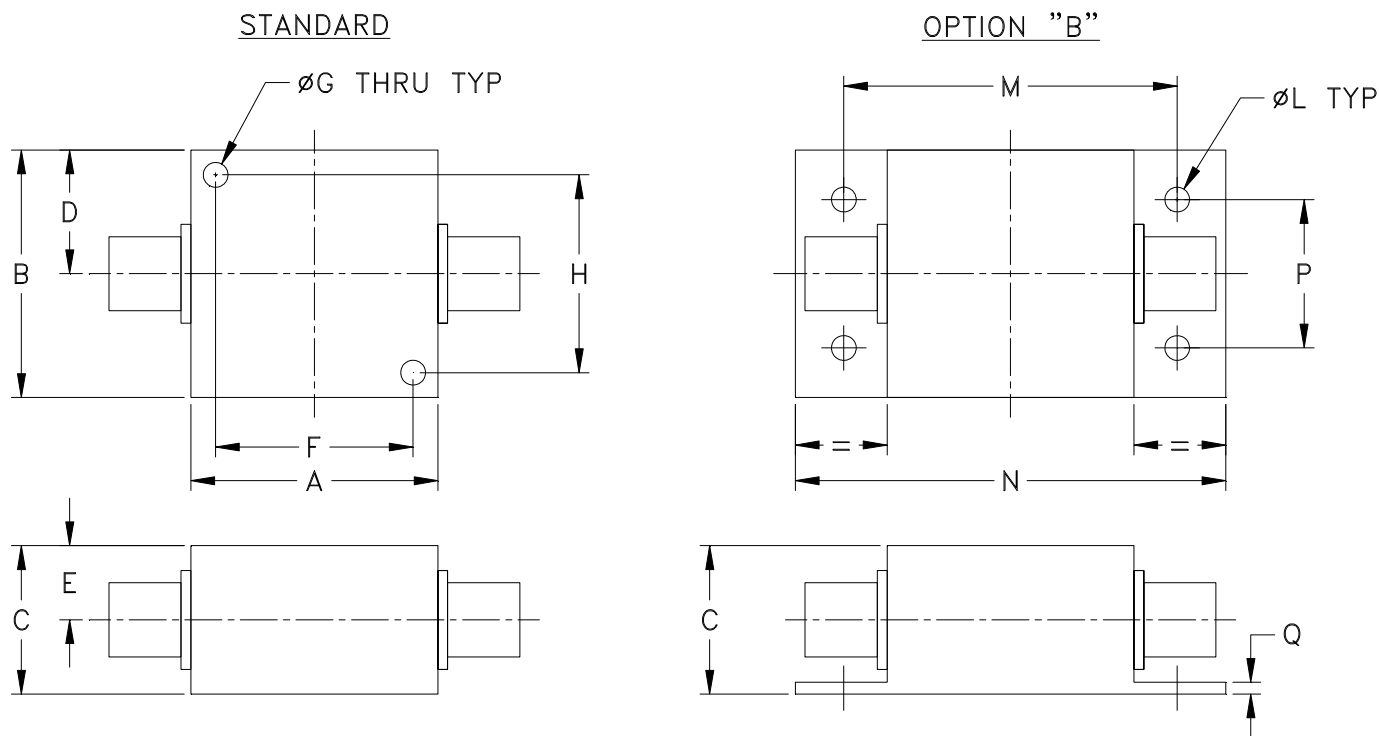
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## Typical Performance Curves



## Outline Dimensions

H16



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
H16	1.25 (31.75)	1.25 (31.75)	.750 (19.05)	.63 (16.00)	.38 (9.65)	1.000 (25.40)	.125 (3.18)	1.000 (25.40)	--	--	.125 (3.18)	1.688 (42.88)	2.18 (55.37)

CASE#	P	Q	WT.GRAMS
H16	.750 (19.05)	.06 (1.52)	70

Dimensions are in inches (mm). Tolerances: 2PL. ± .03; 3PL. ± .015

### Notes:

1. Case material: Aluminum alloy.
2. Case finish:  
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Mounting bracket available on request. Add suffix B to part number.
4. Bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
5. Refer to the individual model data sheet for the type of connectors available.

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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	-40° to 85°C	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