

# +10 to +37 dBm Limiter

## RLM-43-5W+

50Ω Broadband 20 to 4000 MHz



CASE STYLE: TT1224

## The Big Deal

- Broadband, 20 MHz to 4 GHz
- Low output power leakage, +12 dBm
- Excellent limiting range, +10 to +37 dBm
- 0.3 dB  $\Delta$  output / 1 dB  $\Delta$  input

## Product Overview

Mini-Circuits' RLM-43-5W+ is a passive PIN diode RF limiter ideal for protecting sensitive receiver circuitry from high-power signals, while allowing low-powered signals to be received.

Providing limiting range from +10 to +37 dBm and +12 dBm typical output power, the RLM-43-5W+ is ideal for many situations where unwanted signals prevail such as manufacturing sites, train tunnels, radar transceivers and more. The limiter is housed in a durable, surface mount plastic enclosure measuring 0.25 x 0.31 x 0.16", accommodating tight PCB layouts.

## Key Features

Feature	Advantages
Wideband operation, from 20 to 4000 MHz	Ideal for a variety of applications where there is a need to protect sensitive receiver circuitry from unwanted signals as well as control ESD and power surges on the network.
Excellent limiting range from +10 to +37dBm	Prevents undesired signals from passing through the network and damaging sensitive electronic components.
0.3 dB $\Delta$ output / 1 dB $\Delta$ input	Low delta output per 1 dB delta input maintains signal stability in the presence of volatile input signal conditions.
Rapid recovery, 33ns	Minimal downtime after unwanted signals are removed with very quick restoration of standard operating levels.
Low loss insertion, 0.36 dB	Preserves the strength of low-power signals in the receive path.
low-output power loss, +12 dBm	Low output power prevents saturation of receiver circuitry and provides extra protection for sensitive components.

### 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.  
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## RLM-43-5W+



Generic photo used for illustration purposes only

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**+RoHS Compliant**

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

### Maximum Ratings

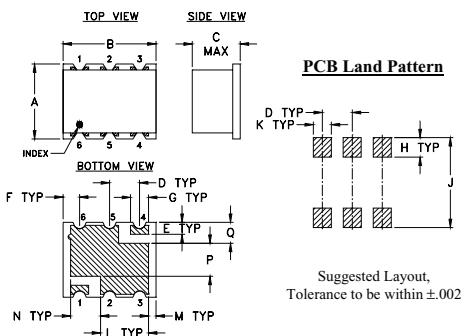
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input Power	5W

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

### Pin Connections

INPUT	1
OUTPUT	4
GROUND	2,3,5,6

### Outline Drawing

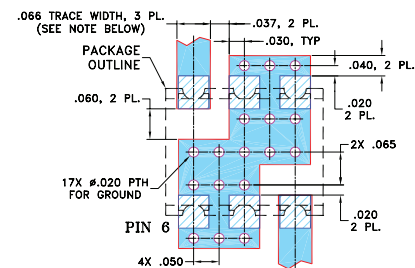


Suggested Layout,  
Tolerance to be within ±.002

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
.25	.31	.16	.100	.040	.055	.060	.065
6.35	7.87	4.06	2.54	1.02	1.40	1.52	1.65
J	K	L	M	N	P	Q	wt.
.300	.060	.160	.025	.100	.110	.070	grams
7.62	1.52	4.06	0.64	2.54	2.79	1.78	0.16

### Demo Board MCL P/N: TB-393 Suggested PCB Layout (PL-258)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### Features

- wideband, 20 to 4000 MHz
- low insertion loss 0.36 dB typ.
- fast recovery time, 33nsec typ.
- excellent VSWR 1.2:1 typ.
- low output power, 12 dBm typ.

### Applications

- military, hi-rel 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
Frequency Range		20		4000	MHz
<b>Linear Range</b>					
Max Input Power	less than 1 dB compression	—	5	—	dBm
Insertion Loss	less than +5 dBm input power	—	0.36	0.85	dB
VSWR	less than +5 dBm input power	—	1.2	1.58	:1
<b>Limiting Range</b>					
Input Power	>1dB compression filtered signal frequency	+10	—	+37	dBm
Output Power		—	+12	—	dBm
Δ Output/ Δ 1dB Input	Input Power Range (dBm)				
	10 to 20	—	0.3	—	
	20 to 30	—	0.1	—	dB/dB
	30 to 37	—	0.1	—	
Recovery Time	2 watt pulse 50 μsec pw 1kHz duty cycle recovery to within 90% of final value @ -5 dBm	—	33	—	nsec
Response Time	-30 to +33 dBm input 50 μsec PW 1 kHz duty cycle	—	21	—	nsec

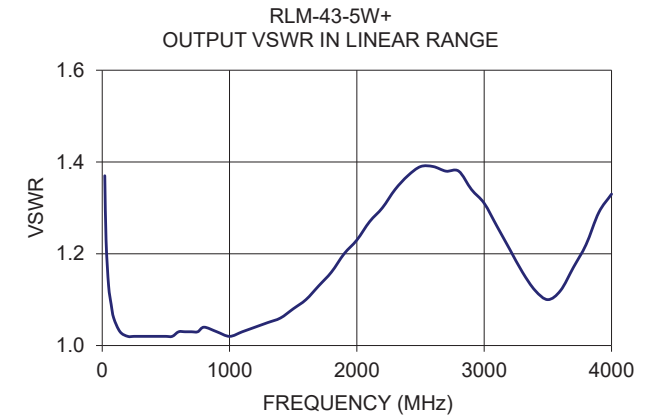
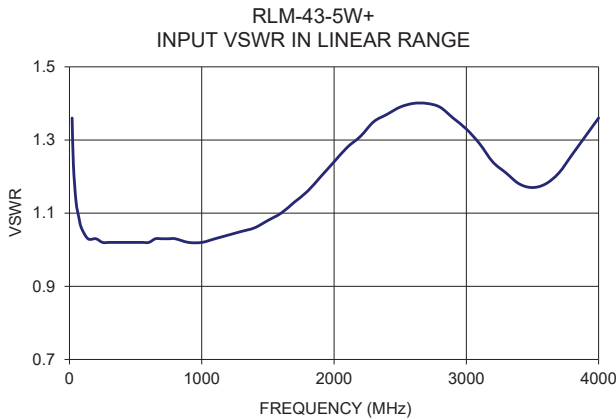
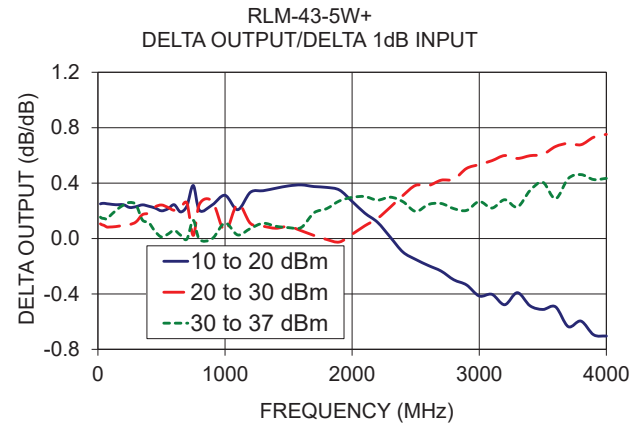
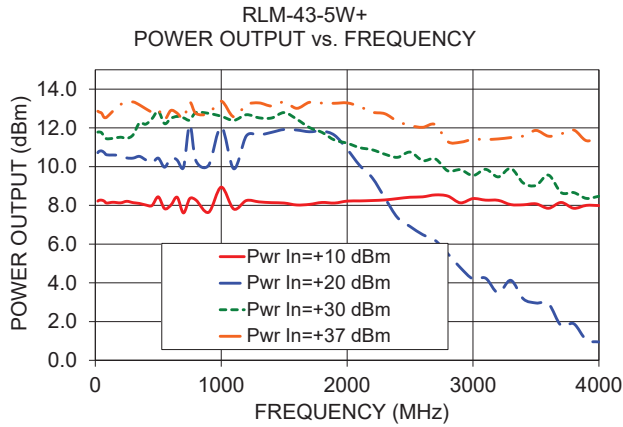
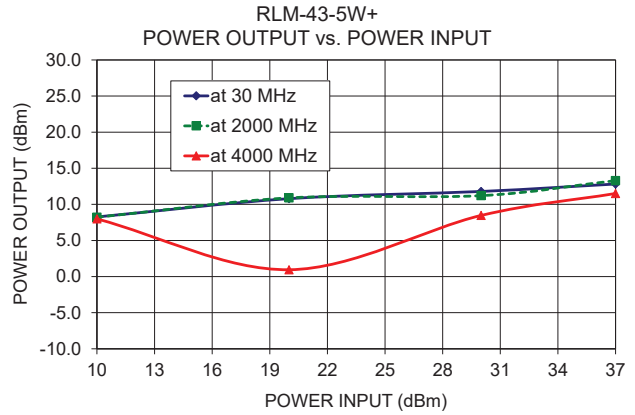
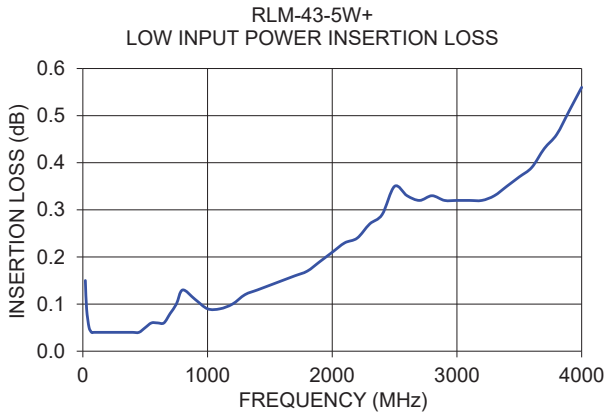
### Typical Performance Data

Freq. (MHz)	I. Loss (dB) in Linear Range at -10 dBm	VSWR (:1) in Linear Range at -10 dBm	Power Output (dBm)				Δ Output / Δ 1dB Input		
			+10 dBm Input	+20 dBm Input	+30 dBm Input	+37 dBm Input	+10 to +20 dBm Input	+20 to +30 dBm Input	+30 to +37 dBm Input
20.00	0.15	1.36	8.22	10.72	11.78	12.86	0.25	0.11	0.15
50.00	0.05	1.13	8.27	10.81	11.75	12.76	0.25	0.09	0.14
90.00	0.04	1.06	8.12	10.61	11.44	12.55	0.25	0.08	0.16
200.00	0.04	1.03	8.13	10.57	11.52	13.21	0.24	0.09	0.24
500.00	0.05	1.02	8.44	10.44	12.86	12.94	0.20	0.24	0.01
1000.00	0.09	1.02	8.94	12.06	12.60	13.38	0.31	0.05	0.11
1200.00	0.10	1.04	8.25	11.59	12.68	13.19	0.33	0.11	0.07
1400.00	0.13	1.06	8.14	11.77	12.51	13.13	0.36	0.07	0.09
1600.00	0.15	1.10	8.02	11.89	12.45	13.01	0.39	0.06	0.08
2000.00	0.21	1.24	8.22	10.90	11.21	13.29	0.27	0.03	0.30
2500.00	0.35	1.39	8.42	6.91	10.75	12.12	-0.15	0.38	0.20
3000.00	0.32	1.33	8.35	4.20	9.54	11.41	-0.42	0.53	0.27
3500.00	0.37	1.17	8.08	2.96	9.03	11.87	-0.51	0.61	0.41
3800.00	0.46	1.26	7.85	1.89	8.66	11.89	-0.60	0.68	0.46
4000.00	0.56	1.36	7.99	0.95	8.47	11.51	-0.70	0.75	0.43

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