

Features

- 2-20 GHz Passive, high isolation limiter
- Low loss typically < 0.8dB, X- Band
- Good Return Loss typically > 15dB
- Flat Leakage < +18dBm
- Input Power CW Survivability >5W
- Integrated DC Block on both input and output
- QFN dimensions 5.0 x 5.0 x 1.25 mm, 32 lead (also available in 3 x 3 x 1.25 mm, 16 lead QFN: LW48-700118)

Typical Applications

- LNA receiver chain protection
- Radar receiver protection

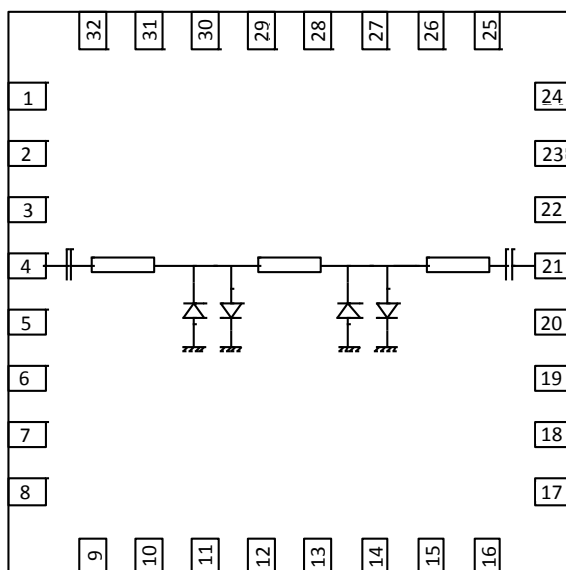
General Description

The LW48-700117 is a wideband two stage limiter packaged in a leadless 5x5mm surface mount package which operates between 2 and 20 GHz. The limiter provides flat leakage of <+18dBm, return loss of >15dB with typical insertion loss of 0.8dB. The LW48-700117 limiter input and output are internally matched to 50 Ohms and are internally DC blocked.

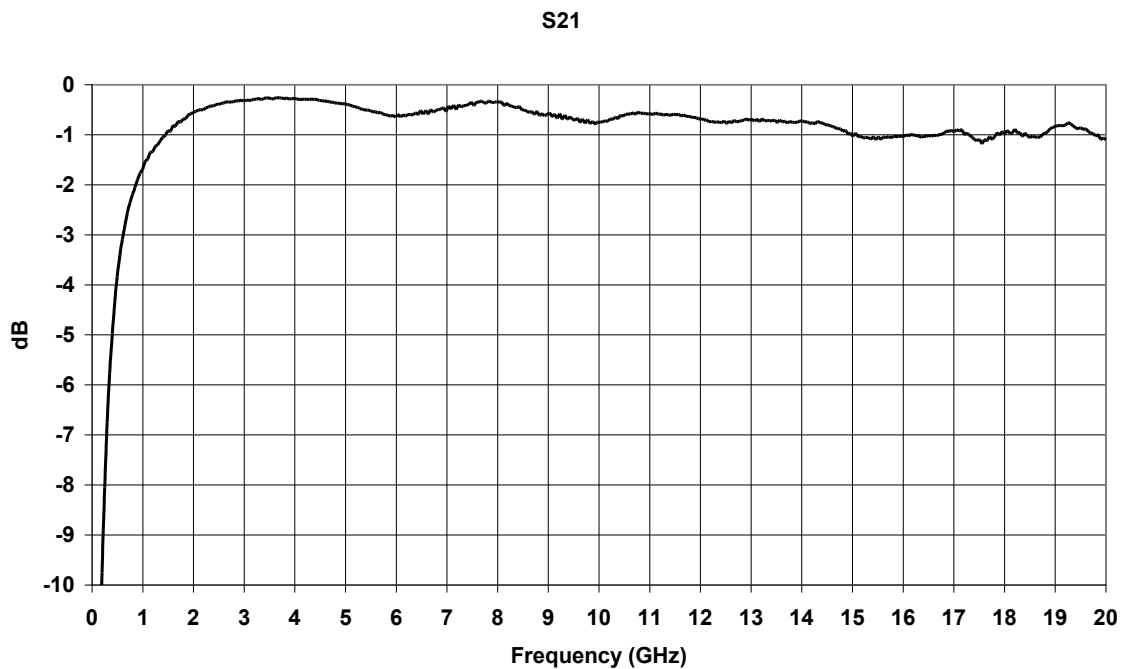
* Also available with integrated LNAs.

Pin Designations	
Pin No.	FUNCTION
Pin 4	RF IN
Pin 21	RF OUT
Pins 1-3, 5-20	GROUND
Pins 22-32	GROUND

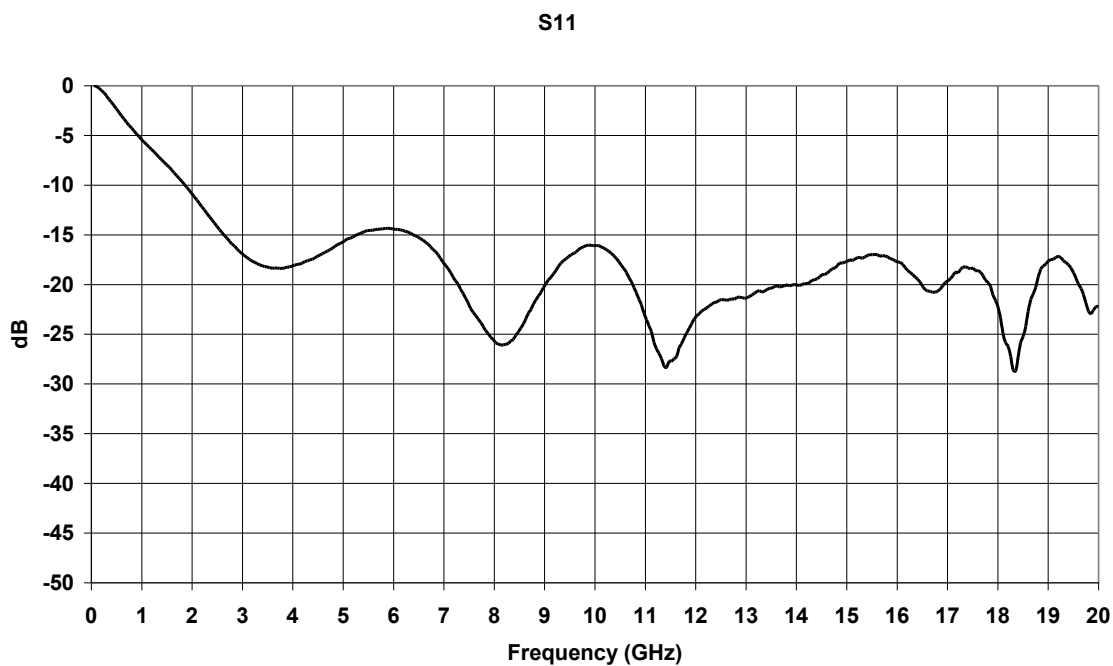
Functional Diagram



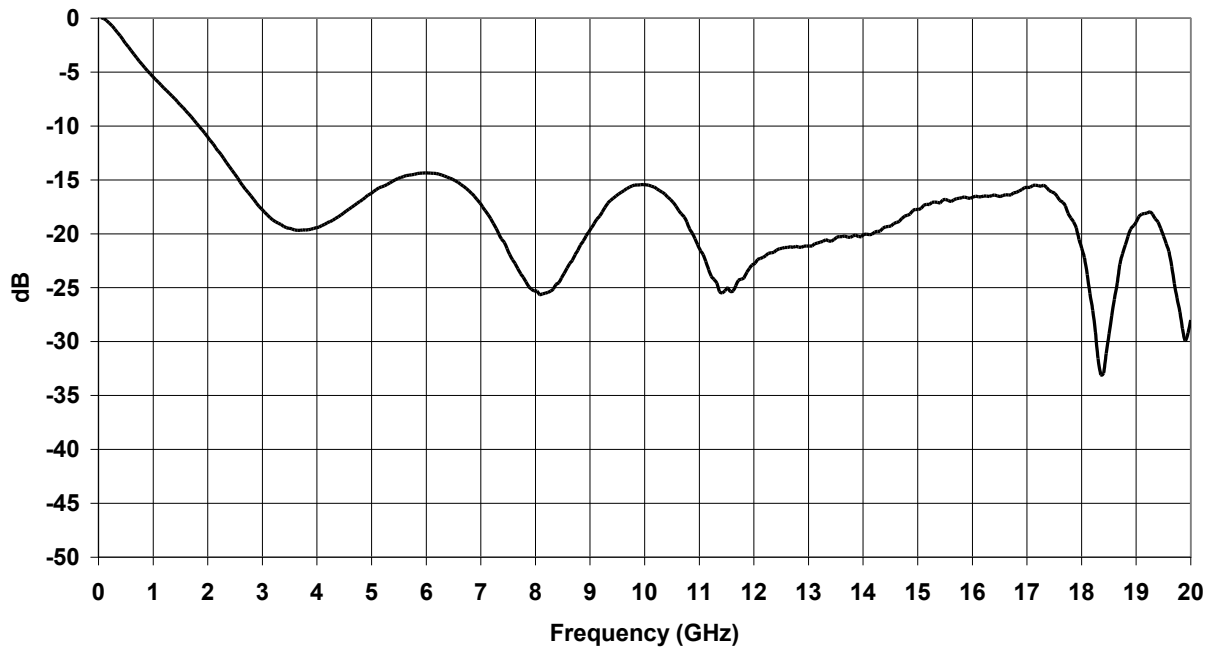
Insertion Loss



Return Loss



S22



Limiting Characteristics

Limiting Characteristic @ 10GHz

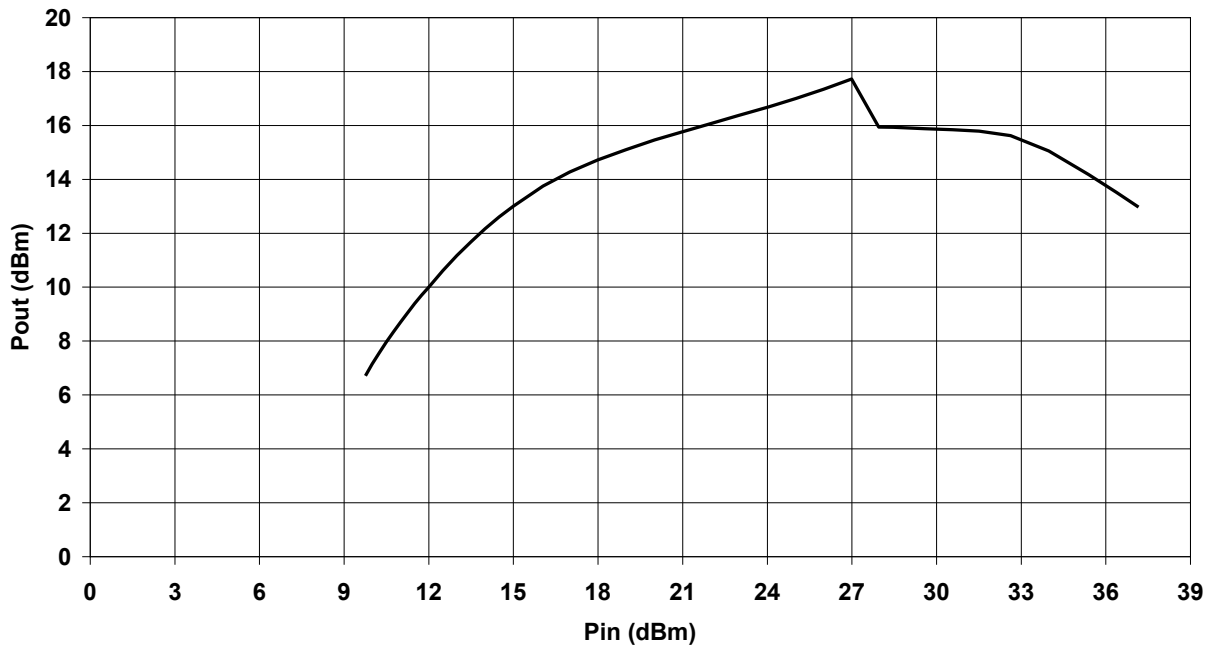


TABLE I
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value
P_{IN}	Input CW Power	+37dBm
T_M	Mounting Temperature (30 secs)	260°C
T_{STG}	Storage Temperature	-55 to +125°C
T_{OP}	Operating Temperature	-40 to +85°C

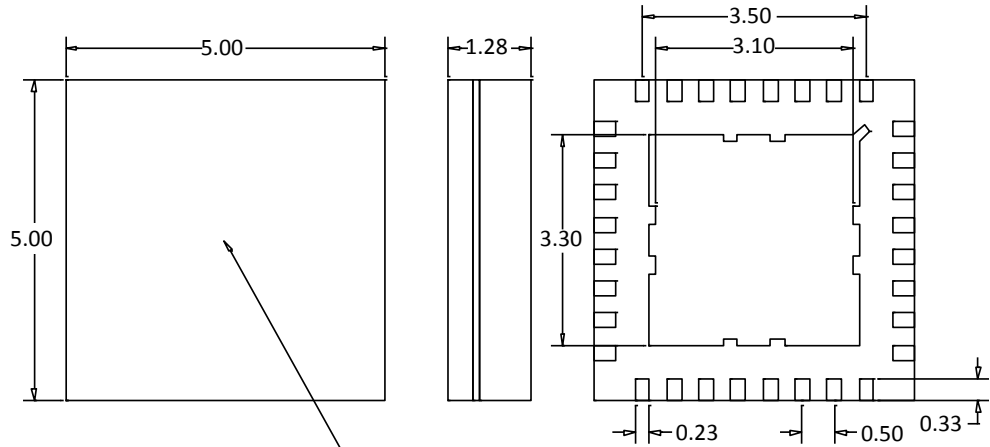
TABLE II
DC CHARACTERISTICS
($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Limit		Units
		Min	Max	
FWD_RES (diodes)	Forward Resistance	1.9	3.9	Ohm
VREV (diodes)	Reverse Voltage	-60	-30	V

TABLE III
RF CHARACTERISTICS
($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Test Condition	Limit			Units
			Min	Typ	Max	
IL	Insertion Loss	F = 4-20GHz		0.8	1.6	dB
IRL	Input Return Loss	F = 4-20GHz	12			dB
ORL	Output Return Loss	F = 4-20GHz	12			dB
PWR	Output Power @ Pin = 27dBm	F=6.0GHz			20	dBm
		F=16.0GHz			20	dBm

Outline Drawing



NOTES

- 1) BODY: PLASTIC, SEMICONDUCTOR GRADE
- 2) LEAD FRAME: COPPER, 194 FH
- 3) LEAD FINISH: FULL GOLD PLATE
- 4) FRAME THICKNESS: 0.2030 ±0.0076
- 5) EXTERNAL DIMENSIONS ± 0.15

MANUFACTURERS
LABELLING ON THIS FACE

Refer to Linwave application note for suggested PC Board Land Pattern.



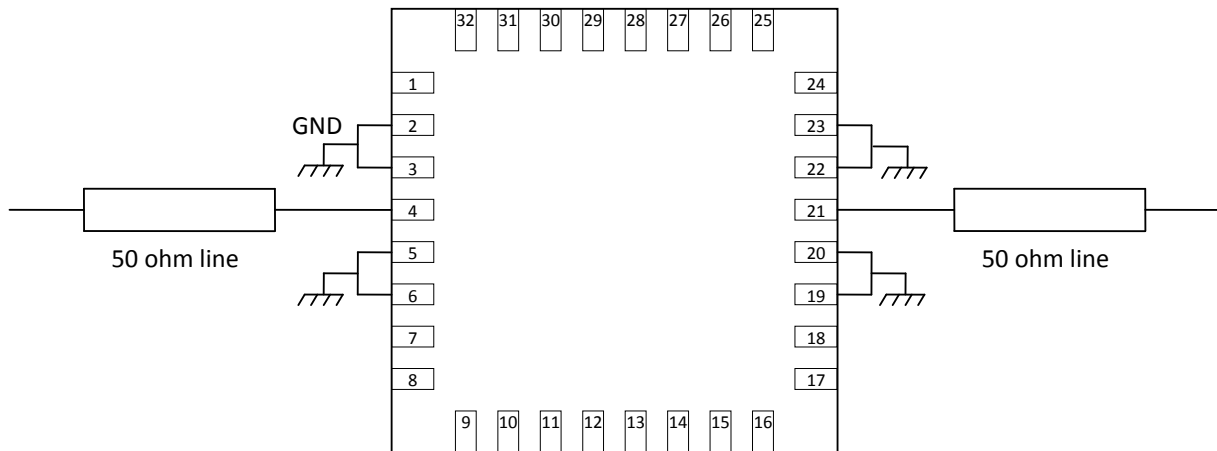
ELECTROSTATIC SENSITIVE DEVICE OBSERVE HANDLING PRECAUTIONS

Pin Descriptions

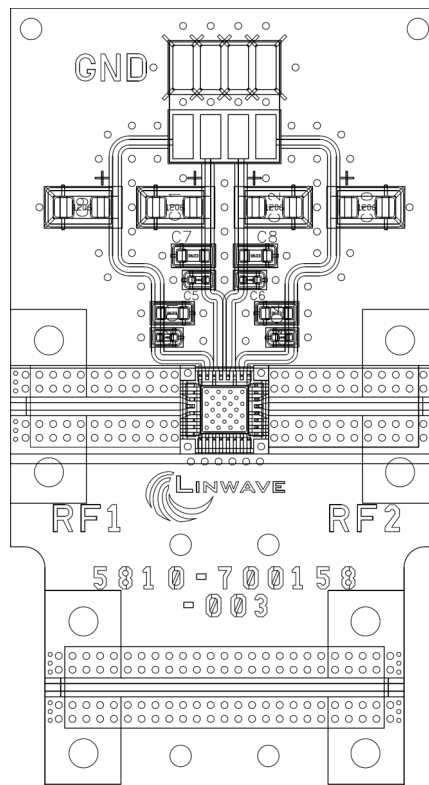
Pin Number	Function	Description
4	RF IN	This pad is AC coupled and matched to 50 ohms
21	RF OUT	This pad is AC coupled and matched to 50 ohms
1, 7-18, 24-32	N/C	The pins are not connected internally; however, all data shown was measured with these pins connected to RF/DC ground externally.
2,3,5,6,19,20,22, 23	GROUND	Must be connected to RF/DC ground
Ground paddle	GROUND	Must be connected to RF/DC ground

Application Circuit

Note: Effective heatsinking through the pallet on the underside is essential for high power operation (RF Input >1W)



Evaluation PCB



List of Materials for Evaluation PCB LW54-10117^[1]

Item	Description
J1-J2	Southwest Microwave 8100-302230
U1	LW48-700117 Limiter
PCB ^[2]	5810-700158-003 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit board material: Rogers 4350B on FR4 backing

The circuit board used in the application should use RF circuit design techniques. The signal lines should have 50 ohms impedance and the package ground leads and package bottom should be connected directly to the ground plane similar to that shown. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation circuit board shown is available from Linwave upon request.