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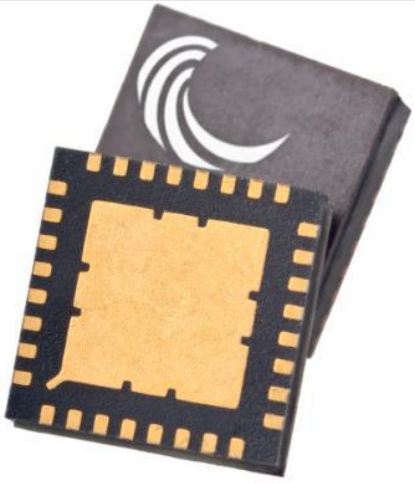
Linwave QFN Dual Stage PIN Limiter

LW48-700118



Features

- 2-20 GHz Passive, high isolation limiter
- Low loss typically < 1dB, 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 3.0 x 3.0 x 1.25 mm, 16 lead

Typical Applications

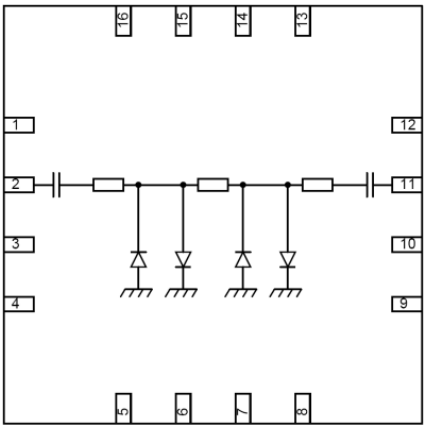
- LNA receiver chain protection
- Radar receiver protection

General Description

The LW48-700118 is a wideband two stage limiter packaged in a leadless 3x3mm surface mount package which operates between 2 and 20 GHz. The limiter provides flat leakage of <+18dBm, return loss of >10dB with typical insertion loss of 1dB
The LW48-700118 limiter input and output are internally matched to 50 Ohms and are internally DC blocked.

* Also available with integrated LNAs in a 5x5mm packaged, see LW48-700117 datasheet.

PIN Designations	
PIN No.	**FUNCTION**
Pin 2	RF IN
Pin 11	RF OUT
Pins 5-8, 13-16	N/C
Pins 1, 3-4, 9-10, 12	GROUND



Functional Diagram

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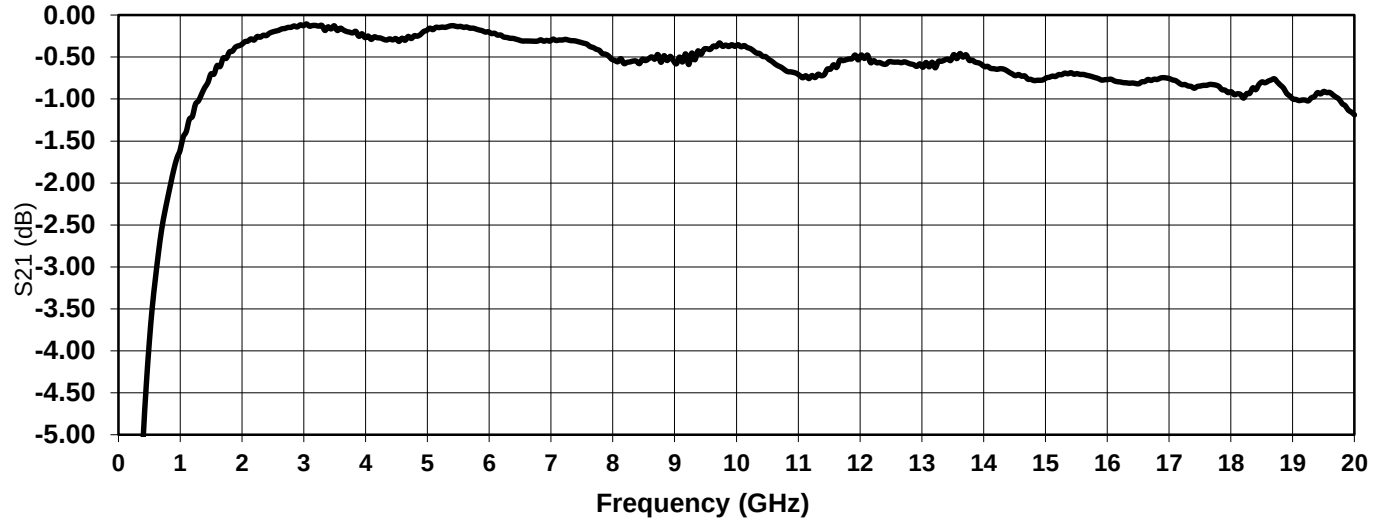
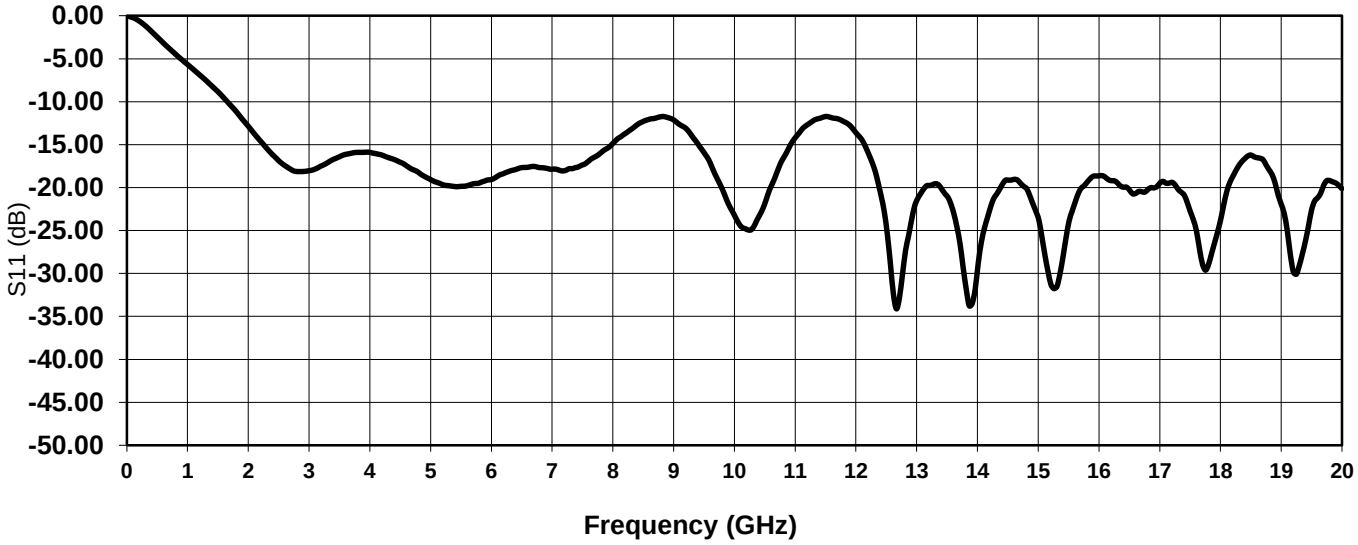
Insertion Loss



Input Return Loss



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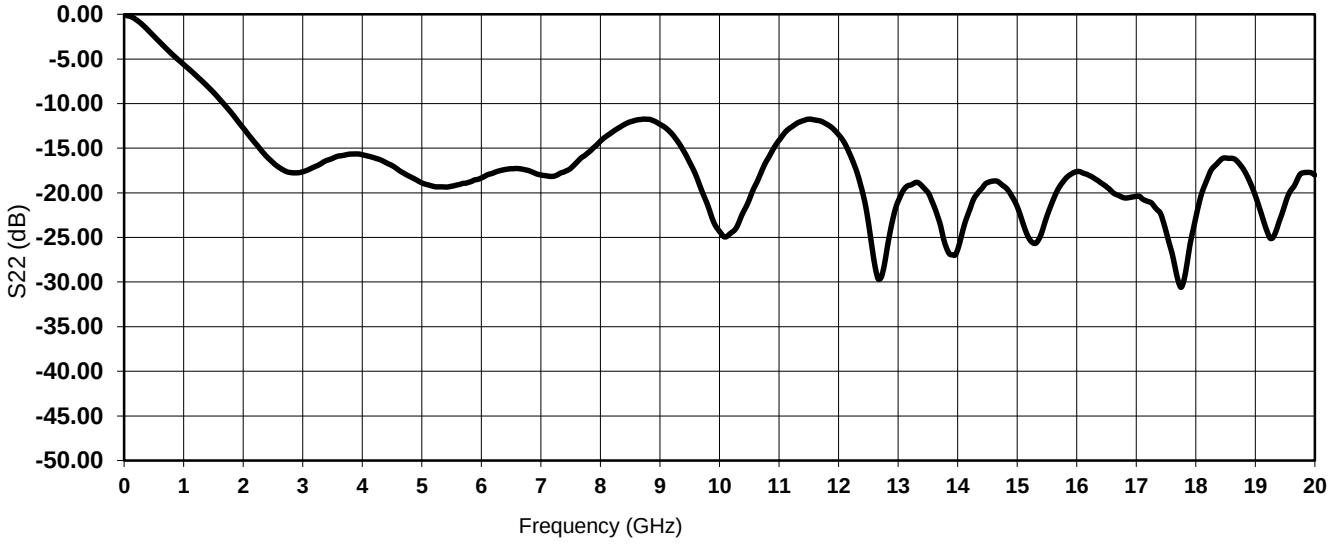
Output Return Loss



Limiting Characteristics

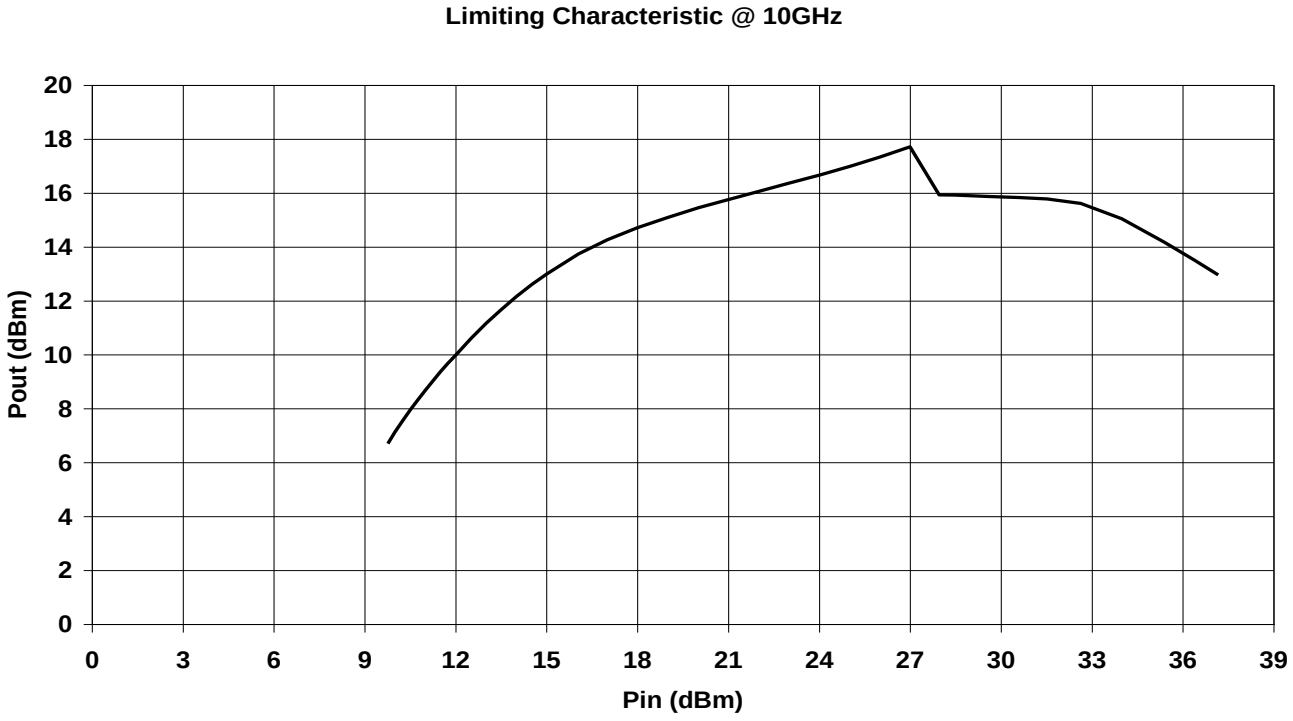


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TABLE I
ABSOLUTE MAXIMUM RATINGS

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°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°C)

Symbol	Parameter	Test Condition	Limit			Units
			Min	Typ	Max	
IL	Insertion Loss	F = 2-20GHz		1	2	dB
IRL	Input Return Loss	F = 2-20GHz	10			dB
ORL	Output Return Loss	F = 2-20GHz	10			dB
PWR	Output Power @ Pin = 27dBm	F=6.0GHz F=16.0GHz			20 20	dBm dBm

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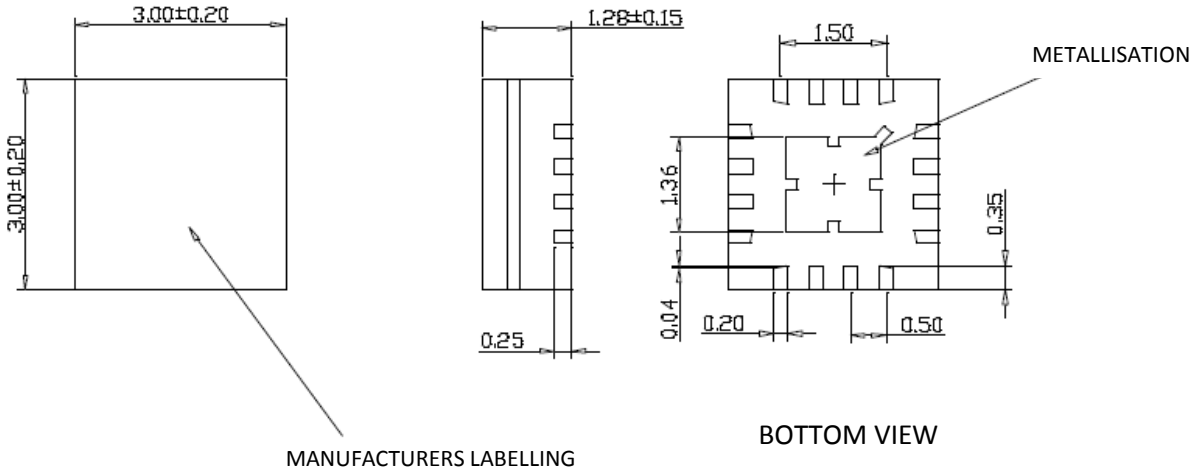
Outline Drawing



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

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

ELECTROSTATIC SENSITIVE DEVICE OBSERVE HANDLING PRECAUTIONS

Pin Descriptions

Pin Number	Function	Description
2	RF IN	This pad is AC coupled and matched to 50 ohms
11	RF OUT	This pad is AC coupled and matched to 50 ohms
5-8, 13-16	N/C	The pins are not connected internally; however, all data shown was measured with these pins connected to RF/DC ground externally.
1, 3-4, 9-10, 12	GROUND	Must be connected to RF/DC ground
Ground paddle	GROUND	Must be connected to RF/DC ground

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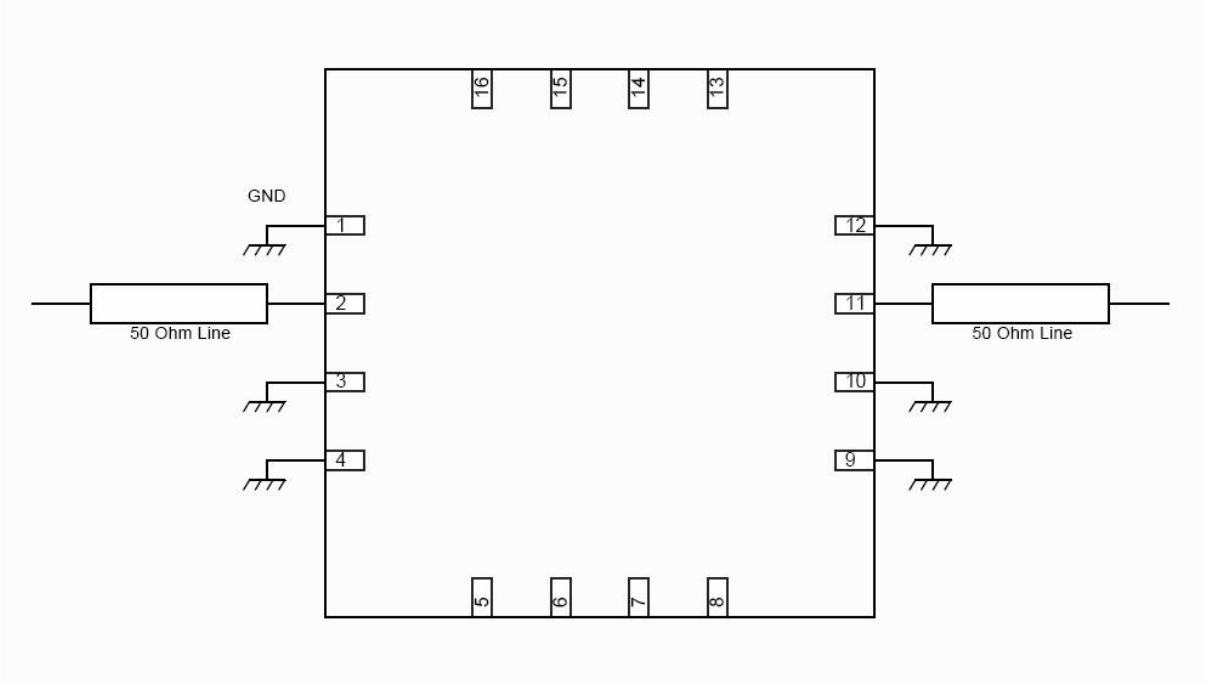
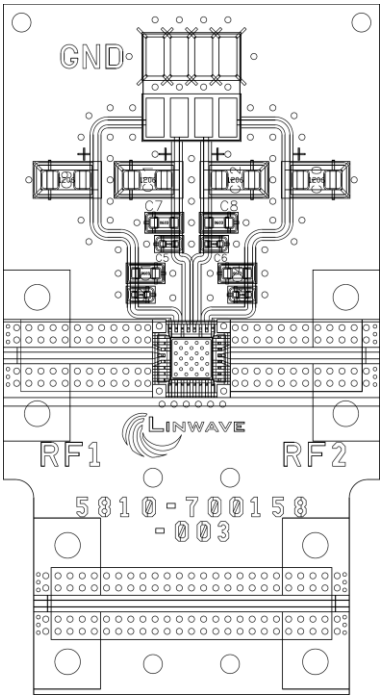
Application Circuit

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



Evaluation PCB



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List of Materials for Evaluation PCB LW54-10118[1]

Item	Description
J1-J2	Southwest Microwave 8100-302230
U1	LW48-700118 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.

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