

## FEATURES

- E1-band coverage
- Surface-mount package
- Integrated WG interface (WR-12)
- 19 dB gain
- 4.5 dB NF

## DESCRIPTION

gMLN0014 is a surface-mount GaAs low-noise amplifier intended for E-band high-capacity communication links. The package features a WR-12 interface for low-loss connection to a rectangular waveguide.

## TYPICAL APPLICATIONS

- Point-to-point communication
- Instrumentation
- Fiber over radio

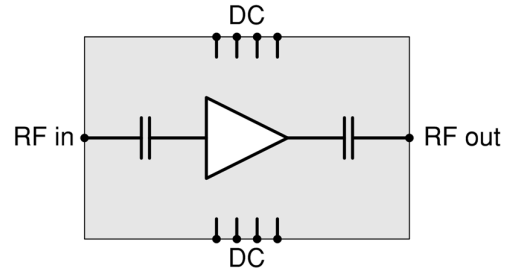


Figure 1. Block diagram of the LNA.

## ELECTRICAL PERFORMANCE

Table 1. Electrical performance  $T_A=25^\circ\text{C}$

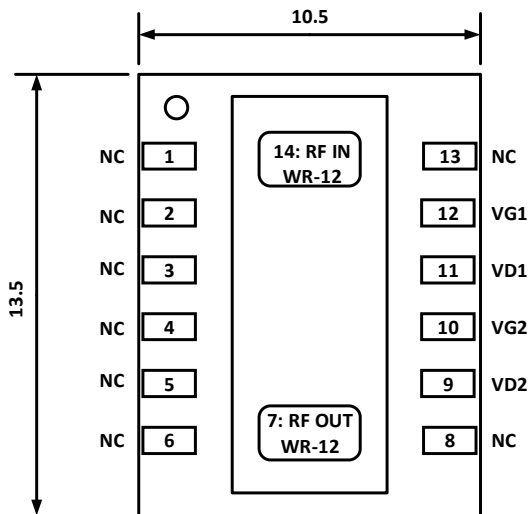
Parameter	Min	Typ	Max	Unit
Frequency	71 (70)		76 (80)	GHz
Gain		19		dB
NF		4.5		dB
P <sub>1dB</sub>		11		dBm
PSAT		13		dBm
OIP <sub>3</sub>		21		dBm
Input return loss		8		dB
Output return loss		10		dB
Power consumption		122		mW

## RECOMMENDED OPERATING CONDITIONS

Bias should first be applied to the gates (VG...) followed by the drains (VD...). The gate voltages must be adjusted within the min/max range indicated in Table 2 to obtain the specified drain currents. The drain currents are stated with all input signals off.

**Table 2. Pin configuration and bias settings**

Pin	Function	Bias settings (V/mA)			I/O	Sequence
		Min	Typ	Max		
1	NC					
2	NC					
3	NC					
4	NC					
5	NC					
6	NC					
7	RF OUT	Waveguide WR-12			O	
8	NC					
9	VD2	1.9	2.0 / 55	2.1	I	2
10	VG2	-0.7	-0.5	-0.3	I	1
11	VD1	1.1	1.2 / 10	1.3	I	2
12	VG1	-0.7	-0.5	-0.3	I	1
13	NC					
14	RF IN	Waveguide WR-12			I	

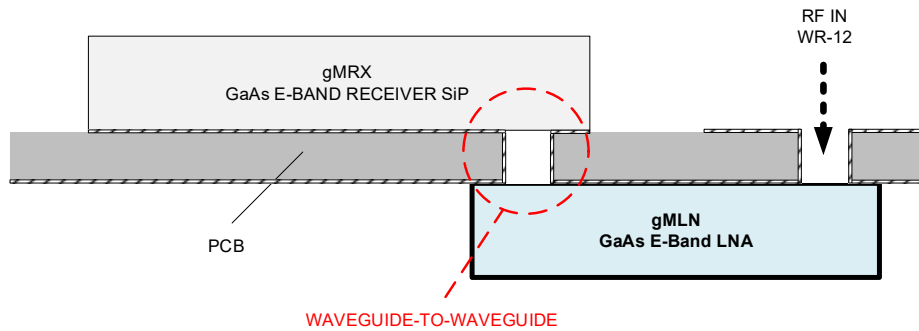


**Figure 2. Pin configuration. Dimensions in mm.**

## APPLICATION INFORMATION

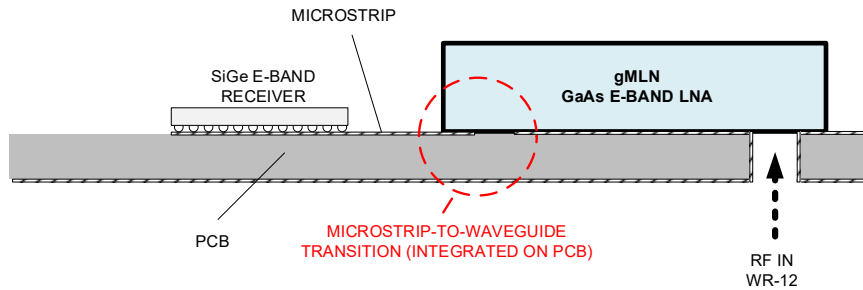
gMLN0014 is a high-performance GaAs LNA suitable for integration in mm-wave front-ends based on GaAs or SiGe receivers. The package WR-12 waveguide interface offers a simple implementation with minimal RF losses. gMLN0014 is compatible with standard surface-mount assembly processes.

### 1. High-Performance GaAs Receiver Chain.

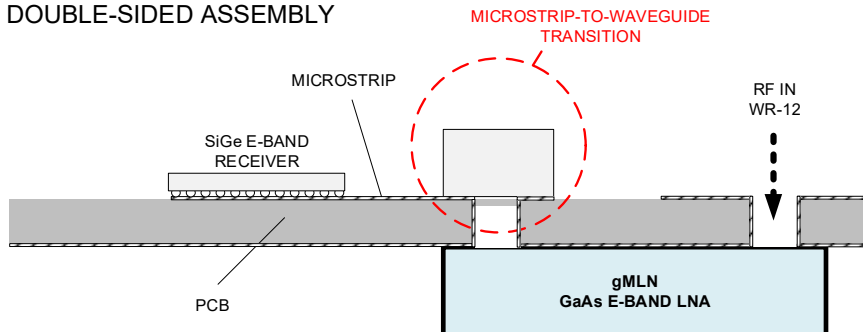


### 2. SiGe Receiver with GaAs LNA.

#### (A) SINGLE-SIDED ASSEMBLY



#### (B) DOUBLE-SIDED ASSEMBLY



## ABSOLUTE MAXIMUM RATINGS

**Table 3. Absolute Maximum Ratings**

Parameter	
Gate-source voltage	-2 to +0.7 V
Drain-source voltage	4.5 V
Gate-drain breakdown voltage	8 V
Operating temperature	-40 to + 85°C
Storage temperature	-65 to +150°C