Preliminary DATA SHEET

CAC50121LW

28V, 3-5GHz, 120Watts GaN Power Amplifier

Product overview

CAC50121LW is a 120W(P5dB) input pre-matched GaN power amplifier. It operates perfectly from 3 to 5GHz with 28 volts rail, offers a general purpose, broadband, high power and high efficiency wireless pulse or CW wideband communication application.

CAC50121LWSF **CAC50121LWSN**

Figure 1. NI360 2L Eared(SF) and Earless(SN) Package

Key Features

- 3 – 5GHz
- Operating Drain Voltage: +28V
- 15dB small signal Gain @5GHz
- 13dB Gain @ 50dBm, 5GHz
- 50.5dBm CW Peak Power
- 65% Drain Efficiency @peak power,5GHz
- NI360 2 Lead flange Ceramic package (MSL3, 260℃ per JEDEC J-STD-020)
- ESD Level: HBM TBD ; CDM TBD
- ROHS compatible

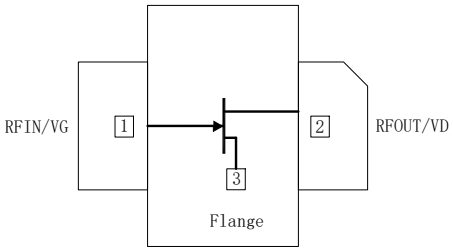


Figure 2. CAC50121LW Function Block Diagram

Applications

- 3GPP 4G LTE/5G NR massive MIMO basestation
- Driver amplifier for micro-base and macro-base Stations
- Active antenna array
- Pico/Small Cell
- Test Instrumentation
- Industrial, scientific, and medical
- Wideband amplifiers

Table 1. CAC50121LW Pinout Descriptions

Pin	Name	Description
1,2	RFIN/VG	RF input port with Gate Bias
3,4	RFOUT/VD	RF output port with Drain Supply Voltage
5	GND	Grounding

Ordering Information

Part No.	Description
CAC50121LWSF	3-5GHz 120W GaN PA with Flange, 7’ Reel with 500pcs
CAC50121LWSN	3-5GHz 120W GaN PA without Flange, 7’ Reel with 500pcs

Table 3. CAC50121LW Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Storage Temperature	TSTG	-55 to 125	˚C
Operating Temperature	TC	-40 to +105	˚C
Operating Junction Temperature	TJ	225	˚C
Thermal Resistance	Rθjc		˚C/W
Operating Voltage	VDD	0 to 32	V
Drain-Source Voltage	VDSS	150	V
Gate-Source Voltage	VGS	-8 to 0	V
Maximum Forward Gate Current		10	mA
Input Power	PIN	+45	dBm

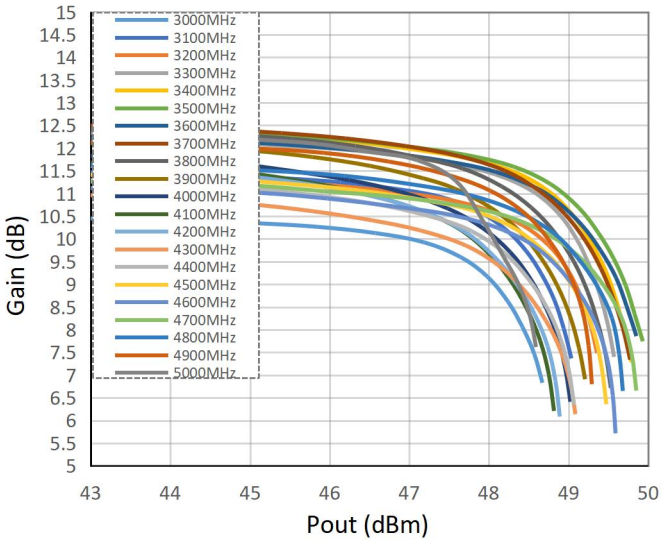
Table 4. CAC50121LW Recommended Operating Conditions

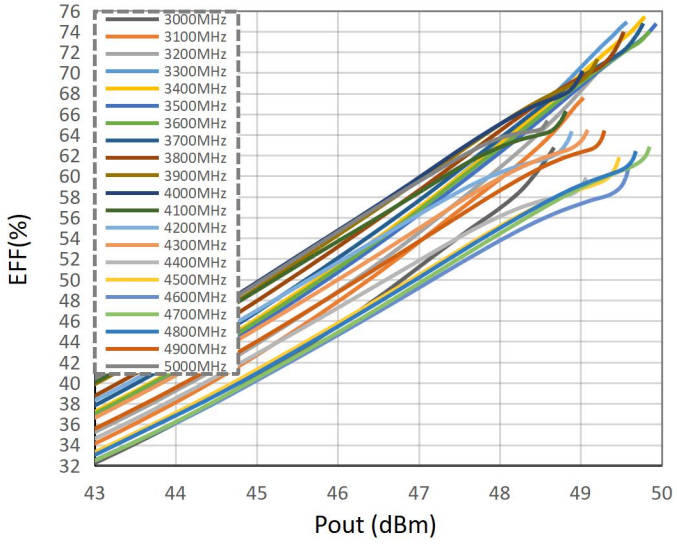
Parameter	Symbol	Min	Typ	Max	Unit
Operating frequency	f	3		5	GHz
Operating temperature	TC	-40	25	85	˚C
Drain Voltage	VDD		28		V
Gate Voltage	VGS		-2.8		V
Quiescent Current	IDQ		400		mA

Table 5. CAC50121LW Electrical Specifications

EVB TYPICAL PERFORMANCE: EFFICIENCY TUNED AT P3dB (VD=28V, Idq=400mA, TC=+25 ˚C, Input /Output Load = 50Ω)

Parameter	Conditions	Min	Typ	Max	Unit
Frequency			5000		MHz
Output P5dB	CW		+50.0		dBm
Gain @ 50dBm	CW		13		dB
Drain efficiency @Psat	CW		65		%





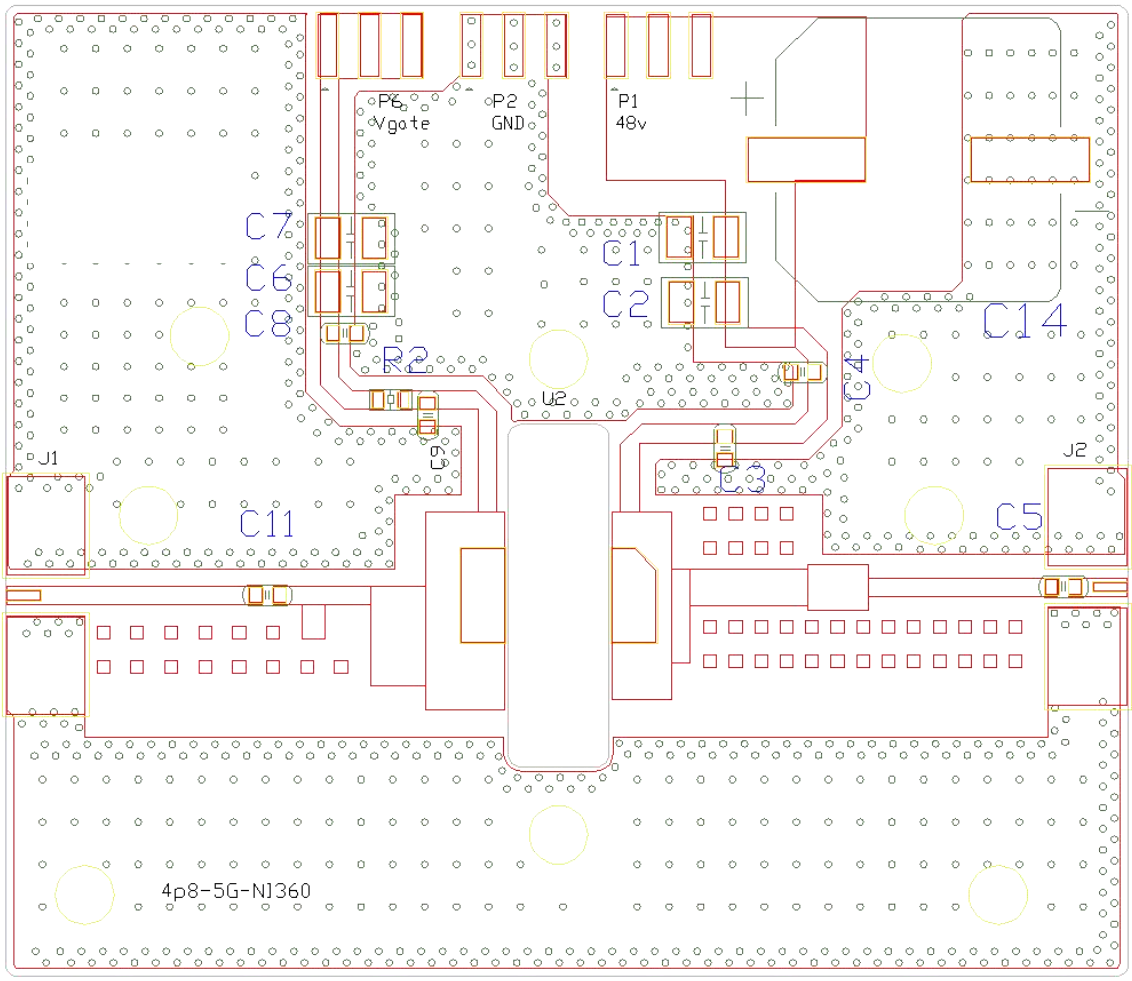


Figure 3. CAC50121LW 3-5GHz Evaluation Board

Table 6. CAC50121LW 3-5GHz Evaluation Board Bill of Materials (BOM)

Component	Description	Size
C6	1nF, 50V	0603
C7	1uF, 50V	0603
C1, C2	10uF, 100V	1206
C3, C6, C5, C11	5.1pF, high Q, 250V	0603
C4	100pF, high Q, 250V	0603
R2	10 Ohm	0603

Rest of the components on the schematic are not used in this part.

Evaluation board test procedure

Turn-on sequence

1．Connect test equipment to the input and output port of Evaluation board and then connect DC ground.

2．Turn on VG to -7V, turn on VD to 28V then tune VG to 400mA quiescent current in order.

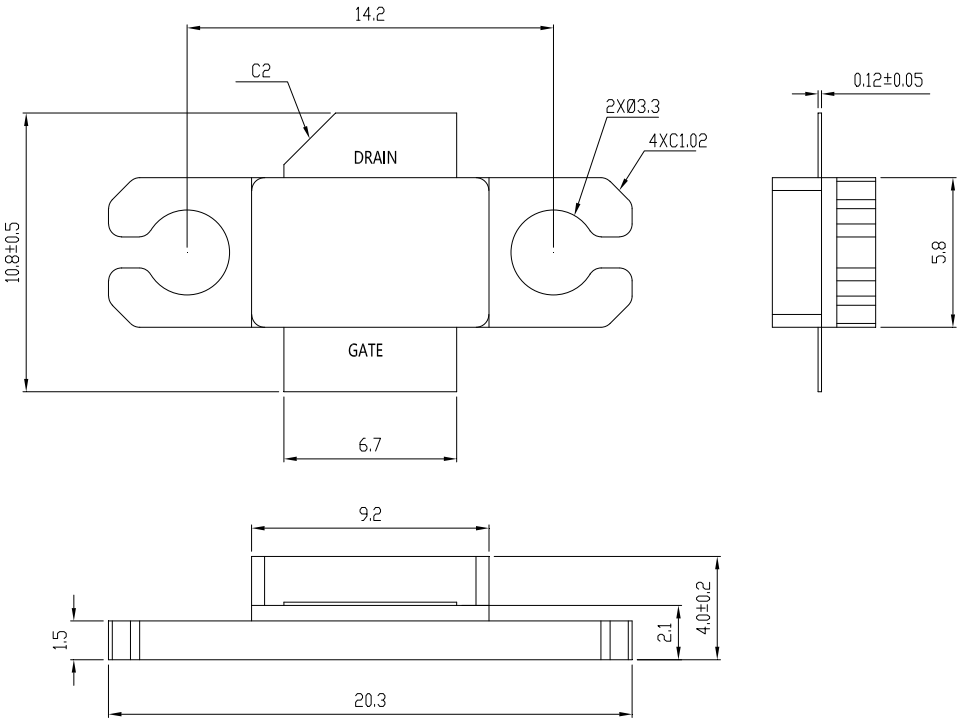
3．Apply RF signal.

Turn-off sequence

1．Turn off RF signal.

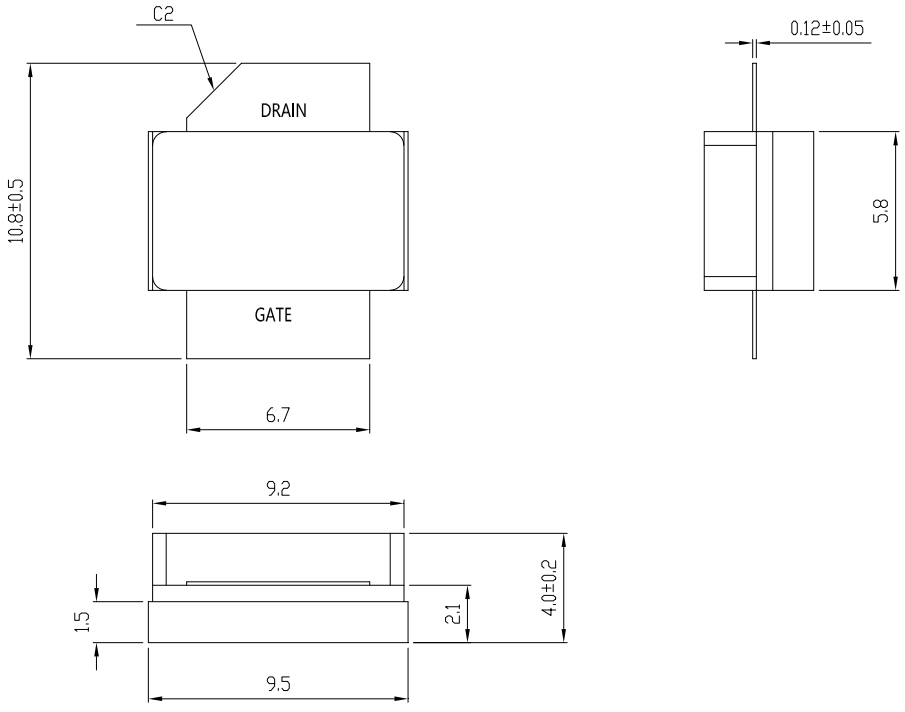
2．Turn off VD.

3．Turn off VG.



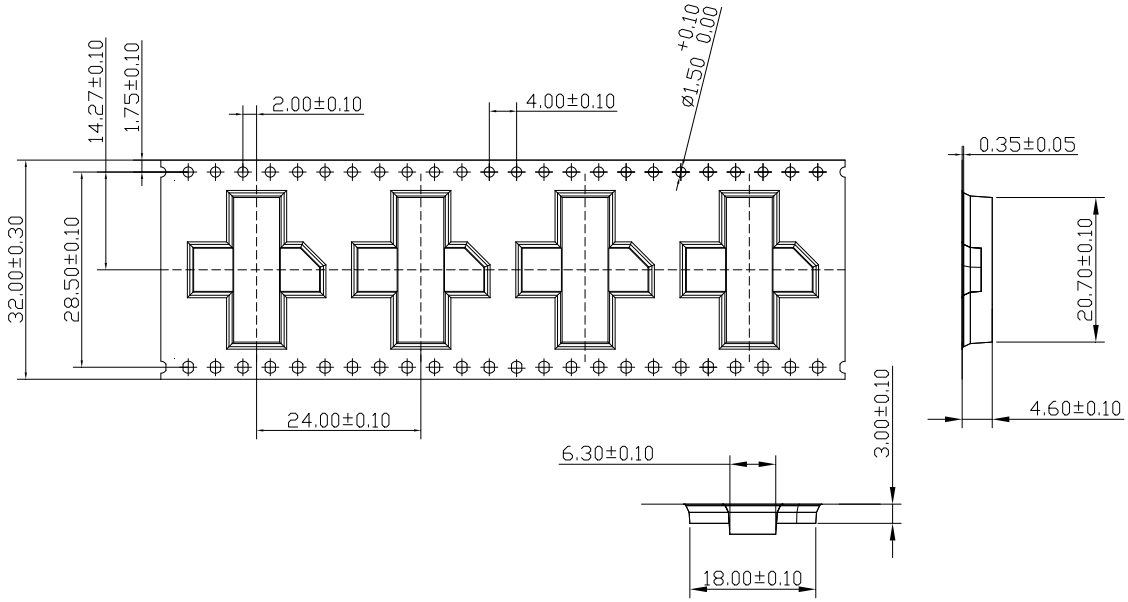
Notes:
1. ALL DIMENSIONS ARE MM.
2. ALL TOLERANCES ±0.15mm UNLESS SPECIFIED OTHERWISE.

Figure 5. CAC50121LWSF Package Dimensions



Notes:
1. ALL DIMENSIONS ARE MM.
2. ALL TOLERANCES ±0.15mm UNLESS SPECIFIED OTHERWISE.

Figure 6. CAC50121LWSN Package Dimensions



Technical requirements：
1.The accumulative error of the distance between any 10 transmitting holes is± 0.1 mm;
2.The lateral bending of the belt along the length direction is≤1mm/100mm;
3.Roughness：Ra＜0.8um;
4.Carrier tape color:Black.

Figure 7. Tape and Reel Dimensions