

Preliminary DATA SHEET

CAQ4030L

28V, DC-4GHz, CW 30Watts GaN Power Amplifier

Product overview

CAQ4030L is a 30W(P3dB) unmatched GaN power amplifier. It operates from DC to 4GHz with 28 volt rail, offers a general purpose, broadband, high power and high efficiency wireless pulse and CW communication application.

Key Features

- DC– 4GHz
- Operating Drain Voltage: +28V
- 19dB linear Gain @0.9GHz
- Above 45dBm CW Peak Power
- 68% Drain Efficiency @P_{sat}
- 7x6.5mm DFN package
(MSL3, 260°C per JEDEC J-STD-020)
- ESD Level: HBM TBD ; CDM TBD
- ROHS compatible

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



Figure 1. 7x6.5mm DFN Package

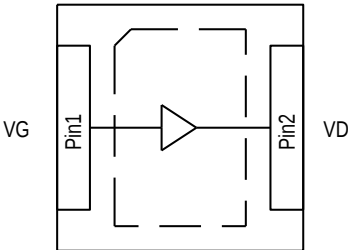


Figure 2. CAQ4030L Function Block Diagram

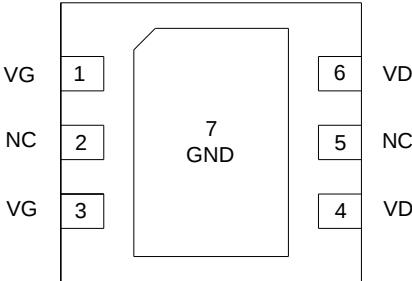


Figure 3. CAQ4030L Pinout

Table 1. CAQ4030L Signal Descriptions

Pin	Name	Description
1,3	RFIN/VG	RF input port with Gate Bias
4,6	RFOUT/VD	RF output port with Drain Supply Voltage
2,5	NC	No connection
7	GND	Ground

Ordering Information

Part No.	Description
CAQ4030L	DC-4GHz CW 30Watts Peak Power GaN wideband PA, 7' Reel with 1500pcs

Table 2. CAQ4030L 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	R θ jc		°C/W
Operating Voltage	VDD	0 to 55	V
Drain-Source Voltage	VDSS	200	V
Gate-Source Voltage	VGS	-8 to 0	V
Maximum Forward Gate Current		10	mA
Input Power	PIN	+33	dBm

Table 3. CAQ4030L Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating frequency	f	DC		4	GHz
Operating temperature	TC	-40	25	65	°C
Drain Voltage	VDD		28		V
Gate Voltage	VGS		-3.5		V
Quiescent Current	IDQ		40		mA

Table 4. CAQ4030L Electrical Specifications

Evaluation Board TYPICAL PERFORMANCE: POWER TUNED AT P3dB (VD=28V, Idq=80mA, TC=+25 °C, Input /Output Load = 50 Ω)

Parameter	Conditions	Min	Typ	Max	Unit
Frequency			2400		MHz
Output P3dB			+45.5		dBm
Gain @ P3dB			13		dB
Drain efficiency @P3dB			68		%

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 40mA quiescent current in order.
- 3 . Apply RF signal.

Turn-off sequence

- 1 . Turn off RF signal.
- 2 . Turn off VD.
- 3 . Turn off VG.

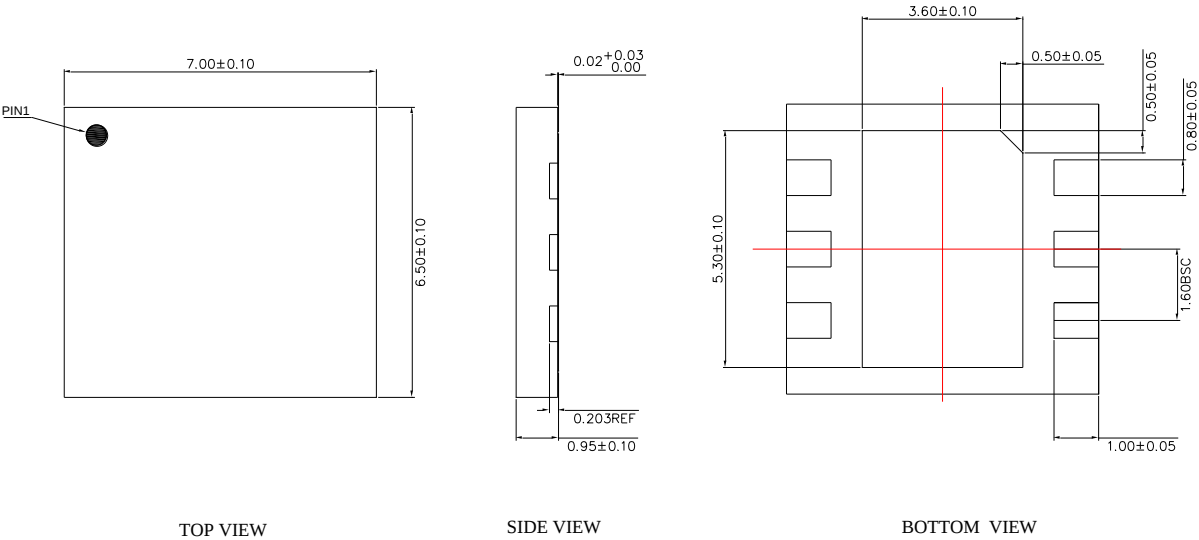


Figure 4. CAQ4030L Package Dimensions

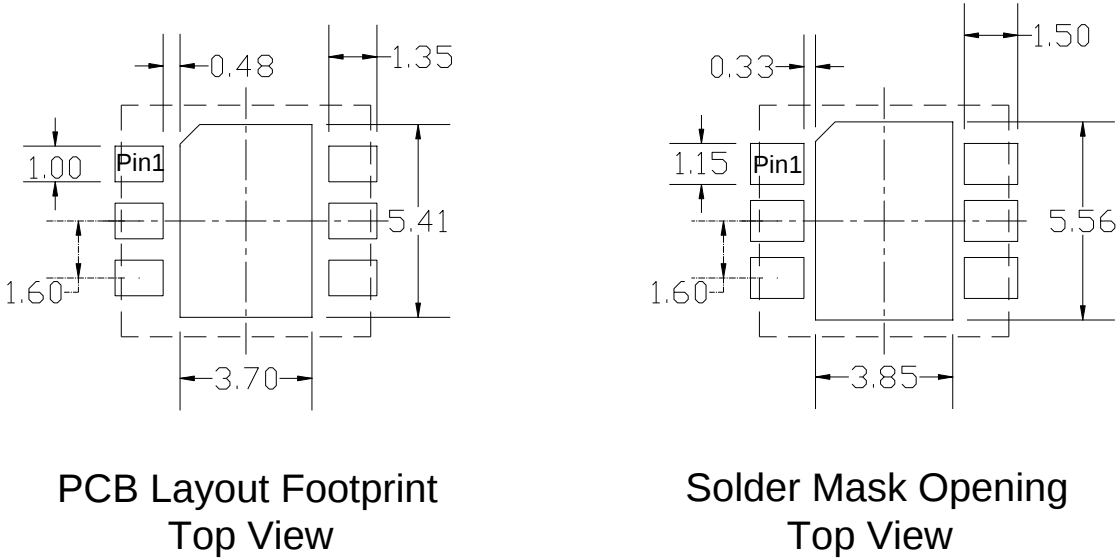


Figure 5. CAQ4030L Package Dimensions

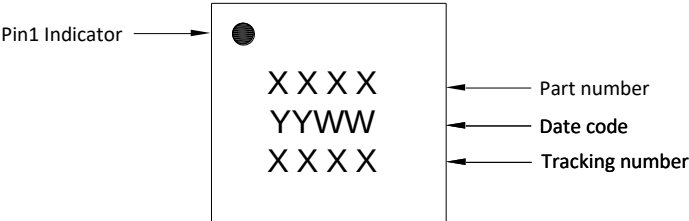
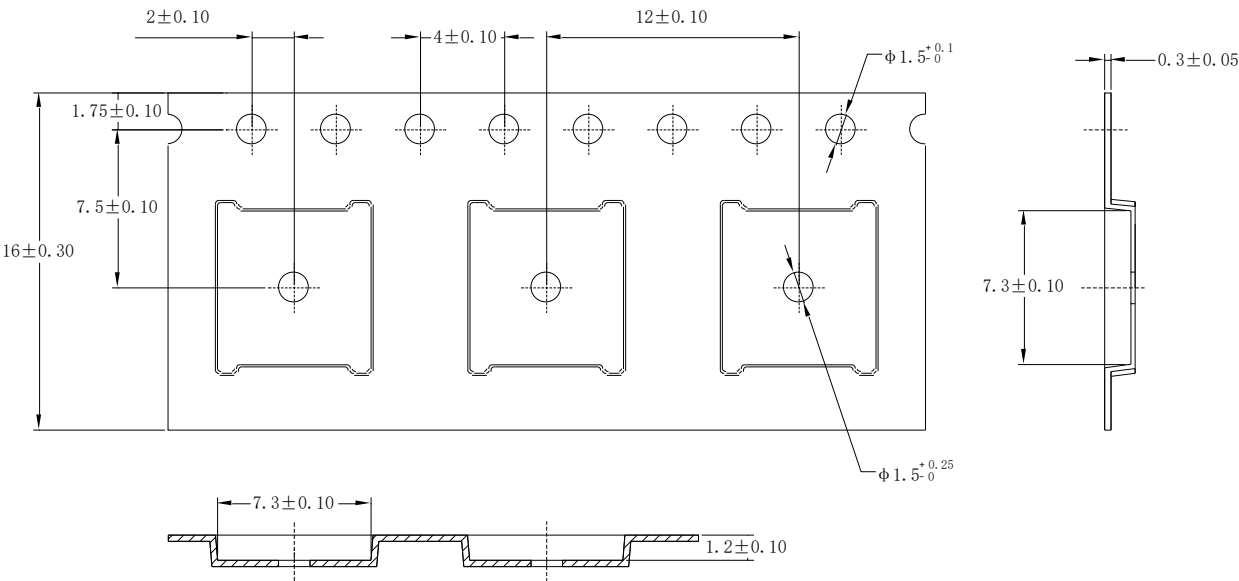


Figure 6. CAQ4030L Marking information



- 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 ≤ 1 mm/100mm;
 - 3.Roughness: $R_a < 0.8\mu\text{m}$;
 - 4.Carrier tape color:Black.

Figure 7. Tape and Reel Dimensions

CAQ4030L REVISION HISTORY

Revision	Date	Description
0.1	Nov 8, 2024	Initial release of data sheet