EC MICROWAVE
The door to the RF world

GaN integrated power amplifier O1196SM7H

Features

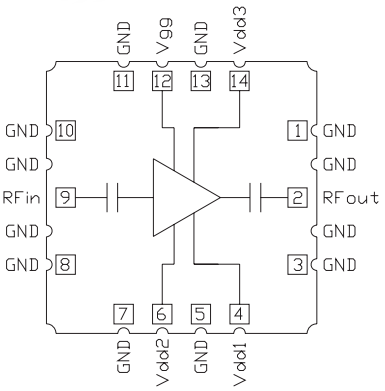
- Working frequency band: 7~9GHz
- Psat output power: 41dBm@42%PAE
- Power Gain: 21dB
- Surface Mount Leadless Ceramic Package
- Package Size: 7.0 x 7.0 x 1.0 mm

Application

Suitable for a variety of applications:

- Microwave radio
- Test measurement
- Military and Aerospace
- Instrumentation
- RF/microwave circuit

Functional block diagram



Overview

The O1196SM7H is a GaN integrated power amplifier operating from 7 to 9 GHz. It provides 21dB of power gain, 41dBm of saturated output power, and 42% of power-added efficiency at a +28V operating voltage.

The amplifier adopts 7mmx7mm surface-mount non-leaded ceramic package, which can realize gas-tight encapsulation. The surface of the pin pad is processed by gold plating and is suitable for reflow soldering installation process.

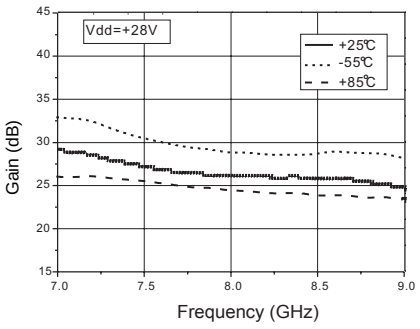
Electrical Characteristics

(TA = +25°C, Vdd=+28V, Vgg=-1.8V, Idq=0.2A, 50Ω system, pulse width modulation PW=100us, duty ratio DC=10%)

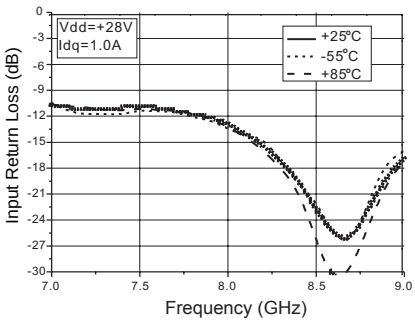
symbol	Parameter	Min.	Typ.	Max.	Unit
Frequency	working frequency		7-9		GHz
Gain	Small signal gain	–	26	–	dB
Gp	Power gain (PIN=20dBm)	–	21	–	dB
IRL	Input return loss	–	15		dB
Pout	Output power (PIN=20dBm)		41		dBm
PAE	Power added efficiency (PIN=20dBm)		42		%
Idd	Working current (PIN=20dBm)	–	1.0	–	A

Test

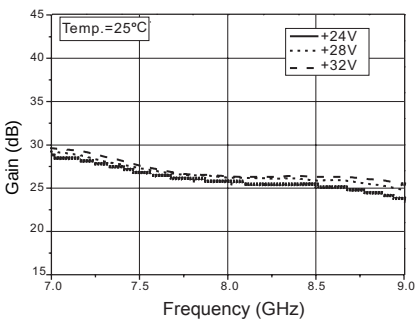
Small signal gain vs. frequency versus temperature



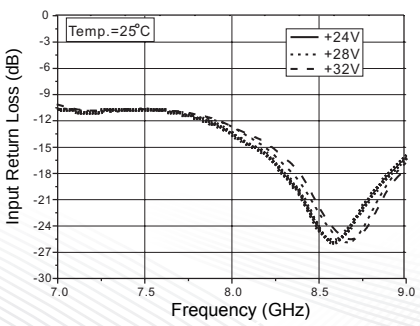
Input Return Loss vs. Frequency vs. Temperature



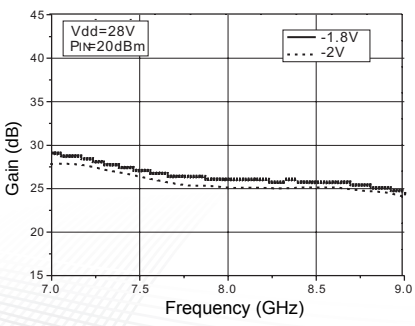
Small Signal Gain vs. Frequency vs. Drain current



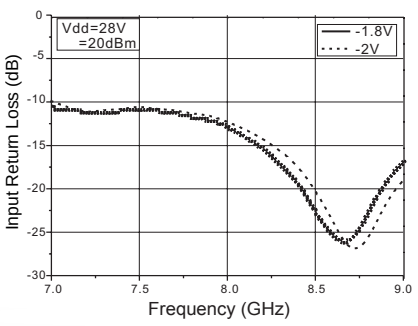
Input Return Loss vs. Frequency vs. Drain current



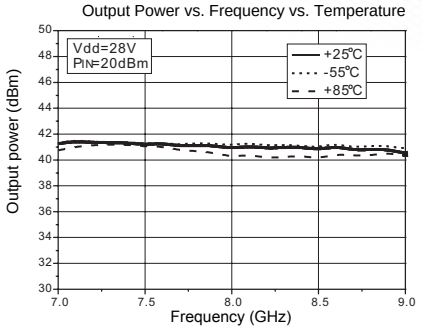
Small Signal Gain vs. Frequency vs. Gate Voltage



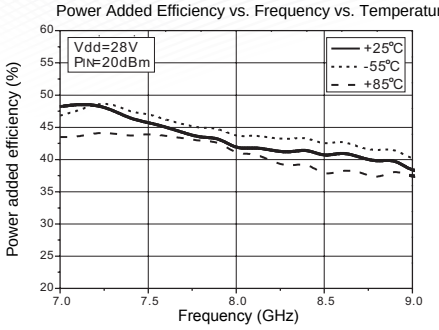
Input Return Loss vs. Frequency vs. Gate Voltage



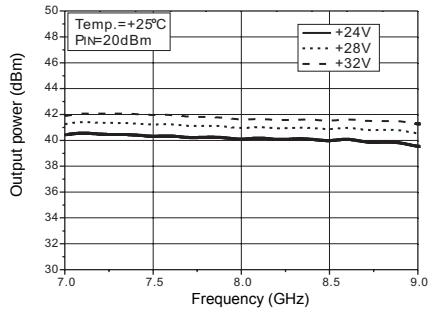
Output Power vs. Frequency vs. Temperature



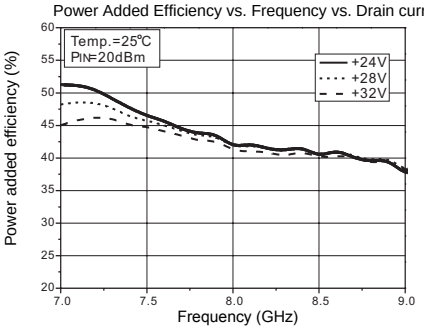
Power Added Efficiency vs. Frequency vs. Temperature



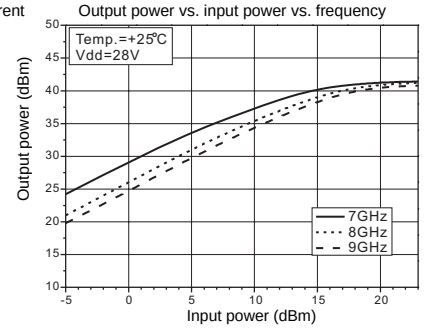
Output Power vs. Frequency vs. Drain current



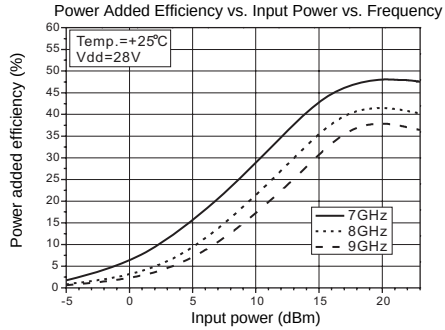
Power Added Efficiency vs. Frequency vs. Drain current



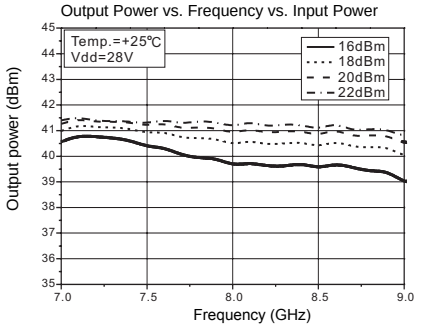
Output power vs. input power vs. frequency



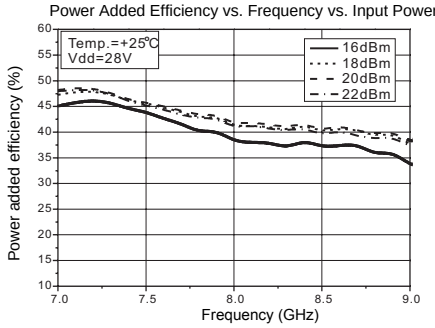
Power Added Efficiency vs. Input Power vs. Frequency



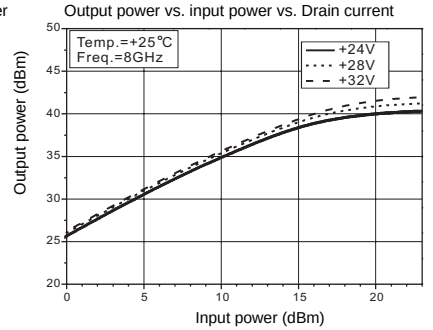
Output Power vs. Frequency vs. Input Power



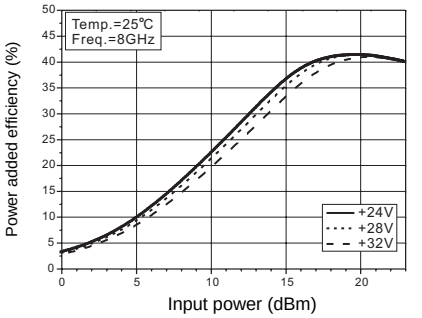
Power Added Efficiency vs. Frequency vs. Input Power



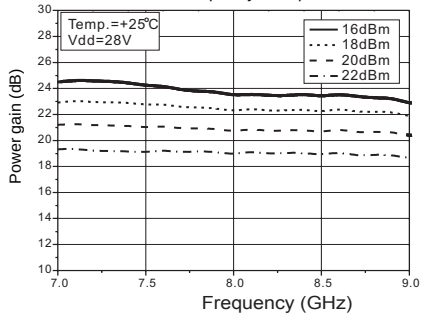
Output power vs. input power vs. Drain current



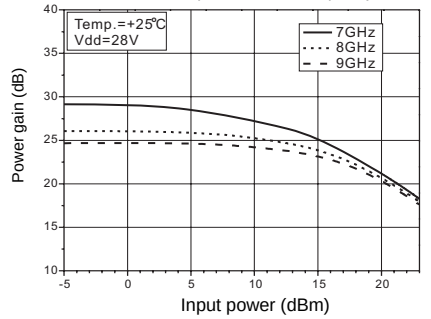
Power Added Efficiency vs. Input Power vs. Drain current



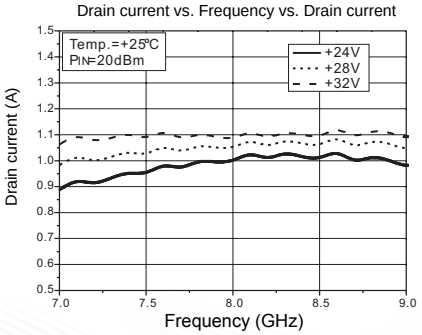
Power Gain vs. Frequency vs. Input Power



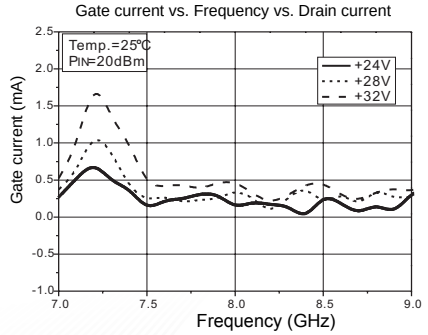
Power Gain vs. Input Power vs. Frequency



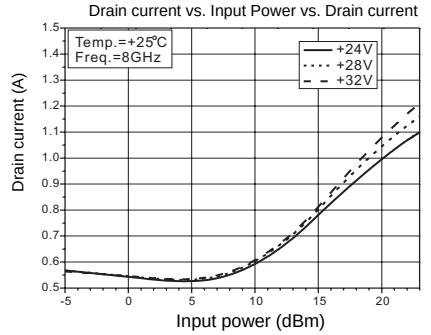
Drain current vs. Frequency vs. Drain current

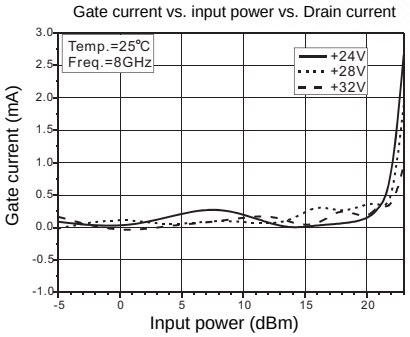


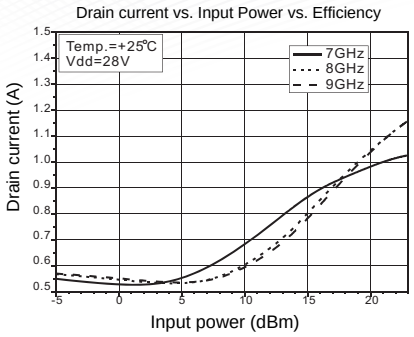
Gate current vs. Frequency vs. Drain current

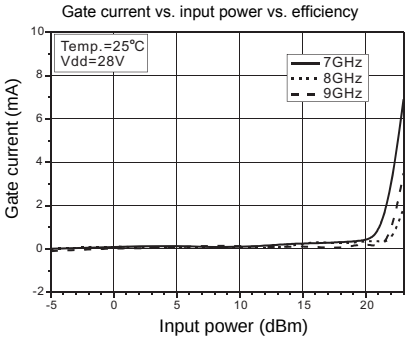


Drain current vs. Input Power vs. Drain current

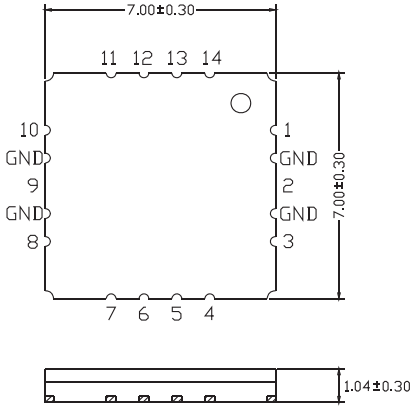


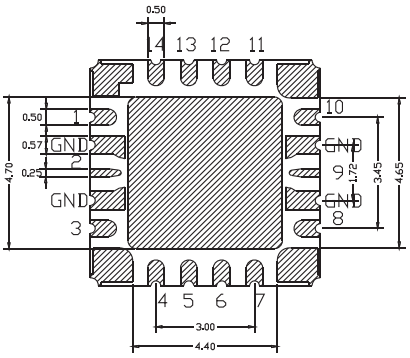






Dimensions





Description:

1, Unit: mm
2, shell material: alumina ceramic
3, pin surface plating: nickel gold
4, the shell surface warping: less than 0.05mm
5, all ground pins please connect RF ground
6, The shell is suitable for reflow installation process

Limit parameter

Supply voltage (VDEVICE)	+33 V
RF input power	+27dBm
Storage temperature	-55~+125℃
Operating temperature	-55~+85℃

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Pin definition

Pin.NO	Pin Name	Description
9	RF in	RF input, external 50Ω system, no need for DC blocking capacitors
2	RF out	RF output, external 50Ω system, no need for DC blocking capacitors
4, 6, 14	V_{dd}	Amplifier drain bias
12	V_{gg}	Amplifier gate bias requires external 1000pF and 1uF capacitors
other	GND	The ground pin and the bottom of the shell need a large area to ground

Application Information