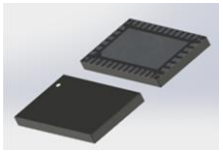
100W GaN amplifier module

NGM4450100HPO2



Description

NGM4450100HPO2 is a fully integrated two-stage GaN amplifier module, designed specifically for 4.4-5.0GHz mobile communications amplifiers.
It provides advanced functionality with its high gain, efficiency, and linearity on a small and efficient footprint in its 10x6mm plastic package.

Typical Applications

- 5G, LTE and multi-standard amplifiers.

Features

- Industry leading product performance for n79 5G
- 50Ω I/O

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	180	Vdc
Gate--Source Voltage	V_{GS}	-8 to +0.5	Vdc
Operating Voltage	V_{DD}	55	Vdc
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C
Operating Junction Temperature	T_J	+225	°C
Load Mismatch	VSWR	10:1	Ψ
Thermal Resistance	RθJC	TBD	°C /W

Electrical Characteristics

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=-8V; I_{DS}=5mA	V_{DSS}	200			V
Gate Threshold Voltage	V_{DS} =10V, I_{DS} = 5mA	$V_{GS(th)}$		-3.0		V
Driver Quiescent Current		$I_{D(Driver)}$		20		mA
Carrier Quiescent Current		$I_{D(Main)}$		90		mA
Peak Gate Quiescent Voltage		$V_{GS(Peak)}$		-6.2		V

RF Characteristics

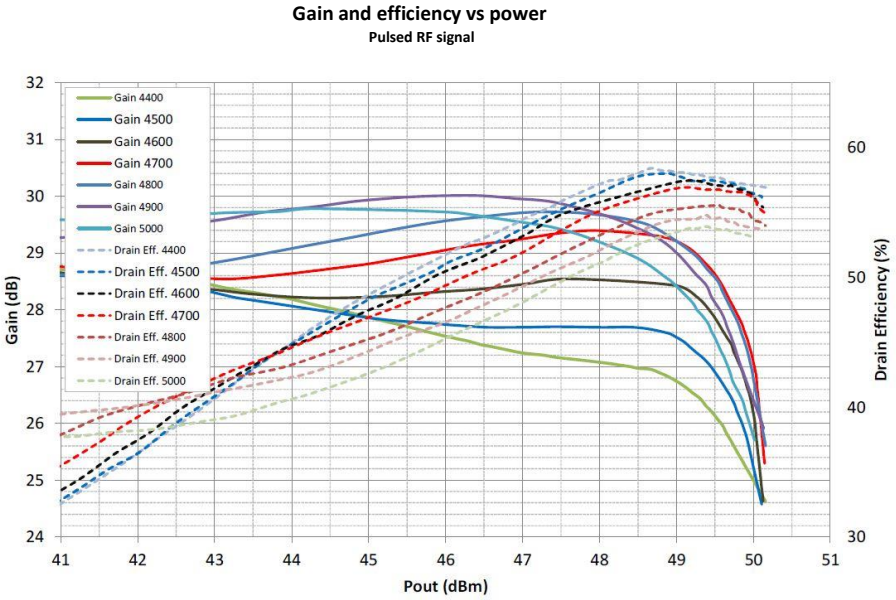
(As measured in test fixture, Pulsed RF 20μs/10%, V_{DD}=50V, F=4.4-5.0 GHz)

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Output power	P_{-1dB}		80		W
Power gain	G_{P-1dB}		29		dB
Output power	P_{-3dB}		100		W
Efficiency	η_{P-3dB}		55		%

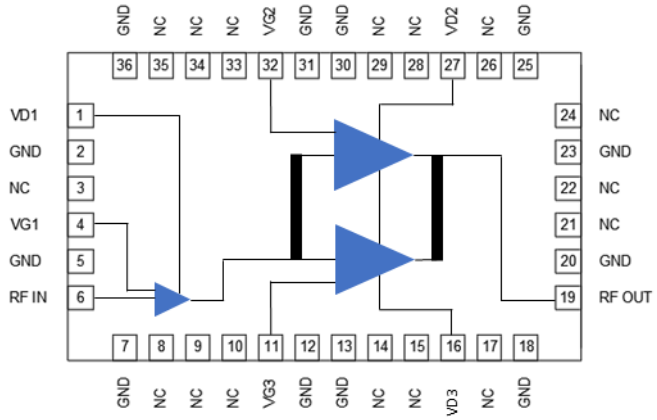
(As measured in test fixture, 42dBm, WCDMA Single Carrier, 3GPP test model 1; 1 to 64 DPCH, Channel BW 3.84MHz, PAR 10.5dB @ 0.01% CCDF)

Freq (MHz)	Ppep(dBm)	Gain（dB）	η (%)	ACPR (dBc)
4400	50.6	26.6	37.2	-29.9
4500	50.8	26.5	37.2	-32.8
4600	50.9	26.9	37.5	-30.3
4700	50.9	27.7	38.2	-28.4
4800	50.8	28.2	38.3	-28.0
4900	50.5	28.3	37.3	-29.8
5000	50.2	27.7	35.7	-33.1

Performance as measured in test fixture.



Functional block diagram and package pinning



Pin	Symbol	Description
1	VD1	Driver amplifier Drain bias
4	VG1	Driver amplifier Gate bias
6	RF IN	RF 50Ω Input
11	VG3	Carrier amplifier Gate bias
16	VD3	Carrier amplifier Drain bias
19	RF OUT	RF 50Ω output
27	VD2	Peak amplifier Drain bias
32	VG2	Peak amplifier Gate bias
3,8-10,14-15,17,21,22,24,26,28,29,33-35	NC	No connection internally. May be connected to PCB ground
2,5,7,12,13,18,20,23,25,30,31,36	GND	Internal ground, recommended to be connected to PCB ground
Package backside base	GND	Ground. Must be connected to PCB ground and soldered atop copper coin or tightly stitched filled vias for adequate heat transfer.

Package Outline