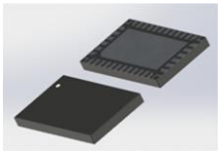
70W GaN amplifier

NGM4850070HPO2



Description

NGM4850070BHPO2 is an integrated two-stage GaN 70W (P_{3dB}) amplifier, designed for use in 5G amplifiers at 4.8-5.0GHz.
It offers advanced functionality with high gain, efficiency, and linearity on a small 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

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	$V_{GS(th)}$		-3.2		V
Driver Quiescent Current		$I_{D(Driver)}$		20		mA
Carrier Quiescent Current		$I_{D(Main)}$		65		mA
Peak Gate Quiescent Voltage		$V_{GS(Peak)}$		-5.9		V

RF Characteristics

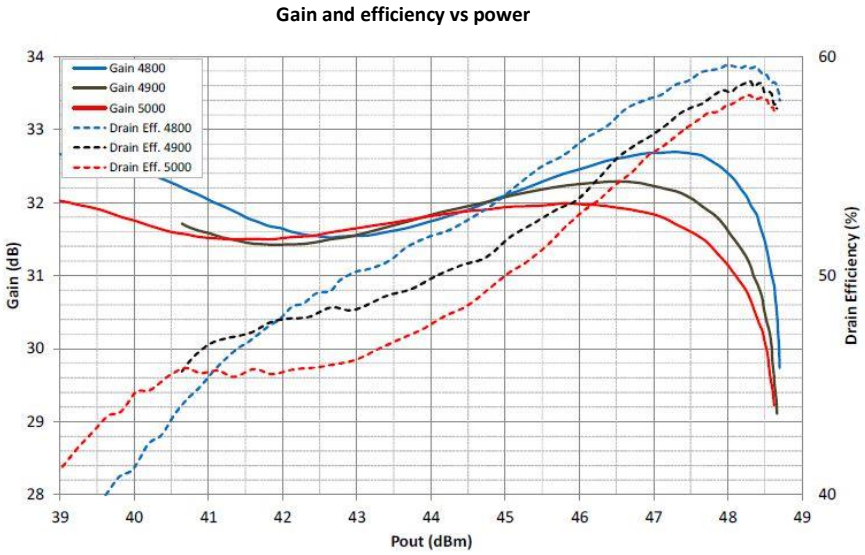
(As measured in test fixture, Pulsed RF 20μs/10%, V_{DD}=48V, F=5.0 GHz)

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output power	P_{-1dB}		60		W	
Power gain	G_{P-1dB}		30		dB	
Output power	P_{-3dB}		70		W	
Efficiency	η_{P-3dB}		57		%	

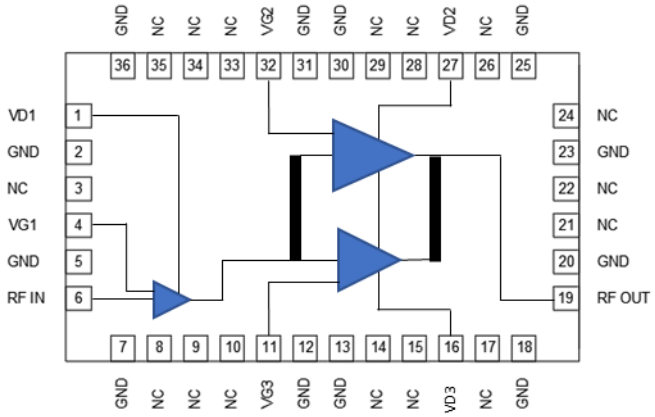
(As measured in test fixture, 40.5dBm 3.84 MHz WCDMA Single Carrier, 3GPP test model 1, PAR 10.5 dB @ 0.01% CCDF)

Freq (MHz)	Ppep(dBm)	Gain（dB）	η (%)	ACPR (dBc)
4800	49.4	31.1	40.8	-27.6
4900	49.2	31.0	40.7	-29.7
5000	49.1	30.8	39.7	-33.2

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
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.

* **Peak and Carrier Drain bias is internally connected and can be fed from either or both sides.**

Package Outline