

## 55W GaN amplifier module

### Description

NGM50055BHPO1 is a fully integrated two-stage GaN amplifier module, designed for 4.8-5.0GHz mobile communications amplifier applications.

It features advanced functionality with its high gain, efficiency, and linearity on a small and efficient footprint in its 10x6mm plastic package.

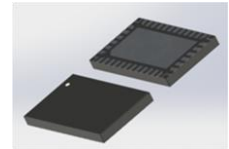
### Typical Applications

- 5G, LTE and multi-standard amplifiers.

### Features

- 50Ω I/O

### NGM4850055HPO2



### Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	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	$R_{\theta JC}$	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	$V_{DS} = 10V$ , $I_{DS} = 5mA$	$V_{GS(th)}$		-3.2		V
Driver Quiescent Current		$I_{D(Driver)}$		20		mA
Carrier Quiescent Current		$I_{D(Main)}$		55		mA
Peak Gate Quiescent Voltage		$V_{GS(Peak)}$		-5.0		V

#### RF Characteristics

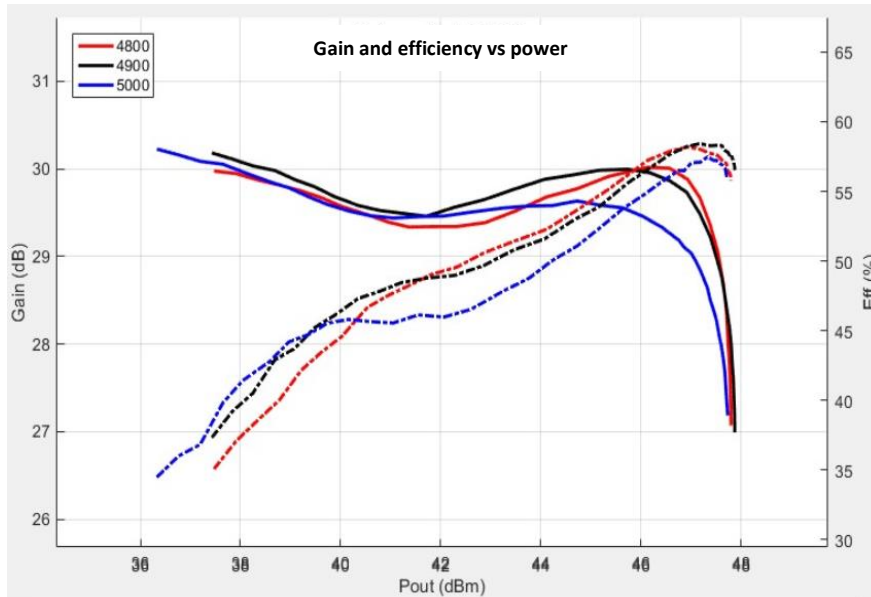
(As measured in test fixture, Pulsed RF 20μs/10%,  $V_{DD} = 48V$ , F=5.0 GHz)

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output power	P-1dB		50		W	
Power gain	GP-1dB		29		dB	
Output power	P-3dB		55		W	
Efficiency	$\eta$ P-3dB		57		%	

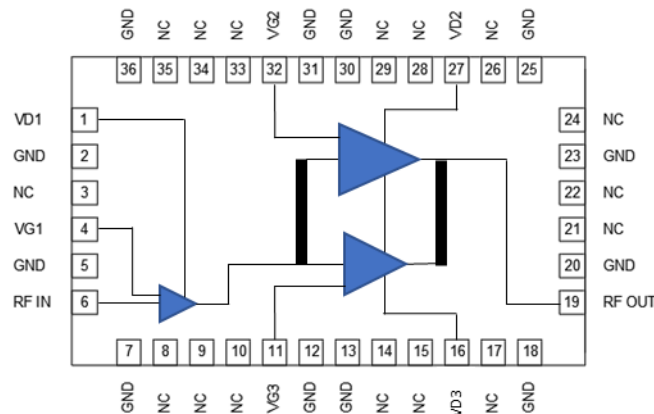
(As measured in test fixture,  $V_{DD} = 48V$ , 39.5dBm WCDMA Single Carrier, 3GPP test model 1, 1 to 64 DPCH, Channel bandwidth 3.84MHz, PAR 10.5 dB @ 0.01% CCDF)

Freq (MHz)	Ppep(dBm)	Gain (dB)	$\eta$ (%)	ACPR (dBc)
4800	48.49	28.7	40.5	-28.6
4900	48.49	28.8	41.0	-29.7
5000	48.38	28.3	40.2	-30.9

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

