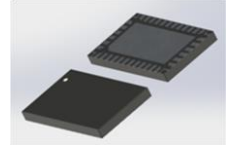


## 35W GaN amplifier module

### Description

NGM4650035LPO2 is a fully integrated two-stage GaN amplifier module, designed primarily targeting 4.6-5.0 GHz mobile communication power amplifiers. It provides advanced functionality with its high gain, efficiency, and linearity on a small and efficient footprint in its 10x6mm plastic package.

### NGM4650035LPO2



### Typical Applications

- 5G, LTE and multi-standard amplifiers.

### Features

- 50Ω I/O

### Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	100	Vdc
Gate-Source Voltage	$V_{GS}$	-8 to +0.5	Vdc
Operating Voltage	$V_{DD}$	55	Vdc
Storage Temperature Range	$T_{stg}$	-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	$R_{\theta JC}$	4.6	°C/W

### Electrical Characteristics

#### DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage		$V_{DSS}$	100			V
Gate Threshold Voltage		$V_{GS(th)}$		-2.7		V
Driver Quiescent Current		$I_{DQ1 (Driver)}$		30		mA
Carrier Quiescent Current		$I_{DQ3 (Main)}$		50		mA
Peak Gate Quiescent Voltage		$V_{GSz (Peak)}$		-4.2		V

#### RF Characteristics

(As measured in test fixture, Pulsed RF 20μs/10%,  $V_{DD}=28V$ ,  $f=5$  GHz)

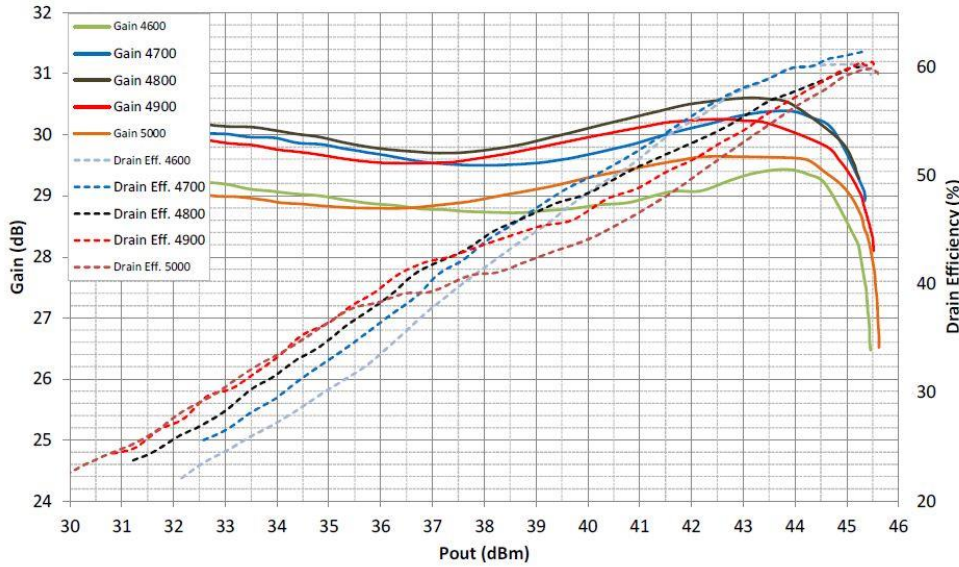
Characteristics	Symbol	Min.	Typ.	Max.	Unit
Output power	P-1dB		30		W
Power gain	GP-3		28		dB
Output power	P-3dB		35		W
Efficiency	$\eta$		58		%

(As measured in test fixture,  $V_{DD} = 28$  V,  $P_{out}$  37.5dBm avg, WCDMA Single Carrier, 3GPP test model 1, 1 to 64 DPCH, PAR 10.5dB, Channel bandwidth 3.84MHz)

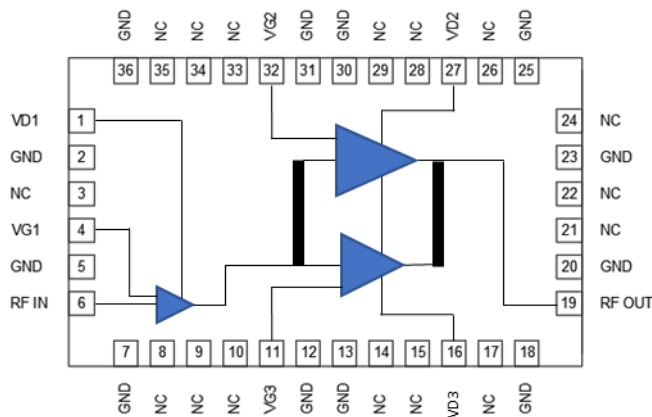
Freq (MHz)	P <sub>pep</sub> (dBm)	Gain (dB)	$\eta$ (%)	ACPR (dBc)
4600	46.20	27.5	39.8	-27.1
4700	46.30	28.5	41.2	-26.6
4800	46.19	29.1	41.0	-28.5
4900	46.18	29.0	41.0	-31.0
5000	46.24	28.4	39.9	-31.9

**Performance as measured in test fixture.**

**Gain and Efficiency vs Power, Pulsed RF**



**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 Input 50Ω
11	VG3	Carrier amplifier, Gate Bias
18	VD3	Carrier amplifier, Drain Bias/ VBW enhancement decoupling
20	RF OUT	RF output 50Ω
27	VD2	Peak amplifier, Drain Bias
32	VG2	Peak amplifier, Gate Bias
3, 8-10, 14-17, 19, 21-24, 26-29, 33-35	NC	No connection. May be connected to PCB ground
2, 5, 7, 12, 13, 30, 31, 36	GND	Internal ground, recommended to be connected to PCB
Package backside base	GND	Ground. Must be soldered and connected to PCB ground mounted atop copper coin or tightly stitched filled vias for adequate heat transfer.

## Package Outline

