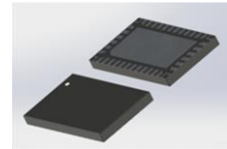


100W 5GHz Dual GaN RF Power Transistor

Description

NGD50100HPO1 is an asymmetric dual path internally matched GaN HEMT transistor module, designed to specifically target use in band 79, 4.4-5.0GHz, mobile communications amplifiers. It features high gain, high efficiency and high linearity capabilities in a small and efficient 10x6mm plastic package, and is ideal for Doherty configuration.

NGD50100HPO1



Typical Applications

- 5G, LTE and multi-standard Doherty amplifiers.

Maximum Ratings

Rating	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
Maximum gate current	I_{gs}	13	mA
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	$R_{\theta JC}$	2.3	°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	$V_{DS} = 10V$, $I_D = 5mA$	$V_{GS(th)}$	-4	-3.2	-2	V
Gate Quiescent Voltage	$V_{DS} = 50V$, $I_{DS} = 55mA$,	$V_{GS(Q)}$		-3		V

RF Characteristics

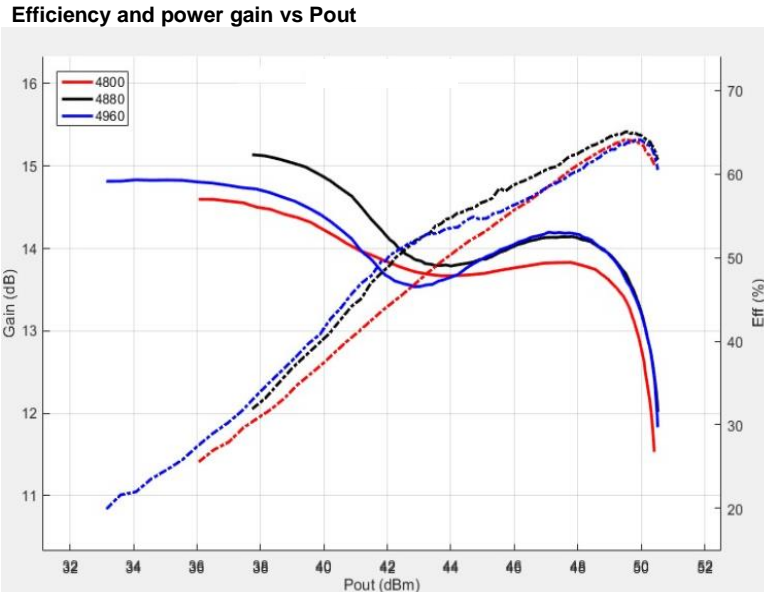
As measured in Doherty test fixture, Pulsed RF 20 μ s/20%, Measured in std test fixture, $V_b = 48V$, $F = 4.8$ GHz

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output power	P-1dB		80		W	
Power gain	GP-1dB		14		dB	
Output power	P-3dB		110		W	
Efficiency	η P-3dB		60		%	

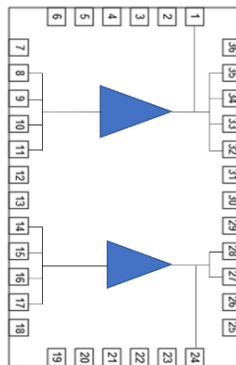
As measured in Doherty test fixture, $V_{DD} = 48$ V, 42dBm, 3.84MHz WCDMA Single Carrier, 4800MHz, 3GPP, peak/average 10.5 dB @ 0.01% CCDF

Ppeak (W)	ACPR (dBc)	Gain (dB)	Efficiency (%)
120	-30.17	13.03	44.41

Performance as measured in test fixture

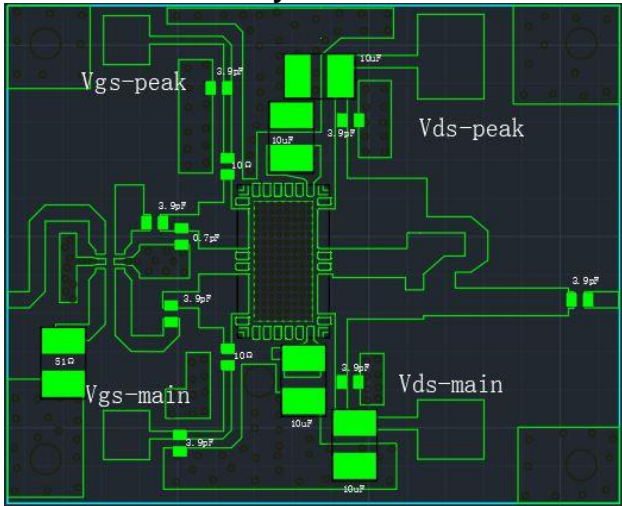


Functional block diagram and package pinning



Pin No.	Symbol	Description
8,9,10,11	RF IN/Vgs1	RF In, Vgs bias for Peak path
32,33,34,35	RF OUT/VDD1	RF Out, VDD bias for Peak path
14,15,16,17	RF IN/Vgs2	RF In, Vgs bias for Main path
27,28	RF OUT/VDD2	RF Out, VDD bias for Main path
1,24	DC1,DC2	VBW decoupling for main and peak path
All other pins	NC	Not Connected internally. May be connected to PCB ground
Package Base	GND	Ground. Must be soldered and connected to PCB ground mounted atop copper coin or tightly stitched filled vias for adequate heat transfer.

Evaluation board Layout



Package Dimensions

