

## Gallium Nitride 100W RF Power Transistor

### Description

The NGN50100HC2 is an internally pre-matched single ended 100W GaN HEMT Ideal for power amplifier applications from 4 up to 6GHz.

This is a versatile transistor that can be used in a multitude of applications with CW, pulsed or complex modulations.

### Applications

- 5G wireless communications,
- Radar,
- Troposcatter Communications
- Satellite Communications
- Weather Monitoring



### 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
Maximum gate current	$I_{GS}$	16	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, Simulated $T_C=85^{\circ}C$ , $P_{out}=100W$ Pulsed	$R_{\theta JC}$	1.3	°C /W

### Electrical Characteristics (T = 25°C unless otherwise noted)

#### DC Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Conditions
Drain-Source Breakdown Voltage	$V_{DSS}$		200		V	$V_{GS}=-8V$ ; $I_{DS}=8mA$
Gate Quiescent Voltage	$V_{GS(Q)}$		-3.1		V	$V_{DS}=50V$ , $I_{DS}=100mA$

#### RF Characteristics (Measured in std test fixture, $V_D=48V$ , $F=5.0GHz$ , $I_{DQ}=100mA$ , $T=25^{\circ}C$ )

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output power	P-1dB		90		W	
Output power	P-3dB		110		W	
Power gain	GP-1dB		14		dB	
Efficiency	$\eta$ P-3dB		57		%	

**Performance measured in test fixture tuned for 4.8-5-0 GHz**

VDD = 48 Vdc, IDQ = 100mA, Tc=25°C,

Pulsed RF, 100us, duty cycle=10%,

Freq (MHz)	P-1dB (dBm)	P-1dB (W)	$\eta$ (%)	Gain (dB)	P-3dB (dBm)	P-3dB (W)	$\eta$ (%)
4800	49.96	99.05	54.34	13.49	50.83	121.12	58.32
4900	49.95	90.93	54.65	14.26	50.66	116.49	58.66
5000	49.23	83.69	52.86	14.06	50.53	112.94	57.21

CW: Pin=38dBm

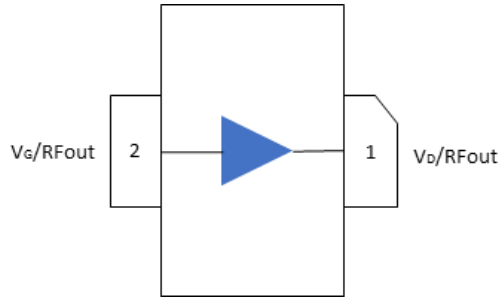
Freq (MHz)	Psat (dBm)	Psat (W)	Ibs (A)	$\eta$ (%)
4800	50.18	104.23	4.04	51.60
4900	50.10	102.33	3.93	52.08
5000	50.12	102.80	4.00	51.40

**Performance measured in test fixture tuned for 5.3-5.9GHz**

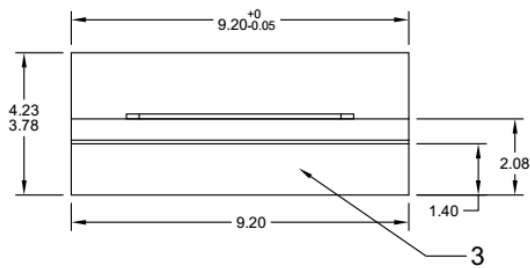
VDD = 48 Vdc, I<sub>bq</sub> = 100mA, Tc=25°C, Pulse width=100us, duty cycle=10%,

Freq (MHz)	P-1dB (dBm)	P-1dB (W)	$\eta$ (%)	Gain (p-1dB)	P-3dB (dBm)	P-3dB (W)	$\eta$ (%)
5300	48.77	75.38	51.67	13.17	49.94	98.58	55.53
5400	48.87	77.14	49.94	13.78	50.27	106.43	53.95
5500	49.23	83.8	49.74	14.18	50.67	116.77	54.16
5600	49.22	83.64	49.00	13.62	50.71	117.72	54.62
5700	49.05	80.3	48.58	14.43	50.64	115.91	53.57
5800	49.04	80.0	50.23	13.87	50.37	108.88	54.25
5900	48.21	66.16	49.14	13.76	49.82	95.93	54.59

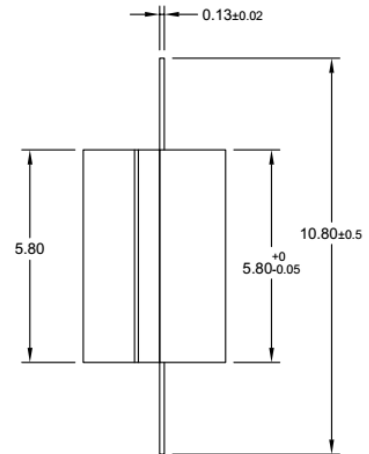
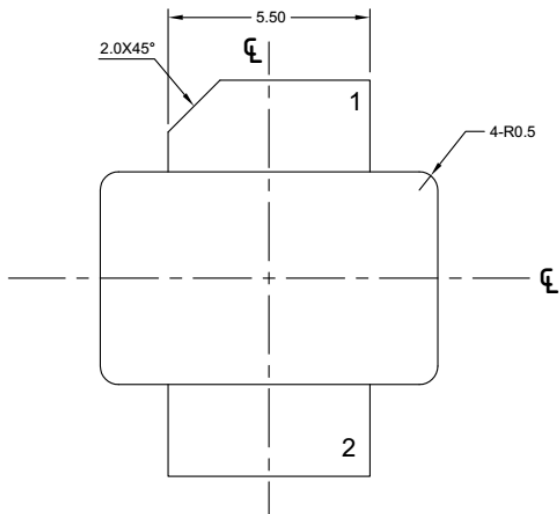
## Package pinning



## Package Outline Metal-Ceramic Package



Pin Connection		
1	2	3
Drain	Gate	Source



Unit: mm

Tolerances(unless specified): x.x ±0.25

x.xx ±0.13

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
C2					