NC11613C-1618P30
GaN MMIC Power Amplifier, 16GHz-18GHz

Features

- Frequency：16GHz～18GHz
- Power Gain：20dB
- Psat：45dBm
- P.A.E：30％
- +28V @ 2.5A（quiescent state）
- Chip Size：3.7mm×3.6mm×0.1mm

Electrical Specification（TA=+25℃,Vd=+28V，Vg=-2.0V）

Parameter	Min	Typ.	Max	Unit
Frequency	16-18			GHz
Power Gain	19	20	—	dB
Saturation Pout	44.8	45.2	—	dBm
P.A.E	30	33	—	%
VSWRin	—	2.0	2.5	—
Dynamic Current	4			A

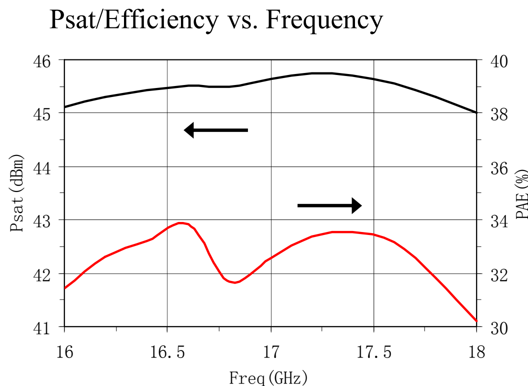
Note：1) All chips have been 100% DC tested.
2) Test condition：Vd=+28V，Vg=-2.0V, pulse width 100μs，duty cycle 10%，P_{in}=25dBm

Limited Rating Values

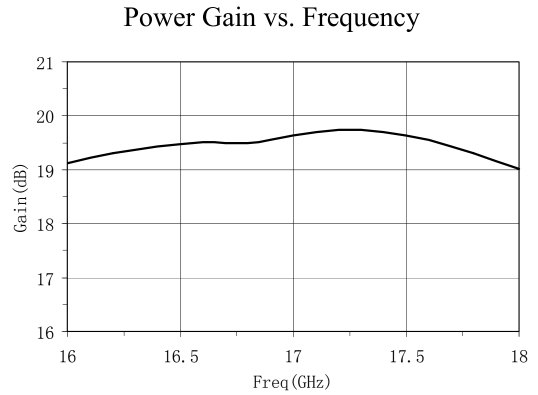
Max Input Vd	+30V
Max Input Power	+30dBm
Storage Temperature	-65℃～+150℃
Operation Temperature	-55℃～+85℃

Typical Testing Curves

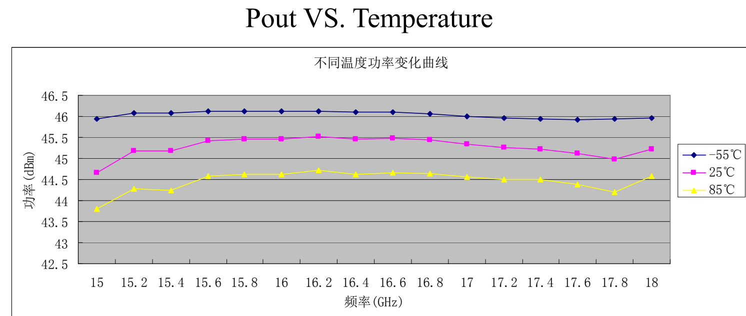
Psat/Efficiency vs. Frequency



Power Gain vs. Frequency



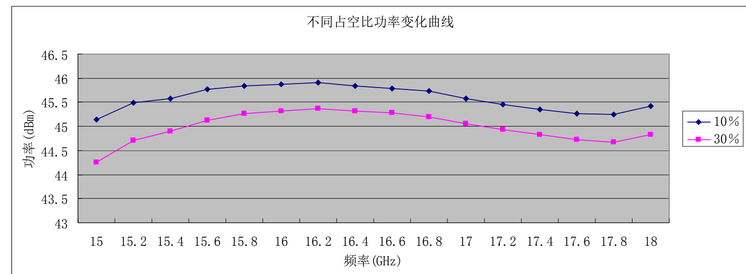
Pout VS. Temperature



Power vs Frequency Curves under different temperature range

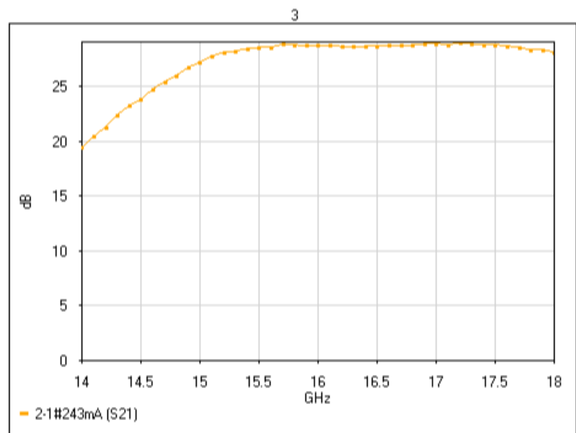
（V_{DS}=28V,V_{GS}=-2V，Duty Cycle 10％，Pulse width 100us）

Power vs Frequency Curves under different Duty Cycle

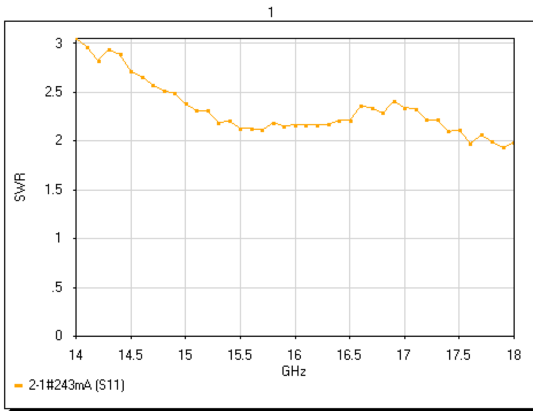


（V_{DS}=28V,V_{GS}=-1.8V）

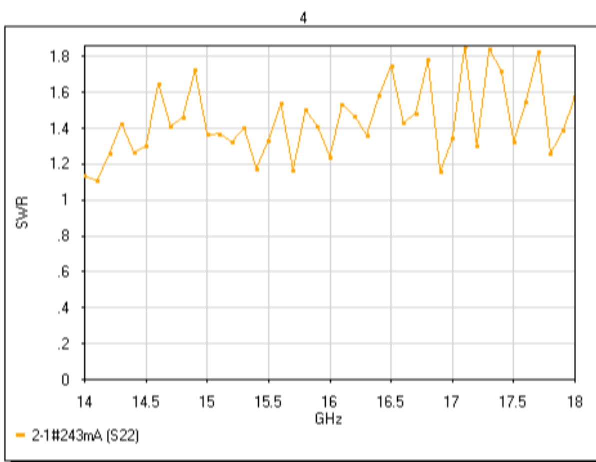
Small Signal Testing Result:



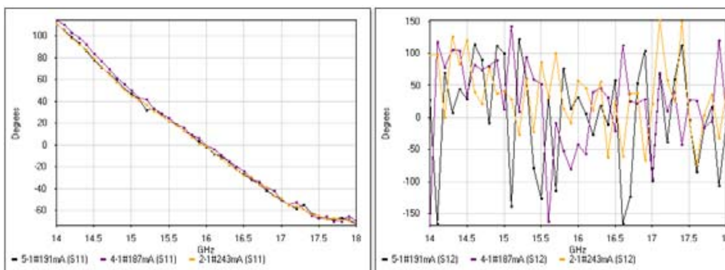
Small Signal Gain S21，（V_{DS}=28V,V_{GS}=-2V）

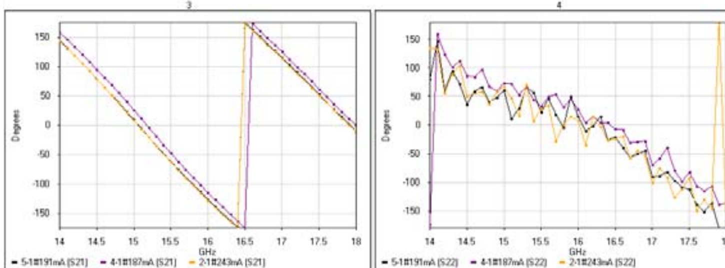


VSWRin，（V_{DS}=28V,V_{GS}=-2V）



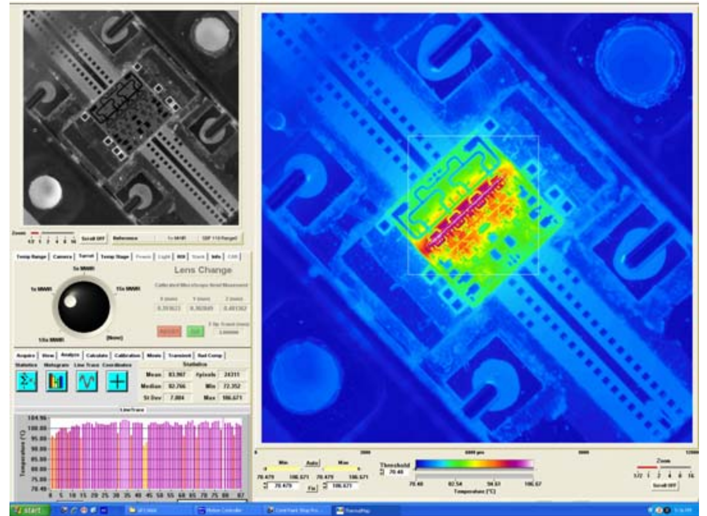
VSWRout，（V_{DS}=28V,V_{GS}=-2V）



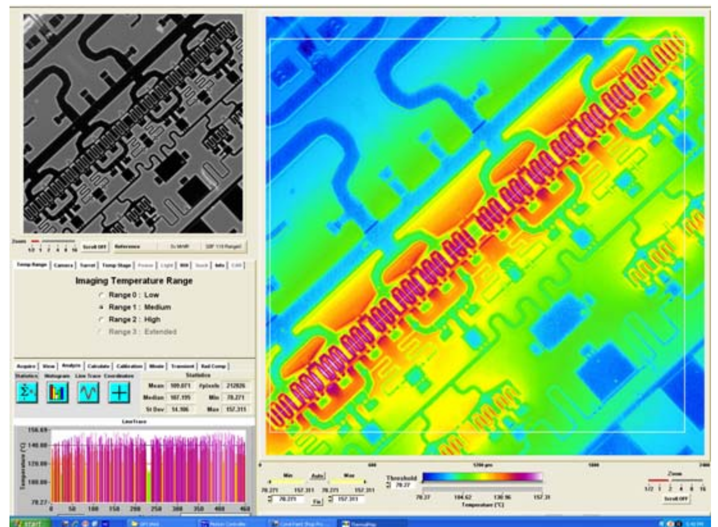


Phase Characteristics，（V_{DS}=28V,V_{GS}=-2V）

Thermal Resistance Characteristics



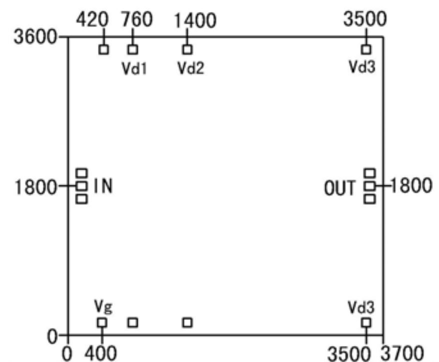
1X Pixel Thermal spread（V_{DS}=28V,I_{DS}=0.8A）



5X Pixel Thermal spread（V_{DS}=28V,I_{DS}=1.4A）

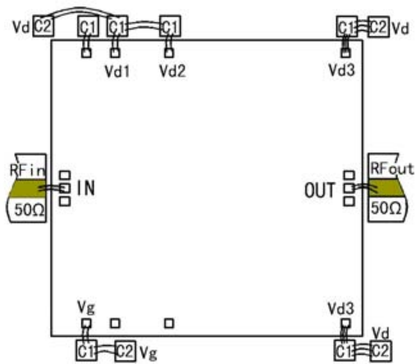
The thermal resistance is less than 3℃/W, and the power variation between high/low temperature is 1.5 dB, the power output will be dropped by 0.5 dB under 30% duty cycle.

Dimension and Outline



Note：The unit is μm. Input and output pad dimension: 100×120μm^2.
Bias pad dimension:100×100μm^2

Assembly Diagram



Note：External capacitor c=100pF,c2=0.01μF. A 0.01μF capacitor filter is needed for gate bias. Diameter of bonding gold wires: 25μm.

Attention:

1) Two bonding wires are needed for input and output. The length should be shorter than 350μm.

2)Bonding with 80/20 Au/Sn. The temperature should be lower than 300 ℃ and the time should be less than 30 seconds.

3)Blocking capacitors in Input/Output are already integrated.