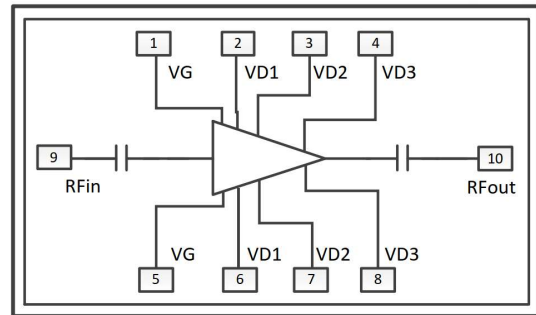


Performance

- Frequency: 6-18GHz
- Typical Small Signal Gain: 25dB
- Typical Pout: 43.5dBm @28V
- Typical PAE: 22%
- Technology: 0.20um HEMT
- Bias: $V_d=28V$, $-1.8V$ (Typ.)
- Mode: CW
- Size: 4.5*5.2mm*0.08mm

Function Diagram

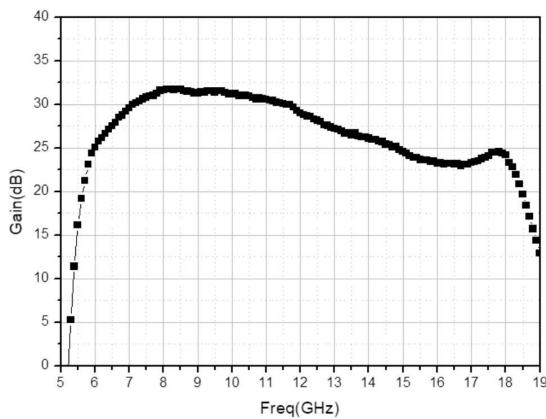


Electrical Specifications ($V_d=28V$, $I_{dq}=2.5A$, F: 6-18GHz, CW)

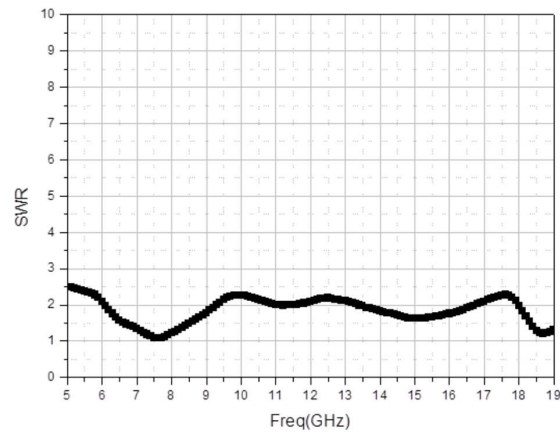
Symbol	Parameter	Min	Typical	Max	Unit
G	Small Signal Gain	-	25	-	dB
Gp	Power Gain	-	15.5	-	dB
Pout	Saturated Power	-	43.5	-	dBm
PAE	Power Added Efficiency	-	22	-	%

Test Curves ($V_d=28V$, $V_g=-1.8V$, F: 6-18GHz, CW)

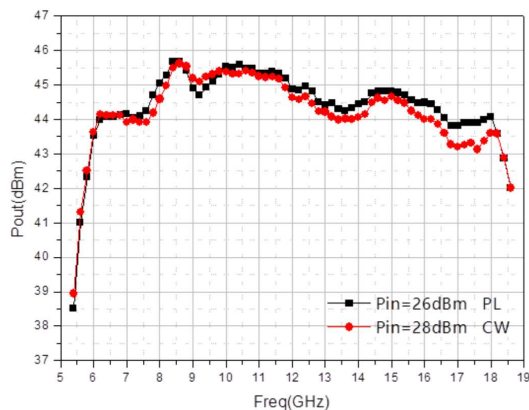
Small Signal Gain vs. Freq ($P_{IN}=-15dBm$)



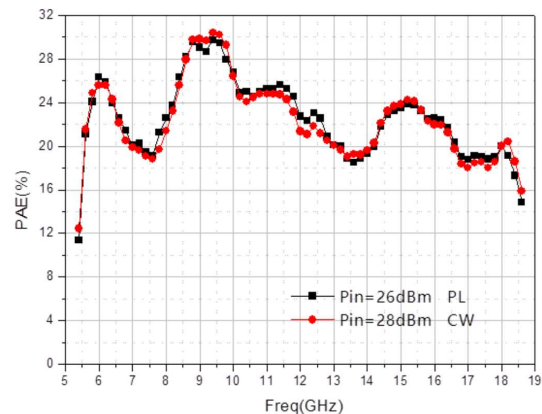
Input VSWR vs. Freq ($P_{IN}=-15dBm$)



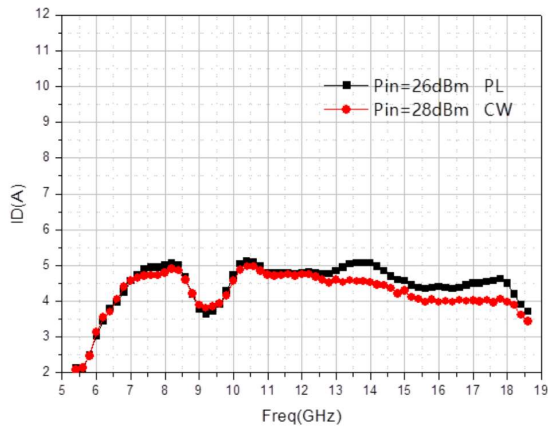
Saturated Power vs. Freq ($I_{dq}=2.6A$)



PAE vs. Freq ($I_{dq}=2.6A$)



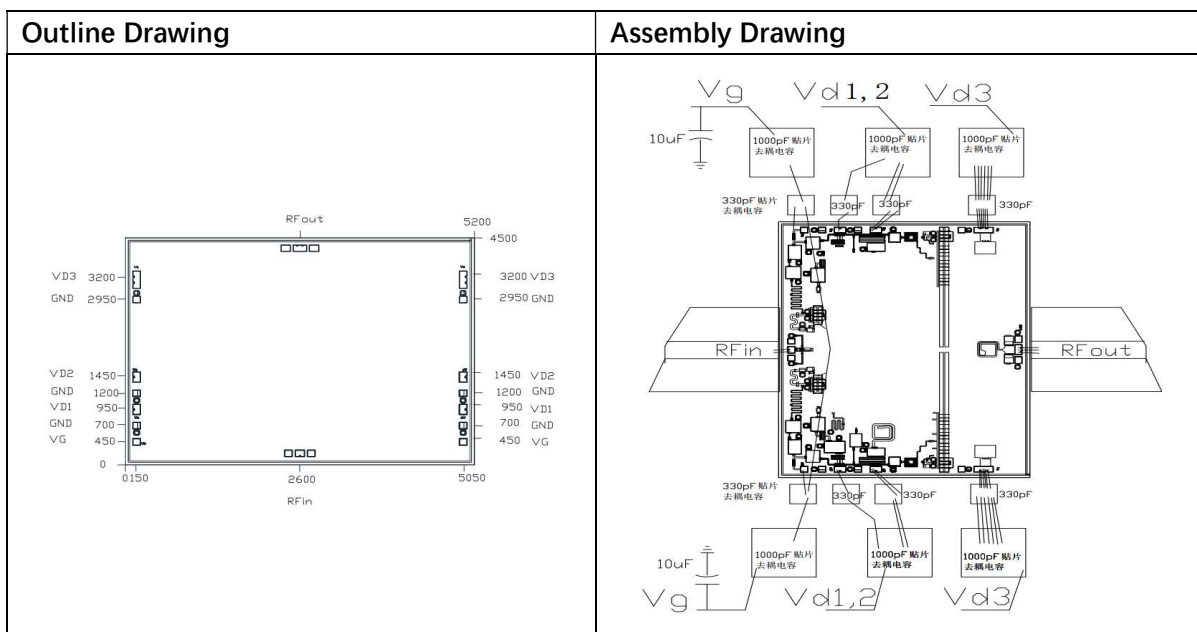
Drain Current vs. Freq (Idq=2.6A)



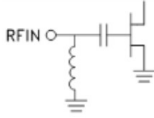

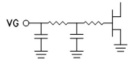

Absolute Max Ratings (TA=25°C)

Symbol	Parameter	Value	Remark
Vd	Drain Voltage	32 V	
Id	Drain Current	6A	
Vg	Gate Voltage	-10 V	
Ig	Gate Current	50 mA	
Pd	DC Power	120 W	
Pin	Input Power	32 dBm	
Tch	Channel Temperature	225°C	
Tm	Mounting Temperature	310°C	1min, N2 Protection
Tstg	Storage Temperature	-55~175°C	

Exceeding any one or combination of these limits may cause permanent damage.



Pads Definition

Number	Description	Equivalent Circuit
RFin	RF signal input, connect to 50 Ohm system, block capacitor will be needed if external DC applied.	
RFout	RF signal output, connect to 50 Ohm system, DC block capacitor is not needed.	
VG	Amplifier grid bias, external 330pF, 1000pF capacitor is needed.	
VD1, VD2, VD3	Amplifier drain bias, external 330pF, 1000pF capacitor is needed.	
GND	Bottom has to be well connected with RF and DC.	

TEST REPORT

1. Introduction

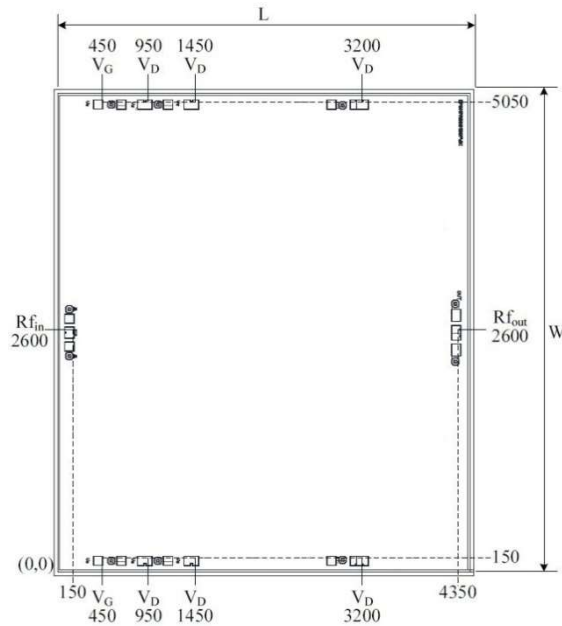
1.1 Features

Table 1 Main features of the chip

Specification	HPA060180P43
Name	GaN Power Amplifier Chip
Fuction	Power Amplify
Operation Frequency	6Hz~18GHz
Output Power	43dBm

1.2 Outline Dimensions

The outline dimensions and bonding site of the chip are illustrated below: the unit is μm .



Outline Mnemonic	Numerical Value		
	Min.	Typ.	Max.
W	-	5200	5250
L	-	4500	4550

Figure 1 The figure of the outline dimensions and bonding site

1.3 PIN Configuration

Table 2 PIN Configuration

Pad Mnemonic	Description	Pad Mnemonic	Description
VG1	Gate Control for the Amplifier	Rfin	Rf Input
VD	Drain Bias for the Amplifier	Rfout	Rf Output

2. Test Items and Contents

The items and contents of the test is illustrated in Table 3 and the detailed results are shown in Figure 3 ~ Figure 7.

2.1 Test Conditions

Table 3 Electrical performance test conditions

Order	Character	Symbol	Conditions	Unit	Note
1	Saturated Output Power	P_{out}	$T_A=25^{\circ}\text{C}$ (Ordinary Temperature) -55°C (Low Temperature) 85°C (High Temperature) $V_G:-1.8\text{V}$, $V_I: 28\text{V}$, $P_{in}: 25\text{dBm}$ (Continuous Wave)	dBm	
2	Saturated Output Power Flatness	ΔG_p		dB	
3	Dynamic Supply Current	I_b		A	
4	Power Added Efficiency	PAE		%	
7	Quiescent Current	I_{bQ}	$T_A=25^{\circ}\text{C}$ (Ordinary Temperature) -55°C (Low Temperature) 85°C (High Temperature) $V_G:-1.8\text{V}$, $V_I: 28\text{V}$.	A	

3. Test Result

3.1 Typical Test Curve

3.1.1 Saturated Output Power

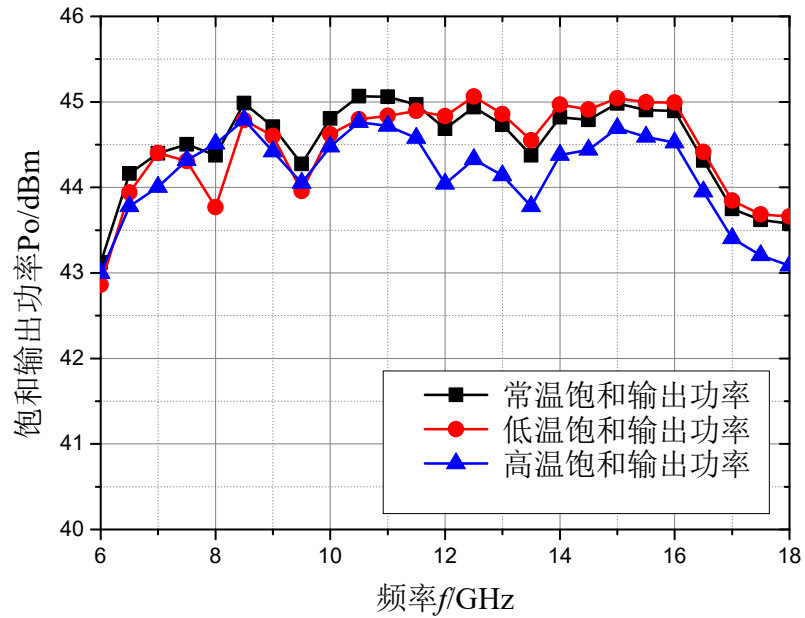


Figure 2 Saturated Output Power Test Curve

3.1.2 Dynamic Current Supply

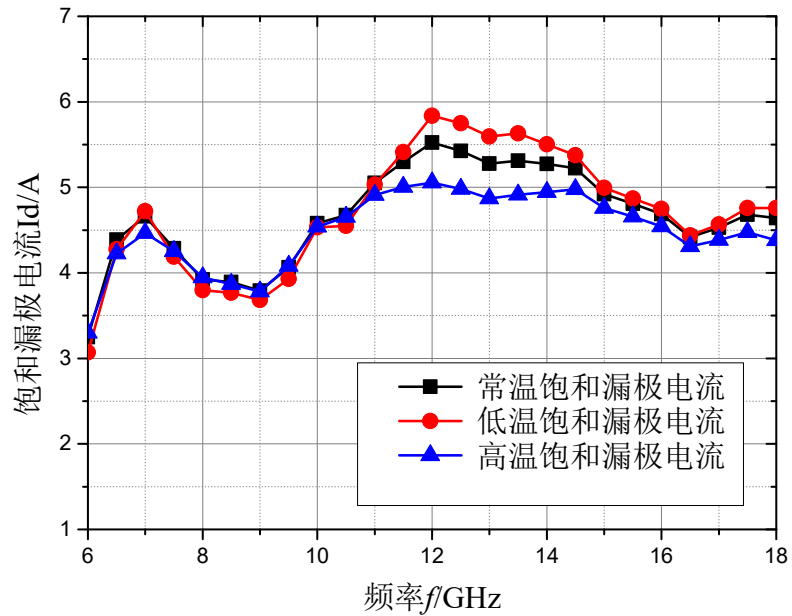


Figure 3 Dynamic Current Supply Test Curve

3.1.3 PAE

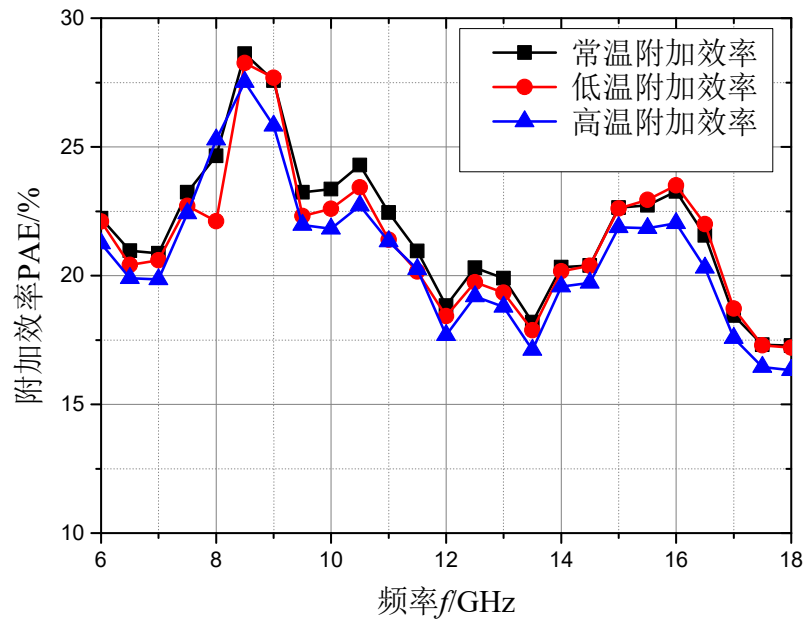


Figure 4 PAE Test Curve

3.1.4 Quiescent Current

$I_{bQ}=2.98A$ (Ordinary Temperature)

$I_{bQ}=3.07A$ (Low Temperature)

$I_{bQ}=2.81A$ (High Temperature)

3.2 Summary

Test typical electrical specification is illustrated in Table 4.

Table 4 Test typical electrical specification

Parameter	Symbol	Condition	Typical Value (6~18GHz)			Unit
		Fig. 3	Min.	Typ.	Max.	
Saturated Output Power	P_{out}	Ordinary Temperature	43	-	45.2	dBm
		Low Temperature	42.8	-	45.2	
		High Temperature	42.8	-	45	
Dynamic Supply Current	I_b	Ordinary Temperature	3.2	-	5.5	A
		Low Temperature	3	-	3.9	
		High Temperature	3.2	-	5.1	
Power Added Efficiency	PAE	Ordinary Temperature	17.2	-	29	%
		Low Temperature	17.2	-	29	
		High Temperature	16.3	-	28	