AMT2106

7 – 13GHz Power Amplifier Chip

Key Features :

- Frequency : 7 – 13GHz
- Typical small signal gain : 31dB
- Typical output power : 44dBm
- Typical power added efficiency : 37%
- Supply voltage : 25V, -2V
- Chip dimensions : 4.6mm x 2.25mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT2106 chip is a high performance high efficiency 7 – 13GHz power amplifier, it is designed based on Gallium Nitrate (GaN) HEMT process, with ground through metal via on the back technology. All chip products are 100% RF tested. AMT2016 is with dual voltage supply, drain voltage Vds = 28V, provides 44dBm output power in 7 – 13GHz frequency range.

Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Vd	Drain Voltage	35V	
Id	Drain Current	4A	
Vg	Gate Voltage	-1.6V	
Ig	Gate Current	150mA	
Pd	DC Power Consumption	100W	
Pin	Input Signal Power	30dBm	
Tch	Operating Temperature	150°C	
Tm	Sintering Temperature	310°C	30s, N_2 protection

[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

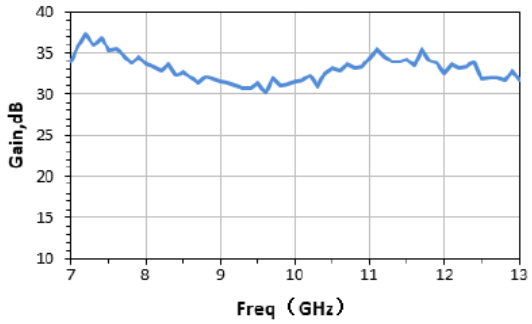
Electrical Characteristics (Ta = 25°C)

Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
Gain	Small Signal Gain	Vd = 28V Vg = -2V F : 7~13GHz Duty Cycle : 10%	-	31	-	dB
VSWRin	Input SW		-	1.8	2	dB
Pout	Saturated Output Power		-	44	-	dBm
PAE	Power Added Efficiency		-	37	-	%
Id	Operating Current		-	3	3.5	A

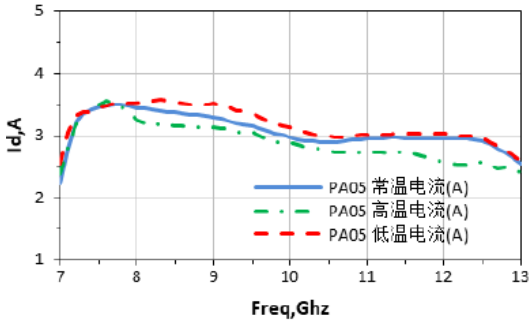
Note, under non-CW operation.

Typical Performance

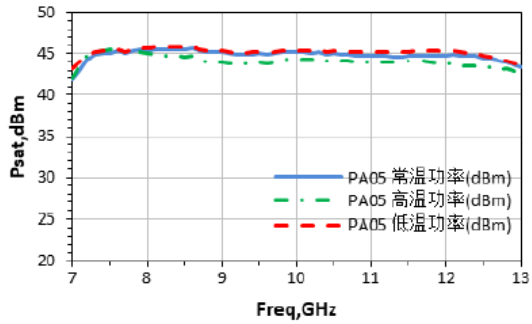
Linear Gain Curve



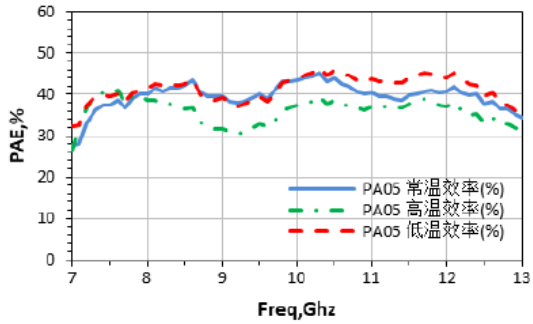
Drain Current Curve



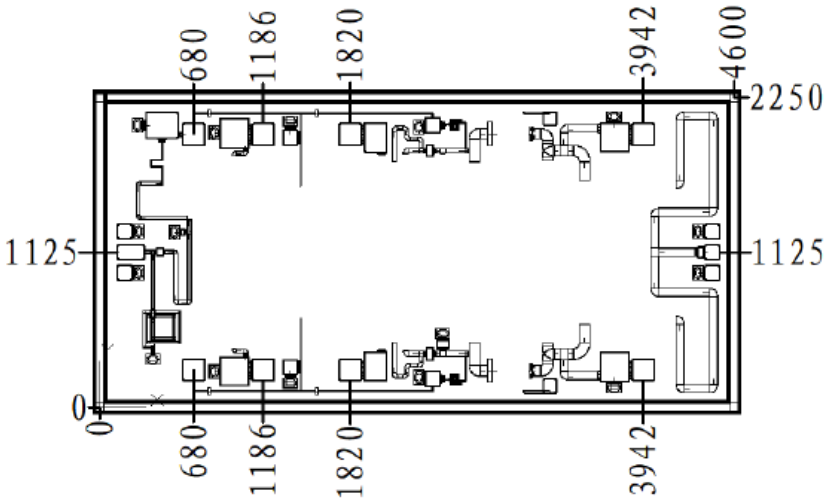
Output Power Curve



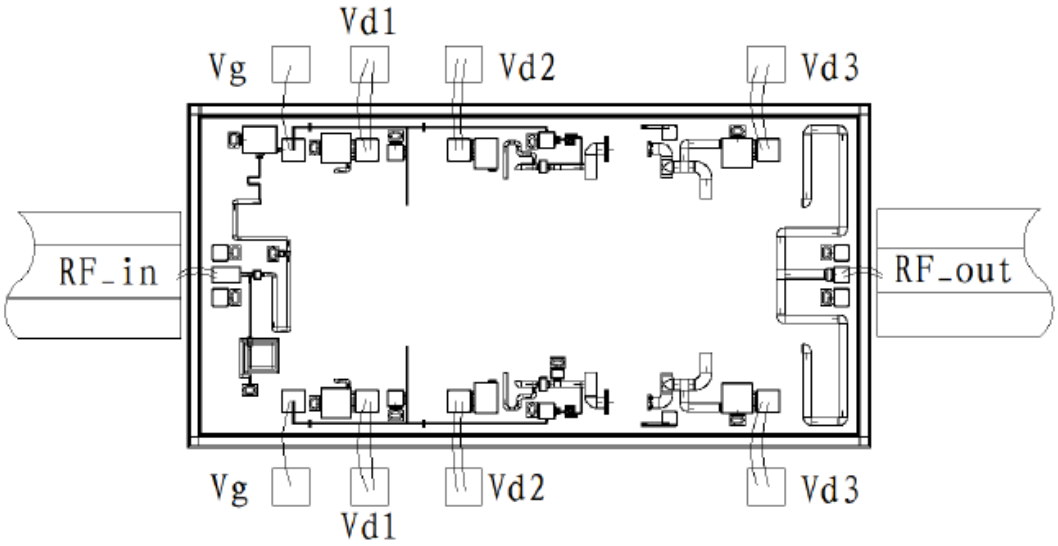
Efficiency Curve



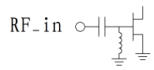
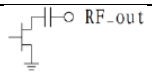
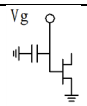
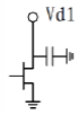
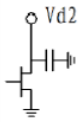
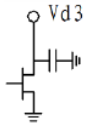
Chip Dimension (Unit : μm)



Chip Layout Diagram



Pad Definition

Symbol	Function	Dimension	Equivalent Circuit
RF_in	RF signal input port, connecting to external 50Ω system. DC blocking capacitor is needed, if external DC current is applied to this pad.	187*100μm^2	
RF_out	RF signal output port, connecting to external 50Ω system, no need to add DC blocking capacitor.	100*100μm^2	
Vg	Amplifier gate bias, need external 100pF, 1000pF capacitor.	150*150μm^2	
Vd1	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*150μm^2	
Vd2	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*150μm^2	
Vd3	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*150μm^2	

Please see Appendix A for details.