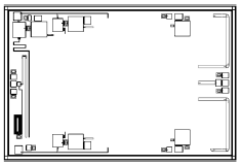
AMT2104
4 – 8GHz Power Amplifier Chip



Key Features :

- Frequency : 4 – 8GHz
- Typical small signal gain : 36dB
- Typical output power : 45dBm
- Typical power added efficiency : 42%
- Supply voltage : 28V, -1.8V
- Chip dimensions : 4.6mm x 3.0mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT2104 chip is a high performance high efficiency 4 – 8GHz 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. AMT2104 is with dual voltage supply, drain voltage Vds = 28V, provides 45dBm output power in 4 – 8GHz frequency range.

Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Vd	Drain Voltage	35V	
Id	Drain Current	5A	
Vg	Gate Voltage	-1.5V	
Ig	Gate Current	150mA	
Pd	DC Power Consumption	120W	
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.

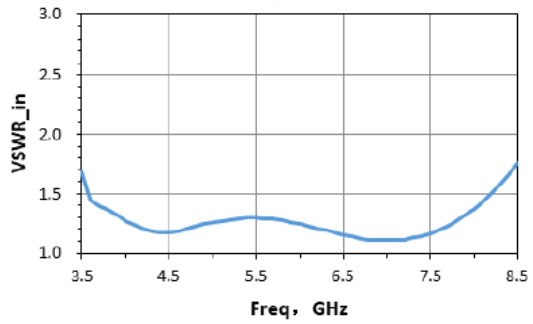
Electrical Characteristics (Ta = 25°C)

Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
G	Small Signal Gain	Vd = 28V Vg = -1.8V F : 4~8GHz Duty Cycle : 10%	-	36	-	dB
VSWRin	Input SW		-	1.3	1.8	dB
Pout	Saturated Output Power		-	45	-	dBm
PAE	Power Added Efficiency		-	42	-	%
Id	Operating Current		-	2.5	-	A

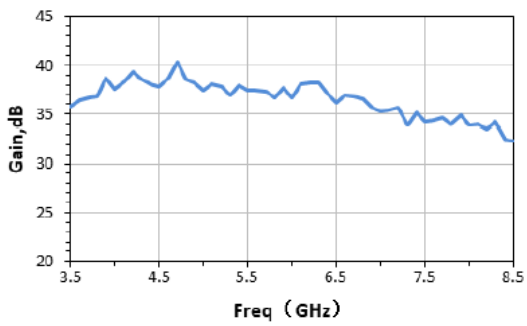
Note, under non-CW operation.

Typical Performance

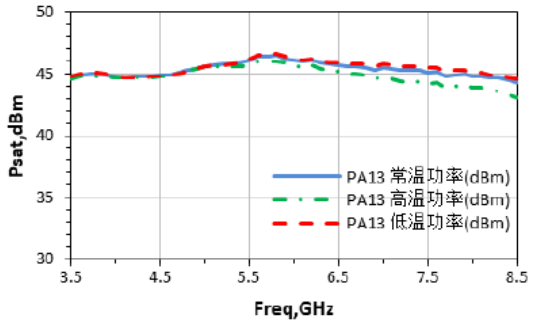
Input Standing Wave Curve



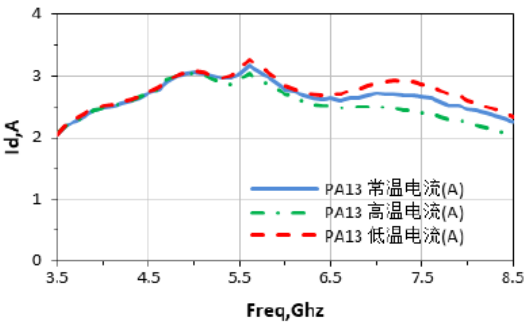
Gain Curve



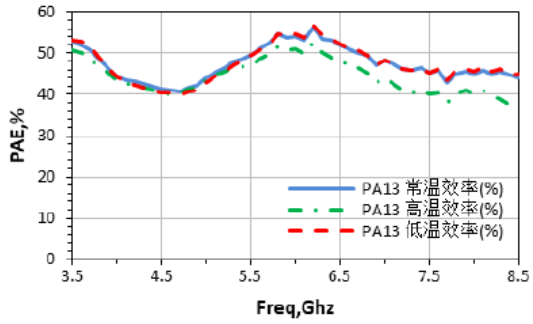
Output Power Curve



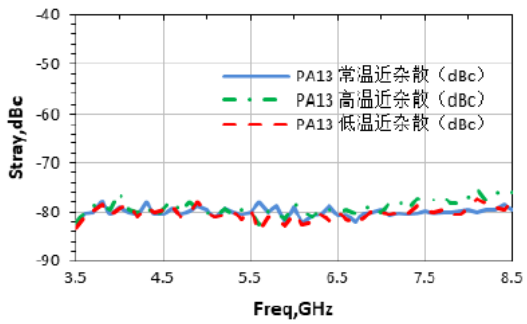
Drain Current Curve



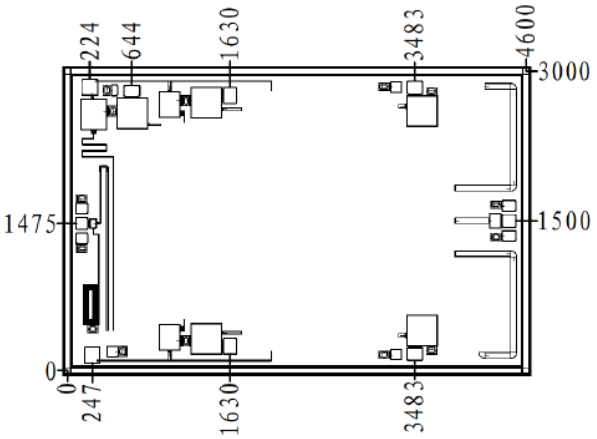
Efficiency Curve



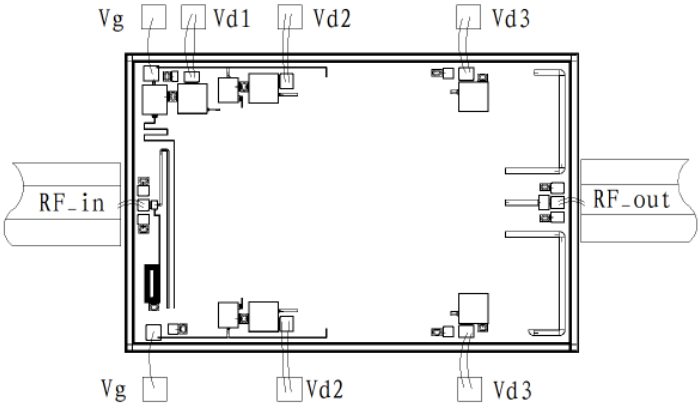
Near 20MHz Parasitic Curve



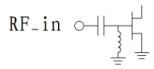
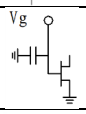
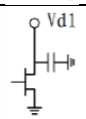
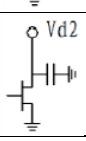
Chip Dimension (Unit : μm)

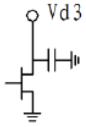


Chip Layout Diagram



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.	110*110μm²	
RF_out	RF signal output port, connecting to external 50Ω system, no need to add DC blocking capacitor.	130*120μm²	
Vg	Amplifier gate bias, need external 100pF, 1000pF capacitor.	150*150μm²	
Vd1	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*100μm²	
Vd2	Amplifier drain bias, need external 100pF, 1000pF capacitor.	130*150μm²	

Vd3	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*120μm^2	

Please see Appendix A for details.