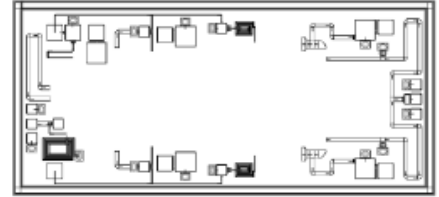


AMT2109
8 – 12GHz Power Amplifier Chip



Key Features :

- Frequency : 8 – 12GHz
- Typical small signal gain : 30dB
- Typical output power : 43dBm
- Typical power added efficiency : 45%
- Supply voltage : 28V, -1.8V
- Chip Dimensions : 4.25mm x 1.9mm x 0.1mm
- Applications : Wireless communication, T/R transceiver module, Radio telecommunication

Description :

AMT2109 chip is a high performance high efficiency 8 – 12GHz 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. AMT2109 is with dual voltage supply, drain voltage Vds at 28V, it provides 43dBm output power in 8 – 12GHz 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	100W	
Pin	Input Signal Power	30dBm	
Tch	Operating Temperature	150°C	
Tm	Sintering Temperature	310°C	30s, N ₂ protection

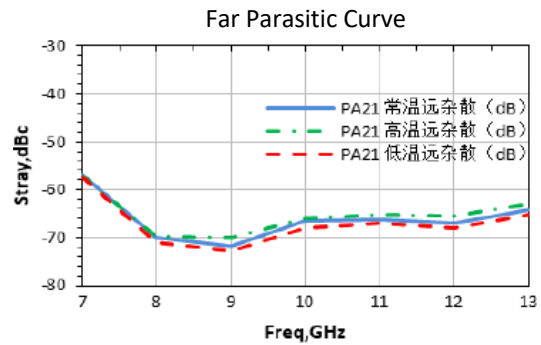
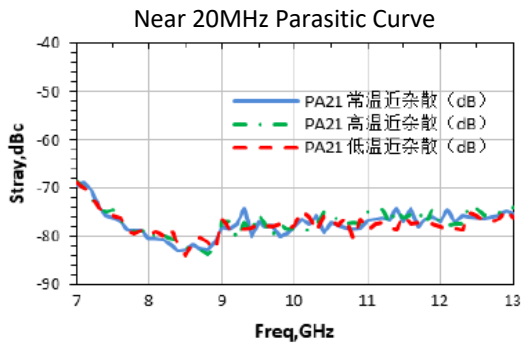
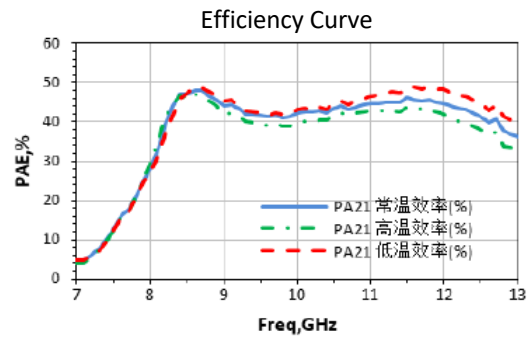
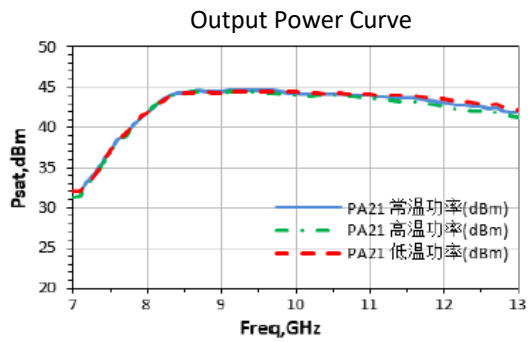
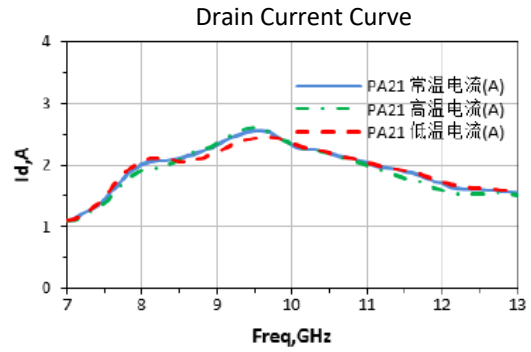
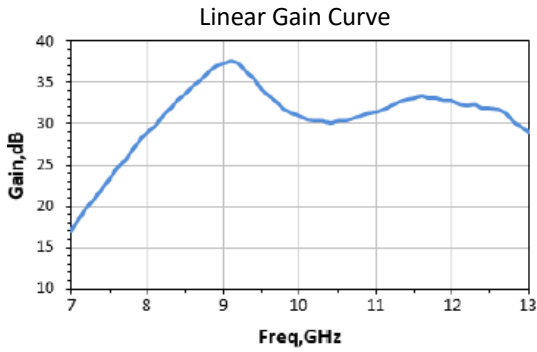
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

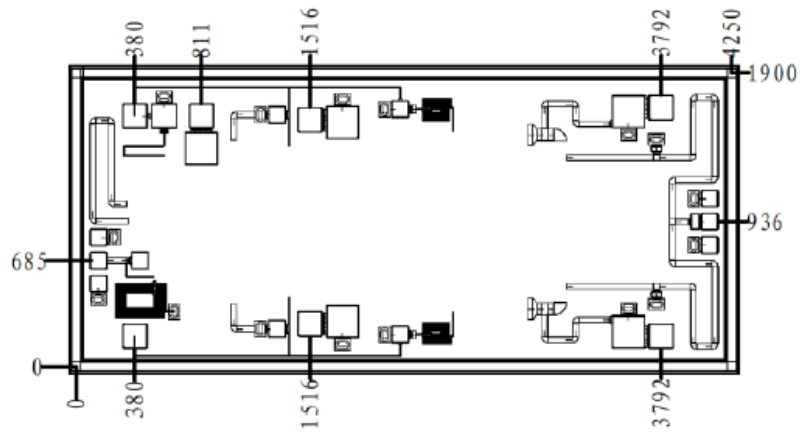
Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
Gain	Small Signal Gain	Vd = 28V Vg = -2V F : 8~12GHz Duty Cycle : 10%	-	30	-	dB
VSWRin	Input SW		-	1.6	1.8	dB
Pout	Saturated Output Power		-	43	-	dBm
PAE	Power Added Efficiency		-	45	-	%
Id	Operating Current		-	2.5	-	A

Note, under non-CW operation.

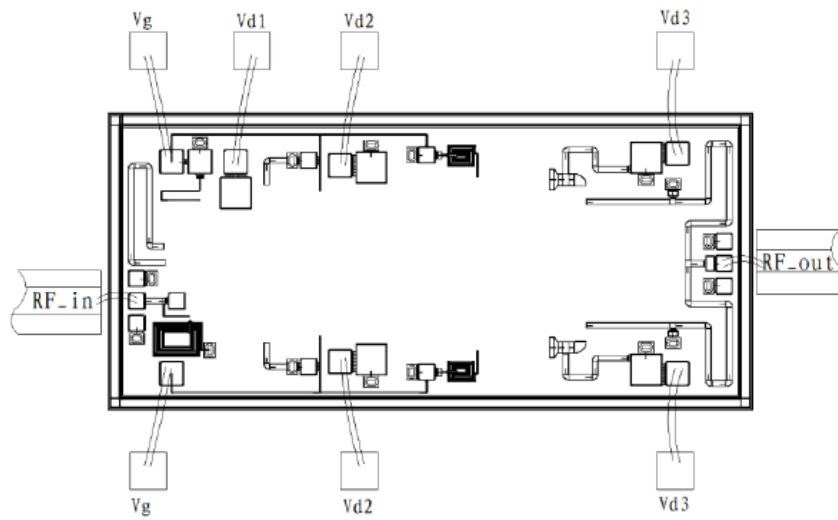
Typical Performance



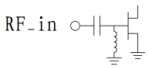
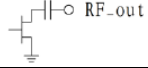




Chip Dimension (Unit : μm)



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.	100*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	

Refer to Appendix A for details.