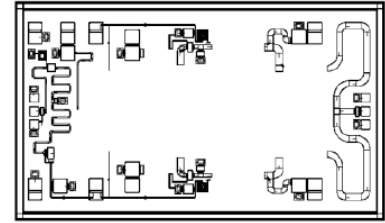


**AMT2112**  
**9 – 14GHz Power Amplifier Chip**



**Key Features :**

- Frequency : 9 – 14GHz
- Typical small signal gain : 30dB
- Typical output power : 43.5dBm
- Typical power added efficiency : 33%
- Supply voltage : 28V, -2V
- Chip dimensions : 4.05mm x 2.35mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

**Description :**

AMT2112 chip is a high performance high efficiency 9 – 14GHz 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. AMT2112 is with dual voltage supply, drain voltage Vds at 28V, it provides 43.5dBm output power in 9 – 14GHz 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 <sub>2</sub> protection

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

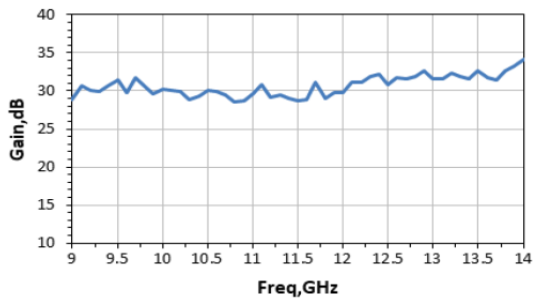
**Electrical Characteristics (Ta = 25°C)**

Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
Gain	Small Signal Gain	Vd = 28V Vg = -2V F : 9~14GHz Duty Cycle : 10%	-	30	-	dB
VSWRin	Input SW		-	1.8	2	dB
Pout	Saturated Output Power		-	43.5	-	dBm
PAE	Power Added Efficiency		-	33	-	%
Id	Operating Current		-	2.4	3	A

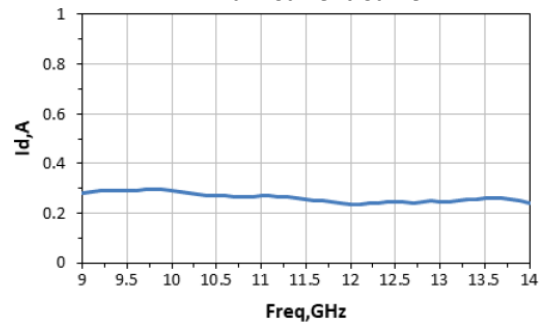
Note, under non-CW operation.

## Typical Performance

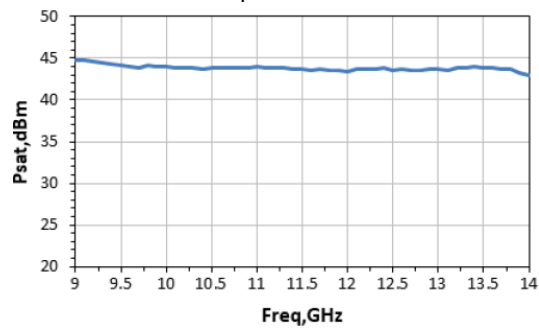
Linear Gain Curve



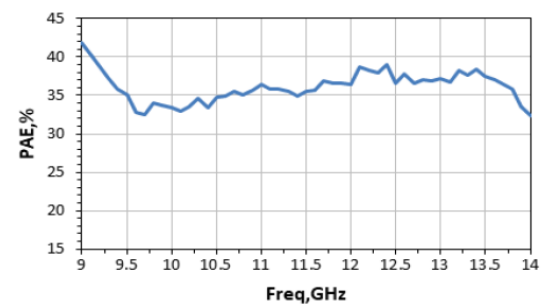
Drain Current Curve



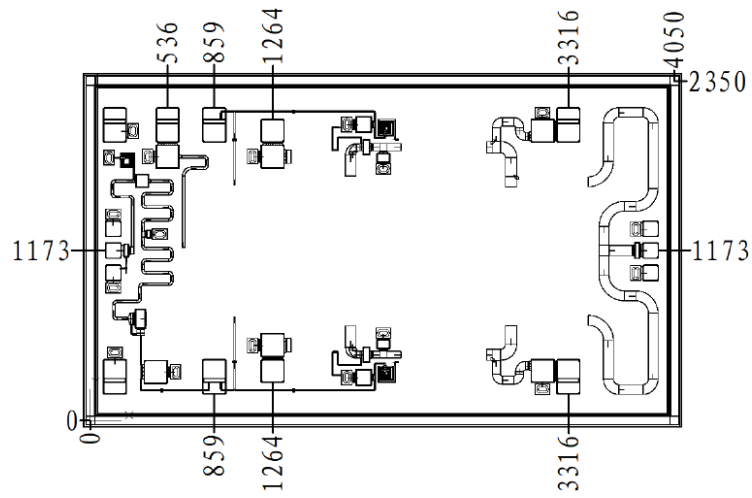
Output Power Curve



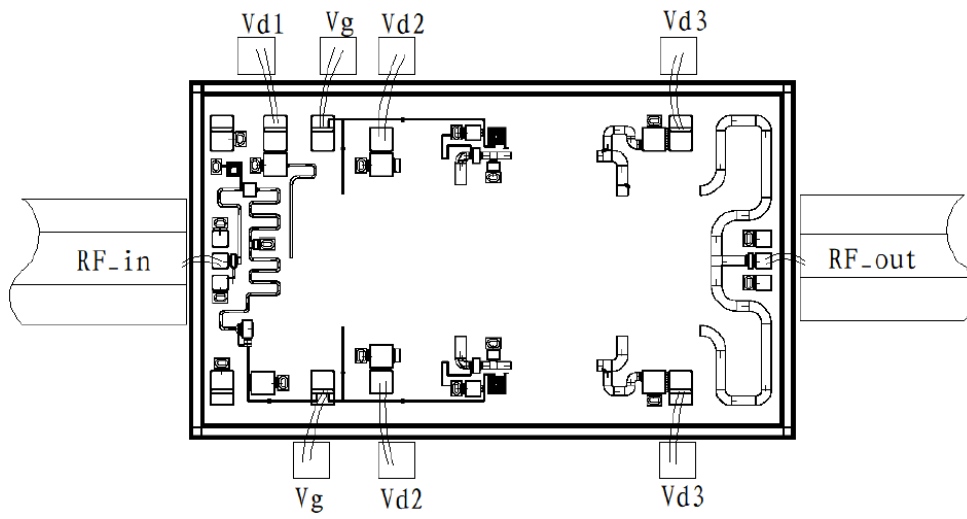
Efficiency Curve



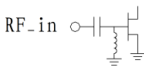
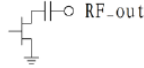

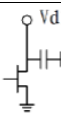
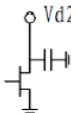
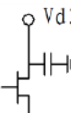
### Chip Dimension (Unit : $\mu\text{m}$ )



### 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 <sup>2</sup>	
RF_out	RF signal output port, connecting to external 50Ω system, no need to add DC blocking capacitor.	100*100μm <sup>2</sup>	
Vg	Amplifier gate bias, need external 100pF, 1000pF capacitor.	150*230μm <sup>2</sup>	
Vd1	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*230μm <sup>2</sup>	
Vd2	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*150μm <sup>2</sup>	
Vd3	Amplifier drain bias, need external 100pF, 1000pF capacitor.	150*230μm <sup>2</sup>	

Refer to Appendix A for details.