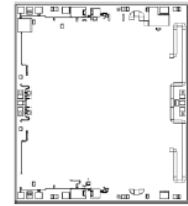


AMT2105
7 – 12GHz Power Amplifier Chip



Key Features :

- Frequency : 7 – 12GHz
- Typical small signal gain : 33dB
- Typical output power : 47.5dBm
- Typical power added efficiency : 42%@7-10GHz
37%@10-12GHz
- Supply voltage : 28V, -2.2V
- Chip dimensions : 4.1mm x 4.7mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT2105 chip is a high performance high efficiency 7 – 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. AMT2105 is with dual voltage supply, drain voltage $V_{ds} = 28V$, provides 47.5dBm output power in 7 – 12GHz frequency range.

Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Vd	Drain Voltage	35V	
Id	Drain Current	7A	
Vg	Gate Voltage	-1.2V	
Ig	Gate Current	150mA	
Pd	DC Power Consumption	196W	
Pin	Input Signal Power	30dBm	
Tch	Operating Temperature	225°C	
Tm	Sintering Temperature	310°C	30s, N ₂ protection

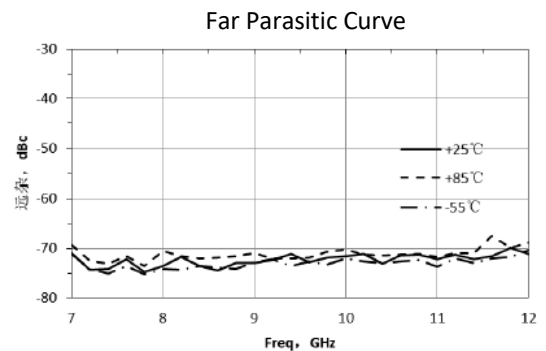
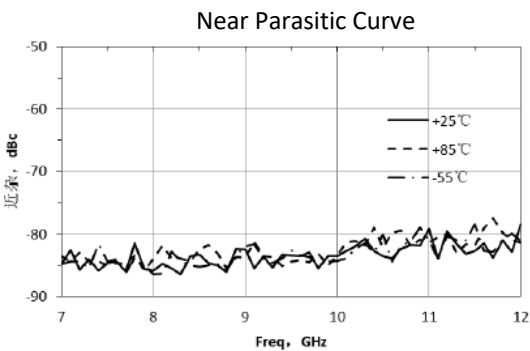
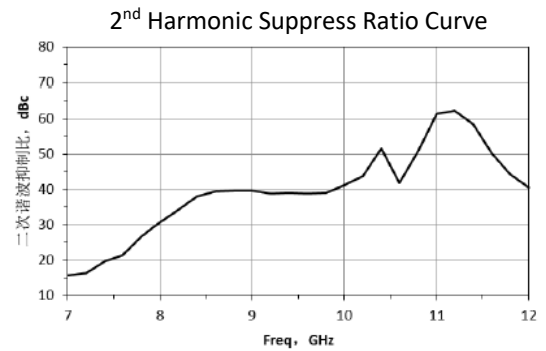
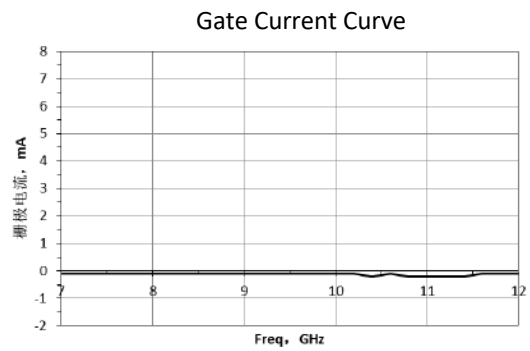
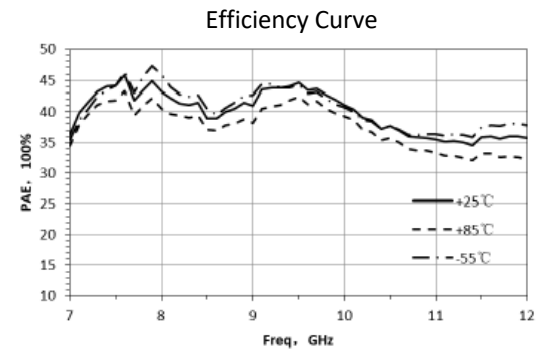
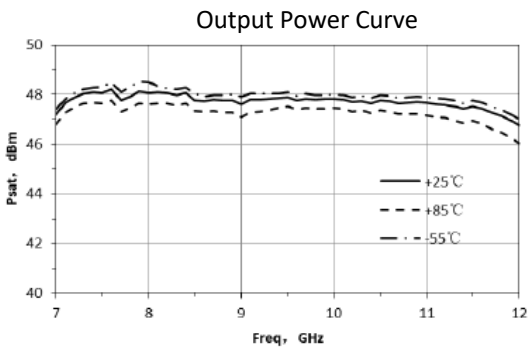
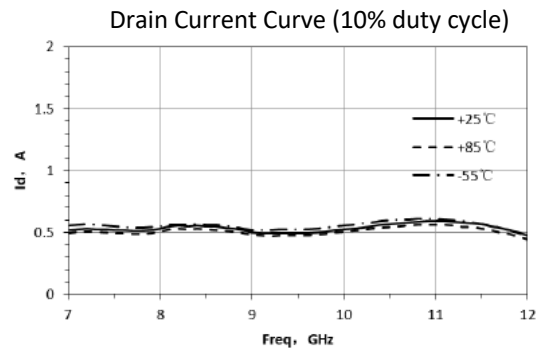
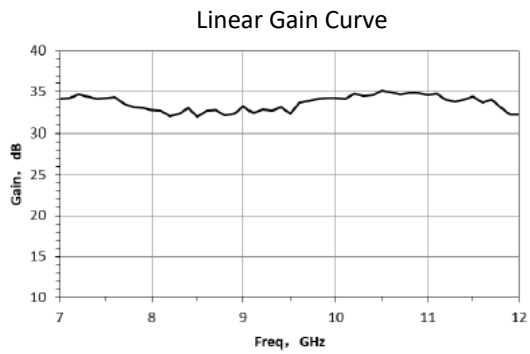
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

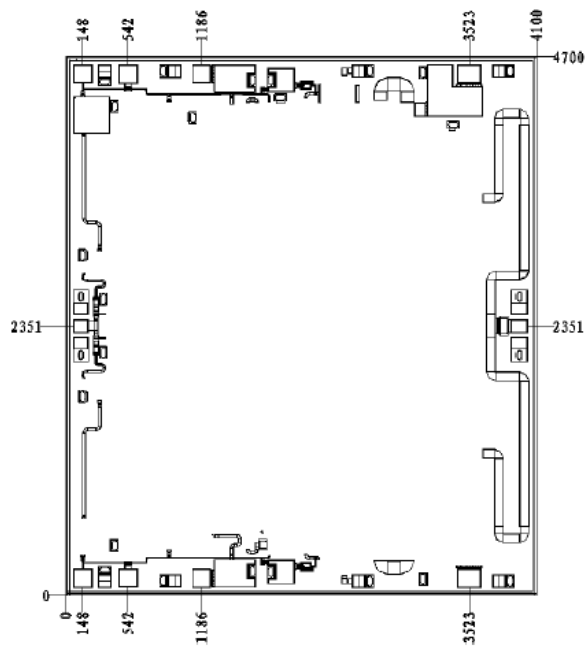
Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
Gain	Small Signal Gain	Vd = 28V Vg = -2.2V F : 7~12GHz Duty Cycle : 10%	-	33	-	dB
VSWRin	Input SW		-	-	2	
Gp	Power Gain		-	24	-	dB
Psat	Saturated Output Power		-	47.5	-	dBm
PAE	Power Added Efficiency		-	40	-	%
Id	Operating Current		0.4	0.5	0.65	A

Note, under non-CW operation.

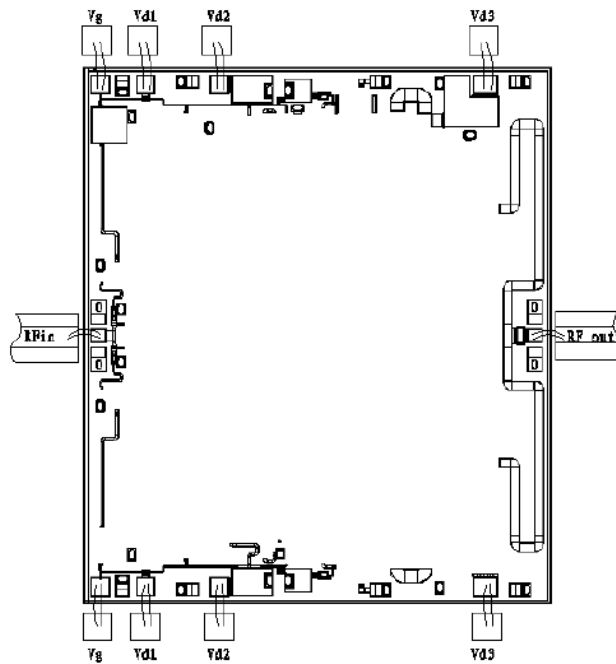
Typical Performance



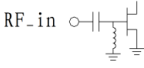
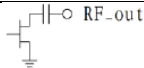

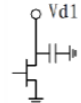
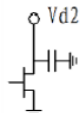
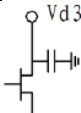
Chip Dimension (Unit : μm)



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.	120*120μm ²	
Vd1	Amplifier drain bias, need external 100pF, 1000pF capacitor.	120*120μm ²	
Vd2	Amplifier drain bias, need external 100pF, 1000pF capacitor.	120*120μm ²	
Vd3	Amplifier drain bias, need external 100pF, 1000pF capacitor.	180*120μm ²	

Please see Appendix A for details.