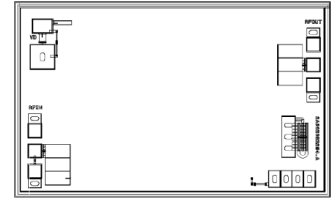


**AMT1109**  
**2 – 20GHz Power Amplifier Chip**



**Key Features :**

- Frequency range : 2 – 20GHz
- Typical small signal Gain : 13.5dB
- Typical output power : 30dBm
- Typical power added efficiency (PAE) : 20%
- Supply voltage : 12V
- Chip dimensions : 2.3mm x 1.4mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

**Description :**

AMT1109 chip is a Gallium Arsenide (GaAs) designed power amplifier chip, it uses dual voltage operation, with drain voltage  $V_{ds}$  at 12V, it offers 30dBm power output in a frequency range of 2 – 20GHz. This chip is designed with ground through metal vias on the back technology. All chip products are 100% RF tested.

**Absolute Maximum Ratings (Ta = 25°C)**

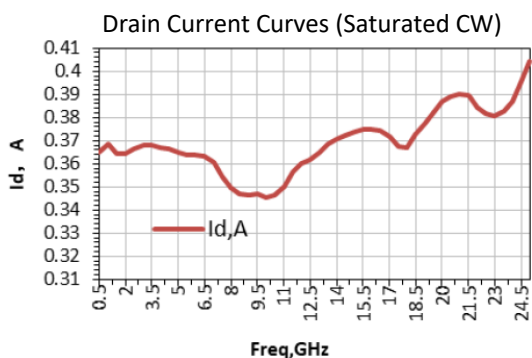
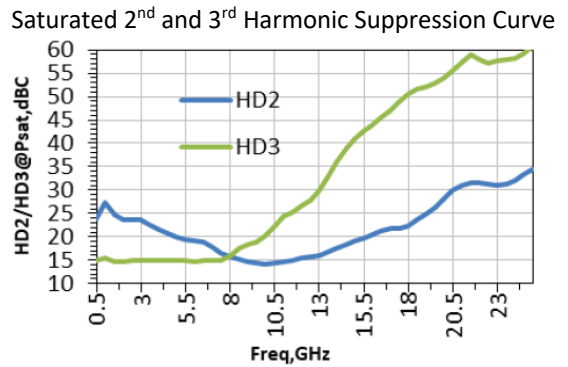
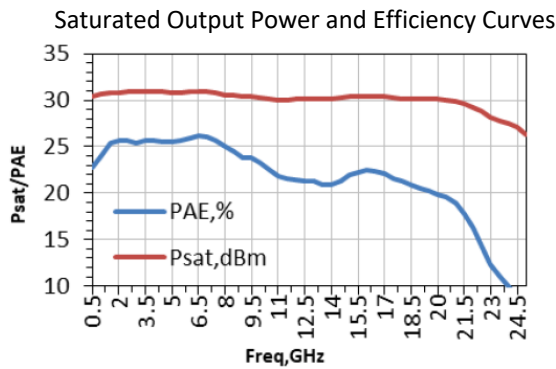
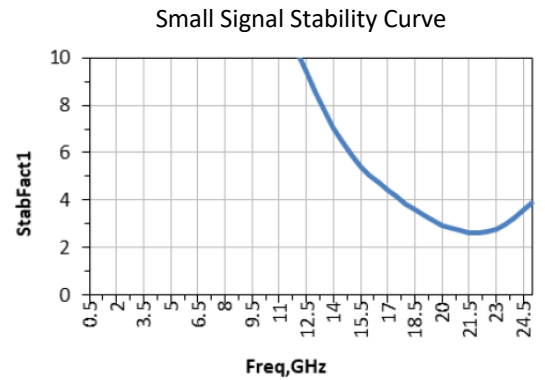
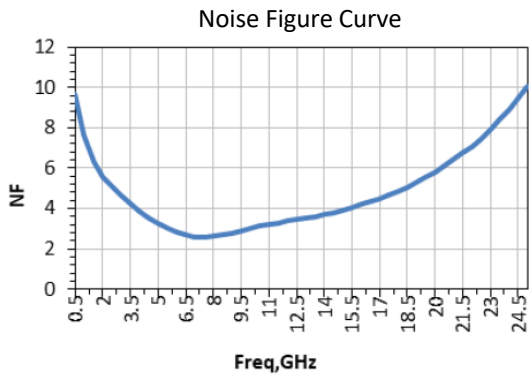
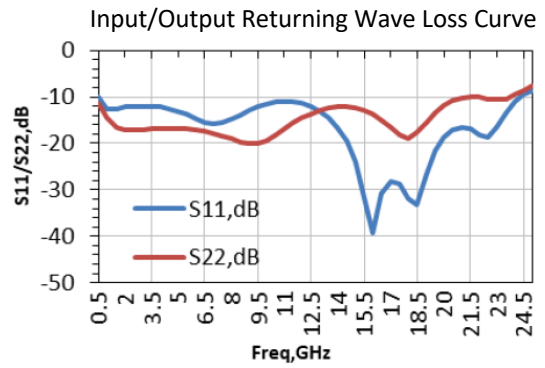
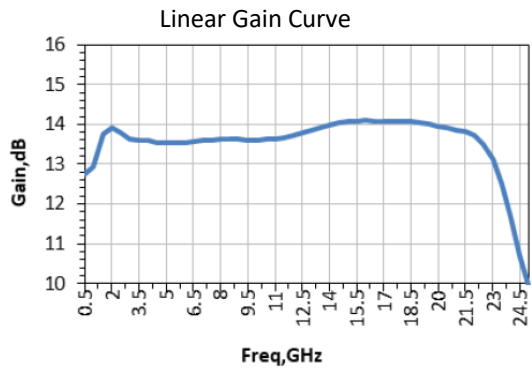
Symbol	Parameter	Value	Remark
Vd	Drain Voltage	16V	
Id	Drain Current	1A	
Ig	Gate Current	150mA	
Pd	Power Dissipation	10W	
Pin	Input Signal Power	25dBm	
Tch	Operating Temperature	150°C	
Tm	Sintering Temperature	310°C	30s, N <sub>2</sub> protection
Tstg	Storage Temperature	-65 ~ +150°C	

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

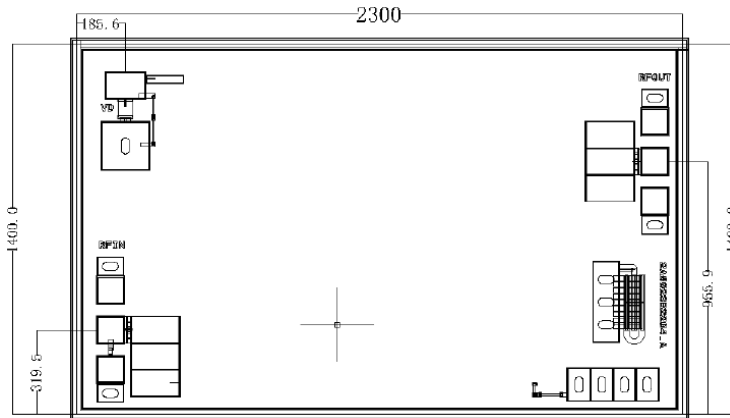
**Electrical Characteristics (Ta = 25°C)**

Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
G	Small Signal Gain	Vd = 12V F : 2 ~ 20GHz	-	13.5	-	dB
VSWR_in	Input Standing Wave		-	1.5	1.8	dB
Pout	Saturated Power Output		30	-	31	dBm
PAE	Power Added Efficiency		-	20	-	%
Id	Operation Current		-	0.35	0.4	A

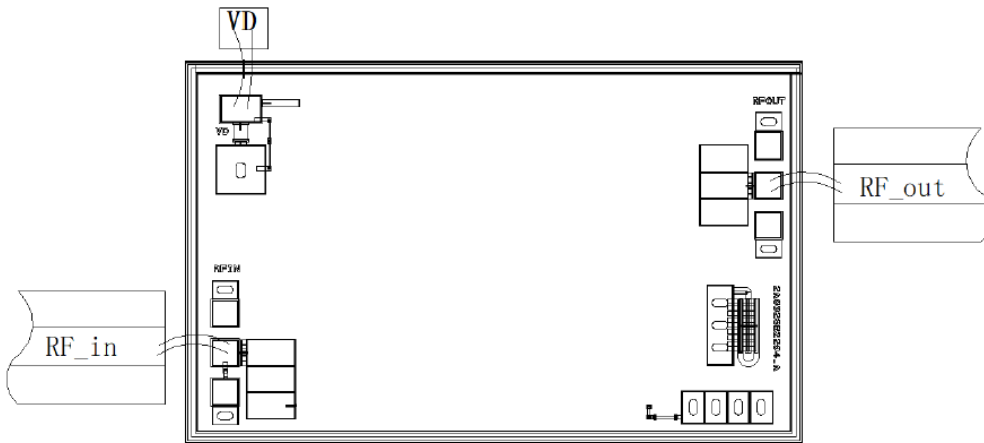
### Typical Performance



**Chip Dimensions (Unit :  $\mu\text{m}$ )**



**Chip Layout Diagram**



**Pad Definition**

Symbol	Function	Dimension	Equivalent Circuit
RF_in	RF signal input port, connecting to external $50\Omega$ system. DC blocking capacitor is not needed, if external DC current is applied to this pad.	$100*100\mu\text{m}^2$	
RF_out	RF signal output port, connecting to external $50\Omega$ system, no need to add DC blocking capacitor.	$100*100\mu\text{m}^2$	
Vd	Amplifier drain bias, need external 100pF, 1000pF capacitor.	$100*100\mu\text{m}^2$	

Please see Appendix A for details.