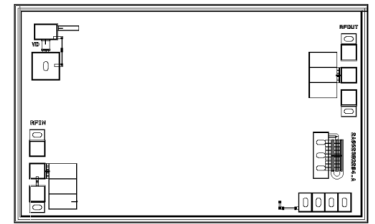


AMT2101
0.3 – 3GHz Power Amplifier Chip



Key Features and Applications

- Frequency : 0.3 – 3GHz
- Typical small signal gain : 17dB
- Typical output power : 40dBm
- Typical power added efficiency : 45%
- Supply voltage : 28V, -2.4V
- Chip dimensions : 2.6mm x 1.3mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT2101 chip is a high performance high efficiency 0.3 – 3GHz 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. AMT2101 is with dual voltage supply, drain voltage $V_{ds} = 28V$, provides 40dBm output power in 0.3 – 3GHz 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

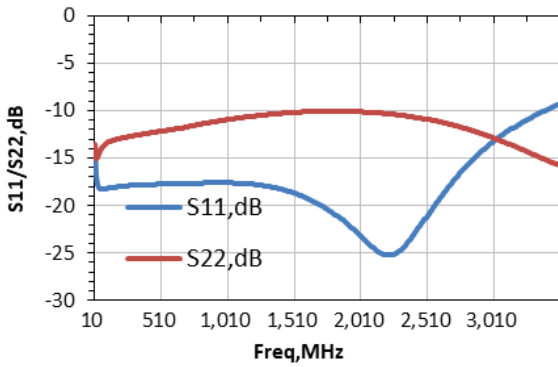
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

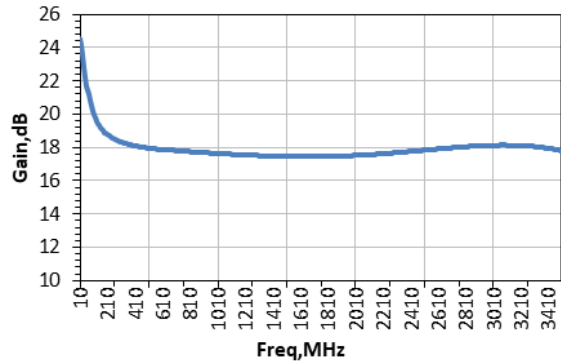
Symbol	Parameter	Test Condition	Value			Unit
			Min	Typical	Max	
G	Small Signal Gain	Vd = 28V Vg = -2.4V F : 0.3~3GHz Duty Cycle : 10%	-	17	-	dB
VSWRi	Input SW		-	1.3	1.5	dB
Pout	Saturated Output Power		-	40	-	dBm
PAE	Power Added Efficiency		-	45	-	%
Id	Operating Current		-	0.9	-	A

Typical Performance

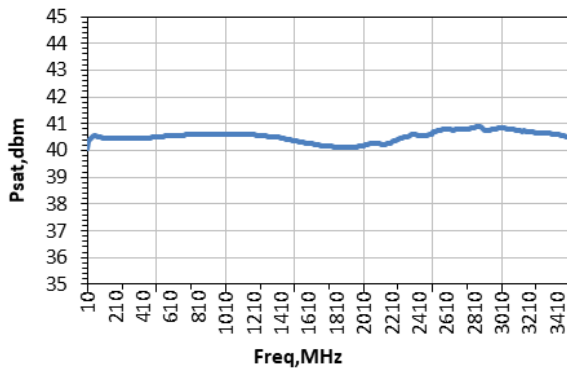
Input Standing Wave Curve



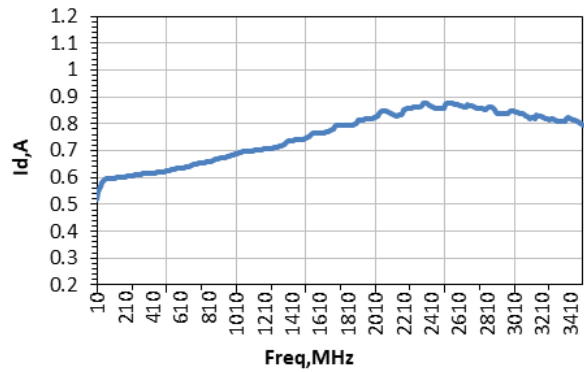
Gain Curve



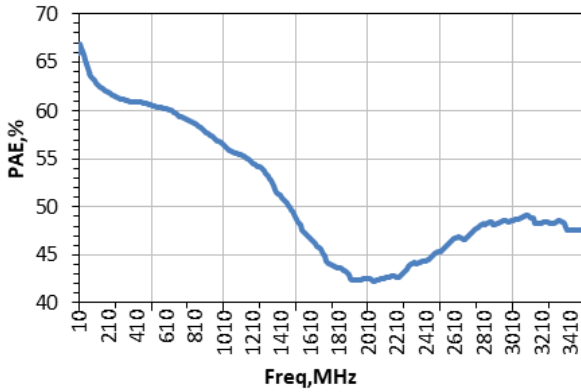
Output Power Curve



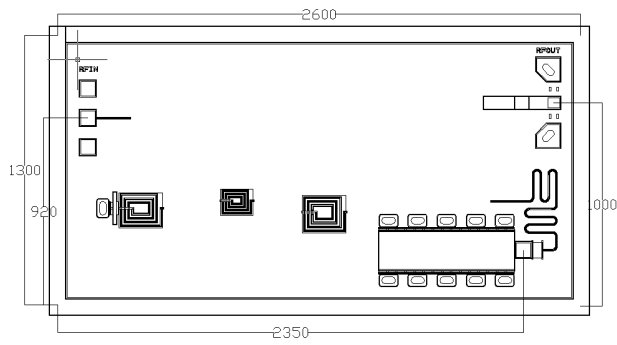
Drain Current Curve



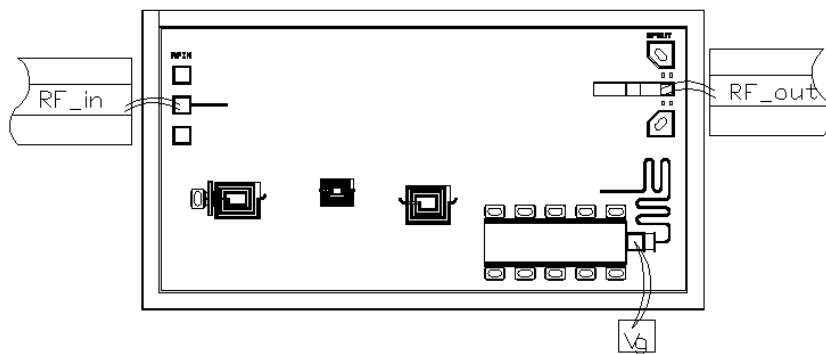
Efficiency Curve



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. No DC blocking capacitor is 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 50Ω system, need to add DC blocking capacitor, external DC biasing network, provides drain current.	$100*100\mu\text{m}^2$	
VG	Amplifier gate bias, need external 100pF, 1000pF capacitor.	$100*100\mu\text{m}^2$	

Please see Appendix A for details.