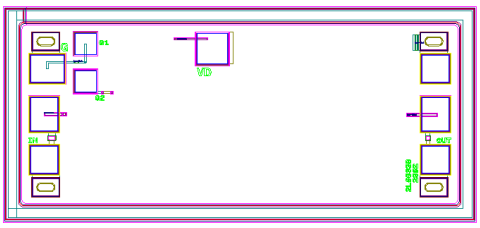
AMT1223
0.1 – 20GHz Low Noise Amplifier Chip



Key Features :

- Frequency range : 0.1 – 20GHz
- Typical gain : 22dB
- Input standing wave : 1.3
- Output standing wave : 1.3
- Noise figure : 2.2dB
- P-1 : 11dBm @ +5V/52mA
  6dBm @ +5V/26mA (Low power mode)
- Chip dimensions : 1.5mm x 0.65mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT1223 chip is a Gallium Arsenide (GaAs) high performance Low Noise Amplifier, it covers 0.1 – 20GHz frequency range. It uses +5V single voltage operation, noise figure is 2.2dB, and 22dB typical gain. This chip is designed with ground through metal vias on the back technology.

Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Vd	Drain Voltage	+7V	
Pin	Input Signal Power	17dBm	
Tch	Operating Temperature	150°C	
Tm	Sintering Temperature	310°C	30s, N_2 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 Conditions	Value			Unit
			Min	Typical	Max	
G	Gain	+5V/52mA F : 0.1 ~ 20GHz	-	22	-	dB
NF	Noise Figure		-	2.2	-	dB
Id	Static Current		-	52	-	mA
VSWR_in	Input Standing Wave		-	1.3	1.8	-
VSWR_out	Output Standing Wave		-	1.3	1.6	-
P-1	Output Power at 1dB point		-	11	-	dBm

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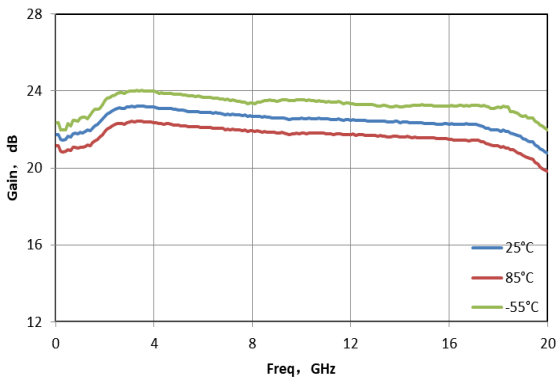
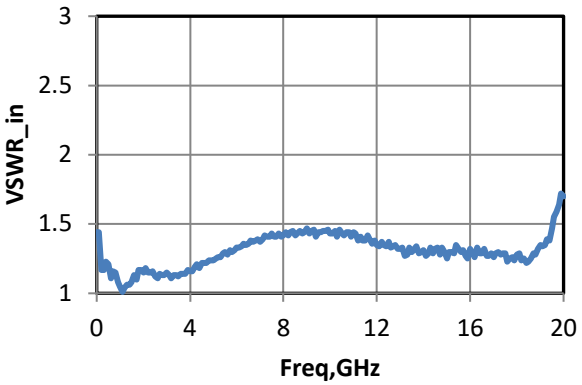
Typical Performance

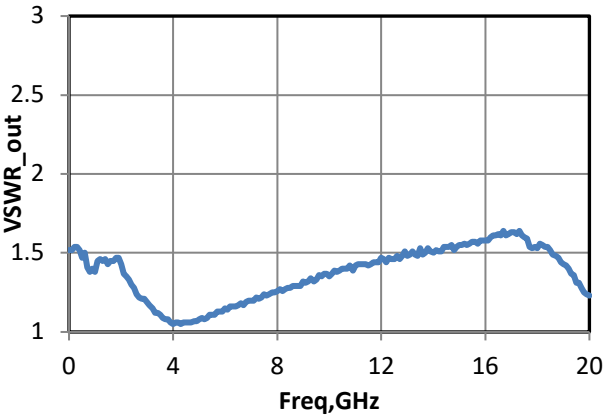
Gain Curve



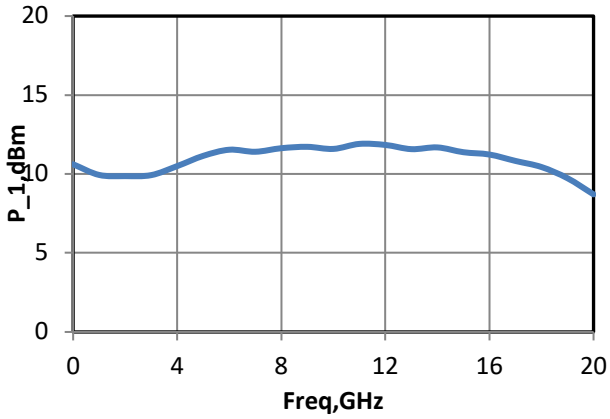
Input Standing Wave Curve



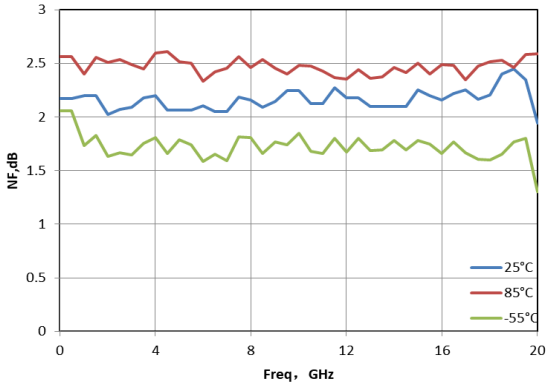
Output Standing Wave Curve



P-1 Compression Characteristic Curve



Noise Figure Curve



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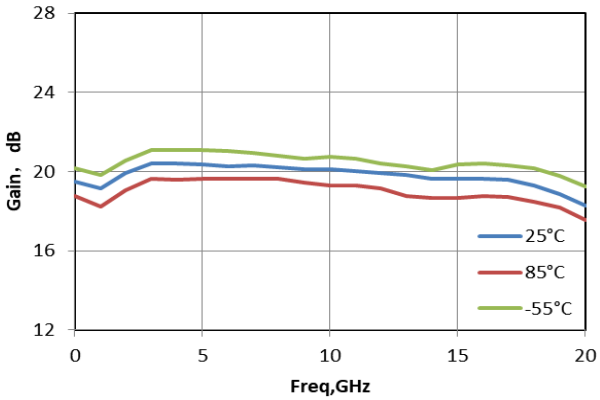
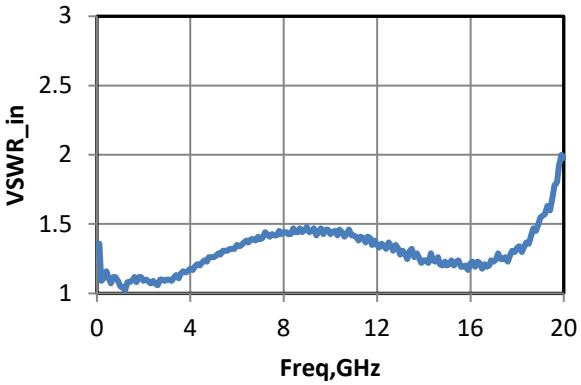
Typical Performance (Low power mode)

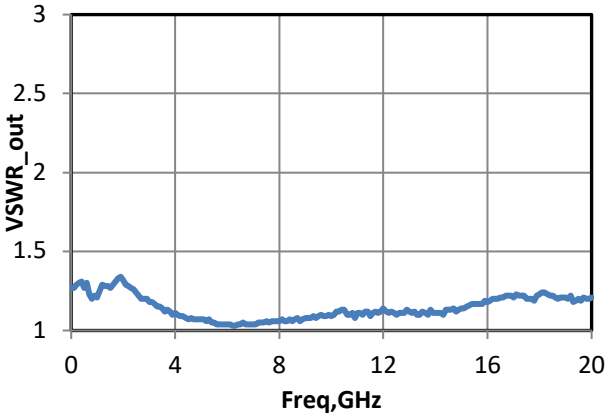
Gain Curve



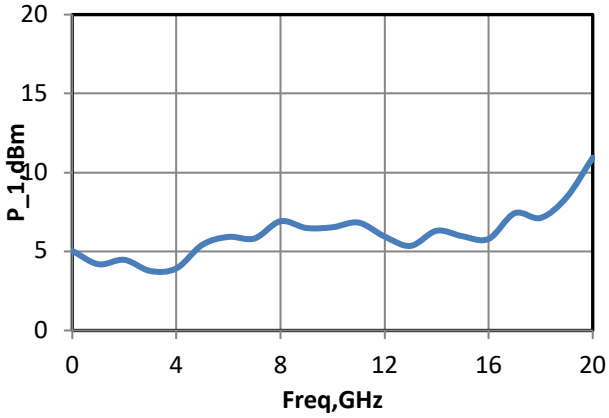
Input Standing Wave Curve



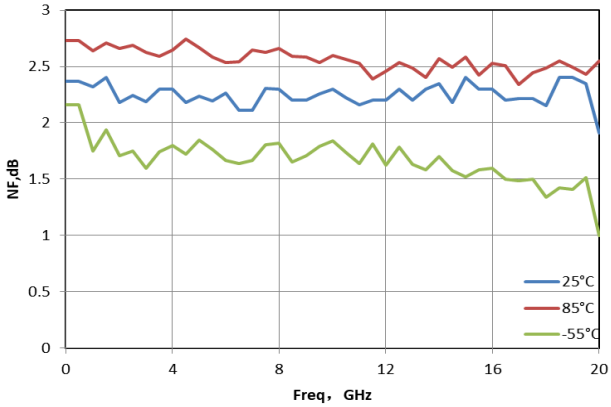
Output Standing Wave Curve



P-1 Compression Characteristic Curve



Noise Figure Curve



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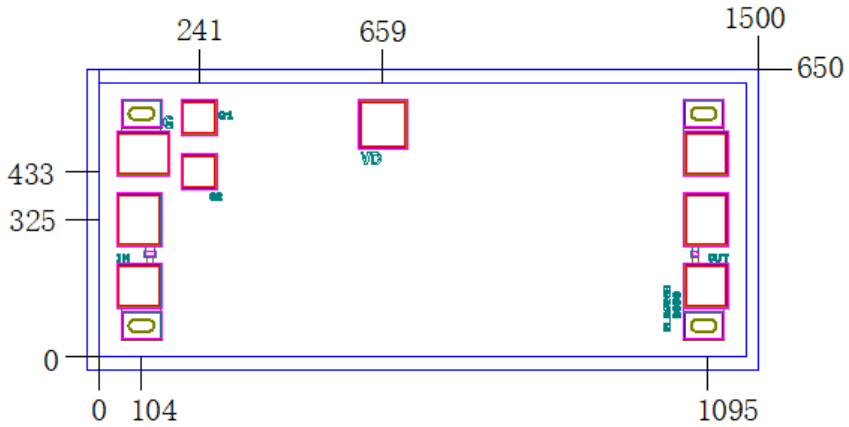
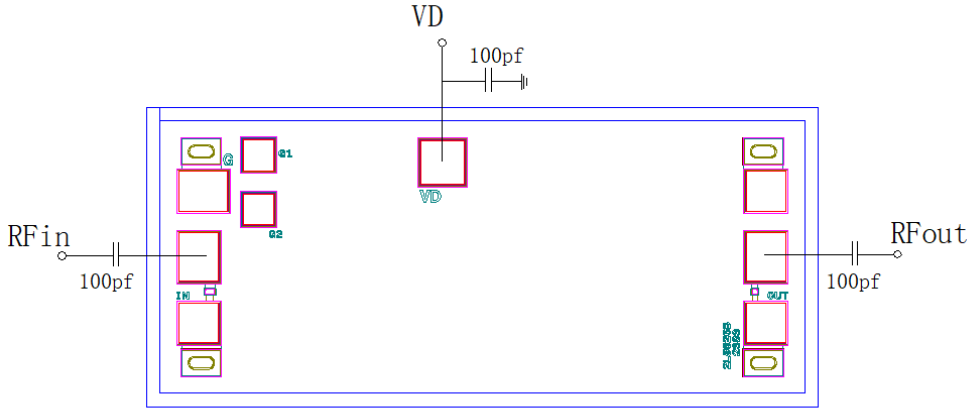
Chip Dimensions (Unit : μm)

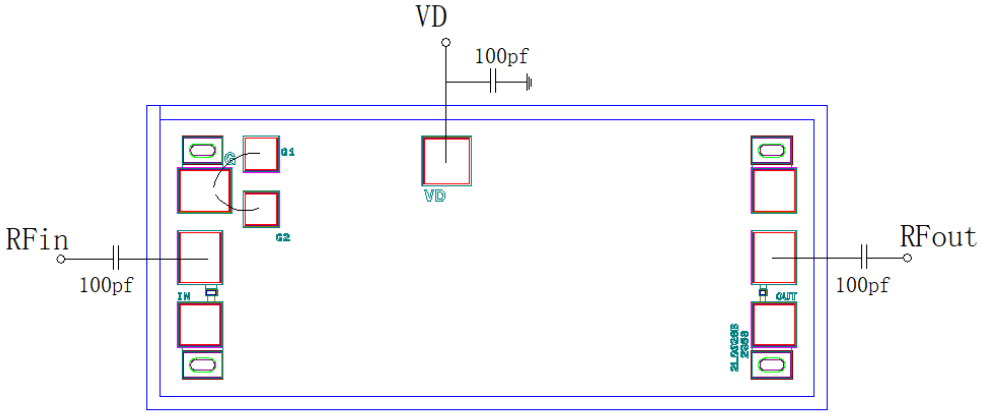


Chip Layout Diagram

Normal Mode :



Low Power Mode (G1, G2 connected to G pad) :



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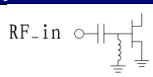
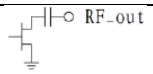
Pad Definition

Symbol	Function Description	Demensions	Equivalent Circuit
RFin	RF signal input port, connecting to external 50Ω system, need to add DC blocking capacitor.	100μm*100μm	
RFout	RF signal output port, connecting to external 50Ω system, need to add DC blocking capacitor.	100μm*100μm	
Vd	Amplifier bias, need to connect 100pF external capacitor	100μm*100μm	
G	Ground	100μm*100μm	
G1, G2	Connected to G pad at Low Power Mode	80μm*80μm	

Please see Appendix A for details.