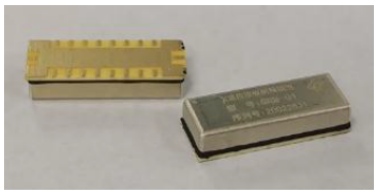
AMT5102 - X Band Transmitter Front End SIP



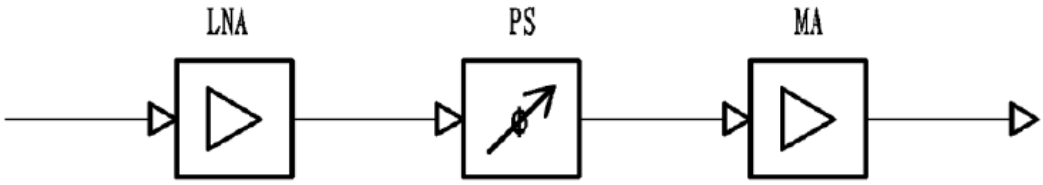
Key Features :

- Frequency range : X Band
- Output power : ≥ 23dB
- In-band flatness : ±0.5dB
- Phase noise deterioration to input signal : ≤ 2.5dB
- Stray deterioration to input signal : ≤ 2dB
- Phase shift bit : 6 bits, 0 ~ 360°
- Input standing wave : ≤ 1.8
- Supply : +5V (≤ 230mA), -5V (≤ 5mA)
- Control port : 3V3_TTL
- Operation temperature : -40 °C ~ +85 °C
- Weight : ≤ 3g
- Chip dimensions : 18mm x 7mm x 4mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT5102 is a X band radio frequency transmitter module, it integrates LNA, phase shifter, amplifier etc. in QFN like package, to provide amplification, 6-bit phase shift etc. functions. Interface port uses 3V3 TTL control, low power consumption, small size.

Circuit Block Diagram :



Absolute Maximum Ratings (Ta = 25°C)

Symbol	Parameter	Value	Remark
Pin	Max input signal power	+17dBm	
Tch	Operation Temperature	105°C	
Tm	Solder Reflow Temperature	255°C	45s
Tstg	Storage Temperature	-55 ~ +150°C	

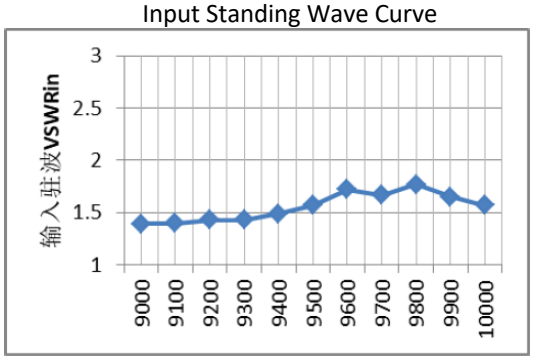
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

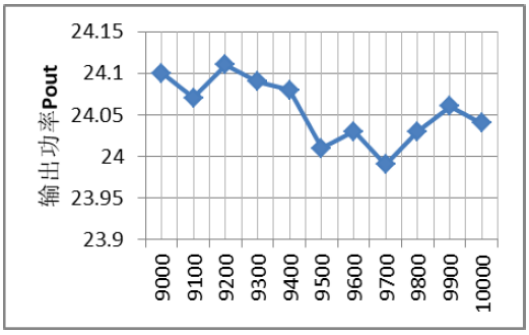
Symbol	Parameter	Value			Unit
		Min	Typical	Max	
F	Frequency range		9 ~ 10		GHz
Pout	Output power	23	-	-	dBm
Δ_{Pout}	In-band flatness	-	-	1	dB
PN	Phase noise deterioration to input signal	-	-	2.5	dB
SFDR	Stray deterioration to input signal	-	-	2	dB
VSWRi	Input standing wave	-	-	1.8	dBm
I_5V	+5V current	-	-	230	mA
I_-5V	-5V current	-	3	5	mA

Typical Test Curve

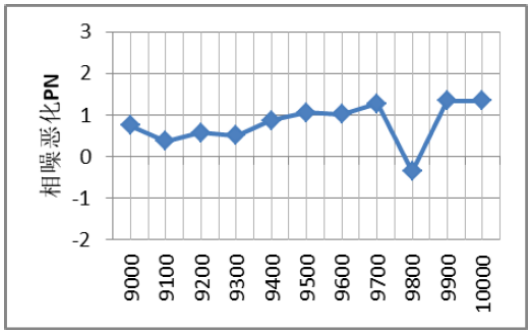
Input Standing Wave Curve



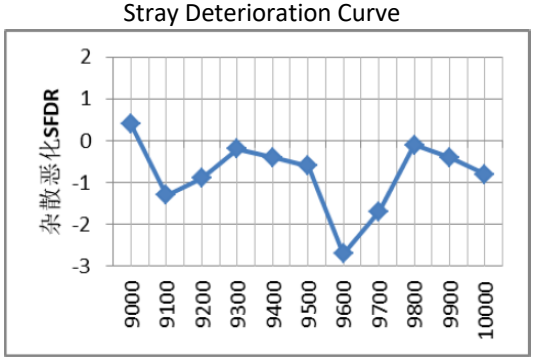
Output Standing Wave Curve



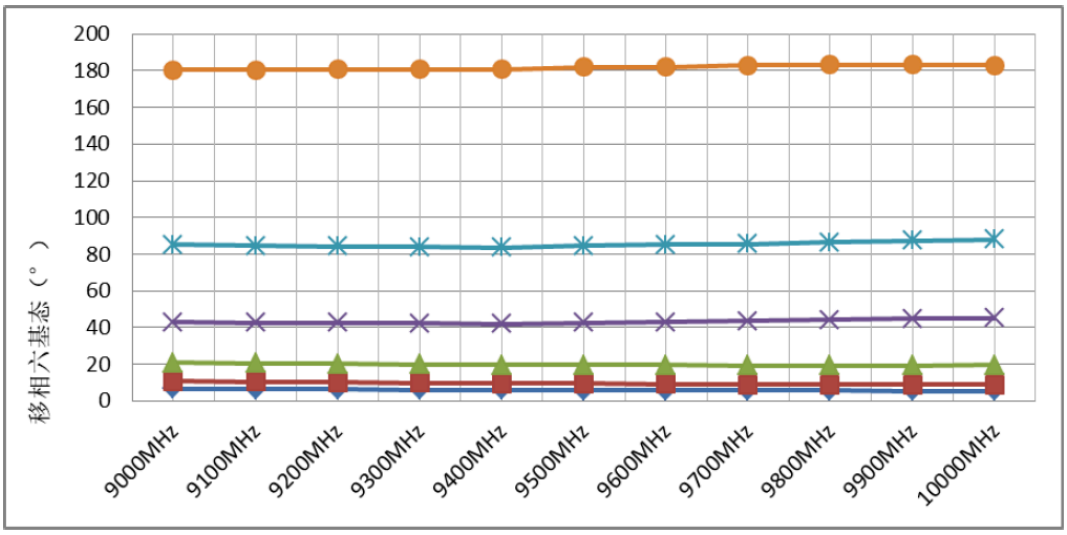
Phase Noise Deterioration Curve



Stray Deterioration Curve



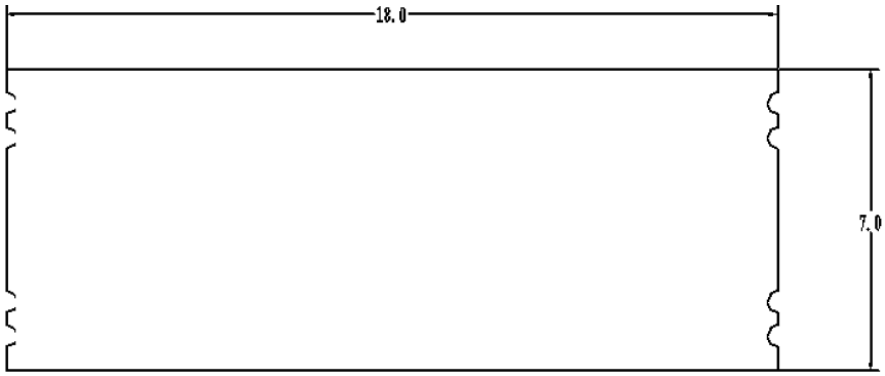
Phase Shift Six Basic State



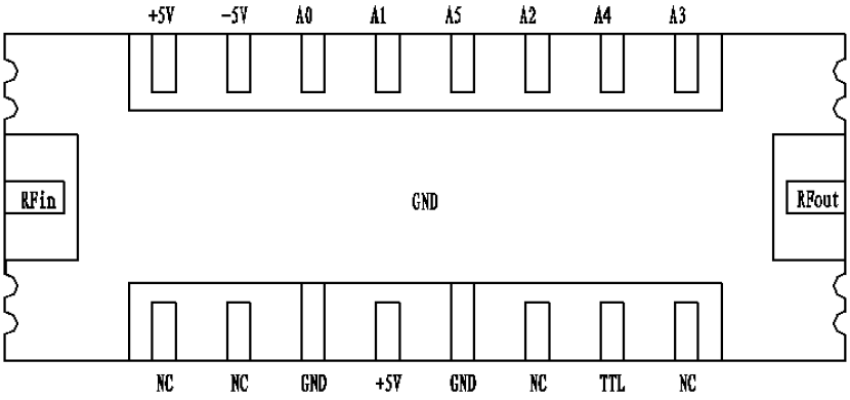
Phase Shift Control Truth Table

Control Port Phase Shift State	A0	A1	A2	A3	A4	A5
State	0V	0V	0V	0V	0V	0V
5.625 °	+3.3V	0V	0V	0V	0V	0V
11.25 °	0V	+3.3V	0V	0V	0V	0V
22.5 °	0V	0V	+3.3V	0V	0V	0V
45 °	0V	0V	0V	+3.3V	0V	0V
90 °	0V	0V	0V	0V	+3.3V	0V
180 °	0V	0V	0V	0V	0V	+3.3V
Max phase shift state	+3.3V	+3.3V	+3.3V	+3.3V	+3.3V	+3.3V

Module Dimensions (Unit : mm)



Front



Backside

Recommendation for PCB PAD Design