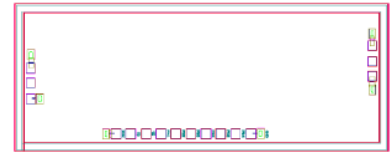


AMT1606
8 – 12GHz Digital Phase Shifter Chip



Key Features :

- Frequency range : 8 – 12GHz
- Insertion loss : 9dB
- Phase shift bit : 6 bit
- Phase shift step : 5.625°
- Phase shift RMS : 3°
- Phase shift additive attenuation : ±1.5dB
- Input/output standing wave : 1.7/1.8
- Control method : TTL parallel control
- Supply : -3V/4mA, +1.4V/1mA
- Chip dimensions : 3.65mm x 1.37mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT1606 is a 6-bit digital control phase shifter, it is designed by Gallium Arsenide (GaAs) process. This chip is designed with ground through metal vias on the back technology, all chip products p are 100% RF tested. It covers a frequency range of 8 ~ 12GHz, typical insertion loss is 9dB, it uses TTL logic control. This chip is for microwave transceiver module, to realize transceiver signal phase control function.

Absolute Maximum Ratings (Ta = 25°C)

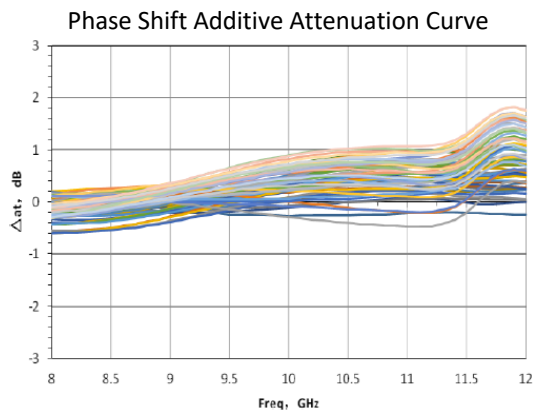
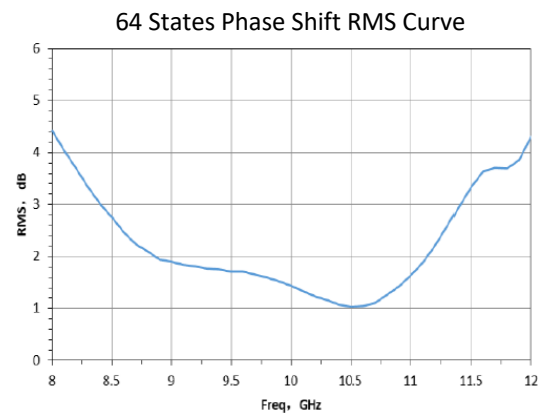
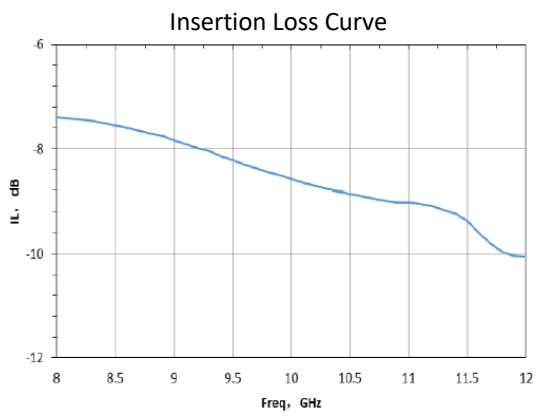
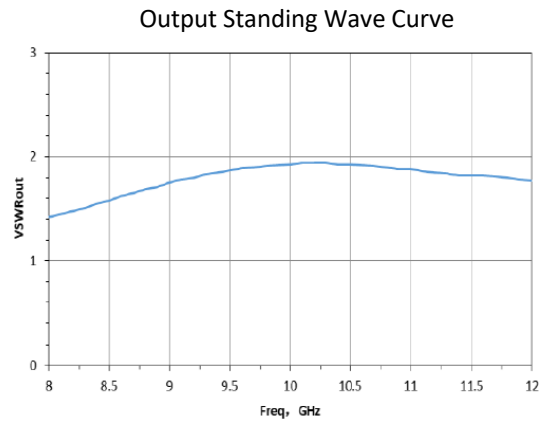
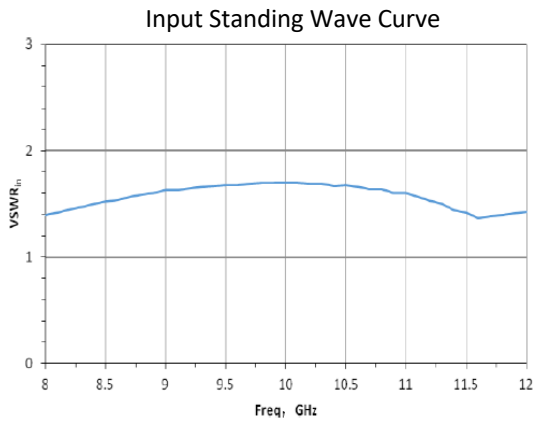
Symbol	Parameter	Value	Remark
Pin	Input Power	25dBm	
Tch	Operation Temperature	-55 ~ +125°C	
Tm	Sintering Temperature	310°C	30s, N ₂ protection
Tstg	Storage Temperature	-65 ~ +150°C	

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

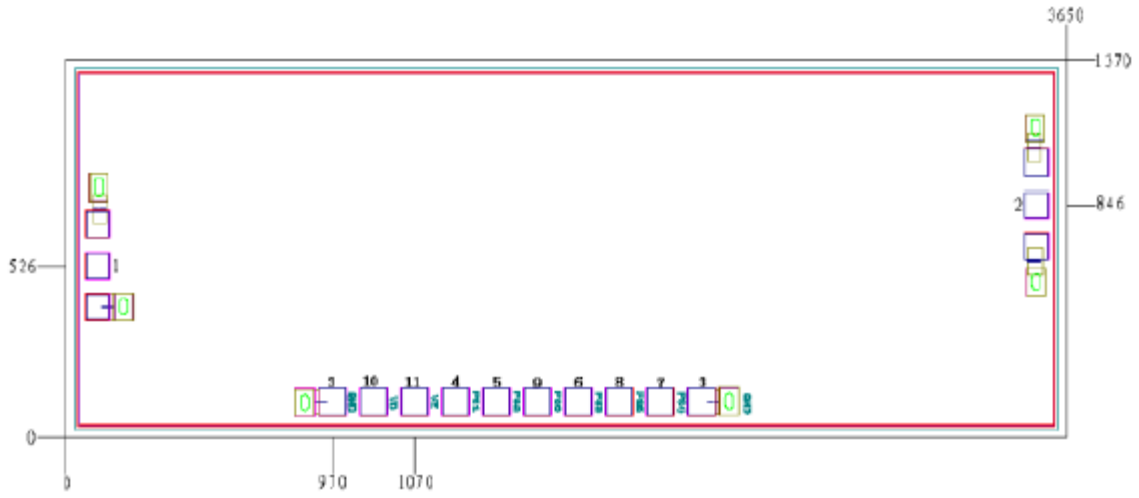
Electrical Characteristics (Ta = 25°C)

Symbol	Parameter	Test Conditions	Value			Unit
			Min	Typical	Max	
IL	Insertion Loss	F : 8 ~ 12GHz	-	9	10.5	dB
PS	Phase shift range		5.625 – 354.375			°
Δat	Phase shift additive attenuation		-1.8	±1.5	1.8	dB
RMS	64 states phase shift RMS error		-	3	4.5	°
VSWRin	Input Standing Wave		-	1.7	1.8	-
VSWRout	Output Standing Wave		-	1.8	2	-

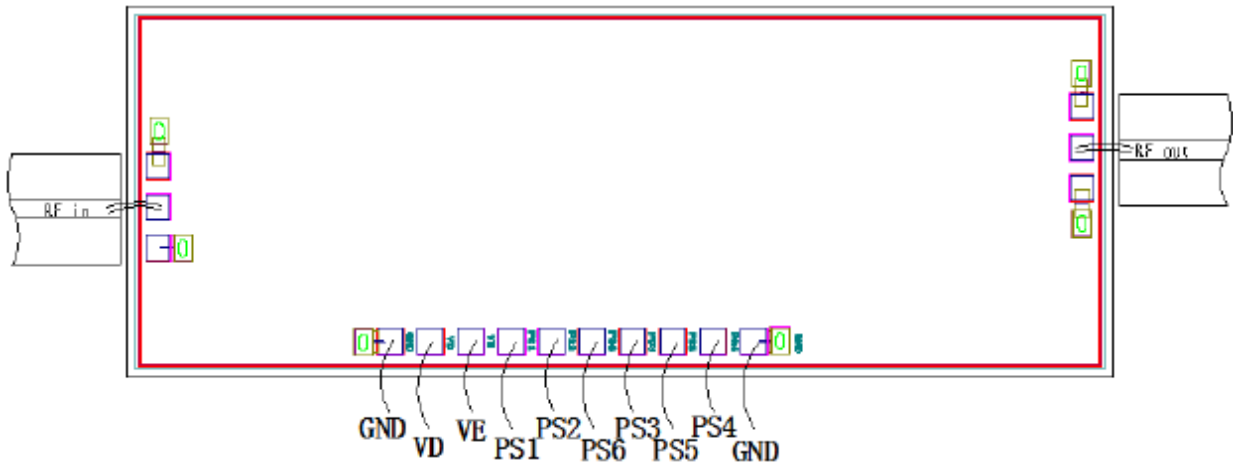
Typical Performance



Chip Dimensions (Unit : μm)



Chip Layout Diagram



Pad Definition

Symbol	Function Description	PAD Dimension
RFin	RF signal input port, external connect to 50Ω system, no DC blocking capacitor	100μm *100μm
RFout	RF signal output port, external connect to 50Ω system, no DC blocking capacitor	100μm *100μm
GND	Ground	100μm *100μm
PS1	5.625° bit control	100μm *100μm
PS2	11.25° bit control	100μm *100μm
PS3	22.5° bit control	100μm *100μm
PS4	45° bit control	100μm *100μm
PS5	90° bit control	100μm *100μm
PS6	180° bit control	100μm *100μm
VD	1.4V supply	100μm *100μm
VE	-3V supply	100μm *100μm

Truth Table

Phase Shift	5.625°	11.25°	22.5°	45°	90°	180°
	PS1	PS2	PS3	PS4	PS5	PS6
Initial	0	0	0	0	0	0
5.625°	1	0	0	0	0	0
11.25°	0	1	0	0	0	0
22.5°	0	0	1	0	0	0
45°	0	0	0	1	0	0
90°	0	0	0	0	1	0
180°	0	0	0	0	0	1

Please see Appendix A for details.