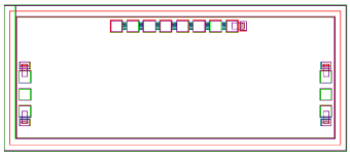
AMT1607

12 – 20GHz Digital Phase Shifter Chip



Key Features :

- Frequency range : 12 – 20GHz
- Insertion loss : 8.2dB
- Phase shift bit : 6 bit
- Phase shift step : 5.625°
- Phase shift RMS : 2°
- Phase shift additive attenuation : ±1dB
- Input/output standing wave : 1.3
- Control method : TTL parallel control
- Supply : -5V/2mA
- Chip dimensions : 3mm x 1.2mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT1607 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 12 ~ 20GHz, typical insertion loss is 8.2dB, phase shift RMS is 2°, 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	150°c	
Tm	Sintering Temperature	310°c	30s, N_2 protection
Tstg	Storage Temperature	-65 ~ +150°c	

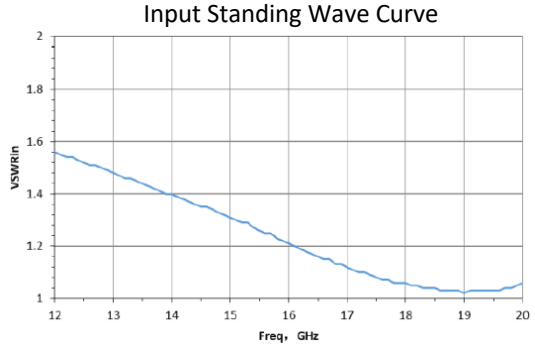
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

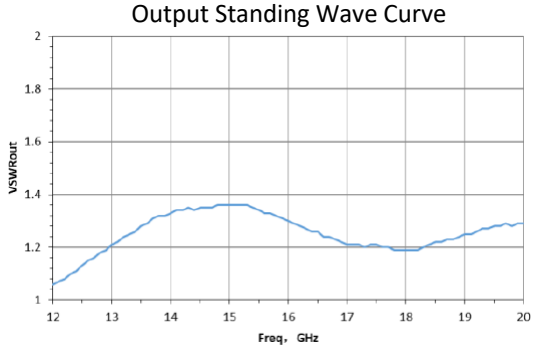
Symbol	Parameter	Test Conditions	Value			Unit
			Min	Typical	Max	
IL	Insertion Loss	VEE = -5V F : 12 ~ 20GHz	-	8.2	8.7	dB
PS	Phase shift range		5.625 – 354.3			°
Δat	Phase shift additive attenuation		-	±1	-	dB
RMS	64 states phase shift RMS error		-	2	-	°
VSWRin	Input Standing Wave		-	1.3	-	-
VSWRout	Output Standing Wave		-	1.3	-	-

Typical Performance

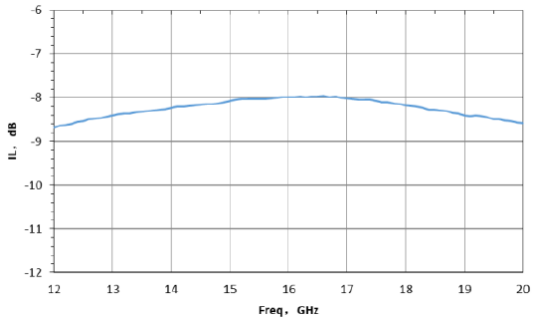
Input Standing Wave Curve



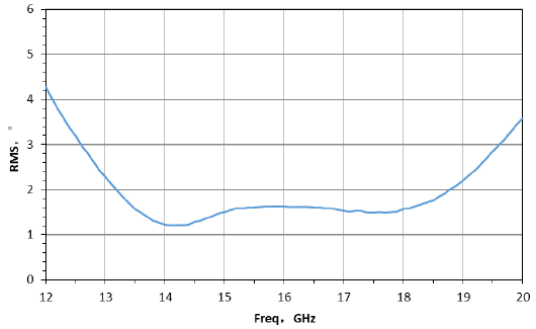
Output Standing Wave Curve



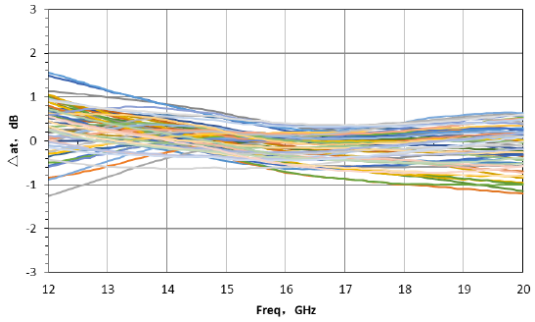
Insertion Loss Curve



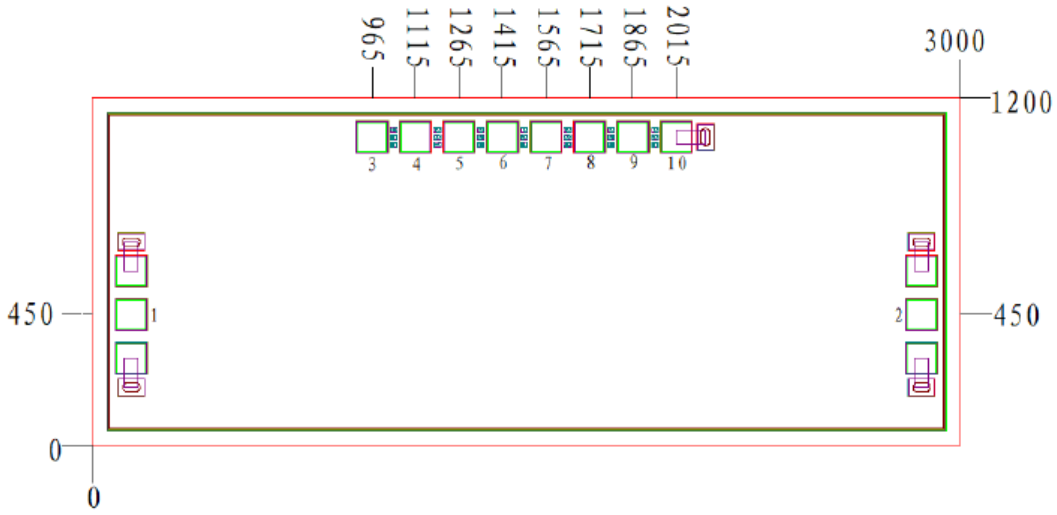
64 States Phase Shift RMS Curve



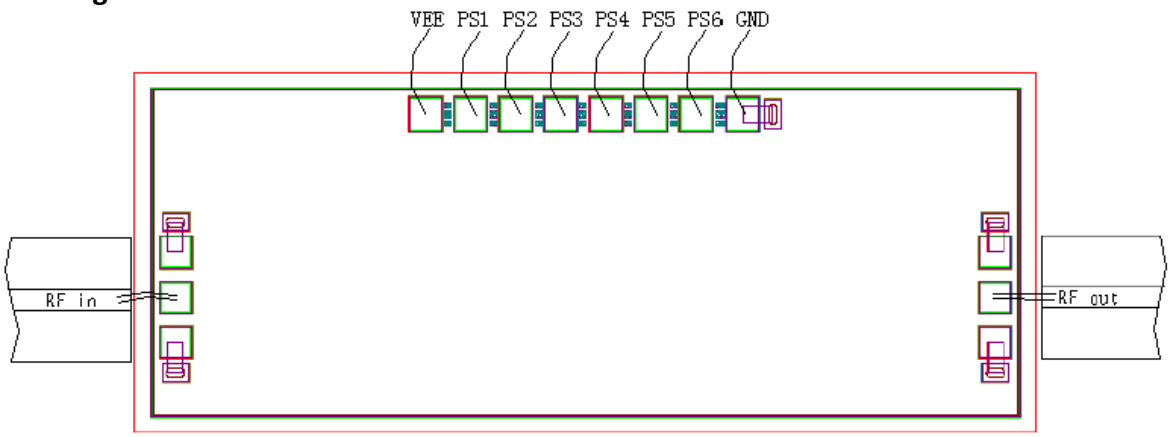
Phase Shift Additive Attenuation Curve



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
VEE	-5V supply	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
GND	Ground	100μm *100μm

Pleases see Appendix A for details.