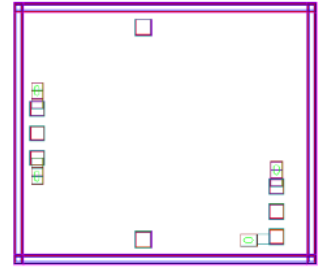


**AMT1704**  
**33-37GHz Vector Modulation Chip**



**Key Features :**

- Frequency Range : 33 – 37GHz
- Type : single balanced
- Phase modulation range : 360°
- Amplitude modulation range : -29dB ~ -13dB
- Input standing wave : 1.2
- Output standing wave : 1.4
- Voltage bias : -0.8V ~ 0V
- Chip dimensions : 1.75mm x 1.5mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

**Description :**

AMT1704 chip is a millimeter wave analog modulation device, it realizes signal amplitude and phase joint modulation. It is designed by Gallium Arsenide (GaAs) pHEMT process. This chip is designed with ground through metal vias on the back technology. All chip products p are 100% RF tested.

**Absolute Maximum Ratings (Ta = 25°C)**

Symbol	Parameter	Value	Remark
Vi, Vq	Control Voltage	0.6V/-5V	
Pin	Input Power	20dBm	
Tm	Sintering Temperature	310°C	30s, N <sub>2</sub> protection
Tstg	Storage Temperature	-65 ~ +150°C	

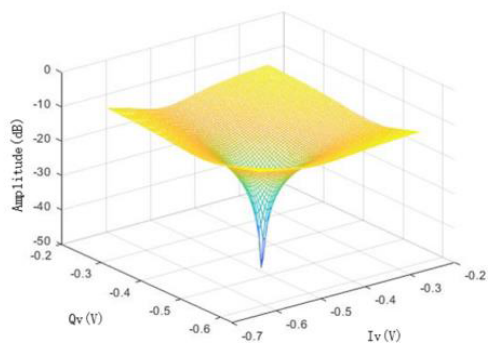
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

**Electrical Characteristics (Ta = 25°C)**

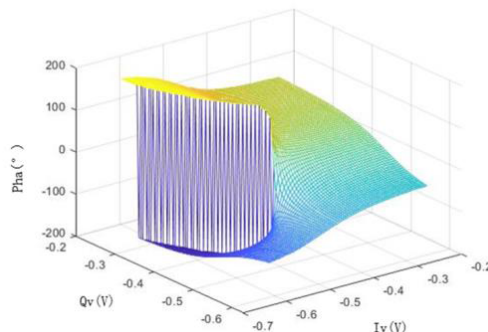
Symbol	Parameter	Value			Unit
		Min	Typical	Max	
VSWRin	Input Standing Wave	-	1.2	1.3	
VSWRout	Output Standing Wave	-	1.4	1.5	
IL	Insertion Loss	-	5.5	6	dB

## Typical Performance

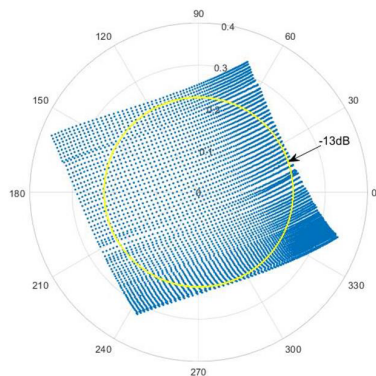
Amplitude Modulation Chart (F = 35GHz)



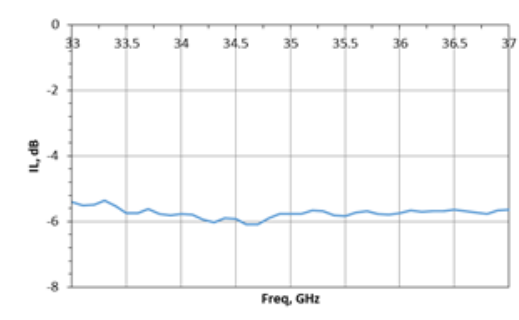
Phase Modulation Chart (F = 35GHz)



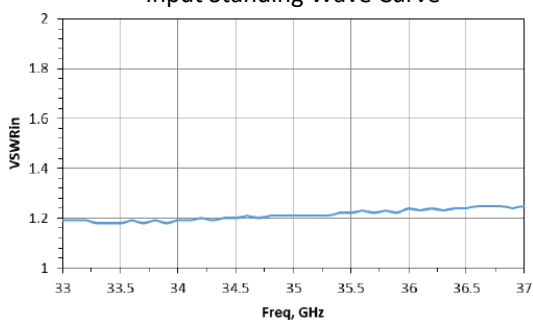
Maximum Gain Chart (F = 35GHz)



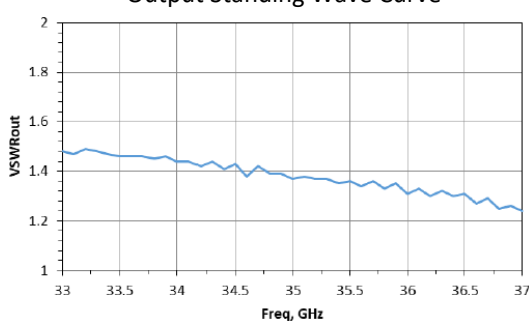
Insertion Loss



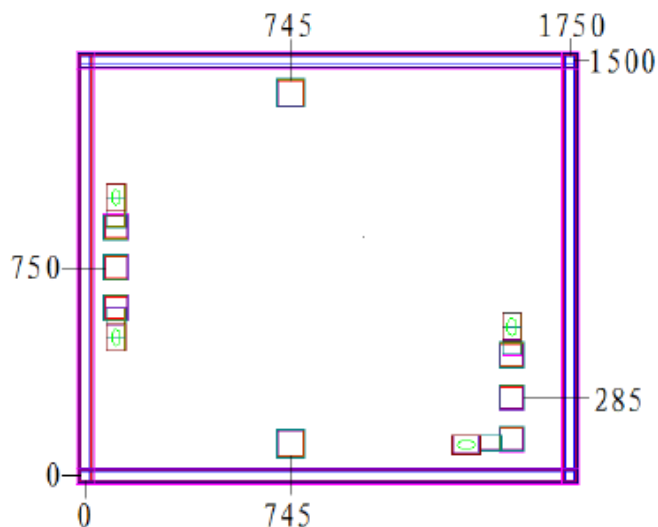
Input Standing Wave Curve



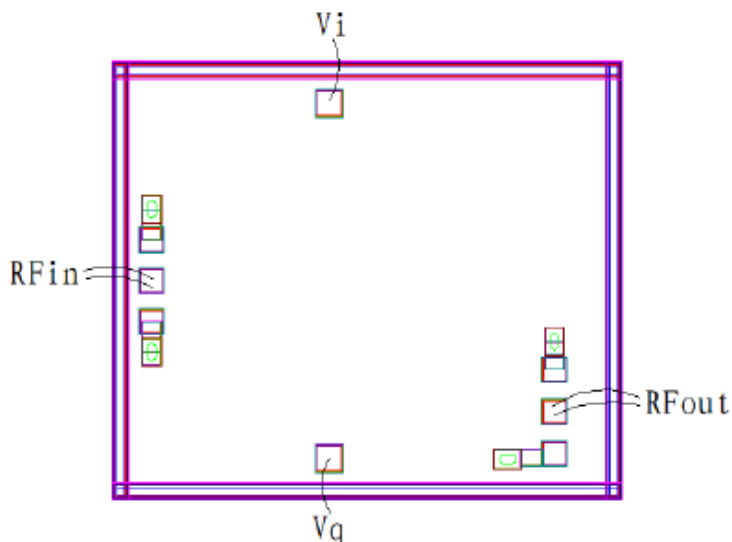
Output Standing Wave Curve



### Chip Dimensions (Unit : $\mu\text{m}$ )



### Chip Layout Diagram



### Pad Definition

No.	Symbol	Function	PAD dimension	Explanation
1	$R_{Fin}$	Input point	$90 \times 90 \mu\text{m}^2$	External connect to $50 \Omega$ system
2	$R_{Fout}$	Output point	$90 \times 90 \mu\text{m}^2$	External connect to $50 \Omega$ system
3	$V_i$	Control point	$100 \times 100 \mu\text{m}^2$	Recommend operation voltage $-0.8\text{V} \sim 0\text{V}$
4	$V_q$	Control point	$100 \times 100 \mu\text{m}^2$	Recommend operation voltage $-0.8\text{V} \sim 0\text{V}$

Please see Appendix A for details.