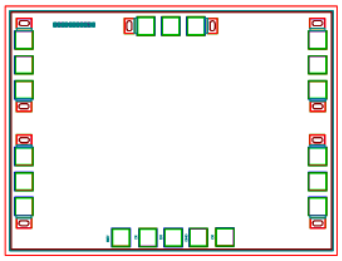
AMT1705
0 - 20GHz SP4T Switch Chip



Key Features :

- Frequency range : 0 – 20GHz
- Insertion loss : 1.7dB
- Isolation : 50dB
- Input standing wave : 1.5
- Switch ON output standing wave : 1.4
- Switch OFF output standing wave : 1.2
- Switching time : 30ns
- Control method : TTL
- Chip dimensions : 2mm x 1.5mm x 0.1mm
- Applications : wireless communication, transceiver module, radio telecommunication etc.

Description :

AMT1705 is a high performance FET SP4T switch chip, it is designed by Gallium Arsenide (GaAs) pHEMT process. The chip uses -5V TTL level control, typical insertion loss is 1.7dB, isolation is 50dB, input standing wave 1.5. 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
VSS	Supply voltage	-5V	
Pin	Input Power	30dBm	
Tm	Sintering Temperature	310°C	30s, N_2 protection
Tstg	Storage Temperature	-65 ~ +150°C	

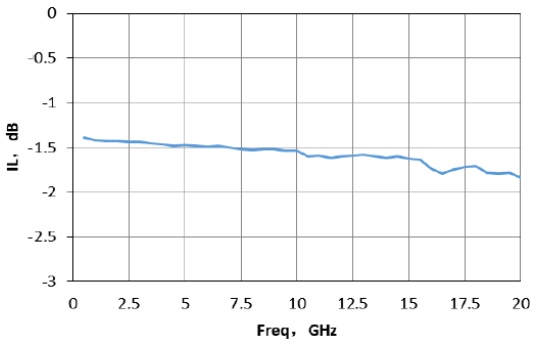
[1] Operation outside any of the Absolute Maximum Ratings may cause permanent device damage.

Electrical Characteristics (Ta = 25°C)

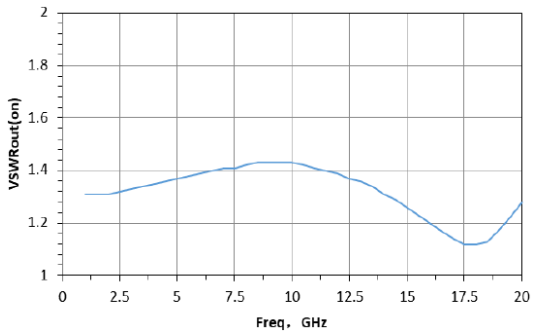
Symbol	Parameter	Value			Unit
		Min	Typical	Max	
VSWRin	Input standing wave	-	1.5	1.7	-
VSWRout(On)	ON state output standing wave	-	1.4	1.6	-
VSWRout(Off)	OFF state output standing wave	-	1.2	1.4	-
IL	Insertion Loss	-	1.7	2	dB
ISO	Isolation	45	50	-	dB

Typical Performance

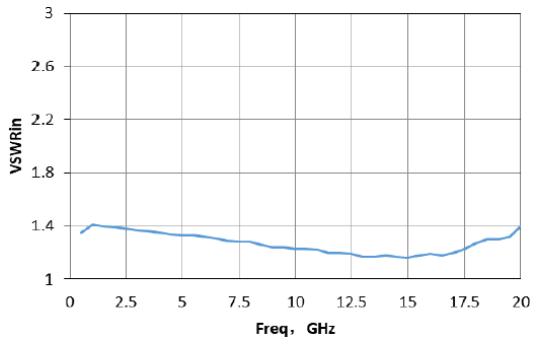
Insertion Loss Curve



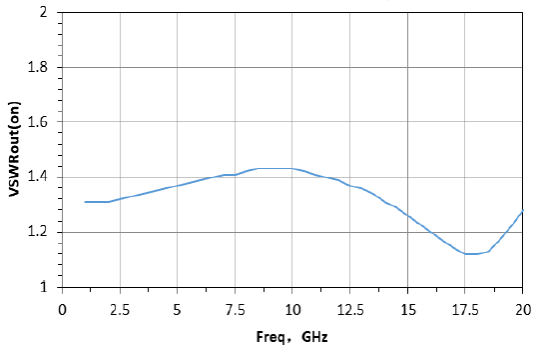
Isolation Curve



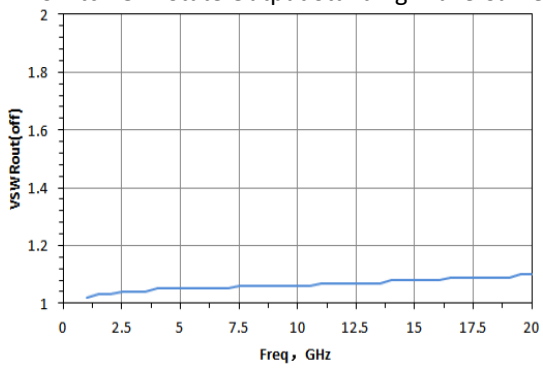
Input Standing Wave Curve



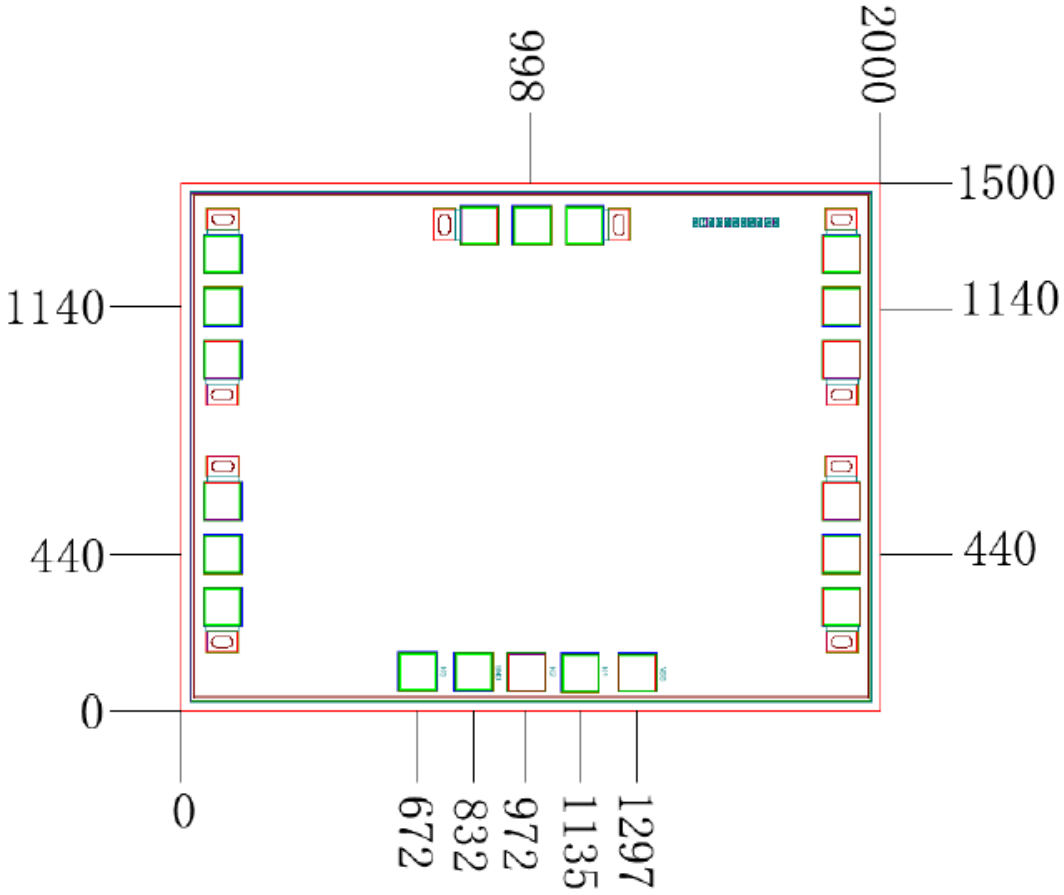
Switch ON State Output Standing Wave Curve



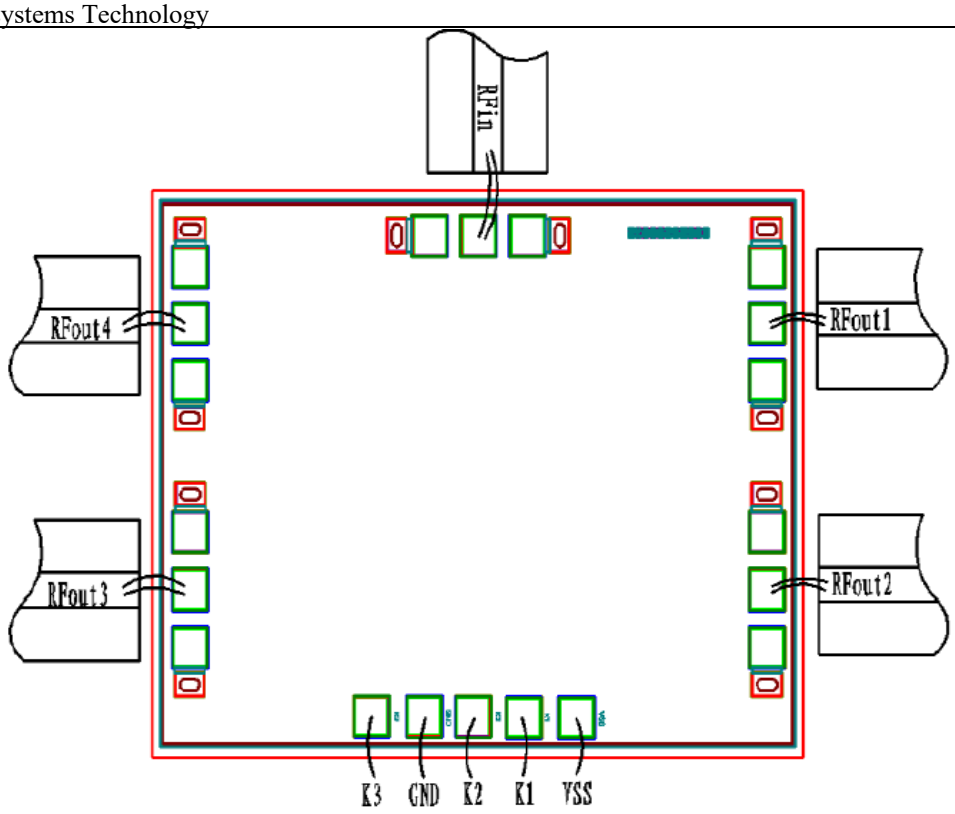
Switch OFF State Output Standing Wave Curve



Chip Dimensions (Unit : µm)



Chip Layout Diagram



Pad Definition

No.	Symbol	Function Description	Dimension
1	RFin	RF signal input port, external connect to 50Ω system, no need DC blocking capacitor	100μm*100μm
2	RFout1	RF signal output port 1, external connect to 50Ω system, no need DC blocking capacitor	100μm*100μm
3	RFout2	RF signal output port 2, external connect to 50Ω system, no need DC blocking capacitor	100μm*100μm
4	RFout3	RF signal output port 3, external connect to 50Ω system, no need DC blocking capacitor	100μm*100μm
5	RFout4	RF signal output port 4, external connect to 50Ω system, no need DC blocking capacitor	100μm*100μm
6	K1	Supply voltage control port, see Truth Table for control logic	100μm*100μm
7	K2	Supply voltage control port, see Truth Table for control logic	100μm*100μm
8	K3	Supply voltage control port, see Truth Table for control logic	100μm*100μm
9	VSS	TTL driver circuit supply port, connect to -5V supply	100μm*100μm
10	GND	TTL driver circuit ground port, grounded or floating when using	100μm*100μm

Truth Table

Function	VSS	K1	K2	K3
RFin – Rfout1	-5V	0V	0V	0V
RFin – Rfout2		5V	0V	0V
RFin – Rfout3		0V	5V	0V
RFin – Rfout4		5V	5V	0V
OFF		-	-	5V

Please see Appendix A for details.