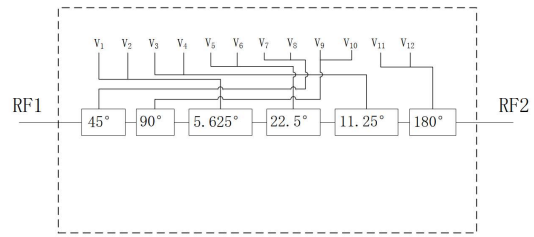


Performance

- Frequency: 4~12GHz
- Insertion loss: 9.5dB
- Ground State Input VSWR (RF1): 1.4
- Ground State Output VSWR (RF2): 1.4
- Phase Bit: 6 Bits, 5.625° step
- Phase Error (RMS): 1°
- Amplitude Equalization: ±1dB
- Control: Parallel, 0/-5V
- Technology: 0.15um PHEMT
- Chip size: 2.2*2.8*0.08mm

Function Diagram



Electrical Specifications (Ta=+25°C, V1~V12: 0V/-5V, F=4~12GHz)

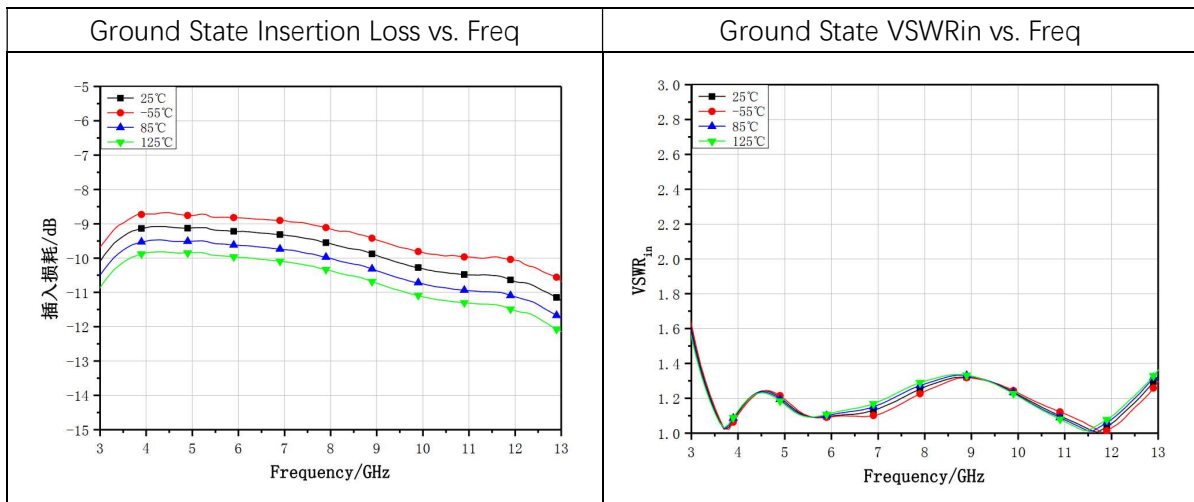
Symbol	Parameter	Min	Typical	Max	Unit
Li	Insertion Loss	-	9.5	10.5	dB
RMS	RMS Phase Error	-	1	2	°
ΔLi	Amplitude Equalization	-	±0.5	±1	dB
VSWRin	Input VSWR	-	1.3	1.7	
VSWRout	Output VSWR	-	1.3	1.7	

Absolute Maximum Ratings

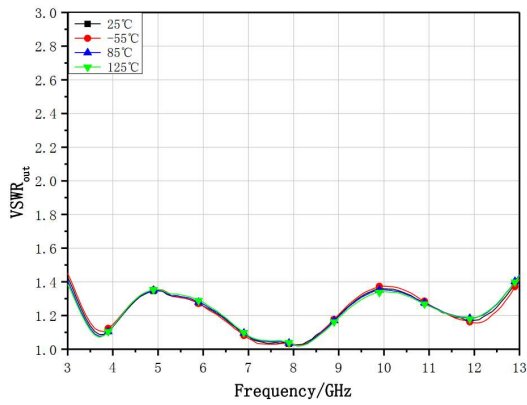
Symbol	Parameter	Value	Remark
V1~V12	Control Voltage	0.5V/-6V	
Pin	Input Power (CW)	25dBm	
Tch	Channel Temperature	150°C	
Tm	Mounting Temperature	300°C	1min, N2 protecting
Tstg	Storage Temperature	-55~150°C	

Exceed any of above ratings may cause permanent damage.

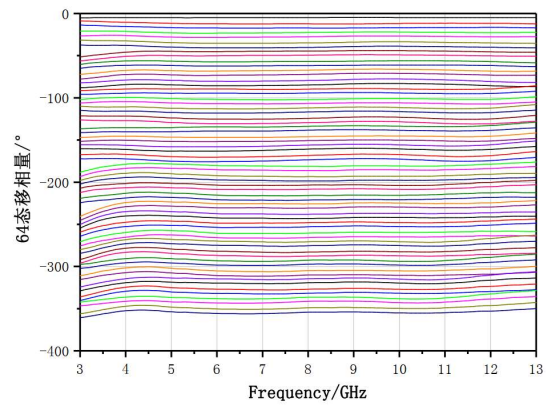
Test Curves



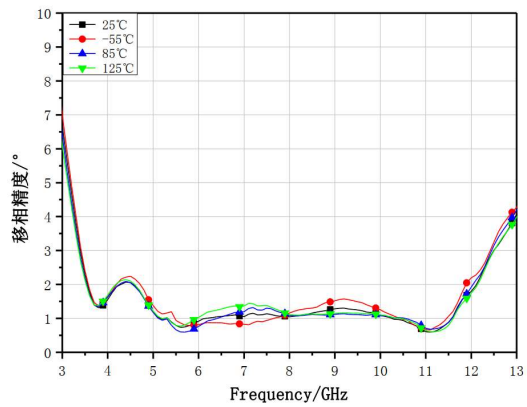
Ground State VSWR_{out} vs. Freq



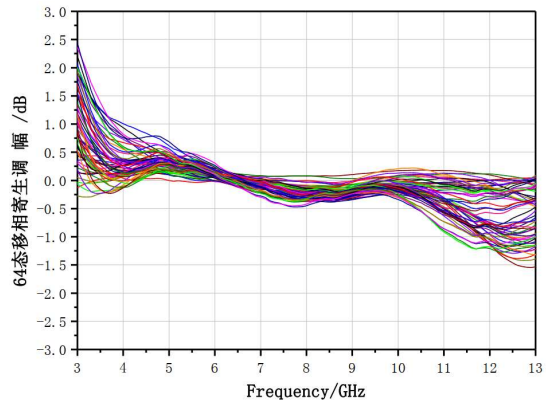
64 States Phase Shifting vs. Freq



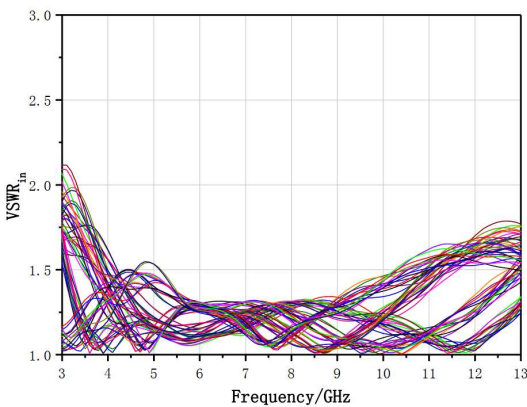
RMS vs. Freq.



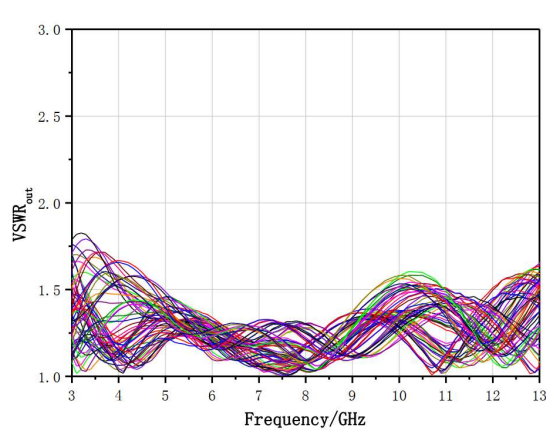
64 States Amplitude Equalization vs. Freq.



64 States VSWR_{in} vs. Freq.



64 States VSWR_{out} vs. Freq.



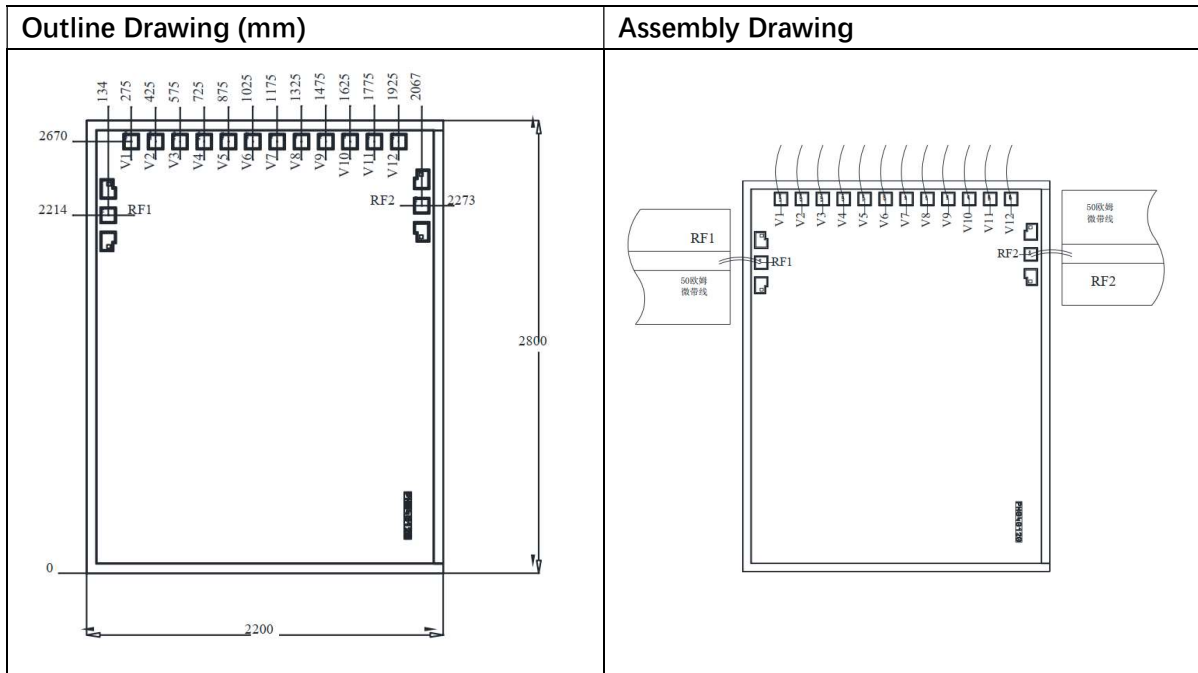
Truth Table

Function	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12
Ground State	0V	-5V	0V	-5V	0V	-5V	0V	-5V	0V	-5V	0V	0V
5.625°	-5V	0V	0V	-5V	0V	-5V	0V	-5V	0V	-5V	0V	0V
11.25°	0V	-5V	-5V	0V	0V	-5V	0V	-5V	0V	-5V	0V	0V
22.5°	0V	-5V	0V	-5V	-5V	0V	0V	-5V	0V	-5V	0V	0V
45°	0V	-5V	0V	-5V	0V	-5V	-5V	0V	0V	-5V	0V	0V
90°	0V	-5V	0V	-5V	0V	-5V	0V	-5V	-5V	0V	0V	0V
180°	0V	-5V	0V	-5V	0V	-5V	0V	-5V	0V	-5V	-5V	0V

RMS is calculated as:

$$\text{RMS} = \sqrt{\frac{\sum_{i=1}^{2^n} (\theta_i - \theta_{i0})^2}{2^n}}$$

Note: n=6, 2ⁿ is 64 states, θ_i is phase shifting value of each state under specified frequency, θ_{i0} is nominal value of the state.



Pads Definition

No	Port	Size (um)	Description
1	RF1	100 x 100	RF signal input port
2	RF2	100 x 100	RF signal output port
3	V1	100 x 100	5.625° Ground state control bit
4	V2	100 x 100	5.625° Phase shift control bit
5	V3	100 x 100	11.25° Ground state control bit
6	V4	100 x 100	11.25° Phase shift control bit
7	V5	100 x 100	22.5° Ground state control bit
8	V6	100 x 100	22.5° Phase shift control bit
9	V7	100 x 100	45° Ground state control bit
10	V8	100 x 100	45° Phase shift control bit
11	V9	100 x 100	90° Ground state control bit
12	V10	100 x 100	90° Phase shift control bit
13	V11	100 x 100	180° Ground state control bit
14	V12	100 x 100	180° Phase shift control bit