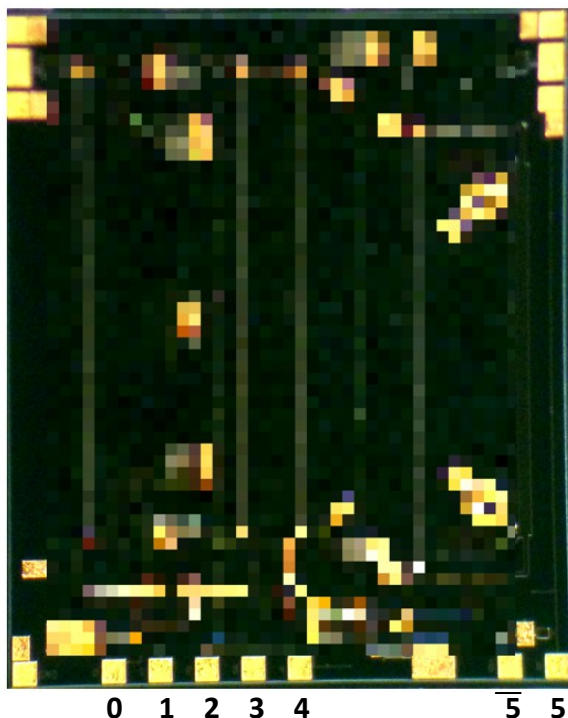


# VRFC0001 - BD

## 6 - 18GHz 6 Bit Phase Shifter

### ADVANCE INFORMATION

Version 0.2



### KEY FEATURES

- Frequency Range: 6 – 18 GHz
- 6 – bit resolution (5.625° phase step)
- Typical Insertion Loss—10.5 dB
- Size: 3mm X 2.5mm X 0.1mm

### DESCRIPTION:

The VRFC0001 BD is a 6 – 18 GHz phase shifter with 6 bits of resolution providing 360° of phase coverage with 5.625° phase step. It is manufactured on a 0.5  $\mu\text{m}$  GaAs process. The circuit demonstrates a typical insertion loss of 10.5 dB (7 dB at lower frequencies).

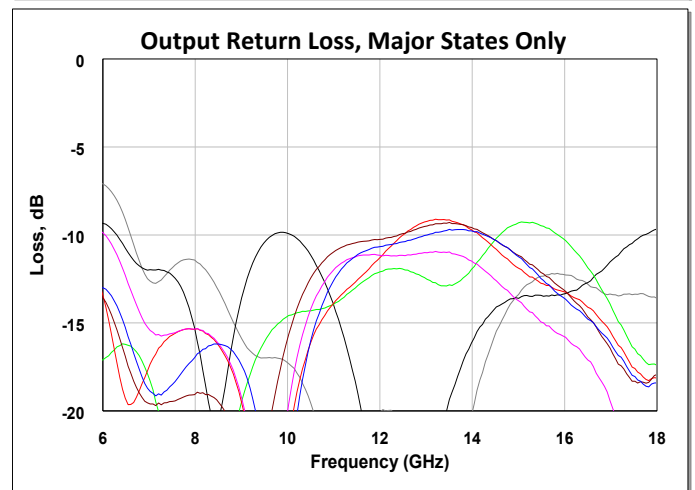
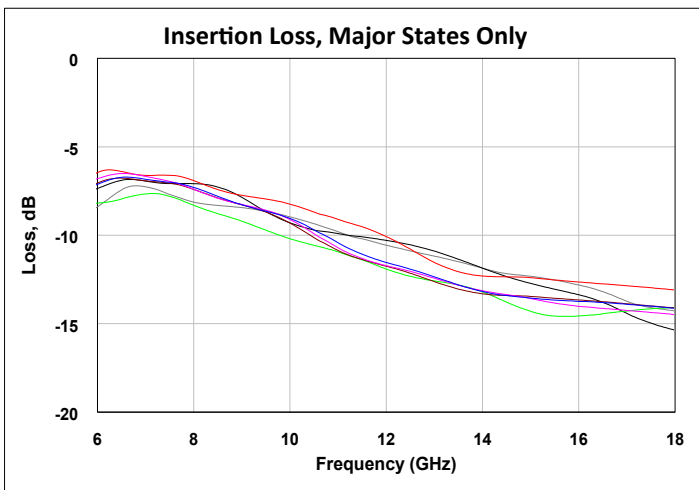
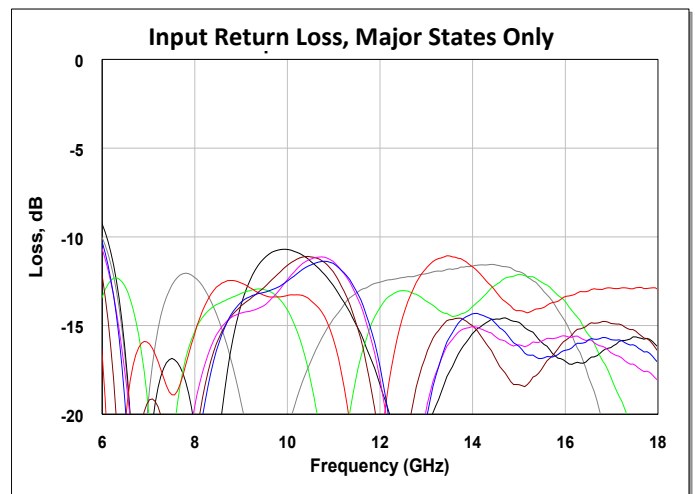
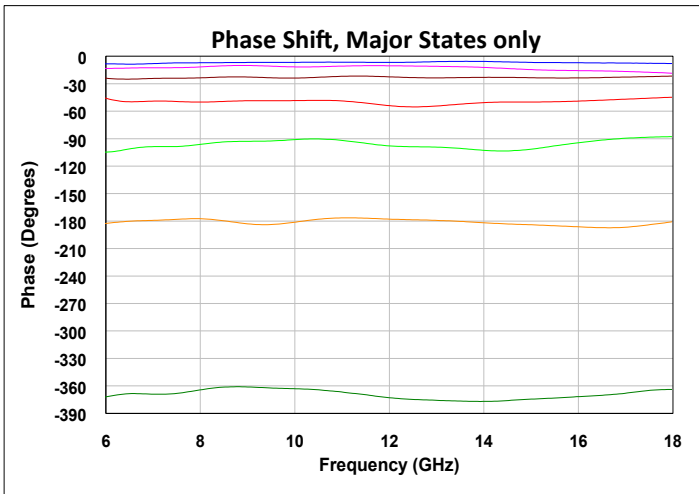
### ELECTRICAL SPECIFICATIONS:

Parameter	Specification			Unit
	Min.	Typ.	Max.	
Resolution		6		bit
Insertion Loss		-10.5		dB
Insertion Loss Modulation		$\pm 1$		dB
RMS Phase Error		2 to 7		deg
Peak Phase Error (PPE)		-1.5/+8 to -3/+18		deg
I/P Return Loss		-12.5		dB
O/P Return Loss		-10.5		dB

Notes: Specifications are at 25°C,  $V_{\text{ctrl}} = 0 \text{ V} / -5 \text{ V}$ ,  $Z = 50 \Omega$ , For all RF specifications, reference plane is at the bondpad

## MEASURED PERFORMANCE: (On-Wafer Measurements, Major states)

TA = 25°C, V<sub>CTRL</sub> = - 5V (low) and 0V (high)

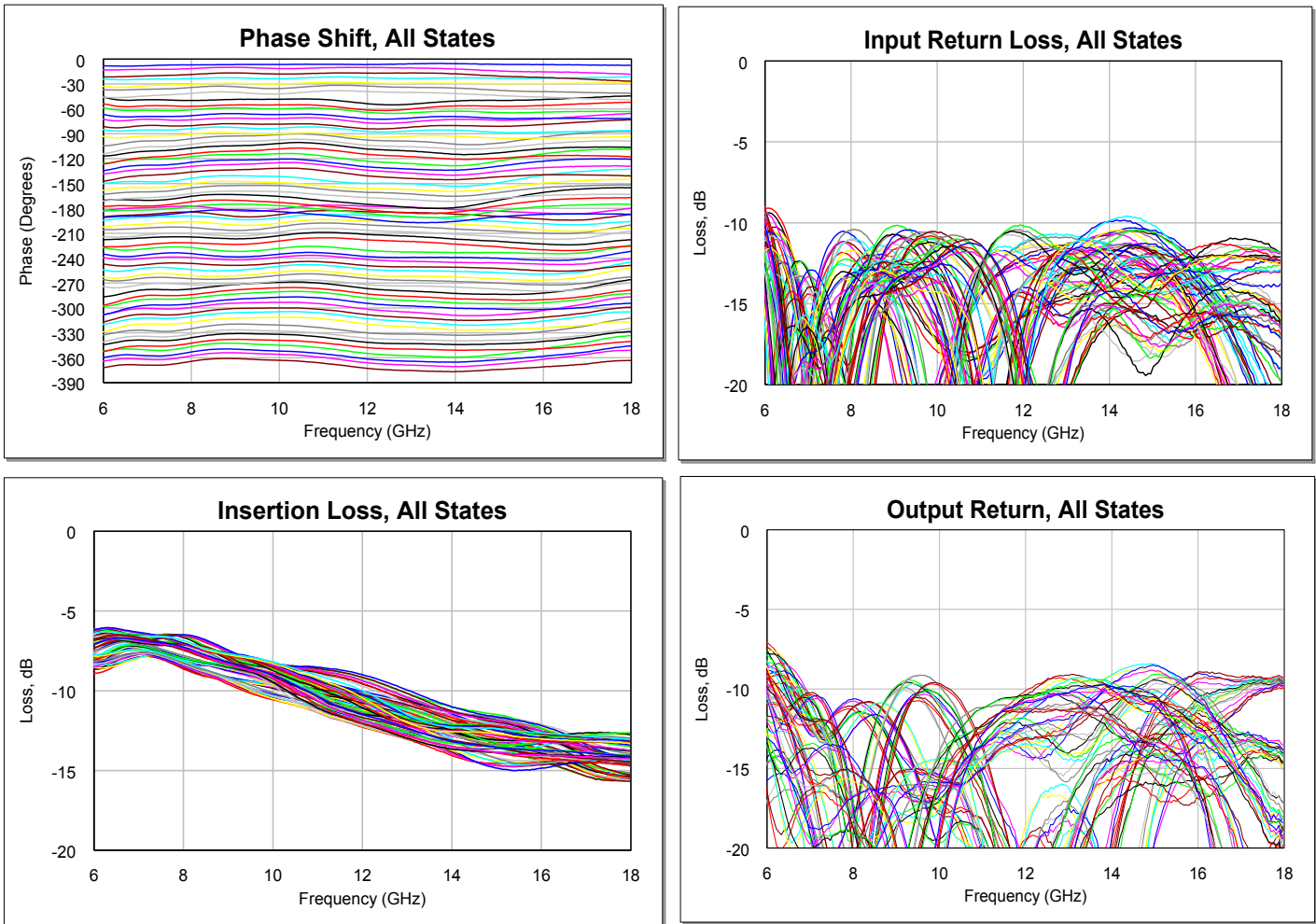


Phase Shift (degrees)	Control Input Voltages						
	0	1	2	3	4	5	5
0	-5	-5	-5	-5	-5	0	-5
5.625	0	-5	-5	-5	-5	0	-5
11.25	-5	0	-5	-5	-5	0	-5
22.5	-5	-5	0	-5	-5	0	-5
45	-5	-5	-5	0	-5	0	-5
90	-5	-5	-5	-5	0	0	-5
180	-5	-5	-5	-5	-5	-5	0
354.375	0	0	0	0	0	-5	0

All other states can be obtained by the combination of any of the above states which will provide a phase shift approximately equal to the sum of the bits selected.

## MEASURED PERFORMANCE: (On-Wafer Measurements, All states)

TA = 25°C, V<sub>CTRL</sub> = - 5V (low) and 0V (high)



## CHIP ASSEMBLY AND BONDING DIAGRAM:

