

**Features**

- Frequency: 19-21GHz
- Phase Shift Accuracy RMS: 3.0 °
- Insertion Loss: 9.2dB (Typ.)
- Amplitude Variation: 1.6dB
- Impedance: 50Ω
- Die Size: 3.5 x 1.5 x 0.1 mm

**Typical Applications**

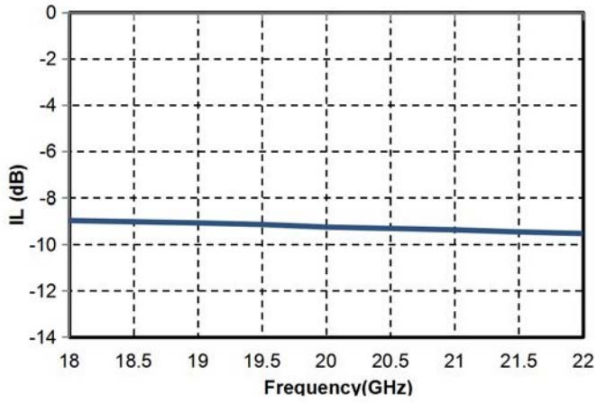
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

**Electrical Specifications**
**TA = +25°C**

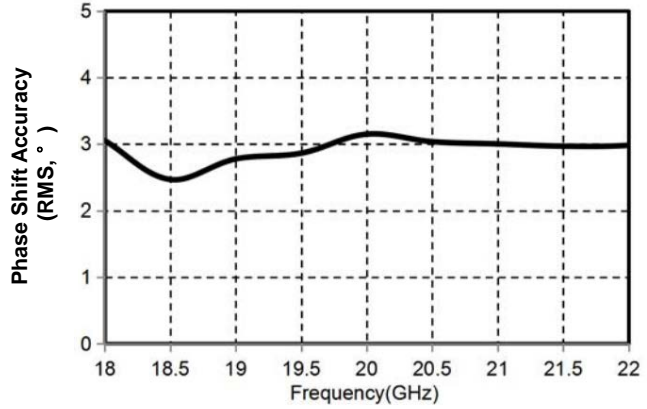
Parameters	Min.	Typ.	Max.	Units
Frequency	19-21			GHz
Insertion Loss		9.2	9.4	dB
Insertion Loss Variation		1.6		dB
Phase Shift Accuracy RMS		3.0		°
Amplitude Variation		1.6		dB
Input Return Loss	11	17	-	dB
Output Return Loss	13	20	-	dB
Switching Speed		20		ns



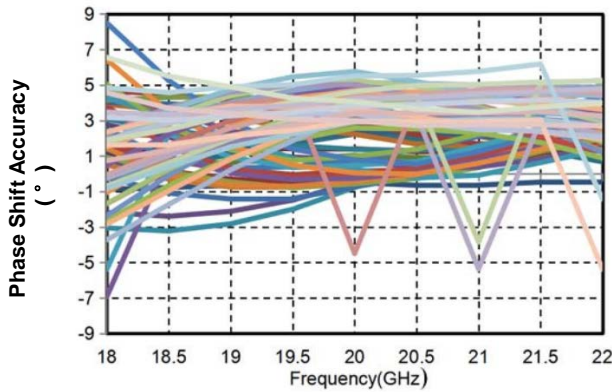
### Insertion Loss vs. Frequency



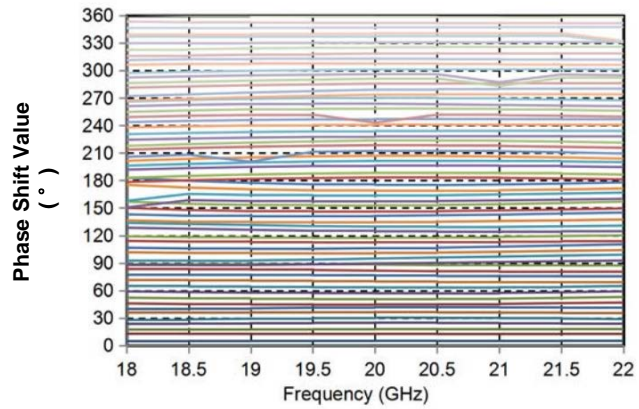
### Phase Shift Accuracy (RMS) vs. Frequency



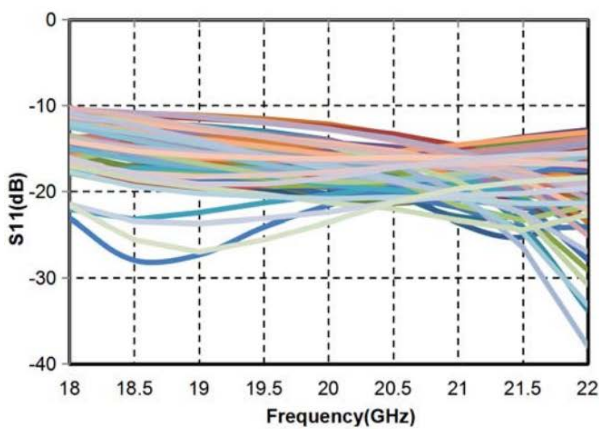
### Phase Shift Accuracy vs. Frequency



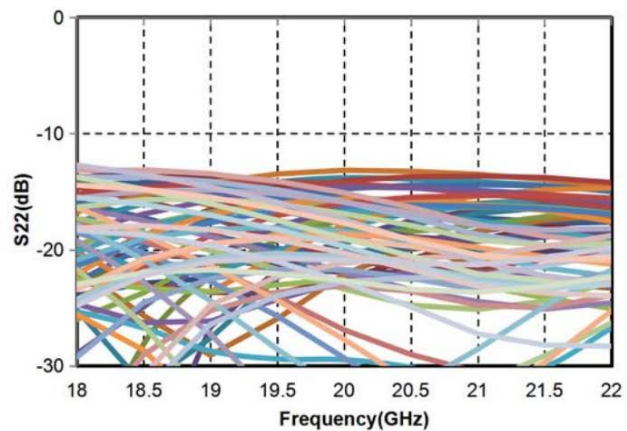
### Phase Shift Value vs. Frequency



### Input Return Loss vs. Frequency

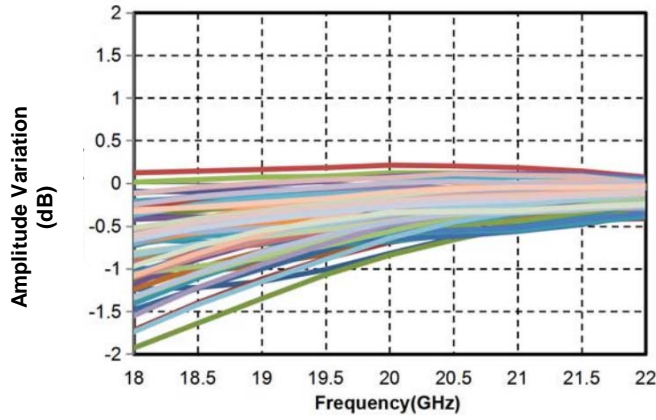


### Output Return Loss vs. Frequency



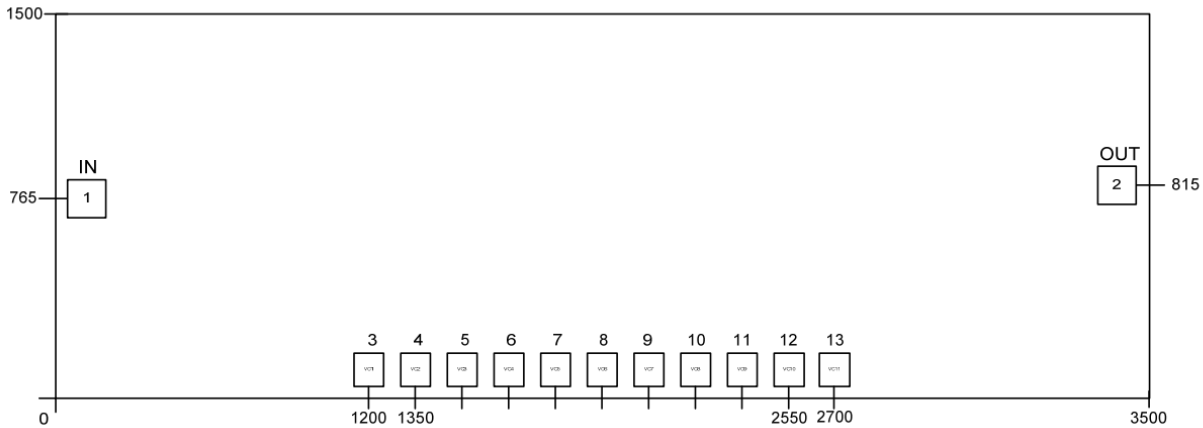


### Amplitude Variation



### Outline Drawing:

All Dimensions in  $\mu\text{m}$



### Pad Description

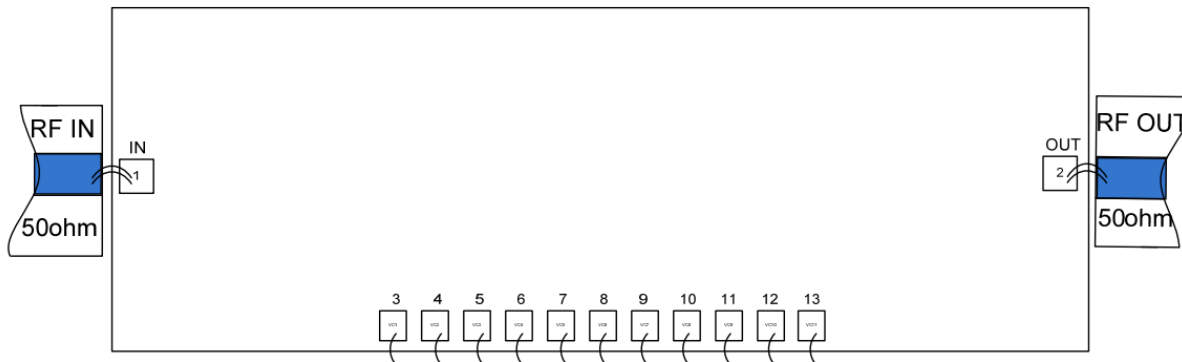
PAD	Function	Description
1	RF IN	RF Input Port
2	RF OUT	RF Output Port
3-13	CTRL	Control Port
GND	GND	Die bottom must be connected to RF/DC ground



### Truth Table

Phase	VC1	VC2	VC3	VC4	VC5	VC6	VC7	VC8	VC9	VC10	VC11
0	0	-5	-5	0	-5	-5	0	-5	0	0	-5
5.60	0	-5	0	0	-5	-5	0	-5	0	0	-5
11.25	0	-5	-5	0	-5	0	-5	-5	0	0	-5
22.5	0	-5	-5	0	-5	-5	0	0	-5	0	-5
45	-5	0	-5	0	-5	-5	0	-5	0	0	-5
90	0	-5	-5	-5	0	-5	0	-5	0	0	-5
180	-5	0	0	-5	0	0	-5	0	-5	-5	0
354.38	0	-5	-5	0	-5	-5	0	-5	0	0	-5

### Assembly Drawing



#### Notes:

1. Die thickness: 100um
2. Typical bond pad is 100\*100  $\mu\text{m}^2$
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die (GND)
6. No connection required for unlabeled bond pads

#### Maximum Ratings:

1. RF input power: +23dBm
2. Control voltage range: -8V~0.5V
3. Storage temperature: -65°C to +150°C
4. Operating temperature: -55°C to +85°C