VRFC0011-BD

2-6 GHz Single Bit GaAs MMIC Phase Shifters

Preliminary Datasheet v2

Features

- Frequency Range: 2-6 GHz
- Single Bit 5.6° and 22.5° Phase Shifters
- 50 Ω Matched RF Ports

5.6° Phase Shifter

Description

The VRFC00011-BD are a set of 2-6GHz single bit phase shifters. Typical applications include Defence and Instrumentation markets.

22.5° Phase Shifter

Electrical Specifications

T=+25°C baseplate, V_{ctrl} = 0/-5V

Parameter	Specification			Unit
	Typ. @2GHz	Typ. @4GHz	Typ. @6GHz	
5.6º Phase Shifter	6.2	5.68	5.1	deg
22.5º Phase Shifter	23.6	20.8	23.9	deg
Return Loss of 5.6º Phase Shifter (I/O)	12.5/12.6	13.7/13.5	11.9/11.8	dB
Return Loss of 22.5º Phase Shifter (I/O)	8.5/8.5	10.4/10.5	9.9/10	dB
Insertion Loss of 5.6º Phase Shifter	0.95	0.4	0.6	dB
Insertion Loss of 22.5º Phase Shifter	1.5	1.4	1.3	dB

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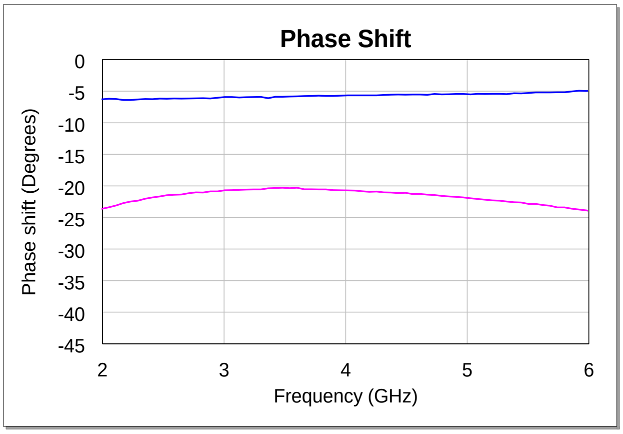
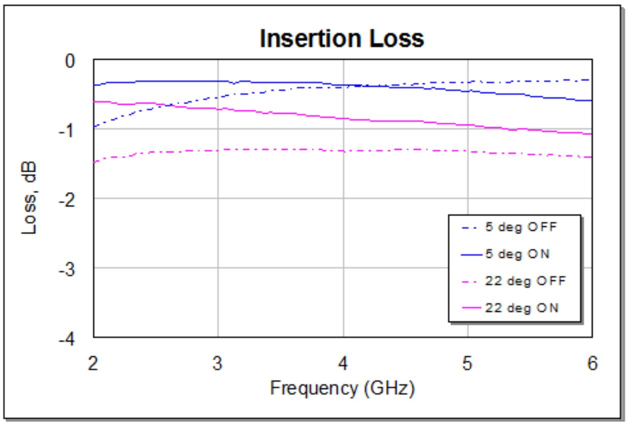
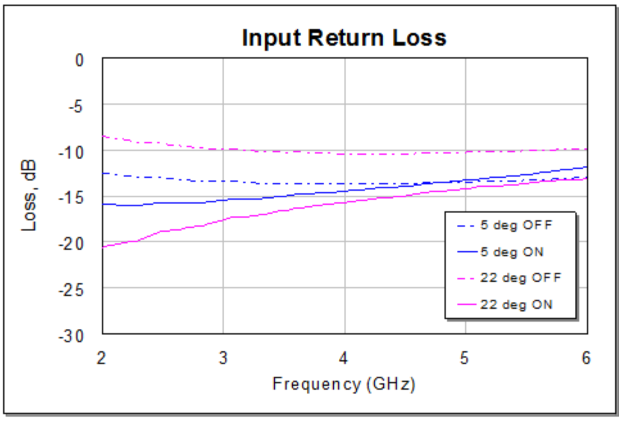
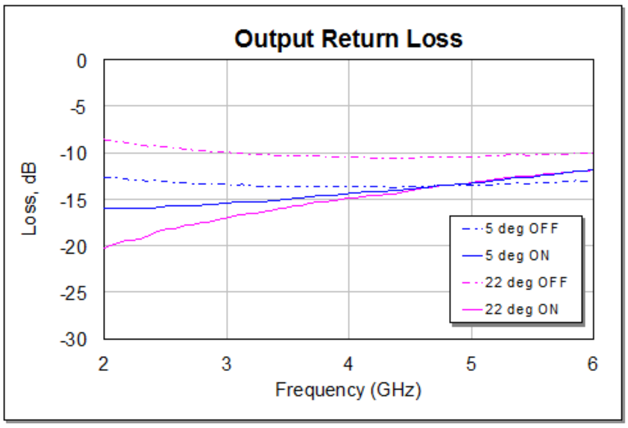
Measured Performance (On-wafer)

T=+25°C baseplate, V_{ctrl} = 0/-5V









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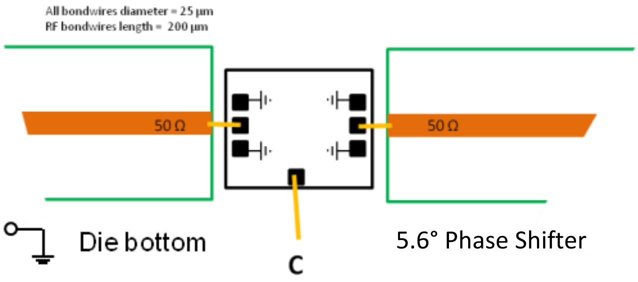
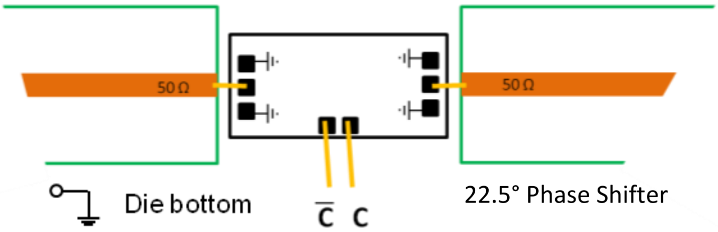
Recommended Absolute Maximum Ratings [1]

Parameter	Symbol	Value	Notes
Control Voltage (+)	V_{ctrl+}	+0.5 V	
Control Voltage (-)	V_{ctrl-}	-7 V	
Control Current	I_{ctrl}	100 µA	
RF Input Power	RF_{in}	27 dBm	
Junction Temperature	T_j	175°C	For maximum median device lifetime, T_j should be minimised
Storage Temperature	$T_{storage}$	-55 to 150°C	

[1] Operation outside these conditions may cause permanent damage to the device. Combination of maximum rating conditions may reduce the values. Device performance at these ratings is not implied.

Assembly & Bonding Diagram





	5.6°	22.5°
Engineering Die Size	2mm x 1mm	2mm x 1.5mm
Est. Production Die Size	0.9mm x 0.6mm	1.3mm x 0.6mm
Die Thickness	100µm	100µm
Minimum Bondpad Opening	70µm x 70µm	70µm x 70µm

Minimal length (0.15nH) are recommended for RF bondwires. The RF input and output ports are DC blocked.

GaAs devices are ESD sensitive and precautions should be observed during storage, handling, assembly and testing.