

# VRFS0008 - BD

## DC-20GHz GaAs pHEMT SPST SWITCH



www.viper-rf.com

### DATASHEET

Version 2.0



### KEY FEATURES:

- DC–20 GHz non-reflective SPST
- Low Insertion Loss: 0.6dB @ 10GHz
- High Isolation: 48dB @ 10GHz
- Size: 1.91mm X 0.7mm X 0.1mm
- Available as known good die

### DESCRIPTION:

The VRFS0008-BD is a DC – 20 GHz non-reflective output single-pole single throw switch for Defence and Instrumentation markets. It is manufactured on 0.5  $\mu\text{m}$  pHEMT GaAs process. The circuit demonstrates over 40 dB isolation across the band (50 dB at lower frequencies), with a low insertion loss of 0.8 dB. It is available as a bare die.

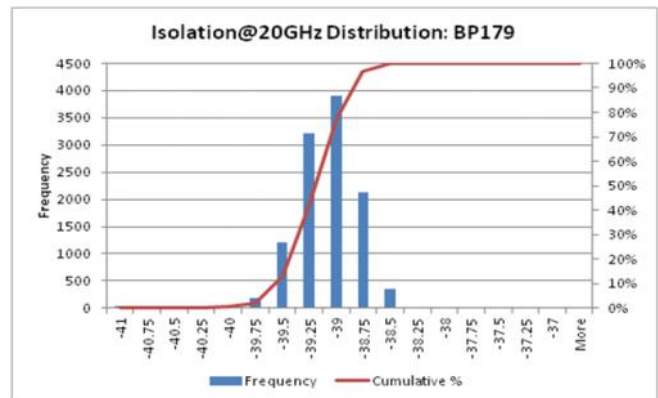
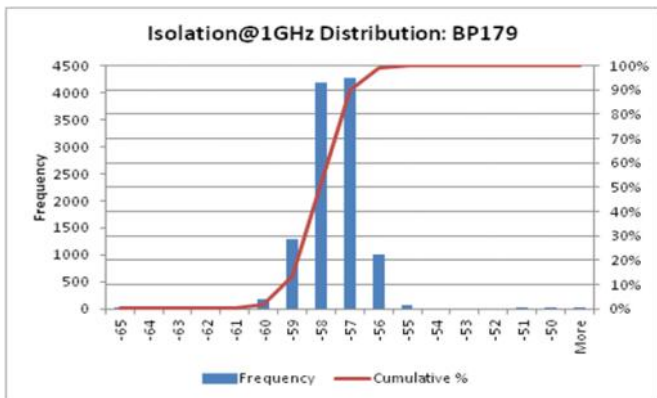
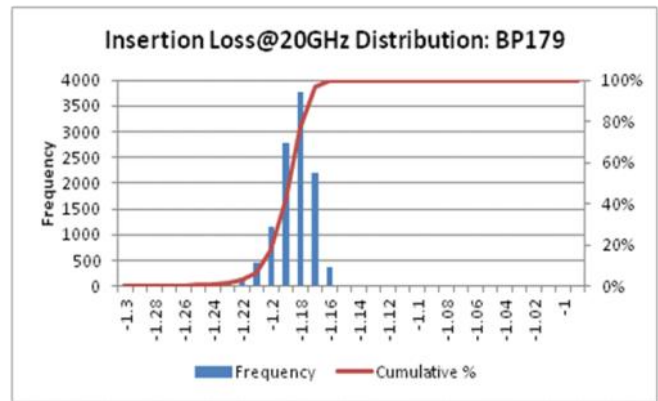
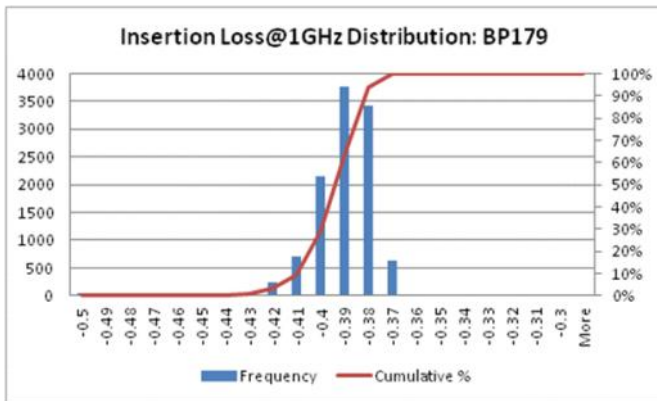
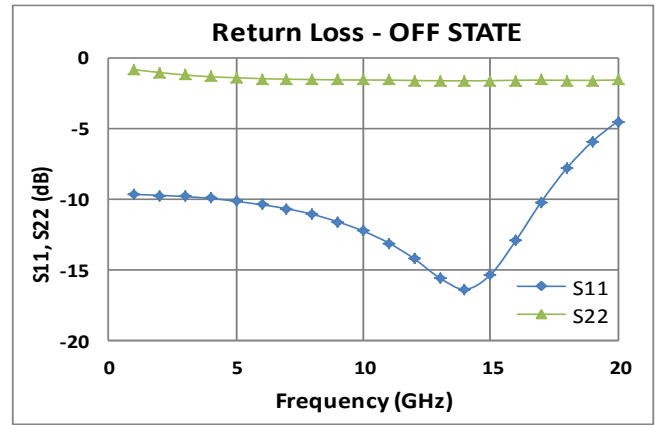
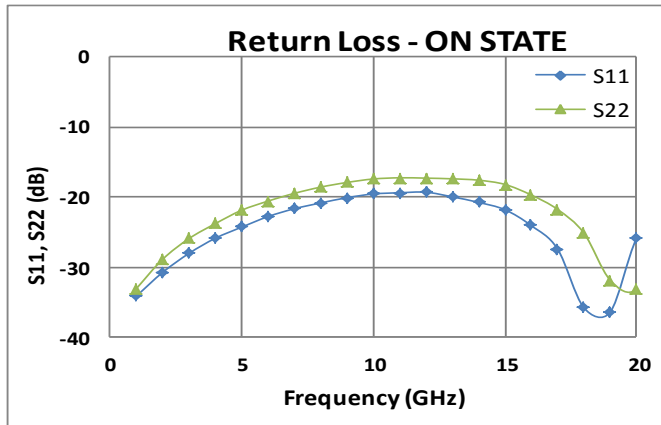
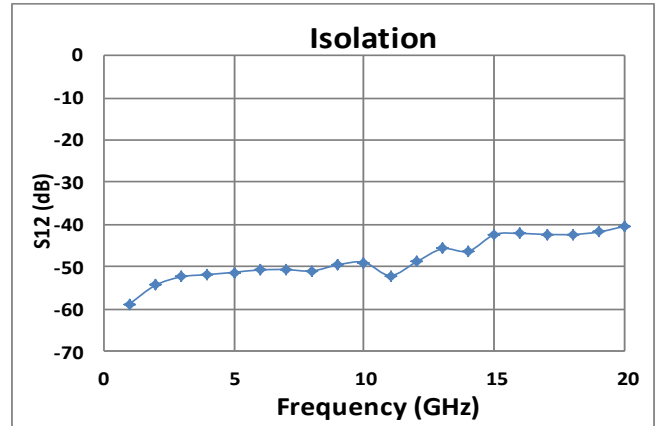
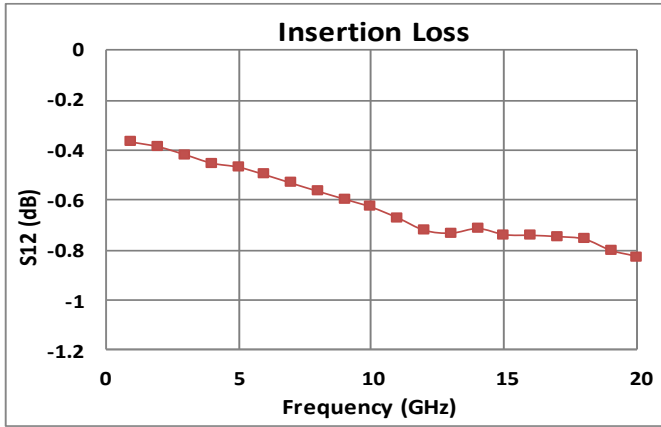
### ELECTRICAL SPECIFICATIONS:

Parameter	Specification			Unit	Condition
	Typ.@1GHz	Typ. @ 10GHz	Typ. @20GHz		
Insertion Loss	-0.4	-0.6	-1.1	dB	$f_0 = \text{DC} - 20\text{GHz}$
Isolation	-58	-48	-39	dB	$f_0 = \text{DC} - 20\text{GHz}$
I/P Return Loss	-33	-19	-26	dB	$f_0 = \text{DC} - 20\text{GHz}$ ON state
O/P Return Loss	-33	-17.3	-33	dB	$f_0 = \text{DC} - 20\text{GHz}$ RF1, RF2, ON state
	-9.6	-12.2	-5	dB	$f_0 = \text{DC} - 20\text{GHz}$ RF1, RF2, OFF state
Input power for 1dB compression		23		dBm	$f_0 = 0.5 - 20\text{GHz}$
Tr/Tf		<30		ns	$f_0 = \text{DC} - 20\text{GHz}$

**Notes :** Specifications at 25°C.  $V_{\text{ctrl}} = 0 \text{ V} / -5 \text{ V}$ .  $Z = 50 \Omega$ . For all RF specifications, reference plane is after bondwire at the inputs/output (see bonding diagram below)

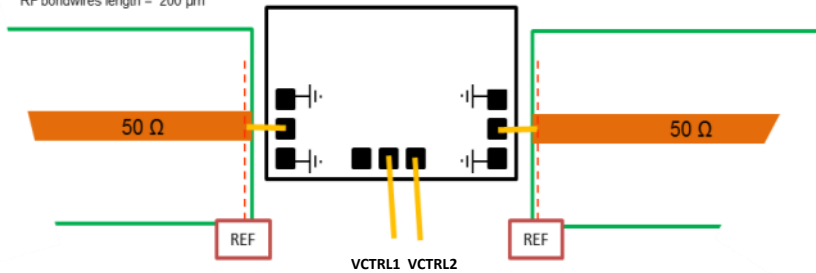
## MEASURED PERFORMANCE: (On-Wafer Measurements)

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



## CHIP ASSEMBLY AND BONDING DIAGRAM:

All bondwires diameter = 25  $\mu$ m  
RF bondwires length = 200  $\mu$ m



STATE	VCTRL1(V)	VCTRL2(V)
LOW LOSS	-5	0
ISOLATION	0	-5

Die Size	1.91mm x 0.7mm
Die Thickness	100 $\mu$ m
Minimum Bondpad opening	70 $\mu$ m x 70 $\mu$ m

Epoxy is recommended for die attach. Ribbon bonds of minimal length 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.

