VRFS0003 - BD

DC-20GHz GaAs pHEMT SP4T Switch

www.viper-rf.com

Version 0.2

Advance Information

Key Features:

- DC – 20 GHz reflective SP4T
- Insertion Loss — 2.7 dB
- High Isolation — 38 dB
- Size: 1.5 x 3 x 0.1 mm
- Available as a bare die

Description:

The VRFS0003-BD is a DC – 20 GHz reflective single-pole four-throw switch for Defence and Instrumentation markets. It is manufactured on 0.5 µm GaAs pHEMT process. The circuit demonstrates over 38 dB isolation across the band (52 dB at 10 GHz), with a insertion loss of 2.7 dB at 20 GHz. It is available as a bare die.

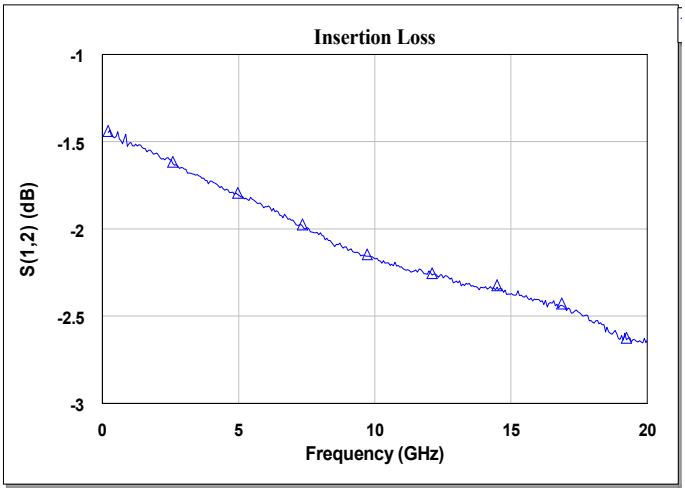
Electrical Specifications:

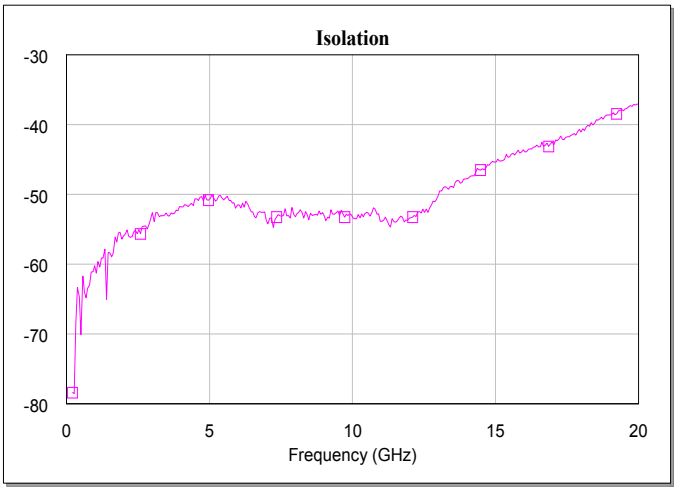
Parameter	Specification			Unit	Condition
	Typ @ 1GHz	Typ @ 10GHz	Typ @ 20GHz		
Insertion Loss	-1.5	-2.2	-2.7	dB	f_0= DC - 20GHz
Isolation	-62	-52	-38	dB	f_0= DC - 20GHz
I/P Return Loss	-18	-12	-14	dB	f_0= DC - 20GHz Any arm, ON state
O/P Return Loss	-18	-21	-13	dB	f_0= DC - 20GHz RF1, RF2, ON state
Input power for 1dB compression		23		dBm	f_0= 0.5 - 20GHz

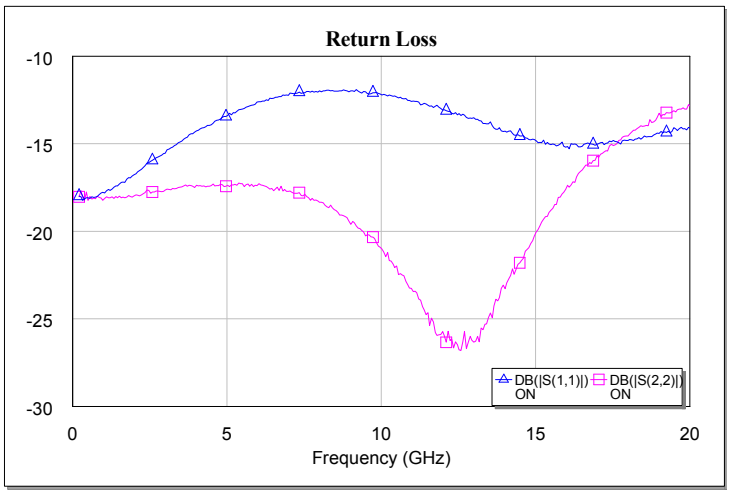
Notes: Specifications are at 25ºC, V_{ctrl} = 0 V / -5V, Z = 50 Ω , For all RF specifications, reference plane is at the bondpad

MEASURED PERFORMANCE: (On-Wafer Measurements)

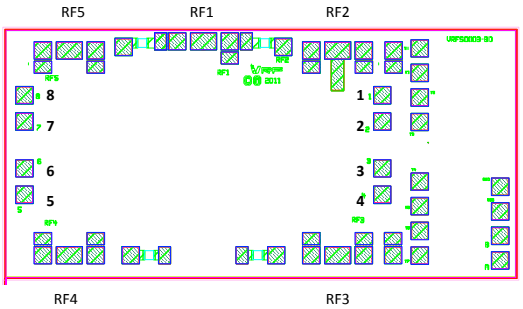
TA = 25°C, V_{CTRL} = - 5V (low) and 0V (high)







Die Padout and Truth Table:



Low Loss State	V1(V)	V2(V)	V3(V)	V4(V)	V5(V)	V6(V)	V7(V)	V8(V)
RF1-RF2	0	-5	0	-5	-5	0	0	-5
RF1-RF3	-5	0	-5	0	-5	0	0	-5
RF1-RF4	-5	0	0	-5	0	-5	0	-5
RF1-RF5	-5	0	0	-5	-5	0	-5	0