DATA SHEET

AS236-321: PHEMT GaAs IC High Power 4-CTL DPDT Switch DC–6 GHz

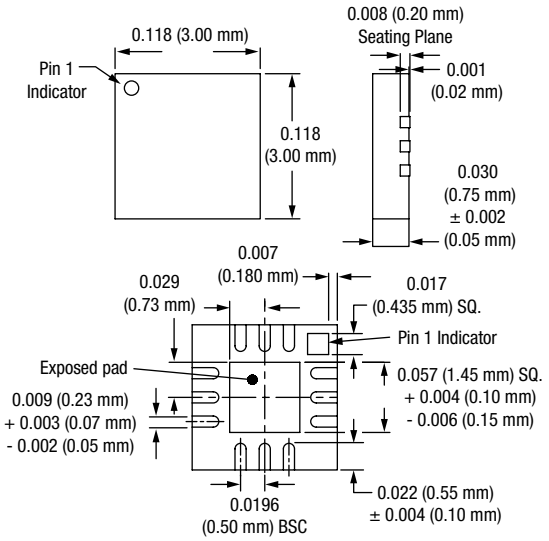
Features

- Application 802.11a (5.2–5.8 GHz) and 802.11b, (2.4 GHz) diversity
- Operating frequency DC–6 GHz
- Positive low voltage control (0/3 V operation)
- Low insertion loss, less than 1.2 dB, DC–6 GHz
- High linearity 57 dBm IIP3
- Miniature QFN-12 plastic package
- PHEMT process

Description

Skyworks' AS236-321 is a broadband DPDT switch designed to combine T/R and antenna diversity switching functions on a single IC. The device is designed to handle high power and maintain high linearity at low control voltages. This low cost switch is ideal for Wi-Fi systems and is capable of covering both the 2.4 GHz and 5 GHz bands.

QFN-12



Electrical Specifications at 25 °C (0, +3 V)

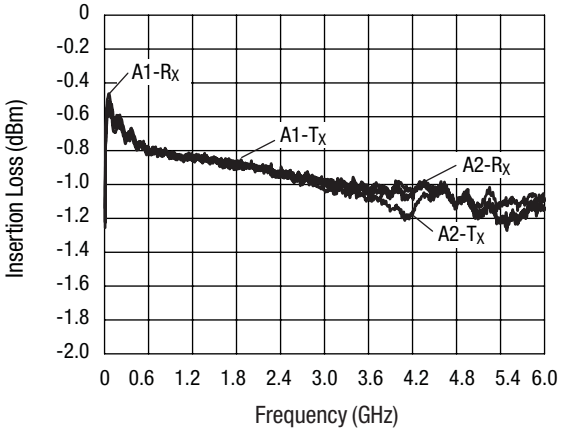
Parameter[1, 4]	Condition	Frequency	Min.	Typ.	Max.	Unit
Insertion loss[2]	Between any pair of ports	2.40–2.50 GHz 5.00–6.00 GHz		0.95 1.15	1.1 1.3	dB dB
Isolation	A1–T_X, A2–R_X, A2–T_X, or A1–R_X	2.40–2.50 GHz 5.00–6.00 GHz	20 13	22 15		dB dB
	A1–A2 or T_X–R_X	2.40–2.50 GHz 5.00–6.00 GHz	20 15	22 17		dB dB
Return loss[3]		2.40–2.50 GHz 5.00–6.00 GHz		24 18		dB dB

Operating Characteristics at 25 °C (0, +3 V)

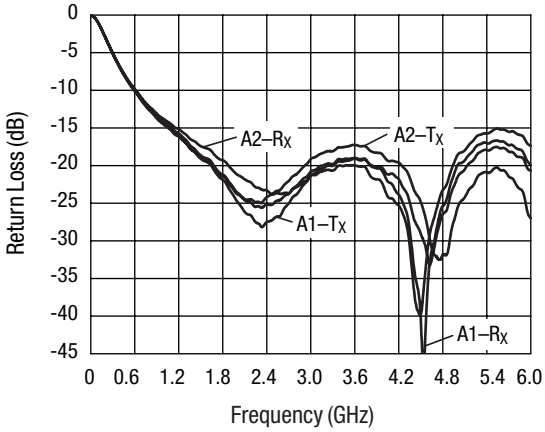
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics	Rise, fall (10/90% or 90/10% RF) On, off (50% CTL to 90/10% RF) Video feedthru			20 50 50		ns ns mV
IIP3	0/+3 V	2.4 GHz 5.2 GHz		57 56		dBm dBm
	0/+5 V	2.4 GHz 5.2 GHz		60 57		dBm dBm
$P_{1\ dB}$	0/+3 V	2.4–5.875 GHz		34		dBm
Gate leakage current	0/+3 V			10	50	µA
Control voltages			2.5	3.0	5.0	V

1. All measurements made in a 50 Ω system.
2. Insertion loss changes by 0.003 dB/C.
3. Return loss for insertion loss state.
4. T_X and R_X paths can be used interchangeably.

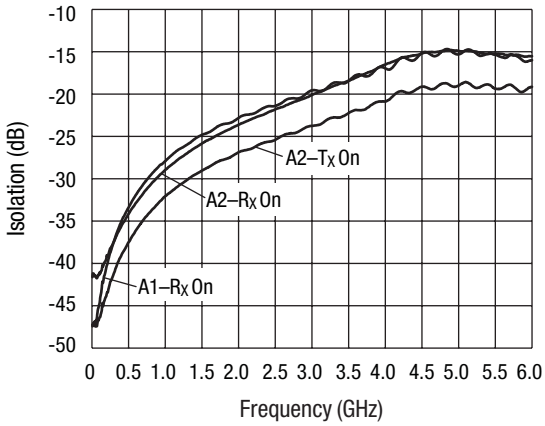
Typical Performance Data



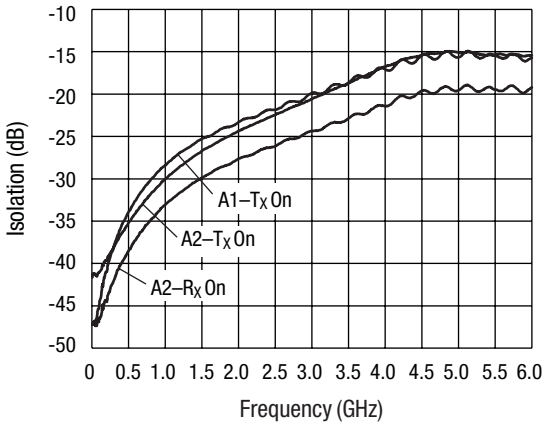
Insertion Loss vs. Frequency



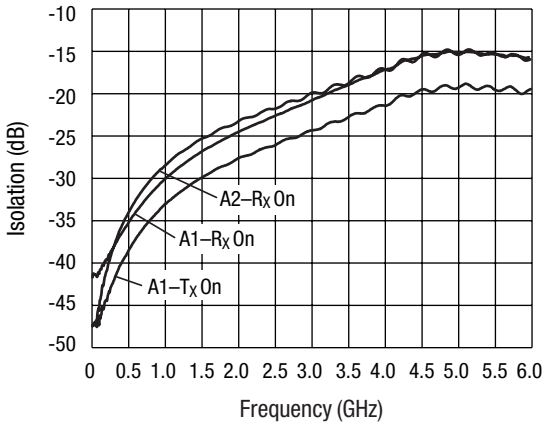
Return Loss vs. Frequency



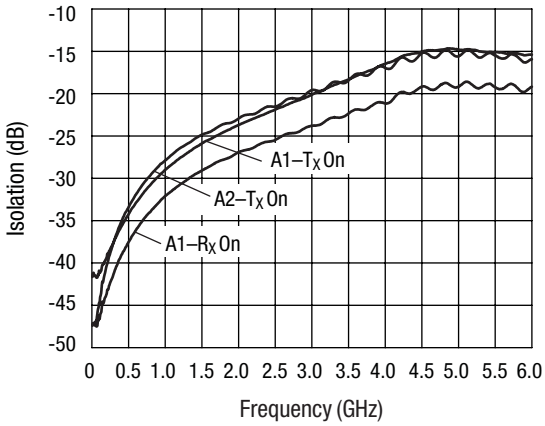
A1–T_X Path Isolation



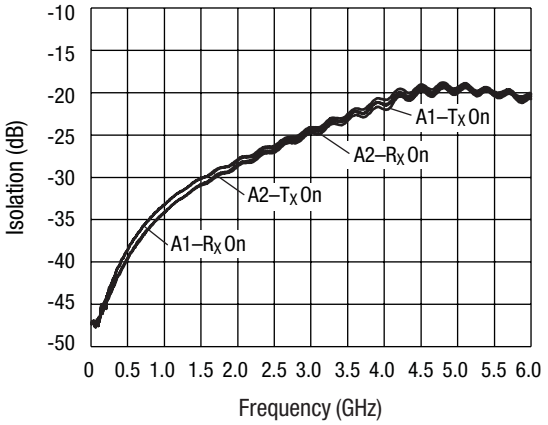
A1–R_X Isolation



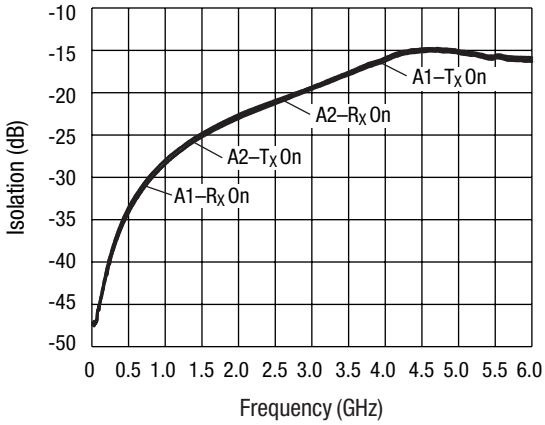
A2–T_X Isolation



A2–R_X Isolation

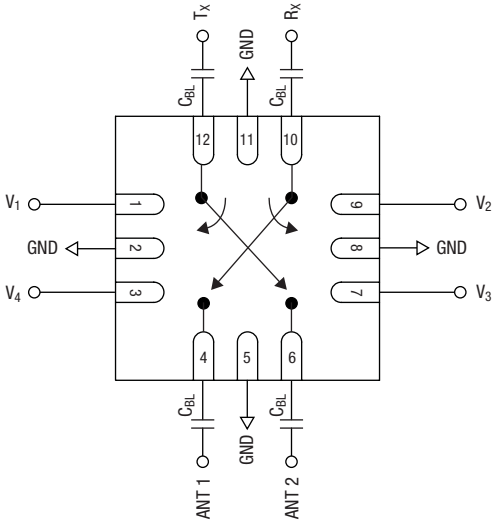


A1–A2 Isolation



T_X–R_X Isolation

Pin Out (Top View)



DC blocking caps (C_{BL}) must be supplied externally.
C_{BL} = 15 pF for operation > 2 GHz.

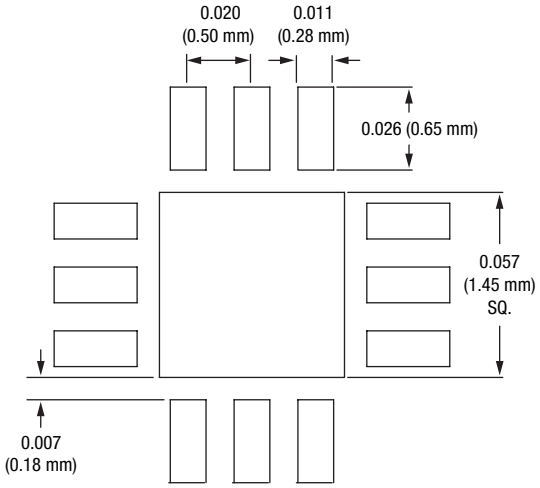
Absolute Maximum Ratings

Characteristic	Value
RF input power	+35 dBm > 500 MHz 0/+7 V control
Control voltage	-0.2 V, +8 V
Operating temperature	-40 °C to +85 °C
Storage temperature	-65 °C to +150 °C
Θ_{JC}	25 °C/W

Truth Table

V_1	V_2	V_3	V_4	A1–T_X	A2–R_X	A2–T_X	A1–R_X
1	0	0	0	IL	ISO	ISO	ISO
0	1	0	0	ISO	IL	ISO	ISO
0	0	1	0	ISO	ISO	IL	ISO
0	0	0	1	ISO	ISO	ISO	IL

Solder Land Pattern



Dimensions in inches (mm).