

DATA SHEET

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

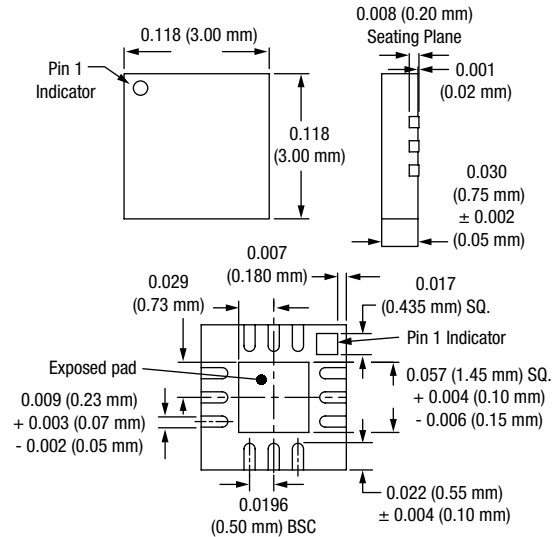
Features

- 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		0.95	1.1	dB
		5.00–6.00 GHz		1.15	1.3	dB
Isolation	A1–T _X , A2–R _X , A2–T _X , or A1–R _X	2.40–2.50 GHz	20	22		dB
		5.00–6.00 GHz	13	15		dB
	A1–A2 or T _X –R _X	2.40–2.50 GHz	20	22		dB
		5.00–6.00 GHz	15	17		dB
Return loss ⁽³⁾		2.40–2.50 GHz		24		dB
		5.00–6.00 GHz		18		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)			20		ns
	On, off (50% CTL to 90/10% RF)			50		ns
	Video feedthru			50		mV
IIP3	0/+3 V	2.4 GHz		57		dBm
		5.2 GHz		56		dBm
	0/+5 V	2.4 GHz		60		dBm
		5.2 GHz		57		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

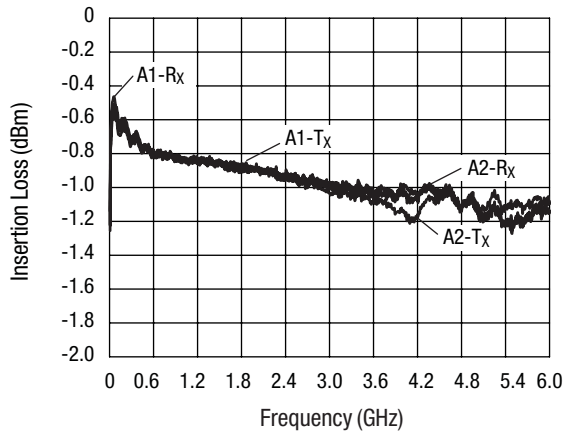
1. All measurements made in a 50 Ω system.

2. Insertion loss changes by 0.003 dB/C.

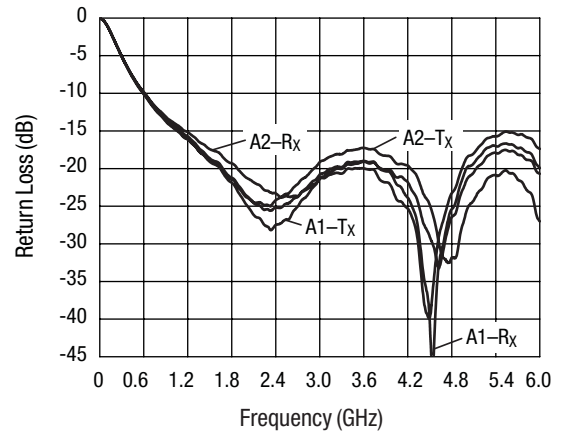
3. Return loss for insertion loss state.

4. T_X and R_X paths can be used interchangeably.

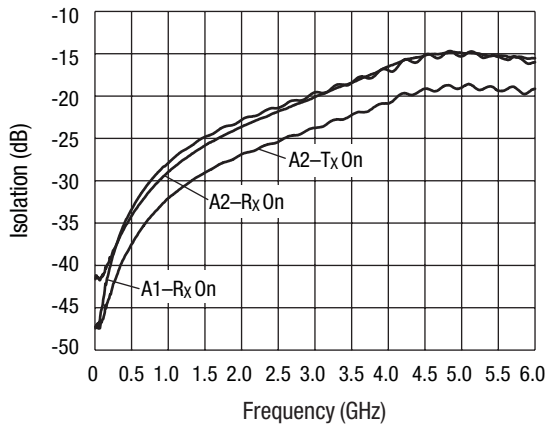
Typical Performance Data



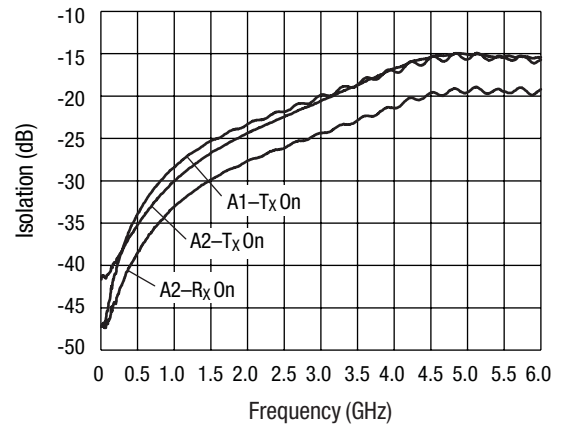
Insertion Loss vs. Frequency



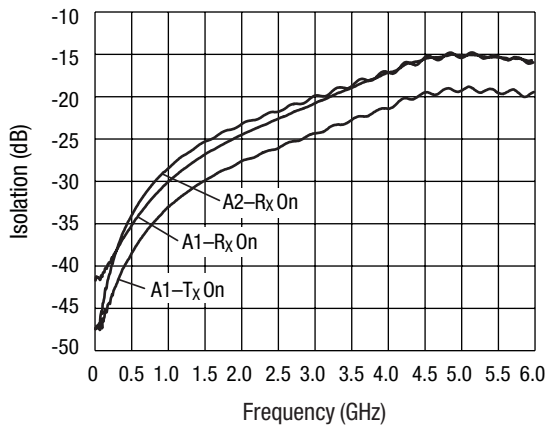
Return Loss vs. Frequency



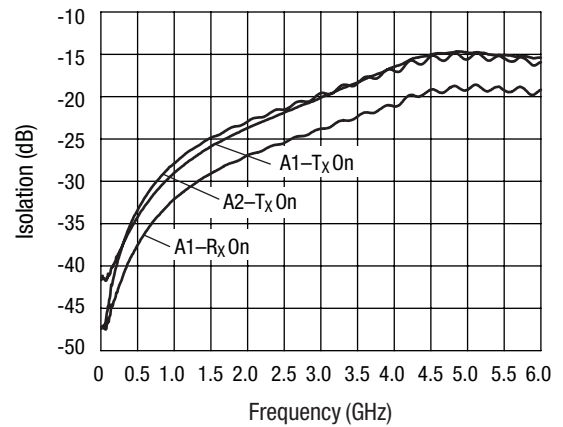
A1-Tx Path Isolation



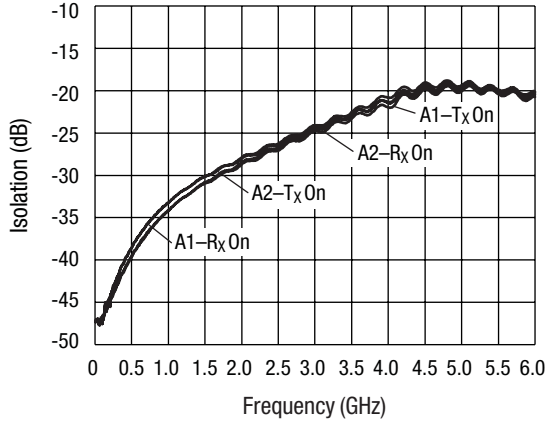
A1-Rx Isolation



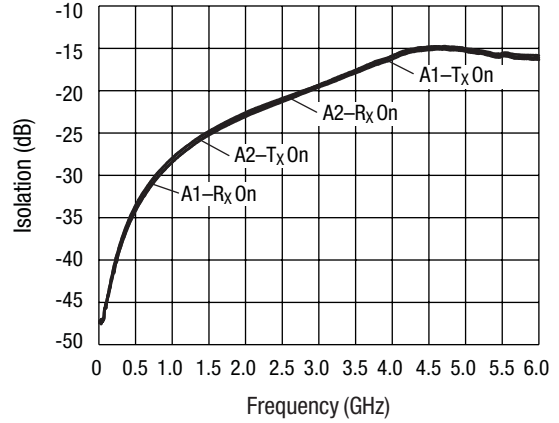
A2-Tx Isolation



A2-Rx Isolation

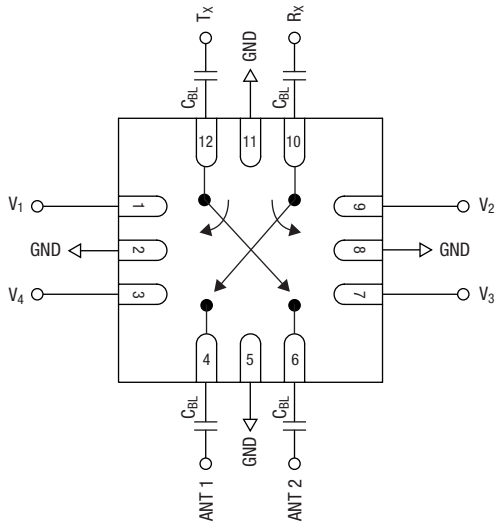


A1-A2 Isolation



Tx-Rx Isolation

Pin Out (Top View)

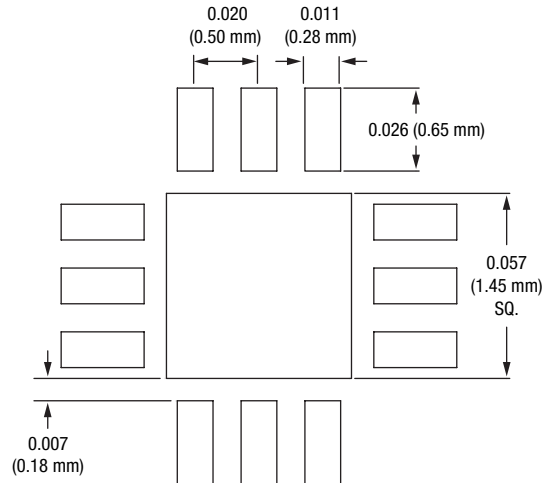


DC blocking caps (C_{BL}) must be supplied externally.
 $C_{BL} = 15 \text{ pF}$ for operation $> 2 \text{ GHz}$.

Truth Table

V_1	V_2	V_3	V_4	A1-Tx	A2-Rx	A2-Tx	A1-Rx
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).

Absolute Maximum Ratings

Characteristic	Value
RF input power	+35 dBm $> 500 \text{ MHz}$ 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