

DATA SHEET

AS218-321, AS218-321LF: PHEMT GaAs IC High-Power Transfer Switch 0.1–6 GHz

Applications

- WLAN 802.11a, b, g diversity

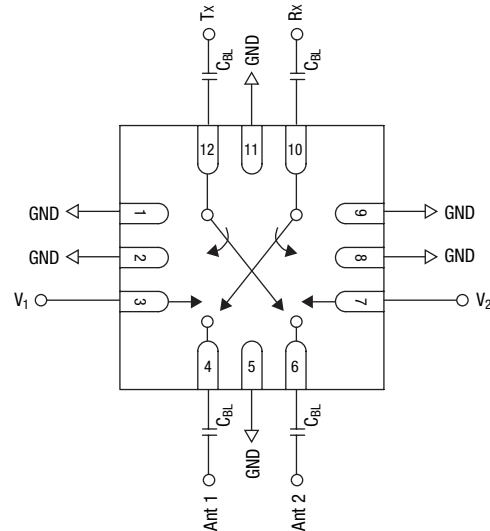
Features

- Operating frequency 0.1–6 GHz
- Positive low voltage control (0/3 V operation)
- Low insertion loss
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 250 °C per JEDEC J-STD-020

Description

The AS218-321 is a broadband transfer 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 and 5 GHz bands.

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.


Pin Out (Top View)


DC blocking capacitors (C_{BL}) required on RF ports.
 $C_{BL} = 15 \text{ pF}$.

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

Parameter ^(1, 4)	Condition	Frequency	Min.	Typ.	Max.	Unit
Insertion loss ⁽²⁾	Ant 1, Ant 2 to Tx, Rx	0.10–6.00 GHz		1.6	1.8	dB
		2.40–2.50 GHz		1.2	1.4	dB
		5.15–5.85 GHz		1.4	1.6	dB
Isolation	Ant 1, Ant 2 to Tx, Rx	0.10–6.00 GHz	17	19		dB
		2.40–2.50 GHz	26	28		dB
		5.15–5.85 GHz	17	19		dB
Return loss ⁽³⁾	Ant 1, Ant 2 to Tx, Rx	0.10–6.00 GHz		10		dB
		2.40–2.50 GHz		15		dB
		5.15–5.85 GHz		20		dB

1. All measurements made in a 50 Ω system.

2. Insertion loss changes by 0.003 dB/C.

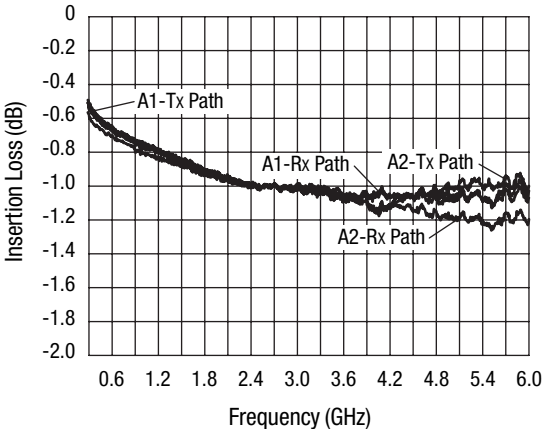
3. Return loss for insertion loss state.

4. Tx and Rx paths can be used interchangeably.

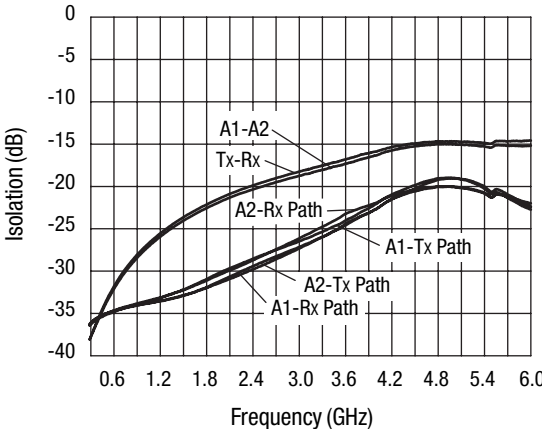
Operating Characteristics at 25 °C (0, 3 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
2nd and 3rd harmonic	23 dBm input @ 0,3 V	2–6 GHz		63		dBc
P ₁ dB		2–6 GHz		33		dBm
IIP3	20 dBm per tone	2–3 GHz		54		dBm
	22 dBm per tone	5–6 GHz		47		dBm
Thermal resistance				25		°C/W
Control voltages	V _{LOW} = 0–0.2 V @ 20 µA max. V _{HIGH} = 3–5 V @ 200 µA max.					

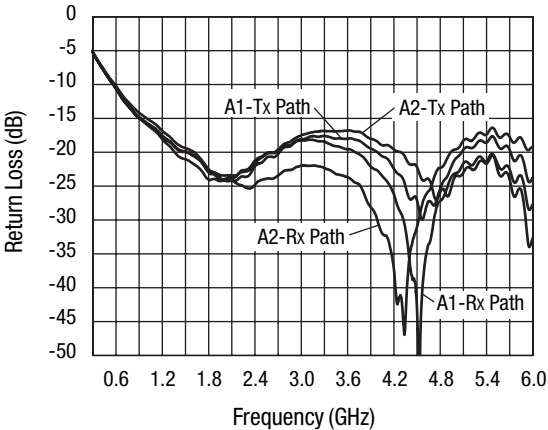
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



Return Loss vs. Frequency

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

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

CAUTION: Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

Truth Table

V ₁	V ₂	Insertion Loss Path
0	1	Ant 1 to Tx, Ant 2 to Rx
1	0	Ant 2 to Tx, Ant 1 to Rx
0	0	Allowed but not recommended
1	1	Allowed but not recommended

"1" = 3 to 5 V.
 "0" = 0 to 0.2 V.

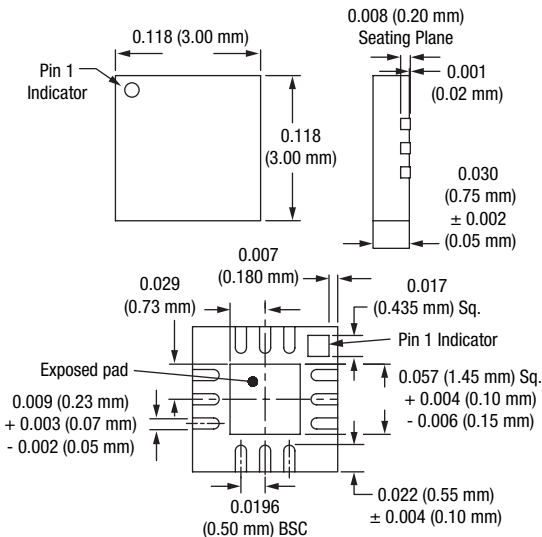
Recommended Solder Reflow Profiles

Refer to the ["Recommended Solder Reflow Profile"](#) Application Note.

Tape and Reel Information

Refer to the ["Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation"](#) Application Note.

QFN-12



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