

DATA SHEET

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

Applications

- WLAN 802.11a, b, g diversity

Features

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

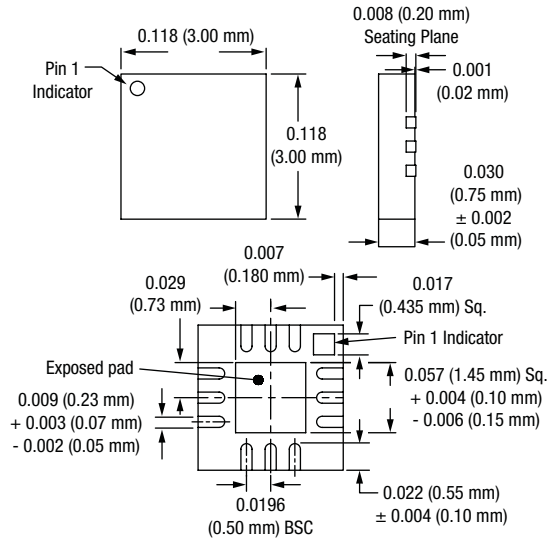
Description

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 “environmentally friendly” packaging that is RoHS compliant (European Parliament for the Restriction of Hazardous Substances).



QFN-12



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
Isolation	$V_1 = V_2$	0.10–6.00 GHz		6		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

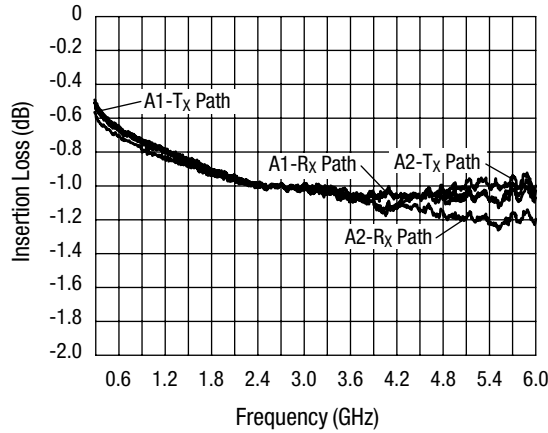
1. All measurements made in a 50 Ω system.
 2. Insertion loss changes by 0.003 dB/C.

3. Return loss for insertion loss state.
 4. TX and RX paths can be used interchangeably.

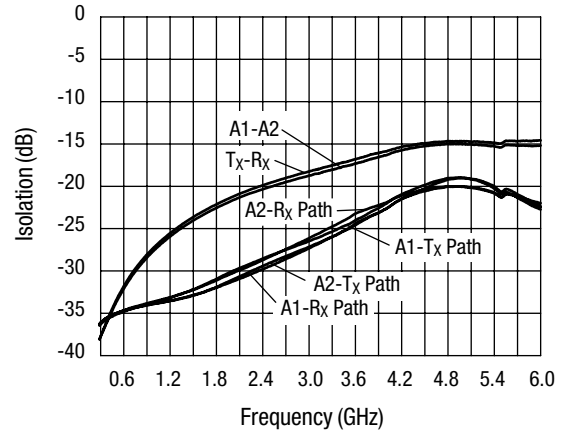
Operating Characteristics at 25 °C (0, +3 V)

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 22 dBm per tone	2–3 GHz 5–6 GHz		54 47		dBm
Control voltages	V _{LOW} = 0–0.2 V @ 20 μA max. V _{HIGH} = 3–5 V @ 200 μA max.					

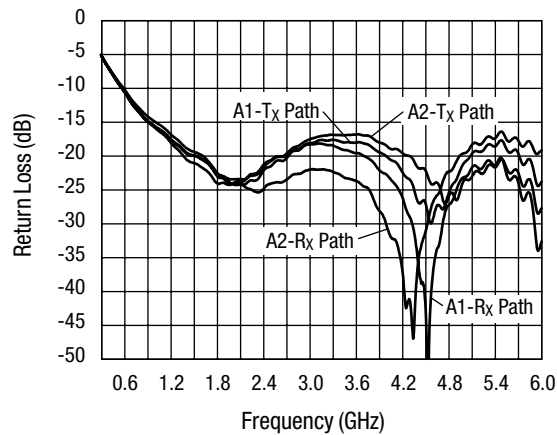
Typical Performance Data (0, +3 V)



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
Θ _{JC}	25 °C/W

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.

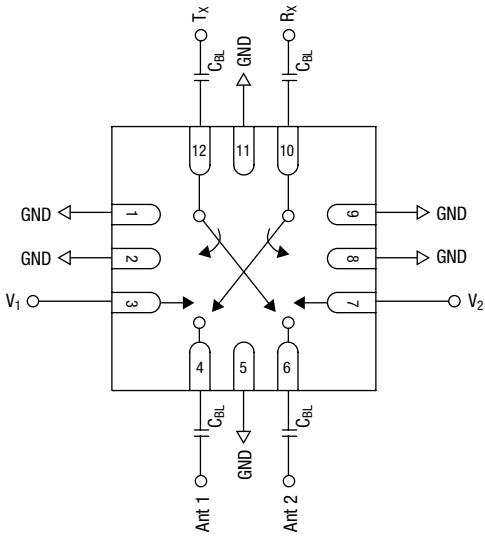
CAUTION: Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without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

Pin Out (Top View)



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

Copyright © 2002, 2003, 2004, Skyworks Solutions, Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions, Inc. ("Skyworks") products. These materials are provided by Skyworks as a service to its customers and may be used for informational purposes only by the customer. Skyworks assumes no responsibility for errors or omissions in these materials. Skyworks may make changes to its documentation, products, specifications and product descriptions at any time, without notice. Skyworks makes no commitment to update the information and shall have no responsibility whatsoever for conflicts, incompatibilities, or other difficulties arising from future changes to its documentation, products, specifications and product descriptions.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by or under this document. Except as may be provided in Skyworks Terms and Conditions of Sale for such products, Skyworks assumes no liability whatsoever in association with its documentation, products, specifications and product descriptions.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED OR OTHERWISE, RELATING TO SALE AND/OR USE OF SKYWORKS PRODUCTS INCLUDING WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. SKYWORKS FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THESE MATERIALS WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Skyworks products are not intended for use in medical, lifesaving or life-sustaining applications. Skyworks customers using or selling Skyworks products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

The following are trademarks of Skyworks Solutions, Inc.: Skyworks™, the Skyworks logo, and Breakthrough Simplicity™. Product names or services listed in this publication are for identification purposes only, and may be trademarks of Skyworks or other third parties. Third-party brands and names are the property of their respective owners. Additional information, posted at www.skyworksinc.com, is incorporated by reference.