

# PHEMT GaAs IC High Power Transfer Switch DC–6 GHz



AS218-000

## Applications

- WLAN 802.11a, b, g Diversity

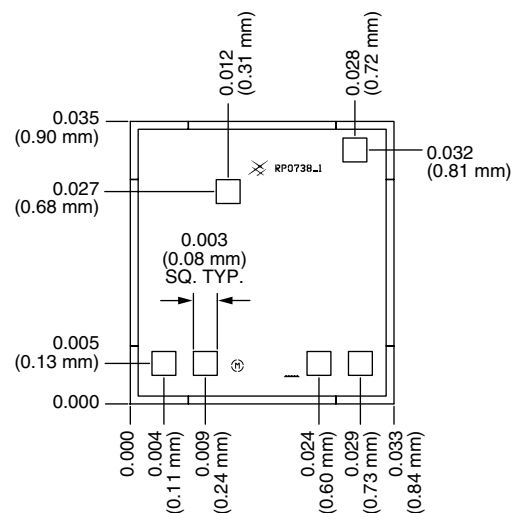
## Features

- Operating Frequency DC–6 GHz
- Positive Low Voltage Control (0/+3 V Operation)
- Low Insertion Loss
- PHEMT Process

## Description

The AS218-000 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.

## Outline Drawing



Dimensions in inches (mm).  
Chip thickness = 0.008 ± 0.001 (0.20 ± 0.025 mm).

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

Parameter <sup>1</sup>	Condition	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss <sup>2,4</sup>	Ant 1, Ant 2 to T <sub>X</sub> , R <sub>X</sub>	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 T <sub>X</sub> , R <sub>X</sub>	0.10–6.00 GHz	17	19		dB
		2.40–2.50 GHz	32	37		dB
		5.15–5.85 GHz	17	19		dB
Return Loss <sup>3</sup>	Ant 1, Ant 2 to T <sub>X</sub> , R <sub>X</sub>	0.10–6.00 GHz		10		dB
		2.40–2.50 GHz		15		dB
		5.15–5.85 GHz		20		dB

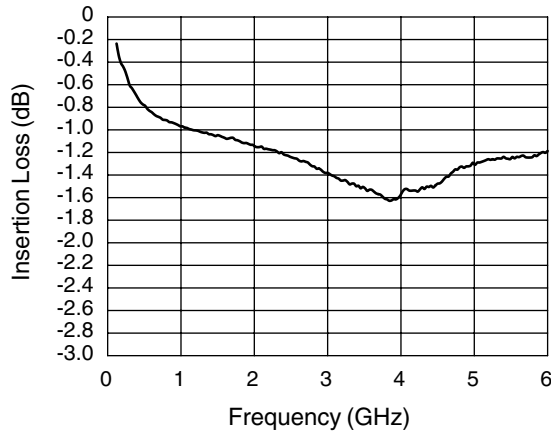
## Operating Characteristics at 25°C (0, +3 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
2nd and 3rd Harmonic	23 dBm Input @ 0, +3 V	2–6 GHz		63		dBc
P <sub>1</sub> 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
Control Voltages	V <sub>Low</sub> = 0–0.2 V @ 20 μA Max. V <sub>High</sub> = 3–5 V @ 200 μA Max.					

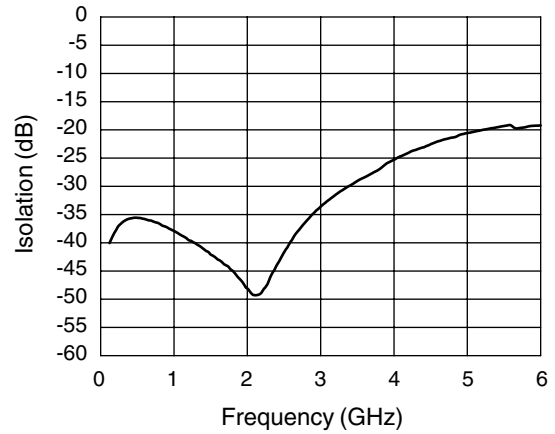
1. All measurements made in a 50 Ω system.  
2. Insertion loss changes by 0.003 dB/C.

3. Return loss for insertion loss state.  
4. T<sub>X</sub> and R<sub>X</sub> paths can be used interchangeably.

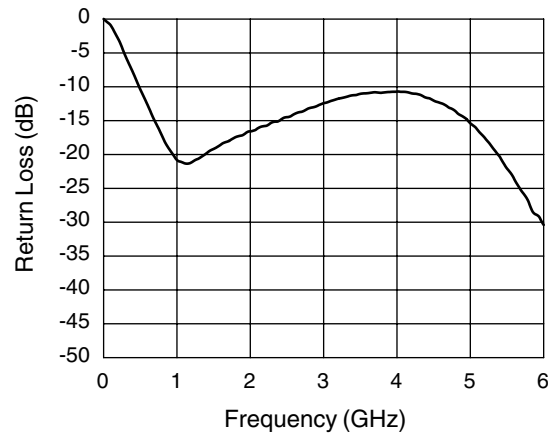
### Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency

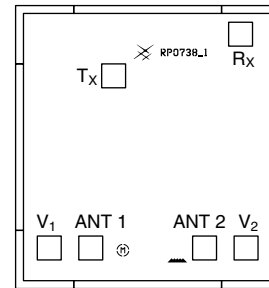


Isolation vs. Frequency



Return Loss vs. Frequency

### Pin Out (Top View)



DC blocking caps required on RF lines for positive voltage operation.  
 Bond pad metallization: gold.  
 Backside metallization: none.  
 Bond pad dimensions: 0.003 (0.075 mm) x 0.003 (0.075 mm).  
 See application note, Handling GaAs MMIC Die.

### Truth Table

V <sub>1</sub>	V <sub>2</sub>	Insertion Loss Path
0	1	Ant 1 to T <sub>X</sub> , Ant 2 to R <sub>X</sub>
1	0	Ant 2 to T <sub>X</sub> , Ant 1 to R <sub>X</sub>

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