PHEMT GaAs IC 1 W High Linearity 0.1–6 GHz SPDT Switch

AS225-313

Application

- WLAN 802.11a, b, g

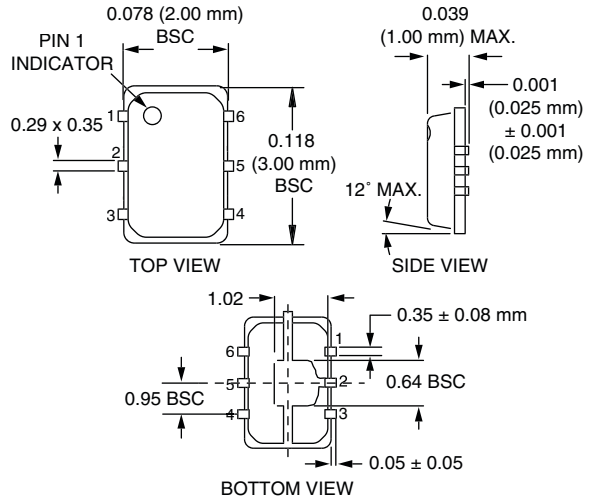
Features

- High Linearity 48 dBm IIP3
- High Power $P_{-1\ dB}$ > 32 dBm
- Low Positive Control Voltage 3 V

Description

The AS225-313 is a 0.1–6 GHz PHEMT GaAs switch. Designed for WLAN applications, this device is capable of switching 1 W microwave signals with 3 V control while maintaining high linearity performance. The switch covers the entire 802.11a, b, g frequency ranges. The low loss, high isolation, high linearity and low cost features make it ideal for wireless LAN systems.

QFN-6



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

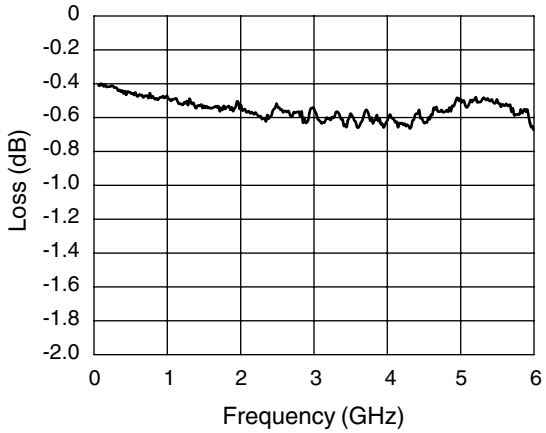
Parameter[1]	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss[2]	0.10–6.00 GHz		0.55	0.7	dB
	2.40–2.50 GHz		0.55	0.7	dB
	5.15–5.85 GHz		0.55	0.7	dB
Isolation	0.10–6.00 GHz	19	21		dB
	2.40–2.50 GHz	20	23		dB
	5.15–5.85 GHz	21	24		dB
Return Loss[3]	2.40–2.50 GHz		23		dB
	5.15–5.85 GHz		17		dB

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

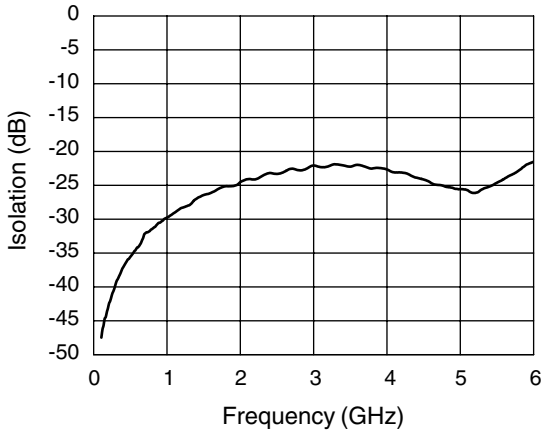
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[4]	Rise, Fall (10/90% or 90/10% RF)			20		ns
	On, Off (50% CTL to 90/10% RF)			50		ns
	Video Feedthru			50		mV
Input Power for -0.1 dB Compression	0/+3 V	2.4–5.8 GHz		+29		dBm
IIP3	0/+3 V	2.4–5.8 GHz		48		dBm
	0/+5 V	2.4–5.8 GHz		50		dBm
Control Voltages	V_{Low} = 0 to 0.2 V @ 20 µA Max. V_{High} = +2.5 V @ 100 µA Max. to +5 V @ 200 µA Max.					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes by 0.003 dB/°C.
3. Insertion loss state.
4. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

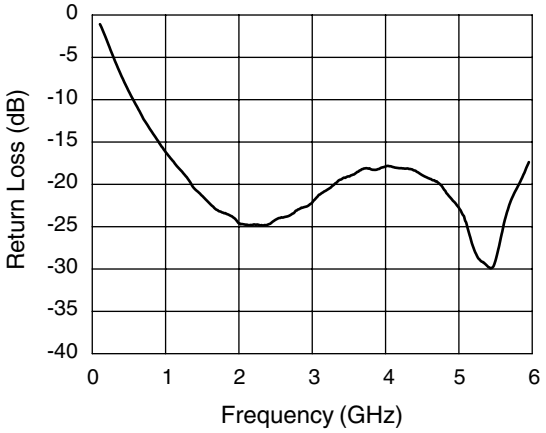
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency

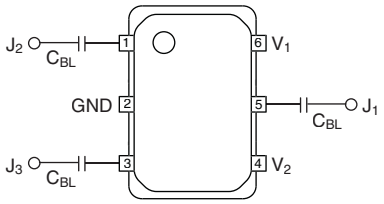


Isolation vs. Frequency



Return Loss vs. Frequency

Pin Out (Top View)



DC blocking capacitors (C_{BL}) must be supplied externally.
C_{BL} = 15 pF.

Truth Table

V_1	V_2	J_1–J_2	J_1–J_3
0	V_{High}	Isolation	Insertion Loss
V_{High}	0	Insertion Loss	Isolation

V_{High} = +2.5 to +5 V.