

PHEMT GaAs IC SPDT Switch DC–2.5 GHz



AS169-73

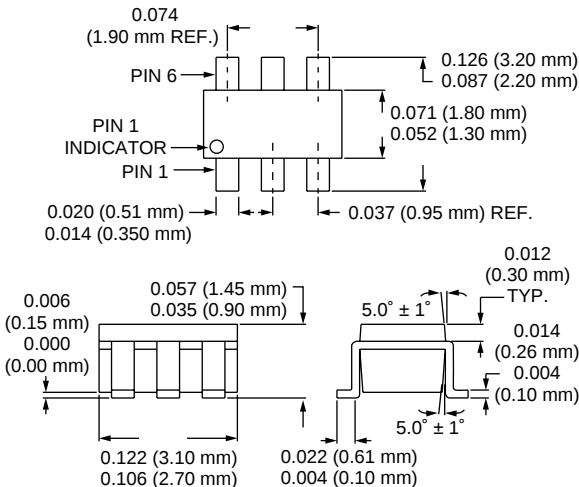
Features

- $P_{1\text{ dB}}$ +30 dBm Typical @ +3 V
- IP3 52 dBm Typical
- Low Insertion Loss (0.3 dB @ 0.9 GHz)
- Low DC Power Consumption
- Ultra Miniature Low Cost SOT-6 Plastic Package
- PHEMT Process

Description

The AS169-73 is an IC FET SPDT switch in a low cost SOT-6 plastic package. The AS169-73 features low insertion loss and positive voltage operation with very low DC power consumption. This general purpose switch can be used in a variety of telecommunications applications.

SOT-6



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

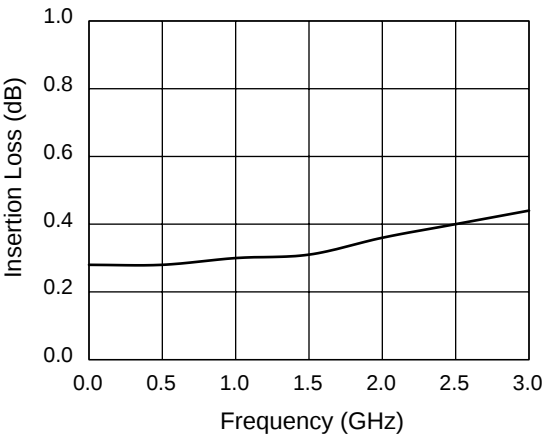
Parameter ¹	Frequency ²	Min.	Typ.	Max.	Unit
Insertion Loss ³	DC–1.0 GHz		0.3	0.4	dB
	DC–2.5 GHz		0.4	0.5	dB
Isolation	DC–1.0 GHz	22	25		dB
	DC–2.5 GHz	21	24		dB
VSWR ⁴	DC–1.0 GHz		1.15:1	1.25:1	
	DC–2.5 GHz		1.3:1	1.4:1	

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

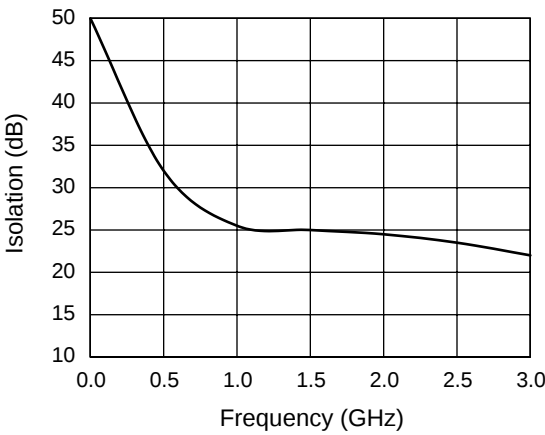
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics ⁵	Rise, Fall (10/90% or 90/10% RF)			10		ns
	On, Off (50% CTL to 90/10% RF)			20		ns
	Video Feedthru			25		mV
Input Power for 1 dB Compression	0/+3 V	0.5–2.5 GHz		30		dBm
	0/+5 V	0.5–2.5 GHz		35		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +5 dBm	0.5–2.5 GHz		52		dBm
Control Voltages	$V_{\text{Low}} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{\text{High}} = +3 \text{ V @ } 100 \mu\text{A Max. to } +5 \text{ V @ } 200 \mu\text{A Max.}$					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Insertion loss state.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

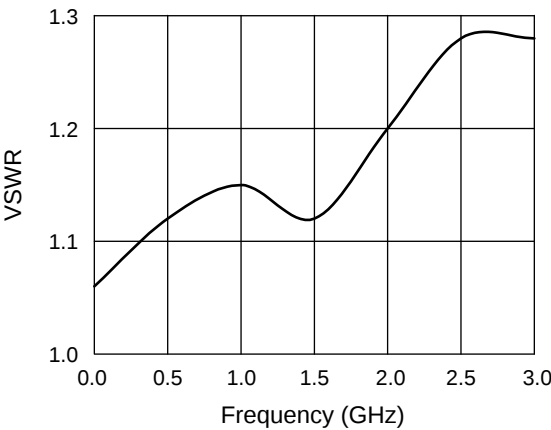
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

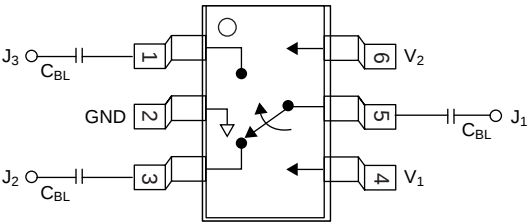
V ₁	V ₂	J ₁ –J ₂	J ₁ –J ₃
V _{High}	0	Isolation	Insertion Loss
0	V _{High}	Insertion Loss	Isolation

V_{High} = +3 to +5 V (V_S = V_{High} ± 0.2 V).

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2 W > 500 MHz 0/+7 V Control
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-50°C to +150°C
Θ _{JC}	25°C/W

Pin Out



DC blocking capacitors (C_{BL}) must be supplied externally for positive voltage operation.
C_{BL} = 100 pF for operation >500 MHz.