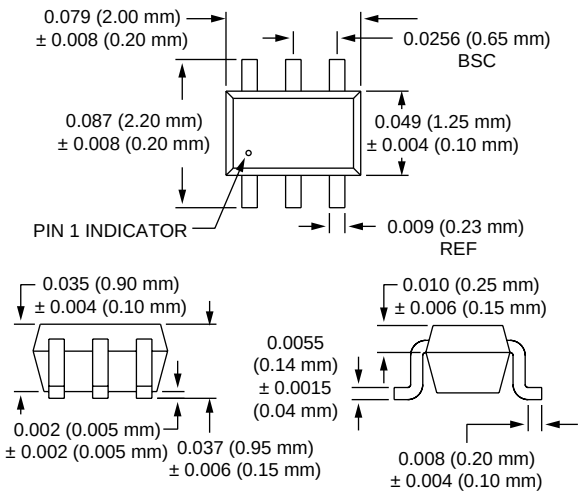
PHEMT GaAs IC SPDT Switch DC–3 GHz

AS179-92

Features

- $P_{1\ dB}$ +30 dBm Typical @ +3 V
- IP3 43 dBm Typical @ +3 V
- Low Insertion Loss (0.3 dB @ 0.9 GHz)
- Low DC Power Consumption
- Ultra Miniature SC-70 6 Lead Package
- PHEMT Process

SC-70 6 Lead



Description

The AS179-92 is an IC FET SPDT switch in a low cost miniature SC-70 6 lead plastic package. The AS179-92 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.

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

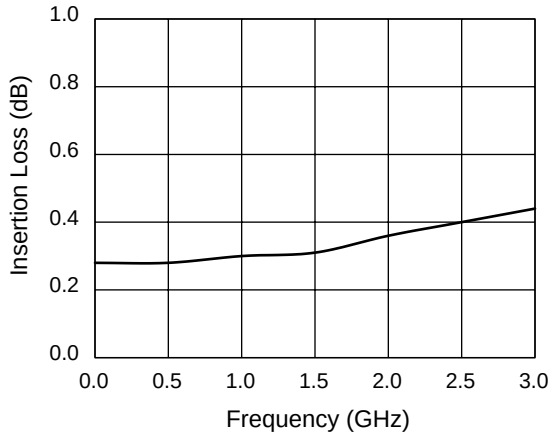
Parameter[1]	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]	DC–1.0 GHz DC–3.0 GHz		0.3 0.4	0.4 0.6	dB dB
Isolation	DC–1.0 GHz DC–2.0 GHz DC–3.0 GHz	22 22 20	25 25 23		dB dB dB
VSWR[4]	DC–1.0 GHz DC–2.0 GHz DC–3.0 GHz		1.2:1 1.2:1 1.3:1	1.4:1 1.4:1 1.4:1	

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

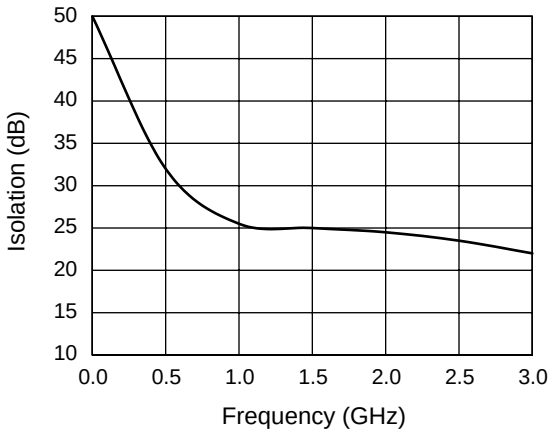
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[5]	Rise, Fall (10/90% or 90/10% RF) On, Off (50% CTL to 90/10% RF) Video Feedthru			10 20 25		ns ns mV
Input Power for 1 dB Compression	0/+3 V 0/+5 V	0.5–3.0 GHz 0.5–3.0 GHz		+30 +34		dBm dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +5 dBm 0/+3 V 0/+5 V	 0.5–3.0 GHz 0.5–3.0 GHz		 +43 +50		 dBm dBm
Control Voltages	V_{Low} = 0 to 0.2 V @ 20 µA Max. V_{High} = +3 V @ 100 µA Max. to +5 V @ 200 µA 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.

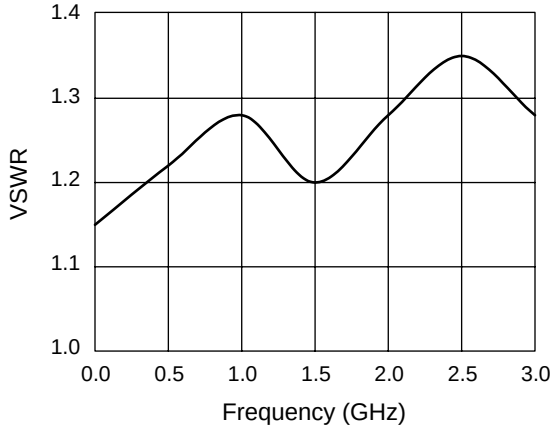
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

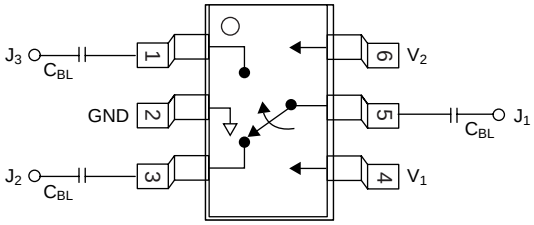
Characteristic	Value
RF Input Power	6 W > 500 MHz 0/+7 V Control
Control Voltage	-0.2 V, +8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ_{JC}	25°C/W

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.

Pin Out



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