

# PHEMT GaAs IC SPDT Switch DC–2.5 GHz

## AS183-92

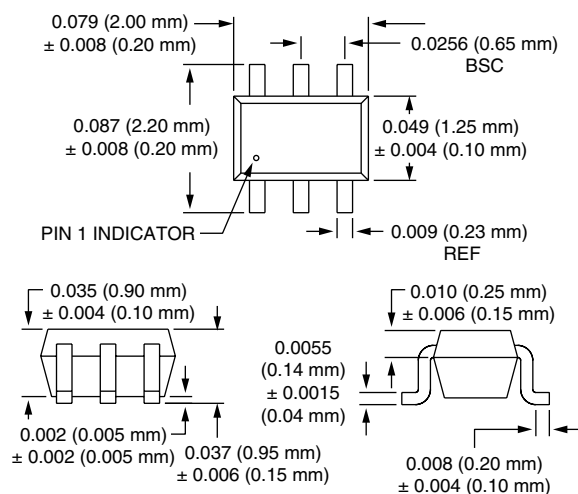
### Features

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

### Description

The AS183-92 is an IC FET SPDT switch in a very small SC-70 6 lead plastic package. The AS183-92 features low insertion loss and positive voltage operation with very low DC power consumption. This switch is suitable for handset applications.

### SC-70 6 Lead



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

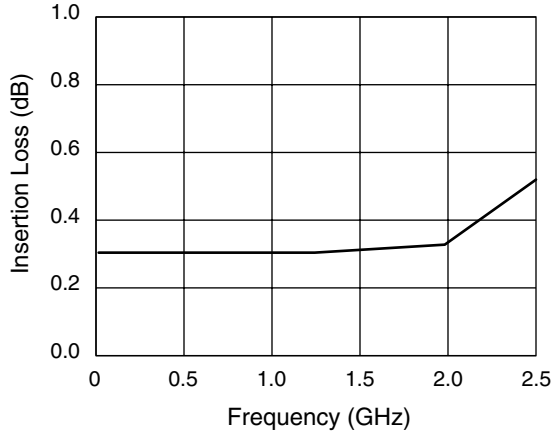
Parameter <sup>1</sup>	Frequency <sup>2</sup>	Min.	Typ.	Max.	Unit
Insertion Loss <sup>3</sup>	DC–1.0 GHz		0.30	0.4	dB
	DC–2.0 GHz		0.30	0.4	dB
	DC–2.5 GHz		0.55	0.6	dB
Isolation	DC–1.0 GHz	18	20		dB
	DC–2.0 GHz	12	14		dB
	DC–2.5 GHz	11	13		dB
VSWR <sup>4</sup>	DC–2.5 GHz		1.2:1	1.6:1	

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

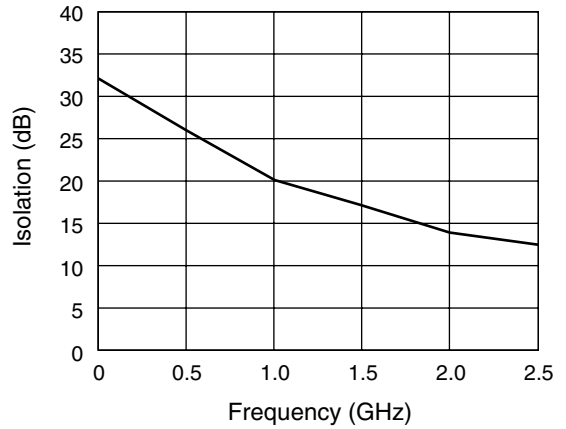
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>5</sup>	Rise, Fall (10/90% or 90/10% RF)			10		ns
	On, Off (50% CTL to 90/10% RF)			20		ns
	Video Feedthru			25		mV
Input Power for 1 dB Compression	0/+3 V	0.5–2.5 GHz		+30		dBm
	0/+5 V	0.5–2.5 GHz		+34		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +15 dBm					
	0/+3 V	0.5–2.5 GHz		+43		dBm
	0/+5 V	0.5–2.5 GHz		+50		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.

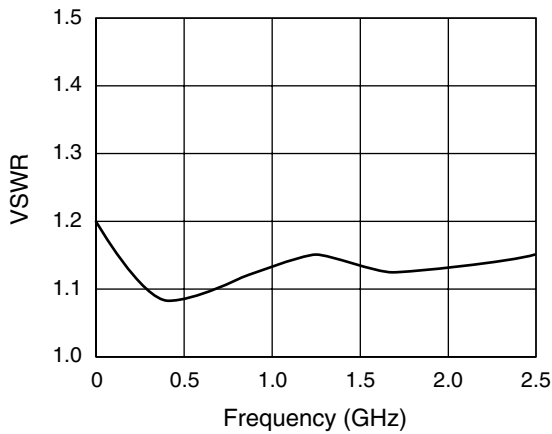
### Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

### Truth Table

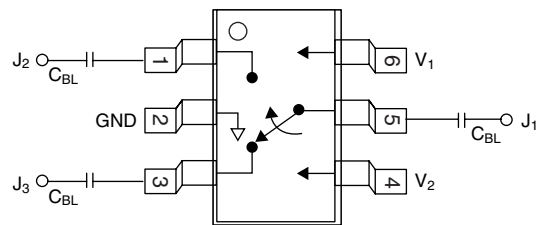
V <sub>1</sub>	V <sub>2</sub>	J <sub>1</sub> -J <sub>2</sub>	J <sub>1</sub> -J <sub>3</sub>
0	V <sub>High</sub>	Isolation	Insertion Loss
V <sub>High</sub>	0	Insertion Loss	Isolation

V<sub>High</sub> = +3 to +5 V.

### 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 <sub>JC</sub>	25°C/W

### Pin Out



DC blocking capacitors (C<sub>BL</sub>) must be supplied externally for positive voltage operation.  
C<sub>BL</sub> = 100 pF for operation >500 MHz.