

**DATA SHEET**

# AS213-92: PHEMT GaAs IC SPDT Switch 0.1–3 GHz

## Applications

- T/R switch in WLANs, Bluetooth® and medium power telecommunication applications

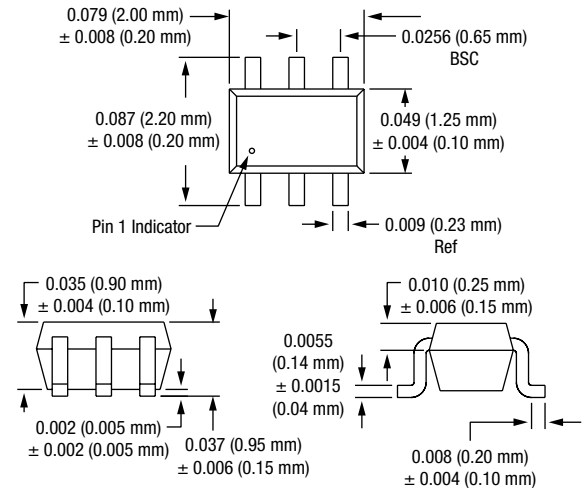
## Features

- Low insertion loss (0.4 dB @ 2.4 GHz)
- Isolation 22 dB @ 2.4 GHz
- Low DC power consumption
- PHEMT process
- Operates with 1.8 V control voltage

## Description

The AS213-92 is a medium power IC FET SPDT switch in a low cost miniature SC-70 6 lead plastic package. The AS213-92 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.

## SC-70 6 Lead



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

Parameter <sup>(1)</sup>	Frequency	Min.	Typ.	Max.	Unit
Insertion loss <sup>(2)</sup>	0.5–1.0 GHz		0.3	0.5	dB
	1.0–2.0 GHz		0.4	0.6	dB
	2.0–3.0 GHz		0.5	0.7	dB
Isolation	0.5–1.0 GHz	24	27		dB
	1.0–2.0 GHz	20	23		dB
	2.0–3.0 GHz	16	19		dB
VSWR <sup>(3)</sup>	0.5–1.0 GHz		1.3:1		
	1.0–3.0 GHz		1.4:1		

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics <sup>(4)</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/+1.8 V	0.5–3.0 GHz		+20		dBm
	0/+3.0 V	0.5–3.0 GHz		+27		dBm
Intermodulation intercept point (IP3)	For two-tone input power +5 dBm 0/+3.0 V	0.5–3.0 GHz		+40		dBm
Control voltages	$V_{LOW} = 0 \text{ to } 0.2 \text{ V @ } 20 \text{ } \mu\text{A max.}$ $V_{HIGH} = +2.7 \text{ V @ } 100 \text{ } \mu\text{A max. to } +5 \text{ V @ } 200 \text{ } \mu\text{A max.}$					

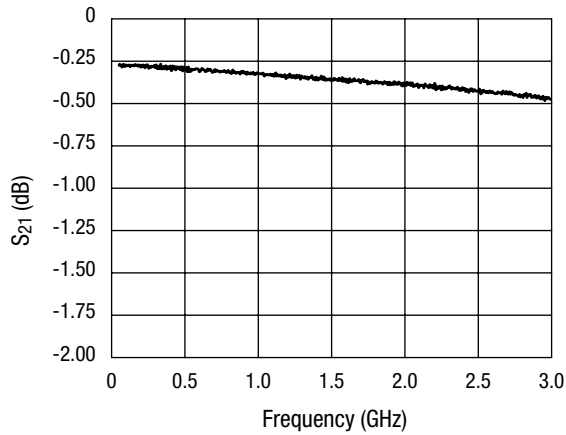
1. All measurements made in a 50 Ω system, unless otherwise specified.

2. Insertion loss changes by 0.003 dB/°C.

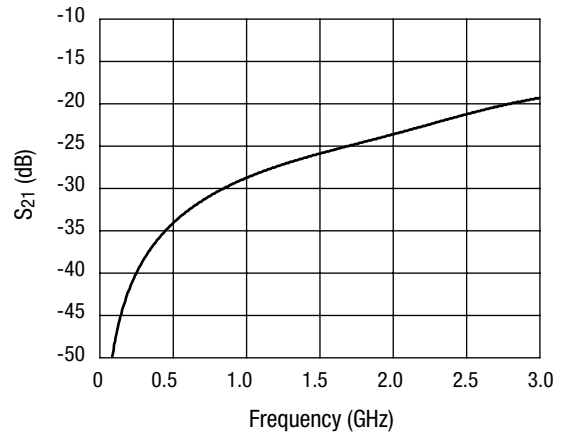
3. Insertion loss state.

4. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

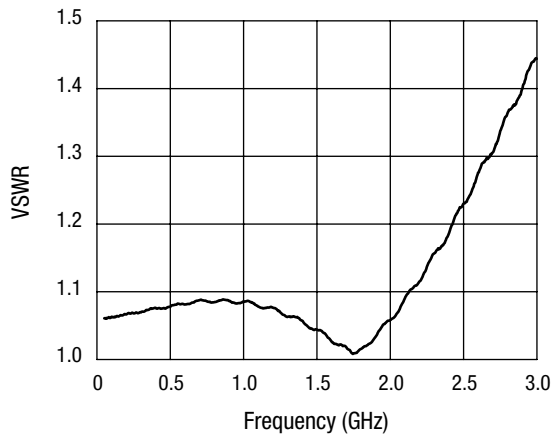
**Simulated Performance Data (0, +3 V)**



**Insertion Loss vs. Frequency**



**Isolation vs. Frequency**



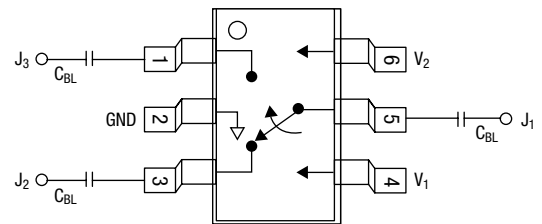
**VSWR vs. Frequency**

**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> = +2.7 to +5V.

**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.