

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

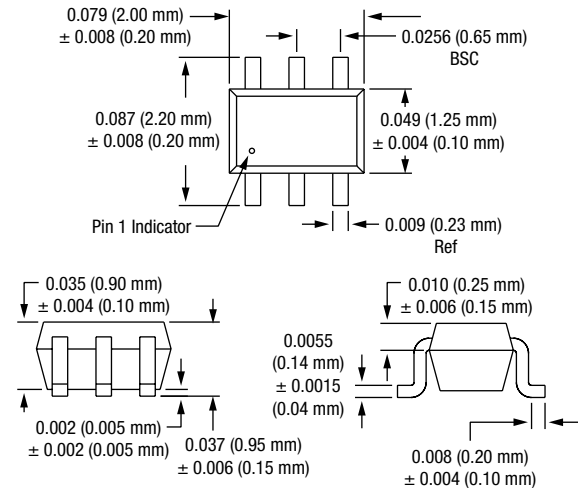
Features

- 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 ⁽¹⁾	Frequency	Min.	Typ.	Max.	Unit
Insertion loss ⁽²⁾	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 ⁽³⁾	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 ⁽⁴⁾	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	$V_{LOW} = 0 \text{ to } 0.2 \text{ V @ } 20 \text{ } \mu\text{A max.}$ $V_{HIGH} = +2.7 \text{ V @ } 100 \text{ } \mu\text{A max. to } +5 \text{ V @ } 200 \text{ } \mu\text{A max.}$					

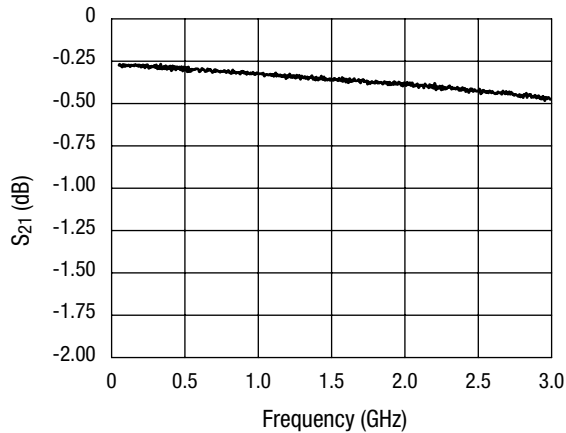
1. All measurements made in a 50 Ω system, unless otherwise specified.

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

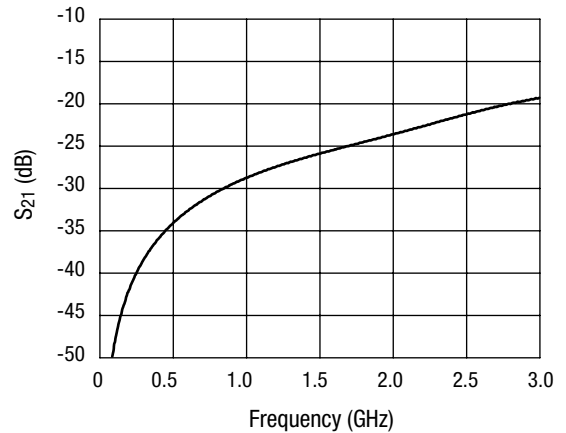
3. Insertion loss state.

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

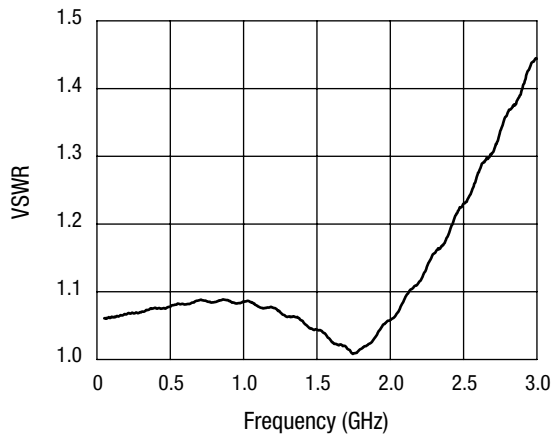
Simulated Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



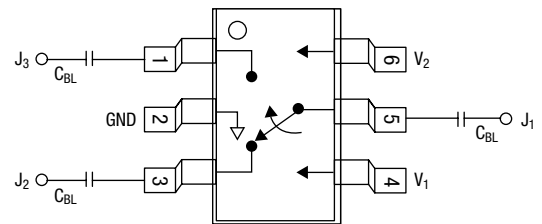
VSWR vs. Frequency

Truth Table

V 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} = +2.7 to +5V.

Pin Out



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