SKYWORKS™

DATA SHEET

AS214-92: PHEMT GaAs IC SPDT Switch 0.1–3 GHz

Applications

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

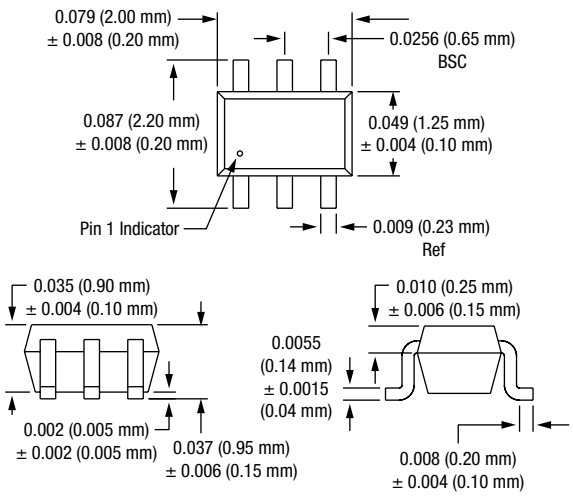
Features

- Low insertion loss (0.4 dB @ 2.4 GHz)
- Isolation 26 dB @ 2.4 GHz
- Low DC power consumption
- PHEMT process
- Operates at 1.8 V control voltage

Description

The AS214-92 is a medium power IC FET SPDT switch in a low cost miniature SC-70 6 lead plastic package. The AS214-92 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)

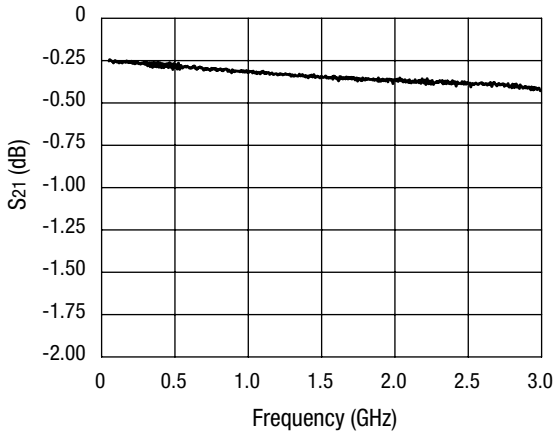
Parameter[1]	Frequency	Min.	Typ.	Max.	Unit
Insertion loss[2]	0.5–1.0 GHz		0.3	0.5	dB
	1.0–2.0 GHz		0.4	0.6	dB
	2.0–3.0 GHz		0.4	0.6	dB
Isolation	0.5–1.0 GHz	27	30		dB
	1.0–2.0 GHz	24	27		dB
	2.0–3.0 GHz	22	25		dB
VSWR[3]	0.5–1.0 GHz		1.1:1		
	1.0–2.0 GHz		1.1:1		
	2.0–3.0 GHz		1.4:1		

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

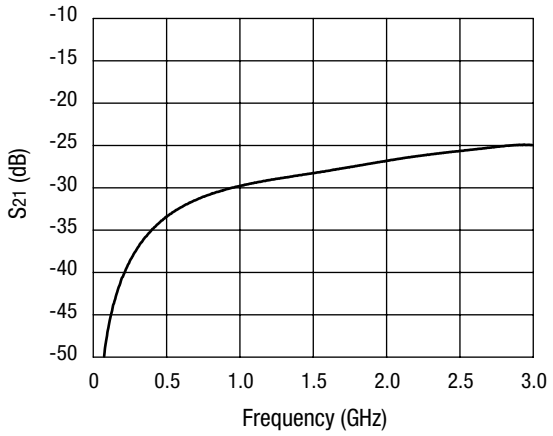
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics[4]	Rise, fall (10/90% or 90/10% RF)			10		ns
	On, off (50% CTL to 90/10% RF)			20		ns
	Video feedthru			25		mV
Input power for 1 dB compression	0/+1.8 V	0.5–3.0 GHz		+20		dBm
	0/+3.0 V	0.5–3.0 GHz		+27		dBm
Intermodulation intercept point (IP3)	For two-tone input power +5 dBm					
	0/+3 V	0.5–3.0 GHz		+40		dBm
Control voltages	V_{LOW} = 0 to 0.2 V @ 20 µA max.					
	V_{HIGH} = +2.7 V @ 100 µA max. to +5 V @ 200 µA 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.

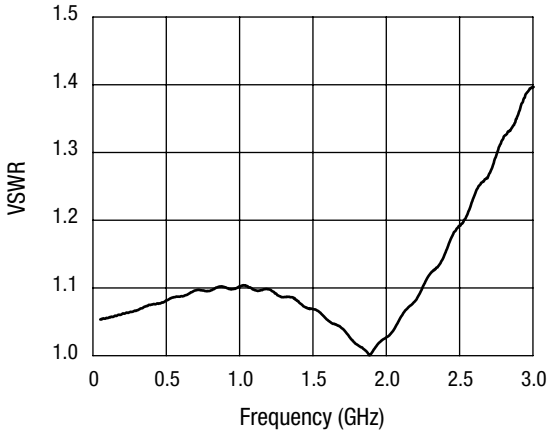
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency

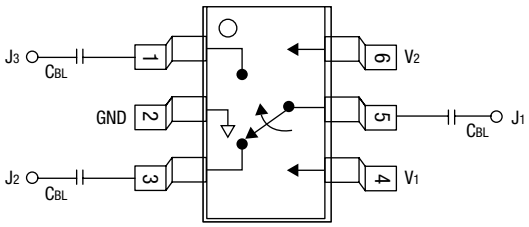


Isolation vs. Frequency



VSWR vs. Frequency

Pin Out



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

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} = +2.7 to +5 V.