



DATA SHEET

**AS222-92, AS222-92LF: PHEMT GaAs IC SPDT Switch
0.1 to 3 GHz**

Applications

- T/R switch for WLAN, Bluetooth® and medium-power telecommunication applications

Features

- Low insertion loss
- Isolation 22 dB @ 2.4 GHz
- Low DC power consumption
- Operates with 1.8 V control voltage
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Description

The AS222-92 is a medium-power IC FET SPDT switch in a low-cost miniature SC-70 6-lead plastic package.

The AS222-92 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.

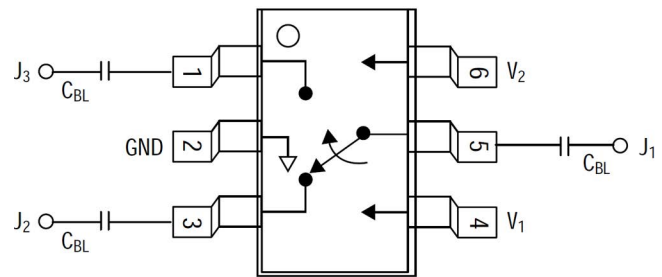


Figure 1. AS222-92, AS222-92LF Block Diagram

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

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.



Table 1. Electrical Specifications at 25 °C (0, 3 V)

Parameter(1)	Frequency	Min.	Typ.	Max.	Unit
Insertion loss(2)	0.1 to 1.0 GHz		0.35	0.5	dB
	1.0 to 2.4 GHz		0.45	0.6	
	2.4 to 3.0 GHz		0.50	0.7	
Isolation	0.1 to 1.0 GHz	24	27		dB
	1.0 to 2.4 GHz	19	22		
	2.4 to 3.0 GHz	16	18		
Return loss(3)	0.1 to 1.0 GHz		19		dB
	1.0 to 2.4 GHz		21		
	2.4 to 3.0 GHz		18		

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.

Table 2. Operating Characteristics at 25 °C (0, 3 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics Rise, fall On, off Video feedthru	10/90% or 90/10% RF 50% CTL to 90/10% RF $T_{RISE} = 1 \text{ ns}$, BW = 500 MHz				20 20 25	ns ns mV
Input power for 1 dB compression	$V_{CTL} = 0/1.8 \text{ V}$ $V_{CTL} = 0/3 \text{ V}$	0.5 to 3 GHz			20 27	dBm
Intermodulation intercept point (IP3)	For two-tone input power 5 dBm $V_{CTL} = 0/3 \text{ V}$	0.5 to 3 GHz			44	dBm
Thermal resistance				25		°C/W
Control voltage	$V_{CTL} = \text{High}$ $V_{CTL} = \text{Low}$		1.8 0		5.0 0.2	V
Control port current	$V_{CTL} = 5 \text{ V}$ $V_{CTL} = 2.5 \text{ V}$ $V_{CTL} = 0.2 \text{ V}$ $V_{CTL} = 0 \text{ V}$				200 100 20 20	μA

Table 3. Absolute Maximum Ratings¹

Characteristic	Value
RF input power	2 W max. > 500 MHz 0/8 V control
Supply voltage	8 V
Control voltage	-0.2 V, +8 V
Operating temperature	-40 °C to +85 °C
Storage temperature	-65 °C to +150 °C

¹Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

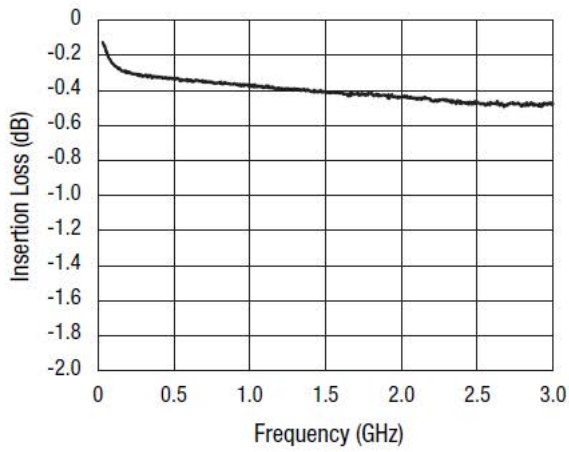
ESD HANDLING: Industry-standard ESD handling precautions must be adhered to at all times to avoid damage to this device.

Table 4. Truth Table

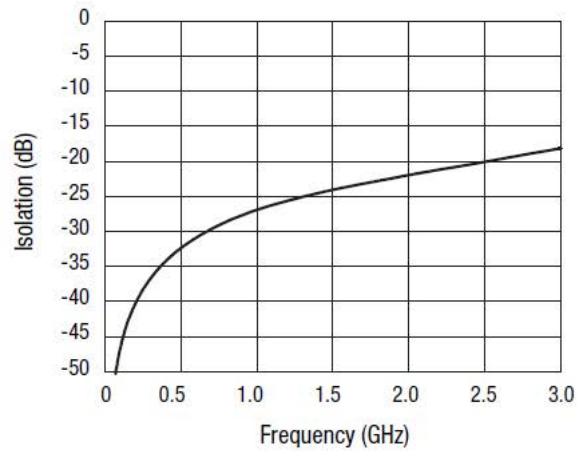
V1	V2	J1-J2	J1-J3
V_{HIGH}	0	Isolation	Insertion loss
0	V_{HIGH}	Insertion loss	Isolation

All other conditions not recommended.
 $V_{HIGH} = 1.8 \text{ to } 5 \text{ V}$.

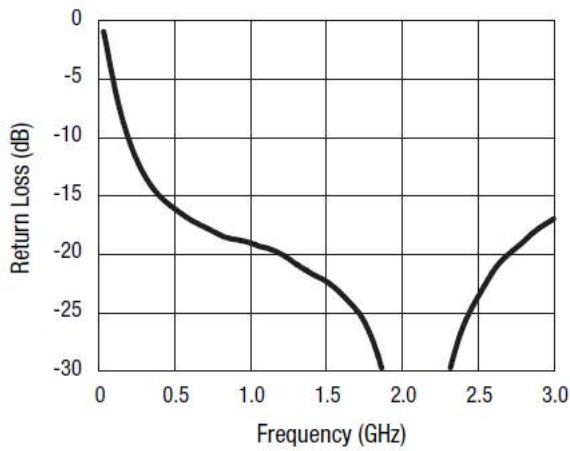
Typical Performance Data



Insertion Loss vs. Frequency



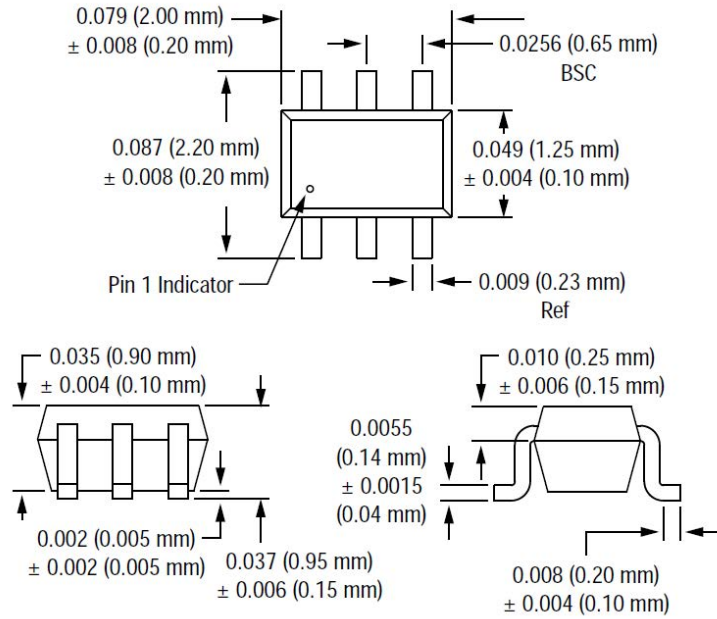
Isolation vs. Frequency



Return Loss vs. Frequency

Package Dimensions

SC-70 6-Lead



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