

DATA SHEET

AS179-92, AS179-92LF: PHEMT GaAs IC SPDT Switch DC–3 GHz

Applications

- General purpose medium power switches in telecommunication applications
- T/R switches in 802.11b, g WLAN Bluetooth™ systems

Features

- P₁ 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
- Ultra miniature SC-70 6 lead package
- PHEMT process
- Available lead (Pb)-free MSL-1 @ 250 °C per JEDEC J-STD-020

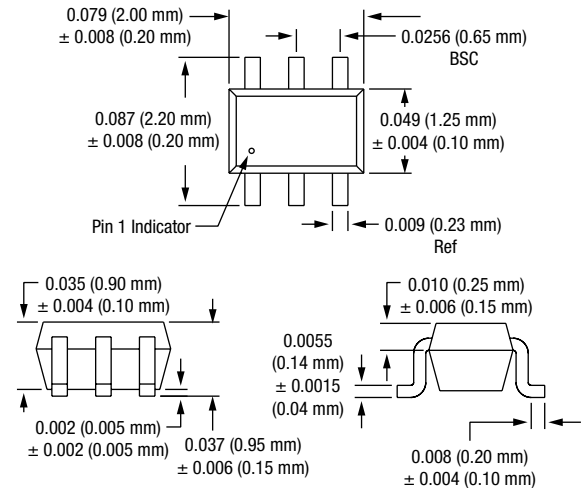
Description

The AS179-92 is an IC FET SPDT switch in a low cost miniature SC-70 6 lead plastic package. The AS179-92 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.

NEW Skyworks offers lead (Pb)-free “environmentally friendly” packaging that is RoHS compliant (European Parliament for the Restriction of Hazardous Substances).



SC-70 6 Lead



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

Parameter ⁽¹⁾	Frequency	Min.	Typ.	Max.	Unit
Insertion loss ⁽²⁾	300 kHz–1.0 GHz		0.3	0.4	dB
	1.0–2.0 GHz		0.4	0.5	dB
	2.0–3.0 GHz		0.4	0.6	dB
Isolation	300 kHz–1.0 GHz	22	25		dB
	1.0–2.0 GHz	22	25		dB
	2.0–3.0 GHz	20	23		dB
VSWR ⁽³⁾	300 kHz–1.0 GHz		1.2:1	1.4:1	
	1.0–2.0 GHz		1.2:1	1.4:1	
	2.0–3.0 GHz		1.3:1	1.45:1	

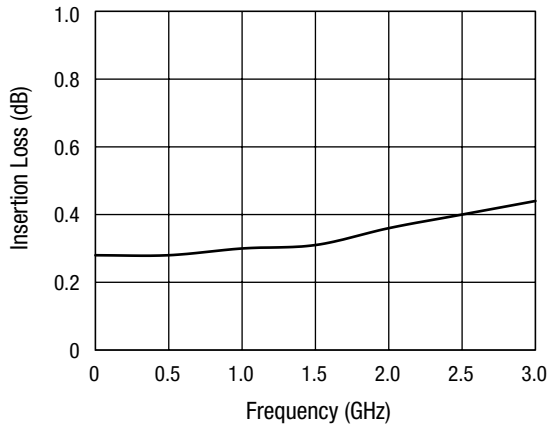
1. All measurements made in a 50 Ω system, unless otherwise specified.
 2. Insertion loss changes by 0.003 dB/°C.
 3. Insertion loss state.

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

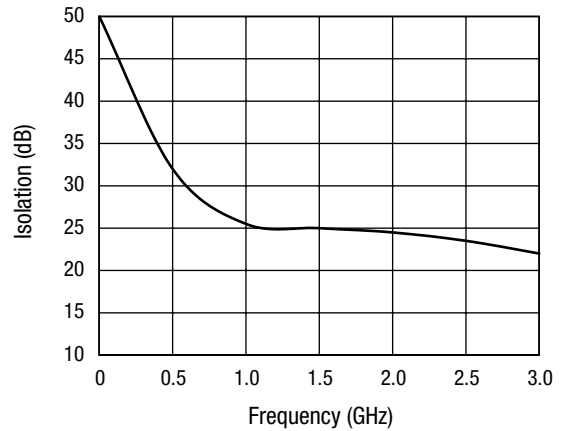
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics ⁽¹⁾	Rise, fall (10/90% or 90/10% RF)			10		ns
	On, off (50% CTL to 90/10% RF)			100		ns
	Video feedthru			25		mV
Input power for 1 dB compression	0/+3 V	0.5–3.0 GHz		+30		dBm
	0/+5 V	0.5–3.0 GHz		+34		dBm
Intermodulation intercept point (IP3)	For two-tone input power +5 dBm					
	0/+3 V	0.5–3.0 GHz		+43		dBm
	0/+5 V	0.5–3.0 GHz		+50		dBm
Control voltages	$V_{LOW} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A max.}$ $V_{HIGH} = +3 \text{ V @ } 100 \mu\text{A max. to } +5 \text{ V @ } 200 \mu\text{A max.}$					

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

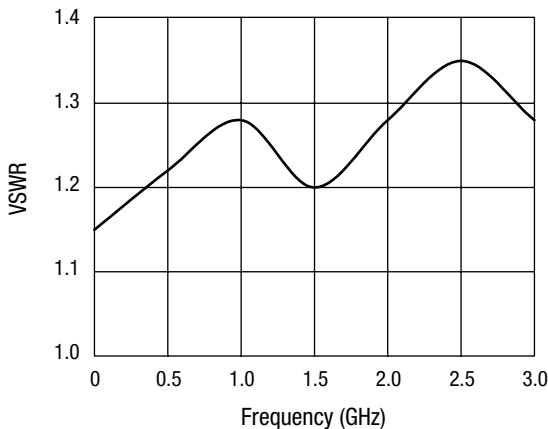
Typical Performance Data (0, +3 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

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_{JC}	25 °C/W

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

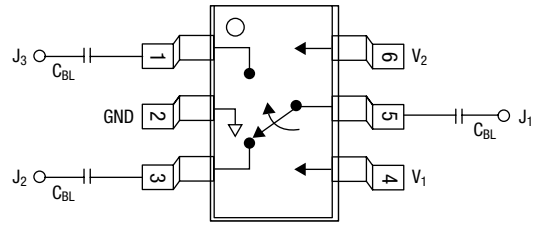
CAUTION: Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

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

$V_{HIGH} = +3$ to $+5$ V.

Pin Out



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