

PRELIMINARY DATA SHEET

AS183-92, AS183-92LF: PHEMT GaAs IC SPDT Switch 300 kHz–2.5 GHz

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
- Miniature SC-70 6-lead plastic package
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Description

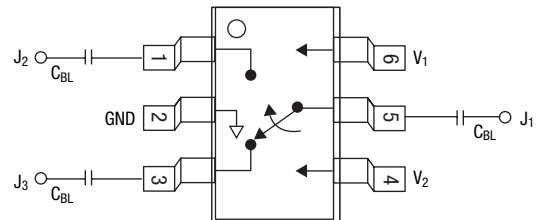
The AS183-92 is an IC FET SPDT switch in a very small SC-70 6-lead plastic package. The AS183-92 features low insertion loss and positive voltage operation with very low DC power consumption. This switch is suitable for handset applications.

NEW

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



Pin Out



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

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

Parameter ⁽¹⁾	Frequency	Min.	Typ.	Max.	Unit
Insertion loss ⁽²⁾	300 kHz–1.0 GHz		0.30	0.4	dB
	300 kHz–2.0 GHz		0.30	0.4	dB
	300 kHz–2.5 GHz		0.55	0.6	dB
Isolation	300 kHz–1.0 GHz	18	20		dB
	300 kHz–2.0 GHz	12	14		dB
	300 kHz–2.5 GHz	11	13		dB
VSWR ⁽³⁾	300 kHz–2.5 GHz		1.2:1	1.6:1	

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

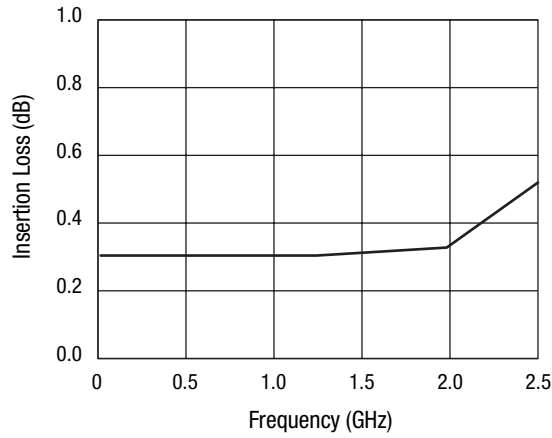
2. Insertion loss changes by 0.003 dB/°C.

3. Insertion loss state.

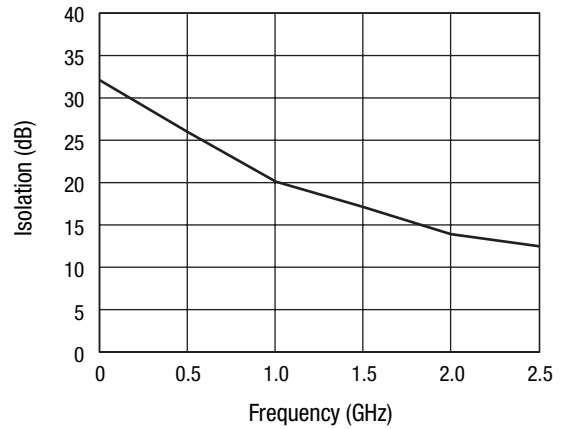
Operating Characteristics at 25 °C (0, 3 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF			10		ns
On, off	50% CTL to 90/10% RF			20		ns
Video feedthru	$T_{RISE} = 1 \text{ ns}$, BW = 500 MHz			25		mV
Input power for 1 dB compression	$V_{CTL} = 0/3 \text{ V}$	0.5–2.5 GHz		30		dBm
	$V_{CTL} = 0/5 \text{ V}$	0.5–2.5 GHz		34		dBm
Intermodulation intercept point (IP3)	For two-tone input power 15 dBm					
	$V_{CTL} = 0/3 \text{ V}$	0.5–2.5 GHz		43		dBm
	$V_{CTL} = 0/5 \text{ V}$	0.5–2.5 GHz		50		dBm
Thermal resistance				25		°C/W
Control voltages	$V_{LOW} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A max.}$ $V_{HIGH} = 3 \text{ V @ } 100 \mu\text{A max. to } 5 \text{ V @ } 200 \mu\text{A max.}$					

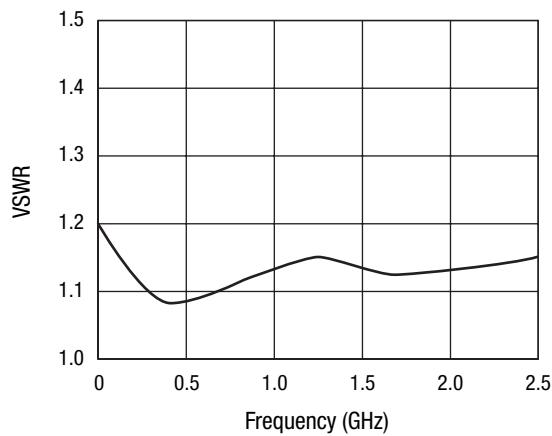
Typical Performance Data (0, 3 V)



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

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, ESD (Electrostatic Discharge) 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.

Recommended Solder Reflow Profiles

Refer to the [“Recommended Solder Reflow Profile”](#) Application Note.

Tape and Reel Information

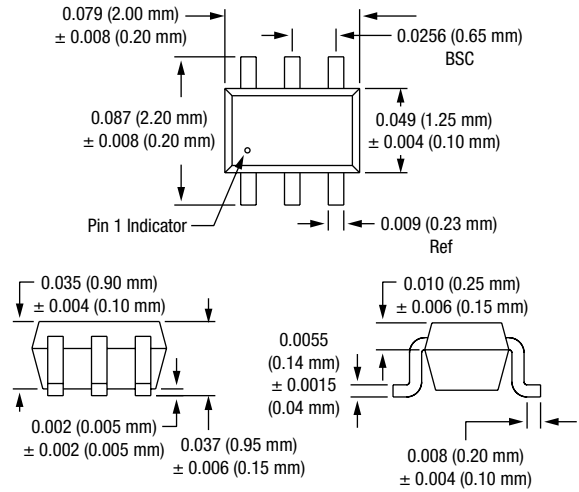
Refer to the [“Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation”](#) Application Note.

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

All other conditions not recommended.
V_{HIGH} = 3 to 5 V.

SC-70 6-Lead



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