

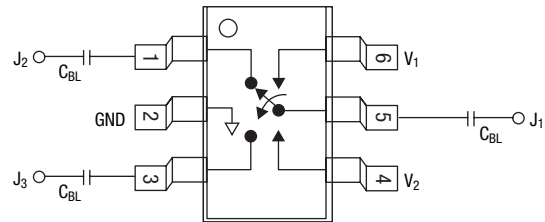
DATA SHEET

AS193-73, AS193-73LF: PHEMT GaAs IC High-Linearity 3 V Control SPDT Switch 0.1–2.5 GHz

Features

- 2.5 to 5 V linear operation
- Harmonics $H_2, H_3 > 65$ dBc @ $P_{IN} = 34.5$ dBm
- Low insertion loss (0.35 dB @ 0.9 GHz)
- High isolation (24 dB @ 0.9 GHz)
- Ultraminiature SOT-6 package
- PHEMT process
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Pin Out




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

Description

The AS193-73 is a PHEMT GaAs FET IC high-linearity SPDT switch in a SOT-6 plastic package. This switch has been designed for use where extremely high linearity, low control voltage, high isolation, low insertion loss and ultraminiature package size are required. It can be controlled with positive, negative or a combination of both voltages. Some standard implementations include antenna changeover, T/R and diversity switching over 3 W. The AS193-73 switch can be used in many analog and digital wireless communication systems including cellular, GSM and UMTS applications.

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



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

Parameter ⁽¹⁾	Frequency	Min.	Typ.	Max.	Unit
Insertion loss ⁽²⁾	0.1–0.5 GHz		0.30	0.4	dB
	0.5–1.0 GHz		0.35	0.5	dB
	1.0–2.0 GHz		0.45	0.6	dB
	2.0–2.5 GHz		0.55	0.7	dB
Isolation	0.1–0.5 GHz	28	30		dB
	0.5–1.0 GHz	22	24		dB
	1.0–2.0 GHz	17	19		dB
	2.0–2.5 GHz	15	17		dB
VSWR ⁽³⁾	0.1–1.0 GHz		1.2:1		dB
	1.0–2.5 GHz		1.3:1		dB

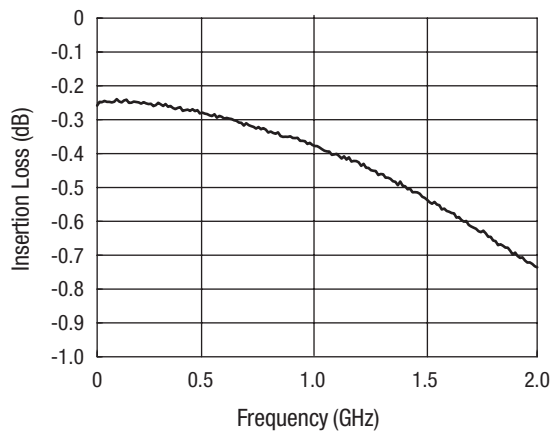
1. All measurements made in a 50 Ω system, unless otherwise specified.
 2. Insertion loss changes by 0.003 dB/°C.
 3. Insertion loss state.

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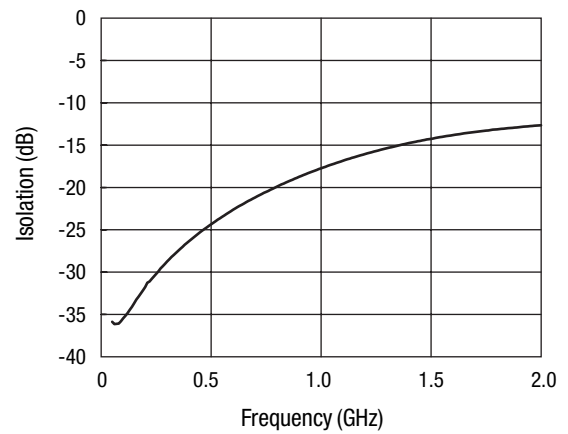
Operating Characteristics at 25 °C (0, 3 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF			60		ns
On, off	50% CTL to 90/10% RF			100		ns
Video feedthru	$T_{RISE} = 1 \text{ ns}$, BW = 500 MHz			50		mV
Input power for -0.1 dB compression	$V_{CTL} = 0/3 \text{ V}$	0.9 GHz		37		dBm
Harmonics H_2, H_3	$P_{IN} = 34.5 \text{ dBm}$	0.9 GHz		-65		dBc
Thermal resistance				25		°C/W
Control voltages	$V_{LOW} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A max.}$ $V_{HIGH} = 2.5 \text{ V @ } 100 \mu\text{A max. to } 5 \text{ V @ } 200 \mu\text{A max.}$					

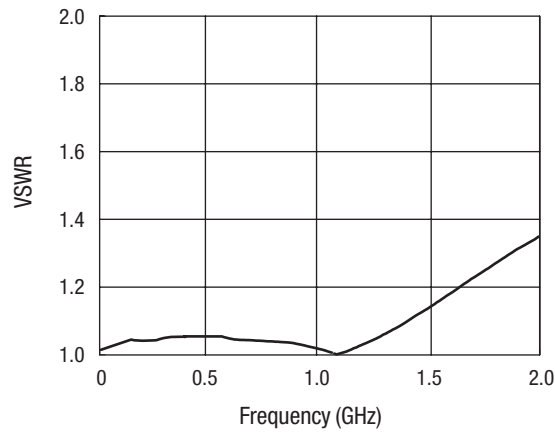
Typical Performance Data



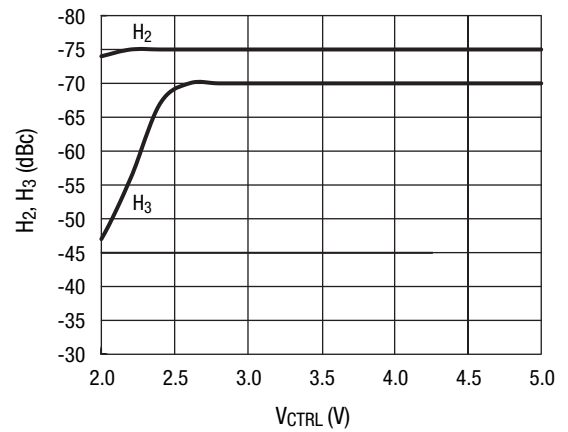
Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency



Harmonics vs. Control Voltage
34.5 dBm 900 MHz GSM Pulse

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