

AS193-73LF-HX-SOT23-6/AS193-73LF-HX-SOT363 IC

High-Linearity 3V Control SPDT Switch 0.1–2.5 GHz

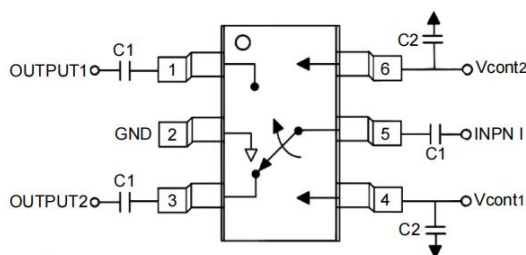
Description

The AS193-73LF-HX-SOT23-6/AS193-73LF-HX-SOT363 is a PHEMT GaAs FET IC high-linearity SPDT switch in a SOT23-6 and SOT363 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. The AS193-73LF-HX-SOT23-6/AS193-73LF-HX-SOT363 switch is used for antenna, T/R, and diversity switching in systems >3W. It's compatible with cellular, GSM, and UMTS systems. HXSZ offers Pb-free, RoHS-compliant packaging.

Features

- ★ Linear operation within the range of 2.5 to 5V
- ★ Harmonics H2, H3 > 65 dBc @ PIN = 34.5 dBm
- ★ Low insertion loss (0.35 dB @ 0.9 GHz)
- ★ High isolation (24 dB @ 0.9 GHz)
- ★ SOT23-6 and SOT363 package
- ★ PHEMT process
- ★ Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Pin Outt



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

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

Parameter	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

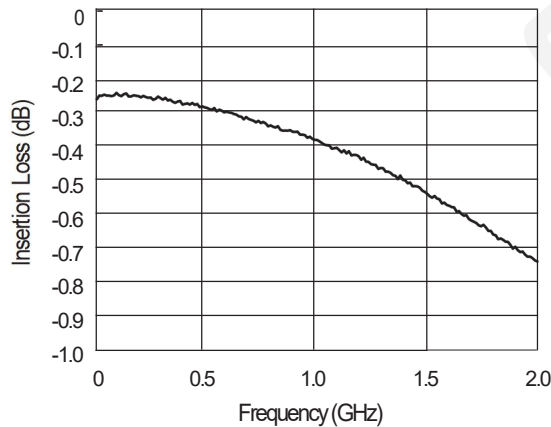
1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes by 0.003 dB/°C.
3. Insertion loss state.

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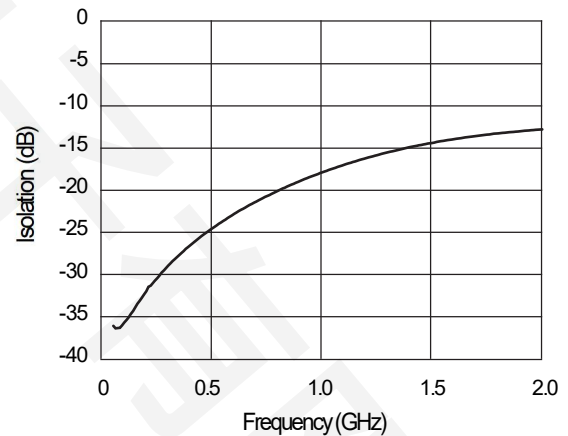
Operating Characteristics at 25 °C (0, 3 V)

Parameter	Condition	Frequency	Min	Typ	Max	Unit
Switching characteristics Rise, fall On, off Video feedthru	10/90% or 90/10% RF 50% CTL to 90/10% RF T RISE = 1 ns, BW = 500 MHz			60 100 50		ns ns mV
Input power for -0.1 dB compression	VCTL = 0/3 V	0.9 GHz		37		dBm
Harmonics H2, H3	PIN = 34.5 dBm	0.9 GHz		-65		dBc
Thermal resistance				25		°C/W
Control voltages	V LOW = 0 to 0.2 V @ 20 µA max. V HIGH = 2.5 V @ 100 µA max. to 5 V @ 200 µA max.					

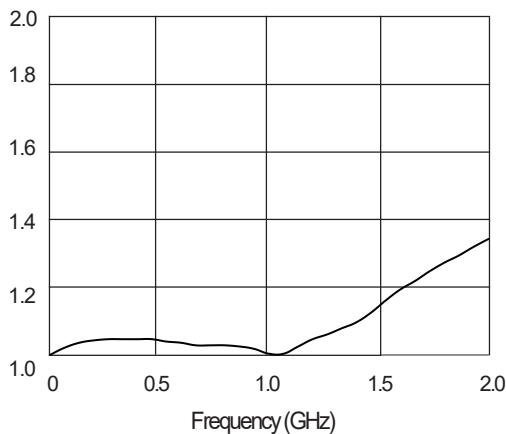
Typical Performance Data



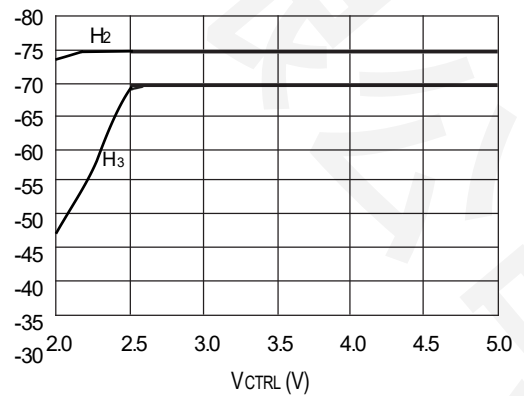
Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency



Harmonics vs. Control Voltage
34.5 dBm 900 MHz GSM Pulse

Absolute Maximum Ratings

Characteristic	Value
RF input power	6 W max. > 900 MHz, 0/5 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: Despite being designed for utmost robustness, this device remains susceptible to damage from ESD (Electrostatic Discharge). It is imperative that this device is continuously safeguarded against ESD. Static electricity can readily accumulate on the human body or equipment, reaching potentials of several kilovolts, which can discharge undetected. Therefore, adhering to industry-standard ESD precautions is mandatory at all times.

Truth Table

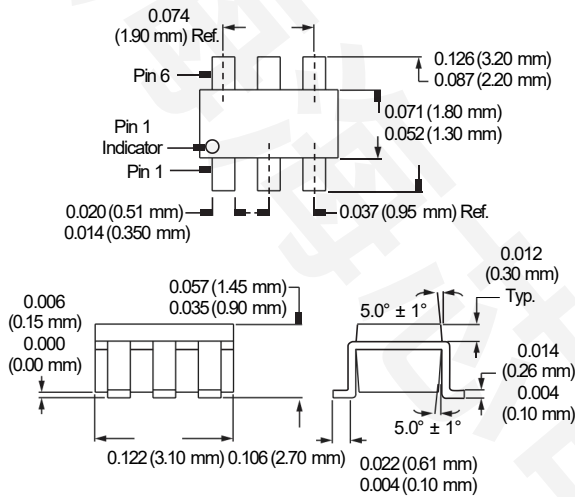
V1	V2	J1-J2	J1-J3
0	V HIGH	Isolation	Insertion loss
V HIGH	0	Insertion loss	Isolation

All other conditions not recommended. V HIGH = 2.5 to 5 V

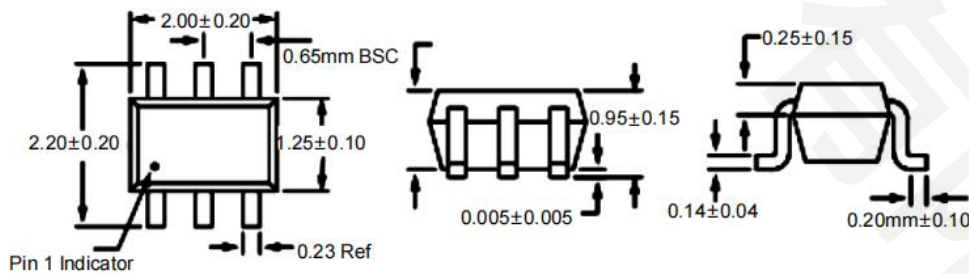
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Mechanical parameters

SOT23-6



SOT363



Part Number	Package Type	package	quantity
AS193-73LF-HX-SOT363	SOT363	Taping	3000
AS193-73LF-HX-SOT23-6	SOT23-6	Taping	3000