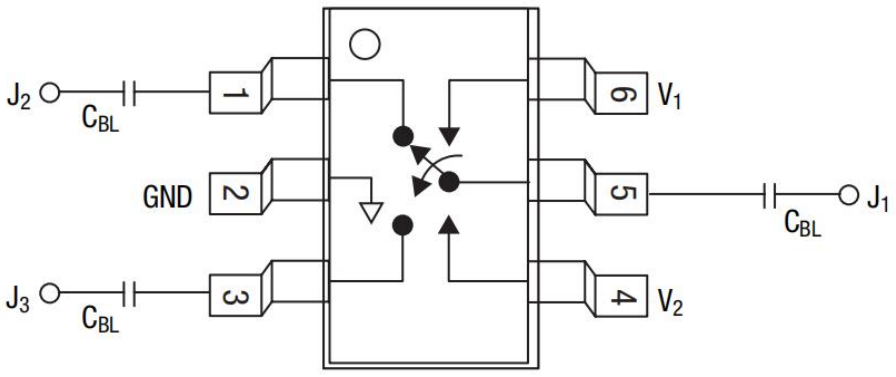
1. DESCRIPTION

The XAS193-73LF 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 XAS193-73LF switch can be used in many analog and digital wireless communication systems including cellular, GSM and UMTS applications.

2. 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

3. PIN OUT



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

4. ELECTRICAL SPECIFICATIONS AT 25°C (0,3V)

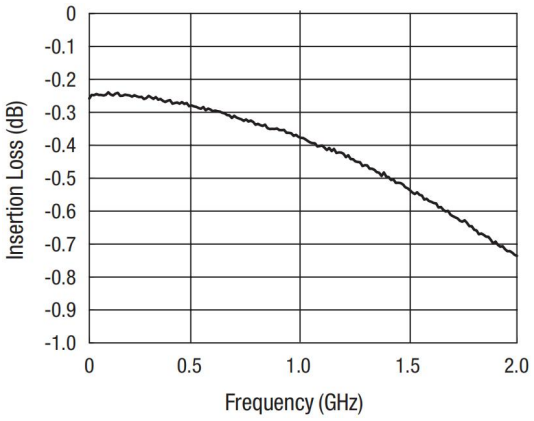
Parameter(1)	Frequency	MIN	TYP	MAX	UNIT
Insertion loss(2)	0.1-0.5 GHz		0.30	0.4	dB
	0.5-1.0 GHz		0.35	0.5	dB
	1.0-2.0 GHz		0.45	0.6	dB
	2.0-2.5 GHz		0.55	0.7	dB
Isolation	0.1-0.5 GHz	28	30		dB
	0.5-1.0 GHz	22	24		dB
	1.0-2.0 GHz	17	19		dB
	2.0-2.5 GHz	15	17		dB
VSWR(3)	0.1-1.0 GHz		1.2：1		dB
	1.0-2.5 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.

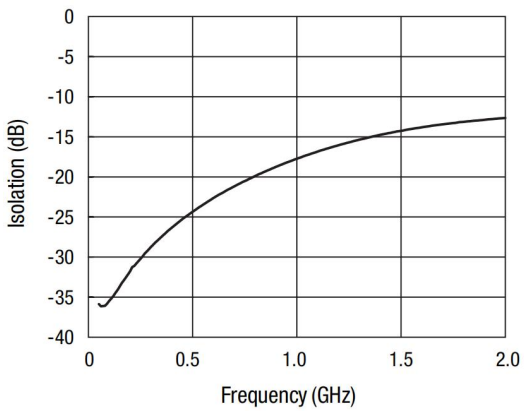
5. OPERATING CHARACTERISTICS AT 25°C (0,3V)

Parameter	Condition	Frequency	MIN	TYP	MAX	UNIT
Switching characteristics						
Rise,fall	10/90%0r 90/10% RF			60		ns
On, off	50% CTL to 90/10% RF			100		ns
Video feedthru	TRISE=1ns,BW= 500 MHz			50		mV
Input power for -0.1 dB compression	V_{CTL} = 0/3 V	0.9 GHz		37		dBm
Harmonics H_2, H_3	P_{IN} = 34.5 dBm	0.9 GHz		-65		dBc
Thermal resistance				25		°C/W
Control voltages	V_{LOW} = 0 to 0.2 V @ 20µA max. V_{HIGH} = 2.5 V @ 100 µA max. to 5 V @ 200 µA max.					

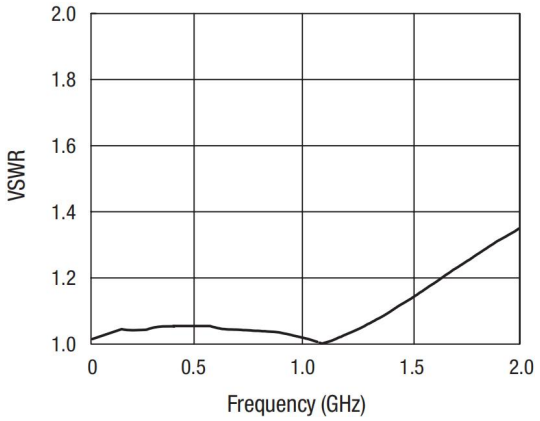
6. TYPICAL PERFORMANCE DATA



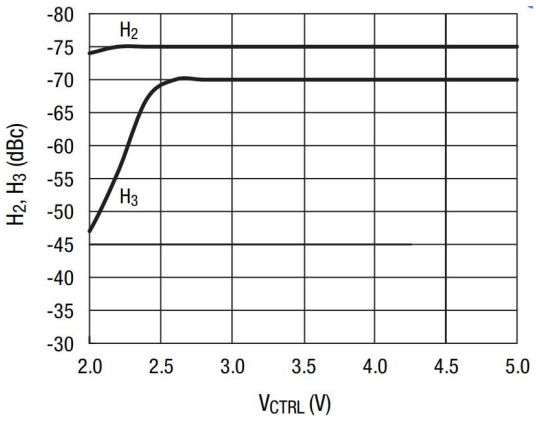
Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency



Harmonics vs. Control Voltage
34.5 dBm 900 MHz GSM Pulse

7. ABSOLUTE MAXIMUM RATNGS

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

NOTE: 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

8. TRUTH TABLE

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

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 poten tials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

9. ORDERING INFORMATION

Ordering Information

Part Number	Device Making	Package type	Body size (mm)	Temperate (°C)	MSL	Transpo Rt	Package Quantit
XAS193-73LF	S193	SOT23-6	2.90*1.60	-40 to +85	MSL3	T&R	3000

10. DIMENSIONAL DRAWINGS