GaAs IC SPDT Reflective Switch
Positive Control DC–2.5 GHz

SKYWORKS

AS373-12

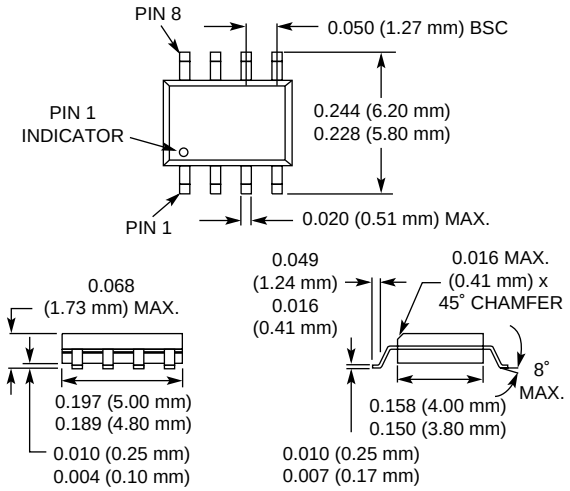
Features

- Low Insertion Loss (<0.5 dB @ 0.9 GHz)
- Complementary Positive Control Voltage
- Positive Voltage Supply (+3 to +5 V)
- Low DC Power Consumption

Description

The AS373-12 is a GaAs IC FET SPDT reflective switch in an SOIC-8 plastic package. It is ideal for commercial switching applications where low power consumption, low insertion loss and high linearity are required. Applications include general purpose T/R switching for wireless communication systems.

SOIC-8



Electrical Specifications at 25°C (0, +5 V)

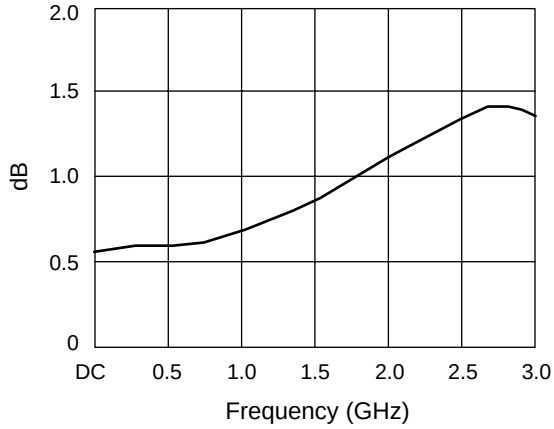
Parameter[1]	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]	DC–0.5 GHz		0.4	0.5	dB
	DC–1.0 GHz		0.5	0.7	dB
	DC–2.0 GHz		1.0	1.2	dB
	DC–2.5 GHz		1.1	1.4	dB
Isolation	DC–0.5 GHz	25	28		dB
	DC–1.0 GHz	18	22		dB
	DC–2.0 GHz	13	15		dB
	DC–2.5 GHz	10	13		dB
VSWR[4]	DC–1.0 GHz			1.5:1	
	DC–2.5 GHz			2.0:1	

Operating Characteristics at 25°C (0, +5 V)

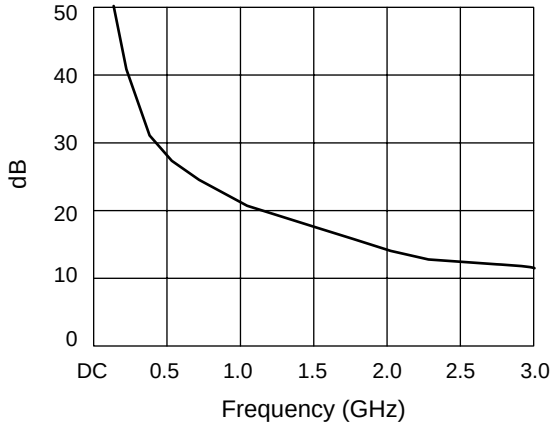
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[5]	Rise, Fall (10/90% or 90/10% RF)			10		ns
	On, Off (50% CTL to 90/10% RF)			20		ns
	Video Feedthru			25		mV
Input Power for 1 dB Compression	0/+3 V	0.5–2.0 GHz		+22		dBm
	0/+5 V	0.5–2.0 GHz		+28		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm	0.5–2.0 GHz		+45		dBm
Control Voltages	V_{Low} = 0 to 0.2 V @ 20 µA Max. V_{High} = +3 V @ 100 µA Max. to +5 V @ 200 µA Max. $V_S = V_{High} \pm 0.2$ V					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Insertion loss state.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

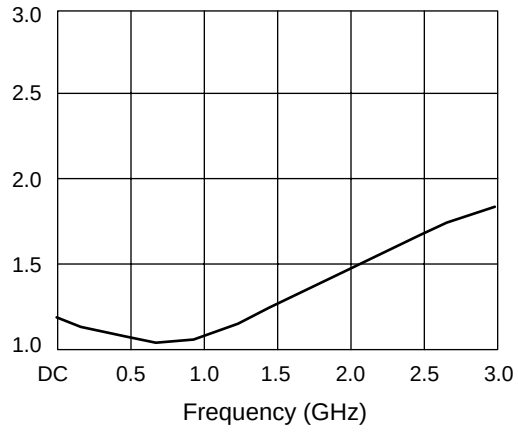
Typical Performance Data (0, +5 V)



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

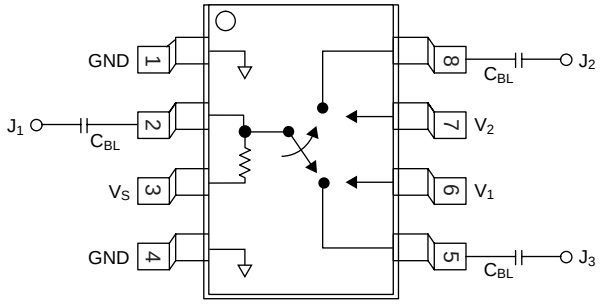
V_1	V_2	J_1–J_2	J_1–J_3
0	V_{High}	Isolation	Insertion Loss
V_{High}	0	Insertion Loss	Isolation

V_{High} = +3 to +5 V (V_S = V_{High} ± 0.2 V).

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2 W Max. > 500 MHz, 0/+8 V Control
Supply Voltage	+8 V
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

Pin Out



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