

GaAs IC SPDT Switch Non-Reflective Positive Control DC–4 GHz



AS004S2-11

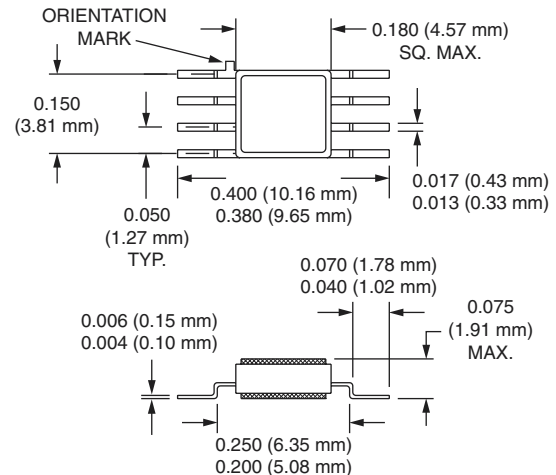
Features

- Positive Control Voltage
- High Isolation, Non-Reflective
- 8 Lead Hermetic Surface Mount Package
- Capable of Meeting MIL-STD Requirements⁵

Description

The AS004S2-11 is a GaAs IC FET SPDT non-reflective switch with positive control voltage. This device is ideal for surface mounting in high reliability and commercial applications. It exhibits high isolation and low DC power consumption. It also meets MIL-STD-883 screening requirements.

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Electrical Specifications at 25°C

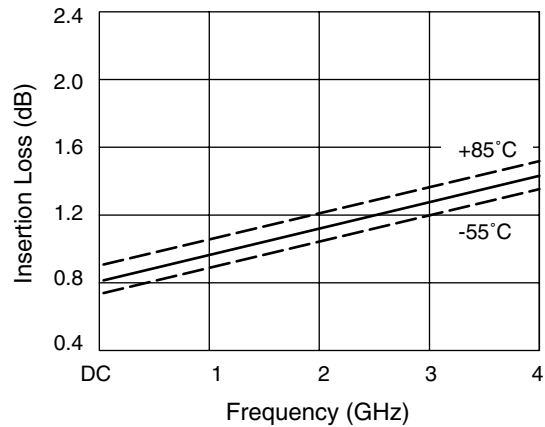
Parameter ¹	Frequency ⁴	Min.	Typ.	Max.	Unit
Insertion Loss ²	DC–1.0 GHz		0.8	1.0	dB
	DC–2.0 GHz		1.0	1.2	dB
	DC–4.0 GHz		1.3	1.6	dB
Isolation	DC–1.0 GHz	52	57		dB
	DC–2.0 GHz	43	50		dB
	DC–4.0 GHz	30	35		dB
VSWR (I/O)	DC–1.0 GHz		1.2:1	1.3:1	
	DC–2.0 GHz		1.3:1	1.5:1	
	DC–4.0 GHz		1.6:1	1.8:1	

Operating Characteristics at 25°C

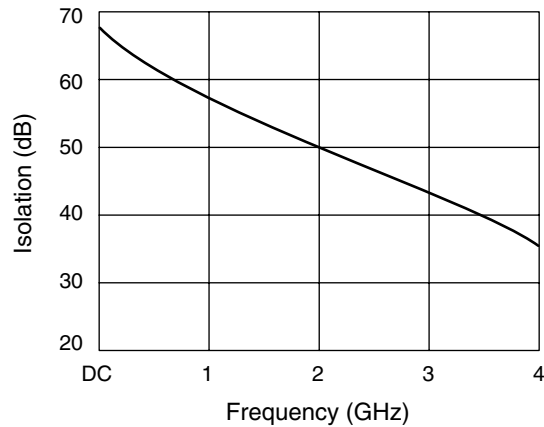
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, Fall (10/90% or 90/10% RF)			25		ns
	On, Off (50% CTL to 90/10% RF)			35		ns
	Video Feedthru ³			20		mV
Input Power for 1 dB Compression	0/+5 V (0/+8 V)	0.5–4 GHz	21	24 (30)		dBm
		0.001 GHz	12	16 (20)		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power 13 dBm	0.5–4 GHz	42	46		dBm
		0.001 GHz	32	35		dBm
Control Voltages	$V_{Low} = 0 \text{ to } 0.2 \text{ V @ } 20 \text{ } \mu\text{A Max.}$ $V_{High} = 5 \text{ V @ } 50 \text{ } \mu\text{A to } 9 \text{ V @ } 200 \text{ } \mu\text{A Max.}$					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. Insertion loss changes 0.003 dB/°C.
3. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.
4. Actual performance dependent on external RF blocking capacitor: DC = 300 kHz.
5. See Quality/Reliability section.

Typical Performance Data



Insertion Loss vs. Frequency



Isolation vs. Frequency

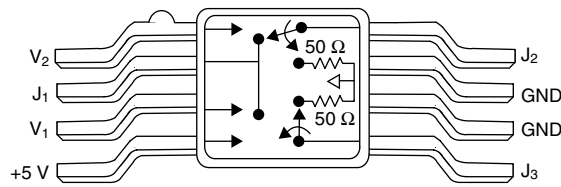
Truth Table

V ₁	V ₂	J ₁ –J ₂	J ₁ –J ₃
5	0	Insertion Loss	Isolation
0	5	Isolation	Insertion Loss

Absolute Maximum Ratings

Characteristic	Value
RF Input Power (RF In)	2 W > 500 MHz 0/-8 V 0.5 W @ 50 MHz 0/-8 V
Control Voltage (V _C)	-0.2 V, +10.0 V
Operating Temperature (T _{OP})	-55°C to +125°C
Storage Temperature (T _{ST})	-65°C to +150°C
Thermal Resistance (Θ _{JC})	25°C/W

Pin Out



Note: RF blocking capacitors (C_{BL}) required of each RF port (J₁, J₂, J₃).
C_{BL} = 100 pF for operation >500 MHz.