

# GaAs IC Diversity Switch DC–2.5 GHz



**ASC02D2-12**  
(Previously ADC02D2-12)\*

## Features

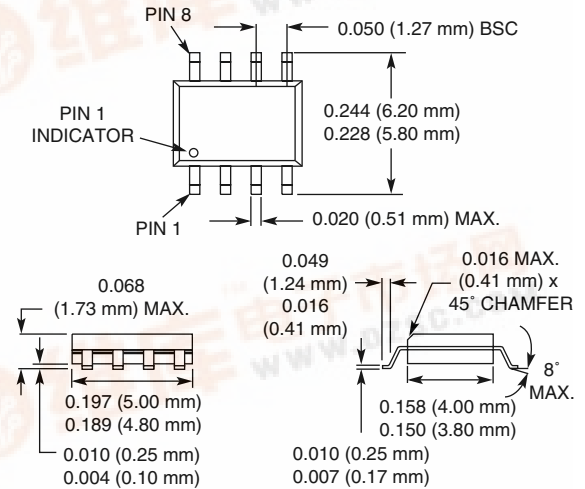
- Low Cost SOIC-8 Plastic Package
- Independent Four Port Switching
- Individual Voltage Control on Each Port

## Description

The ADC02D2 is a 4 port switch with independent DC voltage control on each port mounted in the SOIC-8 package.

In transmit or receive applications, the asymmetric design allows for good isolation between transmit and receive path while maintaining medium power handling in transmit port.

## SOIC-8



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

Parameter <sup>1</sup>	Frequency <sup>2</sup>	Min.	Typ.	Max.	Unit
Insertion Loss <sup>3</sup> Receiver (R <sub>X</sub> -J <sub>1</sub> , J <sub>2</sub> )	DC-0.5 GHz		1.0	1.1	dB
	DC-1.0 GHz		1.0	1.2	dB
	DC-2.0 GHz		1.1	1.3	dB
	DC-2.5 GHz		1.1	1.4	dB
Insertion Loss Transmit (T <sub>X</sub> -J <sub>1</sub> , J <sub>2</sub> )	DC-0.5 GHz		0.8	0.9	dB
	DC-1.0 GHz		0.8	1.0	dB
	DC-2.0 GHz		0.9	1.1	dB
	DC-2.5 GHz		0.9	1.2	dB
Isolation (R <sub>X</sub> -J <sub>1</sub> , J <sub>2</sub> )	DC-0.5 GHz	34	37		dB
	DC-1.0 GHz	28	30		dB
	DC-2.0 GHz	22	24		dB
	DC-2.5 GHz	20	22		dB
Isolation (T <sub>X</sub> -J <sub>1</sub> , J <sub>2</sub> )	DC-0.5 GHz	32	33		dB
	DC-1.0 GHz	26	27		dB
	DC-2.0 GHz	20	21		dB
	DC-2.5 GHz	18	19		dB
VSWR <sup>4</sup>	DC-1.0 GHz		1.5:1	1.7:1	
	DC-2.5 GHz		1.8:1	2.0:1	

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

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics <sup>5</sup>	Rise, Fall (10/90% or 90/10% RF)			3		ns
	On, Off (50% CTL to 90/10% RF)			6		ns
	Video Feedthru			30		mV
Input Power for 1 dB Compression (T <sub>X</sub> -J <sub>1</sub> , J <sub>2</sub> )		0.50–2.0 GHz		+27		dBm
		0.050 GHz		+18		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +13 dBm	0.50–2.0 GHz 0.050 GHz		+40 +29		dBm dBm
Control Voltages	V <sub>Low</sub> = 0 to -0.2 V @ 20 μA Max. V <sub>High</sub> = -5 V @ 50 μA to -8 V @ 200 μA Max.					

1. All measurements made in a 50 Ω system, unless otherwise specified.

2. DC = 300 kHz.

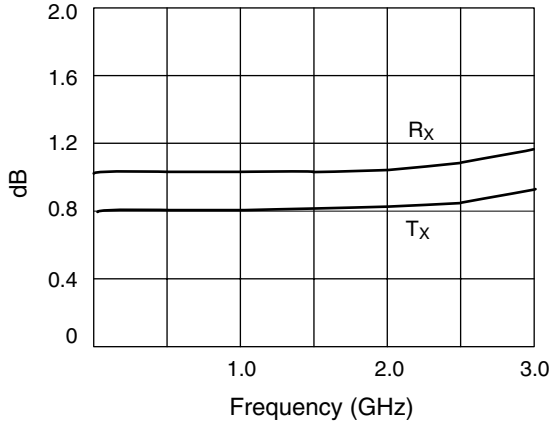
3. Insertion loss changes by 0.003 dB/°C.

4. Insertion loss state.

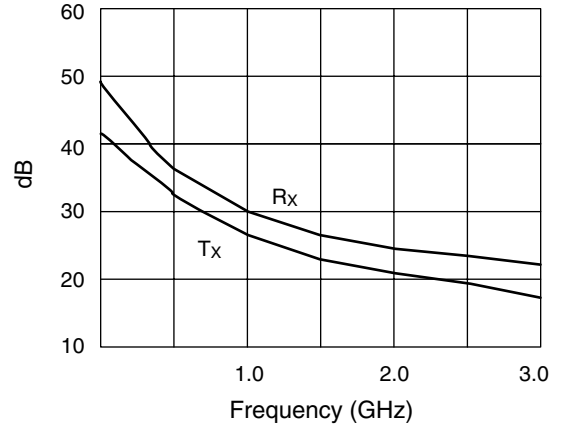
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

\* Due to conflict with another company's product numbering system, Alpha's attenuator product "ADC02D2-12" is being changed to "ASC02D2-12".

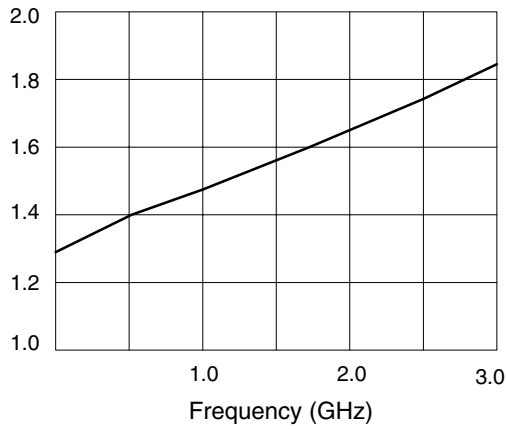
**Typical Performance Data (0, -5 V)**



**Insertion Loss vs. Frequency**



**Isolation vs. Frequency**



**VSWR vs. Frequency (Worst Case)**

**Truth Table**

V <sub>1</sub>	V <sub>2</sub>	V <sub>3</sub>	V <sub>4</sub>	“On Paths”
0	-5	-5	-5	T <sub>X</sub> -J <sub>2</sub>
-5	0	-5	-5	T <sub>X</sub> -J <sub>1</sub>
-5	-5	0	-5	R <sub>X</sub> -J <sub>1</sub>
-5	-5	-5	0	R <sub>X</sub> -J <sub>2</sub>
0	-5	0	-5	T <sub>X</sub> -J <sub>2</sub> , R <sub>X</sub> -J <sub>1</sub>
-5	0	-5	0	T <sub>X</sub> -J <sub>1</sub> , R <sub>X</sub> -J <sub>2</sub>

**Absolute Maximum Ratings**

Characteristic	Value
RF Input Power	2 W > 500 MHz 0/-8 V 0.5 W @ 50 MHz 0/-8 V
Control Voltage	+0.2 V, -10 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
θ <sub>JC</sub>	25°C/W

Note: Exceeding these parameters may cause irreversible damage.

**Pin Out**

