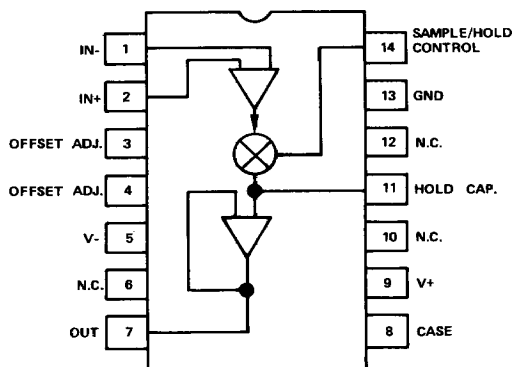


### FEATURES

**High Sample-to-Hold Current Ratio:  $10^6$**   
**High Slew Rate:  $5V/\mu s$**   
**High Bandwidth: 2MHz**  
**Low Aperture Time: 50ns**  
**Low Charge Transfer: 10pC**  
**DTL/TTL Compatible**  
**May Be Used as Gated Op Amp**

### PIN CONFIGURATION



### PRODUCTION DESCRIPTION

The AD583 is a monolithic sample-and hold circuit consisting of a high performance operational amplifier in series with a low leakage analog switch and unity gain amplifier. An external hold capacitor, connected to the switch output, completes the sample-and-hold or track-and-hold function.

With the analog switch closed, the AD583 functions like a standard op amp; any feedback network may be connected around the device to control gain and frequency response. With the switch open the capacitor holds the output at its previous level.

The AD583 may also be used as a versatile operational amplifier with a gated output for applications such as analog switches, peak holding circuits, etc.

### PRODUCT HIGHLIGHTS

1. Sample-and-hold operation is obtained with the addition of one external capacitor.
2. Low charge transfer (10pC) and high sample-to-hold current ratio insure accurate tracking.
3. Any gain or frequency response is available using standard op amp feedback networks.
4. High slew rate and low aperture time permit sampling of rapidly changing signals.
5. Output, gated through a low leakage analog switch, also makes the AD583 useful for applications such as analog switches, peak holding circuits, etc.

# SPECIFICATIONS (typical @ +25°C, hold capacitor of 1000pF and ±15V dc unless otherwise specified)

MODEL	AD583KD	ABSOLUTE MAXIMUM RATINGS	
OPEN LOOP GAIN $R_L = 2k\Omega$ , $T_{min}$ to $T_{max}$	25k min (50k typ)	Voltage between V+ and V- Terminals	40V
OUTPUT VOLTAGE SWING $R_L = 2k\Omega$ , $T_{min}$ to $T_{max}$	±10V min	Differential Input Voltage	±30V
OUTPUT CURRENT	±10mA min	Digital Voltage (Pin 14)	+8V, -15V
OUTPUT RESISTANCE	5Ω	Output Current	Short Circuit Protected
OFFSET VOLTAGE $T_{min}$ to $T_{max}$	6mV max (3mV typ) 8mV max (4mV typ)	Internal Power Dissipation	30mW (Derate power dissipation by 4.3mW/°C above +150°C ambient temperature)
BIAS CURRENT $T_{min}$ to $T_{max}$	200nA max (50nA typ) 400nA max		
OFFSET CURRENT $T_{min}$ to $T_{max}$	50nA max (10nA typ) 100nA max		
INPUT RESISTANCE	5MΩ min (10MΩ typ)		
COMMON MODE RANGE	±10V min		
COMMON MODE REJECTION $T_{min}$ to $T_{max}$	74dB min (90dB typ)		
GAIN BANDWIDTH PRODUCT	2MHz		
SLEW RATE $A_v = +1$ , $R_L = 2k\Omega$ , $C_L = 50pF$ , $V_{out} = \pm 10V$ p-p	5V/μs		
RISE TIME $A_v = +1$ , $R_L = 2k\Omega$ , $C_L = 50pF$ , $V_{out} = 400mV$ p-p	100ns		
OVERSHOOT $A_v = +1$ , $R_L = 2k\Omega$ , $C_L = 50pF$ , $V_{out} = 400mV$ p-p	20%		
DIGITAL INPUT CURRENT $V_{in} = 0$ , $T_{min}$ to $T_{max}$ $V_{in} = +5.0V$ , $T_{min}$ to $T_{max}$	0.8mA max (Logic "Sample") 20μA max (Logic "Hold")		
DIGITAL INPUT VOLTAGE Low $T_{min}$ to $T_{max}$ High $T_{min}$ to $T_{max}$	0.8V max 2.0V min		
ACQUISITION TIME $A_v = +1$ , $R_L = 2k\Omega$ , $C_L = 50pF$ to 0.1% of final value: to 0.01% of final value:	4μs 5μs		
APERTURE TIME	50ns		
APERTURE JITTER	5ns		
DRIFT CURRENT <sup>1</sup> $T_{min}$ to $T_{max}$	50pA max (5pA typ) 1.0nA max (0.05nA typ)		
CHARGE TRANSFER	20pC max (10pC typ)		
SUPPLY CURRENT	5.0mA max (2.5mA typ)		
POWER SUPPLY REJECTION <sup>2</sup>	74dB min (90dB typ)		
OPERATING TEMP	0 to +70°C		
STORAGE TEMP	-65°C to +150°C		
PACKAGE OPTION <sup>3</sup> D-14	AD583KD		

## NOTES

<sup>1</sup> Voltage on hold is zero.

<sup>2</sup> Sample mode only.

<sup>3</sup> D = Ceramic DIP. For outline information see Package Information section.

Specifications subject to change without notice.