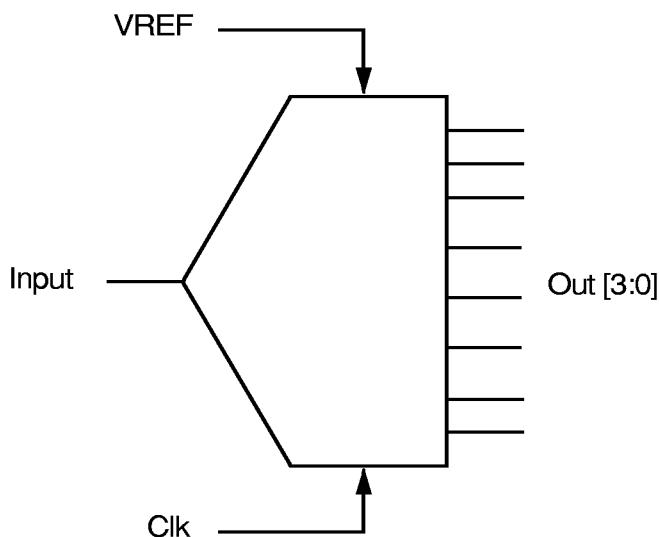


AMI 0.8 micron CMOS

## Features

- 44 MSPS
- 4-bit unsigned binary output
- Analog supply voltage 3.0V to 3.6V

## Functional Block Diagram



Note: AVDD: Nominal 3.3V (3.0 to 3.6V).

AVSS: Analog ground.

Input: 11MHz bandlimited signal with a 750mV DC offset and a 1V peak to peak full scale amplitude.

CK: 44MHz sampling clock.

Vref: Nominal 1.5V analog reference.

OUT[3:0]: ADC conversion results. Unsigned binary output.

## General Description

The flash ADC04R01 is intended to oversample an 11MHz bandlimited signal with a 750mV DC offset and a 1V peak to peak amplitude. The conversion range is .25V to 1.25V with 62.5mV steps. A nominal 1.5V external reference and a 44MHz sampling clock are required.

## Applications

- Fast data acquisition
- Instrumentation
- DSP control loop
- Audio processing

# AD004R01

3.0V to +3.6V, 4-Bit 44 MSPS, Flash ADC



AMI 0.8 micron CMOS

## Electrical Characteristics

PARAMETER	TEMP	MIN	TYP	MAX	UNITS
RESOLUTION					Bits
DC ACCURACY	+25°C +25°C Full				LSB LSB LSB
Differential Linearity					
Integral Linearity					
No Missing Codes			Guaranteed		
INITIAL OFFSET ERROR	+25°C +25°C				LSB LSB LSB uV/°C
Top of Reference Ladder					
Bottom of Reference Ladder					
Offset Drift Coefficient					
ANALOG INPUT					
Input Bias Current (latched)					uA
Input Bias Current (sampling)					uA
Input Resistance					k Ohm
Input Capacitance					pF
Large Signal Bandwidth					Hz
Input Slew Rate					V/ms
REFERENCE INPUT					
Reference Ladder Resistance	+25°C				Ohm
Reference Input Bandwidth	+25°C				MHz
DYNAMIC PERFORMANCE				44	MSPS
Conversion Rate					ns
Output Delay ( $t_{PD}$ )					ns
Transient Response					ns
Overshoot Recovery Time					ns
Output Rise Time					ns
Output Fall Time					ns
ENCODE INPUT					
Logic "1" Voltage					V
Logic "0" Voltage					V
Logic "1" Current					mA
Logic "0" Current					mA
Input Capacitance					pF
Encode Pulse Width (Low)	+25°C				ns
Encode Pulse Width (High)	+25°C				ns
OVERFLOW INHIBIT INPUT					
0 V Input Current	Full				mA
AC LINEARITY					
Effective Number of Bits (ENOB)					Bits

**Continued**

PARAMETER	TEMP	MIN	TYP	MAX	UNITS
In-Band Harmonics					
dc to X.X MHz					dB
dc to X.X MHz					dB
dc to X.X MHz					dB
Signal-to-Noise + Distortion (S/(N+D))			24.5		dB
Intermodulation Distortion IMD <sup>1</sup>			-37		dB
Spurious Free Dynamic Range (SFDR)		-50 @ 5MHz input tone		-30 @ 5MHz input tone	dB
Total Harmonic Distortion (THD) <sup>3</sup>					dB

PARAMETER	TEMP	MIN	TYP	MAX	UNITS
POWER SUPPLY					
Operating Voltage					
$A_{VDD}$					Volts
$A_{VSS}$					Volts
VREF			1.5		V
Operating Current					
$I_{A_{DD}}^2$			12		mA
$I_{D_{DD}}$					mA
Standby Mode					mA
POWER CONSUMPTION					
Operating Mode					mA
Standby Mode					mA

Notes: <sup>1</sup> 5.5 & 6 MHz two tone test. <sup>2</sup> 44 MHz sampling rate. <sup>3</sup> 5MHz input tone.

# AD004R01

3.0V to +3.6V, 4-Bit 44 MSPS, Flash ADC



AMI 0.8 micron CMOS

## Absolute Maximum Ratings

PARAMETERS		
Supply Voltage (-VS)		V
Analog-to-Digital Supply Voltage Differential		V
Analog Input Voltage		V
Digital Input Voltage		V
Reference Input Voltage (+VREF – VREF)		V
Differential Reference Voltage		V
Reference Midpoint Current		mA
Digital Output Current		mA
Operating Temperature Range		°C
Storage Temperature Range		°C
Junction Temperature		°C
Lead Soldering Temperature (10 Sec.)		°C

## Recommended Operating Conditions

PARAMETERS	INPUT VOLTAGE		
	MIN	NOMINAL	MAX
-VS			
+VREF			
-VREF			
Analog Input			

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