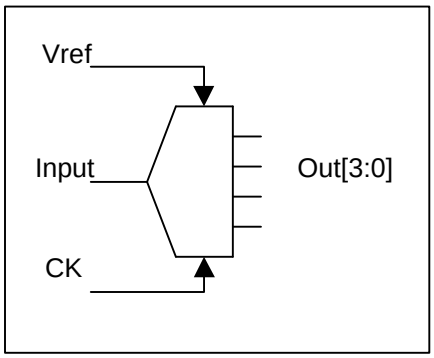
AMERICAN MICROSYSTEMS, INC

ADC04R01

June, 1998 Preliminary **AMI 0.8 micron CMOS**

ADC04R01, 3.0V to 3.6V, 4-bit 44 MSPS, Flash ADC

AVDD	Nominal 3.3V (3.0 to 3.6V).
AVSS	Analog ground.
Input	11MHz bandlimted 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.



FEATURES

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

APPLICATIONS

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

GENERALDESCRIPTION

The flash ADC04R01 is intended to oversample an 11MHz bandlimted 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

Parameter	Temp	Min	Typ	Max	Units
RESOLUTION					Bits
DC ACCURACY					
Differential Linearity	+25°C				LSB
Integral Linearity	+25°C				LSB
No Missing Codes	Full		Guaranteed		LSB
INITIAL OFFSET ERROR					LSB
Top of Reference Ladder	+25°C				LSB
Bottom of Reference Ladder	+25°C				LSB
Offset Drift Coefficient					uV/°C
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
DYNANIC PERFORMANCE					
Conversion Rate				44	MSPS
Output Delay (t_{PD})					ns
Transient Response	+25°C				ns
Overvoltage Recovery Time	+25°C				ns
Output Rise Time	+25°C				ns
Output Fall Time	+25°C				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

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[1]			-37		dB
Spurious Free Dynamic Range (SFDR)	-	50 @ 5MHz input tone		-30 5MHz input tone	dB
Total Harmonic Distortion (THD)[3]					dB

Parameter	Temp	Min	Typ	Max	Units
POWER SUPPLY					
Operating Voltage					
AV_{DD}					Volts
AV_{SS}					Volts
VREF			1.5		V
Operating Current					
IA_{DD}[2]					mA
ID_{DD}			12		mA
Standby Mode					mA
POWER CONSUMPTION					
Operating Mode					mA
Standby Mode					mA

ABSOLUTE MAXIMUM RATINGS		**Units**
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			
Parameter	Input Voltage		
–VS	Min	Nominal	Max
+VREF			
–VREF			
Analog Input			

Notes: [1] 5.5 & 6 MHz two tone test, [2] 44 MHz sampling rate, [3] 5MHz input tone