Analog/Mixed-Signal Products

Designer's Master Selection Guide

Data Converters

August 2002

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

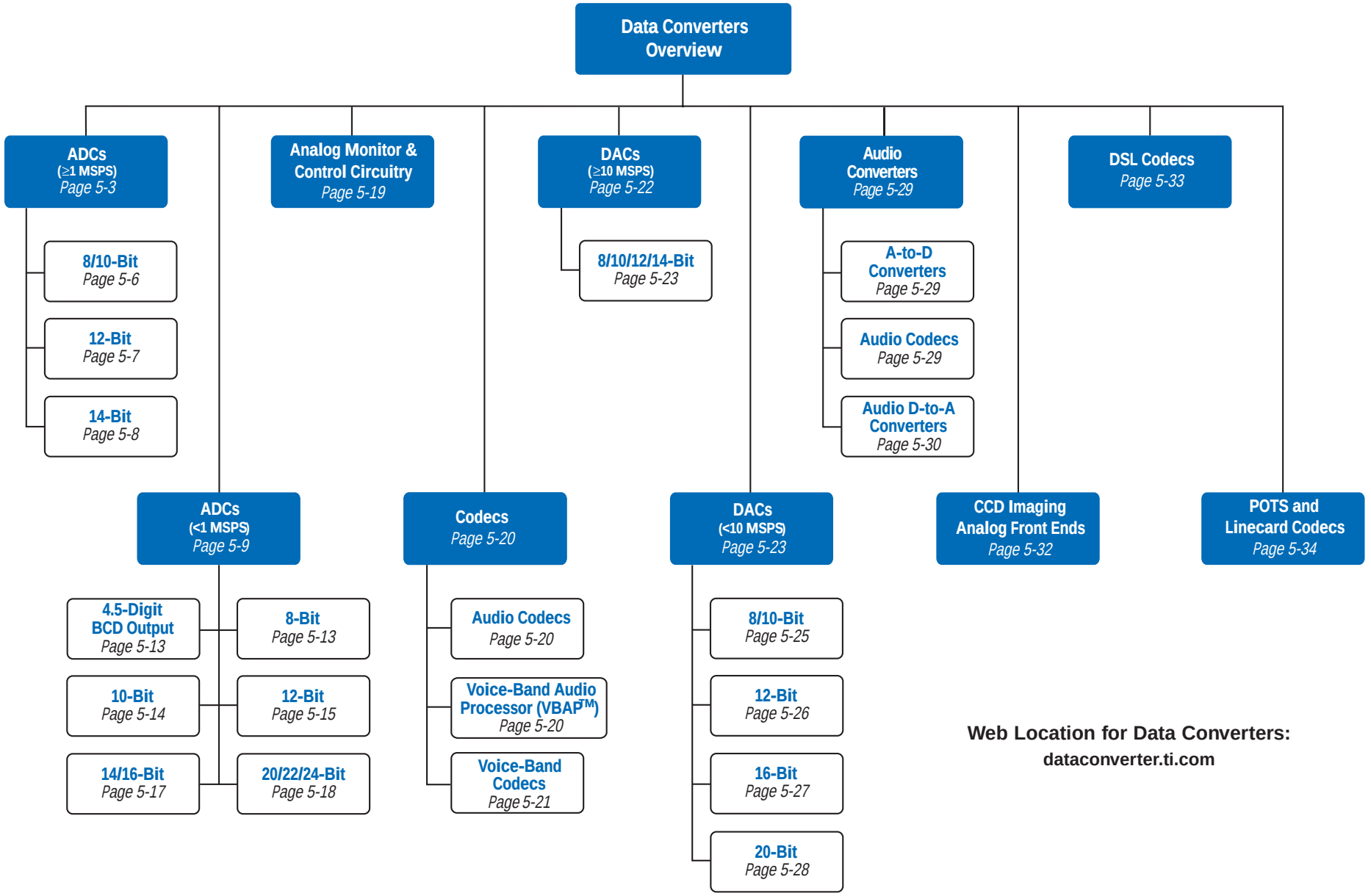
TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third–party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Mailing Address:

Texas Instruments
Post Office Box 655303
Dallas, Texas 75265



Web Location for Data Converters:
dataconverter.ti.com

Data Converters

Contents

Introduction 5-2

Product Selection Guides

ADCs (≥1 MSPS) 5-3
ADCs (<1 MSPS) 5-9
Analog Monitor and Control Circuitry 5-19
Codecs 5-20
DACs (≥10 MSPS) 5-22
DACs (<10 MSPS) 5-23
Audio Converters 5-29
CCD Imaging Analog Front Ends 5-32
DSL Codecs 5-33
POTS and Linecard Codecs 5-34

Resources 5-35

For technical assistance, requesting datasheets or samples, see Contact Information on the last page of this book.

Two other resources for product information are:

1) the *Analog and Mixed-Signal* webpage at *analog.ti.com*

2) the Designer's Master Selection Guide CD-ROM (SLYC005G). Complete and return the attached business reply card to order.

Web Location for Data Converters:
dataconverter.ti.com

The Texas Instruments data converter family provides cost-effective, versatile solutions for data acquisition systems. This section provides a summary of the broad selection of 8-, 10-, 12-, 14-, 16-, 20- and 24-bit analog-to-digital converters (ADCs), digital-to-analog converters (DACs), and special-function ADCs for voice-over-internet-protocol (VoIP) applications. Included in each family is an extensive selection of cost-versus-performance data converters for a wide variety of applications.

The general-purpose ADCs are used for applications such as

- Instrumentation
- Automotive
- ATE
- Optical Networking
- Process Monitoring and Control
- Medical
- Battery-Operated Equipment
- Motor Control

The general-purpose DACs can be used for applications such as

- Programmable Voltage Sources
- Mobile Communications
- ATE/Test Equipment
- Optical Networking
- Digitally Controlled Amplifiers
- Process Control
- Mass Storage
- Portable Instrumentation

The high-speed ADCs and DACs are used for applications such as

- Quadrature Phase Shift Keying (QPSK)
- Digital Down Converters
- Communications, Baseband, I/F
- Digital Set-Top Boxes
- Video Signal Processing
- Flat Panel Displays
- Medical Imaging
- Optical Networking

ADCs (≥1 MSPS)

ADS5203 (Dual 10-Bit, 40-MSPS ADC)—Product Preview

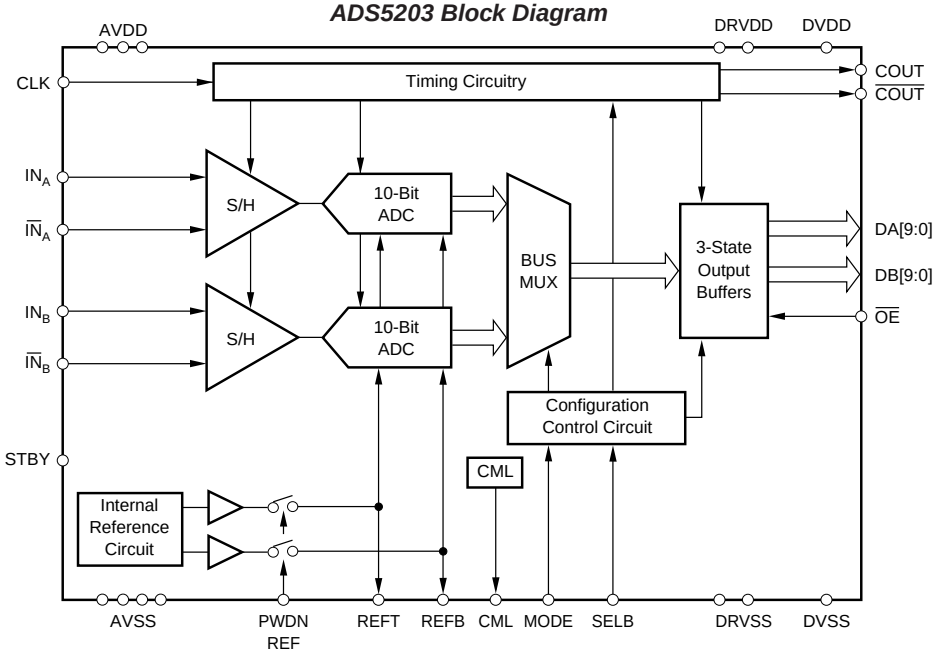
The ADS5203 is a dual 10-bit, 40-MSPS, high-speed ADC. It alternately converts each analog input signal into 10-bit binary-coded digital word up to a maximum sampling rate of 40 MSPS with an 80-MHz clock. All digital inputs and outputs are 3.3-V TTL/CMOS-compatible.

The combination of a pipeline architecture implemented in a CMOS process and the 3.3-V supply results in low power dissipation. To provide maximum flexibility, both bottom and top voltage references can be set from user-supplied voltages. Alternatively, if no external references are available, on-chip references can be used. If external reference voltage levels are available, the internal references can be powered down independently from the rest of the chip, resulting in an even greater power saving.

Features

- Dual Simultaneous Sample-and-Hold Inputs
- Differential or Single-Ended Analog Inputs
- Single or Dual Parallel Bus Output
- 240-mW Power Dissipation
- 60-dB SNR at f_{IN} = 10 MHz
- 73-dB SFDR at f_{IN} = 10 MHz
- 300-MHz Analog Input Bandwidth
- 3.3-V Single-Supply Operation
- 3.3-V TTL/CMOS-Compatible Digital I/O
- Internal or External Reference Option
- Adjustable Reference Input Range
- Power-Down (Standby) Mode
- TQFP-48 Package

ADS5203 Block Diagram



ADCs (≥1 MSPS) (Continued)

ADS5204 (Dual 10-Bit, 40-MSPS ADC with PGA)—Product Preview

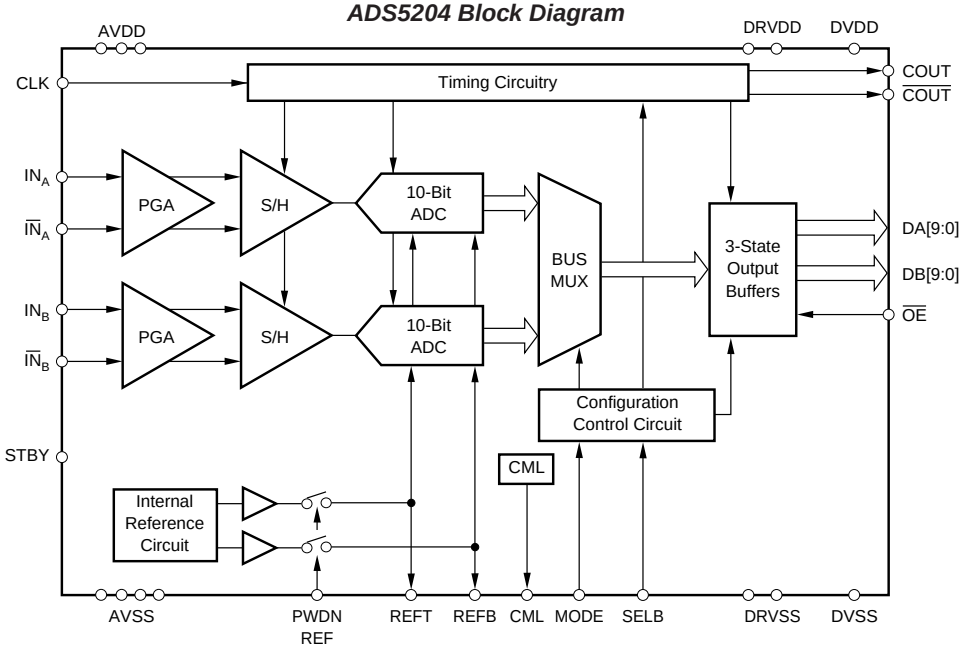
The ADS5204 is a dual 10-bit, 40-MSPS, high-speed ADC with a programmable gain amplifier. It alternately converts each analog input signal into 10-bit binary-coded digital word up to a maximum sampling rate of 40 MSPS with an 80-MHz clock. All digital inputs and outputs are 3.3-V TTL/CMOS-compatible.

The combination of a pipeline architecture implemented in a CMOS process and the 3.3-V supply results in low power dissipation. To provide maximum flexibility, both bottom and top voltage references can be set from user-supplied voltages. Alternatively, if no external references are available, on-chip references can be used. If external reference voltage levels are available, the internal references can be powered down independently from the rest of the chip, resulting in an even greater power saving.

Features

- Dual Simultaneous Sample-and-Hold Inputs
- Differential or Single-Ended Analog Inputs
- Single or Dual Parallel Bus Output
- Programmable Gain Amplifier 0 dB to 18 dB
- 275-mW Power Dissipation
- 60-dB SNR at f_{IN} = 10 MHz
- 72-dB SFDR at f_{IN} = 10 MHz
- 300-MHz Analog Input Bandwidth
- 3.3-V Single-Supply Operation
- 3.3-V TTL/CMOS-Compatible Digital I/O
- Internal or External Reference Option
- Adjustable Reference Input Range
- Power-Down (Standby) Mode
- TQFP-48 Thin Quad Flat Pack Package

ADS5204 Block Diagram



ADCs (≥1 MSPS) (Continued)

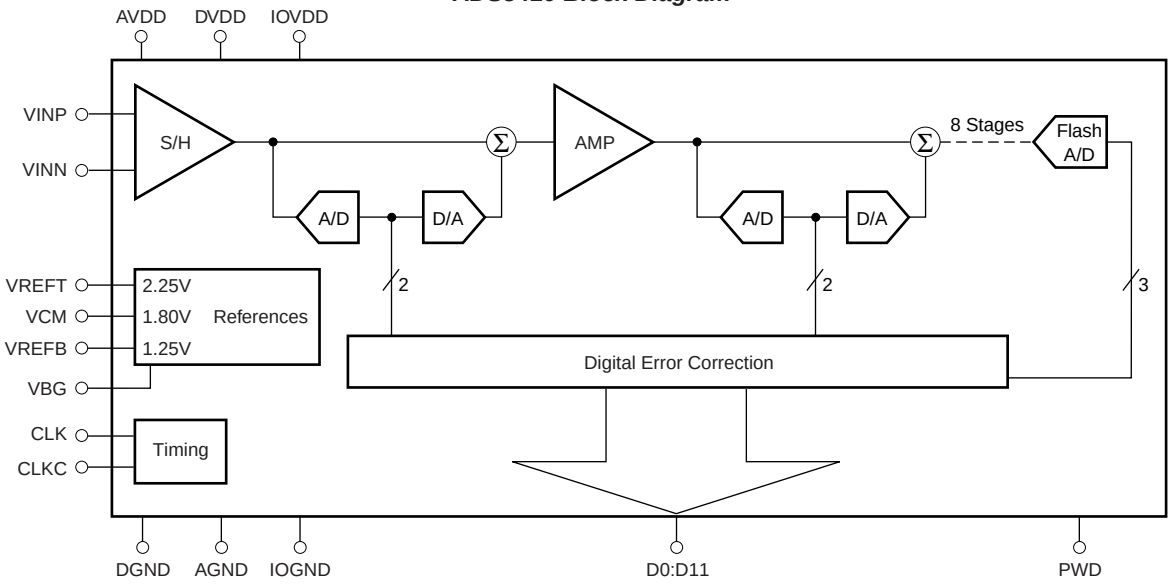
ADS5410 (12-Bit, 80-MSPS, Low-Power ADC)—Product Highlights

The ADS5410 is a high-speed, high-performance pipelined ADC with exceptionally low noise and high spurious-free dynamic range. The ADS5410 high-input bandwidth makes it ideal for IF subsampling solutions where digital I/Q demodulators are used. Its high dynamic range makes it well suited for GSM, IS-95, UMTS, and IS-136 digital receivers. Its linearity and low DNL make it ideal for medical imaging applications. Low power consumption makes the ADS5410 ideal for applications in compact pico- and micro-base stations where heat dissipation has a marked impact on performance.

Features

- 360-mW Power Dissipation
- 1.8-V to 3.3-V I/O
- Binary Two's Complement Digital Output
- 1-GHz Bandwidth Differential Analog Input
- 60-dB SNR at f_{IN} = 70 MHz
- 75-dB SFDR at f_{IN} = 100 MHz
- On-Chip References
- On-Chip Sample-and-Hold
- CMOS Technology
- No Missing Codes
- TQFP-48 Package

ADS5410 Block Diagram



ADCs (≥1 MSPS) (Continued)

Device Name	Resolution (Bits)	Sorted By Sample Rate (MSPS)	Supply (V)	Analog Inputs	Power (typ) (mW)	Analog Input BW (MHz)	DNL (max) (±LSB)	INL (max) (±LSB)	SNR (dB)	Package	Price*	Description
8-Bit												
TLV571	8	1.25	2.7	1	12	30	0.5	0.5	49	SOIC,TSSOP	2.23	8-Bit, 1.25 MSPS Single Ch., Hardware Config., Low Power w/Auto or S/W PowerDown
TLC5510	8	20	5	1	90	14	0.5	0.75	46	SOP,TSSOP	2.24	8-Bit, 20 MSPS ADC Single Ch., Internal S&H, Low Power
TLC5510A	8	20	5	1	90	14	0.5	0.75	46	SOP	2.24	8-Bit, 20 MSPS ADC Single Ch., Internal S&H, Low Power
ADS930	8	30	2.7	1	66	100	1	2.5	46	SSOP	2.27	8-Bit, 30 MSPS ADC SE/Diff Inputs w/ Internal Ref. and Low Power, Powerdown
ADS931	8	30	2.7	1	63	100	1	2.5	48	SSOP	2.18	8-Bit, 30 MSPS ADC SE/Diff Inputs w/ External Ref. and Low Power, Powerdown
TLV5535	8	35	3.3	1	90	600		1.5	46	TSSOP	2.40	8-Bit, 35 MSPS ADC Single Ch., High Ch. Bandwidth, Low SNR and SFDR, Low Power
THS0842	8	40	3.3	2	275	600		2.2		TQFP	3.99	8-Bit, 40 MSPS ADC Dual Ch. (Config.), Dual Simultaneous S&H, Low Power, PowerDown
TLC5540	8	40	5	1	85	75	0.75	1	45	SOP,TSSOP	2.28	8-Bit, 40 MSPS ADC Single Ch., Internal S&H, Low Power
ADS830	8	60	5	1	180	300	1	1.5	49	SSOP	2.58	8-Bit, 60 MSPS ADC SE/Diff Inputs, Int/Ext References and Programmble Input Range
ADS831	8	80	5	1	265	300	1	2	49	SSOP	2.99	8-Bit, 80 MSPS ADC SE/Diff Inputs, Int/Ext References and Programmble Input Range
TLV5580	8	80	3.3	1	165	700		2.4	46	SOIC,TSSOP	2.87	8 Bit, 80 MSPS ADC Single Ch., High Ch. Bandwidth, Low Power
10-Bit												
TLV1570	10	1.25	2.7	8	8	25	1	1	60	SOIC,TSSOP	3.60	10-Bit, 1.25 MSPS ADC 8-Ch., DSP/(Q)SPI™ IF, Pgmable Int. Ref., Auto or S/W PowerDown, Very Low Power
TLV1571	10	1.25	2.7	1	12	30	1	1	60	SOIC,TSSOP	3.48	1-Ch. 10-Bit 1.25 MSPS ADC 8-Ch., DSP/SPI, Hardware Configurable, Low Power
TLV1572	10	1.25	2.7	1	8	12	1	1		SOIC	3.14	10-Bit, 1.25 MSPS ADC Single Ch., DSP/(Q)SPI IF, S&H, Very Low Power, Auto PowerDown
TLV1578	10	1.25	2.7	8	12	30	1	1	60	TSSOP	3.62	8-Ch. 10-Bit 1.25 MSPS ADC 8-Ch., DSP/SPI, Hardware Configurable, Low Power
TLV1562	10	2	2.7	4	15	120		1.5	58.1	SOIC,TSSOP	3.94	10-Bit, 2 MSPS ADC Quad Ch. (Config.) w/mux, Pgmable Res. vs. Speed/Conversion Mode, Auto o
THS10064	10	6	3	4	186	96	1	1	61	TSSOP	4.25	10-Bit, 6 MSPS ADC Quad Ch. (Config.), DSP/uP Interface, Integ. 16x FIFO, Ch. AutoScan, Low Power
THS1007	10	6	5	4	186	96	1	1	61	TSSOP	3.75	10-Bit, 6 MSPS Simultaneous Sampling Quad Ch. ADC; Includes Parallel DSP/uP I/F & Ch. Auto-Scan
THS10082	10	8	3	2	186	96	1	1	61	TSSOP	3.75	10 Bit, 8 MSPS ADC W/Dual Channel, Parallel DSP/uP Interface, 16X FIFO, Channel AutoScan, Low Power
THS1009	10	8	3	2	186	96	1	1	61	TSSOP	3.25	10-Bit, 8 MSPS ADC Dual Ch., Parallel DSP/uP, Channel Autoscan, Low Power
ADS820	10	20	5	1	195	65	1	2	60	SOIC	6.44	10-Bit, 20 MSPS ADC SE/Diff Inputs with Int References and 9.5 bit ENOB

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

ADCs (≥1 MSPS) (Continued)

Device Name	Resolution (Bits)	Sorted By Sample Rate (MSPS)	Supply (V)	Analog Inputs	Power (typ) (mW)	Analog Input BW (MHz)	DNL (max) (±LSB)	INL (max) (±LSB)	SNR (dB)	Package	Price*	Description
10-Bit (Continued)												
ADS900	10	20	2.7	1	52	100	1		50	SSOP	2.78	10-Bit, 20 MSPS ADC SE/Diff Inputs, Int Reference and Adjustable Fullscale Range
ADS901	10	20	2.7	1	48	100	1		54	SSOP	2.68	10-Bit, 20 MSPS ADC SE/Diff Inputs, Ext Reference and Adjustable Fullscale Range
THS1030	10	30	2.7	1	87	150	1	2	57	SOIC,TSSOP	3.54	10-Bit, 30 MSPS ADC Single Ch., Pin Comp. w/TLC876, Out of Range Indicator, PowerDown
THS1031	10	30	2.7	1	94	150	1	2	57	SOIC,TSSOP	3.91	10-Bit, 30 MSPS ADC Single Ch., Integ. Pgmable Digital Clamp & Gain, Out of Range Indic., PowerDown
ADS5103	10	40	1.8	1	105	950	0.6	2	59	TQFP	4.98	10 Bit, 40MSPS ADC, 1.8V, Int/Ext Ref, w/Power-Down
ADS5120	10	40	1.8	8	764	300	1	1.5	57	BGA	34.41	8 channel, 10 Bit, 40MSPS ADC, 1.8V
ADS5203	10	40	3.3	2	240	300	1	1.5	60	TQFP	9.19	Dual, 10-bit, 40 MSPS Low Power ADC
ADS5204	10	40	3.3	2	275	300	1	1.5	60	TQFP	10.19	Dual, 10-bit, 40 MSPS Low Power ADC with PGA
ADS821	10	40	5	1	380	65	1	2	58	SOIC	12.40	10-Bit, 40 MSPS ADC SE/Diff Inputs with Int References and 9.3 bit ENOB
ADS822	10	40	5	1	190	300	1	2	60	SSOP	4.96	10-Bit, 40 MSPS ADC SE/Diff Inputs, Int/Ext References w/Powerdown, pin compatible to ADS823/4/6/8
ADS825	10	40	5	1	190	300	1	2	60	SSOP	4.96	10-Bit, 40 MSPS ADC SE/Diff Inputs, Int/Ext Ref w/Powerdown option, pin compatible to ADS823/4/6/8
THS1040	10	40	3	1	100	900	0.9	1.5	60	SOIC,TSSOP	4.42	10 Bit, 40 MSPS Low Power ADC
THS1041	10	40	3	1	103	900	1	1.5	60	SOIC,TSSOP	5.16	10 Bit, 40 MSPS Low Power ADC with PGA and Internal Precision Clamp
ADS823	10	60	5	1	265	300	1	2	60	SSOP	8.00	10-Bit, 60 MSPS ADC SE/Diff, Int/Ext Ref., program. i/p range w/Pwrdown, comp. to ADS822/4/5/6/8
ADS826	10	60	5	1	265	300	1	2	60	SSOP	8.00	10-Bit, 60 MSPS ADC SE/Diff, Int/Ext Ref., program. input range w/Pwrdn and comp. to ADS822/3/4/5/8
ADS5102	10	65	1.8	1	160	950	1	2	58	TQFP	6.75	10 Bit, 65MSPS ADC, 1.8V, Int/Ext Ref, w/Power-Down
ADS828	10	75	5	1	315	300	1	3	58	SSOP	9.36	10-Bit, 75 MSPS ADC SE/Diff, Int/Ext Ref., program. i/p range w/Pwrdown, comp. to ADS822/3/4/5/6
12-Bit												
ADS803	12	5	5	1	116	270	0.75	2	69	SSOP	7.03	12-Bit, 5 MSPS ADC Int/Ext Ref., flexible I/P between 2 and 5Vpp, Out of Range Indicator, pin comp.
THS1206	12	6	5	4	216	96	1	1.5	74	TSSOP	7.95	12-Bit, 6 MSPS ADC Quad Ch. (Config.), DSP/uP IF, Integ. 16x FIFO, Channel AutoScan, Low Power
THS1207	12	6	5	4	186	96	1	1.5	69	TSSOP	7.45	12-Bit, 6 MSPS Simultaneous Sampling Quad Channel ADC; Includes Parallel DSP/uP I/F & Ch. Auto-Scan
THS12082	12	8	5	2	186	96	1	1.5	69	TSSOP	8.55	12 Bit, 8 MSPS ADC with Dual Ch., DSP/uP Interface, 16X FIFO, Channel Autoscan, Low Power
THS1209	12	8	5	2	188	98	1	1.5	69	TSSOP	8.05	12 Bit, 8 MSPS ADC Dual Ch., DSP/uP Interface, Channel Autoscan, Low Power

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

ADCs (≥1 MSPS) (Continued)

Device Name	Resolution (Bits)	Sorted By Sample Rate (MSPS)	Supply (V)	Analog Inputs	Power (typ) (mW)	Analog Input BW (MHz)	DNL (max) (±LSB)	INL (max) (±LSB)	SNR (dB)	Package	Price*	Description
12-Bit (Continued)												
ADS802	12	10	5	1	250	65	1	2.75	66	SOIC	12.40	12-Bit, 10 MSPS ADC SE/Diff inputs. Internal References, pin compatible to ADS800/1
ADS804	12	10	5	1	180	270	0.75	2	69	SSOP	10.07	12-Bit, 10 MSPS ADC Int/Ext Ref., flexible I/P between 2 and 5Vpp, Out of Range Indicator, pin comp.
THS1215	12	15	3.3	1	148	180	0.9	1.5	68.9	SOIC,TSSOP	12.57	12-Bit, 15 MSPS ADC w/ Low Power and excellent ENOB
ADS805	12	20	5	1	300	270	0.75	2	67	SSOP	13.11	12-Bit, 20 MSPS ADC Int/Ext Ref., flexible I/P between 2 and 5Vpp, Out of Range Indicator, pin comp.
ADS801	12	25	5	1	270	65	1		61	SOIC	20.80	12-Bit, 25 MSPS ADC SE/Diff inputs. Internal References, pin compatible to ADS800/2
THS1230	12	30	3.3	1	168	180	1	2.5	68	SOIC,TSSOP	13.83	Low Power, High-Speed ADC
ADS2806	12	32	5	2	420	270	1	4	69	HTQFP	15.13	12-Bit, 32 MSPS Dual ADC, Int/Ext Ref., program. input range w/Out of Range Flag
ADS800	12	40	5	1	390	65	1		62	SOIC	29.35	12-Bit, 40 MSPS ADC SE/Diff inputs. Internal References, pin compatible to ADS801/2
ADS2807	12	50	5	2	720	270	1	5	68	HTQFP	22.21	12-Bit, 50 MSPS Dual ADC, Int/Ext Ref., program. input range w/Out of Range Flg
ADS807	12	53	5	1	335	270	1	4	69	SSOP	16.14	12-Bit, 53 MSPS ADC SE/Diff inputs w/range of 2 to 3Vpp, Int/Ext Ref., Out of Range Indicator
ADS808	12	70	5	1	900	1000	1.7	7	65	TQFP	18.55	12-Bit, 70 MSPS ADC SE/Diff, Int/Ext Ref., flexible clocking, selectable Fullscale Range and Pwrdown
ADS809	12	80	5	1	880	1000	1.7	6	65	TQFP	23.75	12-Bit, 80 MSPS ADC SE/Diff, Int/Ext Ref., Flexible Clocking, Selectable Fullscale Range and Pwrdown
ADS5410	12	80	3.3/1.8	1	360	1000	1	2	66	PFB	23.00	12-Bit, 80 MSPS ADC Diff Inputs, Lowest Power
14-Bit												
THS1401	14	1	3.3	1	270	140	1	5	72	TQFP	8.46	14-Bit, 1 MSPS ADC Single Ch., Diff. Input, DSP/uP IF, Pgmable Gain Amp, Internal S&H
THS14F01	14	1	3.3	1	270	140	1	2.5	72	TQFP	9.16	14-bit, 1 MSPS ADC with 32-word FIFO
THS1403	14	3	3.3	1	270	140	1	5	72	TQFP	11.28	14-Bit, 3 MSPS ADC Single Ch., Diff. Input, DSP/uP IF, Pgmable Gain Amp, Internal S&H
THS14F03	14	3	3.3	1	270	140	1	2.5	72	TQFP	11.98	14-bit, 3 MSPS ADC with 32-word FIFO
THS1408	14	8	3.3	1	270	140	1	5	72	TQFP	14.10	14-Bit, 8 MSPS ADC Single Ch., Diff. Input, DSP/uP IF, Pgmable Gain Amp, Internal S&H
ADS850	14	10	5	1	220	300			76	TQFP	17.95	14-Bit, 10 MSPS ADC SE/Diff Input, Int/Ext Ref., Self Calibrating
ADS5421	14	40	5	1	850		1		75	LQFP	20.91	14 Bit,40MSPS Sampling ADC
ADS5422	14	62	5	1	1200	300	1		72	LQFP	29.00	14-Bit, 62MSPS ADC Single Channel

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

ADCs (<1 MSPS)

ADS8320, ADS8321, ADS8325 (16-Bit, High-Speed) ADC—Product Highlights

ADS8320 Features

- 100-kHz Sampling Rate
- MicroPower:
  1.8 mW at 100 kHz and 2.7 V
  0.3 mW at 10 kHz and 2.7 V
- Power Down: 3 µA max
- MSOP-8 package
- Pin-Compatible to ADS7816 and ADS7822
- Serial (SPI®/SSI) Interface

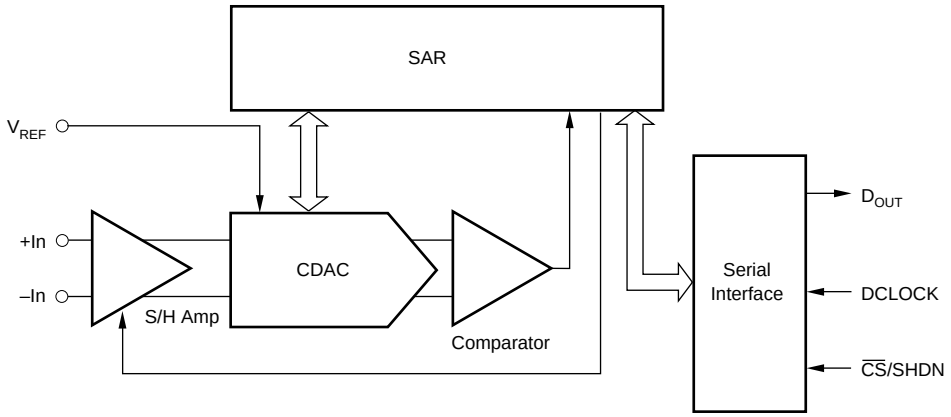
ADS8321 Features

- Bipolar Input Range
- 100-kHz Sampling Rate
- MicroPower:
  4.5 mW at 100 kHz
  1 mW at 10 kHz
- Power Down: 3 µA max
- MSOP-8 Package
- Pin-Compatible to ADS7816 and ADS7822
- Serial (SPI/SSI) Interface

ADS8325 Features

- 16 Bits No Missing Codes
- Very Low Noise: 3 LSB_{p-p}
- Excellent Linearity: ±1.5 LSB typ
- MicroPower:
  4.5 mW at 100 kHz
  1 mW at 10 kHz
- MSOP-8 Package
- 16-Bit Upgrade to the 12-Bit ADS7816 and ADS7822
- Pin-Compatible with the ADS7816, ADS7822, and ADS8320
- Serial (SPI/SSI) Interface

Typical Block Diagram



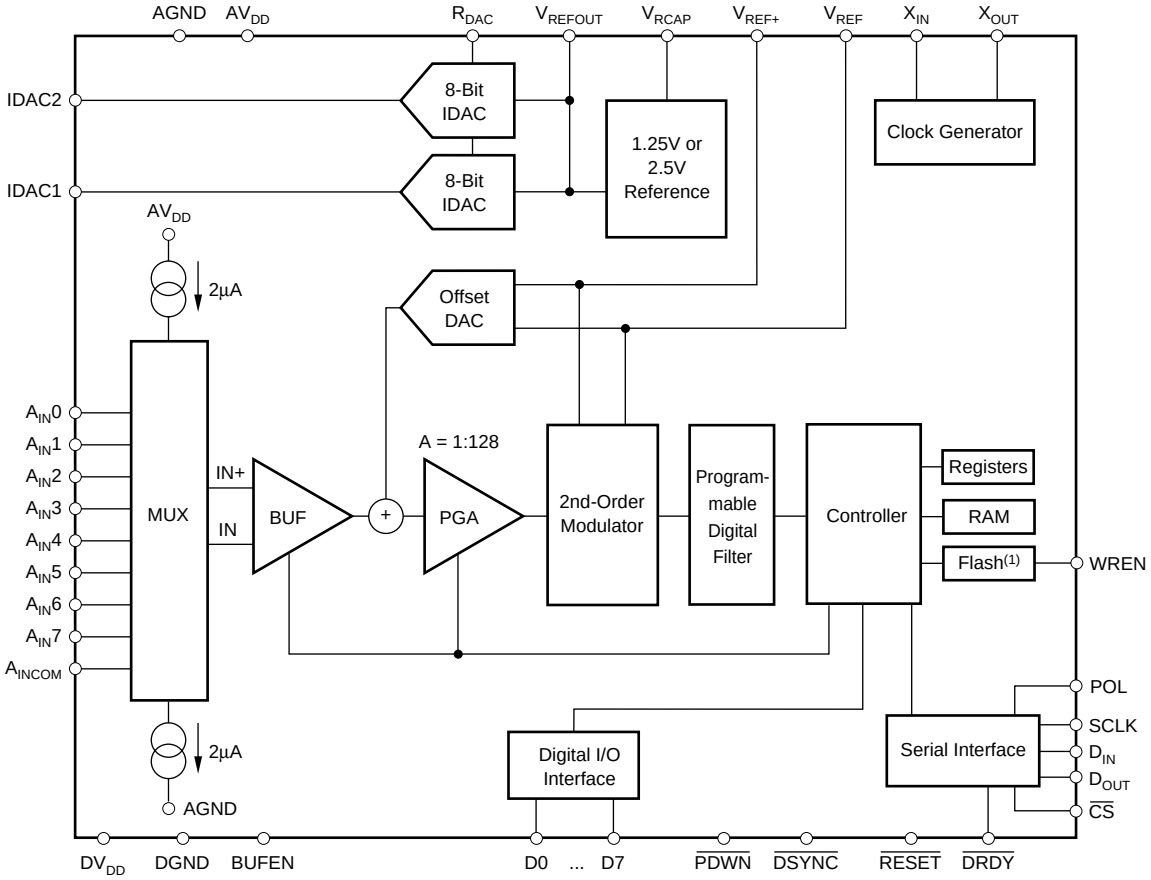
ADCs (<1 MSPS) (Continued)

ADS1216, ADS1217, ADS1218 (High-Resolution) ADC—Product Highlights

Features

- 24 Bits No Missing Codes
- 0.0015% INL
- 22 Bits Effective Resolution (PGA = 1), 19 Bits (PGA = 128)
- PGA From 1 to 128
- Single Cycle Settling Mode
- Programmable Data Output Rates Up to 1 kHz
- On-Chip 1.25-V/2.5-V Reference
- External Differential Reference of 0.1 V to 2.5 V
- On-Chip Calibration
- SPI Compatible
- 2.7 V to 5.25 V
- < 1 mW Power Consumption
- 4KB Non-Volatile Flash Memory (ADS1218)

Typical Block Diagram



NOTE: (1) Flash available on ADS1218.

ADCs (<1 MSPS) (Continued)

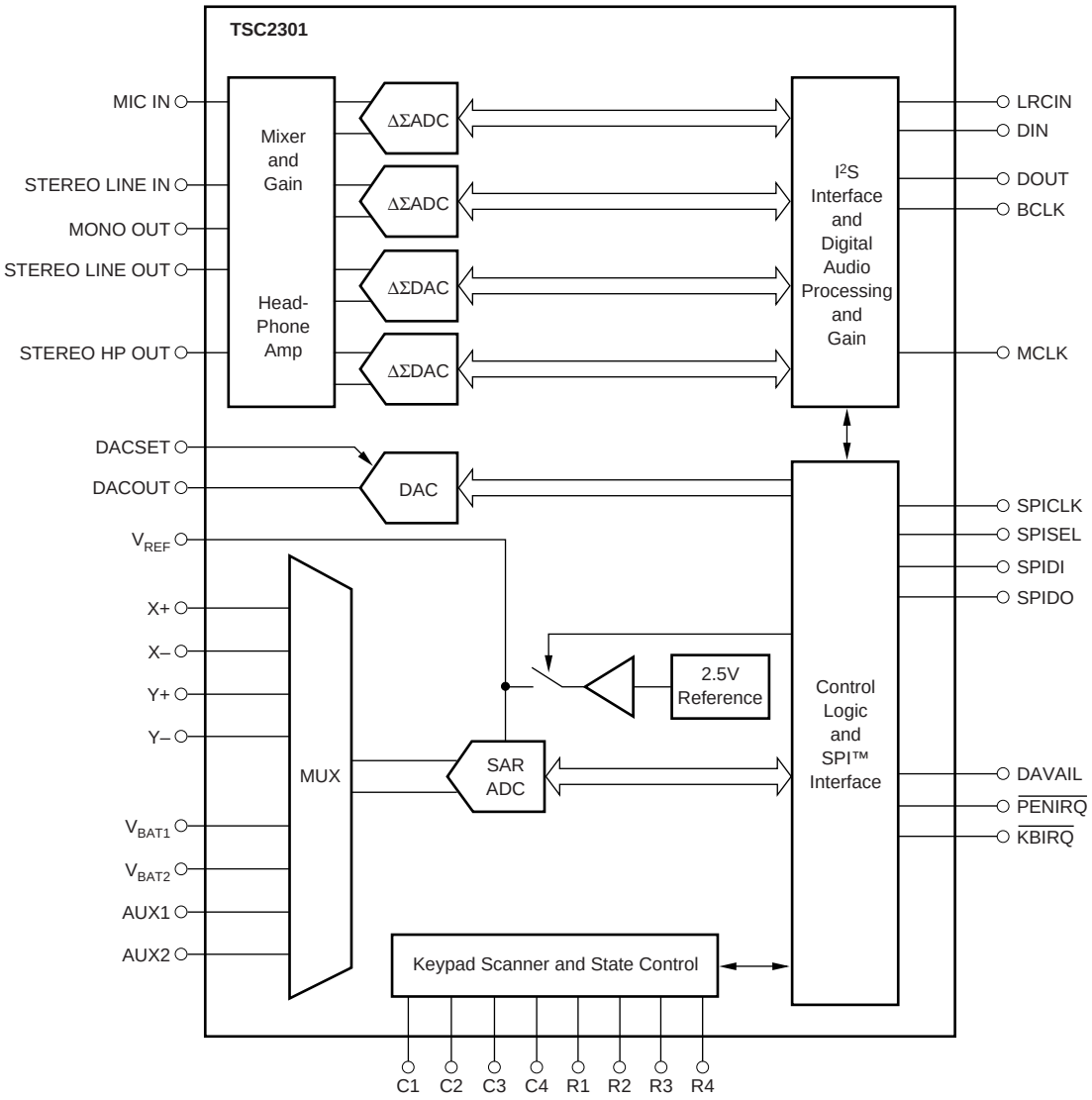
TSC2301*, TSC2300*, TSC2200, TSC2000 Intelligent Touch Screen Controller—Product Highlights and Previews

Features

- 4-Wire Touch Screen Controller
- 4x4 Keypad Interface
- Audio Codec
  - 20-Bit Delta-Sigma ADC/DAC
  - Dynamic Range: 97-dB SNR
  - Sampling Rate: 8 kHz to 48 kHz
  - I^2S Interface
- Internal Detection of Screen and Keypad Touch
- Touch Screen Programmable:
  - Resolution
  - Sampling Rate
  - Touch Screen Settling Delay
  - Averaging
- Two Direct Battery Measurements
- Two Auxiliary Inputs
- On-Chip Temperature Measurement
- Full Power-Down Control
- Single 2.2-V to 3.6-V Supply
- Processor-Based Product Family:
  - TSC2000: Basic Controller
  - TSC2200: Includes 4x4 Keypad
  - TSC2300*: TSC2200, plus Mono in Stereo Out Codec
  - TSC2301*: TSC2200, plus Stereo in Stereo Out Codec

*Product Preview

Typical Block Diagram



ADCs (<1 MSPS) (Continued)

MSC1210 ADC—Product Highlights

Analog Features

- 24 Bits No Missing Codes
- 22-Bit Effective Resolution at 10 Hz Low Noise: 75 nV
- PGA from 1 to 128
- Precision On-Chip Voltage Reference: Accuracy: 0.2% Drift: 5 ppm/°C
- 8 Differential/Single-Ended Channels
- On-Chip Offset/Gain Calibration
- Offset Drift: 0.02 ppm/°C
- Gain Drift: 0.5 ppm/°C
- Burnout Sensor Detection
- Single-Cycle Conversion
- Selectable Buffer Input

Digital Features

Microcontroller Core

- 8051-Compatible
- High-Speed Core: 4 Clocks per Instruction Cycle
- DC to 33 MHz
- Single Instruction 121 ns
- Dual Data Pointer

Memory

- Up to 32KB FLASH Data Memory
- Flash Memory Partitioning
- Endurance 1M Erase/Write Cycles, 100-Year Data Retention
- In-System Serially Programmable
- External Program/Data Memory (64KB)
- 1,280 Bytes Data SRAM
- Flash Memory Security
- 2KB Boot ROM
- Programmable Wait State Control

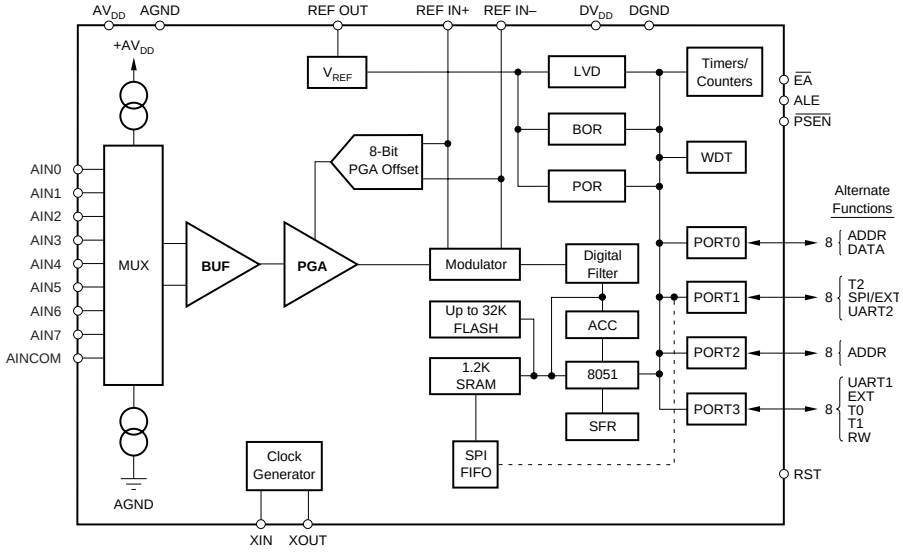
Peripheral Features

- 34 I/O Pins
- Additional 32-Bit Accumulator
- Three 16-Bit Timer/Counters
- System Timers
- Programmable Watchdog Timer
- Full Duplex Dual UART
- Master/Slave SPI With DMA
- 16-Bit PWM
- Power Management Control
- Idle Mode Current < 1 mA
- Stop Mode Current < 1 µA
- Programmable Brownout Reset
- Programmable Low Voltage Detect
- 21 Interrupt Sources
- Two Hardware Breakpoints

General Features

- Package: TQFP-64
- Low Power: 4 mW
- Industrial Temperature Range: –40°C to +85°C
- Power Supply: 2.7 V to 5.25 V

MSC1210 Block Diagram



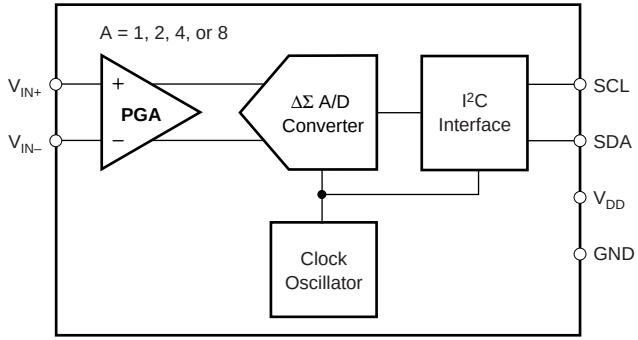
ADCs (<1 MSPS) (Continued)

ADS1100 (Self-Calibrating, 16-Bit) ADC—Product Preview

Features

- Complete Data Acquisition System in a Small SOT23-6 Package
- 16 Bits No Missing Codes
- 0.0125% FSR INL, max
- Continuous Self-Calibration
- Single-Cycle Conversion
- Programmable Gain Amplifier (PGA) = 1, 2, 4, or 8
- Low Noise: 10 μV_{p-p}
- Programmable Data Rate: 8 to 128 SPS
- Internal System Clock
- I^2C Interface
- Power Supply: 2.7 V to 5.5 V
- Low Current Consumption: 90 µA

ADS1100 Block Diagram



Device Name	Resolution (Bits)	Sorted By Sample Rate (kSPS)	Supply (V)	Data-Bus Interface (Bits)	Analog Inputs	Power (typ) (mW)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
4.5-Digit BCD Output												
ICL7135	4.5	0.003	±5		1	5	Ext	0.01	0.5	PDIP	3.36	4.5-Bits, 0.003 kSPS ADC, Muxed BCD Output, True Differential Input, 1 Ch.
TLC7135	4.5	0.003	±5	BCD	1	5	Ext	0.01	0.5	PDIP,SOIC	2.01	4.5-Bits, 0.003 kSPS ADC, Muxed BCD Output, True Differential Input, 1 Ch.
8-Bit												
TLC0834	8	20	5	Serial	4	3	Ext	0.4	0.4	PDIP,SOIC	1.47	8-Bit, 20 kSPS ADC Serial Out, µProcessor Periph./Standalone, Rem. Op w/Ser. Data Link, Mux option
TLC0838	8	20	5	Serial	8	3	Ext	0.4	0.4	PDIP,SOIC,TSSOP	1.47	8-Bit, 20 kSPS ADC Serial Out, µProcessor Periph./Standalone, Rem. Op w/Ser. Data Link, Mux option
TLC0832	8	22	5	Serial	2	12.5	Int	0.4	0.4	PDIP,SOIC	1.41	8-Bit, 22 kSPS ADC Serial Out, µProcessor Periph./Standalone, Mux option w/SE or differential, 2 Ch.
TLC542	8	25	5	Serial	11	6	Ext	0.5	0.5	PDIP,PLCC,SOIC	1.51	8-Bit, 25 kSPS ADC Serial-Out, On-Chip 12-Ch. Analog Mux, 11 Ch.
TLC0831	8	31	5	Serial	1	3	Ext	0.4	0.4	PDIP,SOIC	1.41	8-Bit, 31 kSPS ADC Serial Out, Microprocessor Peripheral/ Standalone, Single Channels

*Budgetary price per unit in U.S. dollars, lots of 1,000+

Preview devices announced but not yet in production appear in **BOLD**.

ADCs (<1 MSPS) (Continued)

Device Name	Resolution (Bits)	Sorted By Sample Rate (kSPS)	Supply (V)	Data-Bus Interface (Bits)	Analog Inputs	Power (typ) (mW)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
8-Bit (Continued)												
TLV0838	8	37.9	3.3	Serial	8	2.7	Ext	0.5	0.5	PDIP,SOIC,TSSOP	1.47	8-Bit 37.9 kSPS ADC Serial Out, Ratiometric Op or Vcc Ref, TTL/MOS Input & Output Compatible, 8 Ch.
TLC541	8	40	5	Serial	11	6	Ext	0.5	0.5	PDIP,PLCC,SOIC	1.43	8-Bit, 40 kSPS ADC Serial-Out, On-Chip 12-Ch. Analog Mux, 11 Ch.
TLC549	8	40	3 to 6	Serial	1	9	Ext	0.5	0.5	PDIP,SOIC	0.92	8-Bit, 40 kSPS ADC Serial Out, Low Power, Compatible to TLC540/545/1540, Single Ch.
TLV0834	8	41	3.3	Serial	4	2.7	Ext	0.5	0.5	PDIP,SOIC	1.47	8-Bit 41 kSPS ADC Serial Out, Ratiometric Op or Vcc Ref, TTL/MOS Input & Output Compatible, 4 Ch.
TLV0832	8	44.7	3.3	Serial	2	5	Int	0.5	0.5	PDIP,SOIC	1.41	8-Bit 44.7 kSPS ADC Serial Out, Muxed Twin Ch. w/SE or Differential Option, 2 Ch.
TLC548	8	45.5	3 to 6	Serial	1	9	Ext	0.5	0.5	PDIP,SOIC	1.15	8-Bit, 45.5 kSPS ADC Serial Out, Low Power, Compatible to TLC540/545/1540, Single Ch.
TLV0831	8	49	3.3	Serial	1	0.67	Ext	0.5	0.5	PDIP,SOIC	1.41	8-Bit 49 kSPS ADC Serial Out, Differential input, Configurable as SE input, 1 Ch.
TLC540	8	75	5	Serial	11	6	Ext	0.5	0.5	PDIP,PLCC,SOIC	1.85	8-Bit, 75 kSPS ADC Serial-Out, On-Chip 12-Ch. Analog Mux, 11 Ch.
TLC545	8	76	5	Serial	19	6	Ext	0.5	0.5	PDIP,PLCC	3.13	8-Bit, 76 kSPS ADC Serial Out, On-Chip 20 Ch. Analog Mux, 19 Ch.
TLC0820A	8	392	5	P8	1	37.5	Ext	0.5	1	PDIP,PLCC,SOIC,SSOP	1.81	8-Bit, 392 kSPS ADC Parallel Out, Microprocessor Peripheral, On-Chip Track-and-Hold, 8 Channels
10-Bit												
TLC1541	10	32	5	Serial	11	6.5	Ext	1	1	PDIP,PLCC,SOIC	3.05	10-Bit, 32 kSPS ADC Serial Out, µProcessor Periph./Standalone, 11 Ch.
TLC1542	10	38	5	Serial	11	4	Ext	0.5	0.5	CDIP,LCCC,PDIP, PLCC,SOIC	2.38	10-Bit, 38 kSPS ADC Serial Out, On-Chip System Clock, 11 Ch.
TLC1543	10	38	5	Serial	11	4	Ext	1	1	PDIP,PLCC,SOIC,SSOP	1.97	10-Bit, 38 kSPS ADC Serial Out, On-Chip System Clock, 11 Ch.
TLC1549	10	38	5	Serial	1	4	Ext	1	1	PDIP,SOIC	1.73	10-Bit, 38 kSPS ADC Serial Out, On-Chip System Clock, Single Ch.
TLV1543	10	38	3.3	Serial	11	2.7	Ext	1	1	CDIP,LCCC,PDIP,PLCC, SOIC,SSOP	2.18	10-Bit 200 kSPS ADC Ser. Out, Built-In Self-Test Modes, Inherent S&H, Pin Compat. w/TLC1543, 11 Ch.
TLV1549	10	38	3.3	Serial	1	1.32	Ext	1	1	PDIP,SOIC	1.73	10-Bit 38 kSPS ADC Ser. Out, Inherent S&H Function, Terminal Compat. W/TLC1549, TLC1549x
TLV1544	10	85	2.7 to 5.5	Serial	4	1.05	Ext	1	1	SOIC,TSSOP	1.87	10-Bit 85 kSPS ADC Ser. Out, Pgrmable Pwr/Pwrdn/Conversion Rate, TMS320™ DSP/SPI/QPSI Compat., 4 Ch.
TLV1548	10	85	2.7 to 5.5	Serial	8	1.05	Ext	1	1	CDIP,LCCC,SSOP	2.19	10-Bit 85 kSPS ADC Ser. Out, Pgrmable Pwr/Pwrdn/Conversion Rate, TMS320 DSP/SPI/QPSI Compat., 8 Ch.
TLC1550	10	164	5	P10	1	10	Ext	0.5	0.5	PLCC,SOIC	3.73	10-Bit, 164 kSPS ADC Parallel Out, Direct I/F to DSP/µProcessor, 10 Ch.
TLC1551	10	164	5	P10	1	10	Ext	1	1	PLCC,SOIC	3.19	10-Bit, 164 kSPS ADC Parallel Out, Direct I/F to DSP/µProcessor, 10 Ch.

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

ADCs (<1 MSPS) (Continued)

Sorted By: Sample Rate (kSPS)

Device Name	Resolution (Bits)	Sample Rate (kSPS)	Supply (V)	Data-Bus Interface (Bits)	Analog Inputs	Power (typ) (mW)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
10-Bit (Continued)												
TLV1504	10	200	2.7 to 5.5	Serial	4	2.7	Int	0.5	0.5	SOIC,TSSOP	2.53	10-Bit 200 kSPS ADC Serial Out, Hardware/Software/Auto Powerdown, Pgrmable Auto Channel Sweep, 4 Ch.
TLV1508	10	200	2.7 to 5.5	Serial	8	2.7	Int	0.5	0.5	SOIC,TSSOP	3.03	10-Bit 200 kSPS ADC Serial Out, Hardware/Software/Auto Powerdown, Pgrmable Auto Channel Sweep, 8 Ch.
TLC1514	10	400	5	Serial	4	22	Int	0.5	0.5	SOIC,TSSOP	2.78	10-Bit, 400 kSPS ADC Serial Out, SPI/DSP Compatible I/F, Power Down, 4 Ch.
TLC1518	10	400	5	Serial	8	22	Int	0.5	0.5	SOIC,TSSOP	3.30	10-Bit, 400 kSPS ADC Serial Out, SPI/DSP Compatible I/F, Power Down, 8 Ch.
12-Bit												
ADS1286	12	37	5	Serial	1	3.5	Ext	0.75	1	PDIP,SOIC	3.02	12-Bit Micro Power Sampling ADC
ADS574	12	40	5,–15	Parallel	1	100	Int	1	0.5	PDIP	15.18	Microprocessor-Compatible Sampling CMOS ADC
ADS7806	12	40	5	Parallel/Serial	1	35	Int	0.45	0.45	PDIP,SOIC	11.50	Low-Power 12-Bit Sampling CMOS ADC
ADS7812	12	40	5	Serial	1	35	Int	0.5	0.5	PDIP,SOIC	11.23	Low-Power, Serial 12-Bit Sampling ADC
ADS7824	12	40	5	Parallel/Serial	4	50	Int	0.5	0.5	PDIP,SOIC	12.45	4-Channel, 12-Bit Sampling CMOS ADC
ADS7823	12	50	2.7 to 3	Serial, I^2C	1	1.625	Ext	1	1	MSOP	3.02	12-Bit Low Power,I^2C Serial, Sampling ADC
ADS7828	12	50	2.7 to 5.5	Serial	8	1	Int	1	1	TSSOP	3.48	12-Bit 50 kSPS ADC I^2C Low Power 8-Channel MUX Int 2.5V Ref
ADS7870	12	50	2.7 to 5	Serial	8	6.5	Int	1	2.5	SSOP	3.95	12-Bit ADC, MUX, PGA and Internal Reference Data Acquisition System
TSC2003	12	50	2.7 to 5.5	Serial	4	2	Int	2	2	TSSOP	2.18	Touch Screen Controller
TLC2543	12	66	5	Serial	11	5	Ext	1	1	CDIP,PDIP,PLCC, SOIC,SSOP	4.23	12-Bit 66 kSPS ADC Ser. Out, Pgrmable MSB/LSB First, Pgrmable Power Down/Output Data Length, 11 Ch.
TLV2543	12	66	3.3	Serial	11	3.3	Ext	1	1	PDIP,SOIC,SSOP	4.23	12-Bit 66 kSPS ADC Ser. Out, Pgrmable Pwrdn, MSB/LSB First, Built-In Self-Test Mode, 11 Ch.
ADS7822	12	75	2.7 to 3	Serial	1	1.625	Ext	0.75	0.75	MSOP,PDIP,SOIC	1.46	12-Bit High Speed 2.7V Micro Power Sampling ADC
VECANA01	12	78	±5	Serial	10	225	Int	2	2	PLCC	24.03	10-Channel 12-Bit Data Acquisition System
ADS774	12	100	5,–15	Parallel	1	100	Int	1	0.5	PDIP,SOIC	15.74	Microprocessor-Compatible Sampling CMOS ADC
ADS7804	12	100	5	Parallel	1	100	Int	0.45	0.45	PDIP,SOIC	13.36	12-Bit 10µs Sampling CMOS ADC
ADS7808	12	100	5	Serial	1	100	Int	0.45	0.45	SOIC	10.58	12-Bit 10µs Serial CMOS Sampling ADC
ADS7832	12	117	3 to 5	Parallel	4	7.5	Int	0.75	0.75		16.19	Autocalibrating, 4-Channel, 12-Bit ADC
ADS7843	12	125	2.7 to 5	Serial	2	3.5	Ext	2	2	SSOP	1.98	Touch Screen Controller
ADS7845	12	125	2.7 to 5	Serial	1	3.5	Int	2	2	SSOP	4.00	Touch Screen Controller
ADS7846	12	125	2.7 to 5	Serial	1	1.8	Int	2	2	SSOP,TSSOP	2.13	Touch Screen Controller
TSC2000	12	125	2.7 to 3	Serial	8	5	Ext	1	2	TSSOP	2.25	Pgrmable Touch Screen Controller with 8/10/12-Bit 125-Khz ADC and SPI Interface
TSC2200	12	125	2.7 to 3	Serial	8	3.75	Ext	1	2	TSSOP	2.31	Pgrmable Touch Screen Controller with 12-Bit 125KHz ADC and Keypad Interface

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

ADCs (<1 MSPS) (Continued)

Device Name	Resolution (Bits)	Sorted By Sample Rate (kSPS)	Supply (V)	Data-Bus Interface (Bits)	Analog Inputs	Power (typ) (mW)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
12-Bit (Continued)												
ADS7816	12	200	2.7 to 5	Serial	1	3.5	Ext	0.75	1	MSOP,PDIP,SOIC	1.98	12-Bit High Speed Micro Power Sampling ADC
ADS7817	12	200	2.7 to 5	Serial	1	4	Ext	1	1	MSOP,SOIC	1.98	12-Bit Differential Input Micro Power Sampling ADC
ADS7841	12	200	2.7 to 5	Serial	4	3.5	Ext	1	1	PDIP,SSOP	2.53	12-Bit, 4-Channel Serial Output Sampling ADC
ADS7842	12	200	2.7 to 5	Parallel	4	3.5	Ext	1	1	SSOP	2.99	12-Bit, 4-Channel Parallel Output Sampling ADC
ADS7844	12	200	2.7 to 5	Serial	8	3.5	Ext	1	1	SSOP	2.94	12-Bit, 8-Channel Serial Output Sampling ADC
TLC2574	12	200	5	Serial	4	24	Ext	0.5	0.5	PDIP,SOIC,TSSOP	5.04	Serial Out, Low Power with Built-in Conversion Clock & 8x FIFO, 4 Channels
TLC2578	12	200	5	Serial	8	24	Ext	0.5	0.5	SOIC,TSSOP	5.55	Serial Out, Low Power with Built-In Conversion Clock & 8x FIFO, 8 Channels
TLV2541	12	200	2.7 to 5.5	Serial	1	2.3	Ext	1	1	MSOP,SOIC	3.54	12-Bit, 200 kSPS ADC, Serial Out, TMS320 Compatible (up to 10MHz), Single Ch.
TLV2542	12	200	2.7 to 5.5	Serial	2	2.3	Ext	1	1	MSOP,SOIC	3.54	12-Bit, 200 kSPS ADC, Serial Out, TMS320 Compatible (up to 10MHz), Dual Ch. Auto Sweep
TLV2544	12	200	2.7 to 5.5	Serial	4	4.5	Int	1	1	SOIC,TSSOP	4.27	12-Bit 200 kSPS ADC Ser. Out, Auto Pwrdn (S/W and H/W), Low Power W/8 x FIFO W/4 Ch.
TLV2544Q	12	200	2.7 to 5.5	Serial	4		Int	1	1.2	SOIC	4.76	2.7-V to 5.5-V 12-Bit 200-KSPS Low-Power ADC
TLV2545	12	200	2.7 to 5.5	Serial	1	2.3	Ext	1	1	MSOP,SOIC	3.54	12-Bit, 200 kSPS ADC, Ser. Out, TMS320 Compatible (up to 10MHz), Single Ch. Pseudo-Differential
TLV2548	12	200	2.7 to 5.5	Serial	8	4.5	Int	1	1	SOIC,TSSOP	4.71	12-Bit 200 kSPS ADC Ser. Out, Auto Pwrdn (S/W and H/W), Low Power W/8 x FIFO W/8 Ch.
TLV2548Q	12	200	2.7 to 5.5	Serial	8		Int	1	1.2	SOIC	4.90	2.7-V to 5.5-V 12-Bit 200-KSPS Low-Power ADC
TLV2553	12	200	2.7 to 5.5	Serial	11	2.2	Ext	1	1	SOIC,TSSOP	4.05	12-Bit, 200 KSPS, 11 Channel, Low Power, Serial ADC Serial Out, w/Pwrdwn
TLV2556	12	200	2.7 to 5.5	Serial	11	3.24	Int	1	1	SOIC,TSSOP	4.20	12-Bit, 200 KSPS, 11 Channel, Low Power, Serial ADC with Internal Reference
ADS7800	12	333	5,–15	Parallel	1	215	Int	0.75	0.5	CDIP SB,PDIP,SOIC	26.66	12-Bit 3µs Sampling ADC
TLC2551	12	400	5	Serial	1	15	Ext	1	1	MSOP,SOIC	3.74	12-Bit, 400 kSPS ADC, Serial Out, TMS320 Compatible (up to 10MHz), Single Ch.
TLC2552	12	400	5	Serial	2	15	Ext	1	1	MSOP,SOIC	3.74	12-Bit, 400 kSPS ADC, Serial Out, TMS320 Compatible (up to 10MHz), Dual Ch. Auto Sweep
TLC2554	12	400	5	Serial	4	4.5	Int	1	1	SOIC,TSSOP	5.06	12-bit, 400 KSPS ADC, 4-Ch. Serial with Powerdown
TLC2555	12	400	5	Serial	1	15	Ext	1	1	MSOP,SOIC	3.74	12-Bit, 400 kSPS ADC, Serial Out, TMS320 Compatible (up to 10MHz), Single Ch. Pseudo-differential
TLC2558	12	400	5	Serial	8	3.3	Int	1	1	SOIC,TSSOP	5.56	12-bit, 400 KSPS ADC, 8-Ch. Serial with Powerdown
ADS7818	12	500	5	Serial	1	15	Int	1	1	MSOP,PDIP	2.63	12-Bit High Speed Low Power Sampling ADC
ADS7834	12	500	5	Serial	1	15	Int	1	1	MSOP	2.65	12-Bit High Speed Low Power Sampling ADC
ADS7835	12	500	5	Serial	1	17.5	Int	1	1	MSOP	3.01	12-Bit, High-Speed, Low Power Sampling ADC

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

ADCs (<1 MSPS) (Continued)

Device Name	Resolution (Bits)	Sorted By Sample Rate (kSPS)	Supply (V)	Data-Bus Interface (Bits)	Analog Inputs	Power (typ) (mW)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
12-Bit (Continued)												
ADS7852	12	500	5	Parallel	8	12	Int	1	1	TQFP	3.56	12-Bit, 8-Channel, Parallel Output ADC
ADS7861	12	500	5	Serial	4	40	Int	1	1	SSOP	4.03	Dual, 500kHz, 12-Bit, 2+2 Ch, Simultaneous Sampling ADC
ADS7862	12	500	5	Parallel	4	40	Int	1	1	TQFP	5.99	Dual 500kHz, 12-Bit, 2+2 Ch Simultaneous Sampling ADC
ADS7864	12	500	5	Parallel	6	50	Int	1	1	TQFP	6.83	500kHz, 12-Bit, 6-Channel Simultaneous Sampling ADC
ADS7810	12	800	±5	Parallel	1	225	Int	1	0.75	SOIC	31.74	12-Bit 800kHz Sampling CMOS ADC
14-Bit												
ADS8324	14	50	2.7 to 3	Serial	1	2.5	Ext	2	2	MSOP	3.95	14-Bit 50 kSPS ADC Ser. Out, 1.8V Operation
TLC3541	14	200	5	Serial	1	17.5	Ext	1	1	MSOP,SOIC	4.75	14-Bit 200KSPS ADC Ser. Out, Auto PWRDN, Single Ended Input
TLC3544	14	200	5	Serial	4	20	Int	1	1	SOIC,TSSOP	7.08	14-bit, 5V, 200KSPS, 4-Channel Unipolar ADC
TLC3545	14	200	5	Serial	1	17.5	Ext	1	1	MSOP,SOIC	4.75	14-Bit 200KSPS ADC Serial Out, Auto PWRDN, Pseudo Differential Input
TLC3548	14	200	5	Serial	8	20	Int	1	1	SOIC,TSSOP	7.59	14-bit, 5V, 200KSPS, 8-Channel Unipolar ADC
TLC3574	14	200	5	Serial	4	24	Ext	1	1.5	PDIP,SOIC,TSSOP	7.59	Serial Out, Low Power with Built-In Conversion Clock & 8x FIFO, 4 Channels
TLC3578	14	200	5	Serial	8	24	Ext	1	1.5	SOIC,TSSOP	9.36	Serial Out, Low Power with Built-In Conversion Clock & 8x FIFO, 8 Channels
16-Bit												
ADS7807	16	40	5	Parallel/Serial	1	35	Int	1.5	1.5	PDIP,SOIC	26.06	Low-Power 16-Bit Sampling CMOS ADC
ADS7813	16	40	5	Serial	1	35	Int	1	2	PDIP,SOIC	20.24	Low-Power, Serial 16-Bit Sampling ADC
ADS7825	16	40	5	Parallel/Serial	4	50	Int	1	2	PDIP,SOIC	28.80	4 Channel, 16-Bit Sampling CMOS ADC
ADS7805	16	100	5	P8/P16	1	100	Int	1	3	PDIP,SOIC	20.75	16-Bit 10µs Sampling CMOS ADC
ADS7809	16	100	5	Serial	1	100	Int	1	2	SOIC	20.75	16-Bit 10µs Serial CMOS Sampling ADC
ADS8320	16	100	2.7 to 5	Serial	1	10	Ext	2	8	MSOP	6.33	16-Bit, High-Speed, 2.7V to 5V Micro Power Sampling ADC
ADS8321	16	100	5	Serial	1	10	Ext	2	8	MSOP	6.33	16-Bit, High Speed, MicroPower Sampling ADC
ADS8325	16	100	2.7 to 5.5	Serial	1	4.5	Ext	2	4	MSOP	7.11	16-Bit, 100kSPS Serial Out, 2.7V to 5.5V Micro Power Sampling ADC
ADS8341	16	100	2.7 to 5	Serial	4	5	Ext	2	6	SSOP	7.08	16-Bit, 4-Channel Serial Output Sampling ADC
ADS8343	16	100	2.7 to 5	Serial	4	5	Ext	2	6	SSOP	7.08	16-Bit, 4-Channel Serial Output Sampling ADC
ADS8344	16	100	2.7 to 5	Serial	8	5	Ext	2	6	SSOP	7.59	16-Bit, 8-Channel Serial Output Sampling ADC
ADS8345	16	100	2.7 to 5	Serial	8	5	Ext	2	6	SSOP	7.59	16-Bit, 8-Channel Serial Output Sampling ADC
TLC4541	16	200	5	Serial	1	17.5	Ext	2	2.5	MSOP,SOIC	7.00	16-Bit 200KSPS ADC Serial Out, Auto PWRDN, Single-Ended Input
TLC4545	16	200	5	Serial	1	17.5	Ext	2	2.5	MSOP,SOIC	7.00	16-Bit 200KSPS ADC Serial Out, Auto PWRDN, Pseudo Differential Input
ADS7811	16	250	±5	Parallel	1	250	Int	2	4	SOIC	34.41	16-Bit 250kHz Sampling CMOS ADC
ADS7815	16	250	±5	Parallel	1	250	Int	2	4	SOIC	20.24	16-Bit 250kHz Sampling CMOS ADC
ADS8322	16	500	5	P16/P8	1	85	Int	2	6	TQFP	7.59	Unipolar, 16-Bit, 500kSPS CMOS ADC
ADS8323	16	500	5	P16/P8	1	85	Int	2	6	TQFP	7.59	Pseudo Bipolar, 16-Bit, 500kSPS CMOS ADC

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

ADCs (<1 MSPS) (Continued)

Sorted By: Sample Rate (kSPS)

Device Name	Resolution (Bits)	Sample Rate (kSPS)	Supply (V)	Data-Bus Interface (Bits)	Analog Inputs	Power (typ) (mW)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
20-Bit												
DDC112	20	3	5	Serial	2	100	Int	1	16	SOIC	11.52	Dual Current Input 20-Bit ADC
DDC101	20	15	±5	Serial	1	100	Ext	32	16	SOIC	19.22	20-Bit ADC
ADS1250	20	25	5	Serial	1	75	Ext	1	16	SOIC	6.63	SpeedPlus 20-Bit Data Acquisition System ADC
22-Bit												
ADS1212	22	6.25	5	Serial	1	8.5	Int	1	64	PDIP,SOIC	7.34	22-Bit ADC
ADS1213	22	6.25	5	Serial	4	8.5	Int	1	64	PDIP,SOIC,SSOP	8.60	22-Bit ADC
24-Bit												
ADS1240	24	0.015	2.7 to 5.5	Serial	4	0.6	Ext	1	256	SSOP	3.64	24-Bit ADC
ADS1241	24	0.015	2.7 to 5.5	Serial	8	0.6	Ext	1	256	SSOP	4.00	24-Bit ADC
ADS1242	24	0.015	2.7 to 5	Serial	4	0.6	Ext	1	256	TSSOP	3.64	24-Bit ADC, 4 Ch, PGA 1:128, 50/60 Hz Notch, 0.6 mW Power Consumption
ADS1243	24	0.015	2.7 to 5	Serial	8	0.6	Ext	1	256	TSSOP	4.00	24-Bit ADC, 8 Ch, PGA 1:128, 50/60 Hz Notch, 0.6 mW Power Consumption
ADS1216	24	0.78	3 to 5	Serial	8	0.6	Int	1	256	TQFP	7.54	24-Bit ADC
ADS1217	24	0.78	±2.5	Serial	8	0.6	Int	1	256	TQFP	6.54	24-Bit ADC
ADS1218	24	0.78	2.7 to 5.5	Serial	8	0.8	Int	1	256	TQFP	8.85	24-Bit, 780 SPS ADC w/FLASH Memory, 8 CH, Vref, Buffer, 2 IDACs, Serial Out, Digital I/O, Low Power
ADS1201	24	1	5	Modulator	1	10	Int	1	256	SOIC	5.83	High Dynamic Range Delta-Sigma Modulator
MSC1210	24	1	2.7 to 5	Parallel/Serial	8	4	Int	1	256	TQFP	8.95	Precision ADC (ADC) with 8051 Microcontroller and Flash Memory
ADS1210	24	16	5	Serial	1	60	Int	1	256	PDIP,SOIC	9.72	24-Bit ADC
ADS1211	24	16	5	Serial	4	60	Int	1	256	PDIP,SOIC,SSOP	10.38	24-Bit ADC
ADS1251	24	20	5	Serial	1	8	Ext	1	256	SOIC	5.32	ResolutionPlus 24-Bit, 20kHz, Low Power ADC
ADS1253	24	20	5	Serial	4	8	Ext	1	256	SSOP	6.38	24-Bit, 20kHz, Low Power ADC
ADS1254	24	20	+5, +1.8 to 3.6	Serial	4	4	Ext	1	256	SSOP	6.38	24-Bit, 20kHz, Low Power ADC
ADS1252	24	41	5	Serial	1	40	Ext	1	256	SOIC	5.32	ResolutionPlus 24-Bit, 40kHz ADC

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

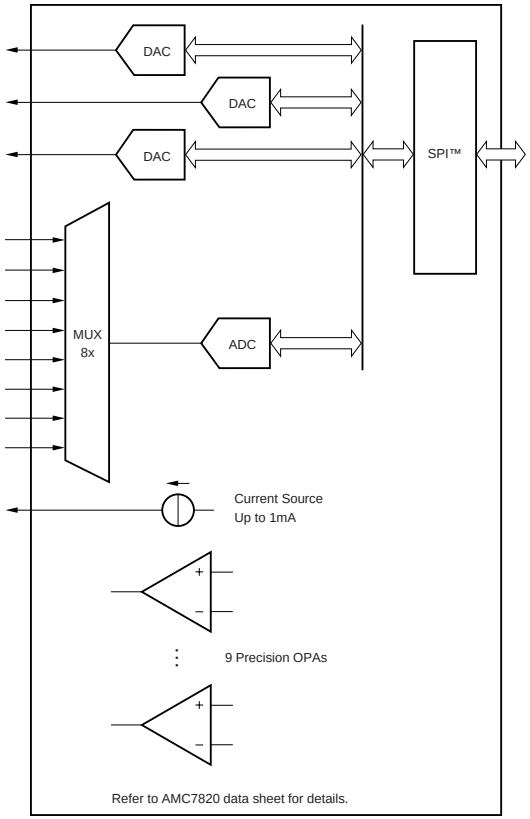
Analog Monitor and Control Circuitry

AMC7820—Product Highlights

Features

- 100-kHz Sampling Rate ADC
- Three DACs
- Nine Operational Amplifiers
- Thermistor Current Source
- SPI™ Serial Interface
- Low Power: 60 mW (3-V/5-V Logic)
- TQFP-48 Package
- Eight Input Channels
- Internal 2.5-V Reference

AMC7820 Block Diagram



Device Name	Number of ADC Channels	ADC Resolution (Bits)	ADC Sampling Rate (kSPS)	ADC Analog Input Range (V)	DAC Resolution (Bits)	Number of DACs	DAC Settling Time (µs)	DAC Output Full Scale (V)	Number of OPAs	OPA Input Offset Voltage (±mV)	OPA V Output Swing from Rail (mV)	OPA GBW (MHz)	Reference Voltage Range (V)	Digital Interface	Power Supply AV_{dd} (V)	Special Function	Package	Price*	Description
AMC7820	8	12	100	0 to 5	12	3	3	0 to 2.5/ 5.0	9	0.5	40	3	2.5	SPI, Serial Clock up to 30 MHz, 3V/5V Logic	5	Pgrmable Current Source up to 1 mA	TQFP	9.15	Analog Monitoring and Control Circuitry

*Budgetary price per unit in U.S. dollars, lots of 1,000+

Preview devices announced but not yet in production appear in **BOLD**.

Codecs—Audio

Device Name	Sorted By Resolution (Bits)	SNR (typ) (dB)	Architecture	Supply Voltage(s) (V)	Bandwidth (Hz)	P_d (typ) (mW)	Sampling Rate (max) (kHz)	Package	Price*	Description
PCM3006	16	93	Stereo	3	20 to 20K	54	48	SSOP	3.27	16-Bit, Single-Ended Analog Input/Output Stereo Audio Codec
PCM3008	16	88	Stereo	2.4	20 to 20K	32	48	TSSOP	2.99	Low Power, Low Voltage 16-Bit Stereo Audio Codec
PCM3500	16	92	Mono	3.3	3.4K to 11K	30	26	SSOP	2.50	Low Voltage, Low Power, 16-Bit, Mono SoundPlus Voice/Modem Codec
PCM3501	16	94	Mono	3.3	3.4K to 11K	30	26	SSOP	2.50	Low Voltage, Low Power, 16-Bit, Mono SoundPlus Voice/Modem Codec
PCM3000	18	98	Stereo	5	20 to 20K	160	48	SSOP	3.27	SoundPlus Stereo Audio Codec 18-bits, Serial Interface
PCM3001	18	98	Stereo	5	20 to 20K	160	48	SSOP	3.27	SoundPlus Stereo Audio Codec 18-bits, Serial Interface
PCM3002	20	94	Stereo	3	20 to 20K	54	48	SSOP	3.27	16-/20-Bit Single-Ended Analog Input/Output SoundPlus Stereo Audio Codecs
PCM3003	20	94	Stereo	3	20 to 20K	54	48	SSOP	3.27	16-/20-Bit Single-Ended Analog Input/Output SoundPlus Stereo Audio Codecs
TLC320AD77	24	100	Stereo	3.3	20 to 20K	160	96	SSOP	3.00	Stereo Audio ADA
TLV320AIC23	24	100	Stereo	1.5/3.3		23	96	TSSOP,VFBGA	2.85	Stereo Codec for Portable Audio
TAS3002								TQFP	3.36	Digital Audio Processor with Codec

Codecs—Voice-Band Audio Processor (VBAP™)

Device Name	Resolution (Bits)	Mic Inputs	Speaker Outputs	Programming Interface	Companding	Internal DTMF/ Tones	Speaker Impedance (min) (Ohms)	Package	Price*	Description
TLV320AC36	13	1	1		µ-law	No	600	LQFP,PDIP,SOIC	2.46	Voice-Band Audio Processor
TLV320AC37	13	1	1		A-law	No	600	LQFP,PDIP	2.46	Voice-Band Audio Processor
TWL1106	13	1	1		µ-law	No	8	TSSOP	2.28	Low-power, Pin-Pgrmable, 13-Bit Linear, 8-Bit µ-law, Single Mic, Speaker with 32/16/8-Ohm Driver
TWL1107	13	1	1		A-law	No	8	TSSOP	2.28	Low Power, Pin-Pgrmable, 13-bit Linear, 8-Bit A-Law, Single Mic, Speaker with 32/16/8 Ohm Driver
TWL1102	15	2	2	I^2C	µ-, A-law	Yes	16	TQFP	3.22	Voice-Band Audio Processor (VBAP)
TWL1103	15	2	2	I^2C	µ-, A-law	Yes	16	TQFP,VFBGA	3.22	Voice Band Audio Processor
TWL1109	15	2	2	I^2C	µ-, A-law	Yes	100	TQFP	3.28	Voice-Band Audio Processor (VBAP)
TWL1110	15	2	2	I^2C	µ-, A-law	Yes	8	TQFP,VFBGA	3.28	15-Bit Linear, 8-Bit µ/A-Law, 2.048 MHz Master Clock, 2048/128 kHz PCM Clock Support, Sidetone
TLV320AC40					µ-law	No		LQFP,SOIC	2.46	3-V Voice-Band Audio Processors

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

Codecs—Voice-Band

Device Name	Sorted By Resolution (Bits)	Sampling Rate (max) (kHz)	Bandwidth (kHz)	SNR (typ) (dB)	Number of Channels	Supply Voltage(s) (V)	P_d (typ) (mW)	Package	Price*	Description
TLV320AIC1106	13	8	0.3 to 3.4	65	1	3.3	13.5	TSSOP	2.57	PCM Codec with Microphone Amps & Speaker Driver
TLV320AIC1107	13	8	0.3 to 3.4	65	1	3.3	13.5	TSSOP	2.57	PCM Codec with Microphone Amps & Speaker Driver
TLC32044	14	19.2	0.15 to 3.6		1	–5	125	CDIP,LCCC	23.24	Single Channel Codec, 0.15 to 3.6 kHz Bandwidth
TLC320AC01	14	25	up to 10.8		1	5	100	PLCC,LQFP	3.74	Single Channel Codec-Bandwidth Independent of Sampling Rate
TLC320AC02	14	25	up to 10.8		1	5	100	PLCC,LQFP	3.61	Single Channel Codec-Bandwidth Independent of Sampling Rate
TLV320AIC1103	15	8	0.3 to 3.4	65	1	3.3	16	TQFP,VFBGA	2.65	Pgrmable PCM Codec with Microphone Amps & Speaker Driver
TLV320AIC1109	15	8	0.3 to 3.4	65	1	3.3	16	TQFP	2.65	Pgrmable PCM Codec with Microphone Amps & Speaker Driver
TLV320AIC1110	15	8	0.3 to 3.4	65	1	3.3	12	TQFP,VFBGA	2.71	Pgrmable PCM Codec with Microphone Amps & Speaker Driver
TLC320AD50	16	22.05	up to 9.92	90/89	1	Single 5V or 5V analog and 3.3V digital	120	LQFP,SOIC	4.01	Single Channel Codec W/Master-Slave Function (3 Slaves) and 89 dB SNR
TLC320AD545	16	11.025	up to 4.96	82	1	3.3/5	120	LQFP	2.98	Single Channel Codec W/Hybrid Op Amps & Speaker Driver
TLV320AIC10	16	22.05	up to 9.92	84	1	3.3/5	39	TQFP,VFBGA	2.12	General Purpose 16-Bit 22-KSPS DSP Codec
TLV320AIC11	16	22.05	up to 9.92	84	1	3.3/5	39	TQFP	2.12	General Purpose Low I/O Voltage 16-Bit 22-KSPS DSP Codec
TLV320AIC12	16	26	up to 11.7	85	1	2.7/3.6, Core 1.8	15	TSSOP	2.75	Single Channel Codec
TLV320AIC13	16	26	up to 11.7	85	1	2.7/3.6, 1.1I/O, Core 1.8	15	TSSOP	2.95	Single Channel Codec
TLV320AIC14	16	26	up to 11.7	85	1	2.7/3.6, Core 1.8	20	TSSOP	2.35	Single Channel Codec
TLV320AIC15	16	26	up to 11.7	85	1	2.7/3.6, 1.1I/O, Core 1.8	20	TSSOP	2.71	Single Channel Codec
TLV320AIC20	16	26	up to 11.7	87	2	3.3 Analog/1.8 Digital/3.3 I/O	30	TQFP	3.51	Low Power Dual Channel Codec with Headset/Handset/ Speaker Driver
TLV320AIC21	16	26	up to 11.7	87	2	3.3 Analog/1.8 Digital/1.1 I/O	30	TQFP	3.71	Low Power Low IOVdd Dual Channel Codec with Headset/ Handset/Speaker Driver
TLV320AIC22	16	16	up to 4.96	80	2	3.3	204	LQFP	3.75	Dual VOIP Codec
TLV320AIC24	16	26	up to 11.7	87	2	3.3 Analog/1.8 Digital/1.1 I/O	26.5	TQFP	3.40	Low Power Dual Channel Codec with Multiple Analog Inputs And Output Drivers
TLV320AIC25	16	26	up to 11.7	87	2	3.3 Analog/1.8 Digital/1.1 I/O	26.5	TQFP	3.60	Low Power Low IOVdd Dual Channel Codec with Multiple Analog Inputs And Output Drivers
TLC32046								CDIP,LCCC	47.17	Single Channel Codec

*Budgetary price per unit in U.S. dollars, lots of 1,000+

Preview devices announced but not yet in production appear in **BOLD**.

DACs (≥10 MSPS)

DAC5675 400-MSPS Digital-to-Analog Converter Enables Transmission of 3G Multicarrier Wideband-CDMA—Product Highlights

The 14-bit resolution DAC5675 digital-to-analog converter (DAC) is designed for high-speed digital data transmission in wired and wireless communication systems, high-frequency direct digital synthesis (DDS) and waveform reconstruction in test and measurement applications.

The DAC5675 has excellent spurious-free dynamic range (SFDR) at high intermediate frequencies and is manufactured on the Texas Instruments advanced high-speed mixed-signal BiCMOS process. This makes the converter well-suited for multicarrier transmission in TDMA- and CDMA-based cellular base transceiver stations.

The DAC5675 operates from a single-supply voltage of 3.3 V. Power dissipation is 820 mW at f_{CLK} = 400 MSPS, f_{OUT} = 70 MHz. The DAC5675 provides a nominal full-scale differential current output of 20 mA, supporting both single-ended and differential applications. Additionally, the DAC5675 features an LVDS interface to allow high-speed data transmissions with low electromagnetic interference (EMI). LVDS interface is ideal for interfacing with CMOS ASICs as well as FPGA.

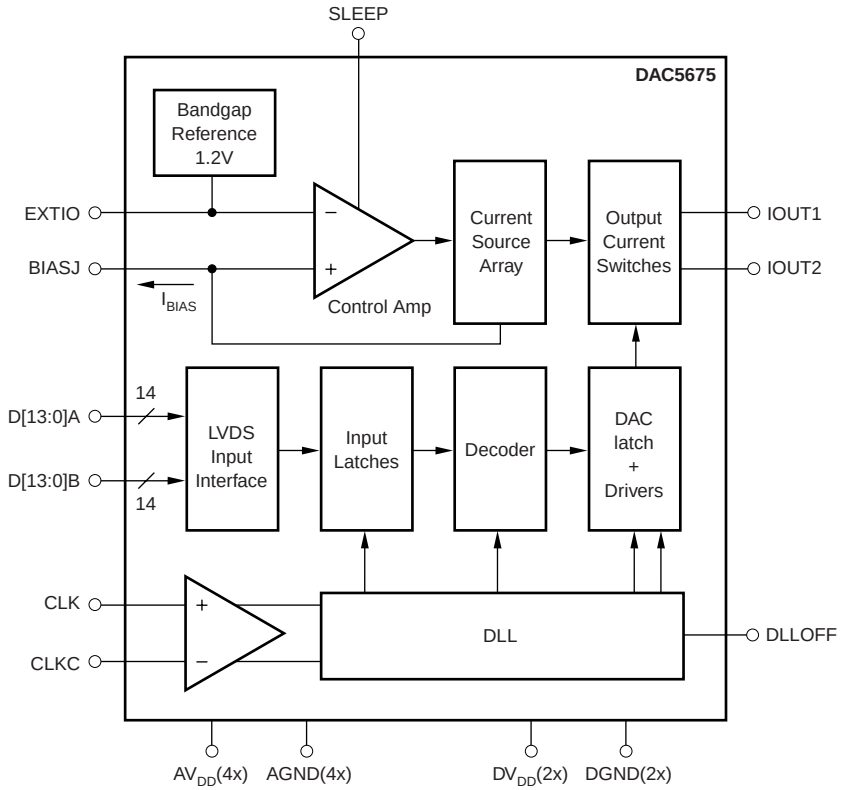
Features

- 400-MSPS Update Rate
- LVDS-Compatible Input Interface
- Spurious-Free Dynamic Range (SFDR):
  69-dBc SFDR at 70-MHz IF, 400 MSPS
- WCDMA Adjacent Channel Power Ratio:
  73 dBc at 30.72-MHz IF, 122.88 MSPS
  71 dBc at 61.44-MHz IF, 245.76 MSPS
- Single-Supply 3.3-V Operation
- Differential Scalable Current Outputs: 2 mA to 20 mA

Typical Applications

- Cellular Base Transceiver Station Transmit Channel: Supports Single and Multi-Carrier Applications
- Test and Measurement: Arbitrary Waveform Generation
- Direct Digital Synthesis (DDS)
- Cable Modem Headend

DAC5675 Block Diagram



DACs (≥10 MSPS) (Continued)

Device Name	Sorted By Resolution (Bits)	Supply (V)	Update Rate (MSPS)	Settling Time (ns)	Number of DACs	Power (typ) (mW)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
8-Bit											
DAC908	8	3.0 to 5.0	165	30	1	170	0.5	0.5	SOIC,TSSOP	3.19	8-Bit, 165MSPS SpeedPlus DAC Scalable Current Outputs between 2mA to 20mA
THS5641A	8	3.0 to 5.0	100	35	1	100	0.5	1	SOIC,TSSOP	3.18	8-Bit, 100 MSPS, CommsDAC™ DAC Scalable Current Outputs between 2mA to 20mA
TLC5602	8	5	30	30	1	80	0.5	0.5	SOIC	1.44	8-Bit, 30MSPS Single DAC
10-Bit											
DAC2900	10	3.3 to 5.0	125	30	2	310	1	1	TQFP	9.21	Dual, 10-Bit, 125Msps DAC
DAC900	10	3.0 to 5.0	165	30	1	170	0.5	1	SOIC,TSSOP	5.21	10-Bit, 165MSPS SpeedPlus DAC Scalable Current Outputs between 2mA to 20mA
THS5651A	10	3.0 to 5.0	125	35	1	175	0.5	1	SOIC,TSSOP	5.30	10-Bit, 100MSPS, CommsDAC, Diff. Scalable Current Outputs between 2mA to 20mA
12-Bit											
DAC2902	12	3.3 to 5.0	125	30	2	310	2.5	3	TQFP	15.43	Dual, 12-Bit, 125Msps DAC
DAC902	12	3.0 to 5.0	165	30	1	170	1.75	2.5	SOIC,TSSOP	7.84	12-Bit, 165MSPS SpeedPlus DAC Scalable Current Outputs between 2mA to 20mA
THS5661A	12	3.0 to 5.0	125	35	1	175	2	4	SOIC,TSSOP	7.40	12-Bit, 125 MSPS, CommsDAC, Diff. Scalable Current Outputs between 2mA to 20mA
14-Bit											
DAC2904	14	3.3 to 5.0	125	30	2	310			TQFP	20.19	14 Bit, 125 MSPS Dual Communications DACs
DAC904	14	3.0 to 5.0	165	30	1	170	2.5	3	SOIC,TSSOP	10.07	14-Bit, 165MSPS SpeedPlus DAC Scalable Current Outputs between 2mA to 20mA
THS5671A	14	3.0 to 5.0	125	35	1	175	3.5	7	SOIC,TSSOP	9.86	14-Bit, 125 MSPS, CommsDAC, Diff. Scalable Current Outputs between 2mA to 20mA
DAC5675	**14**	**1.8 to 3.3**	**400**	**20**	**1**	**820**	**1**	**3**	**TQFP**	**Call**	**14-Bit, 400MSPS DAC with LVDS I/O Supporting Multicarrier Applications**

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

DACs (<10 MSPS)

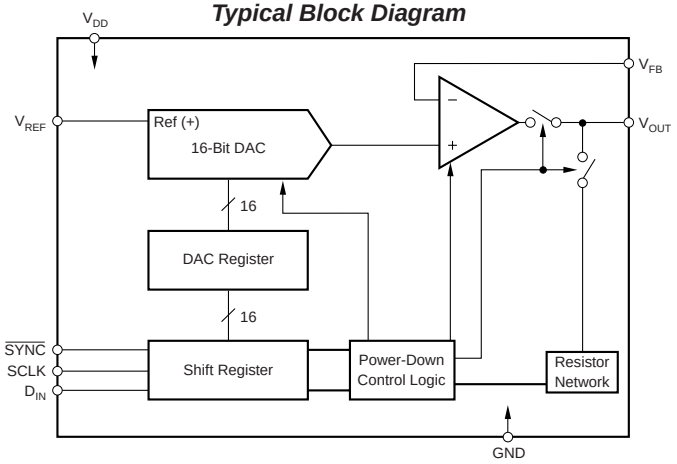
DAC8501, DAC8531, DAC8532, DAC8534* (16-Bit Serial Input, Rail-to-Rail Output) Low-Power DAC—Product Highlights and Preview

Features

- MicroPower Operation: 500 µA at 5 V
- Power-On Reset to Zero
- Power Supply: +2.7 V to +5.5 V
- Ensured Monotonic by Design
- Settling Time: 10 µs to 1 LSB
- Single, Dual and Quad Versions
- Low-Power Serial Interface With Schmitt-Triggered Inputs
- On-Chip Output Buffer Amplifier, Rail-to-Rail Operation
- Sync Interrupt Facility
- MSOP-8 Package

*Product Preview

Typical Block Diagram



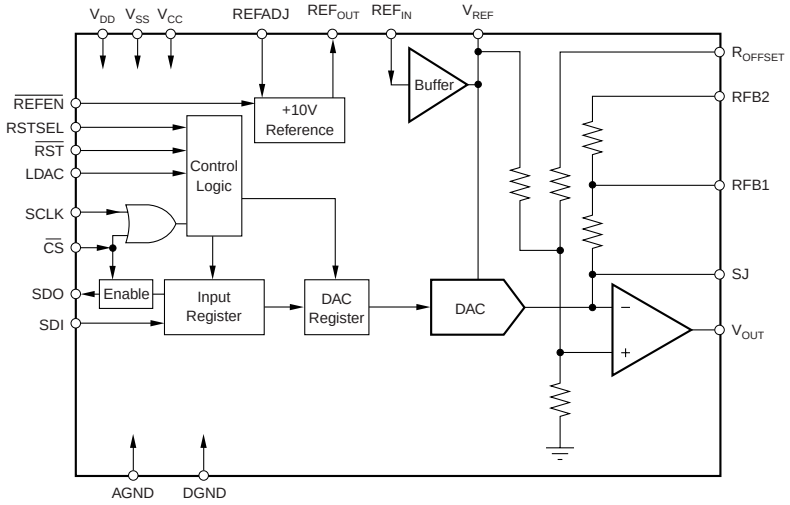
DACs (<10 MSPS) (Continued)

DAC7731 (16-Bit Serial Input, Rail-to-Rail Output) Low-Power DAC—Product Highlights

Features

- Low Power: 150 mW max
- +10-V Internal Reference
- Unipolar or Bipolar Operation
- Setting Time: 5 µs to ±0.003% FSR
- 16-Bit Monotonicity, –40°C to +85°C
- ±10-V, ±5-V, or +10-V Configurable Voltage Output
- Reset to Zero or Mid-Scale
- Double-Buffered Data Input
- Daisy-Chain Feature for Multiple DAC7731s on a Single Bus
- Small SSOP-24 Package

DAC7731 Block Diagram

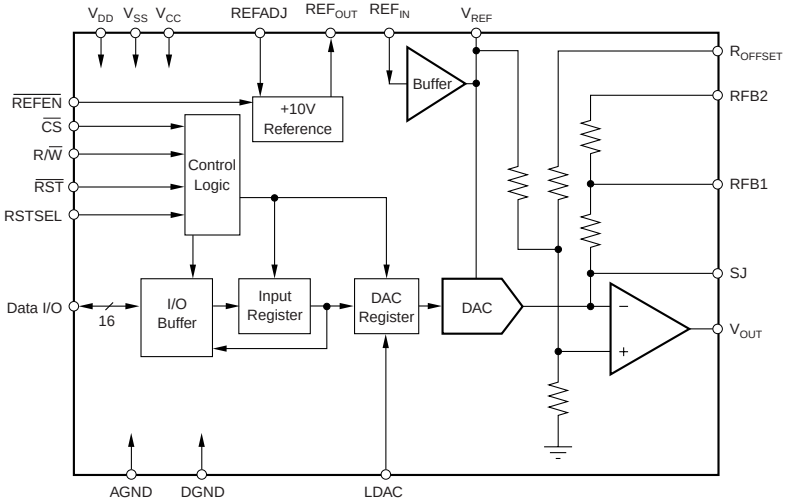


DAC7741 (16-Bit Serial Input, Rail-to-Rail Output) Low-Power DAC—Product Highlights

Features

- Low Power: 150 mW max
- +10-V Internal Reference
- Unipolar or Bipolar Operation
- Settling Time: 5 µs to ±0.003% FSR
- 16-Bit Monotonicity, –40°C to +85°C
- ±10-V, ±5-V or +10-V Configurable Voltage Output
- Reset to Min-Scale or Mid-Scale
- Double-Buffered Data Input
- Input Register Data Readback
- Small LQFP-48 Package

DAC7741 Block Diagram



DACs (<10 MSPS) (Continued)

Device Name	Sorted By Resolution (Bits)	Supply (V)	Data-Bus Interface (Bits)	Settling Time (µs)	Number of DACs	Power (typ) (mW)	Output (I or V)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	INL (max) (±% FSR)	Package	Price*	Description
8-Bit														
AD7524	8	5, 15	8	0.1	1	5	I	±10	0.5	0.5		CDIP	11.90	8-Bit Multiplying DAC, Advanced LinCMOS
TLC5620	8	5	Serial	10	4	8	V	Ext	0.9	1		PDIP,SOIC	1.42	8-Bit, 10 µs Quad DAC, Serial Input, Pgrmable for 1x or 2x Output, Simultaneous Update, Low Power
TLC5628	8	5	Serial	10	8	15	V	Ext	0.9	1		PDIP,SOIC	2.32	8-Bit, 10 µs Octal DAC, Serial Input, Pgrmable for 1x or 2x Output, Simultaneous Update, Low Power
TLC7225	8	5 to 15	Parallel	5	4	60	V	Ext	1	1		SOIC	2.35	8-Bit, 5 µs Quad DAC, Parallel Input, Simultaneous Update, Binary Input Coding
TLC7226	8	15	Parallel	5	4	60	V	Ext	1	1		PDIP,SOIC	2.25	8-Bit, 5 µs Quad DAC, Parallel Input, Single / Dual Supply
TLC7524	8	5 to 15	Parallel	0.1	1	5	I	Ext	0.5	0.5		PDIP,PLCC, SOIC,TSSOP	1.55	8-Bit, 0.1 µs MDAC, Parallel Input, Fast Control Signalling for DSP, Easy Micro Interface
TLC7528	8	5 to 15	Parallel	0.1	2	7.5	I	Ext	0.5	0.5		PDIP,PLCC, SOIC,TSSOP	1.61	8-Bit, 0.1 µs Dual MDAC, Parallel Input, Fast Control Signalling for DSP, Easy Micro I/F
TLC7628	8	11 to 15	Parallel	0.1	2	20	I	Ext	0.5	0.5		PDIP,SOIC	1.44	8-Bit, 0.1 µs Dual MDAC, Parallel Input, Fast Control Signalling for DSP
TLV5620	8	2.7 to 5.5	Serial	10	4	6	V	Ext	0.9	1		PDIP,SOIC	1.42	8-Bit, 10 µs DAC, Serial Input, Quad DAC, Pgrmable 1x or 2x Output, Simultaneous Update
TLV5621	8	2.7 to 5.5	Serial	10	4	3.6	V	Ext	0.9	1		SOIC	1.74	8-Bit, 10 µs Quad DAC, Serial Input, Simple 2 Wire Interface, Pgrmable 1x or 2x Output, PowerDown
TLV5623	8	2.7 to 5.5	Serial	3	1	0.9	V	Ext	0.2	0.5		MSOP,SOIC	1.16	8-Bit, 3 µs DAC, Serial Input, Pgrmable Settling Time/ Power Consumption, Ultra Low Power
TLV5624	8	2.7 to 5.5	Serial	1	1	4.5	V	Int	0.2	0.5		MSOP,SOIC	1.65	8-Bit, 1.0 to 3.5 µs DAC, Serial Input, Pgrmable Int. Ref., Settling Time
TLV5625	8	2.7 to 5.5	Serial	2.5	2	2.1	V	Ext	0.2	0.5		SOIC	1.74	8-Bit, 2.5 or 12 µs Dual DAC, Serial Input, Pgrmable Settling Time
TLV5626	8	2.7 to 5.5	Serial	1	2	5.1	V	Int	0.5	1		SOIC	2.22	8-Bit, 1 µs Dual DAC, Serial Input, Pgrmable Int. Ref., Settling Time
TLV5627	8	2.7 to 5.5	Serial	3	4	3	V	Ext	0.5	0.5		SOIC,TSSOP	2.70	8-Bit, 3 µs Quad DAC, Serial Input, Low Power, H/W or S/W Power Down
TLV5628	8	2.7 to 5.5	Serial	10	8	12	V	Ext	0.9	1		PDIP,SOIC	2.32	8-Bit, 10 µs Octal DAC, Serial Input, Pgrmable 1x or 2x Output, Low Power
TLV5629	8	2.7 to 5.5	Serial		8	15	V	Ext	1	1		SOIC,TSSOP	2.99	8-Bit 8-Ch. 1/3 µs DAC, Ser. Input, Pgrmable Settling Time/Power Consump., Low Power, PowerDown
TLV5632	8	2.7 to 5.5	Serial	1	8	18	V	Int	1	1		SOIC,TSSOP	3.19	8-Bit 8-Ch. 1/3 µs DAC, Ser. Input, Pgrmable Settling Time/Power Consump., Low Power, PwrDn, Int Ref.
10-Bit														
TLC5615	10	5	Serial	12.5	1	0.75	V	Ext	0.5	1		MSOP,PDIP, SOIC	1.97	10-Bit, 12.5 µs DAC, Serial Input, Low Power

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

DACs (<10 MSPS) (Continued)

Device Name	Sorted By Resolution (Bits)	Supply (V)	Data-Bus Interface (Bits)	Settling Time (µs)	Number of DACs	Power (typ) (mW)	Output (I or V)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	INL (max) (±% FSR)	Package	Price*	Description
10-Bit (Continued)														
TLV5604	10	2.7 to 5.5	Serial	3	4	3.3	V	Ext	0.5	0.5		SOIC,TSSOP	4.79	10-Bit, 3 µs Quad DAC, Parallel Input, Simultaneous Update, Pgrmable Settling Time, PowerDown
TLV5606	10	2.7 to 5.5	Serial		1	0.9	V	Ext	1	1.5		MSOP,SOIC	1.77	10-Bit, 3 or 9 µs DAC, Serial Input, Pgrmable Settling Time/Pwr Consumption, Ultra Low Power
TLV5608	10	2.7 to 5.5	Serial		8	18	V	Ext	1	2		SOIC,TSSOP	5.16	2.7V to 5.5V 10-Bit 8-channel Serial DAC
TLV5617A	10	2.7 to 5.5	Serial	2.5	2	2.1	V	Ext	1	1		SOIC	3.41	10-Bit, 2.5 µs Dual DAC, Serial Input, Pgrmable Settling Time
TLV5631	10	2.7 to 5.5	Serial	1	8	18	V	Int	1	2		SOIC,TSSOP	5.57	2.7V to 5.5V 10-Bit 8-Channel Serial DAC W/Int Ref
TLV5637	10	2.7 to 5.5	Serial	1	2	4.2	V	Int	0.5	1		SOIC	4.53	10-Bit, 1 µs DAC Serial Input, Dual DAC, Pgrmable Int. Ref., Settling Time
UCC5950	10	5	Serial	2.5	1	7.5	V	Int	1	2		PDIP,SOIC	1.39	Microprocessor Compatible, 10-bit DAC with Low Power Sleep Mode
12-Bit														
DAC7512	12	2.7 to 5.5	Serial	10	1	0.7	V	Int	1	8		MSOP,SOT23	1.37	Low-Power Rail-To-Rail Output 12-Bit Serial Input DAC
DAC7513	12	2.7 to 5.5	Serial	10	1	0.7	V	Ext	1	8		MSOP,SSOP	1.37	Low-Power Rail-To-Rail Output 12-Bit Serial Input DAC
DAC7541	12	5 to 15	Parallel	1	1	30	I	Ext	0.5	0.5		PDIP,SOIC	6.40	Low Cost 12-Bit CMOS Four-Quadrant Multiplying DAC
DAC7545	12	5 to 15	Parallel	2	1	30	I	Ext	1	0.5		SOIC	5.80	CMOS 12-Bit Multiplying DAC, Microprocessor Compatible
DAC7611	12	5	Serial	10	1	2.5	V	Int	1	1		PDIP,SOIC	2.39	12-Bit Serial Input DAC
DAC7612	12	5	Serial	10	2	3.7	V	Int	1	1		SOIC	2.52	Dual, 12-Bit Serial Input DAC
DAC7613	12	±5	Parallel	10	1	4	V	Ext	1	1		SSOP	2.13	12-Bit, Voltage Output DAC
DAC7614	12	±5	Serial	10	4	10	V	Ext	1	1		PDIP,SOIC,SSOP	6.38	Quad, Serial Input, 12-Bit, Voltage Output DAC
DAC7615	12	±5	Serial	10	4	10	V	Ext	1	1		PDIP,SOIC,SSOP	6.38	Quad, Serial Input, 12-Bit, Voltage Output DAC
DAC7616	12	3	Serial	10	4	3	V	Ext	1	1		SOIC,SSOP	5.75	Quad, Serial Input, 12-Bit, Voltage Output DAC
DAC7617	12	3	Serial	10	4	3	V	Ext	1	1		SOIC,SSOP	5.75	Quad, Serial Input, 12-Bit, Voltage Output DAC
DAC7621	12	5	Parallel	10	1	5	V	Int	1	1		SSOP	2.58	12-Bit, Parallel Input DAC
DAC7624	12	±5	Parallel	10	4	10	V	Ext	1	1		PDIP,SOIC	9.78	12-Bit Quad Voltage Output DAC
DAC7625	12	±5	Parallel	10	4	10	V	Ext	1	1		PDIP,SOIC	9.78	12-Bit Quad Voltage Output DAC
DAC7714	12	±15	Serial	10	4	90	V	Ext	1	1		SOIC	10.88	Quad, Serial Input, 12-Bit, Voltage Output DAC
DAC7715	12	±15	Serial	10	4	50	V	Ext	1	1		SOIC	10.88	Quad, Serial Input, 12-Bit, Voltage Output DAC
DAC7724	12	±15	Parallel	10	4	90	V	Ext	1	1		PLCC,SOIC	11.90	12-Bit Quad Voltage Output DAC
DAC7725	12	±15	Parallel	10	4	30	V	Ext	1	1		PLCC,SOIC	11.90	12-Bit Quad Voltage Output DAC
DAC7800	12	5	Serial	0.8	2	1	I	Ext	1	0.5		PDIP,SOIC	13.10	Dual Monolithic CMOS 12-Bit Multiplying DAC
DAC7801	12	5	Parallel	0.8	2	1	I	Ext	1	0.5		PDIP,SOIC	15.68	Dual Monolithic CMOS 12-Bit Multiplying DAC
DAC7802	12	5	Parallel	0.8	2	1	I	Ext	1	0.5		PDIP,SOIC	13.10	Dual Monolithic CMOS 12-Bit Multiplying DAC
DAC8043	12	5	Serial	1	1	2.5	I	Ext	1	1		SOIC	7.54	CMOS 12-Bit Serial Input Mulitplying DAC
DAC811	12	±15	Parallel	4	1	800	V	Int	0.5	0.25		CDIP SB,PDIP, SOIC	9.97	Microprocessor-Compatible 12-Bit DAC
DAC813	12	±15	Parallel	4	1	330	V	Int	0.5	0.25		PDIP,SOIC	10.96	Microprocessor-Compatible 12-Bit DAC

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

DACs (<10 MSPS) (Continued)

Device Name	Sorted By Resolution (Bits)	Supply (V)	Data-Bus Interface (Bits)	Settling Time (µs)	Number of DACs	Power (typ) (mW)	Output (I or V)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	INL (max) (±% FSR)	Package	Price*	Description
12-Bit (Continued)														
TLC5618A	12	5	Serial	2.5	2	3	V	Ext	1	4		CDIP,LCCC,SOIC	4.74	12-Bit, 2.5 µs Dual DAC, Serial Input, Pgrmable Settling Time, Simultaneous Update, Low Power
TLV5610	12	2.7 to 5.5	Serial		8	18	V	Ext	1	6		SOIC,TSSOP	9.41	2.7V to 5.5V 12-Bit 8-channel Serial DAC
TLV5613	12	2.7 to 5.5	P8	1	1	1.2	V	Ext	1	4		SOIC,TSSOP	3.58	12-Bit, DAC, Parallel, Voltage Out, Pgrmable Settling Time/Pwr Consump., PwrDn
TLV5614	12	2.7 to 5.5	Serial	3	4	3.6	V	Ext	1	4		SOIC,TSSOP	8.26	12-Bit, 3 µs Quad DAC, Serial Input, Pgrmable Settling Time, Low Power, H/W or S/W PowerDown
TLV5616	12	2.7 to 5.5	Serial	3	1	0.9	V	Ext	1	4		MSOP,PDIP,SOIC	2.86	12-Bit, 3 µs DAC, Serial Input, Pgrmable Settling Time/Power Consump., Voltage O/P Range=2x VRef.
TLV5618A	12	2.7 to 5.5	Serial	2.5	2	2.4	V	Ext	1	4		CDIP,LCCC, PDIP,SOIC	4.25	12-Bit, 2.5 µs Dual DAC, Serial Input, Pgrmable Settling Time, Q temp available
TLV5619	12	2.7 to 5.5	P12	1	1	4.3	V	Ext	1	4		SOIC,TSSOP	3.58	12-Bit, Single Channel DAC, Parallel, Voltage Out, Low Power, Asynchronous Update
TLV5630	12	2.7 to 5.5	Serial	1	8	18	V	Int	1	6		SOIC,TSSOP	9.82	2.7V to 5.5V 12-Bit 8-Channel Serial DAC W/Int Ref
TLV5633	12	2.7 to 5.5	P8	1	1	2.7	V	Int	0.5	3		SOIC,TSSOP	4.46	12-Bit, DAC, Parallel, Voltage Out, Pgrmable Int. Ref., Settling Time, Pwr Consumption, 8 Channel
TLV5636	12	2.7 to 5.5	Serial	1	1	4.5	V	Int	1	4		MSOP,SOIC	3.82	12-Bit, 1 µs DAC Serial Input, Pgrmable Int. Ref., Settling Time
TLV5638	12	2.7 to 5.5	Serial	1	2	4.5	V	Int	1	4		CDIP,LCCC,SOIC	4.90	12-Bit, 1 or 3.5 µs DAC Serial Input, Dual DAC, Pgrmable Int. Ref., Settling Time, Pwr Consumption
TLV5639	12	2.7 to 5.5	P12	1	1	2.7	V	Int	0.5	3		SOIC,TSSOP	4.46	12-Bit DAC, Parallel, Voltage Out, Pgrmable Int. Ref., Settling Time, Pwr Consumption, 1 Ch.
16-Bit														
DAC1221	16	3	Serial	10000	1	1	V	Ext	1	1		SSOP	5.01	16-Bit Low Power DAC
DAC701	16	–15,+5,+15	Parallel	8	1	940	V	Int	4	2		CDIP SB	50.18	16-Bit DAC
DAC703	16	±15	Parallel	8	1	940	V/I	Int	2	1		CDIP SB	50.26	Monolithic 16-Bit DACs
DAC707	16	±15	Parallel	8	1	950	V	Int	2	1		PDIP	41.36	Microprocessor-Compatible 16-Bit DAC
DAC709	16	±15	Serial	8	1	950	V	Int	1	0.5		CDIP SB	77.06	Microprocessor-Compatible 16-Bit DAC
DAC712	16	±15	Parallel	10	1	600	V	Int	1	2		PDIP,SOIC	12.53	16-Bit Digital-to-Converter with 16-Bit Bus Interface
DAC714	16	±15	Serial	10	1	625	V	Int	1	2		PDIP,SOIC	12.53	16-Bit DAC with Serial Data Interface
DAC715	16	±15	Parallel	10	1	600	V	Int	1	2		PDIP,SOIC	12.53	16-Bit DAC with 16-Bit Bus Interface
DAC716	16	±15	Serial	10	1	625	V	Int	2	2		PDIP,SOIC	12.53	16-Bit DAC with Serial Data Interface
DAC725	16	±15	Parallel/Serial	8	2	1175	V	Int	1	0.5		PDIP	50.04	Dual 16-Bit DAC
DAC7631	16	±5	Serial	10	1	2.5	V	Ext	2	3		LQFP,SSOP	5.57	Serial Input, 16-Bit, Voltage Output DAC
DAC7632	16	+5, ±5	Serial	10	2	2.5	V	Ext	2	3		LQFP	9.94	16-Bit, Dual Voltage Output DAC with Serial Interface
DAC7634	16	±5	Serial	10	4	60	V	Ext	2	3		SSOP	18.98	16-Bit, Quad Voltage Output DAC
DAC7641	16	±5	Parallel	10	1	2.5	V	Ext	2	3		TQFP	5.92	16-Bit, Voltage Output DAC

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

DACs (<10 MSPS) (Continued)

Device Name	Sorted By Resolution (Bits)	Supply (V)	Data-Bus Interface (Bits)	Settling Time (µs)	Number of DACs	Power (typ) (mW)	Output (I or V)	V_{ref} (Int/Ext)	DNL (max) (±LSB)	INL (max) (±LSB)	INL (max) (±% FSR)	Package	Price*	Description
16-Bit (Continued)														
DAC7642	16	+5, ±5	Parallel	10	2	2.5	V	Ext	2	3		LQFP	10.04	16-Bit, Dual Voltage Output DAC with Parallel Interface and Reset to Mid-Scale
DAC7643	16	+5, ±5	Parallel	10	2	2.5	V	Ext	2	3		LQFP	10.04	16-Bit, Dual Voltage Output DAC with Parallel Interface and Reset to Min-Scale
DAC7644	16	±5	Parallel	10	4	15	V	Ext	2	3		SSOP	18.98	16-Bit, Quad Voltage Output DAC
DAC7731	16	±15	Serial	5	1	100	V	Int	1	3		SSOP	7.80	16-Bit, Single Channel, DAC W/ Internal +10V Reference and Serial I/F
DAC7734	16	±15	Serial	10	4	185	V	Ext	1	2		SSOP	29.94	16-Bit, Quad Voltage Output, Serial Input DAC
DAC7741	16	±15	Parallel	5	1	100	V	Int	1	3		LQFP	8.30	16-Bit, Single Channel, DAC W/ Internal +10V Reference and Parallel I/F
DAC7744	16	±15	Parallel	10	4	185	V	Ext	1	2		SSOP	29.94	16-Bit, Quad Voltage Output DAC
DAC8501	16	2.7 to 5.5	Serial	10	1	1	V	Ext	1		0.098	MSOP	2.83	Multiplying, Low-Power, Rail-to-Rail Output, 16-Bit Serial Input DAC
DAC8531	16	2.7 to 5.5	Serial	10	1	1	V	Ext	1		0.098	MSOP	2.83	Low Power, Rail-to-Rail Output, 16-Bit, Serial Input DAC
DAC8532	16	2.7 to 5.5	Serial	10	2	2.5	V	Ext	1		0.098	MSOP	5.32	16-Bit, Dual Channel, Low Power D-to-A Converter W/ Serial I/F and Rail-to-Rail Voltage Output
DAC8541	16	2.7 to 5.5	Parallel	10	1	1.2	V	Ext	1		0.098	TQFP	2.85	Low Power, 16-Bit D-to-A Converter W/1.8V Compatible Parallel IF, Rail-to-Rail Voltage Output
20-Bit														
DAC1220	20	5	Serial	10000	1	3	V	Ext	1	1		SSOP	6.33	20-Bit Low Power DAC
DAC7731		±15	Serial	5	1	100	V	Int	1	3			Call	16-Bit, Single Channel, DAC W/ Internal +10V Reference and Serial I/F
DAC7741		±15	Parallel	5	1	100	V	Int	1	3			Call	16-Bit, Single Channel, DAC W/Internal +10V Reference and Parallel I/F

*Budgetary price per unit in U.S. dollars, lots of 1,000+

Preview devices announced but not yet in production appear in **BOLD**.

Audio Converters—A to D Converters

Device Name	Sorted By Resolution (Bits)	Dynamic Range (typ) (dB)	Architecture	Supply Voltage(s) (V)	P_d (typ) (mW)	Sampling Rate (max) (kHz)	Package	Price*	Description
PCM1801	16	93	Delta-Sigma 2-ch DAC	5	90	48	SOIC	2.27	16-Bit, Stereo, Audio ADC
PCM1760	20	108	Delta-Sigma 2-ch DAC	±5	370	48	PDIP,SOIC	14.55	Multi-Bit Enhanced Noise Shaping 20-Bit A/D Conversion System
PCM1800	20	95	Delta-Sigma 2-ch DAC	5	90	48	SSOP	2.98	Single-Ended Analog Input 20-Bit Stereo ADC
PCM1802	24	100	Stereo ADC	3.3 and 5	225	96	SSOP	3.95	24-Bit Delta Sigma Audio ADC
PCM1804	24	111	Stereo ADC	3.3 and 5	225	192	SSOP	4.95	High-Performance 24-Bit Delta-Sigma Stereo ADC

Audio Converters—Codecs

Device Name	Sorted By Resolution (Bits)	Dynamic Range (typ) (dB)	Architecture	Supply Voltage(s) (V)	Bandwidth (Hz)	P_d (typ) (mW)	Sampling Rate (max) (kHz)	Package	Price*	Description
PCM2900	16	89	Stereo Codec	2.7 to 5.5	20 to 20K	280	48	SSOP	3.95	Stereo Audio Codec with USB Interface
PCM2901	**16**	**89**	**Stereo Codec**	**3.3**	**20 to 20K**	**178**	**48**	**SSOP**	**3.95**	**Stereo Audio Codec with USB Interface**
PCM2902	**16**	**89**	**Stereo Codec**	**2.7 to 5.5**	**20 to 20K**	**280**	**48**	**SSOP**	**4.25**	**Stereo Audio Codec with USB Interface and S/PDIF**
PCM2903	**16**	**89**	**Stereo Codec**	**3.3**	**20 to 20K**	**178**	**48**	**SSOP**	**4.25**	**Stereo Audio Codec with USB Interface and S/PDIF**
PCM3006	16	93	Stereo	3	20 to 20K	54	48	SSOP	3.27	16-Bit, Single-Ended Analog Input/Output Stereo Audio Codec
PCM3008	16	88	Stereo	2.4	20 to 20K	32	48	TSSOP	2.99	Low Power, Low Voltage 16-Bit Stereo Audio Codec
PCM3500	16	92	Mono	3.3	3.4K to 11K	30	26	SSOP	2.50	Low Voltage, Low Power, 16-Bit, Mono SoundPlus Voice/Modem Codec
PCM3501	16	94	Mono	3.3	3.4K to 11K	30	26	SSOP	2.50	Low Voltage, Low Power, 16-Bit, Mono SoundPlus Voice/Modem Codec
PCM3000	18	98	Stereo	5	20 to 20K	160	48	SSOP	3.27	SoundPlus Stereo Audio Codec 18-bits, Serial Interface
PCM3001	18	98	Stereo	5	20 to 20K	160	48	SSOP	3.27	SoundPlus Stereo Audio Codec 18-bits, Serial Interface
PCM3002	20	94	Stereo	3	20 to 20K	54	48	SSOP	3.27	16-/20-Bit Single-Ended Analog Input/Output SoundPlus Stereo Audio Codecs
PCM3003	20	94	Stereo	3	20 to 20K	54	48	SSOP	3.27	16-/20-Bit Single-Ended Analog Input/Output SoundPlus Stereo Audio Codecs
TLC320AD77	24	100	Stereo	3.3	20 to 20K	160	96	SSOP	3.00	Stereo Audio ADA
TLV320AIC23	24	100	Stereo	1.5/3.3		23	96	TSSOP,VFBGA	2.85	Stereo Codec for Portable Audio

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

Audio Converters—D to A Converters

Device Name	Resolution (Bits)	Dynamic Range (typ) (dB)	Architecture	Supply Voltage(s) (V)	P_d (typ) (mW)	Sorted By Sampling Rate (max) (kHz)	Package	Price*	Description
1-Bit									
DSD1700	1	110	Direct Stream Digital	5	27.5	2822.4	SSOP	10.07	Direct Stream Digital (DSD) DAC
16-Bit									
PCM1725	16	95	Delta-Sigma 2-ch DAC	5	65	96	SOIC	1.26	SoundPlus Stereo Audio DAC 16 Bits, 96kHz Sampling
18-Bit									
PCM1717	18	96	Delta-Sigma 2-ch DAC	2.7 to 5.5		48	SSOP	3.19	SoundPlus Stereo Audio DAC
PCM1718	18	96	Delta-Sigma 2-ch DAC	2.7 to 5.5		48	SSOP	3.19	SoundPlus Stereo Audio DAC
PCM1719	18	96	Delta-Sigma 2-ch DAC	5	180	48	SSOP	4.20	SoundPlus Stereo Audio DAC
PCM1733	18	95	Delta-Sigma 2-ch DAC	5	65	96	SOIC	1.26	SoundPlus Stereo Audio DAC 18 Bits, 96kHz Sampling
20-Bit									
PCM1710	20	110		5		48	SOIC	4.00	Dual Voltage Output CMOS Delta-Sigma DAC with On-Chip Digital Filter
PCM1702	20	120	Sign-Magnitude DAC	±5	150	768	PDIP,SOP	11.78	High-Performance BiCMOS Advanced Sign Magnitude 20-Bit DAC
24-Bit									
PCM1770	**24**	**96**	**Delta-Sigma**	**1.6 to 3.6**	**9.6**	**50**	**SSOP,TSSOP**	**1.95**	**Low Voltage, Low Power Stereo Audio DAC**
PCM1771	**24**	**96**	**Delta-Sigma**	**1.6 to 3.6**	**9.6**	**50**	**TSSOP**	**Call**	**Low Voltage, Low Power Stereo Audio DAC w/Headphone Amp**
PCM1772	**24**	**96**	**Delta-Sigma**	**1.6 to 3.6**	**9.6**	**50**	**TSSOP**	**Call**	**Low Voltage, Low Power Stereo Audio DAC with Line Amp**
PCM1773	**24**	**96**	**Delta-Sigma**	**1.6 to 3.6**	**9.6**	**50**	**TSSOP**	**Call**	**Low Voltage, Low Power Stereo Audio DAC with Line Amp**
DF1704	24		Digital Filter	5	100	96	SSOP	10.07	SoundPlus Stereo, 24-Bit, 96kHz 8X Oversampling Digital Interpolation Filter DAC
PCM1600	24	105	Delta-Sigma 6-Ch DAC	3.3 and 5	266	96	LQFP	3.95	SoundPlus 24-Bit, 96kHz Sampling,6-Channel, Enhanced Multi-Level, Delta-Sigma DAC
PCM1601	24	105	Delta-Sigma 6-Ch DAC	3.3 and 5	266	96	QFP	3.95	SoundPlus 24-Bit, 96kHz Sampling,6-Channel, Enhanced Multi-Level, Delta-Sigma DAC
PCM1716	24	106	Delta-Sigma 2-ch DAC	5	160	96	SSOP	2.99	SoundPlus 24-Bit, 96kHz Sampling CMOS Delta-Sigma Stereo Audio DAC
PCM1720	24	96	Delta-Sigma 2-ch DAC	5	90	96	SSOP	2.27	SoundPlus Stereo Audio DAC MPEG2/AC-3 Compatible
PCM1723	24	94	Delta-Sigma 2-ch DAC	5	100	96	SSOP	2.47	SoundPlus Stereo Audio DAC with Pgrmable PLL
PCM1727	24	92	Delta-Sigma 2-ch DAC	5	125	96	SSOP	2.97	SoundPlus Stereo Audio DAC with Pgrmable Dual PLL
PCM1728	24	106	Delta-Sigma 2-ch DAC	5	160	96	SSOP	2.99	SoundPlus 24-Bit, 96kHz Sampling CMOS Delta-Sigma Stereo Audio DAC
PCM1740	24	94	Delta-Sigma 2-ch DAC	5	125	96	SSOP	2.97	SoundPlus Stereo Audio DAC with VCXO and PLL
PCM1741	24	98	Multilevel Delta-Sigma	3.3	43	96	SSOP	1.46	+3.3V Single-Supply, 24-Bit, 96kHz Sampling Enh. Multilevel, D-S Audio DAC
PCM1744	24	95	Delta-Sigma 2-ch DAC	5	65	96	SOIC	1.26	SoundPlus 24 Bits, 96kHz, Sampling Stereo Audio DAC
PCM1748	24	100	Delta-Sigma	3.3, 5	62	96	SSOP	1.46	24-Bit 96kHz Sampling Enhanced Multilevel Delta-Sigma Audio DAC
TLV320DAC23	24	100	Delta-Sigma	±5	18	96	TSSOP,VFBGA	1.91	16/20/24/32-Bit, 8 to 96 kHz Stereo DSP DAC w/Integrated Headphone Amp
DF1706	24		Digital Filter	3.3		192	SOIC	11.08	Stereo, 24-Bit, 192kHz 8X Oversampling Digital Interpolation Filter

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

Audio Converters—D to A Converters (Continued)

Device Name	Resolution (Bits)	Dynamic Range (typ) (dB)	Architecture	Supply Voltage(s) (V)	P_d (typ) (mW)	Sorted By Sampling Rate (max) (kHz)	Package	Price*	Description
24-Bit (Continued)									
PCM1602	24	105	Delta-Sigma	3.3 and 5	171	192	LQFP	3.08	24-Bit 192kHz Sampling 6-Ch Enhanced Multilevel Delta-Sigma DAC
PCM1604	24	105	Delta-Sigma 6-Ch DAC	3.3 and 5	266	192	LQFP	4.35	SoundPlus 24-Bit, 192kHz Sampling, 6-Channel, Enhanced Multi-Level, Delta-Sigma DAC
PCM1605	24	105	Delta-Sigma 6-Ch DAC	3.3 and 5	266	192	QFP	4.35	SoundPlus 24-Bit, 192kHz Sampling, 6-Channel, Enhanced Multi-Level, Delta-Sigma DAC
PCM1606	24	103	Delta-Sigma 6-Ch DAC	5	250	192	SSOP	2.48	6-Channel, Enhanced Multi-Level, Delta-Sigma DAC
PCM1608	24	105	Delta-Sigma	3.3 and 5	224	192	LQFP	4.10	24-Bit 192kHz Sampling 8-Ch Enhanced Multilevel Delta-Sigma DAC
PCM1730	**24**	**117**	**Delta-Sigma 2-ch DAC**	**3.3, 5**	**188**	**192**	**SSOP**	**4.95**	**High Performance 24-Bit, 192 kHz Sampling Advanced Segment, Audio Stereo DAC**
PCM1737	24	106	Delta-Sigma 2-ch DAC	3.3, 5	93	192	SSOP	3.50	SoundPlus 24-Bit, 192kHz Sampling Enhanced Multi-Level, Delta-Sigma, Audio DAC
PCM1738	**24**	**117**	**Advanced Segment DAC**	**3.3, 5**	**188**	**192**	**SSOP**	**5.01**	**High Performance 24-Bit, 192kHz Sampling Advanced Segment, Audio Stereo DAC**
PCM1739	24	106	Delta-Sigma 2-ch DAC	3.3, 5	93	192	SSOP	3.50	SoundPlus 24-Bit, 192kHz Sampling Enhanced Multi-Level, Delta-Sigma, Audio DAC
PCM1742	24	106	Multilevel Delta-Sigma	3.3, 5	62	192	SSOP	1.62	24-Bit, 96kHZ Sampling Enhanced Multilevel, Delta-Sigma, Audio DAC
PCM1704	24	120	Sign-Magnitude DAC	±5	175	768	SOP	12.96	High Performance 24-Bit, 96kHz BiCMOS Sign-Magnitude DAC
DSD1702							SSOP	2.48	Enhanced Multi-Format, Delta-Sigma, Audio DAC

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

CCD Imaging Analog Front Ends

Device Name	Sorted By Resolution (Bits)	Samples/Sec (MSPS)	P_d (typ) (mW)	Supply Voltage(s) (V)	Gain (min) (dB)	Gain (max) (dB)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
TLC8188	10	4	190	5	0	14	2	1	TSSOP	2.15	CIS/CCD Scanner AFE Using Pipeline-Architecture ADC at 4MSPS
TLV990-13	10	13	150	2.7 to 3.3	0	36	0.5	0.9	TQFP	2.78	CCD Signal Processor/Digitizer Designed For Digital Still Cameras And PC Camera Applications
TLV990-21	10	21	150	3	0	36	0.99	2	TQFP	2.11	3-V, 10-Bit, 21-MSPS Area CCD Analog Front End
TLV990-28	10	28	150	2.7 to 3.3	0	36	0.99	2	TQFP	3.30	3-V, 10-Bit, 28-MSPS Area CCD Analog Front End
TLV990-40	10	40	200	2.7 to 3.3	0	36	0.6	1.75	TQFP	3.59	3-V, 10-Bit, 40 MSPS Area CCD Analog Front End
TLV990B	10	28	150	2.7 to 3.3	0	36	0.99	2	TQFP	3.21	3-V 10-Bit 28-MSPS Area CCD and Video Signal Processor
VSP1021	10	21	90	2.7 to 3.3	0	36	0.5	0.8	TQFP	3.00	3V, 10-Bit, 21 MSPS, Area CCD Analog Front End
VSP10T21	10	21	90	2.7 to 3.3	0	36	1.5	0.5	TQFP	3.40	3V, 10-Bit, 21MSPS, CCD Analog Front End with Internal Sample Timing
VSP1310	**10**	**20**	**60**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**10-Bit, 20Msps CCD Signal Processor for Digital Cameras**
VSP1320	**10**	**28**	**70**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**10-Bit, 28Msps CCD Signal Processor for Digital Cameras**
VSP1330	**10**	**20**	**60**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**10-Bit, 20Msps CCD Signal Processor for Digital Cameras with 8-Bit DAC**
VSP1340	**10**	**28**	**70**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**10-Bit, 28Msps CCD Signal Processor for Digital Cameras with 8-Bit DAC**
VSP1350	**10**	**36**		**2.7 to 3.6**	**–3.5**	**42**				**Call**	**10-Bit, 36Msps CCD Signal Processor for Digital Cameras**
VSP2101	10	27	190	2.7 to 3.6	3	34	0.5	2	LQFP	5.82	10-Bit, 27Msps CCD Signal Processor for Digital Cameras with 10-Bit On-Chip DAC
VSP2210	10	20	97	2.7 to 3.6	–6	42	0.5	1	LQFP	8.10	10-Bit, 20 Msps CCD Signal Processor for Digital Cameras with Two 8-Bit On-Chip DAC
VSP2230	10	36	128	2.7 to 3.6	–6	42	0.5	1	LQFP	9.63	10-Bit, 36Msps CCD Signal Processor for Digital Cameras
VSP2260	10	20	83	3.0 to 3.3	–6	42	0.5	1	LQFP	8.00	10-Bit, 20Msps CCD Signal Processor for Digital Cameras
VSP2265	**10**	**25**		**3.0 to 3.6**	**–6**	**42**	**0.5**	**1**		**Call**	**10-Bit, 25 Msps CCD Signal Processor for Digital Cameras with V/H Timing Generator**
VSP2270	10	27	93	2.7 to 3.3	–6	42	0.5	1	LQFP,QFN	6.66	10-Bit, 28Msps CCD Signal Processor for Digital Cameras
VSP1221	12	21	90	2.7 to 3.3	0	36	0.75	2	TQFP	3.56	12 Bit, 21 MSPS, Ultra Low Power CCD Signal Processor
VSP1312	**12**	**20**	**60**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**12-Bit, 20Msps CCD Signal Processor for Digital Cameras**
VSP1322	**12**	**28**	**70**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**12-Bit, 28Msps CCD Signal Processor for Digital Cameras**
VSP1332	**12**	**20**	**60**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**12-Bit, 20Msps CCD Signal Processor for Digital Cameras with 8-Bit DAC**
VSP1342	**12**	**28**	**70**	**2.7 to 3.6**	**–3.5**	**42**				**Call**	**12-Bit, 28Msps CCD Signal Processor for Digital Cameras with 8-Bit DAC**
VSP1352	**12**	**36**		**2.7 to 3.6**	**–3.5**	**42**				**Call**	**12-Bit, 36Msps CCD Signal Processor for Digital Cameras**
VSP2212	12	20	99	2.7 to 3.6	–6	42	0.5	1	LQFP	10.12	12-Bit, 20 Msps CCD Signal Processor for Digital Cameras with Two 8-Bit On-Chip DAC
VSP2232	12	36	130	2.7 to 3.6	–6	42	0.5	2	LQFP	11.66	12-Bit, 36Msps CCD Signal Processor for Digital Cameras
VSP2262	12	20	86	2.7 to 3.6	–6	42	0.5	1	LQFP,XCEPT	10.02	12-Bit, 20Msps CCD Signal Processor for Digital Cameras
VSP2267	**12**	**25**		**3.0 to 3.6**	**–6**	**42**	**0.5**	**1**		**Call**	**12-Bit, 25 Msps CCD Signal Processor for Digital Cameras with V/H Timing Generator**
VSP2272	12	27	94	3.0 to 3.6	–6	42	0.5	2	LQFP,QFN	8.66	12-Bit, 28Msps CCD Signal Processor for Digital Cameras
VSP3010	12	6	410	5	0	13	0.3	1	LQFP	5.82	12-Bit, 12Msps CCD/CIS Signal Processor for Scanner
VSP1314	**14**	**20**	**60**	**2.7 to 2.6**						**Call**	**14-Bit, 20Msps CCD Signal Processor for Digital Cameras**
VSP1324	**14**	**28**	**70**	**2.7 to 3.6**						**Call**	**14-Bit, 28Msps CCD Signal Processor for Digital Cameras**

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

CCD Imaging Analog Front Ends (Continued)

Device Name	Sorted By Resolution (Bits)	Samples/Sec (MSPS)	P_d (typ) (mW)	Supply Voltage(s) (V)	Gain (min) (dB)	Gain (max) (dB)	DNL (max) (±LSB)	INL (max) (±LSB)	Package	Price*	Description
VSP1334	**14**	**20**	**60**	**2.7 to 3.6**						**Call**	**14-Bit, 20Msps CCD Signal Processor for Digital Cameras with 8-Bit DAC**
VSP1344	**14**	**28**	**70**	**2.7 to 3.6**						**Call**	**14-Bit, 28Msps CCD Signal Processor for Digital Cameras with 8-Bit DAC**
VSP1354	**14**	**36**		**2.7 to 3.6**						**Call**	**14-Bit, 36Msps CCD Signal Processor for Digital Cameras**
VSP3100	14	10	375	5	0	13	0.5	4	LQFP	5.06	14-Bit, 10Msps CCD/CIS Signal Processor for Scanner
VSP3200	16	8	300	5	0	13	1.5	8	LQFP	6.07	16-Bit, 8Msps CCD Signal Processor for Scanner
VSP3210	16	8	300	5	0	13	1.5	8	LQFP	6.07	16-Bit, 8Msps CCD Signal Processor for Scanner
TAFE1040									**TQFP**	**Call**	**3V 10-Bit 42 MSPS CCD Analog Front End**
VSP2254		**27**	**165**	**2.7 to 3.6**			**2**	**8**		**Call**	**2CH, 14-Bit, 27 Msps CCD Signal Processor for Digital Camera**
VSP2256		**36**	**210**	**2.7 to 3.6**			**2**	**8**		**Call**	**2CH, 14-Bit, 36 Msps CCD Signal Processor for Digital Camera**
VSP5000			**290**	**3.0 to 3.6**	**0**	**24**	**0.5**	**2**		**Call**	**2CH, 12-Bit 30 Msps CCD Signal Processor for Copier**

DSL Codecs

Device Name	Power (mW)	Analog Supply (V)	Digital Supply (Up to 5 V) (V)	On-Chip Driver	Resolution (Bits)	Number of Channels	Package	Price*	Description
ACF2101							SOIC	14.80	Low Noise, Dual Switched Integrator
AFE1115	360	5	3.3	Yes	14	1	SSOP	12.15	HDSL/MDSL Analog Front End with VCXO
AFE1124	250	5	3.3	Yes	14	1	SSOP	9.11	HDSL/MDSL Analog Front End
AFE1144	250	5	3.3	Yes	14	1	SSOP	9.11	HDSL/MDSL Analog Front End
AFE1205	385	5	3.3	Yes	14	1	SSOP	14.57	2Mbps, Single Pair HDSL Analog Front End
AFE1224	385	5	3.3	Yes	14	1	SSOP	14.57	2Mbps, Single Pair Analog Front End
AFE1230	750	5	3.3	Yes	16	1	SSOP	14.57	G.SHDSL Analog Front End
AFE1302	500	5	3.3	No	16	1	TQFP	10.63	ADSL Analog Front End
AFE2124	250	5	3.3	Yes	14	2	SSOP	18.22	Dual HDSL/SDSL Analog Front End
AFE2126	**280**	**5**	**3.3**	**Yes**	**14**	**2**		**Call**	**Dual HDSL/SDSL Analog Front End**
TLFD600	1380	3.3	3.3	Yes (12 V required)	14	1	HTQFP	Call	ADSL Codec W/Integrated Line Driver and Receiver
TLV320AD11A	800	3.3	3.3	No	14	1	LQFP	Call	3.3V Integrated ADSL Codec for CPE
TLV320AD13A	800	3.3	3.3	No	14	1	LQFP	Call	3.3V Integrated ADSL over ISDN Codec for CPE
TLV320AD16	600 or 450	3.3	3.3	RX only	14	1	LQFP	Call	3.3-V Integrated ADSL Codec for CO

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

POTS and Linecard Codecs

Device Name	Companding	Clock Frequency (MHz)	Timing	Supply Voltage (V)	Number of Channels	Package	Price*	Description
TCM320AC54	µ-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.26	µ-law, 1.536, 1.544, 2.048 MHz, Interface for DSP
TCM38C17	both	2.048	Intel	5	4	SSOP	5.11	µ-law and A-law, 2.048 MHz, Single +5V Supply
TP3054A	µ-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.39	µ-law, Single-Ended Output, 1.536, 1.544, 2.048 MHz
TP3054B	µ-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.39	µ-law, Single-Ended Output, 1.536, 1.544, 2.048 MHz, Enhanced Noise Reduction
TP3056B	both	2.048	National	±5	1	PDIP,SOIC	1.46	µ-law and A-law, Single-Ended Output, 2.048 MHz
TP3057A	A-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.39	A-law, Single-Ended Output, 1.536, 1.544, 2.048 MHz, Enhanced Noise Reduction
TP3057B	A-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.39	A-law, Single-Ended Output, 1.536, 1.544, 2.048 MHz
TP3064B	µ-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.39	µ-law, Differential output, 1.536, 1.544, 2.048 MHz, Enhanced Noise Reduction
TP3067A	A-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.39	A-law, Differential output, 1.536, 1.544, 2.048 MHz, Enhanced Noise Reduction
TP3067B	A-Law	1.536, 1.544, 2.048	National	±5	1	PDIP,SOIC	1.39	A-law, Differential output, 1.536, 1.544, 2.048 MHz

*Budgetary price per unit in U.S. dollars, lots of 1,000+ Preview devices announced but not yet in production appear in **BOLD**.

To order any of the following literature by telephone, please contact the Product Information Center nearest you. A complete listing of TI's Product Information Centers can be found on the last page of this guide.

For online access to a list of TI's Product Information Centers and distributors in your area, as well as links directing you to information on Evaluation Modules and Design Tools, go to: **www.ti.com/sc/docs/msp/tools/tools.htm**

Literature

TITLE	ORDER NO.
Data Acquisition Circuits, 1998	SLAD001A
Data Converter Sine On, 1999	SLAM023
Semiconductor Group Package Outlines Reference Guide, 1999	SSYU001E
ADCs (≥1 MSPS)	
Analog-to-Digital Converter Grounding Practices Effect System Performance	SBAA052
Designing with the THS1206 High-Speed Data Converter	SLAA094
High Speed Data Conversion	SBAA045
Interfacing A/D Converters TLC5540/10 to the DSKplus DSP Starter Kit TMS320C54x	SLAAE14
Interfacing the TLC5510 Analog-to-Digital Converter to the TMS320C203 DSP	SLAA070
Interfacing the TLC5510 Analog-to-Digital Converter to the TMS320C203 DSP	SLAA029
Interfacing the TLC5540 Analog To Digital Converter to the TMS320C203-80 DSP	SLAA032
Interfacing the TLV1562 Parallel ADC to the TMS320C54x™ DSP	SLAA040
Interfacing the TLV1571/78 Analog-to-Digital Converter to the TMS320C542 DSP	SLAA077
Interfacing the TLV1572 Analog-to-Digital Converter to the TMS320C203 DSP	SLAA026B
Interleaving Analog-to-Digital Converters	SBAA049
Low-Power Signal Conditioning For A Pressure Sensor	SLAA034
Minimizing Input Design Problems With The TLV5590	SWCA001
Principles of Data Acquisition and Conversion	SBAA051
THS1215/THS1230 EVM User's Guide	SLAU058
THS1240 EVM	SLAU053A
THS14xx/5691 EVM for the THS14xx and THS56xx DAC Families	SLAU045A
TLC5540/5510/5510A/5540/5510 EVM User's Guide	SLAU007C
TLC876 Analog-to-Digital Converter Evaluation Board User's Guide	SLAM002
TLV1562 Evaluation Module	SLAU031A
TLV1570 Evaluation Module User's Guide	SLAU024
ADCs (≥1 MSPS) (Continued)	
TLV1572EVM Evaluation Module User's Guide	SLAU018
TMS320C54x DSKplus Adapter Kit	SLAU030
TMS320FLEX Family Messaging System Solutions w/ Numeric Decoder Design Manual	SPRA183
TMS320FLEX Family Messaging System Solutions With Alphanumeric Roaming Decoder	SPRA193
Using References to Generate Offsets for the TLV55xx Family Data Converters	SLAA063
Using the TMS320C5402 DMA Channels to Read from the TLV1570 ADC	SLAA097
Using TI FIFOs to Interface High-Speed Data Converters With TI TMS320 DSPs	SDMA003
What Designers Should Know About Data Converter Drift	SBAA046
ADCs (<1 MSPS)	
A Clarification of Use of High-Speed S/H to Improve Sampling ADC Performance	SBAA053
Accessing the ADS1210 Demo Board with Your PC	SBAA011
ADS121x Analog-Digital Converter Applications Primer	SBAA022
ADS7809 Tag Features	SBAA007
ADS7843 Pen Interrupt	SBAA028
Analog-to-Digital Converter Grounding Practices Effect System Performance	SBAA052
CDAC Architecture Gives ADC574 Pinout /Sampling, Low Power, New Input Ranges	SBAA043
Choosing an ADC and Op Amp for Minimum Offset	SLAA064
Coding Schemes Used with Data Converters	SBAA042
Comparing the ADS1201 to the CS5321 [745k]	SBAA039
Complete Temp Data Acquisition System From a Single PLUS5V Supply	SBAA050
Creating a Bipolar Input Range for the DDC112	SBAA034
Customizing the DDC112 Evaluation Fixture	SBAA021
DDC101 Evaluation Fixture PC Interface Board	SBAA056
DDC112UK DEMO BOARD	SBAA038
DEM-ADS1210/11 Demo Board Tricks Evaluate ADS1211 Multiplexer Switch Response	SBAA009
Dynamic Tests for A/D Converter Performance	SBAA002
Evaluating the ADS7846E: Using the DEM-ADS7843E/45E Evaluation Fixture	SBAA037
Evaluating the TLV2462 and TLV2772 as Drive Amps for the TLV2544/TLV2548 ADC	SLOA048

Literature (Continued)

TITLE	ORDER NO.
ADCs (<1 MSPS) (Continued)	
TLV2543 Evaluation Module Technical Reference	SLAU004
Giving Delta-Sigma Converters a Gain Boost with a Front End Analog Gain Stage	SBAA006
Guide for Delta-Sigma Converters: ADS1210, ADS1211, ADS1212, ADS1213	SBAA016
How to get 23 bits of effective resolution from your 24-bit converter	SBAA017
Improved 60Hz Performance for ADS1211	SBAA040
Interfacing the ADS1210 with an 8xC51 Microcontroller	SBAA010
Interfacing the ADS7822 to synchronous serial port of the 80x51 Microcontroller	SBAA018
Interfacing the ADS7822 to the TMS3420C5402 DSP	SLAA107
Interfacing the ADS7870 and the MC68HC11E9 Analog to Microcomputer Made Easy	SBAA041
Interfacing the ADS8320 ADC to the TMS320C5402 DSP	SLAA118
Interfacing the MSP430 and TLC549/1549 A/D Converters	SLAA112
Interfacing the MSP430x11x(1) and TLV0831	SLAA092
Interfacing the TLC2543 ADC to the TMS320C25 DSP	SLAA017
Interfacing the TLV1544 Analog-to-Digital Converter to the TMS320C203 DSP	SLAA028A
Interfacing the TLV1544 Analog-to-Digital Converter to the TMS320C50 DSP	SLAA025A
Interfacing the TLV1544/1548 Analog Digital Converter to Digital Processors	SLAA022
Interfacing the TLV1549 10-Bit Serial-Out ADC to Popular 3.3-V Microcontrollers	SLAA005
Interfacing the TLV2541 ADC and the TLV5618A DAC to the TMS320C31 DSP	SLAA111
Interfacing the TLV2544/TLV2548 ADC to the TMS320C31 DSP	SLAA101
Interfacing the TLV2544/TLV2548 ADC to the TMS320C5402 DSP	SLAA093A
Interfacing the TMS320C5402 DSP to the TLV2541 ADC and the TLV5636 DAC	SLAA098A
Low-Power Signal Conditioning For A Pressure Sensor	SLAA034
Microcontroller Based Data Acquisition Using the TLC2543 12-Bit Serial Out ADC	SLAA012
Multi-DDC112 DUT Board for the DDC112 Evaluation Fixture	SBAA029
New Software For The DDC112 Evaluation Fixture	SBAA030
Overdriving The Inputs To The ADS1210, ADS1211, ADS1212, and ADS1213	SBAA012
Pressure Transducer to ADC Application	SLOA056

TITLE	ORDER NO.
ADCs (<1 MSPS) (Continued)	
Principles of Data Acquisition and Conversion	SBAA051
Programming Tricks for Higher Conversion Speeds Utilizing Delta Sigma Converters	SBAA005
Remove the DC Portion of Signals with the ADS7817	SBAA015
Retrieving Data from the DDC112	SBAA026
SA1110WCED Driver for ADS7846	SBAC013
SA11x0 ADS7846 WCE300 Release	SBAC014
Selecting an A/D Converter	SBAA004
Short Cycling the 8-Pin ADS78xx Family	SBAA014
Signal Acquisition And Conditioning With Low Supply Voltages	SLAA018
SPI-Based Data Acquisition/Monitor Using the TLC2551 Serial ADC	SLAA108A
Switched-Capacitor ADC Analog Input Calculations	SLAA036
Synchronization of External Analog Multiplexers with Delta-Sigma A/D Converters	SBAA013
The DDC112\'s Test Mode	SBAA025
Thermistor Temperature Transducer to ADC Application	SLOA052
Tips for Using the ADS78xx Family of A/D Converters	SBAA003
Touch Screen Controller Tips	SBAA036
Understanding The DDC112\'S Continuous and Non-Continuous Modes	SBAA024
Using DSP101 with Multiplexed Analog Inputs	SBAA048
Using External Integration Capacitors on the DDC112	SBAA027
Using the ADS1201 Evaluation Board	SBAA031
Using the Continuos Parallel Mode with the ADS7824 and ADS7825	SBAA019
Using the TMS320C5402 DMA Channels to Read From the TLV2548	SLAA095
Voltage Reference Scaling Techniques Increase Converter and Resolution Accuracy	SBAA008
What Designers Should Know About Data Converter Drift	SBAA046
Windows CE Touch and Keypad Device Drivers for the TSC2200	SBAA075
Audio Codecs	
Control Port and Reset Operation SoundPlus Audio Converters and Codecs	SBAA032
Dyamic Performance Testing of Digital Audio D/A Converters	SBAA055
Low Sampling Rate Operation SoundPlus Audio Data Converters and Codecs	SBAA033
Voice-Band Codecs	
Comparison of TI Voiceband Codecs for Telephony Applications	SLAA088
Design Guidelines for the TLC320AD50	SLAA087

TITLE	ORDER NO.
Voice-Band Codecs (Continued)	
Design Guidelines for the TLC320AD535/545	SLAA090
Designing with the TLC320AC01 Analog Interface for DSPs	SLAA006
Evaluation Board for the TLC320AD545 DSP Analog Interface Circuit	SLAA085A
Interfacing the TLC5510 Analog-to-Digital Converter to the TMS320C203 DSP	SLAA029
Interfacing the TLV320AIC10/11 Codec to the TMS320C5402 DSP	SLAA109
Interfacing the TMS320C54x DSP to the TLC320AD535/545 Codecs	SLAA091
Interfacing TMS320C54x DSPs to the TLC320AC01/02	SPRA527
Interfacing Two Analog Interface Circuits to One TMS320C5x Serial Port	SPRA268
Low Voltage Modem Platform Based on TMS320LC56	BPRA049
Multiple TLC320AC01/02 Analog I/F Circuits on One TMS320C5x DSP Serial Port	SLAA016
TMS320 Hardware Applications (Contains Scanned Text)	SPRA390
DACs	
High Speed Data Conversion	SBAA045
Superposition: The Hidden DAC Linearity Error	SBAA047
Using TI FIFOs to Interface High-Speed Data Converters With TI TMS320 DSPs	SDMA003
What Designers Should Know About Data Converter Drift	SBAA046
Bipolar Voltage Outputs for the TLV56xx Family of DACs	SLAA113
High Speed Data Conversion	SBAA045
Interfacing The DAC714 To Micro-Controllers Via SPI	SBAA023
Interfacing the TLC5618A Digital-to-Analog Converter to the TMS320C203 DSP	SLAA033
Interfacing the TLV2541 ADC and the TLV5618A DAC to the TMS320C31 DSP	SLAA111
Low-Power Signal Conditioning For A Pressure Sensor	SLAA034
Solid State Voice Recorder Using Flash MSP430	SLAA123
SPI-Based Data Acquisition/Monitor Using the TLC2551 Serial ADC	SLAA108A
What Designers Should Know About Data Converter Drift	SBAA046

Evaluation Modules and Development Tools

To ease and speed the design process, TI offers evaluation modules (EVMs) for many analog and mixed-signal products.

EVMs contain a fully-assembled evaluation board, data sheet and user's guide. Some modules may include applications notes, software, cables and connectors.

To determine whether a product has an EVM, simply access the "product folder" for the part in question at **http://analog.ti.com** by entering the part number of the product in the "Search TI" field. The "product folder" will appear in the search results. Next, click on the "product folder" then click on "Development Tools" (upper right-hand section of the page) to determine EVM availability.

To place an order for an EVM or if you do not have Internet access, contact TI's Product Information Center (PIC) at 1-800-477-8924, ext. 5800 in North America, or go to: **http://support.ti.com** to locate the Product Information Center nearest you. EVMs may also be ordered through your local TI distributor. See **http://focus.ti.com/docs/general/distributor.jhtml** for distributor listings.

TI Worldwide Technical Support

Internet

TI Semiconductor Product Information Center Home Page
support.ti.com

TI Semiconductor KnowledgeBase Home Page
support.ti.com/sc/knowledgebase

Product Information Centers

Americas

Phone	+1(972) 644-5580
Fax	+1(972) 927-6377
Internet/Email	support.ti.com/sc/pic/americas.htm

Europe, Middle East, and Africa

Phone	
Belgium (English)	+32 (0) 27 45 55 32
Finland (English)	+358 (0) 9 25173948
France	+33 (0) 1 30 70 11 64
Germany	+49 (0) 8161 80 33 11
Israel (English)	1800 949 0107
Italy	800 79 11 37
Netherlands (English)	+31 (0) 546 87 95 45
Spain	+34 902 35 40 28
Sweden (English)	+46 (0) 8587 555 22
United Kingdom	+44 (0) 1604 66 33 99
Fax	+(49) (0) 8161 80 2045
Email	epic@ti.com
Internet	support.ti.com/sc/pic/euro.htm

Japan

Fax	International	+81-3-3344-5317
	Domestic	0120-81-0036
Internet/Email	International	support.ti.com/sc/pic/japan.htm
	Domestic	www.tij.co.jp/pic

Asia

Phone		
International		+886-2-23786800
Domestic		Toll-Free Number
	Australia	1-800-999-084
	China	108-00-886-0015
	Hong Kong	800-96-5941
	Indonesia	001-803-8861-1006
	Korea	080-551-2804
	Malaysia	1-800-80-3973
	New Zealand	0800-446-934
	Philippines	1-800-765-7404
	Singapore	800-886-1028
	Taiwan	0800-006800
	Thailand	001-800-886-0010
Fax	886-2-2378-6808	
Email	tiasia@ti.com	
Internet	support.ti.com/sc/pic/asia.htm	