8-Bit to 18-Bit SAR ADCs …

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ANALOG DEVICES

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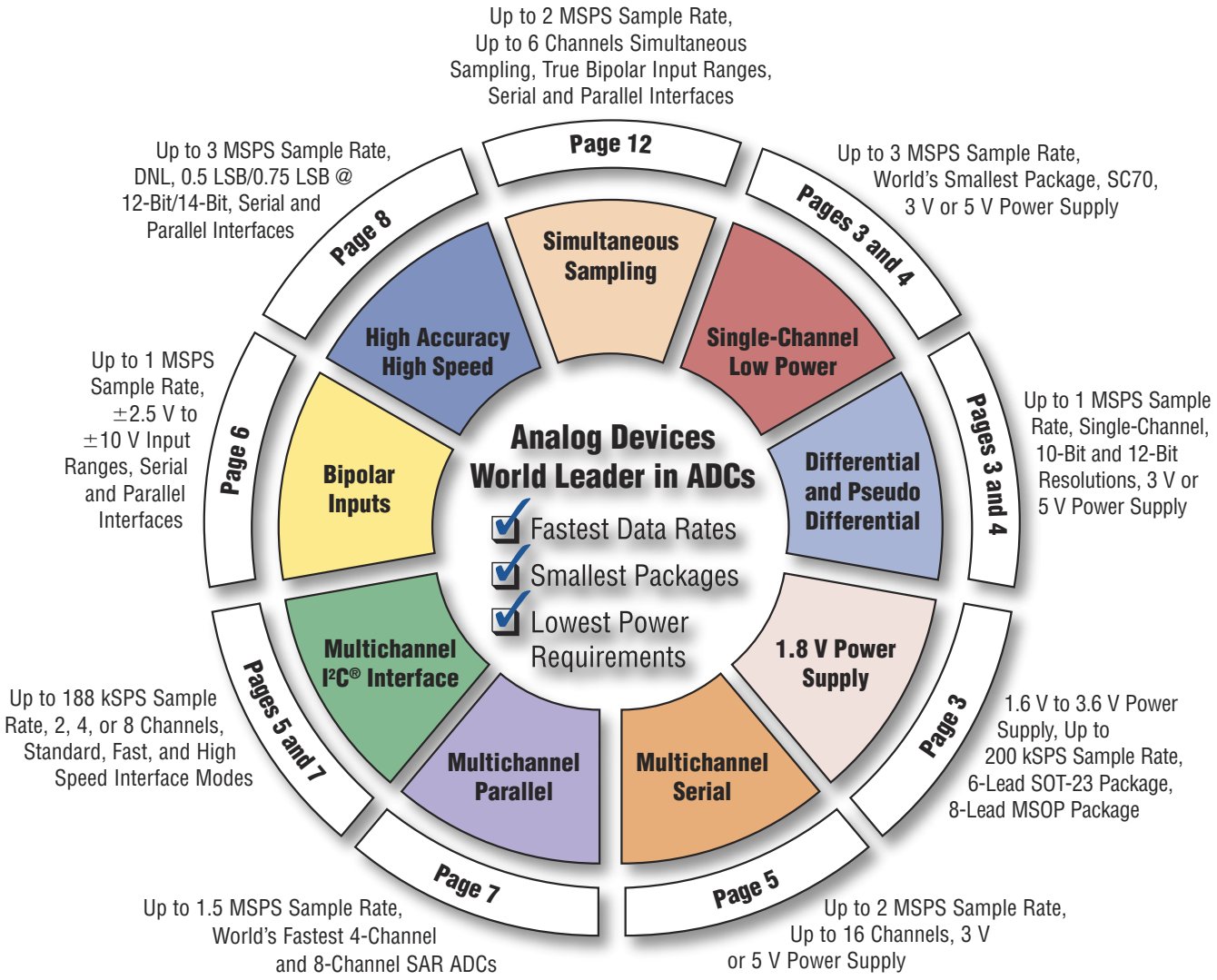
8-Bit to 18-Bit SAR ADCs with Sample Rates up to 3 MSPS

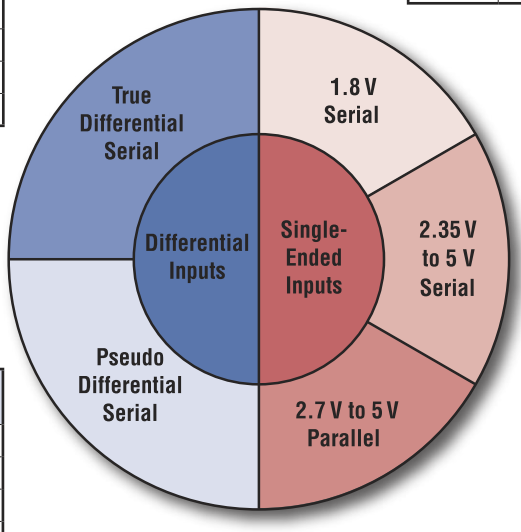
The latest additions to ADI's ADC portfolio offer unrivaled functionality in terms of channel count and power supply voltage, optimal power/speed ratios, and the smallest packages to meet the demands of any data acquisition application, including portable, industrial, medical, wireless, and communications.



Single-Channel Selector Guide

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7450A	12	1,000	4 max
AD7452	12	555	3.3 max
AD7440	10	1,000	4 max
AD7684	16	100	6 max
AD7687	16	250	20
AD7688	16	500	44

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7466	12	200	0.3 max
AD7467	10	200	0.2 max
AD7468	8	200	0.2 max



Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7641	18	2,000	100
AD7621	16	3,000	100
AD7274	12	3,000	12.5
AD7276	12	3,000	12.5
AD7476/ AD7476A	12	1,000	5.1 max
AD7920	12	250	4.2 max
AD7475	12	1,000	4.5 max
AD7495	12	1,000	6 max
AD7277	10	3,000	10.5 max
AD7273	10	3,000	10.5 max
AD7477/ AD7477A	10	1,000	5.1 max
AD7910	10	250	4.2 max
AD7278	8	3,000	10.5 max
AD7478/ AD7478A	8	1,000	5.1 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7683	16	100	6 max
AD7685	16	250	15 max
AD7686	16	500	20
AD7942	14	250	12.5 max
AD7946	14	500	25 max
AD7451	12	1,000	4 max
AD7453	12	555	3.3 max
AD7457	12	100	1 max
AD7441	10	1,000	4 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7472	12	1,500	9 max
AD7492	12	1,250	9 max
AD7470	10	1,750	4.5 max

At 3 MSPS, New Serial ADCs Break Speed Record—in a Tiny TSOT Package

The need for faster loop settling times, higher channel counts, and reduced package sizes is driving converter technology today. By combining the latest in process technology with advances in circuit design, ADI has created a new generation of solutions.

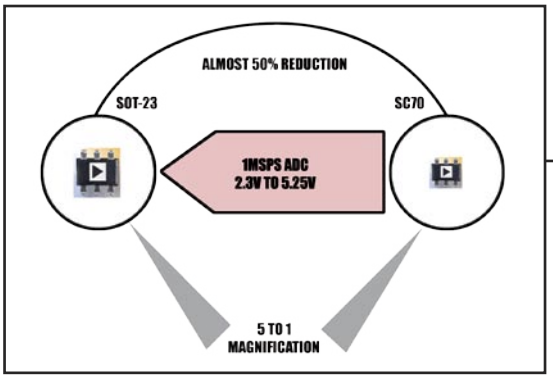
The AD727x family of 12-, 10-, and 8-bit SAR ADCs features high speed and low power SAR ADCs. The parts operate from a single 2.35 V to 3.6 V power supply and feature throughput rates up to 3 MSPS. Housed in both the tiny TSOT package and the 8-lead MSOP package, their conversion process and data acquisition are controlled using CS and the serial clock, allowing the devices to interface with microprocessors or DSPs.

The conversion rate is determined by the SCLK, with no pipeline delays. They also have the advantage of being pin-compatible with other popular ADCs from ADI. The AD7276/AD7277/AD7278 are pin-for-pin compatible with the AD7476 and AD7476A families of converters.

World's Smallest 12-Bit, 10-Bit, and 8-Bit ADCs; SC70 Package Is Half the Size of the SOT-23 Package

The 18-bit AD794x, 14-bit AD7685, 12-bit AD7476A, and 8-bit AD7478A are SAR (successive approximation) A/D converters with a maximum throughput rate of 1 MSPS that consume just 3.6 mW and conveniently come in tiny, 6-lead SC70 packages.

For lower throughput rates, use the AD7910 and AD7920, very low power SAR ADCs that also come in SC70 packages. The parts are based on the AD747x core, but the throughput rates have been reduced to 250 kSPS to conserve power.



Features

- Fast throughput rate: 1 MSPS
- Specified for V_{DD} of 2.35 V to 5.25 V
- Low power: 3.6 mW typ at 1 MSPS with 3 V supplies
- Wide input bandwidth: >13 MHz
- Flexible power/serial clock speed management
- No pipeline delays
- High speed serial interface
- SPI®-/QSPI™-/MICROWIRE™-/DSP-compatible
- Standby mode: 1 μA max
- 6-lead SC70 and 8-lead MSOP* packages

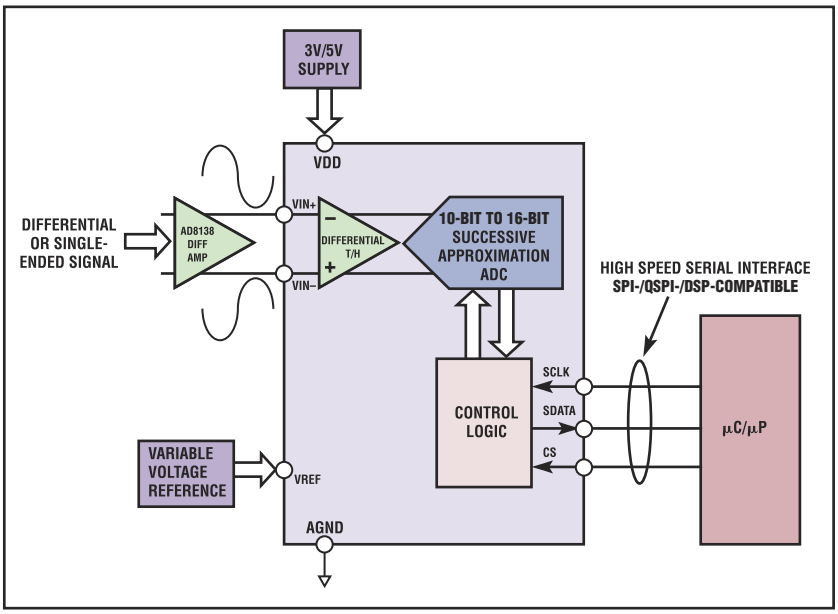
**MSOP is equivalent to μSOIC.*

For More Flexible Reference Capability

The AD7475 and AD7495, from the same family of low power, high speed SAR ADCs, are 12-bit, 1 MSPS parts with the addition of a REF_{IN} and REF_{OUT} pin, respectively, and a logic power supply (VDRIVE) pin. Both are packaged in 8-lead SOIC and MSOP packages; the AD7475 requires an external reference, while the AD7495 provides its own internal 2.5 V reference. For parallel interface versions, refer to the AD7470 (10-bit ADC), AD7472, and AD7492, which include an internal reference option and clock oscillator.

When High Performance or Low Noise Matters, Choose ADI's True Differential or Pseudo Differential Analog Input ADCs

The AD744x, AD745x, AD768x, and AD794x are families of 10-bit to 16-bit serial ADCs with throughput rates from 100 kSPS up to 1 MSPS. For true differential inputs, complementary signals are applied to $V_{IN}(+)$ and $V_{IN}(-)$. Alternatively, in the pseudo differential case, the $V_{IN}(-)$ is used as a dc offset.



Features

- Specified for V_{DD} of 3 V and 5 V
- Fully differential or pseudo differential analog inputs
- Low power at max throughput rate: 3.75 mW at 1 MSPS with 3 V supplies
- Wide input bandwidth: >20 MHz
- Flexible power/serial clock speed management
- High speed serial interface—SPI-/QSPI-/MICROWIRE-/DSP-compatible
- Power-down mode: 1 μA max

Applications

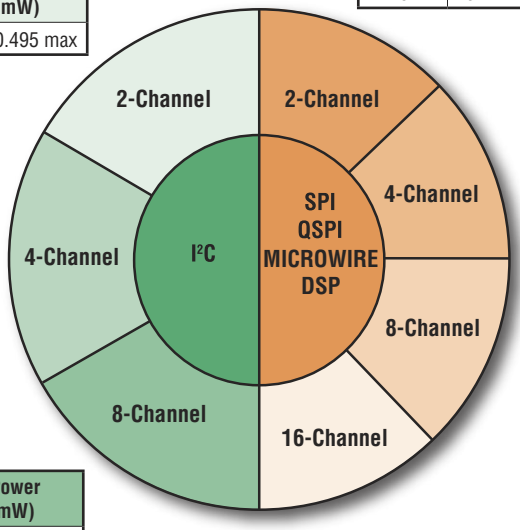
- Interface to transducers
- Communications
- Battery-powered systems
- Data acquisition systems
- Motor control
- Portable instrumentation

Multichannel Selector Guide

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7654	16	500	135 max
AD7922	12	1,000	6 max
AD7921	12	250	6 max
AD7912	10	1,000	6 max
AD7911	10	250	6 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7992	12	188	0.495 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7655	16	1,000	135 max
AD7924	12	1,000	6 max
AD7923	12	200	3.6 max
AD7914	10	1,000	6 max
AD7904	8	1,000	6 max



Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7993	10	188	0.495 max
AD7994	12	188	0.495 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7928	12	1,000	6 max
AD7927	12	200	3.6 max
AD7918	10	1,000	6 max
AD7908	8	1,000	6 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7997	10	188	0.495 max
AD7998	12	188	0.495 max

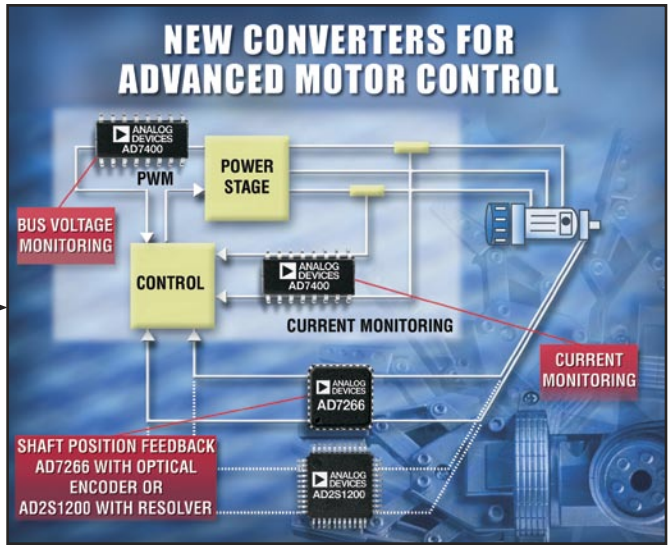
Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7490	12	1,000	5.4 max

Motor Control—AD7266/AD7265—2 MSPS and 1 MSPS 12-Bit SARs

The AD7266 is a simultaneous sampling, dual-channel, 12-bit SAR ADC, enabling extremely fast loop-settling time with throughput rates up to 2 MSPS. The IC's analog input architecture and signal ranges are designed to interface with popular, off-the-shelf optical encoders which provide a low cost, high accuracy solution. Optical encoders are in servo control applications, such as robots and turning machines that require shaft feedback to the controller for precise positioning of mechanical movements. The chip consumes 27 mW of power (less than one half that of any other 2 MSPS simultaneous sampling ADC on the market). A 1 MSPS version—the AD7265—is also available. The AD7265 and AD7266 are available in 32-lead LFCSP or TQFP packages.

Pricing in 1,000-piece quantities is $5.75 for the AD7265 and $7.55 for the AD7266.

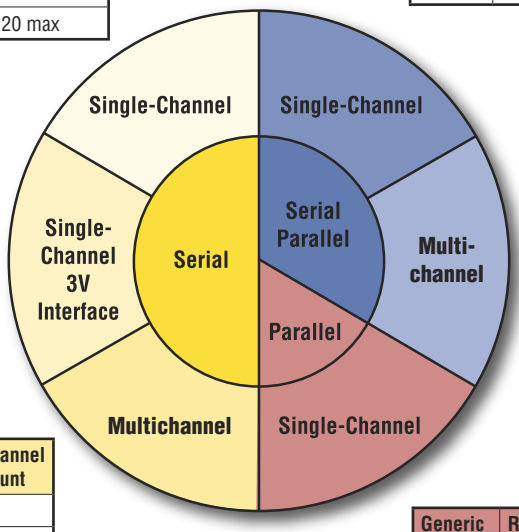
For more information on the AD7400 and AD2S1200 and other motor control parts, check out *www.analog.com/motorcontrol.*



Bipolar ADC Portfolio Product Selector

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7893	12	117	25 max
AD7895	12	200	16 max
AD7894	14	200	20 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7892	12	600	50 max



Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7898	12	220	22.5 max

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)	Channel Count
AD7656	16	250	160	6
AD7657	14	250	160	6
AD7658	12	250	160	6
AD7891	12	500	82 max	8

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)	Channel Count
AD7321	13	500	12	2
AD7322	13	1,000	12	2
AD7323	13	500	12	4
AD7324	13	1,000	12	4
AD7327	13	500	12	8
AD7328	13	1,000	12	8
AD7329	13	400	12	8
AD7890	12	100	30 max	8

Generic	Resolution (Bits)	Throughput (kSPS)	Power (mW)
AD7899	14	400	80 max

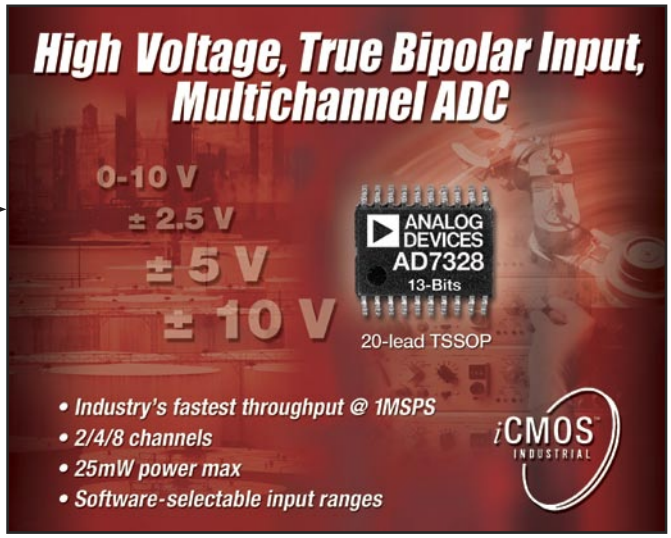
AD7328: True Bipolar Input *i*CMOS Multichannel ADC Has High Impedance Inputs and Software-Programmable AIN Ranges from ±2.5 V to ±10 V

The AD7328 has high voltage devices on the front end, which can accommodate input voltage ranges from ±2.5 V to ±10 V, while providing high dc and ac input impedances. The analog input channels can be configured as single-ended, fully differential, or pseudo differential. Dedicated control register bits are used to configure the analog inputs. The ADCs contain a channel sequencer, allowing automatic conversions on a group of preprogrammed analog input channels.

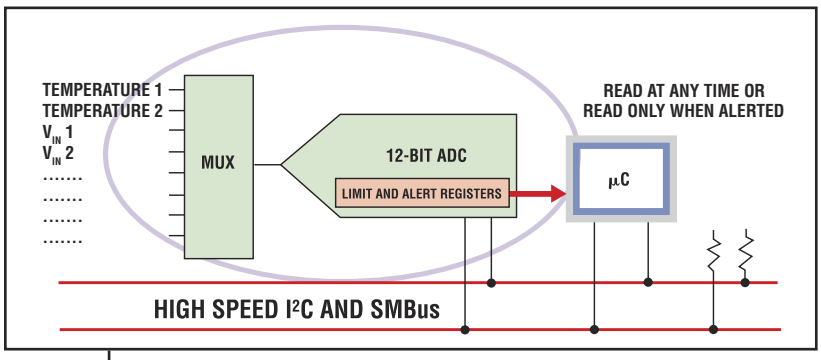
*i*CMOS™ INDUSTRIAL

AD7656—High Accuracy, Simultaneous Sampling *i*CMOS ADC

The AD7656 is highly integrated with six 16-bit successive approximation ADCs featuring fast throughput rates up to 250 kSPS per channel, and a 2.5 V internal reference housed in one package. The AD7656 contains low noise, wide bandwidth track-and-hold amplifiers that can handle input frequencies up to 8 MHz. Independent simultaneous sampling can be performed on the three ADC pairs. The AD7656 has both a high speed parallel and serial interface.



AD799x I²C Devices—ADCs for System Monitoring and Control



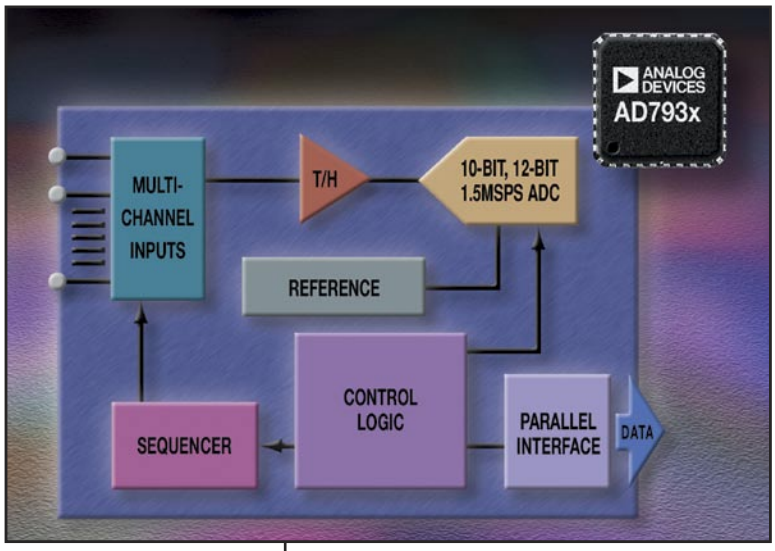
Applications

- Channel monitoring
- Battery and temperature measurements
- Medical instruments
- Voltage monitoring

Features

- 12-bit, 10-bit ADCs with 188 kSPS in high speed I²C® interface
- 2, 4, and 8 single-ended analog input channels
- Specified for V_{DD} of 2.7 V to 5.5 V
- Low power consumption: <1 mW
- On-chip channel sequencer
- Automatic cycle mode
- I²C-compatible serial interface
- Standard, fast, and high speed modes
- Out-of-range indicator/alert function
- Pin-selectable addressing via AS
- Shutdown mode: 1 µA max
- MSOP and TSSOP packages

The AD799x is a family of multichannel, 12-bit and 10-bit successive approximation ADCs with a fully I²C- and SMBus-compatible interface. These parts operate from a single 2.7 V to 5.5 V power supply and feature a conversion time of 2 µs. The family includes versions with two, four, and eight single-ended analog input channels in 10-lead MSOP, 16-lead TSSOP, and 20-lead TSSOP packages. The I²C-compatible interface supports standard, fast, and high speed modes.



AD793x—World's Fastest Multiplexed SAR Converters

The AD793x is a family of multichannel, 12-bit and 10-bit ADCs with throughput rates to 1.5 MSPS. Data transfers are made over a parallel bus, and the parts operate from a single 2.7 V to 5.25 V power supply.

Generic	Resolution (Bits)	Throughput (kSPS)	Channels
AD7938/AD7938-6	12	1,500/600	8
AD7934/AD7934-6	12	1,500/600	4
AD7939	10	1,500	8
AD7933	10	1,500	4

Features

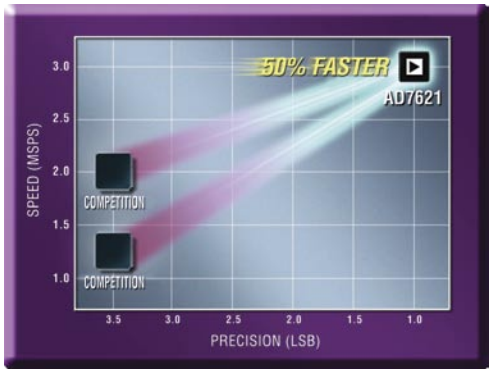
- 10-bit and 12-bit resolutions
- Fast throughput rate: up to 1.5 MSPS
- Specified for V_{DD} of 2.7 V to 5.25 V
- Low power: 8 mW max at 1.5 MSPS with 3 V supplies
- 4 and 8 analog input channels with a sequencer
- Software-configurable analog inputs
- Accurate on-chip 2.5 V reference
- Wide input bandwidth: >20 MHz
- No pipeline delays
- High speed parallel interface—word/byte modes
- Full shutdown mode: 1 µA max
- TSSOP, TQFP, and LFCSP packages

Advance Your Designs with Our Broad Range of PulSAR® ADCs

Some designs demand the highest performance ADCs available. For those there's only one place to go—Analog Devices. Our broad portfolio of 16-bit and 18-bit SAR ADCs delivers the highest performance with less power, smaller sizes, and lower overall systems costs.

AD7621—Unequalled SAR ADC Precision and Speed

With the AD7621, ADI sets a speed record of 3 MSPS, without sacrificing precision: the device offers 1 LSB of INL and DNL, plus 90 dB SNR. To achieve these speed and accuracy levels, ADI's design engineers migrated from a 0.6 μm process to a 0.25 μm process, setting the stage for the fast transistors that make up the quick comparator and fast digital logic. The sampling circuitry at the front of the ADC had to provide enough bandwidth and be ultralow in noise to support the 3 MSPS sampling rate and the 90 dB SNR spec, while the comparator had to settle very quickly (at least 16 times faster than the ADC itself) to make the right bit decisions that ensure the high accuracy. These advances result in numerous benefits—designers can use fewer ADCs per channel, and therefore lower their overall cost per channel, and the higher accuracy decreases the need for an expensive PGA in front of the ADC, which also results in a lower cost per channel.



Features

- 3 MSPS
- 90 dB SNR
- 16 bits, no missing codes
- Single-supply 2.5 V
- 1 LSB INL/DNL
- No pipeline delay
- Low power: 100 mW typ @ 3 MSPS
- 48-lead LFCSP packages

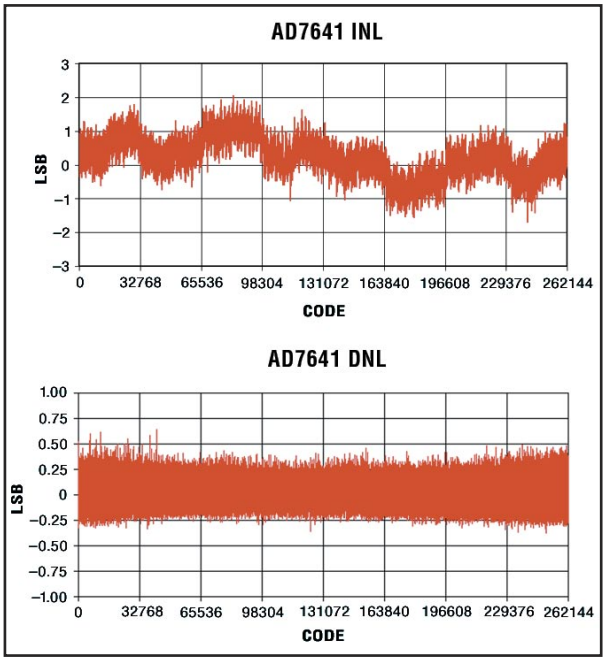
PulSAR Selection Table

Part Number	Resolution (Bits)	Sampling Rate (kHz)	Interface	Channels	Voltage Supply	Power (mW) Max	Voltage Reference	Input Range[1] (V)
AD7641	18	2,000	18P, S	1	2.5 V (3 V, 5 V logic)	100 typ	Yes	$\pm V_{REF}$ differential
AD7643	18	1,250	18P, S	1	2.5 V (3 V, 5 V logic)	100 typ	Yes	$\pm V_{REF}$ differential
AD7674	18	800	18P, S	1	5 V (3 V, 5 V logic)	126	Buffer only	±5 differential
AD7679	18	570	18P, S	1	5 V (3 V, 5 V logic)	103	Buffer only	±5 differential
AD7678	18	100	18P, S	1	5 V (3 V, 5 V logic)	26	Buffer only	±5 differential
AD7621	16	3,000	16P, S	1	2.5 V (3 V, 5 V logic)	100 typ	Yes	$\pm V_{REF}$ differential
AD7623	16	1,333	16P, S	1	2.5 V (3 V, 5 V logic)	100 typ	Yes	$\pm V_{REF}$ differential
AD7653	16	1,000	16P, S	1	5 V (3 V, 5 V logic)	145	Yes	0 to 2.5
AD7667	16	1,000	16P, S	1	5 V (3 V, 5 V logic)	145	Yes	0 to 2.5
AD7671	16	1,000	16P, S	1	5 V (3 V, 5 V logic)	125	No	±2.5, ±5, ±10, +2.5, +5, +10
AD7677	16	1,000	16P, S	1	5 V (3 V, 5 V logic)	130	No	±2.5 @ 2.5
AD7654[2]	16	1,000	16P, S	4	5 V (3 V, 5 V logic)	135	No	0 to 5
AD7655[2]	16	1,000	16P, S	4	5 V (3 V, 5 V logic)	135	No	0 to 5
AD7650	16	570	16P, S	1	5 V (3 V, 5 V logic)	115	No	0 to 2.5
AD7664	16	570	16P, S	1	5 V (3 V, 5 V logic)	115	No	0 to 2.5
AD7665	16	570	16P, S	1	5 V (3 V, 5 V logic)	107	No	±2.5, ±5, ±10, +2.5, +5, +10
AD7686	16	500	S	1	2.7 V to 5 V	20 typ	No	0 to V_{REF} (pseudo differential)
AD7688	16	500	S	1	2.7 V to 5 V	44 typ	No	$\pm V_{REF}$ differential
AD7652	16	500	16P, S	1	5 V (3 V, 5 V logic)	90	Yes	0 to 2.5
AD7666	16	500	16P, S	1	5 V (3 V, 5 V logic)	90	Yes	0 to 2.5
AD7676	16	500	16P, S	1	5 V (3 V, 5 V logic)	74	No	±2.5 @ 2.5
AD7946	14	500	S	1	2.7 V to 5 V	25	No	0 to V_{REF} (pseudo differential)
AD7656	16	250	16P, S	6	5 V (3 V, 5 V logic)	60 typ	Yes	±5, ±10
AD7663	16	250	16P, S	1	5 V (3 V, 5 V logic)	41	No	±2.5, ±5, ±10, +2.5, +5, +10
AD7685	16	250	S	1	2.7 V to 5 V	15	No	0 to V_{REF} (pseudo differential)
AD7687	16	250	S	1	2.7 V to 5 V	20 typ	No	$\pm V_{REF}$ differential
AD7942	14	250	S	1	2.7 V to 5 V	12.5	No	0 to V_{REF} (pseudo differential)
AD974	16	200	S	4	5 V	120	Yes	+4, +5, ±10
AD976A	16	200	16P	1	5 V	100	Yes	±10
AD977A	16	200	S	1	5 V	100	Yes	±3.3, ±5, ±10, +4, +5, +10
AD7651	16	100	16P, S	1	5 V (3 V, 5 V logic)	45	Yes	0 to 2.5
AD7660	16	100	16P, S	1	5 V (3 V, 5 V logic)	25	No	0 to 2.5
AD7661	16	100	16P, S	1	5 V (3 V, 5 V logic)	45	Yes	0 to 2.5
AD7675	16	100	16P, S	1	5 V (3 V, 5 V logic)	25	No	±2.5 @ 2.5
AD7680	16	100	S	1	3 V to 5 V	10	No	0 to V_{DD}
AD7683	16	100	S	1	2.7 V to 5 V	6	No	0 to V_{REF}
AD7684	16	100	S	1	2.7 V to 5 V	6	No	$\pm V_{REF}$

[1] Input range: differential implies that +IN and –IN can vary from –0.1 to V_{DD} (or within 2 V of V_{DD}) when referred to AGND. Pseudo differential implies that the –IN input can only vary ±100 mV typically.
[2] 2 × 2 channel simultaneous sampling.

AD7641: World's Fastest SAR ADC at 18-Bits and 2 MSPS

The AD7641 has raised the top speed for 18-bit SAR ADCs from 800 kSPS to 2 MSPS. Typical INL is ± 2.5 LSB with 18 bits no missing codes guaranteed over temperature. The AD7641 also offers 90 dB of SNR and –100 dB of THD, both specified at 100 kHz. This combination of outstanding ac and dc performance will attract customers needing to convert fast moving signals to the highest level of accuracy. Medical imaging, high speed data acquisition, and automatic test equipment are just a few of the applications that take advantage of the AD7641's rare combination of accuracy and speed. Its 4× increase in resolution over 16-bit ADCs will allow most customers to omit expensive programmable gain amplifiers from their systems. Other features include: serial and parallel interfaces, 2.5 V internal reference, fully differential inputs, and three-way, power-down capability. The AD7641 is available in both 48-lead LQFP and 48-lead chip scale packages.



	No Missing Codes	DNL (LSB)	INL (LSB)	SNR	THD	Package	Price @ 1k ($U.S.)
	18	N/A	±3	93 typ	–100 typ	48-lead LQFP, LFCSP	32.95
	18	N/A	±3	93 typ	–100 typ	48-lead LQFP, LFCSP	29.95
	18	N/A	±2.5	100	–110 typ	48-lead LQFP, LFCSP	27.95
	18	N/A	±2.5	100	–110 typ	48-lead LQFP, LFCSP	25.60
	18	N/A	±2.5	100	–110 typ	48-lead LQFP, LFCSP	19.20
	16	±1	±2	88	–100 typ	48-lead LQFP, LFCSP	29.95
	16	±1	±2	88	–100 typ	48-lead LQFP, LFCSP	24.95
	15	N/A	±6	86 typ	–98 typ	48-lead LQFP, LFCSP	11.50
	15	N/A	±2.5	90 typ	–100 typ	48-lead LQFP, LFCSP	23.50
	16	N/A	±2.5	89	–96	48-lead LQFP, LFCSP	21.95
	16	±1	±1	92	–103.5	48-lead LQFP, LFCSP	32.95
	16	N/A	±3.5	88	–100 typ	48-lead LQFP, LFCSP	15.42
	15	N/A	±6	86 typ	–96 typ	48-lead LQFP, LFCSP	9.45
	15	N/A	±6	86 typ	–98 typ	48-lead LQFP, LFCSP	7.50
	16	–1.0/+1.5	±2.5	90 typ	–100 typ	48-lead LQFP, LFCSP	18.65
	16	N/A	±2.5	89	–100 typ	48-lead LQFP, LFCSP	19.00
	16	N/A	±2.5	92 typ	100 typ	10-lead MSOP	12.00
	16	N/A	±1.5	92	100 typ	10-lead MSOP	14.95
	15	N/A	±6	86 typ	–98 typ	48-lead LQFP, LFCSP	9.45
	15	N/A	±2.5	90 typ	–100 typ	48-lead LQFP, LFCSP	18.00
	16	N/A	±1	92	–103.5	48-lead LQFP, LFCSP	24.95
	14	–0.7/+0.7	±1	83	–100 typ	10-lead MSOP	7.37
	15	N/A	±4	83	–97 typ	64-LQFP	17.00
	16	N/A	±3	89	–100 typ	48-lead LQFP, LFCSP	12.00
	16	N/A	±2.5	92 typ	100 typ	10-lead MSOP	8.00
	16	N/A	±1.5	92	100 typ	10-lead MSOP	8.95
	14	–0.7/+0.7	±1	83	–100 typ	10-lead MSOP	4.75
	15, 16	–2/+3, –1/+1.5	±3, ±2	83, 85	–90/–96	28-lead SSOP	26.40
	15, 16	–2/+3, –1/+1.5, 2 typ	±3, ±2, 3 typ	83, 85	–90/–96	28-lead SOIC, PDIP	20.73
	15, 16	–2/+3, –1/+1.5, 2 typ	±3, ±2, 3 typ	83, 85	–90/–96	20-lead SSOP	20.73
	15	N/A	±6	86 typ	–98 typ	48-lead LQFP, LFCSP	7.45
	16	–1.0/+1.75	±3	87	–96	48-lead LQFP, LFCSP	7.91
	15	N/A	±2.5	90 typ	–100 typ	48-lead LQFP, LFCSP	8.95
	16	N/A	±1.5	92	–103.5	48-lead LQFP, LFCSP	12.00
	15 @ 5 V, 16 @ 3 V	–0.9, +2.5 @ 3 V, ±2.5 @ 5 V	±4	85 @ 3 V, 84 @ 5 V	–95 typ	6-lead SOT-23	6.00
	15, 16	N/A	±6, ±3	90, 91	–100/–106	8-lead MSOP	6.50
	15, 16	N/A	±6, ±3	90, 91	–100/–106	8-lead MSOP	6.50

Part Number	Resolution (Bits)	Data Bus Interface	Sample Rate (kSPS)	Number of Channels	Supply Range	Power (mW)	Power-Down Mode
Single-Channel True Differential and Pseudo Differential ADCs							
AD7450A	12	Serial	1,000	1	2.7 V to 5.25 V	4 max	Yes
AD7452	12	Serial	555	1	2.7 V to 5.25 V	3.3 max	Yes
AD7440	10	Serial	1,000	1	2.7 V to 5.25 V	4 max	Yes
AD7451	12	Serial	1,000	1	2.7 V to 5.25 V	4 max	Yes
AD7453	12	Serial	555	1	2.7 V to 5.25 V	3.3 max	Yes
AD7457	12	Serial	100	1	2.7 V to 5.25 V	1 max	Yes
AD7441	10	Serial	1,000	1	2.7 V to 5.25 V	4 max	Yes
Single-Ended Low Power ADC							
AD7466	12	Serial	200	1	1.6 V to 3.6 V	0.3 max	Yes
AD7467	10	Serial	200	1	1.6 V to 3.6 V	0.21 max	Yes
AD7468	8	Serial	100	1	1.6 V to 3.6 V	0.2 max	Yes
AD7274	12	Serial	3,000	1	2.35 V to 3.6 V	12.5	Yes
AD7276	12	Serial	3,000	1	2.35 V to 3.6 V	12.5	Yes
AD7476A	12	Serial	1,000	1	2.35 V to 5.25 V	5.1 max	Yes
AD7920	12	Serial	250	1	2.35 V to 5.25 V	4.2 max	Yes
AD7475	12	Serial	1,000	1	2.7 V to 5.25 V	4.5 max	Yes
AD7495	12	Serial	1,000	1	2.7 V to 5.25 V	6 max	Yes
AD7277	10	Serial	3,000	1	2.35 V to 3.6 V	10.5	Yes
AD7273	10	Serial	3,000	1	2.35 V to 3.6 V	10.5	Yes
AD7477A	10	Serial	1,000	1	2.35 V to 5.25 V	5.1 max	Yes
AD7910	10	Serial	250	1	2.35 V to 5.25 V	4.2 max	Yes
AD7278	8	Serial	3,000	1	2.35 V to 3.6 V	10.5	Yes
AD7478A	8	Serial	1,000	1	2.35 V to 5.25 V	5.1 max	Yes
AD7472	12	Parallel	1,500	1	2.7 V to 5.25 V	4.5 max	Yes
AD7492	12	Parallel	1,250	1	2.7 V to 5.25 V	9 max	Yes
AD7470	10	Parallel	1,750	1	2.7 V to 5.25 V	4.5 max	Yes
Multichannel Parallel ADCs							
AD7938	12	Parallel	1,500	8	2.7 V to 5.25 V	4.5	Yes
AD7938-6	12	Parallel	625	8	2.7 V to 5.25 V	3	Yes
AD7939	10	Parallel	1,500	8	2.7 V to 5.25 V	4.5	Yes
AD7934	12	Parallel	1,500	4	2.7 V to 5.25 V	4.5	Yes
AD7934-6	12	Parallel	625	4	2.7 V to 5.25 V	3	Yes
AD7933	10	Parallel	1,500	4	2.7 V to 5.25 V	4.5	Yes
Multichannel I²C ADCs							
AD7992	12	I²C	188	2	2.7 V to 5.5 V	0.495 max	Yes
AD7993	10	I²C	188	4	2.7 V to 5.5 V	0.495 max	Yes
AD7994	12	I²C	188	4	2.7 V to 5.5 V	0.495 max	Yes
AD7997	10	I²C	188	8	2.7 V to 5.5 V	0.495 max	Yes
AD7998	12	I²C	188	8	2.7 V to 5.5 V	0.495 max	Yes
Multichannel SPI QSPI MICROWIRE DSP ADCs							
AD7922	12	Serial	1,000	2	2.35 V to 5.25 V	6 max	Yes
AD7921	12	Serial	250	2	2.35 V to 5.25 V	6 max	Yes
AD7912	10	Serial	1,000	2	2.35 V to 5.25 V	6 max	Yes
AD7911	10	Serial	250	2	2.35 V to 5.25 V	6 max	Yes
AD7924	12	Serial	1,000	4	2.7 V to 5.25 V	6 max	Yes
AD7923	12	Serial	200	4	2.7 V to 5.25 V	3.6 max	Yes
AD7914	10	Serial	1,000	4	2.7 V to 5.25 V	6 max	Yes
AD7904	8	Serial	1,000	4	2.7 V to 5.25 V	6 max	Yes
AD7928	12	Serial	1,000	8	2.7 V to 5.25 V	6 max	Yes
AD7927	12	Serial	200	8	2.7 V to 5.25 V	3.6 max	Yes
AD7918	10	Serial	1,000	8	2.7 V to 5.25 V	6 max	Yes
AD7908	8	Serial	1,000	8	2.7 V to 5.25 V	6 max	Yes
AD7490	12	Serial	1,000	16	2.7 V to 5.25 V	5.4 max	Yes
Bipolar, Serial/Parallel, and Parallel ADCs							
AD7893	12	Serial	117	1	Single 5 V supply	25 max	No
AD7895	12	Serial	200	1	Single 5 V supply	16 max	No
AD7894	14	Serial	200	1	Single 5 V supply	20 max	No
AD7898	12	Serial	220	1	Single 5 V supply	22.5 max	No
AD7321	13	Serial	500	2	2.7 V to 5.25 V	12	Yes
AD7322	13	Serial	1,000	2	2.7 V to 5.25 V	12	Yes
AD7323	13	Serial	500	4	2.7 V to 5.25 V	12	Yes
AD7324	13	Serial	1,000	4	2.7 V to 5.25 V	12	Yes
AD7327	13	Serial	500	8	2.7 V to 5.25 V	12	Yes
AD7328	13	Serial	1,000	8	2.7 V to 5.25 V	12	Yes
AD7329	13	Serial	250	8	2.7 V to 5.25 V	12	Yes
AD7890	12	Serial	100	8	Single 5 V supply	30 max	No
AD7899	14	Parallel	400	1	Single 5 V supply	80 max	No
AD7892	12	Serial/Parallel	600	1	Single 5 V supply	60 max	No
AD7891	12	Serial/Parallel	500	8	Single 5 V supply	82 max	No
AD7656	16	Serial/Parallel	250	6	4.75 V to 5.25 V	160	Yes
AD7657	14	Serial/Parallel	250	6	4.75 V to 5.25 V	160	Yes
AD7658	12	Serial/Parallel	250	6	4.75 V to 5.25 V	160	Yes
Simultaneous Sampling ADCs							
AD7862	12	Parallel	250	2	Single 5 V supply	60 max	Yes
AD7863	14	Parallel	175	2	Single 5 V supply	45 max	Yes
AD7864	12	Parallel	520	4	Single 5 V supply	90 max	No
AD7865	14	Parallel	350	4	Single 5 V supply	100 max	No
AD7866	12	Serial	1,000/666	2	2.7 V to 5.5 V	11.4 max	Yes
AD7265	12	Serial	1,000	Dual 3-channel	2.7 V to 5.25 V	7	Yes
AD7266	12	Serial	2,000	Dual 3-channel	2.7 V to 5.25 V	27	Yes

Analog Input Range	Reference	Price @ 1k ($U.S.)	Pin Count and Package	Features
2 × V_{REF}	2.5 V ext	4.30	8-lead SOT-23 and MSOP	Differential input, 1 MSPS, 12-bit ADC
2 × V_{REF}	2.5 V ext	2.95	8-lead SOT-23	Differential input, 555 kSPS, 12-bit ADC
2 × V_{REF}	2.5 V ext	2.50	8-lead SOT-23 and MSOP	Differential input, 1 MSPS, 10-bit ADC
V_{REF}	2.5 V ext	4.25	8-lead SOT-23 and MSOP	Pseudo differential, 1 MSPS, 12-bit ADC
V_{REF}	2.5 V ext	2.95	8-lead SOT-23	Pseudo differential, 555 kSPS, 12-bit ADC
V_{REF}	2.5 V ext	2.05	8-lead SOT-23	Pseudo differential, 100 kSPS, 12-bit ADC
V_{REF}	2.5 V ext	2.50	8-lead SOT-23 and MSOP	Pseudo differential, 1 MSPS, 10-bit ADC
0 V to V_{DD}	V_{DD}	2.35	6-lead SOT-23 and 8-lead MSOP	1.6 V, micropower, 12-bit ADC
0 V to V_{DD}	V_{DD}	1.90	6-lead SOT-23 and 8-lead MSOP	1.6 V, micropower, 10-bit ADC
0 V to V_{DD}	V_{DD}	1.15	6-lead SOT-23 and 8-lead MSOP	1.6 V, micropower, 8-bit ADC
0 V to V_{REF}	1.2 V to V_{DD} ext	6.50	8-lead TSOT and 8-lead MSOP	12-bit, 3 MSPS SAR ADC with external V_{REF}
0 V to V_{DD}	V_{DD}	6.25	6-lead TSOT and 8-lead MSOP	12-bit, 3 MSPS SAR ADC
0 V to V_{DD}	V_{DD}	4.00	6-lead SC70 and 8-lead MSOP	2.35 V to 5.25 V, 1 MSPS, 12-bit ADC
0 V to V_{DD}	V_{DD}	2.05	6-lead SC70 and 8-lead MSOP	Low power, 250 kSPS, 12-bit ADC
0 V to REF_{IN}	2.5 V ext	4.25	8-lead MSOP and SOIC	Low power, 1 MSPS, 12-bit ADC
0 V to 2.5 V	2.5 V int	5.19	8-lead MSOP and SOIC	Low power, 1 MSPS, 12-bit ADC with internal V_{REF}
0 V to V_{DD}	V_{DD}	3.60	6-lead TSOT and 8-lead MSOP	10-bit, 3 MSPS SAR ADC
0 V to V_{REF}	1.2 V to V_{DD} ext	3.75	8-lead TSOT and 8-lead MSOP	10-bit, 3 MSPS SAR ADC with external V_{REF}
0 V to V_{DD}	V_{DD}	2.50	6-lead SC70 and 8-lead MSOP	2.35 V to 5.25 V, 1 MSPS, 10-bit ADC
0 V to V_{DD}	V_{DD}	1.75	6-lead SC70 and 8-lead MSOP	Low power, 250 kSPS, 10-bit ADC
0 V to V_{DD}	V_{DD}	1.85	6-lead TSOT and 8-lead MSOP	8-bit, 3 MSPS SAR ADC
0 V to V_{DD}	V_{DD}	0.95	6-lead SC70 and 8-lead MSOP	2.35 V to 5.25 V, 1 MSPS, 8-bit ADC
0 V to REF_{IN}	2.5 V ext	6.25	24-lead SOIC and TSSOP	1.5 MSPS, 4.5 mW, 12-bit parallel ADC
0 V to 2.5 V	2.5 V int	6.89	24-lead TSSOP and 24-lead SOIC	1.25 MSPS, 16 mW, Int_{REF} and CLK, 12-bit parallel ADC
0 V to REF_{IN}	2.5 V ext	3.00	24-lead SOIC and TSSOP	1.75 MSPS, 4.5 mW, 10-bit parallel ADC
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	7.35	32-lead TQFP and LFCSP	8-channel, 1.5 MSPS, 12-bit parallel ADC with a sequencer
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	4.85	32-lead TQFP and LFCSP	8-channel, 625 kSPS, 12-bit parallel ADC with a sequencer
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	3.75	32-lead TQFP and LFCSP	8-channel, 1.5 MSPS, 10-bit parallel ADC with a sequencer
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	7.10	28-lead TSSOP	4-channel, 1.5 MSPS, 12-bit parallel ADC with a sequencer
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	4.60	28-lead TSSOP	4-channel, 625 kSPS, 12-bit parallel ADC with a sequencer
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	3.50	28-lead TSSOP	4-channel, 1.5 MSPS, 10-bit parallel ADC with a sequencer
0 V to REF_{IN}	0 V to V_{DD} ext	3.00	10-lead MSOP	2-channel, 12-bit ADC with I^2C-compatible interface
0 V to REF_{IN}	0 V to V_{DD} ext	1.99	16-lead TSSOP	4-channel, 10-bit ADC with I^2C-compatible interface
0 V to REF_{IN}	0 V to V_{DD} ext	3.50	16-lead TSSOP	4-channel, 12-bit ADC with I^2C-compatible interface
0 V to REF_{IN}	0 V to V_{DD} ext	2.25	20-lead TSSOP	8-channel, 10-bit ADC with I^2C-compatible interface
0 V to REF_{IN}	0 V to V_{DD} ext	3.75	20-lead TSSOP	8-channel, 12-bit ADC with I^2C-compatible interface
0 V to V_{DD}	V_{DD}	4.25	8-lead TSOT and 8-lead MSOP	12-bit, 2-channel, 1 MSPS ADC
0 V to V_{DD}	V_{DD}	2.30	8-lead TSOT and 8-lead MSOP	12-bit, 2-channel, 250 kSPS ADC
0 V to V_{DD}	V_{DD}	2.75	8-lead TSOT and 8-lead MSOP	10-bit, 2-channel, 1 MSPS ADC
0 V to V_{DD}	V_{DD}	2.00	8-lead TSOT and 8-lead MSOP	10-bit, 2-channel, 250 kSPS ADC
0 V to REF_{IN}	2.5 V ext	4.50	16-lead TSSOP	4-channel, 1 MSPS, 12-bit ADC with sequencer
0 V to REF_{IN}	2.5 V ext	2.55	16-lead TSSOP	4-channel, 200 kSPS, 12-bit ADC with sequencer
0 V to REF_{IN}	2.5 V ext	3.00	16-lead TSSOP	4-channel, 1 MSPS, 10-bit ADC with sequencer
0 V to REF_{IN}	2.5 V ext	1.55	16-lead TSSOP	4-channel, 1 MSPS, 8-bit ADC with sequencer
0 V to REF_{IN}	2.5 V ext	4.75	20-lead TSSOP	8-channel, 1 MSPS, 12-bit ADC with sequencer
0 V to REF_{IN}	2.5 V ext	2.80	20-lead TSSOP	8-channel, 200 kSPS, 12-bit ADC with sequencer
0 V to REF_{IN}	2.5 V ext	3.25	20-lead TSSOP	8-channel, 1 MSPS, 10-bit ADC with sequencer
0 V to REF_{IN}	2.5 V ext	1.85	20-lead TSSOP	8-channel, 1 MSPS, 8-bit ADC with sequencer
0 V to REF	2.5 V ext	5.95	28-lead TSSOP and 32-lead LFCSP	16-channel, 1 MSPS, 12-bit ADC with sequencer
±10 V, ±2.5 V, 0 V to +5 V, 0 V to +2.5 V	2.5 V ext	9.00	8-lead DIP and SOIC	LC^2MOS 12-bit, serial, 117 kSPS, 6 ms ADC
±10 V, ±2.5 V, 0 V to +2.5 V	2.5 V ext	4.95	8-lead DIP and SOIC	5 V, 12-bit, serial, 200 kSPS, 3.8 ms ADC
±10 V, ±2.5 V, 0 V to +2.5 V	2.5 V ext	9.90	8-lead SOIC	5 V, 14-bit, serial, 200 kSPS, 5 ms ADC
±10 V, ±2.5 V	2.5 V ext	4.97	8-lead SOIC	5 V, 12-bit, serial, 220 kSPS ADC
±10 V, ± 5 V, ±2.5 V, 0 V to 10 V	2.5 V ext/int	3.00	14-lead TSSOP	*i*CMOS™ 12-bit plus sign, 250 kSPS, bipolar 8-channel ADC
±10 V, ± 5 V, ±2.5 V, 0 V to 10 V	2.5 V ext/int	4.75	14-lead TSSOP	*i*CMOS 12-bit plus sign, 250 kSPS, bipolar 8-channel ADC
±10 V, ± 5 V, ±2.5 V, 0 V to 10 V	2.5 V ext/int	3.62	16-lead TSSOP	*i*CMOS 12-bit plus sign, 250 kSPS, bipolar 4-channel ADC
±10 V, ± 5 V, ±2.5 V, 0 V to 10 V	2.5 V ext/int	5.75	16-lead TSSOP	*i*CMOS 12-bit plus sign, 250 kSPS, bipolar 4-channel ADC
±10 V, ± 5 V, ±2.5 V, 0 V to 10 V	2.5 V ext/int	3.94	20-lead TSSOP	*i*CMOS 12-bit plus sign, 250 kSPS, bipolar 2-channel ADC
±10 V, ± 5 V, ±2.5 V, 0 V to 10 V	2.5 V ext/int	6.25	20-lead TSSOP	*i*CMOS 12-bit plus sign, 250 kSPS, bipolar 2-channel ADC
±10 V, ± 5 V, ±2.5 V, 0 V to 10 V	2.5 V ext/int	3.90	24-lead TSSOP	*i*CMOS 12-bit plus sign, 250 kSPS, bipolar ADC with mux out
±10 V, 0 V to +4 V, 0 V to +2.5 V	2.5 V ext/int	10.20	24-lead DIP and SOIC	LC^2MOS 8-channel, 12-bit, serial, data acquisition system
±10 V, ±5 V, ±2.5 V, 0 V to +2.5 V, 0 V to +5 V	2.5 V ext/int	9.90	28-lead SOIC and SSOP	5 V single-supply, 14-bit, 400 kSPS ADC
±10 V, ±5 V, 0 V to +2.5 V, ±2.5 V	2.5 V ext/int	12.75	24-lead DIP and SOIC	LC^2MOS single-supply, 12-bit, 600 kSPS ADC
±10 V, ±5 V, ±2.5 V, 0 V to +2.5 V, 0 V to +5 V	2.5 V ext/int	14.75	44-lead MQFP and PLCC	LC^2MOS 8-channel, 12-bit, high speed, data acquisition system
±4 × V_{REF}, ±2 × V_{REF}	2.5 V ext/int	17.00	64-lead LQFP	*i*CMOS 250 kSPS, 6-channel, simultaneous sampling, bipolar 16-bit ADC
±4 × V_{REF}, ±2 × V_{REF}	2.5 V ext/int	12.95	64-lead LQFP	*i*CMOS 250 kSPS, 6-channel, simultaneous sampling, bipolar 14-bit ADC
±4 × V_{REF}, ±2 × V_{REF}	2.5 V ext/int	10.60	64-lead LQFP	*i*CMOS 250 kSPS, 6-channel, simultaneous sampling, bipolar 12-bit ADC
±10 V, ±2.5 V, +2.5 V	2.5 V ext/int	11.00	28-lead SSOP, SOIC, and DIP	Simultaneous sampling, dual, 250 kSPS, 12-bit ADC
±10 V, ±2.5 V, +2.5 V	2.5 V ext/int	14.50	28-lead SOIC and SSOP	Simultaneous sampling, dual, 175 kSPS, 14-bit ADC
±5 V, ±10 V, ±2.5 V, +2.5 V, +5 V	2.5 V ext/int	13.65	44-lead MQFP	4-channel, simultaneous sampling, high speed, 12-bit ADC
±5 V, ±10 V, 0 V to +2.5 V, 0 V to +5 V, ±2.5 V	2.5 V ext/int	14.85	44-lead PQFP	4-channel, simultaneous sampling, fast, 14-bit ADC
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	6.80	16-lead TSSOP	Dual, 1 MSPS, 12-bit, 2-channel SAR ADC, serial interface
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	5.75	32-lead TQFP and LFCSP	Differential input, dual 1 MSPS, 12-bit, 3-channel SAR ADC
0 to V_{REF}, 0 V to 2 × V_{REF}	2.5 V ext/int	7.55	32-lead TQFP and LFCSP	Differential input, dual 2 MSPS, 12-bit, 3-channel SAR ADC

One Small Package with Many Resolution Options

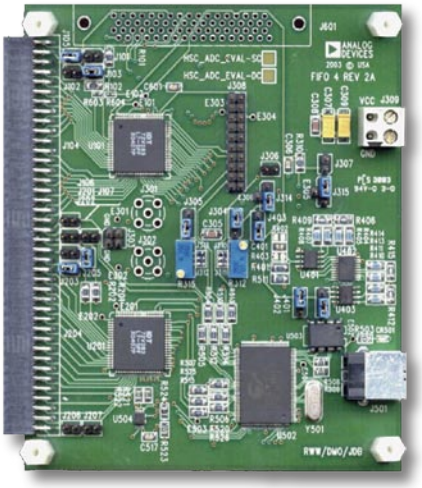
Analog Devices' ADC portfolio includes pin-compatible 8-bit to 16-bit ADCs, in a tiny SOT-23 package.

The most flexible and fastest way to product upgrades is to simply replace the A/D converter with a higher resolution pin-for-pin replacement. This flexibility also allows the manufacturer to traverse the price/performance curve with just one board design.

ADI has several upgrade paths available to designers to accomplish jumps in performance in the shortest time possible. Our family of AD747x and AD746x 8-bit to 12-bit ADCs are not only pin-compatible with each other but also with the smallest 14-bit and 16-bit ADCs available on the market—the AD7940 and AD7680. These high performance ADCs combine the smallest package size—SOT-23-6—with the lowest power dissipation. The AD746x family dissipates just 0.15 mW of power at 100 kSPS while operating from a 1.8 V supply. The AD747x, AD7940, and AD7680 ADCs can operate from a 2.5 V to 5.5 V supply.

This group of ADCs offers small packages, low power, and affordable pricing with the added benefit of pin-for-pin compatibility to make designing with ADI your first choice.

Generic	Resolution (Bits)	Data Rate (kSPS)	Power Supply	Package
AD7278	8	3,000	2.35 V to 3.6 V	6-lead SOT-23
AD7478	8	1,000	2.35 V to 5.25 V	6-lead SOT-23
AD7468	8	200	1.8 V to 3.6 V	6-lead SOT-23
AD7277	10	3,000	2.35 V to 3.6 V	6-lead SOT-23
AD7477	10	1,000	2.35 V to 5.25 V	6-lead SOT-23
AD7467	10	200	1.8 V to 3.6 V	6-lead SOT-23
AD7276	12	3,000	2.35 V to 3.6 V	6-lead SOT-23
AD7476	12	1,000	2.35 V to 5.25 V	6-lead SOT-23
AD7466	12	200	1.8 V to 3.6 V	6-lead SOT-23
AD7940	14	100	2.35 V to 5.25 V	6-lead SOT-23
AD7680	16	100	2.35 V to 5.25 V	6-lead SOT-23



Evaluation Boards

Evaluation boards are available on most ADCs. These are complete self-contained evaluation tools for these precision converters. These boards essentially allow development engineers to evaluate the features, functions, and performance of the devices in determining suitability for the end-user application. Evaluation boards interface to the PC via the parallel printer port and come with a suite of software designed to allow control of all programmable functions.

www.analog.com/serialADCs

ANALOG DEVICES

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Printed in the U.S.A. BR04334-5-7/05(B)