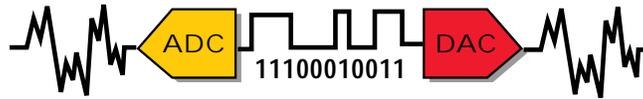
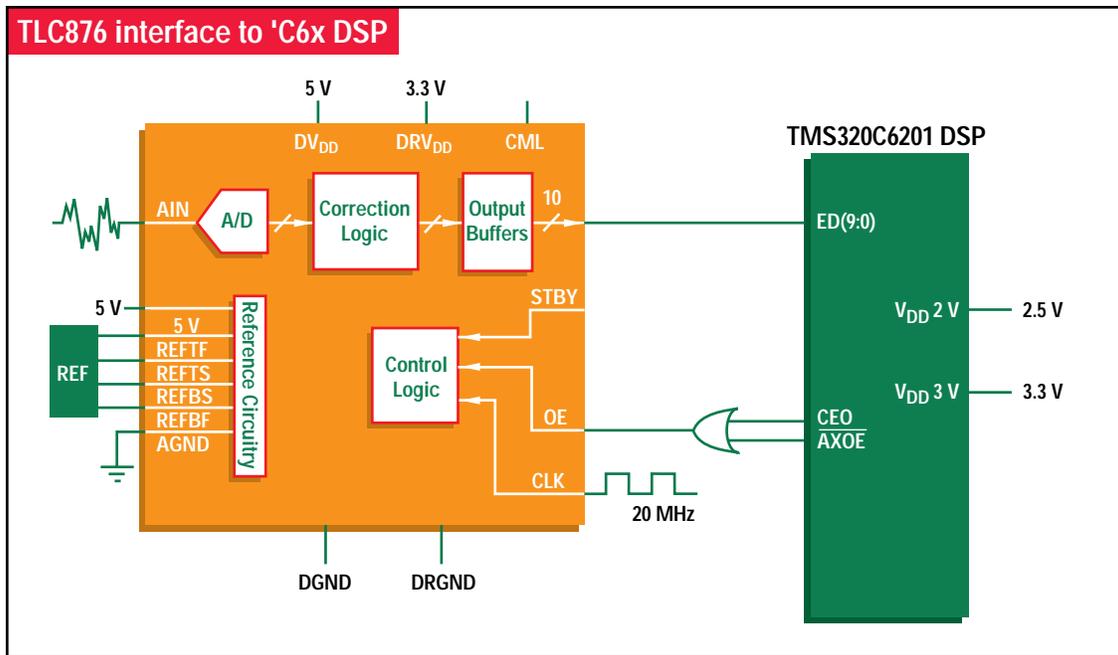


Sine ON

DATA CONVERTERS



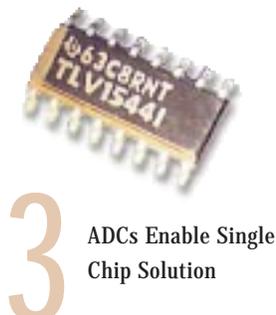
10-Bit, 20-MSPS ADC Improves System Performance



The TLC876 is the easy choice for your 10-bit high-speed system. While superior to the competitive alternative, the low power TLC876 is also friendly to your budget. The TLC876's power consumption is only 107 mW (15 mW in standby mode), and bus delays are nearly eliminated with enable and disable times of only 5 ns. The ADC's analog input has been designed to allow inputs

Inside:

1 10-Bit 20-MSPS ADC Improves System Performance



3 ADCs Enable Single Chip Solution

4 First 12-bit DAC with Programmable Settling Time

5 Low-Power 10-Bit DAC Dissipates 1.15 mW of Power



16 Decision Trees
18 Selection Guides
21 Cross Reference

10-Bit, 20-MSPS ADC Improves System Performance



AT A GLANCE

- ☛ 10-bit resolution
- ☛ 20-MSPS sampling speed
- ☛ Low power dissipation (107 mW typ)
- ☛ Power down (standby) mode
- ☛ Three state outputs
- ☛ Adjustable reference output
- ☛ Digital I/O compatible with 5-V or 3-V logic
- ☛ No missing codes

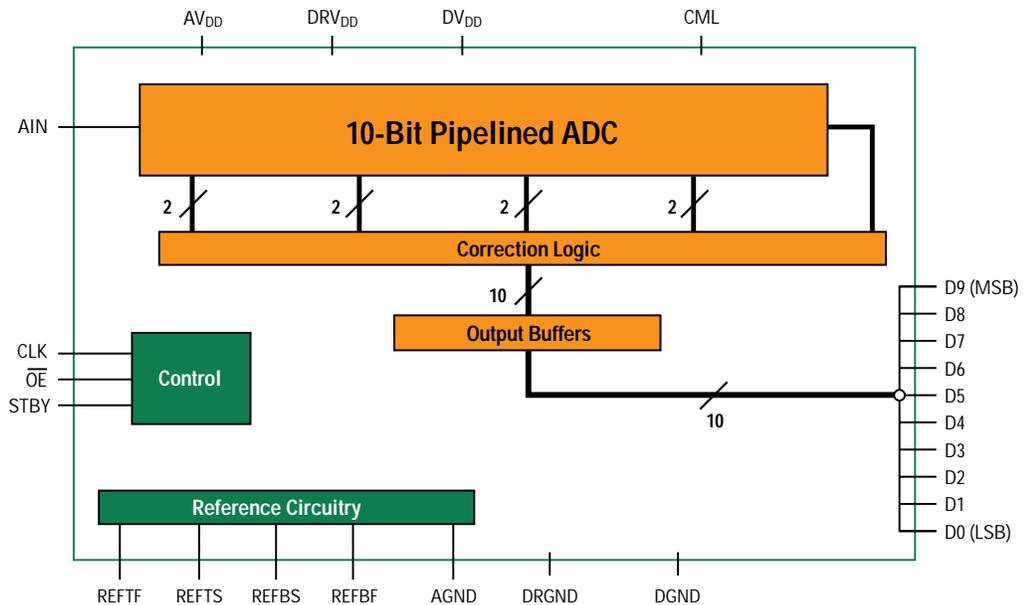
as low as ground, permitting the system designer to eliminate level shifting stages prior to the input. Additionally, the reference input impedance is increased to reduce the loading of your reference drive circuitry. The TLC876 features three-state outputs and both the inputs and outputs are compatible with 3-V and 5-V logic. The TLC876 guarantees DNL less than 1 LSB and delivers 54 dB SNR.

The speed, resolution and single-supply operation of the TLC876 are ideally suited for applications in video,

multimedia, high-speed data acquisition systems and in communications. The low-power consumption and single-supply operation make it a good choice for portable applications.

TLC876CDW
TLC876CDB
➤ \$4.70 in quantities of 1000

TLC876IDB
➤ \$4.90 in quantities of 1000
➤ Available in 28-pin SOIC or SSOP packages



For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

ADCs Enable Single Chip Solution from CCD Output to Digital Domain



TLC8044CFN

- \$13.96 in quantities of 1000
- Available in 64-pin Mini-POFP package

TLC8144CPT

- \$7.13 in quantities of 1000
- Available in 48-pin TOFP package

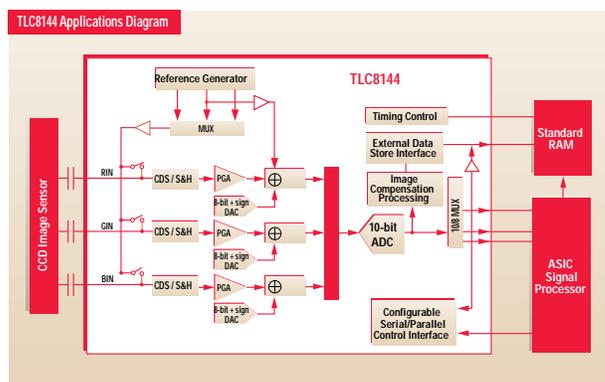
The TLC8044 and TLC8144 are analog-to-digital converters designed to digitize and compensate the analog output of CCD image sensors at resolutions as high as 12 bits. These versatile ADCs will operate in correlated double sample (CDS) mode, and in sample and hold mode. This makes them compatible with many CCD imager applications such as hand-held or flatbed scanner designs and contact image sensor (CIS) designs.

The TLC8044 and TLC8144 both feature separate RGB inputs, bipolar analog signal offset correction, and a 3-to-1 RGB analog MUX. In addition, the internal sample and hold circuitry allows them to handle both color and gray-scale operations.

The TLC8044 features a full differential analog signal path and has a 12-bit, 6-MSPS analog-to-digital converter that will support up to 36-bit color. The TLC8044 also affords the designer the option of using pixel-by-pixel digital correction circuitry, six internal offset correction registers (red, green, blue, even and odd pixels), and three internal registers to

correct pixel shading. For global error correction, the TLC8044 offers both global offset and global gain adjustment for each color channel.

The TLC8144 uses a single-ended analog signal path that includes three independent analog programmable



gain amplifiers (PGAs) and a 10-bit 6-MSPS analog-to-digital converter that will support up to 30-bit color. The TLC8144 is able to perform pixel-by-pixel compensation of pixel response non-uniformity (PRNU) using data that is stored externally. Alternatively, the designer has the option of bypassing this step. The output of the A/D can be passed directly to the controlling processor.



AT A GLANCE

- 12-bit or 10-bit operation
- 3 independent PGAs (TLC8144)
- Economical color and gray scale operation
- CDS, sample & hold modes
- Pixel-by-pixel digital compensation
- 400 mW power dissipation
- Characterized for operation from 0°C to 70°C

Read Sine-On online and download
datasheets at: www.ti.com/sc/sine-on

First 12-Bit DAC with Programmable Settling Time



AT A GLANCE

- ☛ 3 μ s or 15 μ s programmable settling time
- ☛ 12-bits of resolution
- ☛ 3 mW power dissipation (slow mode)
- ☛ High impedance buffered reference inputs

The TLC5618 is a dual programmable, serial-input DAC. This new device lets you choose the right performance for your multiple DAC applications. This 12-bit DAC offers two independent DACs in a space saving 8-pin SOIC package that features programmable settling-time vs. power consumption (3 mW in the slow mode and 8 mW in the fast mode). It also includes a power down mode (to 1 μ A power consumption) to let you optimize the performance of your multiple DAC design.

This device features simultaneous or independent updates of both DACs in the package, high-impedance buffered reference inputs, a maximum output voltage that is 2X the input reference voltage, a completely glueless interface to DSPs that clock data on the falling edge of

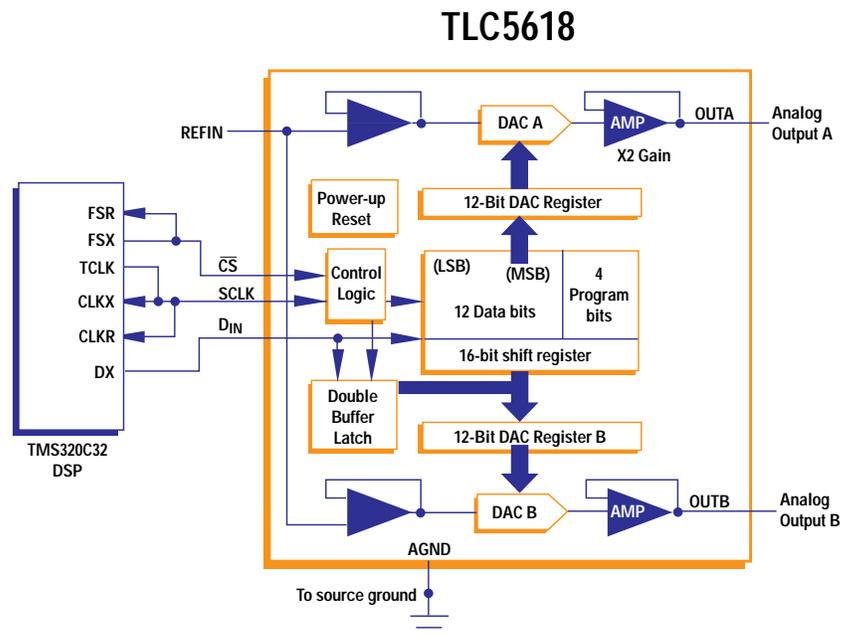
the clock, single supply 5-V operation, and a power-on-reset function that ensures repeatable power-up conditions.

The 12 bits of resolution and power saving features of the TLC5618 make it well suited for digitally controlled servo applications, performing digital offset and gain adjustments, industrial process controls, baseband I & Q modulators, and a wide range of battery powered equipment.

TLC5618CD

- \$4.20 in quantities of 1000
- Available in small footprint 8-pin SOIC package

Device	Compatibility
TPS5618	SPI, QSPI, and Microwire
TPS5618A	TMS320Cxx, SPI, QSPI, and Microwire



For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

Low Power, 10-Bit Serial DAC Dissipates Only 1.15 mW of Power



TLC5615CP
TLC5615CD

➤ \$1.76 in quantities of 1000

TLC5615ID

➤ \$1.94 in quantities of 1000

➤ Available in 8-pin SOIC package

The TLC5615 is a 10-bit CMOS DAC which operates from a single 5-V supply and consumes only 1.15 mW (typ) of power. TLC5615 features an input data rate of 1.21 MHz when operating at a clock speed of 20 MHz and a settling time of 12.5 μ s (to 0.5 LSB). The output amplifier has a gain of 2, therefore the 16-bit digital control word determines a 10-bit analog output ranging between zero and a nominal full-scale value of 2X the input reference voltage.

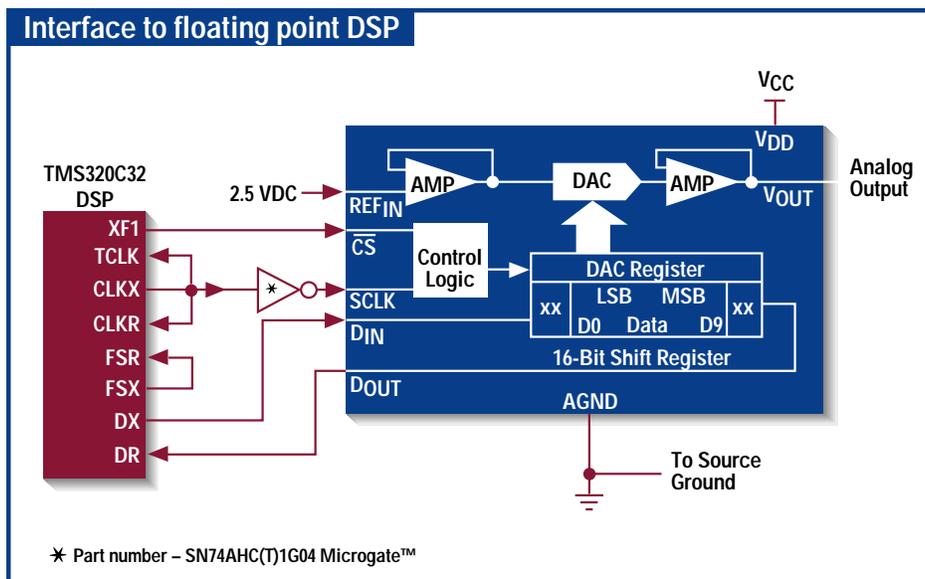
The TLC5615 is an improved pin-compatible version of the MAX515. It has a buffered reference input to reduce the need of controlling source impedance.

Typical applications for these devices include digital offset and gain adjustment, remote industrial controls, motion control devices, cellular telephones, and battery powered test instruments.



AT A GLANCE

- 10-bit serial CMOS DAC with voltage output
- 12.5- μ s settling time to 0.5 LSB
- Update rate of 1.21 MHz
- Low power < 1.15 mW (typ)
- MAX515 pin-compatible



Read Sine-On online and download datasheets at: www.ti.com/sc/sine-on

Ultra Low Power, 10-Bit, 2.7-V ADC Provides Glueless DSP and SPI Interface



AT A GLANCE

- 2.7-V to 5.5-V supply voltage range
- Glueless serial DSP and SPI interface
- 10-bit, 85 kSPS
- Power down mode (1 μ A)
- Multiple analog inputs
 - 4 – TLV1544
 - 8 – TLV1548
- Characterized for operation from 0°C to 70°C

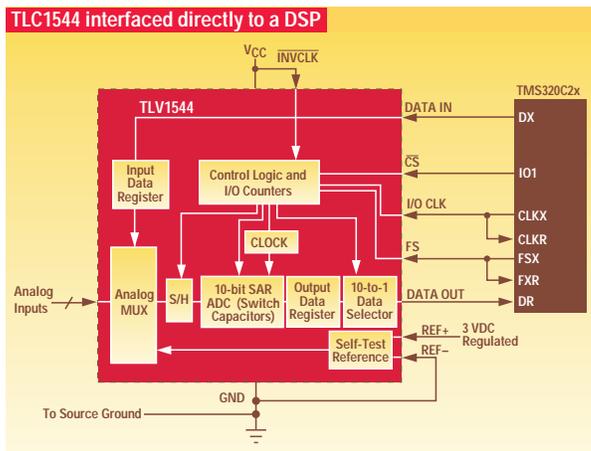
Take complete advantage of Texas Instruments DSP solutions with the low-power, low-voltage TLV1544 and TLV1548. These 10-bit serial ADCs can be connected directly to DSPs and microprocessors without glue logic.

The TLC1544 (4 inputs) and the TLV1548 (8 inputs) operate from a wide range of single-supply voltages (2.7 V to 5.5 V). These devices operate in one of three software programmable power consumption modes: powered down at 1 μ A, slow at 0.6 μ A with 25- μ s conversions, and fast at 1 μ A with 10- μ s conversions.

For easy digital system design, both devices feature a simple direct-connection 4-wire SPI™ compatible serial interface to either DSPs or microprocessors. Additional digital interface flexibility is provided by the Frame Sync input (used to indicate the start of a serial data frame) and the invert

clock input (used to choose the rising or falling edge of the I/O clock for inputting data). In addition to the versatile control capability, the device has an on-chip 11-channel multiplexer that can select any one of eight analog inputs or any one of three internal self-test voltages.

The low power, easy-to-interface ADCs are ideally suited for portable data logging applications with multiple inputs, battery powered equipment (e.g., PDA, cellular phone), and industrial process control systems.



TLV1544CD
➤ \$1.84 in quantities of 1000

TLV1544ID
➤ \$2.05 in quantities of 1000

➤ Available in 16-pin SOIC package

TLV1548CDB
➤ \$2.73 in quantities of 1000

TLV1548IDB
➤ \$3.10 in quantities of 1000

TLV1548IN
➤ \$2.99 in quantities of 1000

➤ Available in 20-pin TSSOP package

For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

TLC5620CD

- \$1.39 in quantities of 1000

TLV5620CN

- \$1.39 in quantities of 1000
- Available in 14-pin SOIC and PDIP packages

TLC5628CDW

- \$2.05 in quantities of 1000

TLV5628CN

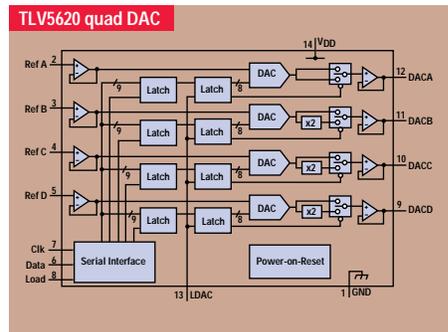
- \$2.05 in quantities of 1000
- Available in 16-pin SOIC and PDIP packages

8-Bit DACs from only \$0.30 per DAC



The TLC5620 and TLC5628 are quad and octal 8-bit DACs that provide top performance. Both versions provide a 3-wire serial interface and voltage output programmable for 1X or 2X the reference voltage. They offer high impedance reference voltage inputs, double buffered latches for simultaneous updates, and single +5-V (TLC version) or +3-V (TLV version) supply that dissipates only 10 mW of power (max).

These DACs typically find use in applications such as digitally controlled amplifiers, mobile communica-



tions, automatic test equipment, process controls, signal synthesis, and programmable voltage sources.



AT A GLANCE

- 10 μ s, 8-bit resolution DACs
- Quad and octal versions
- Voltage output
- 3-V and 5-V versions (TLV or TLC)
- Characterized for operation from 0° C to 70° C

Quad 8-Bit, Ultra Low-Power Serial-Input, DAC



TLV5621ED

- \$2.10 in quantities of 1000

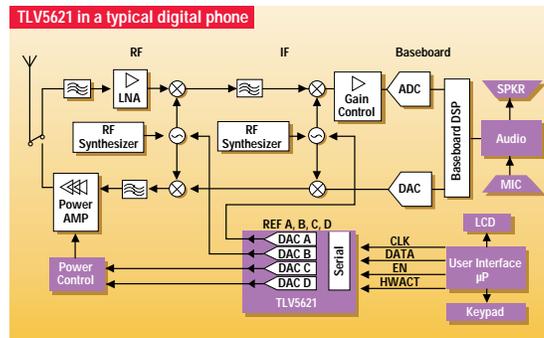
TLV5621EN

- \$2.10 in quantities of 1000
- Available in 14-pin SOIC and PDIP packages

The TLV5621 is an 8-bit, serial-input, voltage-output DAC. It is specially designed to be as frugal on power as possible. The device is 2.7-V functional, includes individual power down (software), and has a low power 'monitor' DAC which will operate using only 150 μ A.

This device is well suited for wireless/cordless applications, digitally controlled amplifiers/attenuators, signal synthesis

applications, automatic test equipment, process monitoring and control, and programmable voltage sources.



AT A GLANCE

- 10 μ s, 8-bit resolution DAC
- Low power (150 μ A) monitor DAC
- +2.7-V to +5.5-V single supply operation
- Characterized for operation from -40° C to 85° C

Read Sine-On online and download datasheets at: www.ti.com/sc/sine-on



AT A GLANCE

- 20 MSPS, 8-bit resolution ADCs
- 0 V-4 V analog input (TLC5510A)
- Latch-up free
- Analog input bandwidth – 14 MHz
- Low power dissipation (90 mW)
- Characterized for operation from 0°C to 70°C

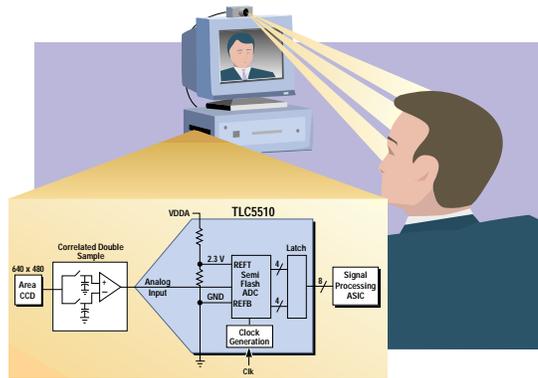
8-Bit, 20-MSPS Analog-to-Digital Converters with Industry Standard Pinout



The TLC5510 and TLC5510A are 8-bit, 20 MSPS ADCs with industry standard pinouts that combine video speed, low power (90 mW typ) and high accuracy. The TLC5510 is an excellent choice for both Nyquist based sampled systems and post-sampled systems such as interfacing with CCDs.

The TLC5510A extends the analog input range to 0 V – 4 V eliminating the need for level shifting circuitry. Both of these devices are suitable

for digital TV, portable VCR, video teleconferencing, QAM demodulation, cellular base stations, video signal processing, and battery/power sensitive applications.



TLC5510INSLE

- \$2.05 in quantities of 1000

TLC5510AINSLE

- \$2.05 in quantities of 1000
- Both are available in a SOIC package



AT A GLANCE

- 40-MSPS, 8-bit resolution ADC
- Latch-up free
- Wide analog input bandwidth (75 MHz)
- Analog inputs down to 0 V
- Characterized for operation from 0°C to 70°C

Wide Input Bandwidth 8-Bit, 40-MSPS ADC



The TLC5540 digitizes high bandwidth analog signals with 8-bit resolution at conversion rates up to 40 MSPS. Using a semiflash architecture and CMOS process, the TLC5540 is able to convert at high speeds while still maintaining low power consumption (85 mW typ) and cost. With an analog input bandwidth of 75 MHz, this ADC is an excellent choice for undersampling applications, while the high conversion speed is well suited for QPSK

& QAM demodulators, digital imaging, and as interfaces to high speed DSPs.

Additionally, the TLC5540 operates from a single 5-V supply, has an internal sample and hold function, internal self-bias reference network, and three-state outputs.

TLC5540CNSLE

- \$3.36 in quantities of 1000

TLC5540INSLE

- \$4.04 in quantities of 1000
- Available in 24-pin SOIC package

For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

12-Bit, CMOS Serial ADC Enables Battery Powered Equipment, Industrial Process Control



TLC2543CFN

- \$3.68 in quantities of 1000

TLC2543IDB

- \$4.31 in quantities of 1000

TLC2543IFN

- \$4.31 in quantities of 1000
- Both TLC and TLV versions available in SOIC, SSOP, and PDIP packages

With 11 input channels, the 12-bit, 66 kSPS TLC2543 and TLV2543 provide the extra resolution and flexibility

required by your system design. They are pin compatible with the TLC542 (8-bit) ADC and the TLC1543 (10-bit) ADC. Such upward compatibility means it is simple and convenient for systems requiring the higher resolution. The TLV2543 operates from a 3-V supply and consumes only 3.3 mW (typ) of power; the TLC2543 operates from a standard 5-V supply and consumes 5 mW (typ) of power.

Device	V	bits	I_{CC} (typ)		Package
			Active	Pwr down	
TLC1543	5 V	10 bit	1 mA	N/A	N, DB, DW
TLV1543	3 V	10 bit	1 mA	N/A	N, DB, DW
TLC2543	5 V	12 bit	1 mA	4 μ A	N, DW, DB
TLV2543	3 V	2 bit	1 mA	4 μ A	N, DW, DB

Low power consumption combined with multiple inputs and high resolution make these parts ideal for your cost sensitive data logging applications, battery powered equipment, industrial process control systems, laptops, palmtops, and PDAs.

AT A GLANCE

- 66-kSPS, 12-bit resolution ADC
- Internal conversion clock
- 11 analog input channels
- 3 Built-in self test modes
- SPI, QSPI, and Microwire Compatible
- Characterized for operation from 0°C to 70°C

Multi-Signal Data Logging Solution with 10-Bit, 11-Input, Serial ADC



TLC1543CDW

- \$1.58 in quantities of 1000

TLC1543IDW

- \$1.94 in quantities of 1000

TLC1543QDW

- \$2.21 in quantities of 1000

TLV1543CDW

- \$2.26 in quantities of 1000
- Available in PDIP, SOIC, and SSOP packages

The TLC1543 and TLV1543 are 10-bit, 33-kSPS analog-to-digital converters, which operate on 5 V and 3 V supplies respectively. These devices are pin compatible with the TLC542 (8-bit) and the TLC2543 (12-bit), which means that upgrading requires only minor software changes. These ADCs have three control inputs and a 3-state output that provide a direct 4-wire interface to the serial port of the host processor. Since the TLC/TLV1543 has

six basic serial-interface timing modes, suiting your application requirements is easy.

The TLC1543 and TLV1543 are commonly used in multi-signal data logging applications, digital gain control applications, process control systems, laptops, and palmtops.

Packaged in a PDIP, SOIC, and SSOP, the TLC1543 and TLV1543 dissipate 4 mW (typ) and 2.6 mW (typ) respectively.

Read Sine-On online and download datasheets at: www.ti.com/sc/sine-on

AT A GLANCE

- 33-kSPS, 10-bit resolution ADC
- Internal conversion clock
- Pin compatible with 8-bit and 12-bit versions
- 5-V (TLC) or 3.3-V (TLV) versions
- Characterized for operation from 0°C to 70°C
- SPI, QSPI, and Microwire compatible

8-Bit Family of Serial ADCs Improve upon ADC083x Products



AT A GLANCE

- ☛ 50% faster conversion time (13 μ s)
- ☛ 1-, 2-, 4-, and 8-input versions
- ☛ 5-V and 3-V versions (TLC and TLV)

An improved version of the industry standard ADC083x family of 8-bit analog-to-digital converters – the TLC083x is available in 1-, 2-, 4-, and 8-input versions. The 2-, 4-, and 8-input versions are software configurable for single-ended or differential inputs. These improved CMOS ADCs allow a faster conversion clock (600 kHz vs. 400 kHz), reducing conversion time to 13 μ s, a 33% reduction over comparable versions.

The TLC083x family requires a 5-V supply. TI also offers an identical

3-V family, the TLV083x. These ADCs can be operated radiometrically using V_{CC} or can be fixed to a 5 V precision reference.

TLC0831CD
TLC0832CD

- \$1.05 in quantities of 1000

TLC0831CP
TLC0832CP

- \$1.40 in quantities of 1000

TLC0834CD

- \$1.26 in quantities of 1000

TLC0838CDW

- \$1.16 in quantities of 1000
- Available in surface-mount SOIC and standard (DIP) packages

Three Channel, 8-Bit, 20-MSPS Video ADC with Digital Clamp



AT A GLANCE

- ☛ 20-MSPS, 8-bit resolution ADC
- ☛ 3 Channels
- ☛ Precision clamping circuit for more uniform color
- ☛ DNL = ± 0.5 LSB
- ☛ Characterized for operation from -25°C to 70°C

The TLC5733A is a three-channel, 8-bit, 20-MSPS ADC that utilizes a semi-flash technique for conversion. It converts high speed signals such as YUV video or the RGB output of color CCDs in parallel for high throughput. The TLC5733A also includes a high precision digital clamp circuit, standard

YUV output formats and is configurable for NTSC or PAL standards. Implemented in a CMOS process the TLC5733A requires a single +5 V supply and dissipates only 375 mW (max).

TLC5733AIPM

- \$5.38 in quantities of 1000
- Available in 64-pin plastic quad flat packs (PQFP)

For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

Microprocessor Compatible, Quad, Parallel Input, Voltage-Output DAC



TLC7226CDW

- \$1.68 n quantities of 1000

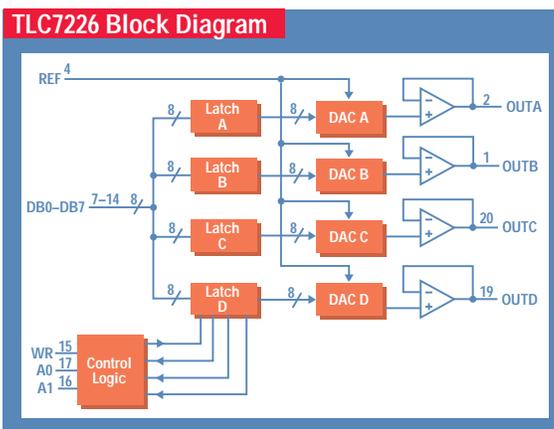
TLC7226IDW

- \$2.21 n quantities of 1000
- Available in 20-pin SOIC or PDIP packages

The industry standard TLC7226 consists of four 8-bit voltage-output DACs with output buffer amplifiers and interface logic on a single monolithic chip. The TLC7226 has a 5 μ s maximum settling time (to 0.5 LSB), an input data rate of 50 kSPS, and will operate from a single or dual supply. No external trimming is required to achieve full specified performance for the device. The TLC7226 is fabricated in a LinBiCMOS™ process that has been specifically developed to allow high-speed digital logic circuits and precision analog circuits to be integrated on the same chip. The TLC7226 has a common 8-bit data bus with individual

DAC latches. This provides a versatile control architecture for simple interface to microprocessors.

This device is well suited for process control, automatic test equipment, or automatic calibration of large system parameters e.g., gain/offset applications.



AT A GLANCE

- 5 μ s, 8-bit resolution quad DAC
- Parallel ports
- Low cost
- Characterized for operation from 0°C to 70°C

TMS57014 Dual 18-Bit Stereo DAC



TMS57014ADWBLE

- \$3.36 in quantities of 1000

The TMS57014 is a stereo oversampled sigma-delta digital-to-analog converter (DAC). It was designed for use in systems such as compact disks, digital audio tapes, multimedia, video cassette recorders, and set top boxes.

It consists of two identical synchronous conversion paths for left and right audio. It contains a serial data interface, timing and control functions and two audio channels, each consisting of an interpolation filter, deemphasis filter, and DAC modulator.

AT A GLANCE

- High resolution (18-bit) signal conversion
- Up to 48 kHz sample rates
- 0.004% THD
- Total-channel dynamic range of 96 dB
- Muting, attenuation

Read **Sine-On** online and download datasheets at: www.ti.com/sc/sine-on



Stereo 18-Bit Sigma-Delta ADC with Direct DSP Interface



AT A GLANCE

- Signal to noise ratio of 97 dB
- Direct interface to DSP
- Device can operate in master or slave modes

The TLC320AD57 is a stereo sigma-delta analog-to-digital converter capable of 48 kSPS with 18-bit resolution. The device consists of two synchronous conversion paths utilizing a 64x oversampling sigma-delta technique to provide a high resolution, low noise ADC.

The TLC320AD57 provides differential inputs to the two independent

channels for improved signal/noise ratio (97 dB), with total harmonic distortion plus noise (THD + N) of 91 dB minimum. The device also integrates the decimation filter, analog filtering and timing and control functions making it the ideal analog interface circuit for direct DSP interface in business audio, multimedia audio and industrial process control applications.

TLC320AD57CDW

➤ \$5.48 in quantities of 1000

20-Bit Stereo A/D and D/A Offers Professional Quality Audio



AT A GLANCE

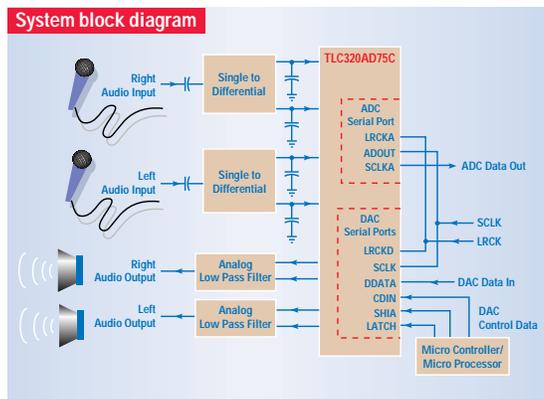
- 20-bit stereo ADC and DAC
- SNR of 100 dB on ADC and 104 dB on DAC
- Digital attenuation and soft mute on DAC

The TLC320AD75 provides a complete stereo audio conversion system for high performance digital audio applications. The device includes 20-bit stereo ADC and DAC conversion in a single low cost package. The ADC achieves signal-to-noise ratios of 100 dB at sample rates up to 48 kHz. In addition, the device operates from either 5 V only or separate 5 V and 3.3 V power supply configurations. Typical power dissipation for the device is 400 mW or 2 mW in

standby. Key applications for this device include consumer audio, business audio, and general purpose high resolution data conversion.

TLC320AD75CDL

➤ \$6.20 in quantities of 1000



For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

Analog Interface Circuits: A Growing Family



AT A GLANCE

TLC320AD50CDW

- \$4.27 in quantities of 1000
- Available in 28-pin SOIC (DW) and 48-pin TQFP (PT) packages

TLC320AD55CDW

- \$7.17 in quantities of 1000
- Available in 28-pin DW plastic small outline package

TLC320AD56CFN

- \$4.15 in quantities of 1000

Analog Interface Circuits (AICs) from Texas Instruments have become essential parts of many DSP-based and microcontroller-based systems which process analog signals and data. The range of applications for AICs is extensive. They include modems, PCMCIA fax modem, industrial process control, acoustical signal processing, DSP analog interface, noise cancellation/suppression, echo cancellation, speech processing, PC-based business audio, and PDA voice over data.

Earlier versions of AICs (TLC32040/41/44/45/46/47/AC01/AC02) used a successive approximation con-

version technique. Today, Texas Instruments incorporates a sigma delta conversion technique to make our AICs more versatile. The TLC320AD50/55/56 use a sigma delta conversion technique to enable improved signal-to-noise ratio (SNR) while simplifying the anti-aliasing filter required. These devices also offer low power dissipation including power down mode. In addition, the AD50 provides master/slave mode, a 3 V digital interface, and differential outputs that can drive a 600- Ω load. To simplify the interface to Digital Signal Processors, the TLC320AD50/55/56 have been designed to offer glueless interface with all industry standard MCUs or DSPs including the TMS320 family of TI DSPs.

- 16-bit sigma delta analog interface circuit
- Glueless interface to DSP
- Master/slave mode (AD50)
- Differential input/output drives

Read Sine-On online and download
datasheets at: www.ti.com/sc/sine-on

New Evaluation Modules Speed System Designs

TI has expanded its offering of low cost, easy-to-use evaluation modules (EVMs), designed to quickly familiarize the user with the features and design benefits of TI mixed-signal and analog ICs. Each kit includes applicable technical documentation on the device and board, as well as any available application reports or instruction on usage and connectivity.

For instance, an evaluation module for the TLC320AD75C analog-to-digital and digital-to-analog (ADA) converter is now available. This EVM can be directly connected to an Audio Precision System 1 or Audio Precision System 2 through the optical Sony Philips Digital Interface (SPDIF) input and output ports.

For DSP users, the analog interface circuit EVMs can be easily connected to TI's DSP Starter Kits (DSKs). Both the TLC320AD55 and 'AD56 EVMs will connect to the 'C5x DSK, while the 'AD50 EVM connects to the 'C54x DSKplus. This provides a complete DSP solution evaluation system, from conversion to signal processing.

AT A GLANCE

- Easy-to-use, low-cost platforms for device evaluation
- Available for a wide selection of devices
- Include user's guides and application reports
- Some kits offer modular daughter boards or easy connection to DSP Starter Kits
- Easy, toll-free ordering for all EVMs

Data Converters

Device	Description	Price
TLV2543	3 V 12-bit ADC	\$75
TLC2543	5 V 12-bit ADC	\$75
TLC5540	8-bit ADC 40-MSPS ADC	\$50
TLC5510	8-bit 20-MSPS ADC	\$50
TLC876	10-bit 20-MSPS Video ADC	\$125

Stereo Analog-to Digital and Digital to Analog

Device	Description	Price	Comments
TLC320AD75C ADA	For digital audio applications	\$500	Available in US only

AICs

Device	Description	Price
TLC320AD55	16-bit sigma delta AIC	\$75
TLC320AD56	16-bit sigma delta AIC	\$75
TLC320AD50	16-bit sigma delta AIC	\$75

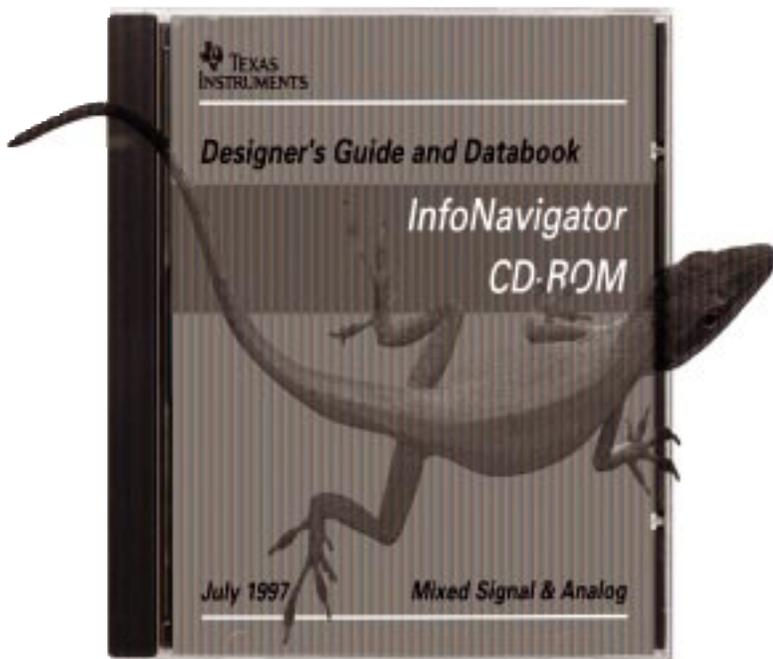
All of TI's mixed-signal and analog EVMs can be ordered by calling (800) 477-8924, ext. 5800, from 7 AM–6 PM, Mountain Time, Mon thru Fri. For the latest information on TI EVMs see www.ti.com/sc/msp/evms.

For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

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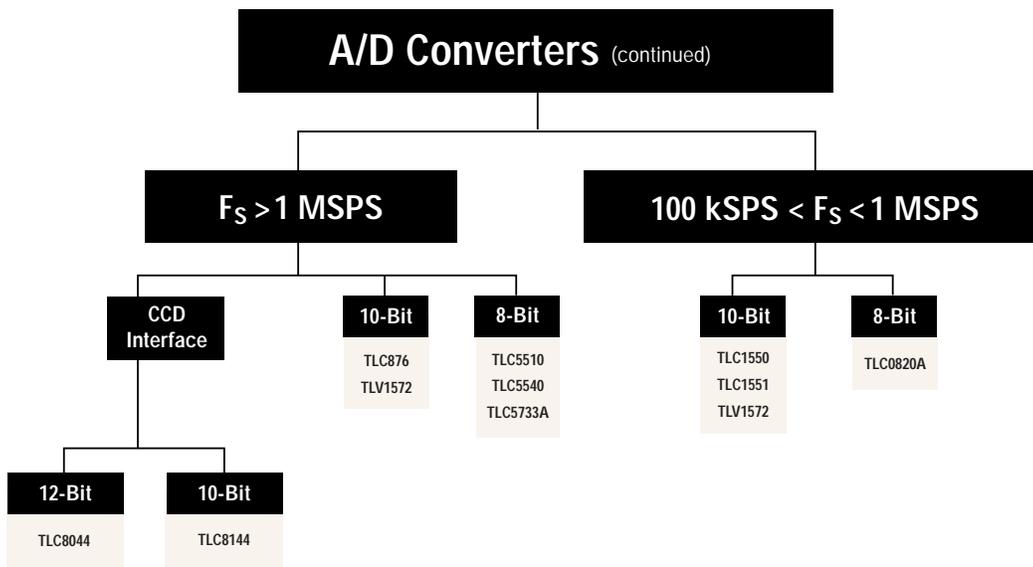
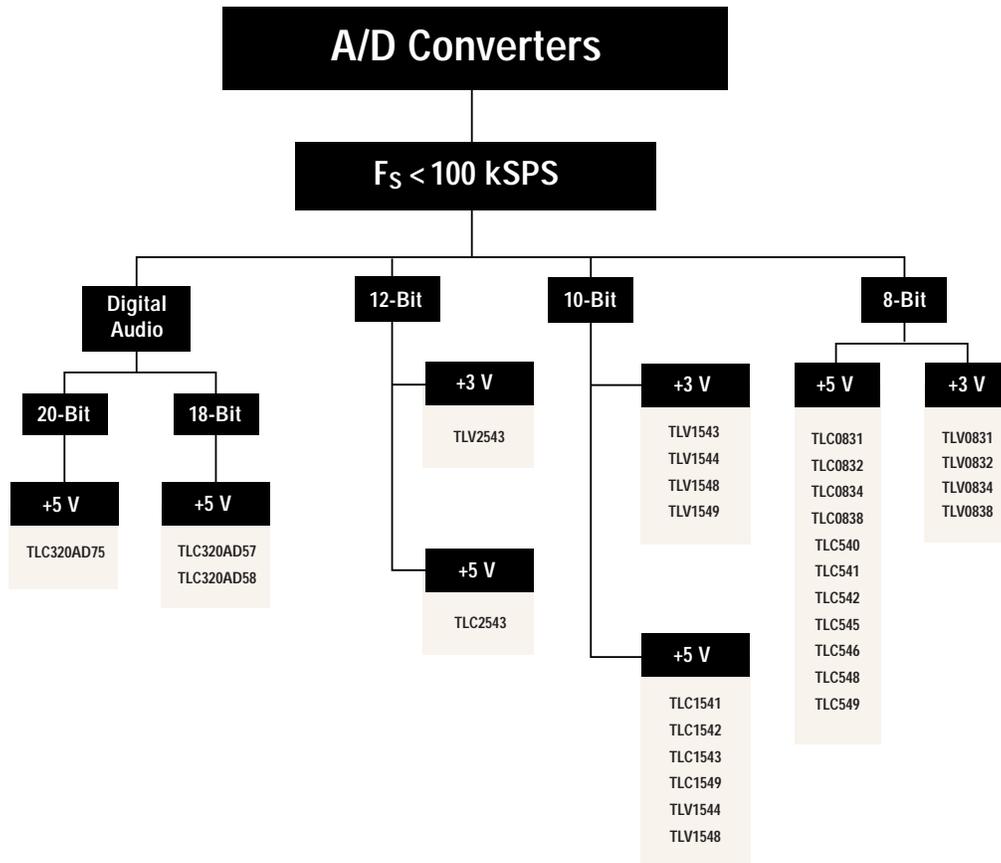
www.ti.com/sc/5047

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And when you're away from your PC, use our book-form Designer's Guide and Databook. This easy-to-use companion helps you identify devices quickly. So for complete information on mixed-signal and analog products, look to TI for the support documentation you want. Any way you want it.

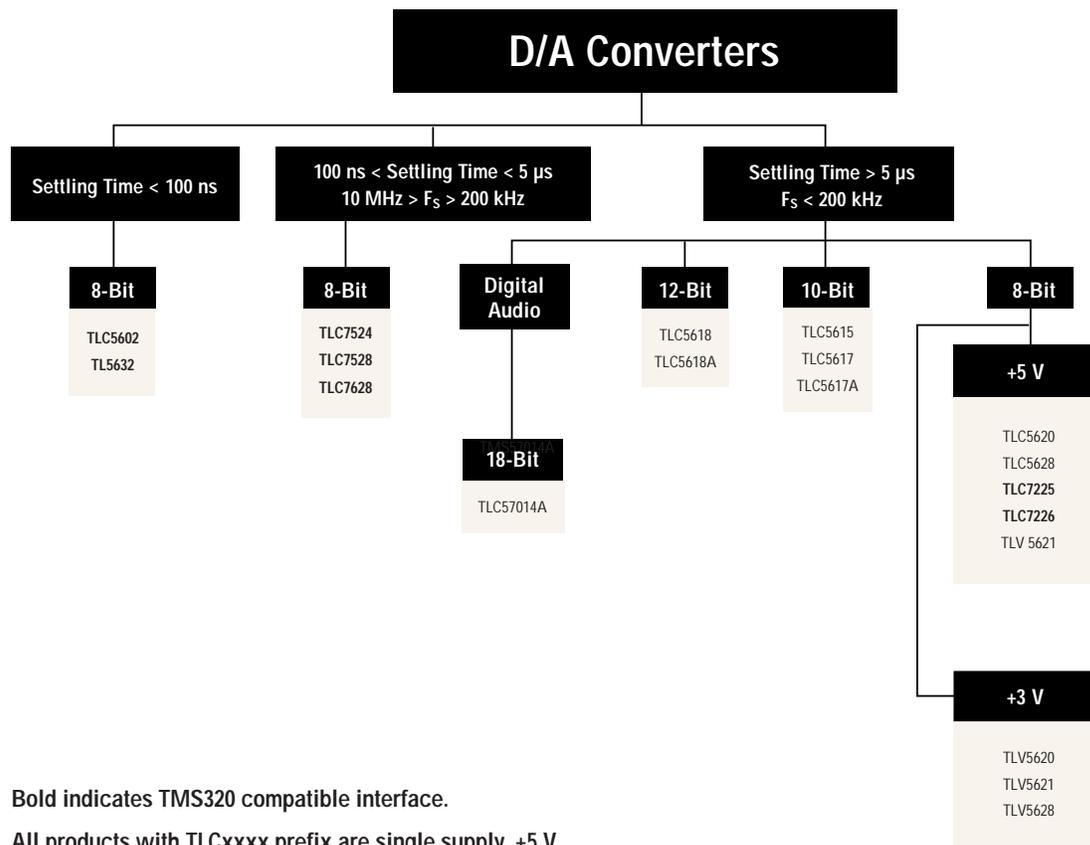


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Bold indicates TMS320 compatible interface.

All products with TLCxxxx prefix are single supply, +5 V



Bold indicates TMS320 compatible interface.

All products with TLCxxxx prefix are single supply, +5 V

Read Sine-On online and download
datasheets at: www.ti.com/sc/sine-on

Digital-to-Analog Data Converter Selection Guide

Device	Update Rate (min) (MHz)	Linearity Error (max) (±LSB)	Number of DACs	Output (I or V)	Power (max) (mW)	Reference	Resolution (Bits)	Settling Time (µs)	V _{CC} (V)
TL5632	60	0.5	3	I	450	Int	8	0.01	5
TLC5602	20	0.2	1	I	125	Ext	8	0.03	5
TLC5615	1.21	0.5	1	V	1.75	Ext	10	12.5	5
TLC5617	1.21	1	2	V	3.3/8.8	Ext	10	2.5-12.5	5
TLC5618	1.21	4	2	V	3.3/13.75	Ext	12	2.5-12.5	5
TLC5620	0.1	1	4	V	10	Ext	8	10	5
TLC5628	0.1	1	8	V	20	Ext	8	10	5
TLC7225	.05	1	4	V	60	Ext	8	5	5-15
TLC7226	0.05	1	4	V	240	Ext	8	5	15
TLC7524	100	0.5	1	I	5	"Ext, M"	8	0.1	5-15
TLC7528	100	0.5	2	I	10	"Ext, M"	8	0.1	5-15
TLC7628	100	0.5	2	I	20	"Ext, M"	8	0.1	11-15
TLV5620	0.1	1	4	V	6.6	Ext	8	10	2.7-5.5
TLV5621	0.1	1	4	V	4.5	Ext	8	10	2.7-5.5
TLV5628	0.1	1	8	V	13.2	Ext	8	10	2.7-5.5

For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

Analog-to-Digital Data Converter Selection Guide

Device	Number of Analog Inputs	Resolution (Bits)	Conversion Rate (kSPS)	Conversion Time (μ s)	Linearity Error (+- LSB)	Power (max) (mW)	Standby	Output Type	Internal System Clock
TLC0820A	1	8	392	2.5	1	75	NO	Parallel	YES
TLC0831	1	8	31	13.3	1	12.5	NO	Serial	NO
TLC0832	2	8	22	13.3	1	26	NO	Serial	NO
TLC0834	4	8	20	13.3	1	12.5	NO	Serial	NO
TLC0838	8	8	20	13.3	1	12.5	NO	Serial	NO
TLC1541	11	10	32	21	1	12	NO	Serial	NO
TLC1542	11	10	38	21	1	12	NO	Serial	YES
TLC1543	11	10	38	21	1	12	NO	Serial	YES
TLC1549	1	10		21	1	12	NO	Serial	YES
TLC1550	1	10	164	6	0.5	40	NO	Parallel	YES
TLC1551	1	10	164	6	1	40	NO	Parallel	YES
TLC2543	11	12	66	10	1	12	YES	Serial	YES
TLC540	11	8	75	9	0.5	12	NO	Serial	NO
TLC541	11	8	40	17	0.5	12	NO	Serial	NO
TLC542	11	8	25	20	0.5	10	NO	Serial	YES
TLC545	19	8	76	9	0.5	12	NO	Serial	NO
TLC546	19	8	40	17	0.5	12	NO	Serial	NO
TLC548	1	8	45.5	17	0.5	12	NO	Serial	YES
TLC549	1	8	40	17	0.5	12	NO	Serial	YES
TLC876	1	10	20000	0.05	0.5	131	YES	Parallel	YES
TLC5510	1	8	20000	0.05	0.5	135	NO	Parallel	YES
TLC5510A	1	8	20000	0.05	0.5	150	NO	Parallel	YES
TLC5540	1	8	40000	0.025	0.75	150	NO	Parallel	YES
TLC7135	1	4.5	0.003	333000	0.5	30	NO	BCD	YES
TLV1543	11	10	38	21	1	8	NO	Serial	YES
TLV1544	4	10	85	10	1	4	YES	Serial	YES
TLV1548	8	10	85	10	1	4	YES	Serial	YES
TLV1549	1	10	38	21	1	8	NO	Serial	YES
TLV2543	11	12	66	10	1	8	YES	Serial	YES
TL5501	1	10	20000	0.05	0.5	131	YES	Parallel	YES
TLC5733A	1	6	20000	0.05	0.5	300	NO	Parallel	YES
TLV0831	1	8	49	13.3	1	4.1	NO	Serial	YES
TLV0832	2	8	44.7	13.3	1	15.5	NO	Serial	NO
TLV0834	4	8	41	13.3	1	4.1	NO	Serial	NO
TLV0838	8	8	37.9	13.3	1	4.1	NO	Serial	NO
TLV8044	6	12	6000	0.16	1	400 (typ)		Parallel	NO
TLV8144	3	10	6000	0.16	1.5	400 (typ)		Parallel	NO
TLV1572	1	10	1250		1		YES	Serial	NO

Multimedia Products Selection Guide

Device	Description	Bandwidth (kHz)	Pd (mW) (typ)	Conversion Method	Resolution (Bits)	Sampling Rate (kHz)	SNR (dB) (typ)	Supply Voltage(s) (V)
TLC320AC01	Single-supply analog interface circuit	10.8	100	successive approx.	14	25		5
TLC320AC02	Single-supply analog interface circuit	10.8	100	successive approx.	14	25		5
TLC32040/41	Voiceband Analog Interface Circuit	.03–3.6	375	successive approx.	14	19.2	89	±5
TLC32044/45	Voiceband Analog Interface Circuit	.01–3.8	375	successive approx.	14	19.2	80	±5
TLC32046	Voiceband Analog Interface Circuit	.03–7.2	375	successive approx.	14	25	85	±5
TLC32047	Voiceband Analog Interface Circuit	.03–11.4	375	successive approx.	14	25	70	±5
TLC320AD50	Sigma-delta analog interface circuit with master-slave function	8.8	175	sigma-delta	16	22.05		+5 / +3
TLC320AD55	Sigma-delta analog interface circuit	4	150	sigma-delta	16	10.3		+5
TLC320AD56	Sigma-delta analog interface circuit	8.8	100	sigma-delta	16	22.05		+5 / +3
TLC320AD57	Sigma-delta stereo analog-to-digital converter	0–20	220	sigma-delta	16 / 18	48 max	97	5
TLC320AD58	Sigma-Delta Stereo Analog-to-Digital Converter	.02–20	250	sigma-delta	16 / 18	48 max	100	5
TLC320AD75	High-performance/ professional audio device	.02–20	400	sigma-delta	20	44.1	104	5
TMS57014A	Dual audio digital-to-analog converter with de-emphasis	0–22.08	350		16/18		100	

For technical support, call 972-644-5580

To order documentation, call 1-800-477-8924, ext.3227

Texas Instruments Data Converters Cross Reference

Part No	Suggested TI Replacement	Vendor	Replacement Type	Part No	Suggested TI Replacement	Vendor	Replacement Type
AD573	TLC1549	Analog Devices	S	ADC12H038	TLV2543	National Semiconductor	P
AD573	TLC1550	Analog Devices	S	ADS574	TLC2543	Burr Brown	P
AD7524	TLC7524	Analog Devices	P	ADS7804	TLC2543	Burr Brown	P
AD7524	TLC7528	Analog Devices	S	CS7820	TLC0820A	Crystal	P
AD7528	TLC7524	Analog Devices	S	CXA1096	TLC5510	Sony	S
AD7528	TLC7528	Analog Devices	P	CXA1175	TLC5510	Sony	P
AD7579	TLC1549	Analog Devices	S	CXA1176	TLC5510	Sony	P
AD7579	TLV1549	Analog Devices	S	HI1175	TLC5510	Harris	F
AD7628	TLC7628	Analog Devices	P	CXA1179	TLC5540	Sony	P
AD775	TLC5540	Analog Devices	P	CXD1175	TLC1550	Sony	S
AD7820	TLC0820A	Analog Devices	P	CXD1175	TLC5510	Sony	F
AD7890	TLC2543	Analog Devices	S	CXD1179	TLC5540	Sony	S
AD7890	TLV2543	Analog Devices	S	DAC08	TLC7524	Motorola	S
AD875	TLC5510	Analog Devices	S	DAC08	TLC7524	National Semiconductor	S
AD876	TLC876	Analog Devices	P	DAC0800	TLC7524	National Semiconductor	S
AD9048	TLC5510	Analog Devices	S	DAC0800	TLC7524	Phillips	S
AD9048	TLC5540	Analog Devices	P	DAC0801	TLC7524	National Semiconductor	S
ADC0811	TLC540	National Semiconductor	P	DAC0802	TLC7524	National Semiconductor	S
ADC0811	TLC541	National Semiconductor	P	DAC0808	TLC7524	SGS-Thomson	S
ADC0820	TLC0820A	Maxim	P	DAC0854	TLC5620	National Semiconductor	S
ADC0820	TLC0820A	National Semiconductor	P	DAC0854	TLV5620	National Semiconductor	S
ADC0820	TLC0820A	Phillips	P	DAC7249	TLC5618	Analog Devices	Q
ADC0830	TLC546	National Semiconductor	P	DAC7528	TLC7528	Burr Brown	P
ADC0831	TLC0831	National Semiconductor	F	DAC8229	TLC7628	Analog Devices	Q
ADC0831	TLC549	National Semiconductor	P	DAC-8800	TLC5628	Analog Devices	S
ADC0832	TLC0832	National Semiconductor	F	LTC1091	TLC1543	Linear Technology	P
ADC0834	TLC0834	National Semiconductor	F	LTC1091	TLC1549	Linear Technology	S
ADC0838	TLC0838	National Semiconductor	F	LTC1092	TLC1542	Linear Technology	S
ADC1001	TLC1541	National Semiconductor	S	LTC1092	TLC1543	Linear Technology	S
ADC1001	TLC1550	National Semiconductor	S	LTC1092	TLC1549	Linear Technology	S
ADC1005	TLC1541	National Semiconductor	S	LTC1093	TLC1542	Linear Technology	S
ADC1021	TLC1541	National Semiconductor	S	LTC1093	TLC1543	Linear Technology	S
ADC1031	TLC1549	National Semiconductor	S	LTC1094	TLC1542	Linear Technology	S
ADC1038	TLC1540	National Semiconductor	S	LTC1094	TLC1543	Linear Technology	S
ADC1038	TLC1543	National Semiconductor	S	LTC1283	TLC1549	Linear Technology	S
ADC12030	TLC2543	National Semiconductor	S	LTC1283	TLV1543	Linear Technology	P
ADC12032	TLC2543	National Semiconductor	S	LTC1283	TLV1549	Linear Technology	S
ADC12034	TLC2543	National Semiconductor	S	LTC1289	TLC2543	Linear Technology	P
ADC12038	TLC2543	National Semiconductor	S	LTC1289	TLV2543	Linear Technology	S
ADC1241	TLC2543	National Semiconductor	P	LTC1290	TLC2543	Linear Technology	S
ADC1241	TLV2543	National Semiconductor	P	LTC1291	TLC1543	Linear Technology	S
ADC12H038	TLC2543	National Semiconductor	P				

Texas Instruments Data Converters Cross Reference

Part No	Suggested TI Replacement	Vendor	Replacement Type	Part No	Suggested TI Replacement	Vendor	Replacement Type
LTC1292	TLC1543	Linear Technology	S	MC10321	TLC1540	Motorola	S
LTC1293	TLC1543	Linear Technology	S	MC10321	TLC5540	Motorola	S
LTC1293	TLV1543	Linear Technology	S	MC10322	TLC5540	Motorola	S
LTC1294	TLC1543	Linear Technology	S	MC14050	TLC1541	Motorola	F
LTC1294	TLC2543	Linear Technology	S	MC14051	TLC1541	Motorola	S
LTC1296	TLC2543	Linear Technology	P	MC14051	TLC1542	Linear Technology	S
LTC1296	TLV2543	Linear Technology	P	MC14051	TLC1542	Motorola	S
LTC1400	TLC5618	Linear Technology	Q	MC14051	TLC1543	Motorola	S
LTC1446	TLC5618	Linear Technology	Q	MC14051	TLC1549	Motorola	P
MAX186	TLC2543	Maxim	S	MC14444P	TLC546	Motorola	P
MAX188	TLC2543	Maxim	P	MC145040	TLC541	Motorola	P
MAX192	TLV1548	Maxim	P	MC145041	TLC542	Motorola	P
MAX192	TLV1544	Maxim	S	MC145051	TLC1543	Motorola	S
MAX500	TLC5620	Maxim	S	MC145051	TLV1543	Motorola	S
MAX500	TLV5620	Maxim	S	MC1508	TLC7524	Motorola	S
MAX509	TLC5620	Maxim	S	MP0820	TLC0820A	MPR	P
MAX509	TLC5628	Maxim	S	MP7524	TLC7524	MPR	P
MAX509	TLV5620	Maxim	S	MP7528	TLC7528	MPR	P
MAX510	TLC5620	Maxim	S	MP7628	TLC7628	MPR	P
MAX510	TLV5620	Maxim	S	MX7524	TLC7524	Maxim	P
MAX528	TLC5628	Maxim	S	MX7528	TLC7528	Maxim	S
MAX529	TLC5628	Maxim	S	MX7628	TLC7628	Maxim	P
MAX5628	TLC5620	Maxim	S	NE5036	TLC549	Phillips	P
MAX5628	TLC5628	Maxim	S	NE5037	TLC549	Phillips	P
MAX5628	TLV5620	Maxim	S	PM7524	TLC7524	Analog Devices	P
MAX7524	TLC7524	Maxim	P	PM7524	TLC7528	Analog Devices	S
MAX7528	TLC7528	Maxim	P	PM7528	TLC7524	Analog Devices	S
MAX7628	TLC7628	Maxim	P	PM7528	TLC7528	Analog Devices	P
MAX7820	TLC0820A	Maxim	P	PM7628	TLC7628	Analog Devices	P
MB4056	TLC548	Fujitsu	S	PM7628	TLC7628	MPR	P
MB4056	TLC549	Fujitsu	S	TDA8703	TLC5540	Phillips	P
MB4066	TLC540	Fujitsu	S	TSC8701	TLC1541	Teledyne (Telcom)	S
MB4066	TLC541	Fujitsu	S	TSC8701	TLC1550	Teledyne (Telcom)	S
MB40778	TLC5602	Fujitsu	F	TSC8704	TLC1541	Teledyne (Telcom)	S
MC10319	TLC1540	Motorola	S	UPD7528	TLC7528	NEC	P
MC10319	TLC5540	Motorola	S				

Replacement Types

F
The device is an EXACT EQUIVALENT in functionality and parametrics to the competitors device

P
The device has the SAME FUNCTIONALITY AND PINOUT as the competitors device but is NOT an exact equivalent

Q
"The device has the SAME FUNCTIONALITY as the competitors device, but is not pin-for-pin and/or parametrically equivalent"

S
The device has SIMILAR FUNCTIONALITY but is not functionally equivalent to the competitors device

This cross reference to TI's Mixed Signal and Analog products lists suggested replacements for many other manufacturers' devices. It is intended as a guide only. It is the designer's responsibility to compare specifications as they relate to an application to determine if the TI device suggested is an acceptable substitute.

Texas Instruments Data Converters Ordering Guide

TLC 0820 A C D R

Prefix	ICL, TL, TLC, TLV, TMS	
Device Number		
Optional Suffix	A	
Temperature Suffix	C: 0 to 70° C I, E: -40 to 85° C	M: -55 to 125° C Q: -40 to 125° C
Package Suffix	D, DW: Small-Outline Package (SOIC) DB: Shrink Small-Outline Package (SSOP) DWB, NS: Plastic Small-Outline Package (SOP) FK: Leadless Ceramic Chip-Carrier Package (LCCC) FN: Plastic J-Leaded Chip-Carrier Package (PLCC) FR: Plastic Quad Flat Package (QFP) GA: Ceramic Pin Grid Array Package J: Ceramic Dual-In-Line Package (CDIP) JG: Glass-Sealed Ceramic Dual-In-Line Package (CERDIP) MDN, MEP: Metal Quad Flat Package (MQFP) N, NW, P: Plastic Dual-In-Line Package (PDIP) PCD, PCE: Plastic Quad Flat Package (HQFP) PM, PT: Plastic Thin Quad Flat Package (TOFP) PPA: Plastic Quad Flat Package (POFP) PW: Thin Shrink Small-Outline Package (TSSOP)	
Optional Carrier Suffix	LE:	Left-End Taped-and-Reeled
	R:	Taped-and-Reeled

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datasheets at: www.ti.com/sc/sine-on