Texas Instruments

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MIXED SIGNAL & ANALOG Showcase

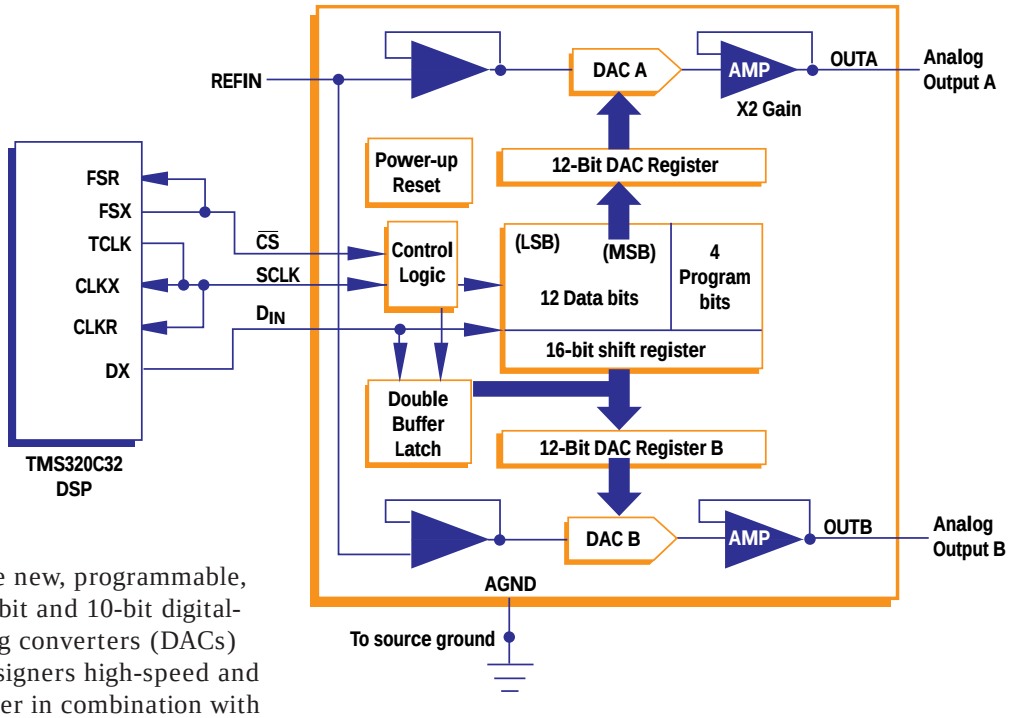
Inside

DATA CONVERTERS

Programmable dual DACs let designers trade power for speed

Product Features

- Serial CMOS DAC with voltage output
- 10-bit TLC5617
- 12-bit TLC5618
- 5-V single-supply
- 20 MHz system clock
- 1.21 MHz update rate
- 3-Wire serial interface
- Glueless interface to TMS320 DSPs
- Characterized for operation from 0°C – 70°C



These new, programmable, dual 12-bit and 10-bit digital-to-analog converters (DACs) offer designers high-speed and low power in combination with an easy interface to TI's line of TMS320 digital signal processors (DSPs).

Both the TLC5618 (12-bit) and TLC5617 (10-bit) feature settling-time vs. power consumption programmability (12.5-µs / 3-mW slow mode and 2.5-µs / 8-mW fast mode) and a software programmable power down mode (to 1 µA). They also offer a high-impedance buffered reference input and simultaneous or independent updates of both DACs in the package. Both devices also have a power-on-reset function that ensures repeatable power-up conditions.

The TLC5618 is a 12-bit DAC perfectly suited for applications such as cellular telephones, battery operated industrial controls, remote industrial controls, and machine and motion controls. The 16-bit digital control data is obtained over a 3-wire serial bus that is CMOS compatible.

The TLC5618 and TLC5617 are available in 8-pin SOIC packages.

Suggested resale price

Quoted per device in quantities of 1,000

TLC5617ID: $3.55

TLC5618ID: $4.31

The Growing TLC56xx Family of Serial Input, Voltage Output, Easy to Use DACs from TI

Device Number	Resolution	Description
TLC5615	10	Single
TLC5617	10	Dual, Programmable
TLC5618	12	Dual, Programmable

■ **Check box 04** for a datasheet.

EVMs

New evaluation modules provide low cost, easy-to-use design platforms

Texas Instruments continues to expand its range 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 and instruction on usage and connectivity.

One of the latest additions provides designers with an innovative way to evaluate audio power amplifiers using a Plug-n-Play base kit and individual, modular EVMs. The base kit includes an evaluation platform, two 3-W speakers, audio input cable, speaker wire and data manual.

Also recently introduced is an evaluation module for the TLC320AD75C analog-to-digital and digital-to-analog (ADA) converter. 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.

Audio Power Amplifiers
Audio Power Amplifier Plug-n-Play Platforms ($150 – $350) and Modules ($50 – $70)

Stereo Analog-to-Digital and Digital-to-Analog Converter
TLC320AD75C ADA for digital audio applications - $500
(available in North America only)

Data Converters
TLV2543 3-V 12-bit ADC - $75
TLC2543 5-V 12-bit ADC - $75
TLS5540 8-bit 40-MSPS ADC - $50
TLC5510 8-bit 20-MSPS ADC - $50
TLC876 10-bit 20-MSPS Video ADC - $125

Linear Arrays (Opto Sensor)
PC404-13 (TSL213) 200-DPI linear array - $124.95
TSL215 200-DPI linear array - $127.95
PC404-401 (TSL401) 400-DPI linear array - $124.95
PC404-1401 (TSL1401) 400-DPI linear array - $124.95
PC404-1402 (TSL1402) 400-DPI linear array - $127.95

Programmable light-to-freq. Converter
TSL230 programmable light-to-freq. converter- $89.95

Phase Locked Loop
TLC2932 50 MHz PLL - $85

Power Supply
TPS9104 Cellphone power supply with audio power amplifiers - $50

1394 High Performance Serial Bus
TSBKPCITST PCILynx™ and 200-Mbps PHY -- feature rich board - $1,000
TSBKPCI PCILynx™ and 200-Mbps PHY -- value board - $275
TSBKGPLYNX TSB12LV31 and TSB21LV03 200-Mbps PHY - $1,000
TSBKBACKPL Backplane card - $2,000
TSBKPRPHRL Peripheral Card - $1,000

Universal Serial Bus
TUSBK4HUB Four-port stand-alone hub - $349
TUSBK7HUB Seven-port stand-alone hub - $399

Analog Interface Circuits
TLC320AD55 16-bit Sigma-Delta AIC - $75
TLC320AD56 16-bit Sigma-Delta AIC - $75
TLC320AD50 16-bit Sigma-Delta AIC - $75

Infrared Products
TIR2000/TSLM1100 - $99.00

EVM Features

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

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, Monday through Friday.

For the latest information on TI EVMs, see www.ti.com/sc/mspevms

PCI PRODUCTS

PCI2031: ACPI/PCI power management compliant PCI-to-PCI bridge

Product Features

- 132 Mbps burst performance
- Supports PCI power management
- Two additional address decode windows
- Chassis numbering/slot numbering
- 176-pin TQFP packaging
- Characterized for operation from 0°C to 70°C

Suggested resale price

Quoted per device in quantities of 1,000

PCI2031: $16.25

The PCI2031 is a PCI-to-PCI bridge device that adds ACPI/PCI power management compliance to the current high performance feature-rich solution for desktop PCs, PCI add-in cards, network servers and work stations. Taking advantage of pipelined FIFO architecture, the PCI2031 bursts at the maximum rate of 132 megabytes per second for 32-bit/33-MHz PCI buses.

The PCI bus is typically limited to only four slots for add-in cards. In systems that require more than four PCI slots, one or more additional PCI buses are required. PCI-to-PCI bridges provide the interface between these extra buses. The bridges are also implemented on some multifunction add-in cards to buffer the electrical loading that the add-in card presents to the PCI bus.

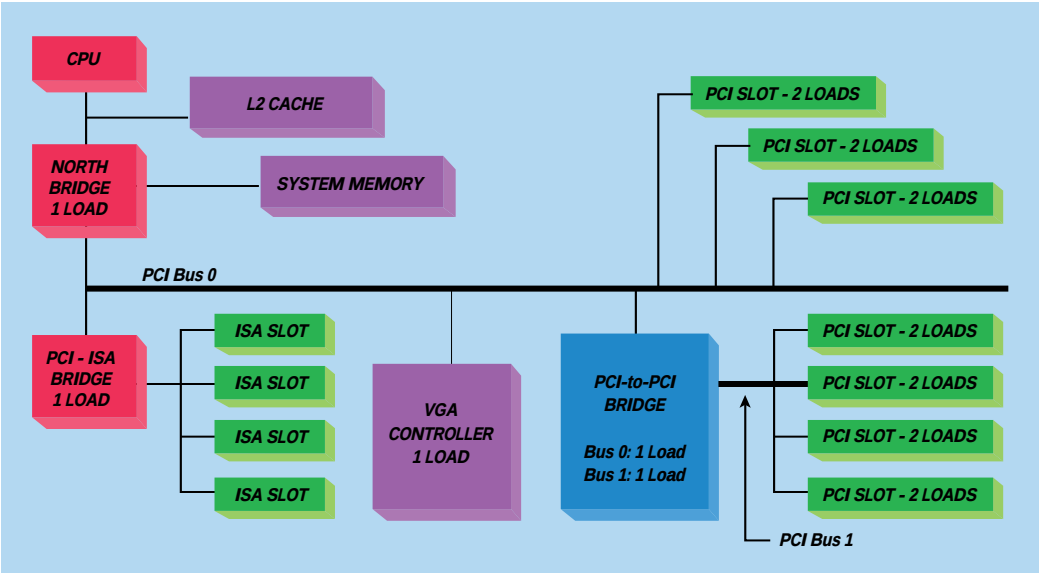
The PCI2031 conforms to all pertinent industry standards including ACPI/PCI power management, PCI bus specification (Version 2.1), PCI-to-PCI bridge specification (Version 1.0), and meets the requirements of Microsoft's PC '97 initiative. It also offers advanced features to meet future and emerging specifications, including the ability to support both logical and physical location addresses in complex PCI bus-based systems as well as exceeding the PCI specification for address decode windows.

This device also has clock-run capability, as defined in the PCI Mobile Design Guide, that allows the device to dynamically adjust the speed of the PCI bus clock to conform with the operation conditions of the bus. The PCI2031 provides several other advantages to the portable PC market, including: support for both 5-V and 3.3-V signaling environments, buffering for electrical loading presented by the docking station to the PCI bus, and one of the eight GPIO pins that can be used to pass interrupts from devices on a docking station to the notebook PC.

The PCI2031, like the earlier PCI2030, supports six programmable, low-skew buffered clocks for up to six secondary devices. These low skew clock outputs can be individually disabled to reduce power consumption. This device also has a serial EEPROM interface compliant with Microsoft PC '97 and subtractive decoding which allow PCI systems to efficiently accommodate legacy ISA based boards.

The PCI2031 is available in 176-pin TQFP packaging.

■ **Check box 02** for a datasheet.



DATA TRANSMISSION

New options available on several UART devices

Texas Instruments has introduced several new operating voltage, packaging and temperature options to further extend the wide portfolio of universal asynchronous receiver/transmitters (UART) products. The TL16C550B and 'C550C are now offered in a 48-pin TQFP package in commercial and industrial temperature ranges. Also, the TL16PC564B is now available with a lower operating voltage, named the TL16PC564BLV.

Historically, UARTs have provided serial-to-parallel and parallel-to-serial data conversion in PCs. Since PC microprocessors use parallel data, a UART is needed to convert the processor's parallel data serial formats used by the system's various I/O ports. TI's UARTs have kept pace with the increasing speeds of microprocessors by offering new functionality such as deep FIFO memory, interface logic and Plug-n-Play support. This makes these UART devices ideal for high-speed PCs, fax/modems, data concentrators, serial I/O expansion boards or any application requiring an enhanced serial port.

The family includes devices for PCMCIA boards for portable computers, PCs with Plug-n-Play I/O subsystems, PCI bus-based PCs as well as UARTs that interface the PC to an infrared controller for remote data transmission.

Other key UART devices include the TL16C750, the first UART with a 64-byte FIFO to reduce CPU interrupt overhead. It provides programmable 16- or 64-byte FIFOs, autoflow control, 3- and 5-volt operation, and low power modes. It is also pin-to-pin compatible with the TL16C550B/C. This device is now available in TQFP packaging in commercial and industrial temperature range.

Another feature is TI's ability to add functionality and offer improved price/performance like the recently introduced TL16PIR552 dual UART. This device can output data through two RS-232 or two infrared communication ports, or one of each. Additionally, the device features a high-performance IEEE 1284 parallel port. This high level of integration provides a parallel and two serial ports in one device for PC applications.

■ **Check box 03** for a datasheet.

Product Features

- Wide device portfolio
- Integrated, deep FIFOs
- Plug-n-Play support
- PCMCIA functionality
- Integrated IR and IEEE 1284 technology

Part Number	Description	FIFOs	Packages	Operating Voltage	Characterized Temperature
TL16C450	Single UART	None	40 DIP, 44 PLCC	5 V	0°C to 70°C
TL16C451	Single UART plus parallel port	None	68 PLCC	5 V	0°C to 70°C
TL16C452	Dual UART plus parallel port	None	68 PLCC	5 V	0°C to 70°C
TL16C550A	Single UART	16-Byte	40 DIP, 44 PLCC	5 V	0°C to 70°C
TL16C550B	Single UART	16-Byte	40 DIP, 44 PLCC, **48 TQFP**	5 V	0°C to 70°C
					–40°C to 85°C (N/A on DIP)
TL16C550C	Single UART w/ Auto Flow Control	16-Byte	40 DIP, 44 PLCC, **48 TQFP**	5 V	0°C to 70°C
					–40°C to 85°C (N/A on DIP)
TL16C552A	Dual UART w/ bi-directional line-printer port	16-Byte	68 PLCC	5 V	–10°C to 70°C
TL16C554	Quad UART	16-Byte	68 PLCC	5 V	0°C to 70°C
					–40°C to 85°C
TL16C750	Single UART w/ Auto Flow contol	64-Byte	44 PLCC, **64 TQFP**	5 V & 3 V	0°C to 70°C
	and low power modes				**–40°C to 85°C (on TQFP only)**
TL16PC564A	Single UART w/ PCMCIA interface	64-Byte	100 TQFP	5 V	0°C to 70°C
TL16PC564B/BLV	Single UART w/ PCMCIA interface	64-Byte	100 TQFP	5 V & 3.3 V / **5 V & 3 V**	0°C to 70°C
TL16PNP100A	Standalone PnP controller,	NA	44 PLCC, 48 TQFP	5 V	0°C to 70°C
	supports 2 logical devices				
TL16PNP200A	Standalone PnP controller,	NA	80 QFP	5 V	0°C to 70°C
	supports 5 logical devices				
TL16PNP550A	Single UART plus PnP controller	16-Byte	68 PLCC	5 V	0°C to 70°C
TL16PIR552	Dual UART w/ IR and 1284 modes	16-Byte	80 QFP	5 V	0°C to 70°C

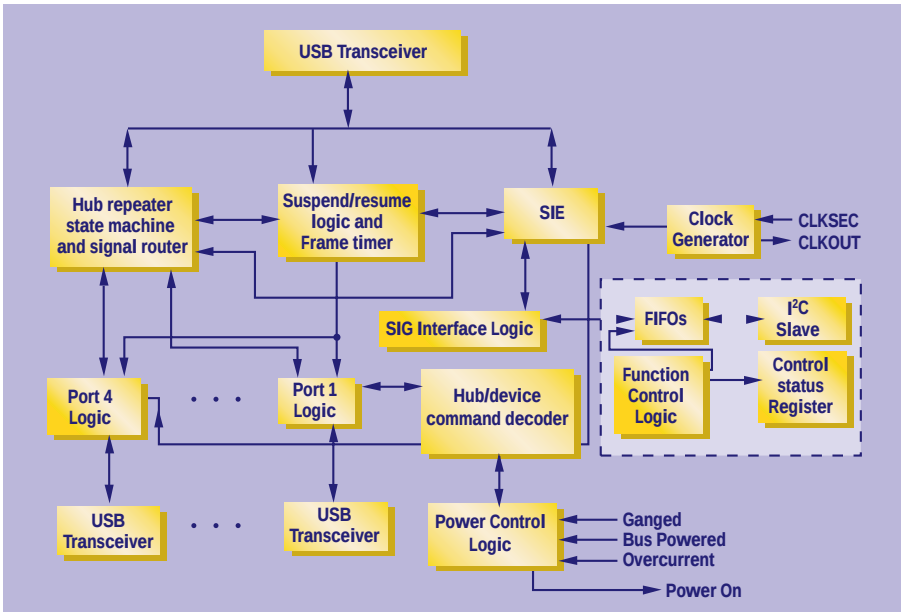
New device options shown in blue.

U S B

TUSB2140: 4-port USB with I²C

Product Features

- Compliance to USB standard v 1.0
- I²C circuitry
- Drop in hardware only solution
- Integrated USB transceivers
- 3.3-V Operation
- Supports self-powered and bus powered mode
- Characterized for operation from 0°C to 70°C



Universal Serial Bus (USB) is a data transmission and power distribution interface that has been introduced into the computer and computer peripheral markets to upgrade the slower serial and parallel interfaces. This four-wire, 12 Mbps, hot-plugable interface, distributes 5-V power as well as data, has been widely adapted by the PC industry.

The TUSB2140 is a compound USB device that provides a 4-port hub and an embedded function. The TUSB2140 is fully compatible with the USB specification (version 1.0) while the embedded function is fully compatible with the USB display-device class specification.

The embedded function includes a control endpoint and an interrupt endpoint to support USB data transfers. The FIFOs and control registers associated with the endpoints are fully integrated within the device. An Inter IC (I²C), 2-wire serial interface is provided for a local microcontroller unit to access the FIFOs and control registers.

This device can be used with any microcontroller with an I²C interface. The TUSB2140 contains state machine functionality to respond to USB requests providing both quick response time and minimize software overhead in the attached microcontroller.

USB compatible transceivers are provided for all upstream and downstream ports. All external downstream ports support both full and low-speed connection by automatically setting the slew rate according to the speed of the device attached to the port.

To reduce power consumption, the TUSB2140 supports a ganged mode as well as a per port mode for power switching and overcurrent conditions. Additionally, all downstream ports support full-speed and low-speed operations. The TUSB2140 supports two power modes, a self-powered and a bus-powered mode. The low-power, 3.3-V CMOS device is a drop-in solution that incorporates all of the circuitry necessary to interface to a PC with USB capability.

■ **Check box 04** for a datasheet.

Suggested resale price

Quoted per device in quantities of 1,000

TUSB2140N: $3.29

TUSB2140PAG: $3.37

U S B

TI, the USB "system solution" provider

As a leader in the semiconductor industry, TI is the only provider of all of the ICs required to design, develop, and manufacture a USB HUB. USB hubs require a controller to handle data and power management, low drop-out regulators for the 3.3-V operation off of the 5-V voltage bus, data line transient suppressors for the hot plug transients, and power distribution switches for the voltage busses and embedded functions.

Power distribution switches: TPS2014/15

Because the TUSB2xxx USB controllers are designed to manage power in ganged and non-ganged configurations, TI offers the TPS20xx power distribution switches with various current ratings. This allows the designer to choose between providing a separate switch for each output port, or distribute all of the power through a higher current switch. The switches also incorporate the overcurrent response required by the USB specification as well as over-temperature protection.

Low drop-out regulators: TPS7X33

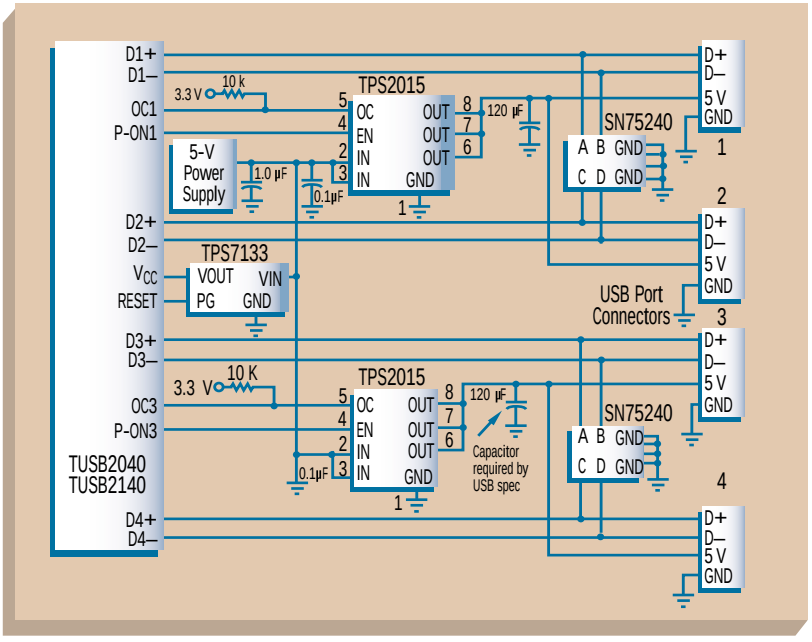
USB distributes both data and power. The voltage bus is specified at two different levels; 4.75-V minimum out of a self powered host or hub and 4.40-V minimum out of a self powered hub. Since most USB controllers as well as the associated embedded functions run at 3.3 V, an LDO is required in each bus-powered device. Due to voltage drops and droops under certain conditions the minimum voltage seen by the device could be as low as 3.82 V, and the device must maintain operation at this level of input.

Transient suppression: SN75240

USB is truly a "hot-plug" interface, this means that the interconnecting cables can be plug/unplugged any time, even while the system is in full operation. There are many transients associated with a hot plug event. The transients on the power lines are handled by bulk capacitance, but data lines need a more dynamic solution. The low leakage current and ultra-fast response time of the SN75240 provides the ideal solution USB is looking for.

■ **Check box 05** for a datasheet.

Typical 7 port self-powered hub BOM:		Typical 4 port bus-powered hub BOM:	
Device	Quantity	Device	Quantity
TUSB2070	1	TUSB2040	1 (2140 if I²C req)
SN75240	4 (1 in, 3 out)	SN75240	3 (1 in, 2 out)
TPS7133	1 (3.3 V for controller)	TPS7133	1 (3.3 V for contoller)
TPS2015	4 (2 500-mA ports per switch)	TPS2014	1 (4 100-mA ports per switch)



Product Features

■ Full compliance to USB standard

■ Supports self-powered and bus-powered hubs

TUSB2040/70
- 3.3-V operation
- 33-mW power dissipation
- 3.3 mW in suspend mode
- 0°C to 70°C oper.

SN75240
- 15-kV HBM ESD
- 1-µA leakage current

TPS7133
- 3.3-V LDO
- 32-mV dropout voltage
- 285-µA I_Q
- 500-mA output current
- 2% tolerance

TPS2014/15
- 95 mΩ $r_{DS(on)}$
- O output
- Over temperature and overcurrent protection
- Controlled switching times

Suggested resale price

Quoted per device in quantities of 1,000

TUSB2040:	$3.15
TUSB2070:	$3.42
SN75240:	$0.42
TPS7133:	$1.20
TPS7233:	$0.70
TPS2014:	$0.93
TPS2015:	$0.93

Product Features

- Fully Compliant with IrDA standard 1.1
- Selectable 16- or 64-byte FIFOs (TIR2000)
- Power Management support
- 3.3-V or 5-V operation (TIR2000)
- Small 64-pin TQFP Packaging (TIR2000)
- Windows® SW drivers and EVM available
- Characterized for operation from 0°C to 70°C

Fully compliant IrDA 1.1 solution

The TIR2000 and TSLM1100, together with software and development support, provide a fully compliant infrared transmission solution. The TIR2000 is a high-speed infrared controller that supports transfer rates up to 4 Mbps. Functionally, it serves as an interface between the host system's ISA bus and the infrared transceiver by encoding and decoding IR information in accordance with IrDA standard 1.1. It also supports amplitude shift keying (ASK) and TV remote control modes.

In addition, the device has several features that provide a competitive advantage. The controller has selectable 16- or 64- byte FIFOs to increase system efficiency and speed. It also supports 11 IRQ options and three DMA configurations to offer the customer flexibility to use either Interrupt or DMA mode for data transfer, and also gives several options of interrupt lines or DMA channels to use in each mode. The device is ideal for battery powered systems with advanced power management and 3.3- or 5-V operation. In notebook PCs, PC peripherals, and hand-held applications the TIR2000 saves valuable board space with its small 64-pin TQFP package.

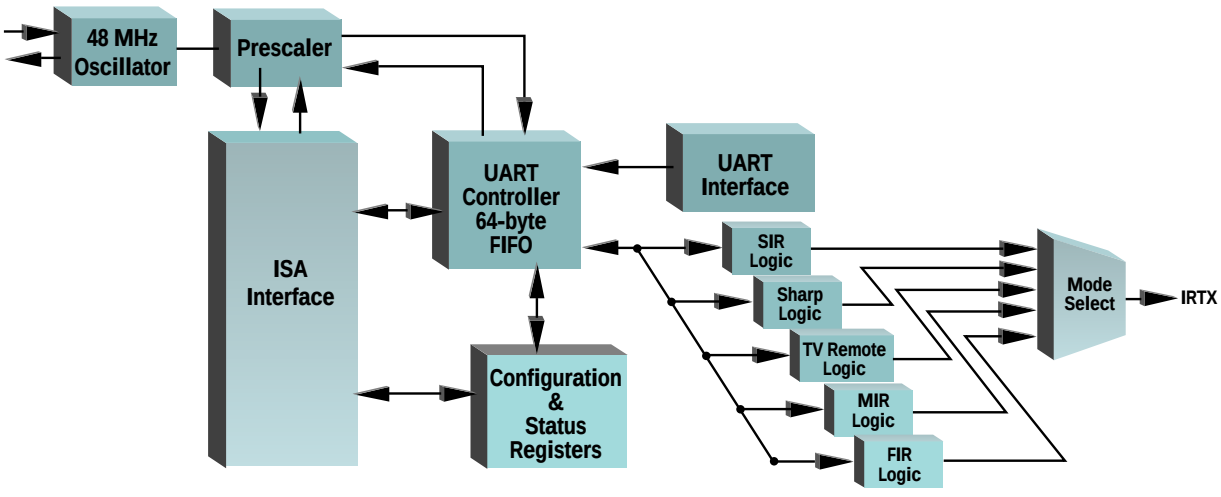
The TSLM1100 is an infrared transceiver that directly interfaces with the TIR2000 controller (or slower speed TIR1000) and transfers IR signals for point-to-point wireless data transmission. This device serves as the connection to the physical world and operates from speeds of 2400 bps to 4 Mbps in full compliance with IrDA 1.1. The TSLM1100 is a multi-die module that combines a pin photodiode, a two path receiver with LED driver and an 870 nm LED.

This transceiver can also interface with the TIR1000, a slower speed IrDA 1.0 compliant controller, to provide a lower speed IR transmission option.

An evaluation module (EVM) is available to speed the development of an IR solution. The EVM provides Windows software drivers, a TIR2000 evaluation board, and a daughter card with TSLM1100 and cable to connect to the TIR2000 board. This development system can be directly connected to a PC or through an ISA card.

IrDA (Infrared Data

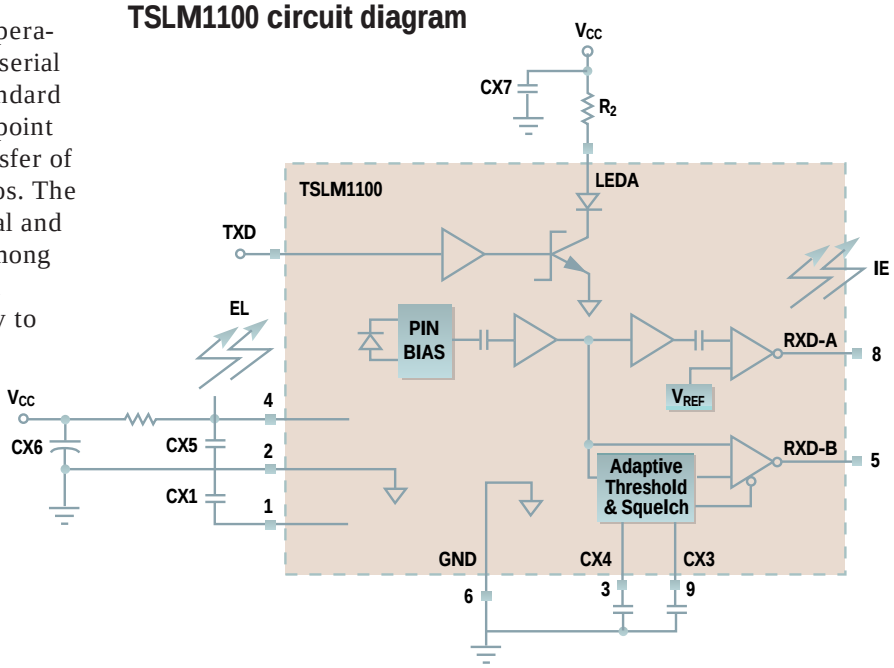
TIR2000 block diagram



N S M I S S I O N

Association) is an interoperable, low cost, low power serial data interconnection standard that provides a point-to-point cordless method for transfer of data, graphics, and photos. The standard ensures physical and protocol compatibility among computer and peripheral vendors. IrDA is the way to cordlessly connect PCs, notebooks and peripherals. Beyond the PC and peripheral market, IR can also be found in telephony, consumer, industrial and automotive systems.

TSLM1100 circuit diagram



■ **Check box 06** for a datasheet.

IrDA Solution Applications

Computers/ Peripherals	Consumer	Multimedia
PDA – PDA Communication (business card transfer)	Notebook - Set-top Box (software download)	Laptop/PC – TV (video conferencing)
Laptop – Printer (walkup printing)	Remote Control for TV,	Digital Camera – PC/Printer (photo printing)
PC – Laptop (file transfer)	Stereo, PC, etc.	
PC – Watch (scheduling) Laptop – LAN (network connection)		

Automotive	Telephony	Industrial
Handheld Device/Phone – Car (diagnostics/auto rental)	Laptop – Telephone (modem hookup)	Handheld – Industrial Equipment (data collection/ programming/diagnostics
Toll Taking	PC/Laptop – Cellular Phone/ Pager (message download)	End Equipment – Tester (manufacture testing)

Suggested resale price

Quoted per device in quantities of 1,000

TIR2000: $6.42

TSLM1100: $5.55

P O W E R

2.5-V Power manage

Low-power 500-mA low dropout regulator for 2.5-V systems

Product Features

- Fixed 2.5-V output at 0 to 500 mA
- V_{DO} = 95 mV max at 100 mA
- I_Q = 292 µA
- Shutdown mode: 0.5 µA max
- ±2% output tolerance
- Characterized for operation from 0°C to 125°C

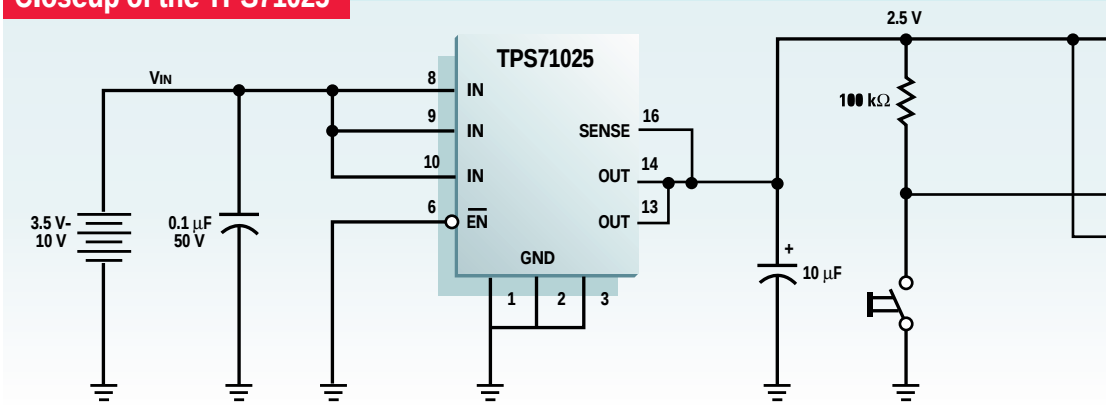
The TPS71025 offers designers an order of magnitude reduction in dropout voltage and quiescent current over conventional bipolar Low Dropout (LDO) Voltage Regulators. The latest member of the family of PMOS LDOs provides reduced power consumption and longer battery life in handheld and portable battery powered systems such as PDAs, palmtops, cellphones and other systems utilizing the emerging 2.5-V logic functions.

The TPS71025 uses a voltage controlled PMOS pass transistor. In contrast, bipolar regulators use a PnP pass element, the base current of which is directly proportional to the load current through the regulator. The PMOS pass transistor results in very low quiescent currents (typically 292 µA) that remain virtually constant over the regulator's full specified 500-mA output load. This pass transistor also acts as a low value resistor, less than 1 Ω, so the dropout voltage is extremely low when compared to conventional bipolar LDOs. Typical dropout voltage under a 100-mA load, for instance, is a mere 95 mV maximum.

The TPS71025's 2.5-V output is regulated to ±2% voltage tolerance over the full specified range for line, load and temperature changes. For additional power savings, a TTL logic-enabled standby mode reduces power consumption to 0.5 µA maximum. This addresses a critical requirement to extend battery life in power sensitive applications. This device is available in the ultra-thin TSSOP package for space sensitive applications.

The TPS71025 is available in 20-pin TSSOP, 8-pin SOIC and 8-pin DIP.

Closeup of the TPS71025



Suggested resale price

Quoted per device in quantities of 1,000

TPS71025D: $0.90

TPS71025P: $0.90

TPS71025PWLE: $1.02

For technical support, call (972) 644-5580.
To order documentation, call 1-800-477-8924, ext. 3225

S U P P L Y

ement for DSP systems

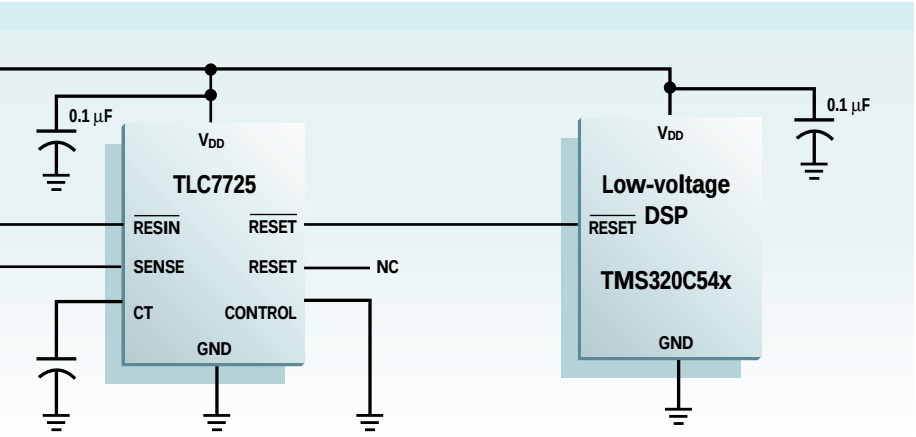
Industry's first 2.5-V supply voltage supervisor operates on 16 µA

The TLC7725 is the industry's first supply voltage supervisor available for 2.5-V systems and consumes only 16 µA of supply current. This device gives designers precision control of their 2.5-V power supply lines for low voltage DSPs and microprocessors. Additionally, component space and board count are reduced by the use of totem pole outputs that eliminate external pull-up or pull-down resistors. Along with battery-saving micropower operation, the TLC7725 also adds static memory backup functionality to the supervisor. These device features are extremely beneficial in laptops, cellphones and a variety of other battery-powered systems designed to utilize the newer 2.5-V digital functions.

The TLC7725 has a 2.25-V sense-voltage threshold. To eliminate undefined states during power-up, the /RESET output is guaranteed asserted when V_{DD} reach 1 V; both outputs are defined once V_{DD} reaches 2 V. Reset delay time is programmable and is set by an external timing capacitor. The TLC7725 also features functionality for controlling static memory chips with battery backup during power failure. The CONTROL pin, when driven by the memory select pin of a microprocessor, programs the RESET output to drive the chip select ($\overline{CS}$) of the memory circuit.

The TLC7725 is the latest member in TI's expanding family of LinBiCMOS™ supply voltage supervisors. Other options include 5 V, 3.3 V 3.0 V and adjustable. This family of supply line supervisors is available in the miniaturized 8-pin TSSOP package, further reducing board space requirements. Other package options are 8-pin SOIC and plastic DIP.

- **Check box 07** for TPS71025.
- **Check box 08** for a TLC7725.



Product Features

- 2.5-V supervisor
- Preset 2.25-V reset threshold
- I_{CC} = 16 µA (max)
- No external pull-up or pull-down resistors
- Characterized for operation from –40°C to 125°C

Suggested resale price

Quoted per device in quantities of 1,000

TLC7725ID: $0.75

TLC7725IP: $0.75

TLC7725IPWLE: $0.81

PCI PRODUCTS

A Cardbus system solution ideal for multimedia applications

Product Features

- PCI power management
- Market leader in performance
- PC '97 ready

Suggested resale price

Quoted per device in quantities of 1,000

PCI1220PDV: $16.46

PCI1250AGFN: $21.13

It is hard to imagine a notebook computer without a PC Card slot or two, and it is even harder to imagine just how much the 132 Mbps Cardbus interface adds to this application. TI has developed a Cardbus system solution ideally suited for even the most demanding multimedia applications. The PCI1250A or PCI1220 combine with the TPS2206 to provide the highest performance PC Card interface on the market.

Holding the majority of the Cardbus market, the PCI1220 and PCI1250A provide data throughput at the theoretical maximum for a 32-bit, 33-MHz PCI bus. They provide a high-speed interface between the PCI bus and a VGA controller for Zoomed video applications, and two 16-bit or Cardbus slots. These devices also feature the industry's most highly integrated controller with programmable IRQ pin assignments, four additional GP I/O pins, and enhanced burst mode data transfers with advanced power management capabilities.

Due to their commanding performance, the TPS2205 and TPS2206 have managed to gain a big portion of the entire Notebook PC Market. These power distribution switches combine low $r_{DS(on)}$ with: overcurrent and thermal protection, 3.3-V, 5-V and 12-V switching, and a 3.3-V low-voltage mode to provide the best price for performance package in the industry.

The TPS2206 uses TI's P²C 3-line serial interface, and is the only switch on the market with a glueless interface to the PCI12xx and PCI11xx Cardbus controllers. The TPS2205 uses an older 8-line parallel interface for standard 16-bit devices.

PCI1220

- Cardbus controller
- Multifunction interrupt routing
- Programmable general purpose I/O pins
- 0°C to 70°C operation

PCI1250A

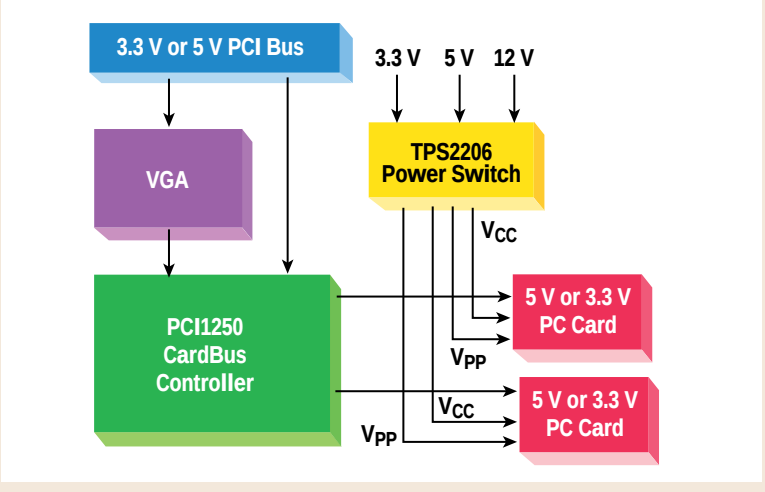
- Cardbus controller
- Internal zoom video buffers
- Multifunction interrupt routing
- Programmable general purpose I/O pins

TPS2206

- 3-line P²C serial interface
- Compatible with 3.3-V, 5-V, and 12-V PC Cards
- Short circuit and thermal protection
- 140-Ω, 5-V and 110-Ω, 3.3-V switch
- 12-V input only required for flash programming

TPS2205

- Same as TPS2206 with an 8-line parallel interface



■ **Check box 09** for a datasheet.

DATA ACQUISITION

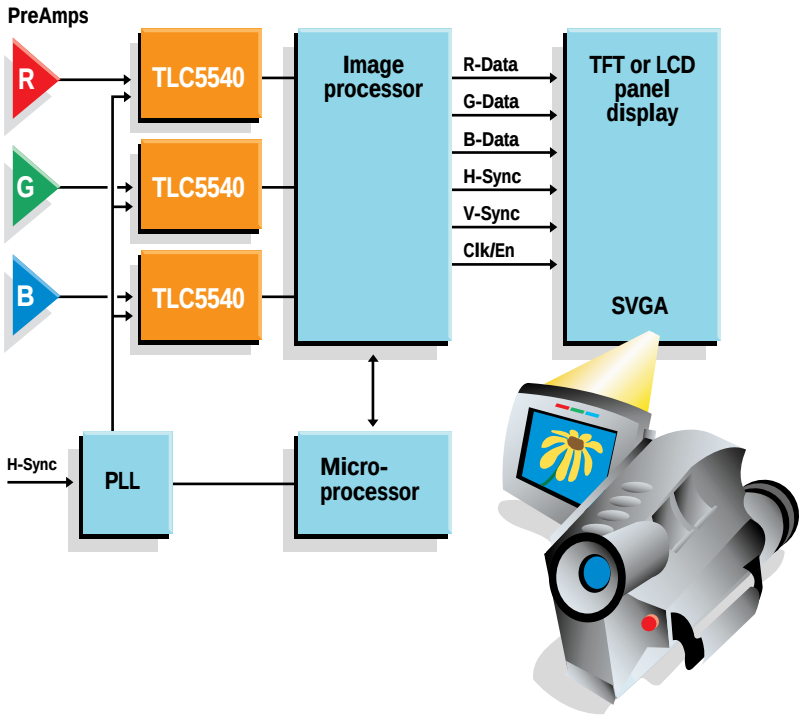
Wide input bandwidth 8-bit, 40-MSPS ADC

The TLC5540 digitizes high bandwidth analog signals with 8-bit resolution at a minimum conversion rate of 40 MSPS. This product combines high speed with low power consumption and cost to create a new price/performance point for high speed ADCs. Features include an analog input bandwidth of 75 MHz (greater than Nyquist), internal sample & hold, internal self bias reference network and three-state outputs. Fabricated in a CMOS process, the TLC5540 requires a single 5-V supply for operation and dissipates only 85 mW of power typically at F_s = 40 MSPS.

The wide analog input bandwidth allows this ADC to be used in undersampling applications to digitally transform an IF signal to baseband information and eliminate the costly analog down converter components. The TLC5540 implements a semi-flash architecture to allow the combination of wide analog input bandwidth, high speed and low power. The low analog input capacitance of 4 pF (typ) eases the drive requirements of the interface circuits.

The TLC5540 is also an excellent choice for traditional Nyquist based digital signal processing applications. Specified with both static and dynamic characteristics, the TLC5540 delivers 7.6 effective bits with a sampling rate of 20 MSPS and 7.0 effective bits with 40 MSPS. Differential Non-Linearity is specified at ±0.75 LSB and Integral Non-Linearity at ±1.0 LSB. Spurious free dynamic range (SFDR) is typically 46 dBc at 20 MSPS and 42 dBc at 40 MSPS. This device is available in a 24-pin SOIC package.

TLC5540 ADC Provides Digital Imaging Solution



■ **Check box 10** for a datasheet.

Product Features

- 8-bit resolution, minimum 40 MSPS
- Full power bandwidth of 75 MHz typ
- 85-mW power dissipation
- ENOB
  - 7.6 at F_S = 20 MSPS
  - 7.0 at F_S = 40 MSPS
- DNL – ±0.3 typ and ±0.75 LSB max 25°C
- SFDR – 46 dBc
- Characterized for operation from 0°C to 70°C and –40°C to 85°C

Suggested resale price

Quoted per device in quantities of 1,000

TLC5540CSNLE: $3.36

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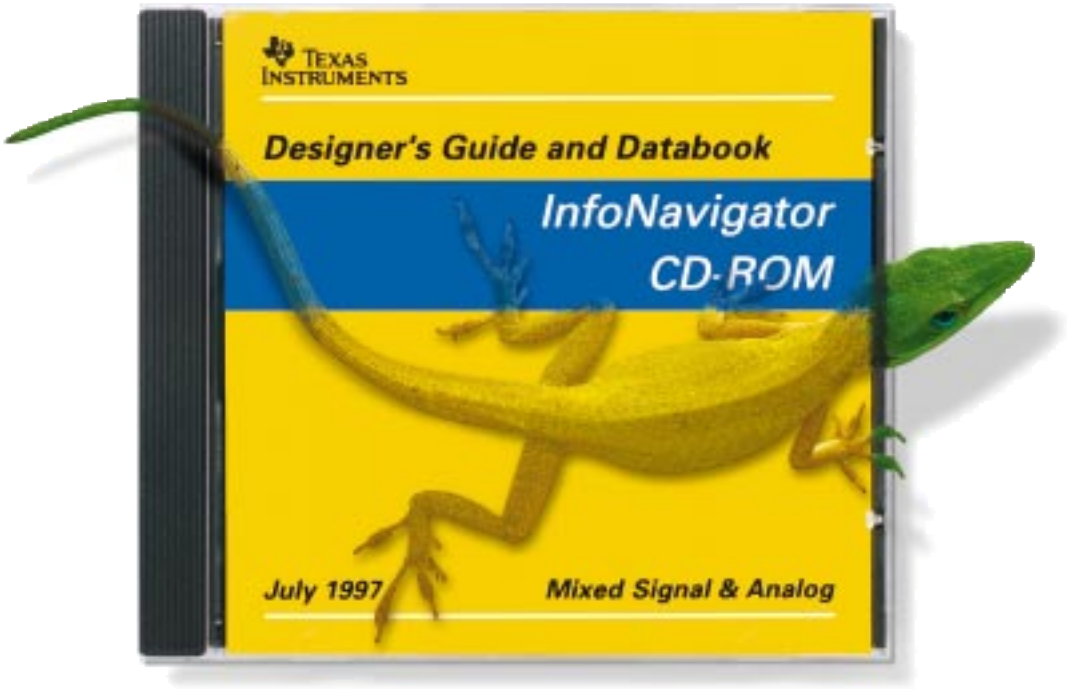

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To order any of the EVM kits listed, please call our toll-free order desk number 1-800-477-8924 x 5800.

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