Embedded Systems Glossary

A/D Converter	Analog to digital. Specifically: A/D converter, a circuit that converts analog signals into a stream of digital data.
Accelerometer	A sensor or transducer for measuring acceleration.
ACPI	Advanced Configuration and Power Interface: An industry-standard specification (co-developed by Hewlett-Packard, Intel, Microsoft, Phoenix, and Toshiba) for operating-system-directed power management for laptop, desktop, and server computers. A replacement for APM.
ACPR	Adjacent (alternate)-channel power ratio
ACR	Accumulated current register
ADS	Analog design system
ADSL	Asymmetric Digital Subscriber Line: A method for moving data over regular phone lines. An ADSL circuit carries much more data than a modem can encode on a regular phone connection. ADSL rides on the regular phone wires coming into the subscriber's premises (twisted pair copper).
AFE	Analog Front End: The analog portion of a circuit which precedes A/D conversion.
AGC	Automatic Gain Control: A circuit that modulates an amplifier's gain, in response to the relative strength of the input signal, in order to maintain the output power.
Ah	Ampere-hour(s): A measure of battery capacity. A 4Ah battery could, for instance, deliver 1A for 4 hours, 1/2A for 8 hours, etc.
Air Discharge	A method for testing ESD-protection structures in which the ESD generator is discharged through an air gap between the generator and the device under test (DUT).

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AIS	Alarm indication system
AISG	The Antenna Interface Standards Group (AISG) creates open specifications for antenna-line control and monitoring for 3G systems.
Aliasing	In A/D conversion, the Nyquist principle states that the sampling rate must be at least twice the maximum bandwidth of the analog signal. If the sampling rate is insufficient, then higher-frequency components are "undersampled" and appear shifted to lower-frequencies. These frequency-shifted components are called aliases. The frequencies that shift are sometimes called "folded" frequencies because a spectral plot looks like it was folded to superimpose the higher frequency components over the sub-Nyquist portion of the band.
Alternator	An electromechanical device that converts mechanical power into AC electrical power. Typically, a magnet spins inside a coil, inducing alternating current in the windings. The magnet can be a permanent magnet, an iron rotor in which a magnetic field is induced, or an electromagnet powered by an externally applied current.
AM	Amplitude Modulation: A modulation method in which the carrier amplitude changes with the input signal amplitude.
Ambient Temperature	Temperature of the air surrounding a component.
Ambient Temperature Sensor	Temperature sensor used to measure the temperature of the air that surrounds a component (the ambient temperature).
AMLCD	Active-matrix liquid-crystal display
Ampacity	The amount of current a conductor can carry without exceeding its specified temperature, in amperes.
Ampere	Ampere(s), the unit of electrical current. Current is defined as the amount of charge that flows past a give point, per unit of time.

	The symbol I is used for current in equations and A is the abbreviation for ampere.
Ampere-hour	A measure of charge (or current flow over time). One ampere-hour (or amp-hour or Ah) is a current of one ampere flowing for one hour. The amount of charge transferred in that hour is 3,600 coulombs (ampere-seconds). • A milliampere-hour (mAh or milliamp-hour) is a thousandth of an amp-hour. • An ampere-second (A-s or amp-second) is an amp supplied for one second. A common use of the term is rating energy storage device capacity, especially rechargeable batteries. For example, a 12-volt, 7Ah rechargeable battery used in an alarm system will supply an amp at the rated voltage range for seven hours, 2 amps for 3.5 hours, etc. If my alarm consumes 250mA, this battery would operate the system for 28 hours.
Amplifier	An electrical circuit that produces an output that is a replica of the input. The output may be scaled or have increased drive, or it may provide isolation (so changes in output conditions do not affect the input or other outputs). It may perform other transformations (e.g., filtering or logarithmic drive).
AMPS	Advanced Mobile Phone System: An analog only, 1G standard that operates in the 800MHz to 900MHz frequency band. It is still widely used in the United States.
AMR	Automatic Meter Reading: A system installed to read a utility meter remotely.
Analog	A system in which an electrical value (usually voltage or current, but sometimes frequency, phase, etc.) represents something in the physical world. The electrical signal can then be processed, transmitted, amplified, and finally, transformed back into a physical quality. For example: A microphone produces a current that is proportional to sound pressure. Various stages amplify, process, modulate, etc. Ultimately, a varying voltage is presented to a speaker which converts it back to sound waves. By contrast, a digital system handles a signal as a stream of numbers.

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Analog Switch	An analog switch (sometimes just called a "switch") is a switching device capable of switching or routing analog signals (meaning signals that can have any level within a specified legal range), based on the level of a digital control signal. Commonly implemented using a "transmission gate," an analog switch performs a function similar to that of a relay. For example, an analog switch can turn an audio signal on or off based on a MUTE signal; or analog switches could send one of two signals to a headphone amplifier. Most commonly implemented using CMOS technology integrated circuits. Maxim makes hundreds of examples.
Analog Temperature Sensor	Temperature sensor with a continuous analog voltage or current output that is related, usually linearly, to the measured temperature.
AND	Combining two signals so that the output is on if both signals are present. This can be accomplished by an AND logic gate (two inputs, one output which is high if both inputs are).
ANSI	American National Standards Institute
APC	Automatic Power Control: Feature in laser drivers (such as the MAX3669) that uses feedback from the laser to adjust the drive, to keep the laser's output constant.
APD	Avalanche Photo Diode: A photodiode designed to take advantage of avalanche multiplication of photocurrent to provide gain. As the reverse-bias voltage approaches the break-down voltage, hole-electron pairs created by absorbed photons acquire sufficient energy to create additional hole-electron pairs when they collide with ions. Thus a multiplication or signal gain is achieved.
API	Application program interface: A software layer that allows a system to be programmed via a defined set of commands.
APM	Advanced Power Management: Power management standard for computers that provides five power states: Ready, Stand-by, Suspended, Hibernation, Off.

APON	ATM (-based) passive optical network
APQP	Advanced Product Quality Planning. System developed by the AIAG automotive organization to communicate common product quality planning and control plan guidelines for suppliers to the automotive industry.
ASCII	American Standard Codes for Information Interchange
ASIC	Application-specific integrated circuit.
ATE	Automatic test equipment; automated test equipment.
ATM	Asynchronous transfer mode
Auto Shutdown	A feature in EIA-232 interface devices which puts the IC into a low-power shutdown mode when no signal is present on the EIA-232 bus.
Autoshutdown Plus	A feature in EIA-232 interface devices which puts the IC into a low-power shutdown mode when no signal is present on the bus or the transmitter inputs.
Autotransformer	An autotransformer is a transformer that uses a common winding for both the primary and secondary windings. Essentially an inductor with a center-tap, an autotransformer is often used in power-supply boost-converter applications to achieve a higher output voltage, while limiting the peak flyback voltage seen by the power switch.
AWG	1. Arbitrary waveform generator 2. American Wire Gauge: A measure of wire thickness (which also dictates cross-sectional area, and for a given material, ampacity). Example: 24 AWG wire has a nominal diameter of 0.0201in or 0.511mm. Also called the Brown and Sharpe Wire Gauge.
Backup Step-Up	Step-up, switching-regulator power supply with a backup battery switchover.
Bandwidth	1. Bandwidth (BW) is a range of frequencies, or information, that a circuit can handle or the range of frequencies that a signal contains or occupies. Example: An AM broadcast radio channel in the US has a bandwidth of 10kHz, meaning that it occupies a 10kHz-wide band, such as the frequencies from 760kHz to 770kHz.

	2. The amount of data a digital channel or line can handle, expressed in bits per second (bps), kilobits per second (kbps), baud, or a similar measure.
Base Station	A base station (or basestation) is a wireless transceiver at a fixed location (e.g. atop a telephone pole) which is part of a wireless communications network, e.g. the cell phone network. Typically, the base station connects to any cell phones in its area and relays the calls to the wired network. A femto base station is a smaller, personal base station which might cover a home or building and connect via a DSL Internet connection.
Baseline	The electrical signal from a sensor when no measured variable is present. Often referred to the output at no-load condition.
Bass Boost	Circuitry that boosts the bass response of the amplifier, improving audio reproduction, especially when using inexpensive headphones.
Battery Backup	A feature of microprocessor supervisory circuits and some power supplies to switch between a main power source and a battery.
Battery Freshness Seal	A feature in microprocessor supervisory circuits which disconnects a backup battery from any down-stream circuitry until VCC is applied the first time. This keeps a backup battery from discharging until the first time a board is plugged in and used, and thus preserves the battery life.
Battery Fuel Gauge	A feature or device that measures the accumulated energy added to and removed from a battery, allowing accurate estimates of battery charge level.
Battery Monitor	A feature that monitors the voltage on a battery and indicates when the battery is low. It is usually implemented using a comparator to compare the battery voltage to a specified level.

	May also include functions such as charging, remaining capacity estimation, safety monitoring, unique ID, temperature measurement, and non-volatile (NV) parametric storage.
Battery Switchover	A circuit that switches between the higher of a main supply and a backup battery.
BCD	Binary-coded decimal: Representation of a number in which each decimal digit (0-9) is encoded in binary, with four bits per decimal digit.
BER	Bit Error Rate: A measure of the number of erroneous bits which can be expected in a specified number of bits in a serial stream.
BERT	Bit Error Rate (BER) Tester: A piece of test equipment which determines the bit error rate for a device under test (DUT).
Beyond-the-Rails^{rm}	Maxim's name for a feature of an IC that can process inputs and provide output voltages that exceed the supply rails. The feature is achieved through on-chip integration of necessary supply rails.
Bidirectional	The device accommodates signals traveling either direction though a single channel.
Bipolar Inputs	An input which accommodates signals both above and below ground.
Bipolar Junction Transistor	A Bipolar Junction Transistor, or BJT, is a solid-state device in which the current flow between two terminals (the collector and the emitter) is controlled by the amount of current that flows through a third terminal (the base). Contrast to the other main transistor type, the FET, in which the ouput current is controlled by input voltage (rather than by input current).
BIST	Built-in self-test.
Bit Banging	A technique which uses the general-purpose ports of a microcontroller to emulate a serial interface standard (I2C, SPI, etc).
Bit Error Ratio	The number of erroneous bits divided by the total number of bits transmitted, received, or processed over some stipulated period.

G.8   *Embedded and Real Time Systems*

Blade Server	A blade server is a computer system on a motherboard, which includes processor(s), memory, a network connection, and sometimes storage. The blade idea is intended to address the needs of large-scale computing centers to reduce space requirements for application servers and lower costs.
Blink Control	Controls the display segment blink rate.
BLM	Ball limiting metal
Bluetooth	A technology that allows voice and data connections between a wide range of mobile and stationary devices through short-range digital two-way radio. For instance, it specifies how mobile phones, Wireless Information Devices (WIDs), computers and PDAs interconnect with each other, with computers, and with office or home phones.
BLVDS	Bus low-voltage differential signal
BOC	Bit-oriented code
Boost Converter	A power supply that steps an input voltage up (boosts it) to a higher, regulated voltage.
Bootstrap	Often refers to using the output of a step-up converter to drive the main power FET switch, providing more gate drive than the input can supply alone. Also refers to using a switched capacitor to boost the voltage of a node.
BPON	Broadband passive optical network
BPSK	Binary phase-shift keying
BRD	Band-rate divisor
Break-Before-Make	Break-Before-Make: A switch that is configured to break (open) the first set of contacts before engaging (closing) the new contacts. This prevents the momentary connection of the old and new signal paths. Applies to mechanical systems (e.g. that use relays or manual switches) and to solid-state analog multiplexers and switches.
BRI	Bit-rate interface
Bridge Battery	A battery intended to provide power to system memory while the main battery is replaced.
Bridge-Tied Load	Used in audio applications, the load (a speaker in this case) is connected between two audio amplifier outputs (it "bridges" the two output terminals).

	This can double the voltage swing at the speaker, compared to a speaker that is connected to ground. The ground-tied speaker can have a swing from zero to the amplifier's supply voltage. A BTL-driven speaker can see twice this swing because the amplifier can drive either the + terminal of the speaker or the - terminal, effectively doubling the voltage swing. Since twice the voltage means four times the power, this is a major improvement, especially in applications where battery size dictates a lower supply voltage - e.g. automotive or handheld applications.
Brightness	Although the terms "brightness" and "luminance" are often used interchangeably, they are different. Luminance is the light intensity; brightness is how it is perceived by the human eye.
Broadband	A transmission medium with enough bandwidth to carry multiple voice, video, or data channels simultaneously. This technique is used, for example, to provide fifty CATV channels on one coaxial cable; or to provide Internet access over cable TV; or to add DSL to a voice-grade telephone line. A common technique is frequency-division. Each channel is modulated to a different frequency band and combined in the transmission medium. It is demodulated to its original frequency at the receiving end. Channels are separated by guardbands (empty spaces) to ensure that each channel will not interfere with its neighboring channels.
Brownout	A condition where the voltage supplied to the system falls below the specified operating range, but above 0V.
BSC	BSC (Basic Spacing between Centers) is a term that appears on IC package drawings in reference to dimensions between pins. "Basic" spacing is nominal and can change with conditions. For example, the distance between the rows of pins on a DIP (dual inline package) is BSC because it changes when the auto insertion machine grabs the part, and again when the part is inserted. The BSC dimension, in this case, is the dimension of the hole spacing that the part will fit into, rather than the dimensions of the part itself.
BSLF	Best-straight-line fit
BT	Butterworth (filter)
BTS	Base Transceiver Station: The stationary component of a cellphone system includes transmit-receive units and one or more antennae. The combined systems (often including multiple co-located systems and ganged directional antennae) is called a cell-site, a base station, or a base transceiver station (BTS).

Buck	A "buck" or "step-down" switch-mode voltage regulator is one in which the output voltage is lower than its input voltage. Note: A customer asked the origin of the term and no one seems to know! A buck regulator is a step-down regulator, as opposed to boost. We think it's an American term - in England it was always "step-down." Buck means to resist or reduce (as in "buck the trend"), and hence was used to denote a step-down. Conveniently, it alliterates with the opposite, a boost regulator.
Buck-Boost	A switch-mode voltage regulator in which output voltage can be above or below the input voltage.
Burst Dimming	Burst Dimming is a method of controlling the brightness of cold cathode fluorescent lamps (CCFL) by turning the lamps on and off at a rate faster than the human eye can detect. The on/off rate is nominally 100Hz to 300Hz. The higher the ratio of on-time to off-time, the brighter the lamps will be. Because of CCFL response times, on-time to off-time ratios of less than 1% are not practical.
Burst Mode	1) A temporary high-speed data-transfer mode that can transfer data at significantly higher rates than would normally be achieved with nonburst technology. 2) The maximum short-term throughput which a device is capable of transferring data.
Bus	Data path that connects to a number of devices. A typical example is the bus a computer's circuit board or backplane. Memory, processor, and I/O devices may all share the bus to send data from one to another. A bus acts as a shared highway and is in lieu of the many devoted connections it would take to hook every device to every other device. Often misspelled "buss."
BWLS	Bandwidth, Large Signal
BWSS	Bandwidth, Small Signal
C/N	Carrier-to-noise
CA	Common anode
CAD	Computer-aided design
CAN	Controller Area Network. The CAN protocol is an international standard defined by ISO 11898.

Capacitive Crosstalk	A phenomenon where a signal on one line/trace is capacitively coupled to an adjacent line/trace.
Capacitor	A capacitor is a passive electronic component that consists of two conductive plates separated by an insulating dielectric. A voltage applied to the plates develops an electric field across the dielectric and causes the plates to accumulate a charge. When the voltage source is removed, the field and the charge remain until discharged, storing energy. Capacitance (or C, measured in farads), dictates the amount of charge that can be stored at a given voltage (a one-farad capacitor charged to one volt will hold one Coulomb of charge).
CardBus	32-bit version of the PC card (formerly PCMCIA) standard
CAS	Column-Address-Strobe: The signal that tells the DRAM to accept the given address as a column-address; used with RAS and a row-address to select a bit within the DRAM
CAT3	Category 3: Refers to Ethernet cabling that satisfies the criteria for the EIA/TIA-568 standard's Category 3, which allows data transfers up to 10Mbps.
CAT5	Category 5: Refers to Ethernet cabling that satisfies the criteria for the EIA/TIA-568 standard's Category 5, which allows data transfers up to 100Mbps.
CATV	Originally "Community Antenna Television," a term which now refers to any community television system distributed by cable.
CBR	Constant bit rate
CC/CV Charger	Constant Current/Constant Voltage battery charger
CCCv	Constant current/constant voltage
CCD	Charge Coupled Device: One of the two main types of image sensors used in digital cameras. When a picture is taken, the CCD is struck by light coming through the camera's lens. Each of the thousands or millions of tiny pixels that make up the CCD convert this light into electrons. The accumulated charge at each pixel is measured, then converted to a digital value. This last step occurs outside the CCD, in an analog-to-digital converter (ADC).
CCFL	Cold Cathode Fluorescent Lighting: Often used as a backlight for LCD displays.

CCFT	Cold Cathode Fluorescent Tube: Often used as a backlight for LCD displays.
CCK	Complementary code keying
CCM	Continuous-conduction mode; cross connect module
CDC	Clock distribution circuit
CDD	Clock Distribution Device or Clock Distribution Driver
CDMA	Code Division Multiple Access: A digital cellular technology that uses spread-spectrum techniques. Unlike GSM and other competing systems that use TDMA, CDMA does not assign a specific frequency to each user. Instead, every channel uses the full available spectrum. Individual conversations are encoded with a pseudo-random digital sequence.
CDR	Clock/data recovery. Clock/data recovery is a function or circuit that extracts a clock signal from an incoming data stream.
CE Control	Chip enable control
Ch. to Ch. Skew (Ps Max)	Channel-to-channel skew. A signal on one channel has a different phase than the same signal on another channel (delayed/skewed). This is measured in picoseconds, max.
Channel Associated Signaling	Channel Associated Signaling (CAS): Some communications protocols include "signaling" functions along with data. Channel Associated Signaling protocols include signaling in the data channel (as opposed to a dedicated signaling channel). Also called Robbed Bit Signaling.
Charge Injection	A parameter pertinent to analog switches. As an analog switch turns on and off, a small amount of charge can be capacitively coupled (injected) from the digital control line to the analog signal path.
Charge Pump	A power supply which uses capacitors to store and transfer energy to the output, often stepping the voltage up or down. Charge is transferred from one capacitor to another

	under control of regulator and switching circuitry. Maxim offers both regulated and non-regulated charge pumps, as well as ICs with on-board charge pumps to boost internal voltages.
Charge Pump	A power supply which uses capacitors to store and transfer energy to the output, often stepping the voltage up or down. Charge is transferred from one capacitor to another under control of regulator and switching circuitry. Maxim offers both regulated and non-regulated charge pumps, as well as ICs with on-board charge pumps to boost internal voltages.
Charge Termination Method	Method the battery charger uses to determine when to terminate the charging cycle.
CHATEAU	CHAnnelized T1 and E1 And Universal HDLC controller
Chip	1. Integrated circuit: A semiconductor device that combines multiple transistors and other components and interconnects on a single piece of semiconductor material. 2. Encoding element, in Direct-Sequence Spread Spectrum systems.
Chip-Enable Gating	A feature in microprocessor supervisory circuits which prevents the writing of erroneous data when power falls outside of spec. When the main power-supply voltage is below the minimum safe-operating limit, the feature disconnects the chip-enable signal path from the host microprocessor or microcontroller.
Chrominance	The color portion portion of a composite video signal. Forms a complete picture once combined with the luminance component.
CID	Consecutive identical digit(s)
CIM	Cable integrity monitor
CISC	Complex instruction set computer (CISC): Computer hardware designed to support complex instructions, as opposed to RISC (reduced instruction set computer) architecture.

Class A	The simplest type of amplifier, class A amplifiers are those in which the output transistors conduct (i.e. do not fully turn off) irrespective of the output signal waveform. This type of amplifier is typically associated with high linearity but low efficiency.
Class AB	Class AB amplifiers combine Class A and Class B to achieve an amplifier with more efficiency than Class A but with lower distortion than class B. This is achieved by biasing both transistors so they conduct when the signal is close to zero (the point where class B amplifiers introduce non-linearities). The transistors transition to class B operation for large excursions. So, for small signals both transistors are active, acting like a class A amplifier. For large signal excursions, only one transistor is active for each half of the waveform, acting like a class B amplifier.
Class B	Class B amplifiers are those in which the output transistors only conduct during half (180 degrees) of the signal waveform. To amplify the entire signal two transistors are used, one conducting for positive output signals and the other conducting for negative outputs. Class B amplifiers are much more efficient than class A amplifiers, but have high distortion due to the crossover point when the two transistors transition from on to off.
Class C	A class C amplifier is a form of switching amplifier in which the transistors are on for less than a half cycle (less than 180 degrees) – often, much less. For instance, the transistor may be on only during the top 10% of the signal excursion, delivering just a pulse. Class C amps are very efficient because the transistors are off most of the time and when they are on, they are in full conduction. They deliver high distortion and are often used in RF circuits, where tuning circuits restore some of the original signal and reduce distortion. They are also used in low-fidelity applications where the distortion is not important, such as a siren speaker driver.
Class D	Class D amplifiers are those that output a switching waveform, at a frequency far higher than the highest audio signal that needs to be reproduced. The low-pass filtered, average value of this waveform corresponds to the actual required audio waveform. Class D amplifiers are highly efficient (often up to 90% or higher) since the output transistors are either fully turned on or off during operation. This completely eliminates the use of the linear region of the transistor which is responsible for the inefficiency of other amplifier types. Modern Class D amplifiers achieve fidelity comparable to class AB.

Class G	Class G amplifiers are similar to class AB amplifiers except they use two or more supply voltages. When operating at low signal levels, the amplifier uses a lower supply voltage. As the signal level increases, the amplifier automatically picks the appropriate supply voltage. Class G amplifiers are more efficient than class AB amplifiers since they use the maximum supply voltage only when required, while a class AB amplifier always uses the maximum supply voltage.
Class H	Class H amplifiers modulate the supply voltage to the amplifier output devices so that it is never higher than necessary to support the signal swing. This reduces dissipation across the output devices connected to that supply and allows the amplifier to operate with an optimized class AB efficiency regardless of output power level. Class H amplifiers are generally more complex than other designs, with extra control circuitry required to predict and control the supply voltage.
Click-and-Pop	Click-and-pop refers to the unwanted transient signals in the audio band that are reproduced by the headphone and/or speaker when the audio device driving it is either: • powered up (power applied) • powered down (power removed) • brought out of shutdown (power applied previously) • forced into shutdown (power still applied)
Click/Pop Reduction	A feature that eliminates "clicks" and "pops" - unwanted transient noise signals during power-up, shutdown, connection, etc.
Clock and Data Recovery	The process of extracting and reconstructing clock and data information from a single-wire/channel, serial data stream.
Clock Jitter	A periodic waveform (especially a clock) is expected to cross certain thresholds at precisely timed moments. Variations from this ideal are called jitter.

Clock Throttling	Reducing the frequency or duty-cycling the clock of an integrated circuit usually for the purpose of reducing heat generation.
cm	Centimeter: 1/100 of a meter, 0.39 inches.
CMF	Current-mode feedback
CMI	Code matrix insertion
CML	Current-mode logic
CMOS	Complementary metal-oxide semiconductor technology in which p- and n-channel MOS transistors are used in tandem.
CMRR	Common Mode Rejection Ratio: The ability of a differential amplifier to not pass (reject) the portion of the signal common to both the + and - inputs.
CNC	Computer numeric control
CO	Coarse offset
CODEC	Short for compressor/decompressor, a codec is any technology for compressing and decompressing data. Codecs can be implemented in software, hardware, or a combination of both.
COG	Chip-on-glass
Coherent Sampling	Describes the sampling of a periodic signal, where an integer number of its cycles fits into a predefined sampling window.
COLC	Correction loop capacitor
Color Subcarrier	A modulated carrier, added to a television signal, to carry the color components. Examples: In NTSC television, a 3.579545MHz color subcarrier is quadrature-modulated by two color-difference signals and added to the luminance signal. The PAL television standard uses a subcarrier frequency of 4.43362MHz.
Common-Mode Signals	Common-mode signals are identical signal components on both the + and - inputs of a differential amplifier or instrumentation amplifier. A common example is in a balanced pair, where a noise voltage is induced in both conductors. Another example is where a DC component is added (e.g. due to a difference in ground between the signal source and the receiver).

	In an ideal differential amp, the common-mode element is cancelled out, since the differential (+ and -) inputs should subtract out the identical components. A measurement of the actual ability to do this is called the Common Mode Rejection Ratio, or CMRR.
Comp. Prop. Delay	Comparator propagation delay. This is the lag between the input crossing the comparator threshold, and the output changing states.
compander	Signal processing technique which uses both compression and expansion to improve dynamic range and signal-to-noise ratio. A signal is passed through a non-linear transformation prior to transmission. A reverse of this transformation occurs at reception. The transformation is such that quiet portions are boosted and loud portions reduced. Noise is reduced because the quiet signals are louder, compared to the noise in the transmission channel. Used in digital, PCM, transmissions as well as analog applications. Dolby is a common example of a compander-based noise reduction system.
Comparator	A comparator is a device that accepts two analog inputs, compares the inputs, and produces a binary output that is a function of which input is higher. If the non-inverting (+) input is greater than the inverting (-) input, then the output goes high. If the inverting (-) input is greater than the non-inverting (+) input, then the output goes low. When described that way, the comparator resembles a 1-bit ADC. A simple comparator can be achieved using an op amp without negative feedback. Its high voltage gain enables it to resolve very small differences in input voltage. But op amps used this way are generally slower than comparators and lack special features, such as hysteresis and internal references.
CompoNet	CompoNet is a four-wire, industrial, bus with a master-slave architecture. It is used at the lower network levels to transmit bit or word information, such as for use in sensors and actuators. Up to 256 slaves are supported on a bus. Data rates of 93.75kbps to 4Mbps and network lengths up to 1500 meters with repeaters are possible. CIP is used as the underlying protocol.

Contact Bounce	When a mechanical switch or relay closes, the switch elements will often bounce, even if only briefly, before making final contact. This is of consequence if downstream elements are sensitive to the switching transients. A contact debouncing circuit is often used to remove the transients.
Contact Discharge	An ESD test method where the ESD generator makes direct contact with the device under test (DUT).
Coplanar Line	A line which is in the same plane as another line. Any two intersecting lines must lie in the same plane, and therefore be coplanar.
Coulomb	Coulomb (abbreviated C) is the standard measure of electrical charge. Named after Charles-Augustin de Coulomb, it is the amount of charge accumulated on a one-farad capacitor charged to one volt; or the amount of charge transported by a one ampere current in one second.
CP	Comparable part
CPGA	Ceramic pin grid array, an IC packaging technology.
CRC	Cyclic Redundancy Check: A check value calculated from the data, to catch most transmission errors. A decoder calculates the CRC for the received data and compares it to the CRC that the encoder calculated, which is appended to the data. A mismatch indicates that the data was corrupted in transit. Depending on the algorithm and number of CRC bits, come CRCs contain enough redundant information that they can be used to correct the data.
CRIL	Command register and interface logic
Crossover	In an output stage (or similar amplifying stage which uses one device to pull the signal up and another to pull the signal down), the region in which the high-side device is turning on and the low-side device is turning off, or vice versa.
Crowbar Circuit	A crowbar circuit is a power supply protection circuit that rapidly short-circuits ("crowbars") the supply line if the voltage and/or current exceeds defined limits. In practice, the resulting short blows a fuse or triggers other protection, effectively shutting down the supply. It is usually achieved by an SCR or other silicon device, or by a mechanical shorting device.

	Probably named for the concept of using a big metal bar to mechanically provide the short circuit, as might be used done in a high-current application; or from the appearance of a crowbar circuit's I-V curve.
CRT	A cathode ray tube (CRT) is a display device which uses an electron beam to energize a phosphorescent coating. The beam is generated at one end of an evacuated glass tube and controlled by electrostatic and/or electromagnetic fields to strike the coating at the other end, where light emitted when electrons strike the phosphor constitute the display.
Cryptanalysis	The art and science of breaking encryption or any form of cryptography.
CS	Chip select
CSP	Chip Scale Package: An IC packaging technology in which solder balls take the place of pins, making the smallest package available. When heated, the solder balls alloy to matching pads on the circuit board.
CTIM	Retry timeout capacitor
CTON	Startup timer capacitor
Current Mode Feedback	An alternative op amp topology usually used in high-speed amplifiers. It is sensitive to feedback impedance, and cannot be used as an integrator.
Current-Mode Controller	A DC-DC switching regulator which regulates its output voltage by varying the peak inductor current on a cycle-by-cycle basis to output a regulated voltage despite variations in load-current and input-voltage.
Current-Sense Amplifier	An amplifier that measures current by measuring the voltage drop across a resistor placed in the current path. The current sense amp outputs either a voltage or a current that is proportional to the current through the measured path.
D/A Converter	Digital-to-analog converter (DAC): A data converter, or DAC, that receives digital data (a stream of numbers) and outputs a voltage or current proportional to the value of the digital data.

Daisy Chain	A method of propagating signals along a bus in which the devices are connected in series and the signal passed from one device to the next. The daisy chain scheme permits assignment of device priorities based on the electrical position of the device on the bus.
Dallastat	Trademark for Dallas Semiconductor's line of digital rheostats (digital potentiometers). (Dallas Semiconductor is a subsidiary of Maxim Integrated.)
Data Acquisition System	System which acquires data, generally by digitizing analog channels and storing the data in digital form. These systems can be standalone or married to a computer and can acquire multiple channels of data.
Data Converter	A/D or D/A converter: An electronic circuit that converts analog signals to digital, or vice-versa. An analog signal is a continuously varying voltage or current. Its digital counterpart is a stream of digital numbers, each representing the amplitude of the analog signal at a moment in time.
dB	Decibels: A method for specifying the ratio of two signals. dB = 10 times the log of the ratio of the power of the two signals. This is equal to 20 times the ratio of their voltages, if the signals are driving equal impedances. Decibels are also used to describe a signal level by comparing it to a reference level. The reference is usually defined as 0dB and the dB value of the signal is 10 times the log of the signal's power over that of the reference. A letter is sometimes added to signify the reference. For instance, dBm is relative to 0 dBm = 1mW.
dBm	A unit that defines a signal level by comparing it to a reference level. The reference level of 0dBm is defined as 1mW. The signal level in dBm is 10 times the log of the signal's power over that of the 0dBm reference.

DBS	Direct Broadcast Satellite: A system which broadcasts directly from satellite to the subscriber (end user). Prominent examples in the US are DirecTV and Dish network.
DC	Direct current
DC-DC	Any of the family of switch-mode voltage regulators, these devices use an inductor to store and transfer energy to the output in discrete packets, resulting in highly efficient power conversion.
DC-DC Controller	A DC-DC converter (switch-mode power supply) in which the power switch (usually a power MOSFET) is external to the IC.
DCE	Data communications equipment; interchangeable with DTE
DCM	Discontinuous-conduction mode
DCR	Direct conversion receiver
DCS	Digital Cellular System: Any cellular phone system that uses digital (e.g. TDMA, GSM, CDMA).
DDI	Digital data input
DDJ	Data-dependent jitter
DDR Memory	Double Data Rate Synchronous DRAM: A clock is used to read data from a DRAM. DDR memory reads data on both the rising and falling edge of the clock, achieving a faster data rate. Often used in notebook computers because it also consumes less power.
DDRD	Data direction register D
DDS	DDS (direct digital synthesis) is a method for digitally generating analog waveforms, such as sine waves (modulated or not) or arbitrary waveforms. In the most straightforward realization, a digitized sample of the waveform is stored and the values are clocked out to a D/A converter. Varying the clock rate changes the frequency. Variations in rate and changes to a gain factor can modulate the signal.
Debounce	Electrical contacts in mechanical pushbutton switches often make and break contact several times when the button is first pushed. A debouncing circuit removes the resulting ripple signal, and provides a clean transition at its output.
DECT	Digital European cordless telephone

Delta-Sigma	An analog-to-digital converter (ADC) architecture consisting of a 1-bit ADC and filtering circuitry which over-samples the input signal and performs noise-shaping to achieve a high-resolution digital output. The architecture is relatively inexpensive compared to other ADC architectures. Sometimes called a "sigma-delta" converter.
Design for Testability	Design For Testability (or Design for Test, or DFT) refers to design techniques that make products easier to test. Examples include the addition of test points, parametric measurement devices, self-test diagnotics, test modes, and scan design.
Deterministic Jitter	Reproducible jitter within a given system, under controlled conditions. Also known as bounded jitter. For more information and illustrations, see:
DFE	Decision feedback equalization
DFMEA	Design Failure Mode and Effects Analysis (DFMEA) is a method for evaluating a design for robustness against potential failures.
DG	Differential gain
Differential Remote Output Sensing	Uses a Kelvin connection at a remote location to sense the output voltage and better control the voltage at that point.
Differential Signaling	Most electrical signals are single-ended, comprised of a single wire and ground. Differential signals use two wires which are the inverse of each other – when one swings positive, the other swings negative in equal magnitude. The receiving circuit looks only at the difference between the two, ignoring any common-mode voltage.

	This "push-pull" arrangement reduces the impact of electrical interference because external noise will affect both wires equally and the common-mode rejection will ignore the noise. Examples: RS-422, RS-485, professional audio signal standards (especially for microphones), the signal lines employed by Ethernet, and the standard twisted-pair analog telephone (POTS) line.
Digital Log Pot	Digital logarithmic potentiometer.
Digital Pot	Digital potentiometer: A solid-state device that emulates a mechanical potentiometer, it is usually controlled via a simple interface.
Digital Signal Processor	A Digital Signal Processor, or DSP, is a special-purpose digital circuit that acts on digitized signals, such as audio. DSP circuits can replace traditional analog functions, such as filtering and more complex functions that are difficult to accomplish in the analog domain. A Digital Audio Signal Processor is a DSP for audio applications.
DIO	Data input/output
Diode	A two-terminal device that rectifies signals (passes current in only one direction). Most commonly, a semiconductor consisting of a P-N junction, but dioides can also be realized using vacuum tube, point-contact, metal-semiconductor junction (Schottky), and other technologies.
DIP	DIP (Dual Inline Package) is an integrated circuit package with two rows of pins. PDIP (Plastic Dual Inline Package) is a DIP package with a molded plastic body. CDIP (Ceramic Dual Inline Package) is a DIP package with a ceramic body.
Distortion	In systems that handle electrical signals, distortion is a generally unwanted change in the signal. Not all signal alterations are considered distortion. For instance, a uniform delay or a linear attenuation or amplification would generally not be considered distortion.

Dithering	A common technique to improve digitizing when quantization noise (quantization error/noise) can no longer be treated as random. A small amount of random noise is added to the analog input signal. This added noise causes the digital output to randomly toggle between two adjacent codes, thereby avoiding thresholding effect.
DIU	Digital interface unit
Diversity	In radio systems, diversity is a method of improving the reliability and capacity by using multiple communication channels to carry each signal.
DLC	Double-layer capacitor
DMA	Direct Memory Access: A scheme which reads or writes data directly to memory, bypassing the processor and the processor bus.
DML	Data Manipulation Language (or Data Management Language): A language that allows data to be manipulated in a database. In SQL, commands such as DELETE and INSERT are DML commands.
DMM	Digital Multimeter: Measuring instrument or VOM (e.g. voltage, resistance, current) with a digital display.
DMR	Digital microwave radio
DMT	Discrete multitone data transmission
DNL	Differential Nonlinearity: A specification that appears in data-converter datasheets. In an ideal D/A converter, incrementing the digital code by 1 changes the output voltage by an amount that does not vary across the device's permitted range. Similarly, in an A/D, the digital value ramps smoothly as the input is linearly swept across its entire range. DNL measures the deviation from the ideal. An ideal converter has the code exactly the same size, and a DNL of 0 (zero).
DOCSIS	Data Over Cable Service Interface Specification: A standard for delivering data over cable TV systems, typically for subscriber Internet access services.
Down Converters	A device which provides frequency conversion to a lower frequency, e.g. in digital broadcast satellite applications.
DP	Differential phase; also decimal place
DPAK	Discrete packaging
DPD	Digital phase detector
DPDT	Double-pole/double-throw
DPH	Data pointer high

DPL	Data pointer low
DPM	Digital panel meter
DPS	Data pointer select
DPST	Double-pole/single-throw
DPWM	Digitally adjusted pulse-width modulation
DQPSK	Differential quadrature phase-shift keying
Drain	One of the three terminals that comprise a FET. A voltage on the gate controls the current flow between the source and drain.
DRAM	Dynamic RAM: Random-Access Memory that uses a continuous clock. Unlike SRAM, when DRAM is no longer clocked, its data is lost.
DRC	Design-rule checking
DRL	Daytime Running Lamps (DRLs) are white lights mounted on the front of an automobile. Mandated in many countries, they automatically switch on when the key is turned and are intended for daytime use, to increase the visibility of the automobile. They are typically built with LEDs.
Drypack	Drypack is a method for packing integrated circuits in a moisture-free environment. The device is baked and immediately sealed in a vacuum-sealed bag. This process is reserved for package types which are especially susceptible to moisture intrusion. Maxim devices with MSL (Moisture Sensitivity Level) of 2 or higher require drypack. A part-number suffix of -D, +D, or #D at the end of the part number denotes products which ship with drypack. There is no price adder associated with drypacking products with MSL 2 or above.
DSL	A mechanism for providing high-speed digital communications (e.g. Internet access) over a standard phone line.
DSLAM	Digital Subscriber Line Access Multiplexer: a device which takes a number of ADSL subscriber lines and concentrates these to a single ATM line.
DSSP	Digital-sensor signal processor
DSSS	Direct-Sequence Spread Spectrum: A transmission technology used in WLAN (wireless LAN) transmissions where a data signal at the sending station is combined with a higher data-rate bit sequence, or chipping code, that divides the user data according to a spreading ratio.
DTB	Digital terrestrial broadcasting
DTE	Data terminal equipment; interchangeable with DCE

DTMF	Dual Tone Multiple Frequency (DTMF) is a signaling method developed by Bell Labs for sending telephone dialing information over the same analog, voice-quality phones lines that carry voice. Each digit is encoded as the sum of two sine wave bursts, of different frequencies. The two-tone method was chosen because it can be reliably distinguished from voice and normal phone conversations are highly unlikely to falsely trigger the DTMF receiver. DTMF was the basis for "TouchTone" (a former trademark of AT&T), the pushbutton system that replaced mechanical rotary dial telephones.
Dual Mode	Two modes of operation. Examples: In power circuits, the IC can deliver either a fixed 5V or an adjustable 1.3V to 16V source. In cellular phones, the IC operates in FM or CDMA mode, AMPS or TDMA mode, etc. (Maxim Integrated trademarked term.)
Dual Phase Controller	Switching regulator that employs dual-phase technique to reduce output noise and boost output current capability.
Dual-Band	Dual-band refers to the capability of GSM network infrastructure and handsets to operate across two frequency bands.
Dual-Modulus Prescaler	A Dual-Modulus Prescaler (DMP) is an important circuit block used in frequency synthesizers to divide the high-frequency signal from the voltage controlled oscillator (VCO) to a low-frequency signal by a predetermined divide ratio, either (N+1) or N, which is controlled by a swallow counter. This low-frequency signal is then further divided by the main counter to the desired channel-spacing frequency which is then fed to the phase detector to form the closed feedback loop in frequency synthesizers.
DVB	Digital Video Broadcast is a name for digital TV.
DVM	Digital voltmeter

DWDM	Dense Wave Division Multiplexing: The technology by which the frequencies of light carried on a single optical fiber are subdivided into discrete wavelengths, allowing for the greater transmission of data.
DXC	Digital cross-connect
Dynamic Range	The range, in dB, between the noise floor of a device and its defined maximum output level.
E1	Wide-area, digital transmission scheme, used predominantly in Europe, that carries data at a rate of 2.048Mbps. E1 lines can be leased for private use from common carriers.
E2	A line that carries four multiplexed E1 signals with a data rate of 8.448Mbps.
E3	Wide-area, digital transmission scheme used predominantly in Europe that carries data at a rate of 34.368Mbps. E3 lines can be leased for private use from common carriers.
EAM	Electro-Absorption Modulators: Chip-level modulation devices often integrated into hybrid transponder devices, alongside lasers.
ECB	Electrically controlled birefringence
ECL	Emitter-coupled logic
ECM	Electret capacitor microphone
EconoReset	The simplest form of microprocessor supervisory circuit, it monitors the power supply for the microprocessor and provides only a power-on reset function.
EconOscillator	Low-cost, surface-mount, CMOS oscillator family from Maxim. EconOscillators replace crystal-based oscillators. They need no external crystals or timing components.
EDFA	Erbium-doped fiber-optical amplifier
EDGE	Enhanced Data Rates for GSM Evolution: An enhanced modulation technique designed to increase network capacity and data rates in GSM networks. EDGE should provide data rates up to 384Kbps.
EEPROM	Electrically erasable programmable read-only memory
EFT	Electrical fast transient
EIA	Electronic Industries Alliance: Among other things, the EIA sponsors electrical and electronic standards.
EIA-JEDEC	Electronic Industries Association/Joint Electron Device Engineering Council

Embedded System	A system in which the computer (generally a microcontroller or microprocessor) is included as an integral part of the system.
	Often, the computer is relatively invisible to the user, without obvious applications, files, or operating systems. Examples of products with invisible embedded systems are the controller that runs a microwave oven or the engine control system of a modern automobile.
EMC	Electromagnetic Compatibility: The ability of electronic equipment to be a "good electromagnetic neighbor": It neither causes, nor is susceptible to, electromagnetic interference (within the limits of applicable standards).
EMI	Electromagnetic Interference: Unwanted noise from electromagnetic radiation.
End Point	Behavior of the device at the limit of temperature or voltage.
ENDEC	Encoder/Decoder
Energy Harvesting	Energy harvesting (also known as power harvesting or energy scavenging) is the process in which energy is captured from a system's environment and converted into usable electric power. Energy harvesting allows electronics to operate where there's no conventional power source, eliminating the need to run wires or make frequent visits to replace batteries. An energy harvesting system generally includes circuitry to charge an energy storage cell, and manage the power, providing regulation and protection. Energy source examples include light (captured by photovoltaic cells), vibration or pressure (captured by a piezoelectric element), temperature differentials (captured by a thermo-electric generator) radio energy (captured by an antenna); and even biochemically produced energy (such as cells that extract energy from blood sugar).
ENOB	Effective Number of Bits: An indication of the quality of an analog-to-digital converter (ADC). The measurement is related to the test frequency and the signal-to-noise ratio.
EPON	Ethernet (-based) passive optical network
EPROM	Erasable programmable read-only memory
ERC	Extinction ratio control

ESBGA	Enhanced Super Ball-Grid Array (trademark of Amkor/Anam)
ESD	Electrostatic Discharge: Release of stored static electricity. Most commonly: The potentially damaging discharge of many thousands of volts that occurs when an electronic device is touched by a charged body. See the following application notes that describe how ESD is generated, how it damages electronic systems, human body and machine models for testing, IEC compliance levels, and design approaches.
ESD Protection	Devices added to input and output pins on an IC to protect the internal circuitry from the damaging effect of electrostatic discharge.
ESF	Extended Superframe: A DS1 framing format in which 24 DS0 times lots, plus a coded framing bit are organized into a frame which is repeated 24 times to form a superframe.
ESL	Effective/Equivalent Series Inductance is the parasitic inductance in a capacitor or resistor.
ESP	Extended stack pointer
ESR	Effective Series Resistance (or Equivalent Series Resistance or ESR) is the resistive component of a capacitor's equivalent circuit. A capacitor can be modeled as an ideal capacitor in series with a resistor and an inductor. The resistor's value is the ESR.
Ethernet	A family of network protocols based on asynchronous frames. The Ethernet framing structure provides a flexible payload container with basic addressing and error detection mechanisms.
EV	1. Electric Vehicle. 2. Evaluation, as in "EV Kit."
Evaluation Kit	Evaluation Kit (EV Kit, Development Kit): A printed circuit board with an integrated circuit and support components to produce a working circuit for evaluation and development. Most Evaluation Kits are fully assembled and tested. EVKIT: Part number suffix used for Maxim Evaluation Kits. Dallas Semiconductor, now owned by Maxim, used the term "development kit." See the list of Maxim Evaluation Kits and EVKit software.

EVM	Error Vector Magnitude: A measure of the difference between the (ideal) waveform and the measured waveform. The difference is called the error vector, usually referred to with regard to M-ary I/Q modulation schemes like QPSK, and shown on an I/Q "constellation" plot of the demodulated symbols. Also see: "Phase Noise and TD-SCDMA UE Receiver
EVSE	EVSE is an abbreviation for Electric Vehicle Service Equipment, referring to a charging station.
EVSYS	Evaluation System: Evaluation kits that also include an interface board for connecting to a personal computer and Windows-based EVKit software. EVSYS: Suffix used for Maxim Evaluation System part numbers.
Exposed Pad	Offered in some packages to improve thermal dissipation or lower the impedance of the ground connection. Normally not electrically isolated, it typically needs to be connected to a ground or power plane, depending on the device.
F	1. Farad(s): Unit of capacitance. 2. f in lower case is the standard abbreviation for femto, a metric prefix for 10 to the -15. 3. Fahrenheit temperature scale.
fA	Femtoampere(s): 10 to the -15 Ampere; a millionth a nanoampere.
Fail-Safe	A technique used in RS-485 interface transceivers which forces the output to a predefined state in the event of a line short or open circuit.
Fan Controller - Linear	An integrated circuit that varies the speed and airflow of a cooling fan using a variable voltage in response to temperature or system commands.
Fan Controller - PWM	An integrated circuit that varies the speed and airflow of a cooling fan using a pulse-width-modulated (PWM) voltage in response to temperature or system commands.
Fault Blanking	A function that ignores a fault for a predetermined period. This is done to eliminate nuisance fault indication.

Fault Tolerant	Will tolerate excessive voltage during a fault condition.
FB	Feedback
FCD	Fan count divisor
FCR	Fan conversion rate
FDD	Frequency-division duplex
FDDI	Fiber Distributed Data Interface: A standard for transmitting data on optical fiber cables at a rate of around 100,000,000 bits-per-second (10 times as fast as 10 Base-T Ethernet; about twice as fast as T-3).
FDL	Facility data link: Embedded communications channel in ESF DS1 framing. Used to convey both bit-oriented and message-oriented signals.
FDM	A method for carrying multiple channels of information on one channel by dividing the available bandwidth among the channels.
FE	Functional equivalent (in component cross-reference data); also field engineer; also framing error
FEC	Forward Error Correction: A technique for detecting and correcting errors from imperfect transmission by adding a small number of extra bits. FEC allows optical transmission over longer distances by correcting errors that can happen as the signal-to-noise ratio decreases with distance.
Femto Base Station	A femto base station (also called an Access Point Base Station, femtocell, femtobasestation or femto base station) is an in-home base station. Like a standard base station, it connects cell phone voice and data to the cell phone network, but it serves a smaller area (the home). A femto base station benefits the service provider because it offloads cell tower traffic. Subscribers benefit from superior signal strength, due to the proximity of the unit – especially where a cellular signal is weak or not available. Femto base stations augment the normal network and replicates the usual telecommunications infrastructure. Connection to the cell phone network is provided by VoIP over the Internet.
FET	Field-Effect Transistor: A transistor in which the voltage on one terminal (the gate) creates a field that allows or disallows conduction between the other two terminals (the source and drain).

	There are three varieties: The JFET (Junction Field-Effect Transistor); the MOSFET (Metal-Oxide-Semiconductor Field-Effect Transistor); and the MESFET (Metal-Semiconductor Field-Effect Transistor). The FET is one of two major kinds of transistor, the other being the Bipolar Junction Transistor.
FFT	A Fourier transform (FT) converts a signal from the time domain (signal strength as a function of time) to the frequency domain (signal strength as a function of frequency). It shows the signal's spectral content, divided into discrete bins (frequency bands). The Fast Fourier Transform is a common algorithm for Fourier transforms. It is more efficient (faster) than the DFT, Discrete Fourier Transform.
FG	Fan gain
FHSS	Frequency Hopping Spread Spectrum: A transmission technology in which the data signal is modulated by a narrowband carrier signal which changes frequency ("hops") over a wide band of frequencies. The hopping seems random but is prescribed by an algorithm known to the receiving system.
Fibre Channel	A highly-reliable, gigabit interconnect technology that allows concurrent communications among workstations, mainframes, servers, data storage systems, and other peripherals using SCSI and IP protocols. It provides interconnect systems for multiple topologies that can scale to a total system bandwidth on the order of a terabit per second. (The standardized spelling is "fibre channel" but often misspelled as "fiber channel.")
FIFO	First-In First Out: A type of memory that stores data serially, where the first bit read is the first bit that was stored.
FireWire	Apple Computer trademarked name for the IEEE 1394 serial interface standard: A high-speed interface between computers and peripherals such as external disk drives, cameras, and camcorders. Also referred to by Sony trademarked name, "I-Link."
FIT	Failures in time
Flash ADCs	An analog-to-digital converter that uses a series of comparators with different threshold voltages to convert an analog signal to a digital output.
FlexSound	FlexSound describes a set of digital audio signal processing blocks used in Maxim's products to provide or enhance audio functions such as compression, limiting, or equalization.

	FlexSound®processor is a fully programmable digital audio signal processing system that includes a programmable DSP core, hard-wired digital macros, and an associated memory architecture. FlexSound is a registered trademark of Maxim Integrated Products, Inc.
Floating	1. A signal line is said to be "floating" if it is not connected to any voltage supply, ground, or ground-referenced signal source. Examples: • An open-drain, high-impedance (hi-z) output when in the off (hi-z) mode • In microcomputer systems, a data or address bus may, at times, be undriven (floating). This is permissible because control signals indicate when data is valid, so users of the bus know when the signal can be ignored. 2. One form of non-volatile memory device is achieved via floating gates. The gate of a MOSFET has no connection, allowing charge to remain indefinitely. The gate charge is changed using Fowler-Nordheim tunneling or hot-carrier injection. EPROM, EEPROM, and flash memory are examples.
FM	Frequency Modulation: A modulation method in which the carrier frequency changes with the input signal amplitude.
FOC	Fields oriented control
Foldback Current Limit	A circuit which reduces the current limit once the device enters current-limited operation. Commonly seen on RS-422/RS-485 drivers and some power circuits.
Force-Sense	Measurement technique in which a voltage (or current) is forced at a remote point in a circuit; then the resulting current (or voltage) is measured (sensed).
Forward Converter	A power-supply switching circuit that transfers energy to the transformer secondary when the switching transistor is on.

FOX	Fast-on oscillator
FPBW	Full-power bandwidth
FPGA	Field Programmable Gate Array: A family of general-purpose logic devices that can be configured by the end user to perform many, different, complex logic functions. It is often used for prototyping logic hardware.
Frame Relay	A high-speed, packet-switched data communications service similar to X.25. Frame relay is a leading contender for LAN-to-LAN interconnect services, and is well suited to the burst-intensive demands of LAN environments.
Framer	A device used to align/synchronize to an embedded framing pattern in a serial bit stream. Once synchronized and data fields are properly aligned, overhead bits for alarms, performance monitoring, embedded signaling, etc. may be extracted and processed.
Frequency Bin	The frequency range and resolution on the frequency axis of a spectrum graph depends on the sampling rate and the size of the data record (the number of acquisition points). The number of frequency points or lines or bands in the power spectrum is NRECORD/2, where NRECORD is the number of signal points captured in the time domain. The first frequency line in the power spectrum always represents DC (frequency=0). The last frequency line can be found at fSAMPLE/2 - fSAMPLE/NRECORD. Frequency lines are spaced at even intervals of fSAMPLE/NRECORD. They are commonly referred to as frequency bins or FFT bins. Bins can also be computed with reference to a data converter's sampling period: Bin = fSAMPLE/NRECORD = $1/($NRECORD $\times \Delta$t SAMPLE$)$ Example: We apply a sampling frequency of 82MHz and take 8192 records. The frequency bin is 10kHz.
Frequency Diversity	In radio systems, Frequency Diversity spreads a signal across multiple channels by transmitting multiple versions of the signal on different frequencies.

Frequency Synthesizer	A frequency synthesizer is an electronic circuit that uses an oscillator to generate a preprogrammed set of stable frequencies with minimal phase noise. Primary applications include wireless/RF devices such as radios, set top boxes, and GPS.
FS	Full scale; frame sync
FSC	Fan-speed control
FSK	Frequency Shift Keying: A method of transmitting digital data by shifting the frequency of a carrier signal to represent binary 1s and 0s.
FSO	Full-span output
FSOTC	Full-span output temperature coefficient
FSR	Full-scale range
FTC	Fan tachometer count
FTCL	Fan tachometer count limit
FTTB	Fiber-to-the-business
FTTH	Fiber-to-the-home: A method for broadband data (voice, Internet, multimedia, etc.) delivery to the home via optical fiber. Contrast with FTTN (fiber-to-the-node) which uses fiber up to a node outside the home and uses copper to bring the data into the home.
FTTN	FTTN is "Fiber-to-the-node." There are two technologies for delivering broadband: Fiber-to-the-node (FTTN) uses fiber to bring data to a node and uses copper to bring the data into the home. Fiber-to-the-home (FTTH) brings fiber all the way into the home.
Full Duplex	A channel providing simultaneous transmission in both directions.
G	Gram(s)
GaAs	Gallium arsenide: A semiconductor material used for optoelectronic products such as LEDs, and for high-speed electronic devices.
GaAs MESFET	A Gallium Arsenide (GaAs) Metal-Semiconductor Field-Effect-Transistor (MESFET) is a transistor built with gallium arsenide semiconductor material. The conducting channel is built using a metal-semiconductor (Schottky) junction.
GaAsFET	Gallium arsenide field-effect transistor

GaAsP	Gallium Arsenide Phosphide (or, Gallium Arsenic Phosphide): A semiconductor material used for optoelectronics, including LEDs and photodiodes.
Gain	The amount of amplification accomplished by an amplifier circuit. For instance, a gain of 2 would mean the output is scaled to twice the amplitude of the input.
Gain Error	The gain error of a data converter indicates how well the slope of an actual transfer function matches the slope of the ideal transfer function. Gain error is usually expressed in LSB or as a percent of full-scale range. Gain error can be calibrated out with hardware or in software. Gain error is the full-scale error minus the offset error.
Galvanic Isolation	Galvanic isolation is a design technique that separates electrical circuits to eliminate stray currents. Signals can pass between galvanically isolated circuits, but stray currents, such as differences in ground potential or currents induced by AC power, are blocked.
Gamma Correction	The application of a function that transforms brightness or luminance values. Gamma functions are usually nonlinear but monotonic and designed to affect the highlights (whitest values), midtones (grayscale), and shadows (dark areas) separately. Most commonly applied to make a light-emitting device, such as a display, match the human eye's brightness curve. In other terms: A gamma correction function can be used to alter the luminance (light intensity) of a display such that its brightness (the human-perceived values) looks correct.
Gate	1. The controlling terminal of a FET. A voltage on the gate controls the current flow between the source and drain. 2. A basic logic element (e.g. AND, OR, NOT, NAND, NOR, XOR, etc.).
GbE	Gigabit Ethernet
GBIC	Gigabit Interface Converter: A removable transceiver module permitting Fibre-Channel and Gigabit-Ethernet physical-layer transport.
GBW	Gain bandwidth

Generator	An electromechanical device that converts mechanical power into electrical power.
GFSK	Gaussian frequency-shift keying: A type of FSK modulation which uses a Gaussian filter to shape the pulses before they are modulated. This reduces the spectral bandwidth and out-of-band spectrum, to meet adjacent-channel power rejection requirements. Bluetooth uses GFSK.
GHz	Gigahertz
Gigabit	1 billion bits-per-second.
Glitch	General term used to describe an undesirable, momentary pulse or unexpected input or output.
Glitch Immunity	A term used in microprocessor supervisory circuit datasheets to describe the maximum magnitude and duration of a negative-going VCC supply-voltage pulse without causing the reset output to assert.
GLONASS	The Russian Global Navigation Satellite System
GMSK	Gaussian minimum shift keying (GMSK) is a form of frequency shift keying (FSK) used in GSM systems. The tone frequencies are separated by exactly half the bit rate. It has high spectral efficiency.
GMSL	Gigabit Multimedia Serial Link. This is a Maxim-specific category name for a range of products that serialize, deserialize, and buffer high-speed digital data streams for communications over short distances.
GPIB	General Purpose Interface Bus: A standard bus for controlling electronic instruments with a computer. Also called IEEE-488 bus because it is defined by ANSI/IEEE Standards 488-1978, and 488.2-1987. Also called HP-IB, a trademarked term of Hewlett-Packard, which invented the protocol.
GPIO	General Purpose I/O: A flexible parallel interface that allows a variety of custom connections.
GPON	Gigabit passive optical network
GPRS	General Packet Radio Service: A radio technology for GSM networks that adds packet-switching protocols and shorter set-up time for ISP connections; it offers the possibility to charge by amount of data sent rather than connect time.

GPS	Global Positioning System: A satellite- based navigation system in which two or more signals, received from satellites, are used to determine the receiver's position on the globe.
GSM	Global System for Mobile Communications: A land, mobile, pan-European, digital, cellular radio-communications system.
GSM900	GSM network operating in the 900MHz band, as used by BT Cellnet and Vodafone in the UK, and by more than one hundred countries around the world.
GUI	Graphical user interface
H	Henry(ries): The unit of inductance.
H-Bridge	A circuit diagram which resembles the letter "H." The load is the horizontal line, connected between two pairs of intersecting lines. It is very common in DC motor-drive applications where switches are used in the "vertical" branches of the "H" to control the direction of current flow, and thus the rotational direction of the motor.
Half-Duplex	Data transmission over a circuit capable of transmitting in either direction, but not simultaneously.
Half-Flash	An ADC architecture which uses a bank of comparators first to digitize the upper half bits, then uses a digital-to-analog converter (DAC) to subtract that voltage from the input, and then digitizes what remains of the input signal to get the lower half bits. Also see application note 748
Handover	Switching an on-going call to a different channel or cell in a wireless cellular network. Also known as "hand-off."
Harmonic Distortion	The presence of frequencies in the output of a device that are not present in the input signal, and are multiples of components of the input signal. Clipping is a common cause but other nonlinearities can also introduce harmonics.
HART	Highway Addressable Remote Transducer (HART) communication is a commonly used mode of transmission for digital signals that are superimposed on the analog signal of a 4-20mA current loop.

	The HART protocol is based on the phase continuous frequency shift keying (FSK) technique. Bit 0 is modulated to a 2200Hz sinusoidal signal, and bit 1 is modulated to a 1200Hz sinusoidal signal with a baud rate of 1200bps. These two frequencies can easily be superimposed on the analog current-loop signal, which is in the range of DC to 10Hz, without affecting either signal. This unique nature of the HART protocol enables simultaneous analog and digital communication on the same wire.
HAST	Highly accelerated stress test; highly accelerated steam and temperature
HB LED	High-Brightness LEDs are any of a new generation of LEDs bright enough for illumination applications such as automotive interior, exterior, and display; room and architectural illumination; task and general lighting; projection display; display backlights; and signage.
HBT	Heterojunction bipolar transistor
HD	Harmonic distortion
HDLC	High Level Data Link Control: An ITU-TSS link layer protocol standard for point-to-point and multi-point communications.
HDSL	High bit-rate Digital Subscriber Line: The oldest of the DSL technologies, it continues to be used by telephone companies deploying T1 lines at 1.5Mbps and requires two twisted pairs.
HDTV	High-definition television: an all-digital system for transmitting a TV signal with far greater resolution than the analog standards (PAL, NTSC, and SECAM). A high-definition television set can display several resolutions, (up to two million pixels versus a common television set's 360,000). HDTV offers other advantages such as greatly improved color encoding and the loss-free reproduction inherent in digital technologies.
Heat Sink	Mechanical device that is thermally-connected to a heat-producing electronic component, designed to conduct heat away from the device. Most heat sinks are aluminum and employ fins to increase surface area and encourage the transfer of heat to the ambient environment.
HEMT	High-electron-mobility transistor
HF	High frequency
HGLL	High gain, low linearity
Hi-Z	Hi-Z (or High-Z or high impedance) refers to an output signal state in which the signal is not being driven. The signal is left open, so that another output pin (e.g. elsewhere on a bus) can drive the signal or the signal level can be determined by a passive device (typically, a pull-up resistor).

High-Side	An element connected between the supply and the load. High-side current sensing applications measure current by looking at the voltage drop across a resistor placed between the supply and the load.
Home RF	Trademarked name for Home Radio Frequency, a networking technology which uses antennae and transmitters to provide wireless home networking via transmitted radio signals.
HomePlug	HomePlug (Powerline) is an industry-standard method for transmitting data via the power lines. It can transmit audio, video, control signals, etc. HomePlug is a trademark of the HomePlug Powerline Alliance; Powerline is the generic term for the method.
Hot-Swap	A power supply line controller which allows circuit boards or other devices to be removed and replaced while the system remains powered up. Hotswap devices typically protect against overvoltage, undervoltage, and inrush current that can cause faults, errors, and hardware damage.
HR	High reliability
HSDPA	High-Speed Downlink Packet Access (HSDPA) is a 3G radio interface standard in the HSPA family for wireless and cellular handsets or datacards that increase the datarate and improve the traffic handling of existing UMTS standards.
HSPA	High-Speed Packet Access (HSPA) is a collection of radio interface standards for wireless and cellular handsets or datacards that increase the datarate and improve the traffic handling of existing UMTS standards.
HSSI	High-Speed Serial Interface: A short-distance communications standard for data rates from 2Mbps to 52Mbps.
HSUPA	High-Speed Uplink Packet Access (HSUPA) is a 3G radio interface standard in the HSPA family for wireless and cellular handsets or datacards that increase the datarate and improve the traffic handling of existing UMTS standards.
HTML	Hyper Text Markup Language: Coding language used to create web pages.
HTS	High-temperature semiconductor
HTTP	Hyper Text Transport/transfer Protocol
Human Body Model	An ESD test method where the ESD generator consists of a 100pF capacitor and a 1.5kohm series resistor.

	See the following application notes that describe how ESD is generated, how it damages electronic systems, human body and machine models for testing, IEC compliance levels, and design approaches.
HVAC	Heating, Ventilation, and Air Conditioning: Industry term for the systems and technology responsible for the heating, ventilation, and air conditioning in buildings. HVAC systems regulate comfort (temperature and humidity), energy efficiency, and air quality.
Hz	Hertz: A measure of frequency. An older term is cycles per second, or cps.
I	See Ampere
I^2C	I^2C (pronounced "I-squared-C" and typeset as I^2C but often typed as I^2C) is short for "inter-IC bus." I^2C is a two-wire, low-speed, serial data connection IC bus used to run signals between integrated circuits, generally on the same board. SMBus^{TM} is electrically similar-see Comparing the IC Bus to the SMBus. For more information, do a site search for I^2C to find other I^2C articles and products.
I^2S	Inter-IC Sound (I^2S) is an electrical bus interface standard used for connecting digital audio devices. The IS bus separates clock and data signals, resulting in a very low-jitter connection. The bus consists of three lines: a clock line, a word-select line, and a multiplexed-data line.
I/O	Input/output
I/Q	1. I/Q modulation is a method for combining two channels of information into one signal so that they can be separated at a later stage. Two quadrature carriers, 90 degrees out of phase, are modulated, then combined. Abbreviated from "in-phase/quadrature-phase" which refers to the two carrier signals' phase relationship. 2. IQ (Q should be subscripted but sometimes printed as "IQ" without subscripting): Quiescent current: The current consumed when a circuit is in a quiet state, driving no load and if appropriate, with its inputs not cycling. 3. Intelligence quotient, a measure in which electrical engineers invariably excel.

IBO	Input Back-Off: In a power amplifier, a measure of how far you must reduce the input power in order to receive the desired output linearity and power. Stated differently, the ratio between the input power that delivers maximum power to the input power that delivers the desired linearity.
IC	1. Integrated circuit: A semiconductor device that combines multiple transistors and other components and interconnects on a single piece of semiconductor material. 2. Internally Connected
ICA	Integrated circuit accumulator
ICR	Internal calibration register
Ideality Factor	A constant adjustment factor used to correct for discrepancies between an ideal PN junction equation and a measured device.
Idle Mode^{TM}	A method for improving the efficiency of switching regulators by skipping pulses when the circuit is lightly loaded. This variation in PWM (pulse-width modulation) combines the efficiency at low loads afforded by PFM (Pulse-Frequency Modulation) with PWM's efficiency and low-noise characteristics at higher loads. At light loads the circuit skips pulses as necessary (acting like a PFM circuit). At higher loads it acts like PWM. The net result is the maximum efficiency over the widest possible load range. Learn more: "DC-DC Converter Tutorial" (see the paragraphs around Figure 14).
IEC	1. IEC stands for the International Electrotechnical Commission: An "organization that prepares and publishes international standards for all electrical, electronic and related technologies." 2. Commonly used to refer to one of the 13 power connectors described by specification IEC 60320. Most commonly refers to the C13 and C14 connectors used by most computers and many AC-powered electronic devices to connect the AC power. 3. Integrated electronic component.
IEEE	From www.ieee.org: "The IEEE (Eye-triple-E) is a non-profit, technical professional association of more than 360,000 individual members in approximately 175 countries. The full name is the Institute of Electrical and Electronics Engineers, Inc., although the organization is most popularly known and referred to by the letters I-E-E-E." IEEE also sponsors many electrical and electronic standards.

IERC	International Electronic Research Corp
IF	Intermediate Frequency: Radio communications systems modulate a carrier frequency with a baseband signal in order to achieve radio transmission. In many cases, the carrier is not modulated directly. Instead, a lower IF signal is modulated and processed. At a later circuit stage, the IF signal is converted up to the transmission frequency band.
IFM	ISDN file manager
IFT	Intermediate-frequency transform
IIP3	Third Order Input Intercept Point: The point at which the power in the third-order product and the fundamental tone intersect, when the amplifier is assumed to be linear. IIP3 is a very useful parameter to predict low-level intermodulation effects.
IMA	Inverse Multiplexing over ATM, an MGX card module that supports T3 or E3 inverse multiplexing on up to eight T1 or E1 lines.
Image Frequency	Receivers typically convert RF signals to a lower Intermediate Frequency (IF) for demodulation. In addition to the IF, a second signal, called the "image frequency" is often generated and filtered out.
Image Rejection	The measure of a receiver's ability to reject signals at its image frequency. It is normally expressed as the ratio, in dB, of the receiver's sensitivity at the desired frequency versus the sensitivity at the image frequency.
IMD	Intermodulation Distortion (IMD): When two signals mix in non-linear circuits or devices, new frequency components are created that are not in the original signal. The resulting signal error is called intermodulation distortion, or IMD.
Impedance	Impedance, represented by the symbol Z, is a measure of the opposition to electrical flow. It is measured in ohms. For DC systems, impedance and resistance are the same, defined as the voltage across an element divided by the current ($R = V/I$). In AC systems, the "reactance" enters the equation due to the frequency-dependent contributions of capacitance and inductance. Impedance in an AC system is still measured in ohms and represented by the equation $Z = V/I$, but V and I are frequency-dependent.

IMVP	Intel Mobile Voltage Positioning: A technology in which the processor voltage (VCC) is dynamically adjusted, based on the processor activity, to reduce processor power. It allows higher processor clock speed at a given power consumption; or lower consumption at a given clock frequency.
Inductive Kickback	The very rapid change in voltage across an inductor when current flow is interrupted. Snubber diodes are often used to channel this energy in relays, and other inductive loads. Kickback can be a problem (causing EMI and component failure); or it can be used in power supply circuits to develop higher or opposite-polarity voltages from a single supply.
InfiniBand	InfiniBand architecture is an industry standard, channel-based, switched-fabric, interconnect architecture for servers. InfiniBand architecture changes the way servers are built, deployed, and managed.
InGaAs	ndium gallium arsenide
Ingress Protection	An Ingress Protection (IP) rating indicates how well an enclosure is protected from penetration by contaminants such as dust or fluids (such as water). IP ratings are defined in the IEC standard 60529. See also: • iButton Certifications. • Understanding the IP (Ingress Protection) Ratings of iButton Data Loggers and Capsule
INL	Integral nonlinearity
Input CMVR (V)	Common-mode voltage range (CMVR) or Input Voltage Range (IVR): For signal processing devices with differential inputs, such as an op amp, CMVR is the range of common mode signal for which the amplifier's operation remains linear. If we let the voltage present on the "−−" input equal V1, and the voltage on the "+" input equal V2, then the common mode voltage is VCM = (V1+V2)/2.

	Some op amps, for instance, will only allow the common mode voltage of a signal to come within a diode drop or so of the power supply rails. Many of Maxim's op amps will allow the common mode input voltage to go all the way to one or both supply rails. Some even allow inputs beyond the supply rails (Beyond-The-Rails^{TM}).
Inrush Current	A momentary input current surge, measured during the initial turn-on of the power supply. This current reduces to a lower steady-state current once the input capacitors charge. Hotswap controllers or other forms of protection are often used to limit inrush current, because uncontrolled inrush can damage components, lower the available supply voltage to other circuits, and cause system errors.
Int. Ref.	Internal Reference. An on-chip voltage reference.
Integral Nonlinearity	A measure of a data converter's ability to adhere to an ideal slope in its transfer function. It can be specified using end-point or best-straight-line fit. Each of these approaches can yield very different numbers for the same data converter.
Integrated Heat Spreader	An Integrated Heat Spreader (IHS) is the surface used to make contact between a heatsink or other thermal solution and a CPU or GPU processor.
Intellectual Property	Intellectual Property: Creations of the intellect such as trade knowledge, technical information, and literary or artistic work, including patents, copyrights, and trademarks.
Interleave	To organize the data sectors on a computer hard disk, so the read/write heads can access information faster.
Intermodulation	A process whereby signals mix together in a circuit and nonlinearities in the circuit create undesired output frequencies that are not present at the input.
Internet Protocol	Standard method for data transfer used on the Internet. Also known as IP or TCP/IP.

Inverting Switching Regulator	A switch-mode voltage regulator in which output voltage is negative with respect to its input voltage. See application note 660, "Regulator topologies for battery-powered systems."
IO-Link	IO-Link is a 24-volt, three-wire, half-duplex, point-to-point sensor and actuator communication interface. Remote configuration, diagnostics, event triggering and process data readout are made possible from a PLC via a three layer protocol stack. IO-Link can be used for simple binary sensors and smart sensors.
IP3	Third-order intercept point
IR	Infrared: Light that has a frequency below the visible light spectrum, used for remote controls, line-of-sight wireless data, and night vision applications, among others.
IrDA	Infrared Data Association: A group of device manufacturers that developed a standard for transmitting data via infrared light waves.
IRE	Institute of Radio Engineers; IREs are units of measurement dividing the area from the bottom of sync to peak white level into 140 equal units. 140 IRE = 1VP-P
IRO	Input-referred offset
IRS	Interface register set
IRSA	Interface register set address
IRSD	Interface register set data
IS	IN SEL (control bit)
ISA	Industry-standard architecture
ISI	Inter-Symbol Interference: A form of interference that occurs when echoes of a radio-signal interfere with the original signal. ISI can reduce the effective data rate of wireless LAN transceivers.
ISM	Industrial, Scientific and Medical: Radio frequency bands made available for use by communication equipment without license, within certain maximum emitted power

	limits. Equipment which uses the ISM band must tolerate interference from other such equipment. Common uses include WiFi (802.11a, b, and g) and cordless phones.
ISO	International Standards Organization
ISP	Internet Service Provider: Company that offers connection to the Internet.
ITU	International Telecommunication Union: An international organization under the UN that is concerned with telecommunications.
Joule	Joule (abbreviated J): A measurement of energy or work. In mechanical systems, it's the a force of one newton, moving an object a distance of one meter. In electronics, it's the same amount of energy, in electrical units. One joule is one watt of power, applied for one second (a watt-second); or a coulomb of electrical charge raised to a potential of one volt.
JPEG	Joint Photography Experts Group; more commonly, files that are compressed using the JPEG standard.
JVM	Java virtual machine.

k	1. Kilo: Metric unit representing 1000. E.g.: 1kHz is a 1 kilohertz (1000 Hertz). Note that the k is always lowercase.
	
	   In digital systems, "K" or "k" is often used to mean 210, that is, 1024. This is not well-standardized but it's usually apparent from context. On the Maxim site, we use upper-case K to mean 1024 and lower-case k to mean 1000. This standard is applied to new documents but older documents may use "k".
	
	2. Kelvin: Temperature scale. Zero K is defined as absolute zero. 273.15K is 0 degrees C.
	
	   Note that temperatures on the kelvin scale are called kelvins, not "degrees kelvin." The K symbol is uppercase and used without a degree symbol. The word "kelvin" in this context is not capitalized.

kb	Kilobit(s)
Keep-Out Zone	The area on or near a CPU or GPU processor that the circuit board layout design can not use, due to thermal management components, cooling, and mounting constraints.
kg	Kilogram(s)

kHz	Kilohertz
km	Kilometer(s)
kVM	Keyboard Video Mouse: Defacto standard for the three cables used on a typical cpr: One for the keyboard; one for the monitor (video); one for the mouse. Also: A KVM switch is a switch box used to connect one KVM to multiple computers.
kW	Kilowatt (or kilowatts): 1000 watts.
kWh	Kilowatt hour(s)
L-Band	The group of radio frequencies extending from 390MHz to 1550MHz. The GPS carrier frequencies (1227.6MHz and 1575.42MHz) are in the L-band.
LAN	Local Area Network: A computer network, usually within one building, that connects computers, file and mail servers, storage, peripherals, and other devices in a way that permits data interchange and sharing of resources. Ethernet and WiFi (802.11) are common examples.
Laser Driver	An IC that supplies modulated current to a laser diode in response to an input serial-data stream.
LCC	1. Leadless Ceramic Chip Carrier or Leadless Chip Carrier: An IC package, usually ceramic, that has no leads (pins). It instead uses metal pads at its outer edge to make contact with the printed circuit board. Example: Maxim 20-pin LCC diagram (PDF) 2. Leaded Chip Carrier, also called PLCC or Plastic Leaded Chip Carrier: A square surface mount chip package in plastic with leads (pins) on all four sides. Example: Maxim 20-pin PLCC diagram (PDF)
LCD	Liquid-crystal display
LDO	Low Drop Out: A linear voltage regulator that will operate even when the input voltage barely exceeds the desired output voltage.
Leakage Inductance	Leakage inductance in a transformer is an inductive component that results from the imperfect magnetic linking of one winding to another.

	In an ideal transformer, 100% of the energy is magnetically coupled from the primary to the secondary windings. Imperfect coupling reduces the signal induced in the secondary windings. The electrical equivalent is some self-inductance in series with the primary windings that are properly coupled. This series inductance is the "leakage inductance."
LED	Light-Emitting Diode: A semiconductor device that emits light (usually visible or infrared) when forward-biased.
Level Translator	A device which translates a logic signal from one type to another, for example, ECL to TTL.
LFSR	Linear Feedback Shift Register: A shift register in which some of its outputs are connected to the input through some logic gates (typically, an exclusive-or (XOR). A wide variety of bit patterns can be generated inexpensively, including pseudo-random sequences. Can be used as a noise generator.
LGHL	Low gain, high linearity
LIN	Local Interconnect Network (LIN): Defined by the LIN-BUS consortium, a LIN is a low data-rate, single-wire communications system, used in automotive and heavy vehicle applications.
Line Regulation	The ability of a power-supply voltage regulator to maintain its output voltage despite variations in its input voltage.
Linear	1. Having the property that the output is proportional to the input. E.g.: $$VOUT = k*VIN$$ where k is a constant. 2. Analog; as in a "linear" circuit (as opposed to digital).
Linear Mode	Uses a linear-pass element (BJT or FET) to control/regulate the charging voltage/current.
Linear Regulator	A voltage regulator that is placed between a supply and the load and provides a constant voltage by varying its effective resistance.
Lithium batteries	Lithium batteries for low-power, high-reliability, long-life applications such as non-volatile memory and timekeeping (typically in coin-shaped cells) use a variety of lithium-based chemistries (as differentiated from lithium-ion).

	Maxim NV SRAM and timekeeping products use mostly BR chemistry (poly-carbonmonofluoride) primary (non-rechargeable) lithium coin cells. We use CR chemistry (manganese dioxide) primary lithium coin cells in microcontroller and touch products. Some new products use "manganese lithium" (ML) chemistry, which is chemically close to the CR, but is a secondary (rechargeable) lithium coin cell.
Lithium-ion batteries	Lithium and lithium-ion: A number of battery chemistries are based on the element lithium, a highly-reactive metallic element. Lithium-based batteries are common in two applications: Power for portable equipment such as cell phones, laptops, and MP3 players; and low-power, long-life applications such as powering memory elements and clocks. Lithium-ion (Li+, Li-Ion, Lion) cells are generally used as power sources for portable equipment. They are usually rechargeable. Lithium-ion and nickel-metal-hydride (NiMH) have displaced nickel-cadmium (NiCd or nicad) as the dominant rechargeable chemistry for portable applications. Maxim makes a wide range of battery management products for all these families, including chargers, fuel gauges, and smart battery components. Lithium batteries are typically coin-shaped and are used to power items such as Maxim's non-volatile static RAM (NV SRAM) and timekeeping circuits (such as real-time clocks).
LL	Local loopback
Lm	Lumen(s)
Lm/W	Lumen(s) per watt
LMDS	Local Multipoint Distribution Service: A broadband radio service, located in the 28GHz and 31GHz bands, designed to provide two-way transmission of voice, high-speed data and video (wireless cable TV). In the U.S., FCC rules prohibit incumbent local exchange carriers and cable-TV companies from offering in-region LMDS.
LNA	Low noise amplifier. Typical use: The first stage of a satellite receiver.
LO	Local oscillator

Load Regulation	Load regulation refers to circuitry that compensates for changes in load. Most commonly: Circuits that keep voltage constant as load varies.
Local Temperature	The temperature measured on the die of the temperature-measuring integrated circuit.
Local Temperature Sensor	An element or function of an integrated circuit that measures its own die temperature.
LOL	Loss of lock
Long Haul	A network that spans distances larger than a local area network (LAN). Because electrical and optical transmissions fade over distance, long-haul networks are difficult and expensive to implement.
Long Term Evolution	LTE (Long Term Evolution) is a high-speed mobile communications cellular standard developed by the 3rd Generation Partnership Project (3GPP). LTE is an evolution of GSM/UMTS standards.
LOP	Loss of power
LOS	Loss of signal
Low Batt. Det.	Low battery detector
Low Line O/P	Low line output
Low-Side	An element connected between the load and ground. Low-side current sensing applications measure current by looking at the voltage drop across a resistor placed between the load and ground.
LSB	Least-significant bit. In a binary number, the LSB is the least weighted bit in the number. Typically, binary numbers are written with the MSB in the left-most position; the LSB is the furthest-right bit.
LSI	Large-scale integration (LSI).
Luminance	1. The emitted light, projected per unit area, measured in cd/m^2 (candela per square meter). Often incorrectly equated with "brightness". 2. The black and white portion of a video signal, also referred to as the "Y" component. A composite, Y/C, or Y/Pb/Pr video signal combines a luminance signal with color components.

LVC	Lowest voltage clamp
LVDS	Low Voltage Differential Signaling
LVECL	Low Voltage Emitter Coupled Logic
LVPECL	Low Voltage Positive Emitter Coupled Logic
LVS	Layout versus schematic
LVTTL	Low Voltage Transistor-Transistor Logic
M2M	Machine-to-machine or machine-to-mobile communications, via wireless technologies such as cell phone network technologies, WLAN, Bluetooth, and RFID (radio frequency identification). Applications include automatic meter reading, fleet management, vending, monitoring and control, security and alarms, and telemedicine.
mA	Milliampere, or milliamp: 1/1000 of an Ampere. Ampere is the basic unit for measuring electrical current.
MAC Address	Media Access Control Address (maca, MAC): A hardware address that uniquely identifies each node of a network, as in IEEE-802 (Ethernet) networks. The MAC layer interfaces directly with the network medium.
Manchester Data Encoding	Manchester encoding is a form of binary phase-shift keying (BPSK) that has gained wide acceptance as a modulation scheme for low-cost radio-frequency (RF) transmission of digital data. Its key characteristic is that it encodes data in a way that insures there will never be long strings of continuous zeros or ones. The guaranteed transitions means that the clock can be derived from the transmitted data, allowing the link to function with variable signal strengths from transmitters with imprecise, low-cost, data-rate clocks.
MAP	Manifold absolute pressure
Margining	Margining is a test procedure that determines the "safety margin." A parameter is varied to determine the device's sensitivity or ability to perform given a range of inputs. A large number of parts can be characterized to determine a safe range for the specification, to guarantee performance and yield.

Max. DNL (LSB)	Maximum differential nonlinearly expressed in least significant bit(s).
Max. Hold Step (MV)	When switching between sample mode and hold mode, charge injection from stray capacitance causes the maximum voltage of the hold capacitor to change.
Max. INL as percent FSR	"Max. INL ($\pm$%FSR)" is the maximum integral nonlinearity, expressed as a percentage of full-scale range.
MAXTON	Maximum time-on
MBB	Make-before-break: In a switching device, a configuration in which the new connection path is established before the previous contacts are opened. This prevents the switched path from ever seeing an open circuit. Applies to mechanical systems (e.g. that use relays or manual switches) and to solid-state analog multiplexers and switches.
MBC	Main booster converter
MC	Multicommunicator
MCM	1. Multi-Chip Module (MCM): An integrated circuit package that contains two or more interconnected chips. 2. MCM is an abbreviation for thousands of circular mils, an old measurement of wire gauge. 1 MCM = 1 kcmil = 0.5067 square milimeters. A mil is 1/1000 inch. A wire 200 mils in diameter is 40 MCM. MCM is generally used for very large-diameter wire. Most wire uses AWG. 3. MCM is also used for 'million cubic meters."
Mcps	1. Megacycles per second (obsolete): Megahertz 2. Megachips per Second (Mcps): In a Direct-Sequence Spread Spectrum signal, a "chip" is an encoding element. Mcps is a measure of the speed at which chips can be generated by a circuit.

MDAC	Multiplying digital-to-analog converter
Media Independent Interface	A parallel digital bus used for 10Mbps and 100Mbps Ethernet.
MegaBaud	RS-232 logic-level compatible data rates that are 1Mbps or higher.
MEMS	Acronym for "Micro Electronic Mechanical Systems," or microelectromechanical systems: Systems that combine mechanical and electrical components and are fabricated using semiconductor fabrication techniques. Common examples are pressure and acceleration sensors which combine the sensor and amplification or conditioning circuitry. Other applications include switches, valves, and waveguides.
MESFET	A Metal-Semiconductor Field-Effect-Transistor uses a metal-semiconductor (Schottky) junction to create the conductive channel, rather than using a p-n junction as a JFET does; or a metal-oxide-semiconductor layer as a MOSFET uses.
Metal Oxide Varistor	A Metal Oxide Varistor (MOV, or surge-suppressor) is a discrete electronic component that diverts excessive voltage to the ground and/or neutral lines.
MFSK	Multiple frequency-shift keying
MHz	Megahertz (MHz): Measurement of frequency – million cycles per second.
Micro Energy Cell	A Micro Energy Cell (MEC) is a small, rechargeable, very long life, energy storage device used in energy harvesting applications. An example is the THINERGY ®MEC from Infinite Power Solutions.
MicroLAN	A 1-Wire network. A low-cost network in which PCs or microcontrollers communicate digitally over twisted-pair cable using 1-Wire components.
MicroMonitor	A device that monitors three conditions vital to processor-controlled systems: power supply, software execution, and external override.

Microprocessor Supervisor	A device that monitors a host microprocessor or microcontroller's supply voltage and, in some cases, its activity. It monitors for a fault condition and takes appropriate action, usually issuing a reset to the microprocessor.
MIMO	A Multiple Input, Multiple Output (MIMO) system has multiple antennas and multiple radios. It takes advantage of multipath effects, where a transmitted signal arrives at the receiver through a number of different paths. Each path can have a different time delay, and the result is that multiple instances of a single transmitted symbol arrive at the receiver at different times. Usually multipath is a source of interference, but MIMO systems use the fact that data will arrive at the receiver at different times through different paths to improve the quality of the data link. For example, rather than relying on a single antenna path to receive an entire message, the message can be pieced together based on fragments received at the various antennas. This can act to either increase the data rate at a given range, or increase system range for a given data rate. MIMO is used in the implementation of the 802.11n standard.
Min Stable Closed Loop Gain	The minimum closed-loop gain for which the amplifier is stable.
MISI	Master-in, slave-out isolated input
MISO	Master-in, slave-out isolated output
mm	Millimeter(s)
MMI	Man-machine interface
Monotonic	A sequence increases monotonically if for every n, Pn + 1 is greater than or equal to Pn. Similarly, a sequence decreases monotonically if for every n, Pn + 1 is less than or equal to Pn. In plain language, the value rises and never falls; or it falls and never rises.

MOSFET	Metal-oxide semiconductor field-effect transistor; metal-oxide silicon field-effect transmitter. In a MOSFET, the conductive channel between the drain and source contacts is controlled by a metal gate separated from the channel by a very thin insulating layer of oxide. The gate voltage establishes a field that allows or blocks current flow. Compare to a JFET, in which a p-n junction controls the channel; or a MESFET, which uses a metal-semiconductor (Schottky) junction.
MOSI	Master Out Slave In: One of the four Serial Peripheral Interface (SPI) pins.
MPU	Microprocessing unit
MPW	Multiproject wafer
MQFP	Metric quad flat pack
mrad	Milliradian(s)
ms	Millisecond(s)
MSA	Measurement Systems Analysis is a method for ensuring product test measurements are reliable, robust, and of good statistical merit.
MSB	Most-significant bit. In a binary number, the MSB is the most weighted bit in the number. Typically, binary numbers are written with the MSB in the left-most position; the LSB is the furthest-right bit.
Msps	Megasamples per second: A measure of speed in digitizing systems, samples per second dictates the maximum frequencies that can be accurately captured.
MTIMD	Multitone intermodulation distortion
MTPR	Multitone power ratio
Multipath	In radio transmission, multipath refers to the simultaneous reception of two copies of the signal, that arrive via separate paths with different delays. A common example is when a signal bounces off a building or other object and is received along with the direct (unbounced) signal. In television reception, this causes "ghosting" – one sees a faded echo on the screen horizontally displaced from the main image. Another common example is in radio (especially AM radio), where the signal bounces off the ionosphere and one receives that delayed signal along with the directly transmitted signal. Usually, multipath is an undesired effect but in MIMO systems, separate antennas deliberately send replicas and sophisticated receivers piece together the fragments to improve performance.

Multiplex	
	1. Combining two signals (which can be analog or a digital stream) into one in such a way that they can later be separated. Examples are OFDM; standard FM stereo broadcast (in which left and right are multiplexed onto one baseband signal); standard television in which video and several audio signals shared the channel; and time-division multiplexing which gives each signal a separate time-slice. 2. An array of analog switches, usually on a single CMOS chip, that allows one input signal to be routed to any of several output lines, depending on the value of a set of digital control lines. A multiplexer can also be used in the opposite direction, allowing the array to connect one of several input lines to the output, depending on the control lines. Several of these can be implemented on one chip to make a multi-channel version.
Murphy's Law	Anything that can go wrong, will.
mV	A millivolt (mV) is 1/1000 of a volt.
mW	Milliwatt(s)
MW	Megawatt(s)
MxTNI	MxTNI^{TM} (Maxim Tiny Network Interface, formerly called TINI) is Maxim's trademark for the industry's smallest web server. The MxTNI platform consists of a microcontroller that includes the facilities necessary to connect to the Internet. The platform is a combination of broad based I/O, a full TCP/IP stack and an extensible Java runtime environment that simplifies development of network-connected equipment.
Nanovolt	Nanovolt (nV): Unit of measure. A billionth of a volt.
NC	Normally closed (switch contacts)
NF	Noise figure
NIC	Network interface card
NiMH	Nickel metal hydride: A rechargeable-battery technology.
NMI	Nonmaskable interrupt
nMOS	An n-channel metal-oxide semiconductor (nMOS) transistor is one in which n-type dopants are used in the gate region (the "channel"). A positive voltage on the gate turns the device on.

NO	Normally open (Switch contact)
Nonvolatile	Nonvolatile (NV) RAM is memory which retains its stored value when power is removed.
NPR	Noise-power ratio
NRD	Nonradiative dielectric
NRE	Nonrecurring engineering - one-time engineering costs associated with a project.
NRZ	Non Return to Zero: A binary encoding scheme in which ones and zeroes are represented by opposite and alternating high and low voltages, and where there is no return to a zero (reference) voltage between encoded bits. That is, the stream has only two values: low and high.
ns	Nanosecond(s)
NTC	Negative temperature coefficient
nth	A tiny, tiny amount. Pronounced "enth." From 1/n, which is one "nth."
NV-S	Nanovolt seconds
nW	Nanowatt(s)
Nyquist	In A/D conversion, the Nyquist principle (derived from the Nyquist-Shannon sampling theorem) states that the sampling rate must be at least twice the maximum bandwidth of the analog signal in order to allow the signal to be reproduced. The maximum bandwidth of the signal (half the sampling rate) is commonly called the Nyquist frequency (or Shannon sampling frequency). In real life, sampling rate must be higher than that (because filters are not perfect). As an example, the bandwidth of a standard audio CD is a bit shy of the theoretical maximum of 22.05kHz (based on the sample rate of 44.1kHz).
OEM	Original equipment manufacturer
OFC	Open fiber control
Open-drain	An open-drain or open-collector output pin is driven by a single transistor, which pulls the pin to only one voltage (generally, to ground). When the output device is off, the pin is left floating (open, or hi-z). A common example is an n-channel transistor which pulls the signal to ground when the transistor is on or leaves it open when the transistor is off. Open-drain refers to such a circuit implemented in FET technologies because the transistor's drain terminal is connected to the output; open-collector means a bipolar transistor's collector is performing the function.

	When the transistor is off, the signal can be driven by another device or it can be pulled up or down by a resistor. The resistor prevents an undefined, floating state. (See the related term, hi-z.)
OR	Combining two signals so that the output is on if either signal is present. This can be accomplished by an OR logic gate (two inputs, one output which is high if either input is). It can also be done with a "wired-OR" connection in which two signals are simply wired together and either one of them can raise the level. This works when the signals are driven by a source that only pulls up or only pulls down, with a resistive load (e.g. an "open collector" output).
Output to Input Ratio	The ratio between the sensed current and the output current of the amplifier.
Overvoltage Protection	Overvoltage Protector (OVP) refers to a circuit that protects downstream circuitry from damage due to excessive voltage. An OVP monitors the DC voltage coming from an external power source, such as an off-line power supply or a battery, and protects the rest of the connected circuitry using one of two methods: a crowbar clamp circuit or a series-connected switch. The crowbar short-circuits or clamps the supply line to limit the voltage, possibly triggering other forms of protection such as a fuse. The series-connected switch uses a MOSFET or transistor connected as a switch in series with the supply line. During an overvoltage condition, the OVP circuit rapidly shuts off the MOSFET and disconnects the downstream circuit.
P-P	Peak-to-peak
pA	Picoampere(s)
PA	Power amplifier: An amplifier used to drive significant power levels. An audio amplifier that drives a loudspeaker and the final stage of a transmitter are common examples.
PAE	Power-added efficiency

PAL	Phase alternate line: A television standard used in most of Europe. Similar to NTSC, but uses subcarrier phase alternation to reduce the sensitivity to phase errors that would be displayed as color errors. Commonly used with 626-line, 50Hz scanning systems, with a subcarrier frequency of 4.43362MHz.
Parallel Interface	A parallel interface (as distinguished from a serial interface) is one in which data is sent on several wires (or several wireless channels) at once. Examples: GPIB, byte-wide parallel interfaces to data converters, memory and data buses on computer boards and backplanes. In contrast, a serial interface uses one wire or wire-pair or wireless channel (or one in each direction).
Parasite Power	The device derives its supply power directly from the serial interface (1-Wire).
Partition Locking	The ability to lockout writes and/or reads to certain sections of the memory.
PBC	Port bypass circuit
pC	1. pC: Picocoulomb(s), a unit of electrical charge. 2. PC: Printed circuit. 3. PC: Personal Computer.
PC Card	Add-in cards that conform to the PC Card specification (formerly called PCMCIA). A PC Card is a removable device, approximately the size of a credit card, designed to plug into a matching slot.
PCI	Peripheral Component Interconnect: A standard interface used primarily on computer backplanes to connect interface cards and peripheral devices to the processor bus. PCI is often used for video display cards, network interfaces (e.g. Ethernet), and peripheral interfaces such as SCSI or USB. PCI buses typically also support the older Industry Standard Architecture (ISA) standard.
PCM	Pulse-Code Modulation (PCM) is the conversion of an analog signal (e.g. audio) into digital, binary (0 or 1), coded pulses, decreasing noise susceptibility. PAM, PFM and PWM are examples of PCM methods.

PCMCIA	Personal Computer Memory Card International Association: A standard for miniaturized laptop expansion cards for modems, storage, and other devices. The standard was officially renamed "PC card."
PCS	Personal Communications Service: An American generic term for a mass-market mobile phone service, emphasizing personal communication, independent of the technology used to provide it. PCS includes such digital cellular technologies as GSM 1900, CDMA and TDMA IS-136. 2G, CDMA, Digital, GSM, TDMA.
PDC	Personal Digital Cellular: The digital wireless standard used in Japan. PDC uses TDMA air interface.
PDI	Phase-detector input
PDJ	Pattern-dependent jitter
PDM	Pulse density modulation
PDO	Phase-detector output
Peak Inverse Voltage	Peak Inverse Voltage (PIV) or Peak Reverse Voltage (PRV) refer to the maximum voltage a diode or other device can withstand in the reverse-biased direction before breakdown. Also may be called Reverse Breakdown Voltage. Note that PIV is also an abbreviation for FIPS 201 Personal Identity Verification.
PECL	Positive-referenced emitter-coupled logic
pF	Picofarad. A Farad is the unit of capacitance. A pF is 10-12 of a Farad. (1000pF = 1nF, 1000nF = 1 microfarad).
PFD	Phase/frequency detector
PFI	Power-fail input
PFM	Pulse-Frequency Modulation: A pulse modulation technique in which the frequency is varied with the input signal amplitude. The duty cycle of the modulated signal does not change. Because it is always a square wave with changing frequency, PFM is also referred to as square-wave FM.
PFMEA	Process Failure Mode and Effects Analysis (PFMEA): A methodology for assessing the weaknesses of production processes and the potential effects of process failures on the product being produced.
PFO	Power-fail output

PG	Power-good; power gain
PGA	Programmable Gain Amplifier: An amplifier whose gain can be varied by a separate input (usually a digital value).
PKI	Public Key Infrastructure: A combination of standards, protocols, and software that creates, edits, and revokes digital public key certificates.
PLA	Programmable logic array
PLC	A Programmable Logic Controller (PLC, or Programmable Controller) is a ruggedized, microprocessor-based system which provides factory or plant automation by monitoring sensors and controlling actuators in real time.
PLCC	Leaded Chip Carrier, also called PLCC or Plastic Leaded Chip Carrier: A square surface mount chip package in plastic with leads (pins) on all four sides.
PLL	A phase-locked loop (PLL, or phase lock loop) is a control system that generates a signal that has a fixed relation to the phase of a "reference" signal. A phase-locked loop circuit responds to both the frequency and the phase of the input signals, automatically raising or lowering the frequency of a controlled oscillator until it is matched to the reference in both frequency and phase. Phase-locked loops are widely used in radio, telecommunications, computers and other electronic applications. They may generate stable frequencies, recover a signal from a noisy communication channel, or distribute clock timing pulses in digital logic designs such as microprocessors.
PLM	Pad limiting metal
PMIC	Power Management Integrated Circuit: Circuits used to regulate and control power.
PMM	Power-management mode
Pmod	Pmods™ are small I/O interface boards used to extend the capabilities of FPGA/CPLD and embedded control boards. Pmods communicate with system boards using 6- or 12-pin connectors. Pmod is the trademark of Digilent Inc.
pMOS	A p-channel metal-oxide semiconductor (pMOS) transistor is one in which p-type dopants are used in the gate region (the "channel"). A negative voltage on the gate turns the device on.
PMR	Private Mobile Radio: Radio bands generally for use within a defined user group, such as the emergency services or by the employees of a mining project.

PoE	Power-over-Ethernet: A means for delivering power to a remote device using the same cable lines used to deliver Ethernet data.
Point-of-Load	Point-of-load (POL) power supplies solve the challenge of high peak current demands and low noise margins, required by high-performance semiconductors such as microcontrollers or ASICs, by placing individual power supply regulators (linear or DC-DC) close to their point of use.
PON	Passive optical network: A cost-effective way to provide high performance Fiber to the Home (FTTH) connectivity via shared optical fiber. PON connects up to 32 (or more) homes on the same network using passive optical components (splitters).
POP Analysis	Periodic Operating Point (POP) Analysis is a simulation technique (used by EE-Sim) to find the steady state operation condition of a switching power supply design. One conversion cycle is run in the time domain. The inductor currents and capacitor voltages at the beginning of that cycle are compared to the inductor currents and capacitor voltages at the end of that cycle. When the difference has been driven below 10-9, the steady state conditions are identified and POP Anaylsis ends.
Potentiometer	Variable resistor in which a wiper sweeps from one end of the resistive element to the other, resulting in resistance that is proportional to the wiper's position.
Power Added Efficiency	In an RF power amplifier, power added efficiency (PAE) is defined as the ratio of the difference of the output and input signal power to the DC power consumed. In other words: PAE = (PRFOUT - PRFIN)/PDC = (PRFOUT - PRFIN)/(VDC*IDC)
Power Fail	A feature in a microprocessor supervisory circuit that provides early warning to the microprocessor of imminent power failure.

PowerCap	A special surface-mount package with access to the internal cavity via an openable top. This packaging scheme allows easy upgrade of NV RAMs without having to change the PCB hardware layout. The user can simply open the lid and swap out the IC.
PPAP	Production Part Approval Process. Used by automotive industry for acceptance of new products for release and use on automobiles.
PRBS	Pseudorandom binary (bit) sequence
PRC	Parasitic resistance cancellation
PRCM	Parasitic resistance cancellation mode
Pre-Bias Soft Start	A power-supply feature that prevents discharging of the output capacitor when the power supply starts up. Discharging the output capacitor could create either start up oscillation problems at cold start or large voltage disturbances on the output voltage bus at hot plug-in. Pre-bias soft start is an important feature in redundant power-supply systems, parallel power supply modules, battery back-up voltage buses, and other applications where multiple power sources supply one node.
Preemphasis	In some transmission and recording systems (e.g. vinyl records, FM radio, analog magnetic tape), there is more noise at higher frequencies. To offset this, the audio signal is "preemphasized" at the transmitter – filtered with a high-pass filter to boost the higher audio frequencies. A matching low-pass filter is used at the receiver to return to an overall flat audio-frequency response. The filter at the receiver reduces the high-frequency noise introduced by the transmission process.
Pressure Cooker Test	A Pressure Cooker Test (PCT) tests a part under high temperature, humidity, and pressure conditions. Also called an Autoclave Test or Pressure Pot Test (PPOT).
Printed Circuit Board	A printed circuit board, or PC board, or PCB, is a non-conductive material with conductive lines printed or etched. Electronic components are mounted on the board and the traces connect the components together to form a working circuit or assembly.

	A PC board can have conductors on one side or two sides and can be multi-layer - a sandwich with many layers of conductors, each separated by insulating layers. The most common circuit boards are made of plastic or glass-fiber and resin composites and use copper traces, but a wide variety of other materials may be used. Most PCBs are flat and rigid but flexible substrates can allow boards to fit in convoluted spaces. Components are mounted via SMD (surface-mount) or through-hole methods.
PROFIBUS	Vendor-independent open fieldbus standard used in manufacturing, building automation, and process control. Utilizes a nonpowered two-wire (RS-485) network. PROFIBUS is standardized under the European Fieldbus Standard EN 50 170. It includes three versions: FMS, DP, and PA.
PROM	Programmable read-only memory
PRT	Platinum Resistance Thermometer, a resistance temperature device (RTD).
PS	Power sense
PSD	Preamble-switched diversity
PSK	Phase-shift keying (PSK): A modulation technique in which the phase of the carrier conveys the input signal's information.
PSR	Power-supply rejection
PSRR	Power Supply Rejection Ratio (PSRR) is the ability of an amplifier to maintain its output voltage as its DC power-supply voltage is varied. PSRR = (change in Vcc)/(change in Vout) See also: Ripple rejection, which is degree of immunity from AC in the power supply.
PSW	Program status word
PTC	Positive Temperature Coefficient (PTC): When the resistance of a component rises with temperature, it is said to have a positive temperature coefficient. Example: Hewlett-Packard's first commercial product, an audio oscillator, used a common light bulb as a PTC element in the feedback circuit to maintain constant output amplitude regardless of frequency.

Pulse-Amplitude Modulation	Pulse-Amplitude Modulation (PAM) is a pulse modulation technique in which the amplitude of the pulse is varied with the input signal amplitude.
Push-Pull	An output structure which uses one active device to source current and a second device to sink current. Common examples are: a CMOS stage in which an n-channel device pulls toward ground or a negative supply and a p-channel device pushes current to bring the output up; an output stage in an audio amplifier with an NPN and PNP device in totem-pole configuration.
PV-S	Picovolt second(s)
PVR	Personal video recorder
PWD	Pulse-width distortion
PWM	1. A method for using pulse width to encode or modulate a signal. The width of each pulse is a function of the amplitude of the signal. 2. A technique used to modulate the power delivered to a load. In DC-DC switching regulators, the pulse width driving the main power switch (and hence, the duty cycle) is varied to maintain the desired output voltage. In DC motor-control applications, pulse width is used to vary motor speed.
PWM Temperature Sensor	Temperature sensor with digital, logic-level output. The output has a fixed frequency and the duty cycle varies with the measured temperature.
Q Factor	A measure of the quality of a resonant (tank) circuit. A "high-Q" circuit has mostly reactive components (inductive and capacitive), with low resistance. It resonates strongly, with little

	damping (low loss). A high-Q circuit will have low bandwidth relative to its center frequency (that is, it will have a narrow bandwidth vs frequency curve). $Q = 2\pi \times$ (Energy stored / Energy dissipated per cycle)
QAM	Quadrature Amplitude Modulation: A modulation method in which two signals are used to amplitude-modulate two carriers that are in quadrature (90 degrees out of phase with each other). The two modulated signals are combined. A common application is in PAL and NTSC color television transmission. Color is encoded into two analog signals (called I and Q), which modulate quadrature color carriers. Modems also use this approach, to increase the data bandwidth they can carry (or, more accurately, to trade bandwidth for error rate or noise immunity).
QFN	"Quad, flat, no-lead" package.
QFP	Quad flat pack, a package type.
QPSK	Quadrature Phase Shift Keying (QPSK) is a form of Phase Shift Keying in which two bits are modulated at once, selecting one of four possible carrier phase shifts (0, 90, 180, or 270 degrees). QPSK allows the signal to carry twice as much information as ordinary PSK using the same bandwidth. QPSK is used for satellite transmission of MPEG2 video, cable modems, videoconferencing, cellular phone systems, and other forms of digital communication over an RF carrier.
QRSS	Quasi-random signal source
QSOP	Quarter small-outline package
Quadrature	The relation between two waves of the same frequency, but one-quarter of a cycle ($90°$) out of phase.
Quantization	A process whereby the continuous range of input-signal values is divided into nonoverlapping subranges. Each of these subranges has a discrete value of the output uniquely assigned. Once a signal value falls within a given subrange, the output provides the corresponding discrete value.
QuERC	Software that examines bias and transient simulation output and flags devices operating above limits. Querc is supplied by Maxim to ASIC customers.
Quiescent	For an electronic circuit, a quiet state in which the circuit is driving no load and its inputs are not cycling. Most commonly used for the specification "quiescent current," the current consumed by a circuit when it in a quiescent state.

R-2R	1. Short for R-2R ladder: A method for D/A conversion which employs a ladder-shaped resistor array composed of two resistor values: R and 2R. Each bit in the digital input switches a ladder's rungs in and out of the network to change the output voltage by an amount proportional to the significance of the bit. 2. Rail-to-rail
RAID	Redundant Array of Independent Disks: A redundant array of inexpensive disks. RAID is a performance-enhancing method of storing the same data in different places on multiple hard disks to achieve speed and/or data redundancy.
RAM	Random access memory
RAR	Remaining active runtime (min)
RC	Resistance-capacitance; resistor-capacitor. In particular, an RC network is a network composed of resistors and capacitors in a series-parallel combination, usually to filter or delay a signal.
RE	Remaining energy (joules)
Receiver	A circuit that accepts signals from a transmission medium (which can be wireless or wired) and decodes or translates them into a form that can drive local circuits. Examples: • A radio receiver that detects and demodulates the signal from the airwaves • An ultrasonic receiver that turns ultrasound signals into electrical signals • A line receiver that receives signals from a wire or backplane • A standard interface receiver (e.g., USB, serial, LVDS) • A fiber optic device that translates light pulses into electrical signals
Recovery Time	The time for a sensor to return to baseline value after the step removal of the measured variable. Usually specified as time to fall to 10% of final value after step removal of measured variable.

REF	REF is a term that appears on IC package drawings in reference to dimensions. It stands for REFERENCE and indicates that this is a reference dimension, calculated or based on another dimension. For example, the dimension from the first pin to the last pin in the row of a DIP (dual inline package) usually is tagged as REF because it is a multiple of the distance from pin-to-pin. In the case of a 16-pin DIP, the first pin to last pin dimension is 7 times the pin-to-pin dimension (7 spaces between 8 pins).
Relay	A relay is an electromagnetic switching device consisting of an armature which is moved by an electromagnet to operate one or more switch contacts. Some advantages of relays are that they provide amplification and isolation and are straightforward. They can switch difficult voltages (e.g. RF or high-powered AC) with complete isolation and no worries about level translation. Relay disadvantages, compared to solid-state switching, include power efficiency, noise (both mechanical and electrical, including "contact bounce"), size, speed, and reliability. Analog switches are commonly used instead of relays in signal switching applications. Driving a relay can be tricky because it's an inductive load. Special relay drivers are often used. Contact bounce is another issue. Search the Maxim site for the term "relay" to see application notes on relay driving and for relay driving products.
Remote Temperature	Temperature at a location other than at the die of the temperature-measuring integrated circuit.
Remote Temperature Sensor	A remotely located PN junction used as a temperature sensing device, usually located on an integrated circuit other than the one doing the measurement.

Resistance	Resistance, represented by the symbol R and measured in ohms, is a measure of the opposition to electrical flow in DC systems. Resistance is the voltage across an element divided by the current ($R = V/I$).
Resonant Circuit	A resonant, or tuned, circuit combines an inductor and capacitor (or mechanical equivalents such as a crystal or MEMS oscillator) to make a circuit that is responsive to a frequency. Depending on the configuration, the circuit can have a high or low impedance at the resonant frequency and operate as bandpass or band stop filter, or an oscillator. It may be called an LC or LRC circuit because of the inductive (L), resistive (R), and capacitive (C) components used. An older name is "tank circuit," because its operation is analogous to a tank in a fluid system, in which the dimensions of the tank define the natural frequency observed when fluid is pulsed through the tank.
Response Time	The time for a sensor to respond from no load to a step change in load. Usually specified as time to rise to 90% of final value, measured from onset of step input change in measured variable.
Reverse Recovery Time	When switching from the conducting to the blocking state, a diode or rectifier has stored charge that must first be discharged before the diode blocks reverse current. This discharge takes a finite amount of time known as the Reverse Recovery Time, or trr. During this time, diode current may flow in the reverse direction.
RF	Radio Frequency: An AC signal of high enough frequency to be used for wireless communications.
RFID	Radio Frequency Identification: A method for uniquely identifying an object using a tag or module that carries a unique ID number, or code. Identification can be made using wireless (RF, or radio-wave) connection, meaning no line-of-sight or physical contact is needed. There are many different ways to achieve RFID and many applications including pet ID, identification of parts on an assembly line, tracking goods in manufacturing or retail settings, etc.

RFDS	Radio frequency design system
RFI	Radio Frequency Interference: Unwanted noise from RF sources.
RFPF	Positive reference
RH	Relative humidity
RI	Reference input; ring indicate
RIAA	Recording Industry Association of America
Ripple Rejection	Ripple Rejection is the ability of an amplifier to maintain accurate output voltage despite AC fluctuations in the power supply.
RISC	Reduced instruction set computer (RISC): Computer hardware designed to support a short list of simple instructions. This makes the hardware simpler and faster, since it does not need to accommodate complex instructions. Although more instructions must be executed for some operations, a RISC architecture can be faster, depending on the instruction mix, the design of the instruction set, and how effective the compilers and support software are in translating operations into optimized instructions.
RMS	Root mean square
RNPF	Negative reference
ROM	Read-only memory
RRC	Remaining relative capacity: The percent of the full charge that remains in a power cell.
RS-232	A serial interface published by the EIA for asynchronous data communication over distances up to a few hundred feet. Characterized by a single-ended (not differential) physical layer, it uses one signal wire for transmission, another for reception, and a common wire (ground), plus some timing and control signals. Its specifications are rooted in electromechanical equipment signaling (Teletype machines). Still a very common interface but largely replaced by USB in recent years. The term "serial" interface is often used for an RS-232 interface. The usage is not quite accurate-while RS-232 is a serial interface, there are other serial interfaces in addition to RS-232.

	When it was introduced in 1987, the MAX232 rapidly became the most common way to implement RS-232 because it required only a single 5-volt supply. On-board DC-DC converters developed the odd voltages required by the official spec.
RS-422/RS-485	RS-485 and RS-422 are serial interface standards in which data is sent in a differential pair (two wires, or twisted pair cable), which allows greater distances and higher data rates than non-differential serial schemes such as RS-232. RS-485 and RS-422 can be configured for full-duplex or half-duplex bus systems.
RSR	Remaining standby runtime (min)
RSSI	Received Signal Strength Indicator (or Indication): A signal or circuit that indicates the strength of the incoming (received) signal in a receiver. (The signal strength indicator on a cell phone display is a common example). RSSI is often done in the IF stage before the IF amplifier. In zero-IF systems, it is done in the baseband signal chain, before the baseband amplifier. RSSI output is often a DC analog level. It can also be sampled by an internal ADC and the resulting codes available directly or via peripheral or internal processor bus.
RTCs	Real-time clock: Integrated circuit that contains a timer that supplies the time of day (and often, the date). An RTC generally contains a long-life battery to allow it to keep track of the time even when there is no power applied.
RTD	A Resistance Temperature Detector (RTD) is a device with a significant temperature coefficient (that is, its resistance varies with temperature). It is used as a temperature measurement device, usually by passing a low-level current through it and measuring the voltage drop. A thermistor is a common type of RTD.
RTS	Request to send: A data communications signal (e.g. RS-232)
Rx	Receive
RZ	Return to Zero: A binary bitstream encoding scheme in which the signal returns to zero voltage in between the data bits. The signal has three valid levels: High, Low, and the return to zero volts after each bit.
S-UMTS	Satellite-universal mobile telecommunications system

S/N	Signal-to-Noise Ratio
S/N Ratio	Signal-to-Noise Ratio
S/S	Single supply
Samples per Second	1. sps: Samples per second. In data conversion, an analog signal is converted to a stream of numbers, each representing the analog signal's amplitude at a moment in time. Each number is called a "'sample." The number sample per second is called the sampling rate, measured in samples per second. 2. ksps: Kilosample(s) per second (thousands of samples per second) 3. Msps: Megasamples per second (millions of samples per second)
Sampling Rate	An A/D converter converts an analog signal into a stream of digital numbers, each representing the analog signal's amplitude at a moment in time. Each number is called a "sample." The number sample per second is called the sampling rate, measured in samples per second.
SAN	Storage Area Network: A network infrastructure of shared multihost storage, linking all storage devices and interconnecting remote sites.
SAR	Successive Approximation Register: Used to perform the analog-to-digital conversion in successive steps in many analog-to-digital (ADC) converters.
SAW	Surface Acoustic Wave: A sound wave that propagates along the surface of a solid and is contained within the solid. SAW devices typically combine compressional and shear components. In Wireless applications, SAW refers to a Surface Acoustic Wave band-pass filter, which exhibits much better out-of-band rejection, but has higher passband ripple and insertion loss.
SB	Side braze
SBGA	Super ball-grid array, a packaging technology.
SBS	Smart Battery Specification: A specification developed by Duracell.

Scan Design	A design technique in which the internal registers or flip-flops of a circuit can be chained, to allow an external circuit to easily read and write their contents.
	When internal memory elements are not directly accessible from the circuit's outside pins, testing is difficult because their state is unknown. With scan design, a signal reconfigures the elements into a "scan chain" and their contents can be read and if desired, altered.
SCART	Also known as Euroconnector or Peritel, a 21-pin connector commonly used in Europe to interconnect satellite receivers, television sets, and other audiovisual equipment (e.g. video-cassette recorders). A single connector combines audio and video signals. The name comes from "Syndicat des Constructeurs d'Appareils Radiorcepteurs et Tlviseurs."
	Peritel is an abbreviation for "pritlvision." Peri is a prefix that means around or surrounding - in this case, it suggests the connection between the television and its electronic environment.
SCF	Switched-capacitor filter
Schottky Diode	A diode realized via a "Schottky-barrier junction" – a metal-semiconductor junction – rather than the P-N junction used by conventional semiconductor diodes. Schottky diodes are often chosen for their high switching speed and low forward voltage drop.
SCSI	Small Computer System Interface (pronounced "scuzzy"), an interface standard for connecting peripheral devices to computers. Hardware components for implementing a SCSI interface include connector ports on computers and cables for connecting peripheral devices to the computer. SCSI is gradually being supplanted by the newer USB and IEEE 1341 standards.
SCT	Single Chip Transceivers: A single IC that includes data communication transmitter and receiver functions.
SD	1. Signal detect: An output that indicates when a signal is present. A form of Signal Strength Indicator.

	2. Secure Digital, a media format for non-volatile external memory. The successor to the "MultiMedia Card" format, or MMC, SD card memories typically operate from 3.3V supplies with modest current requirements. SD memory cards are best known as storage for digital cameras, smart phones, and other consumer electronic devices.
SDA	Serial data access
SDTV	Standard Definition Television: Digital formats that do not achieve the video quality of HDTV, but are at least equal, or superior to, NTSC pictures. SDTV may have either 4:3 or 16:9 aspect ratios, and includes surround sound. Variations of fps (frames per second), lines of resolution, and other factors of 480p and 480i make up the 12 SDTV formats in the ATSC standard.
Second Harmonic Distortion	Second harmonic distortion (HD2): Ratio of second-order harmonic to the input signal (carrier). Often measured as dBc.
Sense Resistor	A resistor placed in a current path to allow the current to be measured. The voltage across the sense resistor is proportional to the current that is being measured and an amplifier produces a voltage or current that drives the measurement.
Serial Interface	A serial interface (as distinguished from a parallel interface) is one in which data is sent in a single stream of bits, usually on a single wire-plus-ground, wire-pair, or single wireless channel (or two sets, one for each direction). Examples include USB, RS-232, I2C, and 1-Wire. By contrast, a parallel interface sends several bits at once, on separate wires.
SFDR	Spurious-Free Dynamic Range: A term used to specify A/D and D/A converters (ADCs and DACs).

	In ADCs, Spurious-Free Dynamic Range (SFDR) is the ratio of the RMS amplitude of the carrier frequency (maximum signal component) to the RMS value of the next largest noise or harmonic distortion component. SFDR is usually measured in dBc (with respect to the carrier frequency amplitude) or in dBFS (with respect to the ADC's full-scale range).
	In DACs, Spurious-Free Dynamic Range (SFDR) is the ratio of the RMS amplitude of the carrier frequency (maximum signal components) to the RMS value of their next largest distortion component. SFDR is usually measured in dBc (with respect to the carrier frequency amplitude) or in dBFS (with respect to the DAC's full-scale range). Depending on the test condition, SFDR is observed within a predefined window or to Nyquist.
SHDN	Shutdown. Low-power standby mode.
Shift Register	Two or more bistable elements (flip-flops) connected in series. With each tick of the clock, the output of stage n is shifted to stage n+1. Applications include clock or signal delays, delay lines, linear-feedback shift registers.
Shutdown	A feature of many Maxim ICs, typically controlled via a logic-level input, which dramatically reduces power consumption when the device is not in use.
SI	Sampled input
SiGe	Silicon Germanium process
Signal-Invalid O/P	Signal invalid output. Indicates when all RS-232 signals to the IC are in the invalid range.
Signal-to-Noise Ratio	Signal-to-Noise Ratio, the ratio of the amplitude of the desired signal to the amplitude of noise signals at a given point in time. The larger the number, the better. Usually expressed in dB.
SIM	Subscriber identity module
SINAD	Signal-to-noise and distortion ratio: The RMS value of the sine wave f(IN) (input sine wave for an ADC, reconstructed output sine wave for a DAC) to the RMS value of the converter noise from DC to the Nyquist frequency, including harmonic content. It is typically expressed in dB (decibels).

SLBI	System loopback input
SLIC	Subscriber-Loop-Interface-Circuit: A telephone line interface.
Smart Battery	A battery with internal circuitry that provides level of charge status to the host system.
Smart Phone	A phone with a microprocessor, memory, screen, and built-in modem. The smart phone combines some of the capabilities of a PC in a handset device and typically include Internet connectivity.
Smart Signal Conditioner	Signal conditioner that is programmable or has a flexible architecture to allow it to accomplish sophisticated signal transformations and corrections.
SMBus	System Management Bus: A 2-wire serial-interface standard developed by Intel.
SMD	1. Surface Mount Device (SMD): An electronic component that mounts on the surface of a printed circuit board (as opposed to "through-hole" components which have pins that are inserted into holes). SMDs typically allow more components per square centimeter of PC board, but their scale is such that hand assembly and prototyping may be difficult. 2. Standard Military Drawing (SMD): A U.S. government program for standardized MIL-STD-883 product specifications, to simplify military procurement. Sponsored by the DSCC (Defense Supply Center, Columbus).
SMPS	Switch-Mode Power Supply
SMR	Specialized Mobile Radio: Indicates the 896MHz to 901MHz band (800MHz band), which uses two paired 25kHz channels, and the 935MHz to 940MHz band (900 MHz band), which uses two paired 12.5kHz channels. Ten 20-channel blocks have been allocated in these frequency bands by the FCC. 900MHz SMR is primarily used for radio dispatch, paging, and wireless data communications.
Snubber	A device which suppresses voltage transients.

SO	Small outline (a package type).
SOC	State of change
Soft Start	A feature in some switching power supplies that limits the startup inrush current at initial startup.
SOHO	Small Office/Home Office: Businesses that are either run from home or a from a small office. Software and hardware companies sometimes promote products as suitable for the SOHO market.
SOIC	Small outline integrated circuit, a packaging technology.
Solid State	A solid state device or circuit is one that relies on semiconductors rather than mechanical or vacuum tube circuits.
SONET	Synchronous Optical Network: A North American standard for transmission in synchronous optical networks. It defines a family of rates, formats, interfaces, transport options, and maintenance capabilities. The minimum rate for SDH is 155Mbps.
SOT	Small outline transistor
Space Diversity	In radio systems, Space Diversity transmits a signal on multiple propagation paths.
SPC	Statistical process control
SPCR	Service Control Peripheral Register
SPDR	Service Control Data Register
SPDT	Single-pole/double-throw switch
A switch with three leads, one of which is common. The common lead can connect to one or the other leads exclusively.
SPFP	Signal power functional part
SPI	Serial Peripheral Interface. A 3-wire serial interface developed by Motorola.
SPICE	Simulation program with integrated circuit emphasis
Spurious-Free	Unwanted frequencies are not present.
SQC	Statistical quality control: Use of statistical methods to measure and improve the quality of manufacturing processes and products. The term "statistical process control" is often used interchangably.
SR	Slew rate
SRAM	Static RAM: RAM that does not require a clock to retain its contents.
SRF	Self-resonant frequency
SS	Soft-start; sample size

SSC	Smart signal conditioning
SSOP	Shrink small-outline package
Star Ground	A pcb layout technique in which all components connect to ground at a single point. The traces make in a "star" pattern, emanating from the central ground.
Star Point	A point from which all traces leave in a "star" pattern in pcb layout.
STB	A "set top box," or STB, is a generic name for an electronic interface between a cable television or satellite signal and video display and recording devices. Typically a box that can be placed atop the television set (hence the name), it can have many functions, including acting as a tuner, decoding digital or analog television signals, removing encryption, and allowing the purchase of pay-per-view channels.
STC	1. Silicon Timed Circuit: A circuit that produces a delayed version of the input signal. Also known as a delay line. 2. System Timing and Control: Clock generation and distribution systems and components. May include the means for clock control such as spread-spectrum clock generation for EMI reduction, skew rate control, rate dividers, rate control, width, delay, and phase adjustment
Step-Up DC-DC	A switch-mode voltage regulator in which output voltage is higher than its input voltage.
Strobe	A pulse used for timing and synchronization.
Super heterodyne Receiver	A radio receiver that combines a locally generated frequency with the carrier frequency to produce a lower-frequency signal (IF, or intermediate frequency) that is easier to demodulate than the original modulated carrier.
Switch Mode	Uses a switching transistor and inductor to control/regulate the charging voltage/current.

Switched Capacitor Circuit	A circuit methodology, typically implemented in CMOS integrated circuits, that uses clocked switches and capacitors to transfer charge from node to node such that a resistor function is realized. The effective resistance is governed by capacitor size and switching clock frequency.
Switching Regulator	A voltage regulator that uses a switching element to transform the supply into an alternating current, which is then converted to a different voltage using capacitors, inductors, and other elements, then converted back to DC. The circuit includes regulation and filtering components to insure a steady output. Advantages include the ability to generate voltages beyond the input supply range and efficiency; disadvantages include complexity.
SWT	Set watchdog timeout
Synchronous Digital Hierarchy	Synchronous Digital Hierarchy, SDH: The ITU-TSS International standard for transmitting information over optical fiber.
System on a Chip	A System on a Chip (SoC) integrates most of a system's elements on a single integrated circuit (chip). It typically combines a microprocessor core along with interface elements and analog and mixed signal functions.
T/H	Track/hold
T/R	Transmit/receive
T1	T1 is standard for digital transmission in the United States. It is a digital transmission link with a capacity of 1.544Mbps. T1 uses two pairs of normal twisted wires, the same as found in most residences. T1 normally handles 24 voice conversations, each one digitized at 64kbps. With more advanced digital voice encoding techniques, T1 can handle more voice channels.

T3	A type of data connection capable of transmitting a digital signal at 44Mbps. T3 lines are often used to link large computer networks, such as those that comprise the Internet.
Tachometer	A transducer used for measuring the rate of revolution of a shaft.
TAD	Total accumulated discharge (mA-hr)
Taper	In a potentiometer, taper refers to how the resistance varies as the pot's armature is rotated (or, for a slide pot, as its wiper slides; or for a solid state pot like the DS1802, as its input voltage is varied). For a pot with a linear taper, the resistance varies linearly as the wiper moves. For a pot with a logarithmic (log) taper, the resistance varies logarithmically with the wiper's motion. When used in an amplifier circuit, the output varies slowly as the pot is operated at the low end and varies more and more rapidly as the pot is operated toward the high end. This is also called an audio taper because it is most commonly used for audio volume controls. The ear responds logarithmically (each doubling in signal is perceived as an equal step in volume). The ear is more sensitive to changes at lower volumes, so an audio volume control varies the signal slowly at lower settings and more rapidly at higher settings. The net effect is that the sound seems to vary smoothly through the pot's range. The perceived volume is subjective and fairly imprecise, so an approximation may be used instead of a true log pot.
TC	Temperature coefficient; thermocouple; TURBOCHARGE (control bit)
TCP/IP	Transmission Control Protocol/Internet Protocol: The protocols or conventions that computers use to communicate over the Internet.
TCXO	Temperature Compensated Crystal Oscillator: A crystal oscillator that includes circuitry that compensates for temperature variations, to maintain a more constant frequency.
TDD	Time Division Duplex, the second variation of WCDMA especially suited to indoor environments where there is a need for high traffic density.
TDM	Time Division Multiplexing, a scheme in which numerous signals are combined for transmission on a single communications line or channel. Each signal is broken into many segments, each having very short duration.

TDMA	Time Division Multiple Access: A method of digital wireless-communications transmission. TDMA allows many users to access (in sequence) a single radio-frequency channel without interference, because it allocates unique time slots to each user within each channel.
Temperature	The average kinetic energy of the atoms or molecules of a body or substance, perceived as warmth or coldness. Measured in degrees Fahrenheit, Celsius, or Kelvin.
Temperature Comparator	An integrated circuit with a digital output that indicates whether a measured temperature is above or below a predetermined threshold.
Temperature Sensor	Temperature sensor that uses an external diode-connected transistor as the sensing element to measure temperatures external to the sensor (for example, on a circuit board or on the die of a CPU). Generally produces a digital output.
TFT	Thin-film transistor
THB	Temperature/humidity bias
THD	Total Harmonic Distortion (THD): A measure of signal distortion which assesses the energy that occurs on harmonics of the original signal. It is specified as a percentage of the signal amplitude. As an example, if a 12kHz signal is applied to the input, THD would look at energy on the output occurring at 24kHz, 36kHz, 48kHz, etc. and compare it to the energy occurring at 12kHz.
Thermal Shutdown	Deactivating a circuit when a measured temperature is beyond a predetermined value.
Thermocouple	A temperature sensor formed by the junction of two dissimilar metals. A thermocouple produces a voltage proportional to the difference in temperature between the hot junction and the lead wire (cold) junction.
Thermostat	Circuit that indicates whether a measured temperature is above or below a particular temperature threshold or trip point. Used for thermal protection and simple temperature control systems.

Three-State	A three-state, or Tri-State^{TM}, output has three electrical states: One, zero, and "Hi-Z," or "open." The hi-Z state is a high-impedance state in which the output is disconnected, leaving the signal open, to be driven by another device (or to be pulled up or down by a resistor provided to prevent an undefined state). High-impedance schemes such as three-state are commonly used for a bus, in which several devices can be selected to drive the bus. Tri-State^{TM} is a trademark of National Semiconductor.
Through-Hole	A method for mounting components on a printed circuit board (PCB) in which pins on the component are inserted into holes in the board and soldered in place.
Time Diversity	In radio systems, Time Diversity spreads a signal across multiple channels by placing multiple versions of the signal in different time slots.
Transceiver	A device that contains both a transmitter and receiver. Common misspellings: Transciever, Tranceiver, Transeiver, Transiever, Tranciever, Transcever. Examples: • Interface devices (such as line drivers and receivers, RS-232, RS-485, RS-422, CAN, LVDS, or USB) • Wired communications ICs, such as T1/E1/J1 Transceivers (LIU and Framer) and T3/E3 Transceivers • Wireless communications such as IF and RF transceivers
Transfer	Transfer refers to the amount of data transferred across a digital interface, exclusive of any extra bits used to encode the data. The number of data transfers is less than the number of bits transmitted when encoded data has more bits than the raw data. As an example, a PCIe serial bus uses 10 bits to encode eight data bits. (Extra bit space may be used to encode a clock, error-detection redundancy, etc.) Data rates are commonly expressed in transfers per second, gigatransfers per second (GT/s) and megatransfers per second (MT/s).

Transformer	An inductive electrical device for changing the voltage of alternating current. A transformer consists of two magnetically coupled coils. Alternating current in one (called the "primary") creates a changing magnetic field which induces a current in the second coil (the "secondary"). A core made of iron or ferrite generally connects the two coils, but higher frequency devices can work without a ferrous core. Transformers have two primary functions: Voltage transformation and isolation: • The voltage of the secondary can be higher or lower than the voltage that drives the primary and is determined by the ratio of turns of wire in the two coils. • Isolation refers to the fact that the coils are connected only by a magnetic field, so they can be independent of a common ground. Primary applications are for power and for signal isolation / impedance transformation. An autotransformer is a transformer with a single coil with intermediate "taps" to effect the changed outgoing voltages. They do not provide isolation. Transformer capacity is rated in kilovolt-amps (KVA): The volts x amps / 1000.
Transimpedance Amplifier	An amplifier which converts a current to a voltage. It is a familiar component in fiber-communications modules.The unit for trans resistance is the ohm.
Transistor	A basic solid-state control device which allows or disallows current flow between two terminals, based on the voltage or current delivered to a third terminal. Usually built from silicon but can be constructed from other semiconductor materials. There are two major types: The FET (field-effect transistor) and the bipolar junction transistor (BJT). The first transistor was invented in 1947 at Bell Labs by Michael John Bardeen, Walter Brattain and William Shockley.

Transmitter	A circuit that accepts signals or data in and translates them into a form that can be sent across a medium (transmitted), usually over a distance. The medium can be wireless or wired. Examples: • A radio transmitter that modulates the signal on a carrier and transmits it over the airwaves • An ultrasonic transducer that sends the signal over ultrasound frequencies • A line driver that drives a backplane • A circuit that drives an interface (e.g., USB, serial, LVDS) • A fiber optic device that emits light pulses
TSOC	Thin small-outline C-lead
TSOP	Thin small-outline package
TSSM	Temperature sensor and system monitor
TSSOP	Thin shrink small-outline package
TTC	Temperature conversion sample time
TTFC	Time remaining to full charge
TTIMD	Two-tone intermodulation distortion
TTL	Transistor-to-transistor logic
Tubular Motor	A tubular motor is an electric motor embedded in a cylindrical form factor. They are typically used for window shades and blinds, projection screens, awnings, roller doors, etc.
UART	Universal Asynchronous Receiver-Transmitter: An IC that converts parallel data to serial, for transmission; and converts received serial data to parallel data.
Uninterruptible Power Supply	An uninterruptible power supply (UPS) is a device that maintains power in the event of a failure. A UPS commonly includes a battery that is kept charged and ready. When power fails, the battery supplies power, as long as it lasts. When the battery fails, a UPS may contain circuitry that triggers an orderly shutdown. An uninterruptible power supply may also provide line regulation, protecting against voltage variations.

USB	Universal Serial Bus (USB): A standard port that enables you to connect external devices (such as digital cameras, scanners, keyboards, and mice) to computers. The USB standard supports data transfer at three rates: low speed (1.5MBps), full speed (12Mbps) and high speed (480 MBps). Mbps=million bits per second The supply voltage for a circuit is often given as V plus a double-letter suffix. The double letter is usually related to the lead of the transistors that are commonly connected to that supply or to a resistor that connects to that supply. Examples: V_{CC} is a positive-voltage supply and the collector terminal of bipolar transistors is connected to the V_{CC} supply or to a load which connects to V_{CC}. V_{SS} connects to the source terminal of a FET, etc.
VCO	Voltage-Controlled Oscillator: An oscillator device in which output frequency is proportional to its input voltage.
VLSI	Very large-scale integration (VLSI) refers to an IC or technology with many devices on one chip. The question, of course, is how one defines "many." The term originated in the 1970s along with "SSI" (small-scale integration), "LSI" (large-scale), and several others, defined by the number of transistors or gates per IC. It was all a bit silly since improving technology obviously makes numerical definitions meaningless over time. And it varies by industry – a VLSI analog part is quite different from a VLSI digital logic part or a VLSI memory part.
VoIP	Voice over Internet Protocol: Method for transmission of voice (or fax) calls over the Internet.
Volt	Volt (or Volts): Unit of measure for electromotive force (EMF), the electrical potential between two points. An electrical potential of 1 volt will push 1 ampere of current through a 1-ohm resistive load. Using a common plumbing analogy, voltage is similar to water pressure and current is analogous to flow (e.g. liters per minute)
WTA	Wireless Telephony Application: A collection of telephony-specific extensions for call- and feature-control mechanisms that make advanced mobile network services available to end users. WTA essentially merges the features and services of data networks with the services of voice networks.
XCO	Crystal clock oscillator (XCO): An oscillator that relies on a crystal for its frequency reference. A piezoelectric crystal oscillates at a very stable frequency