

Smell



Refining the limits of detection

Sound



Listening to our customers

Touch



Sculpturing the technology for tomorrow

Taste



Leading with integrity

Sight



Focusing our vision



Linear
Makes
Sense

Linear Technology Corporation
Annual Profile 1997

Corporate Profile

Linear Technology Corporation (LTC, or the Company) designs, manufactures and markets a broad line of high performance standard linear integrated circuits using silicon gate CMOS, BiCMOS, Bipolar and Complementary Bipolar wafer process technologies.

Analog (also called linear) circuits monitor, condition, amplify, or transform continuous analog signals associated with such physical properties as temperature, pressure, weight, position, light, sound or speed. They play an important role in bridging our analog world and a wide variety of electronic systems.

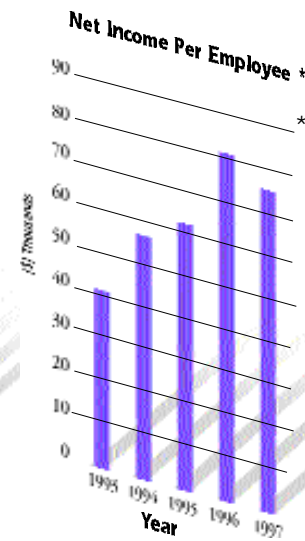
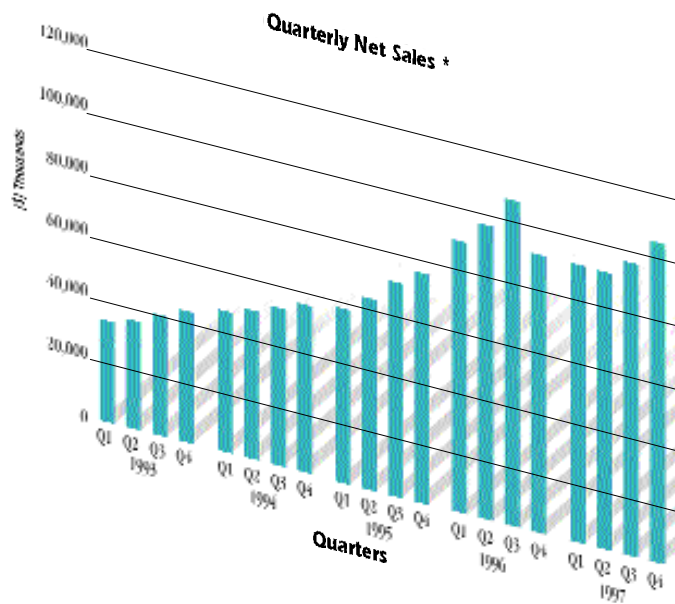
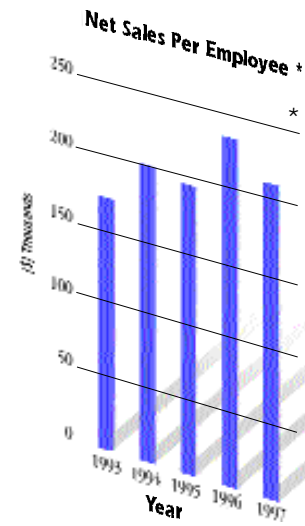
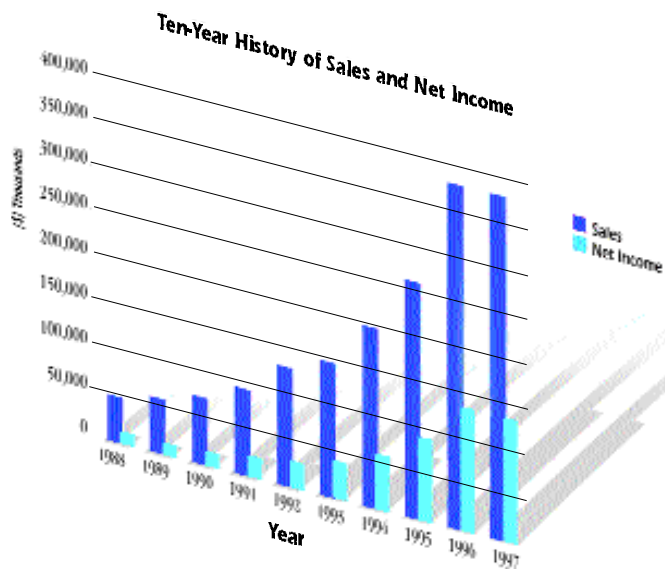
The Company's products include operational, instrumentation and audio amplifiers; voltage regulators, power management devices, DC-DC converters and voltage references; comparators; monolithic filters; communications interface circuits; one-chip data acquisition sub-systems; pulse-width modulators and sample-and-hold devices.

Linear Technology targets its products and marketing efforts towards the high performance segment of the analog integrated circuit market. Applications for the Company's products include: telecommunications, cellular telephones, networking products and satellite systems, notebook and desktop computers, computer peripherals, video/multimedia, industrial instrumentation, factory automation, process control, and military and space systems. The Company competes primarily on the basis of performance, functional value, quality, reliability and service.

The Company markets approximately 5,200 finished part types of which more than ninety percent are proprietary, presented in a five volume set of databooks and a CD-ROM called LinearView™. These products are sold directly or through distributors to over 13,000 original equipment manufacturers (OEMs).

The Company was founded in late 1981 by a management team with significant experience in the design, manufacture and marketing of linear integrated circuits. Linear Technology became a publicly held company in May, 1986. The Company's common stock trades on the NASDAQ National Market System under the symbol LLTC. Linear Technology Corporation maintains its Headquarters in Milpitas, California, and employs approximately 1,800 people worldwide. The Company has manufacturing and test facilities located in Milpitas, California; Camas, Washington; Singapore; and Penang, Malaysia; as well as design facilities in Milpitas, California; Boston, Massachusetts; Colorado Springs, Colorado; and Singapore.

FINANCIAL HIGHLIGHTS



* Majority of employee increases were in remote manufacturing facilities.

1997 was a challenging year for Linear Technology Corporation. When the year began, we were in the throes of an industry-wide inventory correction caused by excess buying during the previous year vis-a-vis real demand. FY96 for us was the strongest sales growth year ever, yet it ended on a sour note as sales for the first time in 42 quarters slipped backwards during the fourth quarter of that year. FY97 by contrast was, for the first time in our 15 year history, essentially a flat sales year. While this fact in itself would be nothing to cheer about, because the second half of 1997 experienced strong sequential growth in sales and profits, the year ended on a strong positive note.



ROBERT H. SWANSON, JR.

When the year started we had many projects in progress and many decisions were made based on our long-term confidence in both the analog market and our own business strategy. During the year we completed the construction and equipping of Phase I of our new wafer fabrication facility in Camas, Washington. We doubled the size of the clean room in our plastic assembly facility in Penang, Malaysia. We also completed a 50% addition to our test facility in Singapore. We began the year with three design locations and ended the year with four, opening a new design center in Colorado Springs, Colorado. We also added design staff in other locations. We started the year with 18% of our sales in the telecommunications sector, which is the fastest growing end market in electronics, and finished the year with 30%. We did face some challenging issues during the year and we think we resolved them successfully.

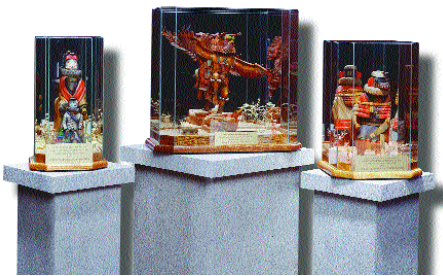
Net sales were a record \$379,251,000, a nominal increase over net sales of \$377,771,000 for the previous year. Net income was a record \$134,371,000 for the year, again a nominal increase over \$133,964,000 for fiscal 1996. Cash and short-term investments of \$443,439,000 increased by \$120,967,000 over the previous year.

As stated earlier, in 1997 we put into production our first remotely located wafer fabrication plant. The first wafer came off the production line in March and by the end of the year we were outputting wafers in Camas that could support a sales run-rate of approximately \$75,000,000 per year. With a modest increase to our current \$60,000,000 property, plant and equipment investment in Camas, we will have created additional capacity for \$250,000,000 in annual sales. We will shortly consider commencing Phase II of the Camas operation which will more than double our capacity there.

1997 was an active year for new product development. Each of our product areas had significant new offerings ranging from PowerPath™ controllers and Pentium® Pro **power management** devices; to Hot Swap™ controllers, and multiprotocol devices in **interface**; 14- and 16-bit fast and accurate circuits in **data conversion**; low noise, low cost monolithic **filters**; and, finally in **amplifiers**, a large group

of fast and accurate products and a special amplifier that uniquely drives a varactor diode found in every cellular phone. These and many other products we believe have properly positioned us to participate in fast growing end product markets at our diverse customer base.

Although often known for their digital characteristics, all electronic products have a critical analog content. It makes sense that Linear Technology would be prominently involved in these new markets. This brings us to the theme of this annual report; "Linear Makes Sense" - sense in many ways and meanings. First, technically, analog ICs perform electronically the same functions that human senses perform. Analog circuits interface with a variety of sensors and perform initial contact with electronic impulses or signals



IN-STAT® KACHINA AWARDS

and then amplify, regulate, filter, interface and finally convert these analog signals to a digital format. In this way analog circuits are like sensors. Secondly, since analog is critical to electronic products, it makes sense that a leading analog IC company would be intricately involved in leading edge system products ranging from digital cellular phones, to flat panel displays, to personal digital assistants, to networking infrastructure, to global positioning systems, to new generation microprocessors, and to the Pathfinder vehicle and

Sojourner robot on the Mars space mission. It just makes sense!

Finally, the sale of leading edge products into vibrant markets makes cents, lots of cents. For the second year in a row we won the in-stat Kachina Award for the Best Financially Managed Company in the Semiconductor Industry. We are now a three time winner of this award.

In summary, although 1997 was a challenging year, it was a good year. Our strategy of profitable growth was verified in relatively tough times. We closed 1997 strongly and are going into fiscal 1998 with good momentum. We share this sense of accomplishment and energy toward the future with our valued customers, our dedicated, hardworking employees and our shareholders.

We thank you for all your support.

Sincerely,

LINEAR TECHNOLOGY CORPORATION

A handwritten signature in black ink, reading "R.H. Swanson, Jr.", is written over a white background.

Robert H. Swanson, Jr.
President & CEO

Linear makes sense in Many Ways

LINEAR TECHNOLOGY "MAKES SENSE" IN MANY WAYS. THE COMPANY SERVES MARKETS THAT USE ITS PRODUCTS TO "MAKE SENSE" OF REAL-WORLD PHENOMENA.

THESE PRODUCTS PROVIDE ELECTRONIC SIGNALS FOR DIGITAL PROCESSING THAT ARE ANALOGOUS TO THE WAY HUMAN SENSES PROVIDE INFORMATION TO THE BRAIN. SIGHT, SOUND, TOUCH, TASTE AND SMELL ARE ALL MEASURED AS ANALOG SIGNALS. ANALOG (ALSO CALLED LINEAR) CIRCUITS MONITOR, CONDITION, AMPLIFY OR TRANSFORM THESE SIGNALS.

THE RANGE OF APPLICATIONS FOR THESE PRODUCTS IS ALMOST LIMITLESS. INDUSTRIAL APPLICATIONS MEASURE AND CONTROL THE WORLD AROUND US. IN COMPUTING, MICROPROCESSOR POWER IS BRINGING NEW DIMENSIONS OF SOUND AND VIDEO TO US IN THE FORM OF MULTIMEDIA. COMMUNICATION SYSTEMS, VIA CELLULAR BASED SYSTEMS AND NETWORKED ENVIRONMENTS, ALLOW US TO TRANSMIT VOICE AND DATA ALMOST ANYWHERE AT GREATER SPEEDS WITH MORE RELIABILITY. OUR REACH ALSO CONTINUES TO INCREASE AS MORE POWERFUL SATELLITE SYSTEMS ARE LAUNCHED AND BROUGHT ON LINE.

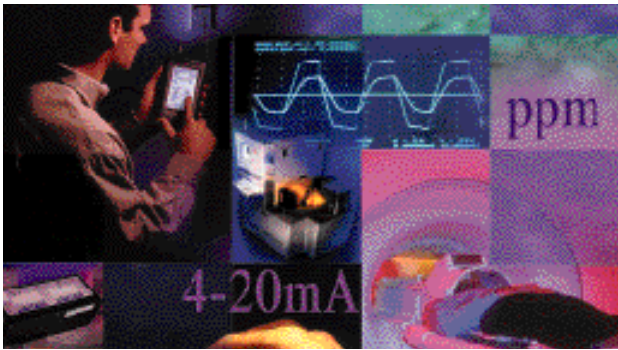
LINEAR TECHNOLOGY ALSO "MAKES SENSE" BECAUSE THE COMPANY HAS DEVELOPED AND FOLLOWS A BUSINESS STRATEGY THAT FOCUSES ON PRODUCT DIVERSITY AND CONSISTENCY IN PERFORMANCE. THE COMPANY HAS DEVELOPED SPECIFIC COMPETENCIES IN

MOST KEY ANALOG AREAS AND HAS BUILT A BROAD PRODUCT LINE OF GENERAL PURPOSE PRECISION LINEAR FUNCTIONS. IT IS NOT A CONTRADICTION OR OXYMORON THAT THE COMPANY FOCUSES ON HIGH PERFORMANCE ANALOG ICs AND STILL OFFERS A VERY WIDE VARIETY OF BASIC FUNCTIONS. THE REQUIREMENTS FOR ANALOG ICs IN DATA ACQUISITION, SIGNAL PROCESSING, AND POWER MANAGEMENT ARE PERVASIVE AND REQUIRE A WIDE RANGE OF COMPLEX FUNCTIONS.

LINEAR TECHNOLOGY HAS AN IN-HOUSE MANUFACTURING STRATEGY OF VERTICAL INTEGRATION TO OPTIMIZE PROCESS DEVELOPMENT, WAFER FABRICATION, PACKAGING AND TESTING. CONTROLLING THESE KEY MANUFACTURING AREAS IS NECESSARY TO ENSURE THE HIGHEST LEVELS OF SERVICE, QUALITY AND RELIABILITY.

TO ITS INVESTORS, LINEAR TECHNOLOGY "MAKES CENTS" BECAUSE OF THE COMPANY'S CONSISTENCY IN REVENUE AND PROFITABILITY. LINEAR TECHNOLOGY HAS ACHIEVED RECORD SALES AND NET INCOME FOR OVER 10 CONSECUTIVE YEARS.

THE GOAL IS TO HELP YOU "MAKE SENSE" OF OUR STRATEGY AND OUR SUCCESS BY DESCRIBING THE BASIC ANALOG FUNCTIONS WE SUPPLY AND THE VAST ARRAY OF REQUIREMENTS FOR OUR PRODUCTS. THE WORLD IS ANALOG. THE END APPLICATIONS SUPPORTED BY OUR PRODUCTS ARE WELL KNOWN TO EVERYONE IN TODAY'S HIGHLY ELECTRONIC WORLD.



Industrial Applications

ALL MEASUREMENT AND CONTROL APPLICATIONS REQUIRE PRECISION ANALOG SIGNAL CONDITIONING AND DATA CONVERSION. LINEAR TECHNOLOGY HAS BEEN A LEADER IN PROVIDING SOLUTIONS FOR THESE DEMANDING APPLICATIONS SINCE OUR INCEPTION. THE COMPANY CONTINUES TO INTRODUCE NEW PRODUCTS IN THIS AREA AND IS COMMITTED TO MAINTAINING THE INDUSTRIAL MARKET AS A CORE BUSINESS.



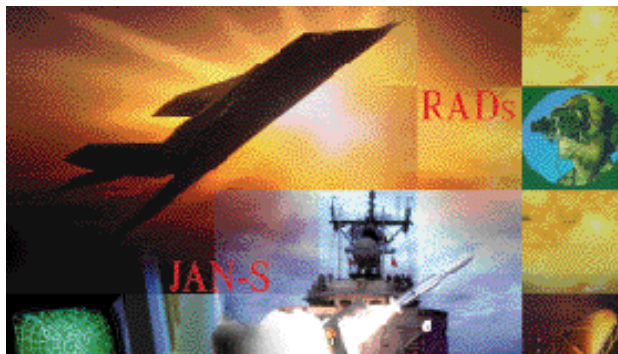
Communications

TRANSMITTING AND RECEIVING A VAST ARRAY OF DIFFERENT PROTOCOLS AT INCREASING SPEEDS HAS CREATED A NEED FOR NEW, HIGHER SPEED, HIGHER PERFORMANCE COMMUNICATIONS ICs. LINEAR TECHNOLOGY PROVIDES INNOVATIVE SOLUTIONS FOR INTERFACE, MULTIPROTOCOL AND DATA CONVERSION REQUIREMENTS. HANDHELD DIGITAL ELECTRONICS ARE ALSO DEMANDING INCREASED BATTERY LIFE AND FASTER RECHARGING; THE COMPANY OFFERS A WIDE RANGE OF POWER MANAGEMENT PRODUCTS FOR CELLULAR PHONES, PAGERS AND A VARIETY OF COMMUNICATIONS EQUIPMENT.



Computing

DESKTOP PCs AND PORTABLE COMPUTING DEVICES CONTINUE TO PRESENT COMPUTER MANUFACTURERS WITH DIFFICULT POWER MANAGEMENT PROBLEMS. HIGH SPEED PROCESSORS REQUIRE LOWER VOLTAGE OPERATION, HIGHER CURRENTS AND TIGHTER TOLERANCES; BATTERY POWERED EQUIPMENT MUST ALSO RUN LONGER AND RECHARGE FASTER. LINEAR TECHNOLOGY IS STEADFAST IN ITS COMMITMENT TO PROVIDING THE BEST AND MOST COST-EFFECTIVE SOLUTIONS FOR THESE APPLICATIONS.



Military & Space

ELECTRONIC CIRCUITS SENT INTO SPACE ARE EXPOSED TO THE DESTRUCTIVE EFFECTS OF RADIATION. LINEAR TECHNOLOGY HAS DEVELOPED PROPRIETARY PROCESSES THAT ALLOW US TO BUILD MANY HIGH PERFORMANCE PRODUCTS THAT CAN WITHSTAND THESE EFFECTS. THE COMPANY PROVIDES DEVICES FOR USE IN MANY MILITARY, SATELLITE AND SPACE MISSION PROGRAMS.

Linear
makes

sense

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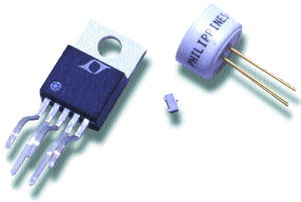
Industrial Applications

ANALYTIC
INSTRUMENTATION
TEST
INSTRUMENTATION
SEISMIC ANALYSIS
MULTIMETERS
OSCILLOSCOPES
DIGITAL
VOLT METERS
GAS DETECTORS
MEDICAL
INSTRUMENTATION
PULSE OXYMETERS
ULTRASONIC IMAGING
GAS CHROMATOGRAPHY
BLOOD ANALYZERS
MAGNETIC
RESONANCE IMAGING
DIGITAL RADIOGRAPHY
PROCESS CONTROL
SYSTEMS
PROGRAMMABLE
CONTROLLERS
LOOP CONTROLLERS
FACTORY AUTOMATION
ROBOTICS
MOTION CONTROL
TEMPERATURE CONTROL
FLOW CONTROL
VIBRATION ANALYSIS
HVAC
INVENTORY CONTROL
SYSTEMS
POINT-OF-SALE
TERMINALS
TELEPHONE LINE
TESTERS
SECURITY SYSTEMS
ELECTRONIC SCALES
SENSOR CONDITIONING
COMPUTER CONTROL
MACHINERY
ELECTRIC UTILITY
METERS

ppm

4-20mA

416588



INDUSTRIAL APPLICATIONS The evolution of the factory environment from a mechanical world to an electronic one continues to create strong demand for analog signal processing and data conversion circuits. As processing power and throughput increase, so does the demand for accurate analog inputs.

Measuring real-world signals in these applications requires precision analog components. Operational amplifiers and instrumentation amplifiers combine with precision filters, allowing large factory systems to monitor and isolate signals that contain vital information for critical processes.

High accuracy circuits convert these signals to a digital format and feed the information to process control systems. The process control systems can then analyze the data and determine an appropriate action to control the phenomenon, typically temperature, flow or pressure. From chemical refining to beer brewing, processes must be monitored and precisely controlled. Allen Bradley, A.B.B., Honeywell, Rohde and Schwarz and many other equipment manufacturers provide calibration and measurement/control systems

that take advantage of the convergence of inexpensive digital processing and precision analog signal conditioning. These companies are providing new levels of performance for their customers.

Maintaining clean air and water requires monitoring and analysis of chemical contamination and manufacturing by-products. Analytical and test instrumentation supplied by companies such as Hewlett Packard, Fluke, Keithley and Yokogawa can be used to measure minute amounts of chemicals. Complex cleaning equipment can then remove harmful particles or substances. Medical instrumentation imposes significant performance and reliability requirements on system designers; Abbott Labs, Acuson, Welch Allyn and a host of other medical equipment manufacturers use Linear Technology components in their equipment.

New GPS (Global Positioning System) equipment from Magellan, Trimble Navigation and Garmin Industries can pinpoint a location via satellite link quickly and accurately for industrial and consumer use. On boats, in airplanes or as handheld units, these devices are bringing remarkable innovations to navigation.

Linear makes sense

MARKETS Industrial systems sense the world around us. Factory automation, process control systems, medical instrumentation and analytical instrumentation must process analog inputs to provide information for control or analysis.

STRATEGY Linear Technology provides expert design support and leading-edge solutions for the most challenging industrial application problems, enabling our customers to deliver smaller, lower power, higher performance equipment.

MANUFACTURING Harsh industrial environments require rugged integrated circuits. Linear Technology offers industrial temperature products to suit these needs. Careful attention is paid in circuit design to make products robust and reliable.

FINANCIAL PERFORMANCE System designers depend on companies like Linear Technology to maintain system accuracy and deliver devices that allow improvement in overall system performance and value.

AMPLIFIERS AMPLIFY, ATTENUATE OR FILTER VERY SMALL DELICATE SIGNALS. AMPLIFIERS ARE A FUNDAMENTAL BUILDING BLOCK IN ELECTRONIC SYSTEMS. PRECISION AMPLIFIERS CAN OPERATE WITH A RANGE OF ERROR FROM 1 MICROVOLT (ONE MILLIONTH OF A VOLT) TO 1 MILLIVOLT (ONE THOUSANDTH OF A VOLT). HIGH-SPEED AMPLIFIERS CAN ACHIEVE SPEEDS OF OVER 100MHz (100 MILLION CYCLES PER SECOND).

Linear makes sense

MARKET Cellular phones and pagers keep us connected in the car or at the ball game. We want long life and fast charging from this equipment. High efficiency power management devices from Linear Technology enable manufacturers to continually improve performance in this area.

STRATEGY Traditionally these have been consumer applications. But today's market demands high performance integrated solutions. Linear Technology designs complex circuits in very small packages to support the specific needs of equipment suppliers.

MANUFACTURING Customers in this high volume market rely on vendors with a demonstrated ability to deliver quality product on time. Linear Technology has both the in-house manufacturing strategy and capacity necessary to support the growing communications market.

FINANCIAL PERFORMANCE The communications market is flourishing because suppliers continue to reduce costs and add function. Linear Technology supports this trend by delivering more function in less space. The resulting total solution cost is reduced.

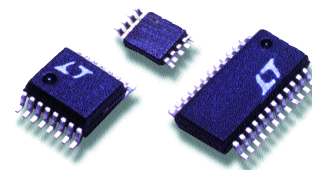
ANALOG-TO-DIGITAL CONVERTERS CONVERT ANALOG SIGNALS TO DISCRETE DIGITAL MEASUREMENTS. A 12-BIT CODE CAN ACCURATELY REPRESENT 4,096 PIECES OF THE ORIGINAL SIGNAL. FOR EXAMPLE, IN A 100-DEGREE ENVIRONMENT A 12-BIT ANALOG-TO-DIGITAL CONVERTER CAN ENCODE CHANGES IN TEMPERATURE AS SMALL AS .024 DEGREES (100/4096). ANALOG-TO-DIGITAL CONVERTERS CAN ALSO ENCODE SIGNALS THAT CHANGE VERY QUICKLY. VIDEO SIGNALS MUST BE SAMPLED MANY MILLIONS OF TIMES PER SECOND.

COMMUNICATIONS Cellular technology is bringing revolutionary changes to the way we communicate from and with our homes and offices. Portability is the essential change, with wireless communication and battery powered equipment providing users the freedom to communicate from anywhere at any time. In both wireless and battery powered applications, analog circuits play a critical role.

The use of mobile communication devices such as pagers and cellular phones is creating new challenges for power management. Batteries need to be charged quickly and efficiently. Battery voltages have to be converted to stable and suitable levels for powering cellular phones, pagers, and an increasing array of other portable devices.

The emergence of new digital cellular phone systems has also precipitated a new wave of consumer demand. These new generations of digital cellular phones promise greater functionality and better performance at lower prices. Digital PCS phones from Motorola, Sony and Qualcomm, as well as European GSM phones from companies such as Alcatel, Nokia, Ericsson and Siemens all have the same fundamental requirements for power management and battery charging.

These are demanding power management applications.



Switching regulators are used to control a varying battery voltage and efficiently convert it up or down. Lithium-Ion, Nickel-Metal-Hydrate and Nickel-Cadmium are all standard battery chemistries that require complex charging systems.

The GSM telephone uses a SIM (Subscriber Identity Module) card to identify a user. The SIM card belongs to an individual and can be used with any GSM telephor. Linear Technology makes devices that provide power conversion, and translate, or level shift the digital signals for various GSM designs. The Company also supplies low power, low dropout regulators that can be used as general purpose system components in GSM telephones.

Base stations are now being installed in increasing numbers, with higher levels of performance. Motorola, Ericsson and Kyocera all use Linear Technology components in base station applications. Their requirements include filtering, analog-to-digital and digital-to-analog conversion and power management.

Linear
makes

sense in Communications



GPS
CELLULAR PHONES
GSM
PCS
TDMA
CDMA
PAGERS
MODEMS
ADSL
HDSL
xDSL
CABLE MODEMS
ROUTERS
SWITCHES
CSU/DSU
BRIDGES
BASE STATIONS
RF TRANSCEIVERS
SERVERS
LAN
WAN
T-1
ISDN
ATM

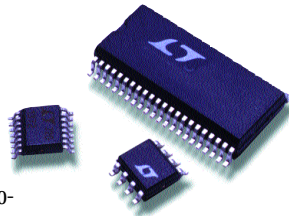


Linear makes sense

WWW, TCP/IP, ISDN, T1, ADSL, Windows NT™, ATM, LAN and WAN are all acronyms that are encroaching on our lives. Networks are connecting people and companies around the world. The end result is a modern-day Tower of Babel — a tangled web of protocols and system platforms. AOL, Internet Explorer and Netscape may be our interface to the on-line network, but protocols like languages must be transmitted and received coherently to enjoy real communication.

Routers, switches and modems move packets of data to and from our PCs. Linear Technology is at the heart of this process. We supply interface and multiprotocol devices to Cisco Systems, 3COM, BayNetworks and Newbridge Networks that let these devices communicate. Some interface products are dedicated to a small set of simple rules, RS-232 is a protocol used by your PC to allow it to communicate with your printer.

Other protocols are more complex and difficult to implement. They are intended to move data faster or farther. Linear Technology provides high speed receivers for up to 50Mbps (million bits per second) data rates and multiprotocol devices that allow many protocols to be handled by a single circuit. This allows the customer to build smaller, lower



power interfaces that are more cost effective.

Power management in these large systems is important. Sun Microsystems, Compaq

Computer and IBM must supply systems which do not “go down”.

Repairs and upgrades must be made while the system has

power. In electronic systems this can have dire consequences. Linear Technology introduced a Hot Swap controller IC during fiscal 1997 which controls the voltage and current incurred during live insertion of a new board. Servers, routers and data concentrators are better maintained with less downtime if a good Hot Swap design is implemented.

ADSL, HDSL, xDSL, and cable modems are competing to deliver fast connections to our homes and offices. These new technologies utilize leading edge analog signal conditioning techniques to find and maintain a discrete signal in the context of a very noisy environment. Companies such as PairGain, Amati, K&E GmbH and Adtran all use Linear Technology components ranging from high speed analog-to-digital converters, to filters and high speed amplifiers as line drivers. These systems provide the bridge for our voices and data to be processed and delivered by the digital infrastructure.

MARKETS Voice, data and video communication is defining our interaction with people around the world. Today, sight and sound of unparalleled quality are delivered to us on demand. Linear Technology plays a major role in this rapidly emerging market.

STRATEGY Linear Technology provides high performance power management and interface products. These products enable equipment manufacturers to deliver on their promise of ease of connectivity, increasing speed and no downtime.

MANUFACTURING Devices designed to support multiprotocol architectures are typically very complex and require large die areas. Process innovation and design expertise must be supported by execution in manufacturing so that product can be delivered on time in large volume.

FINANCIAL PERFORMANCE Many system suppliers use highly integrated multiprotocol devices from Linear Technology to implement several communications ports with a single connector. This allows them to reduce the cable and accessory costs to their end customer, and increase the value of their system.

INTERFACE RS-232, RS-485, RS-422, V.35, V.28, V.11 ARE ALL SERIAL INTERFACE PROTOCOLS WHICH COMPUTERS, PERIPHERALS AND PRINTERS USE TO ROUTE DATA. THE COMMON SERIAL PORT OF A DESKTOP PC USED FOR CONNECTING TO A PRINTER IS ONE EXAMPLE OF AN RS-232 CONNECTION. THE SAME PORT MAY HAVE A MODEM CONNECTED TO IT RATHER THAN A PRINTER BECAUSE MOST PC TYPE MODEMS ALSO USE RS-232 AS AN INTERFACE. MULTIPROTOCOL DEVICES CAN IMPLEMENT SEVERAL INTERFACE STANDARDS IN ONE DEVICE.

Linear makes sense

■ **MARKET** Bright colors and sharp contrast give multimedia the lifelike appearance users have come to expect. Today's microprocessors and graphics chips need well-controlled, robust power. Linear Technology has a long history of understanding these needs and providing advanced solutions.

■ **STRATEGY** Linear Technology focuses on improving efficiency, or power use, at the component and system level of computer applications. The Company provides expert knowledge and design support to help customers implement leading edge solutions to their power management needs.

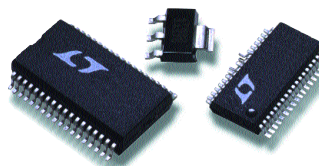
■ **MANUFACTURING** Rapid advances in computing technology require innovative manufacturing capability. Linear Technology has developed new packages to accommodate higher pin count devices and packages which can dissipate more power in the same space as existing solutions.

■ **FINANCIAL PERFORMANCE** Overall solution cost can depend on many supporting "passive" components in a power supply design. Linear Technology focuses on supplying components that allow manufacturers to use smaller, lower cost passive components, sometimes saving several dollars in total solution cost.

REGULATORS ACCURATELY HOLD AN OUTPUT VOLTAGE WITH A VARYING INPUT VOLTAGE. THERE ARE TWO BASIC TYPES OF REGULATORS, LINEAR AND SWITCHING. THERE ARE ALSO TWO COMMON OPERATIONS OF REGULATORS. THEY CAN INCREASE, BOOST, OR DECREASE, BUCK, VOLTAGE AND CONTROL CURRENT. A SWITCHING REGULATOR IN A BUCK MODE CAN ACHIEVE MUCH BETTER EFFICIENCY THAN A LINEAR REGULATOR. BOOST OPERATIONS CANNOT BE DONE WITH LINEAR REGULATORS.

Computing The computer industry is a primary force in driving digital technology.

Linear Technology's high performance linear circuits provide necessary functions for new generations of digital elec-



tronics to realize their full benefits. The Company's products are utilized in desktop, handheld, notebook and mainframe computers, as well as servers, printers, modems, disc drives and peripheral cards.

Linear Technology's switching and linear regulators power a wide range of microprocessors, memory chips and peripheral logic devices. High speed microprocessors from Intel, for instance, require large amounts of current in very short amounts of time. New processors may require up to 14 amps of current in just 100 nanoseconds while the device must maintain output voltage within 5%.

Multiprotocol and interface devices, CCFL (backlight display) drivers, and Hot Swap protection circuits are also used in systems provided by household names like Compaq, Dell, NEC, Apple, DEC, Samsung, IBM and others. These circuits are used to transmit and receive high speed data, drive displays and provide fail-safe protection to boards in systems being upgraded or repaired while the power is on.

US Robotics uses a Linear Technology analog-to-digital converter in their popular PalmPilot™ Personal Digital Assistant. The ADC interfaces the system and display, allowing the user to input data by merely touching the screen. In notebook, handheld and PDA computers, DC to DC converters and micropower regulators provide high efficiency power for many functions.

Philips uses Linear Technology components to maximize the useful battery life in a handheld device. In rechargeable, portable and handheld systems, Linear Technology provides products to monitor the battery status and recharge all common types of batteries. Micropower interface circuits implement RS-232 data transmission for output of information to a printer or modem while using a fraction of the power of older devices.

The need for high performance analog products in complex digital computing systems is growing; power management, data transmission and interface circuit design require extensive linear experience. Linear Technology has succeeded in providing leading edge solutions for these requirements.

Linear
makes
sense
in
Computing



NOTEBOOKS
DESKTOP PCs
WORKSTATIONS
PERSONAL DIGITAL ASSISTANTS
BACKLIGHT DISPLAYS
ACTIVE MATRIX DISPLAYS
RS-232
SERIAL COMMUNICATIONS
PENTIUM®
PENTIUM® II
K6
MAINFRAMES
PRINTERS
DISK DRIVES
PCMCIA
MODEMS
PERIPHERALS
SCANNERS
TOUCH SCREEN
CCFL
MULTIMEDIA
BATTERY CHARGERS

Linear
makes
sense
in
**Military and
Space**

ELECTRONIC
COUNTERMEASURES

FLIGHT CONTROL

FIRE CONTROL

NIGHT VISION

LAUNCH SYSTEMS

TELEMETRY

GUIDANCE

NAVIGATION

COMMUNICATIONS

EXPLORATION

SATELLITES

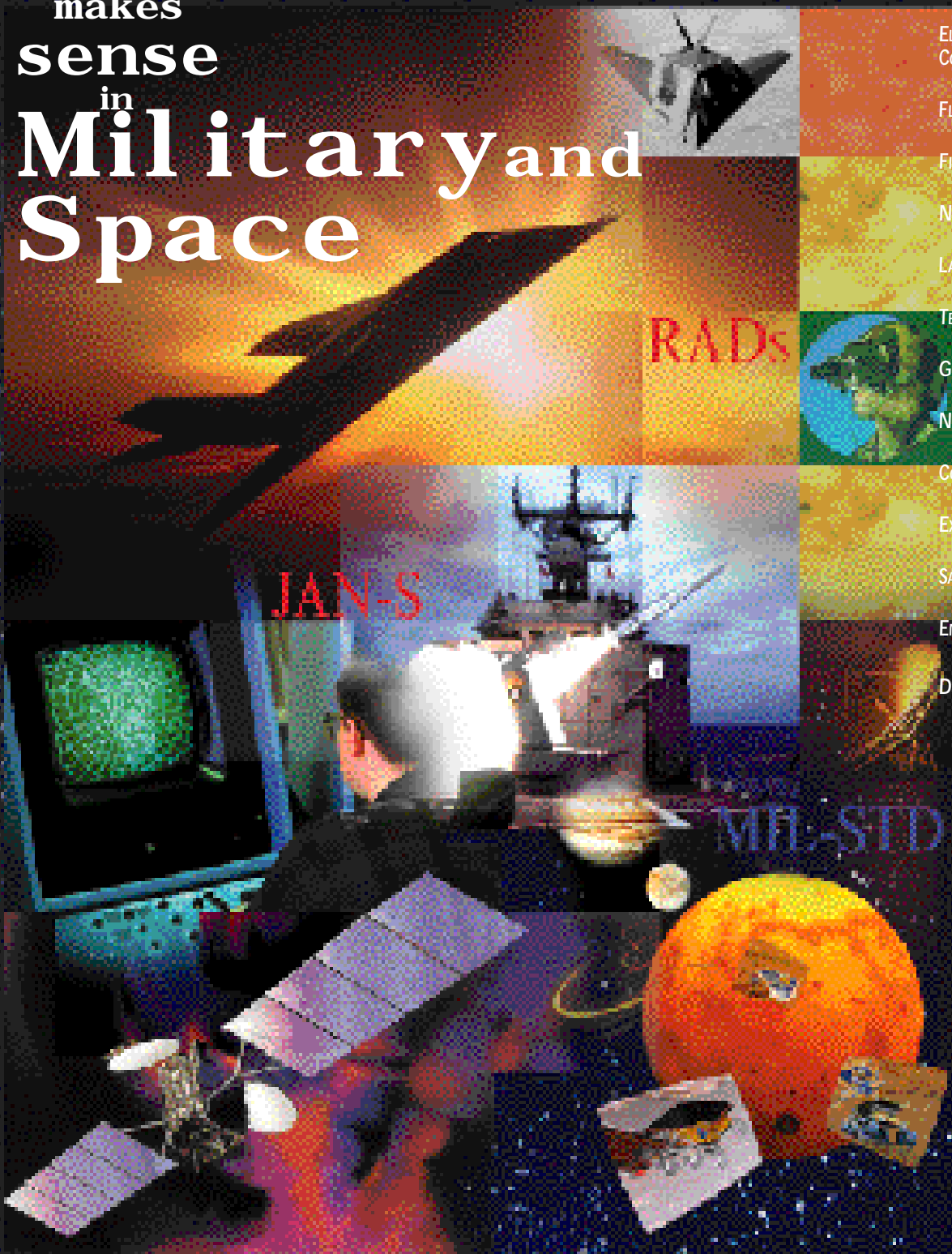
ENCRYPTION

DECIPHER

RADs

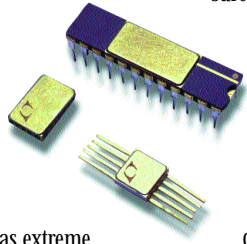
JAN-S

ML-STD



Linear makes sense

Military and Space Military and space applications present the most demanding environments for electronic components. Electronic circuits are exposed to a wide range of temperatures as well as extreme shock, weight, acceleration and hostile chemicals or radiation. These environments combine to stress device performance and reliability.



devices provide power control, precision measurement and signal conditioning, as well as filtering of unwanted signals or spurious noise. Micropower amplifiers reduce total power demand, enabling batteries to last longer and allowing additional functions to be included for the same amount of power. Precision amplifiers and comparators enable more accurate positioning, tuning and tracking, while voltage regulators and references provide well-controlled power levels, higher efficiency, more accurate measurements and reduced total component counts.

Linear Technology is one of a small group of companies worldwide that offer devices designed, processed and tested to space-level quality and reliability standards with guaranteed radiation-tolerant specifications. The Company has participated in this market since its founding and is a premier supplier to many vendors within the military and aerospace industry. Linear Technology devices are found in a variety of applications, from communications to navigation, radar warning and aircraft guidance and controls. Of particular importance is the increased use of these components in satellites for communications, entertainment, weather and navigation systems.

In satellite systems reliability and performance-on-demand are critical requirements for all components. The Company's

This year we are very proud to note that eight of the Company's products were used on the Mars Pathfinder and Sojourner exploration program. Other significant applications include missile and booster rocket launch systems by Lockheed Martin; communications and guidance systems from Rockwell, and satellite systems from Hughes Aircraft, TRW and Alcatel. Litton, Boeing and ITT use Linear Technology devices in countermeasures equipment, missiles and launch systems.

MARKETS Military and space applications require measurement of critical signals in the most hostile environments. On land, in the air at sea or in outer space, accurate, reliable, data is critical to a mission's success.

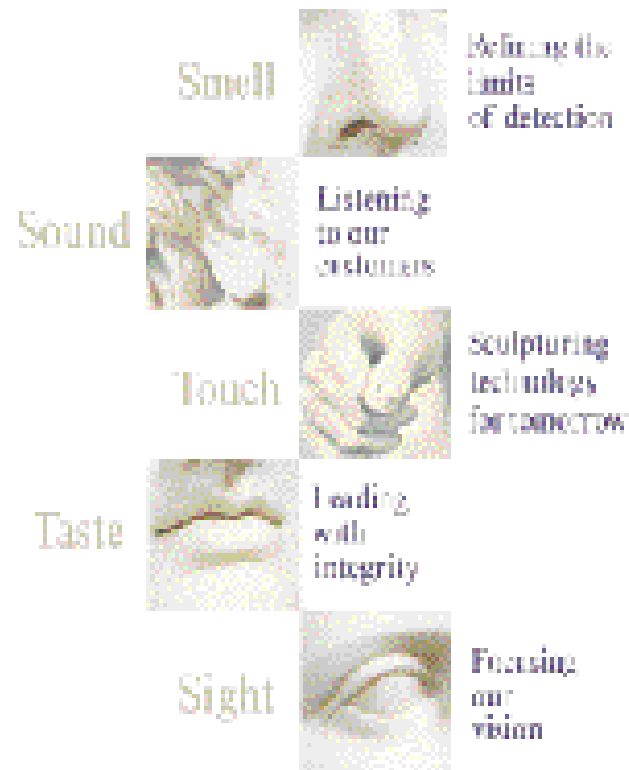
STRATEGY The Company focuses on fundamental design and develops standard products that withstand the rigors of military and aerospace applications. Linear Technology has made a long-term commitment in this important area.

MANUFACTURING The convergence of good design and in-house manufacturing provides superior quality control. As a result, Linear Technology is a premier supplier to many military and aerospace contractors. Quality and reliability are paramount for these customers.

FINANCIAL PERFORMANCE By providing a wide range of high performance devices processed to the highest reliability levels, Linear Technology allows the military and aerospace design community to deploy the most advanced technologies available anywhere.

VOLTAGE REFERENCES ARE MUCH LIKE THE NATIONAL BUREAU OF STANDARDS FOR ELECTRONICS SYSTEMS; THEY CREATE A BASELINE. SIGNALS ARE MEASURED AND CALIBRATED AGAINST THE REFERENCE VOLTAGE. THE ACCURACY OF THE VOLTAGE REFERENCE PLAYS A MAJOR ROLE IN ESTABLISHING OVERALL SYSTEM ACCURACY. PRECISION VOLTAGE REFERENCES CAN OPERATE WITH AN INITIAL ERROR AS SMALL AS .05% AND MAINTAIN THAT ACCURACY WITHIN .0005% FOR EACH ONE-DEGREE CHANGE IN AMBIENT TEMPERATURE.

Linear Makes Sense



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