

Dictionary of Electrical and Computer Engineering

McGraw-Hill

**Dictionary of
Electrical and
Computer
Engineering**

McGraw-Hill

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1 2 3 4 5 6 7 8 9 0 DOC/DOC 0 9 8 7 6 5 4

ISBN 0-07-144210-3



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This book was set in Helvetica Bold and Novarese Book by TechBooks, Fairfax, Virginia. It was printed and bound by RR Donnelley, The Lakeside Press.

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Library of Congress Cataloging-in-Publication Data

McGraw-Hill dictionary of electrical and computer engineering.

p. cm.

ISBN 0-07-144210-3

1. Computer engineering—Dictionaries. 2. Electric engineering—Dictionaries.

TK7885.A2M37 2004
004'.03—dc22

2004049888

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AND TECHNICAL TERMS, Sixth Edition,
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n Plaza, New York, NY 10121-2298. Or contact

n-Publication Data

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Preface

The McGraw-Hill Dictionary of Electrical and Computer Engineering provides a compendium of more than 18,000 terms that are central to these fields as well as related fields. In addition to computer science, electronics, electricity, and electrical engineering, coverage includes terminology in control systems, engineering acoustics, systems engineering, and communications.

The definitions are drawn from the McGraw-Hill Dictionary of Scientific and Technical Terms, Sixth Edition (2003). Each one is classified according to the field with which it is primarily associated. The pronunciation of each term is provided along with synonyms, acronyms, and abbreviations where appropriate. A guide to the use of the Dictionary is included, explaining the alphabetical organization of terms, the format of the book, cross referencing, and how synonyms, variant spellings, abbreviations, and similar information are handled. A pronunciation key is also provided to assist the reader. An extensive appendix provides conversion tables for commonly used scientific and technical units as well as charts, a "family tree" of programming languages, and listings of useful mathematical, engineering, and scientific data, laws, and equations.

It is the editors' hope that this dictionary will serve the needs of scientists, engineers, specialists in information technology, students, teachers, librarians, and writers for high-quality information, and that it will contribute to scientific literacy and communication.

Mark D. Licker
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Staff

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ALPHABETIZATION. The terms in the *McGraw-Hill Dictionary of Electrical and Computer Engineering* are alphabetized on a letter-by-letter basis; word spacing, hyphen, comma, and solidus in a term are ignored in the sequencing. For example, an ordering of terms would be:

absolute-value computer	airborne radar
absolute vector	air capacitor
accuracy control system	
ac/dc receiver	

FORMAT. The basic format for a defining entry provides the term in boldface, the field in small capitals, and the single definition in lightface:

term [FIELD] Definition.

A field may be followed by multiple definitions, each introduced by a boldface number:

term [FIELD] **1.** Definition, **2.** Definition, **3.** Definition.

A term may have definitions in two or more fields:

term [COMMUN] Definition, [COMPUT SCI] Definition.

A simple cross-reference entry appears as:

term See another term.

A cross reference may also appear in combination with definitions:

term [COMMUN] Definition, [COMPUT SCI] See another term.

CROSS REFERENCING. A cross-reference entry directs the user to the defining entry. For example, the user looking up "chroma band-pass amplifier" finds:

chroma band-pass amplifier See burst amplifier.

The user then turns to the "B" terms for the definition. Cross references are also made from variant spellings, acronyms, abbreviations, and symbols.

ACK See acknowledge character.

A-O-I gate See AND-OR-INVERT gate.

bps See bit per second.

chip See microchip.

ALSO KNOWN AS ..., etc. A definition may conclude with a mention of a synonym of the term, a variant spelling, an abbreviation for the term, or other such information, introduced by "Also known as ...," "Also spelled ...," "Abbreviated ...," "Symbolized ...," "Derived from" When a term has more than one definition, the positioning of any of these phrases conveys the extent of applicability. For example:

term [COMPUT SCI] 1. Definition. Also known as synonym. 2. Definition. Symbolized T.

In the above arrangement, "Also known as ..." applies only to the first definition; "Symbolized ..." applies only to the second definition.

term [COMMUN] 1. Definition. 2. Definition. [COMPUT SCI] Definition. Also known as synonym.

In the above arrangement, "Also known as ..." applies only to the second field.

term [COMMUN] Also known as synonym. 1. Definition. 2. Definition. [COMPUT SCI] Definition.

In the above arrangement, "Also known as ..." applies only to both definitions in the first field.

term Also known as synonym. [COMMUN] 1. Definition. 2. Definition. [COMPUT SCI] Definition.

In the above arrangement, "Also known as ..." applies to all definitions in both fields.

Fields and Their Scope

[COMMUN] **communications**—The science and technology by which information is collected from an originating source; converted into a form suitable for transmission; transmitted over a pathway such as a satellite channel, underwater acoustic channel, telephone cable, or fiber-optic link; and reconverted into a form suitable for interpretation by a receiver.

[COMPUT SCI] **computer science**—The study of computing, including computer hardware, software, programming, networking, database systems, information technology, interactive systems, and security.

[CONT SYS] **control systems**—The study of those systems in which one or more outputs are forced to change in a desired manner as time progresses.

[ELEC] **electricity**—The science of physical phenomena involving electric charges and their effects when at rest and when in motion.

[ELECTROMAG] **electromagnetism**—The branch of physics dealing with the observations and laws relating electricity to magnetism, and with magnetism produced by an electric current.

[ELECTR] **electronics**—The technological area involving the manipulation of voltages and electric currents through the use of various devices for the purpose of performing some useful action with the currents and voltages; this field is generally divided into analog electronics, in which the signals to be manipulated take the form of continuous currents or voltages, and digital electronics, in which signals are represented by a finite set of states.

[ENG] **engineering**—The science by which the properties of matter and the sources of power in nature are made useful to humans in structures, machines, and products.

[ENG ACOUS] **engineering acoustics**—The field of acoustics that deals with the production, detection, and control of sound by electrical devices, including the study, design, and construction of such things as microphones, loudspeakers, sound recorders and reproducers, and public address systems.

[GEOPHYS] **geophysics**—The branch of geology in which the principles and practices of physics are used to study the earth and its environment, that is, earth, air, and (by extension) space.

[MATER] **materials**—A multidisciplinary field concerned with the properties and uses of materials in terms of composition, structure, and processing.

[MATH] **mathematics**—The deductive study of shape, quantity, and dependence; the two main areas are applied mathematics and pure mathematics, the former arising from the study of physical phenomena, the latter involving the intrinsic study of mathematical structures.

[NAV] **navigation**—The science or art of directing the movement of a craft, such as a ship, small marine craft, underwater vehicle, land vehicle, aircraft, missile, or spacecraft, from one place to another with the assistance of onboard equipment, objects, or devices, or of systems external to the craft.

[OPTICS] **optics**—The study of phenomena associated with the generation, transmission, and detection of electromagnetic radiation in the spectral range extending from the long-wave edge of the x-ray region to the short-wave edge of the radio region, and the science of light.

[PHYS] **physics**—The science concerned with those aspects of nature which can be understood in terms of elementary principles and laws.

[SOLID STATE] **solid-state physics**—The branch of physics centering on the physical properties of solid materials; it is usually concerned with the properties of crystalline materials only, but it is sometimes extended to include the properties of glasses or polymers.

[STAT] **statistics**—The science dealing with the collection, analysis, interpretation, and presentation of masses of numerical data.

[SYS ENG] **systems engineering**—The branch of engineering dealing with the design of a complex interconnection of many elements (a system) to maximize an agreed-upon measure of system performance.

disciplinary field concerned with the properties of composition, structure, and processing.

deductive study of shape, quantity, and in areas are applied mathematics and pure sing from the study of physical phenomena, the study of mathematical structures.

ce or art of directing the movement of a craft, craft, underwater vehicle, land vehicle, aircraft, the place to another with the assistance of onboard s, or of systems external to the craft.

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dealing with the collection, analysis, inter- masses of numerical data.

s—The branch of engineering dealing with the ction of many elements (a system) to maximize tem performance.

Pronunciation Key

Vowels

a	as in bat, that
ā	as in bait, crate
ā	as in bother, father
e	as in bet, net
ē	as in beet, treat
i	as in bit, skit
ī	as in bite, light
ō	as in boat, note
ō	as in bought, taut
ū	as in book, pull
ū	as in boot, pool
ə	as in but, sofa
au	as in crowd, power
oi	as in boil, spoil
yə	as in formula, spectacular
yū	as in fuel, mule

Semivowels/Semiconsonants

w	as in wind, twin
y	as in yet, onion

Stress (Accent)

ˈ	precedes syllable with primary stress
ˌ	precedes syllable with secondary stress
ˑ	precedes syllable with variable or indeterminate primary/secondary stress

Consonants

b	as in bib, dribble
ch	as in charge, stretch
d	as in dog, bad
f	as in fix, safe
g	as in good, signal
h	as in hand, behind
j	as in joint, digit
k	as in cast, brick
Ʒ	as in Bach (used rarely)
l	as in loud, bell
m	as in mild, summer
n	as in new, dent
ɳ	indicates nasalization of preceding vowel
ŋ	as in ring, single
p	as in pier, slip
r	as in red, scar
s	as in sign, post
sh	as in sugar, shoe
t	as in timid, cat
th	as in thin, breath
θ	as in then, breathe
v	as in veil, weave
z	as in zoo, cruise
zh	as in beige, treasure

Syllabication

·	Indicates syllable boundary when following syllable is unstressed
---	---

aperture plate [ELECTR] A small part of a piece of perforated ferromagnetic material that forms a magnetic cell. { 'ap-ə, char, plăt }

API See application program interface.

APL [COMPUT SCI] An interactive computer language whose operators accept and produce arrays with homogeneous elements of type number or character.

apodization [ELECTR] A technique for modifying the response of a surface acoustic wave filter by varying the overlap between adjacent electrodes of the interdigital transducer. { ,a-pə-də'zā-shən }

A positive [ELEC] Symbolized A+. 1. Positive terminal of an A battery or positive polarity of other sources of filament voltage. 2. Denoting the terminal to which the positive side of the filament voltage source should be connected. { ,ā 'pāz-ad-iv }

A power supply See A supply. { ,ā 'pau-ər sə,plī }

apparent power [ELEC] The product of the root-mean-square voltage and the root-mean-square current delivered in an alternating-current circuit, no account being taken of the phase difference between voltage and current. { ə 'pa-rənt 'pau-ər }

apparent source See effective center. { ə 'pa-rənt 'sɔrs }

Applegate diagram [ELECTR] A graph of the electron paths in a two-cavity klystron tube, showing how electron bunching occurs. { ,ap-ə,l,gāt 'dī-ə ,gram }

applet [COMPUT SCI] A small program, typically written in Java. { 'ap-lăt }

appliance [ENG] A piece of equipment that draws electric or other energy and produces a desired work-saving or other result, such as an electric heater, a radio, or an electronic range. { ə 'plī-əns }

appliance panel [ENG] In electric systems, a metal housing containing two or more devices (such as fuses) for protection against excessive current in circuits which supply portable electric appliances. { ə 'plī-əns ,pan-əl }

application [COMPUT SCI] A computer program that performs a specific task, for example, a word processor, a Web browser, or a spread sheet. { ,ap-lə'kā-shən }

application development language [COMPUT SCI] A very-high-level programming language that generates coding in a conventional programming language or provides the user of a database management system with a programming language that is easier to implement than conventional programming languages. { ,ap-lə'kā-shən dī'vel-ap-mənt ,lāŋ-gwīj }

application development system [COMPUT SCI] An integrated group of software products used to assist in the efficient development of computer programs and systems. { ,ap-lə'kā-shən dī'vel-ap-mənt ,sɪstəm }

application generator [COMPUT SCI] A commercially prepared software package used to create applications programs or parts of such programs. { ,ap-lə'kā-shən ,jen-ə,rād-ər }

application package [COMPUT SCI] A combination of required hardware, including remote inputs and outputs, plus programming of the computer memory to produce the specified results. { ,ap-lə'kā-shən ,pak-ij }

application processor [COMPUT SCI] A computer that processes data. { ,ap-lə'kā-shən 'prə ,ses-ər }

application program [COMPUT SCI] A program written to solve a specific problem, produce a specific report, or update a specific file. { ,ap-lə'kā-shən ,prō-gram }

application program interface [COMPUT SCI] A language that enables communication between computer programs, in particular between application programs and control programs. Abbreviated API. { ,ap-lə'kā-shən ,prō-gram 'in-tər,fās }

application server [COMPUT SCI] A computer that executes commands requested by a Web server to fetch data from databases. Also known as app server. { ,ap-lə'kā-shən ,sɛr-vər }

application-specific integrated circuit [ELECTR] An integrated circuit that is designed for a particular application by integrating standard cells from a library, making possible short design times and rapid production cycles. Abbreviated ASIC. { ,ap-lə'kā-shən spɪ'sɪf-ɪk ,ɪnt-ɪgrəd-əd 'sɜr-kət }

application study [COMPUT SCI] The detailed process of determining a system or set of procedures for using a computer for definite functions of operations, and establishing specifications to be used as a base for the selection of equipment suitable to the specific needs. { ,ap-lə'kā-shən ,stəd-ē }

application system [COMPUT SCI] A group of related applications programs designed to perform a specific function. { ,ap-lə'kā-shən ,sɪstəm }

application window [COMPUT SCI] In a graphical user interface, the chief window of an application program, with a title bar, a menu bar, and a work area. { ,ap-lə'kā-shən ,wɪn,dō }

applicative language [COMPUT SCI] A programming language in which functions are repeatedly applied to the results of other functions and, in its pure form, there are no statements, only expressions without side effects. { 'ap-lə,kād-iv 'lāŋ-gwɪj }

applied epistemology [COMPUT SCI] The use of machines or other models to simulate processes such as perception, recognition, learning, and selective recall, or the application of principles assumed to hold for human categorization, perception, storage, search, and so on, to the design of machines, machine programs, scanning, storage, and retrieval systems. { ə 'plɪd ɪpɪs-tə 'mäl-ə-jē }

appliqué circuit [ELEC] Special circuit which is provided to modify existing equipment to allow for special usage; for example, some carrier telephone equipment designed for ringdown manual operation can be modified through the use of an appliqué circuit to allow for use between points having dial equipment. { ,ap-lə 'kə 'sɜr-kət }

o each other.

anna effect.

-independent
by stationary

ction of a fo-
ay tube by the
lek-trə'stad-ik

n a charged
eld, equal to
charge of the

ENG] The use
to measure
charges on a
'krä-skə-pē]
ny machine
s by friction
ic induction.

e process of
y bringing it
n touching it
ion [i,lek-

meter that de-
s of attraction
charged bod-
t]

omb interac-
shanz]

range ment of
ion beams of
y a glass lens
ad-ik 'lenz]
COUS] A loud-
orces are pro-
: fields; in one
n a thin metal
Also known as
'stad-ik 'laüd

static storage.

acitor micro-
fön]

CTR] A device
ons or other
ght electrodes
th alternating
ct aberrations
'lek-trə'stad-ik

ric potential.

, device which
ided particles
les inductively
cting them to
Also known
d-ik prä'sip-ə

electrostatic quadrupole lens [ELECTR] A device for focusing beams of electrons or other charged particles, consisting of four electrodes arranged in a circular pattern with alternating polarities. [i'lek-trə'stad-ik kwä-drə,pöl 'lenz]

electrostatic repulsion SIV Coulomb repulsion. [i'lek-trə'stad-ik ri'päl-shən]

electrostatics [ELEC] The study of electric charges at rest, their electric fields, and potentials. [i,lek-trə'stad-iks]

electrostatic scanning [ELECTR] Scanning that involves electrostatic deflection of an electron beam. [i'lek-trə'stad-ik 'skan-ig]

electrostatic shielding [ELEC] The placing of a grounded metal screen, sheet, or enclosure around a device or between two devices to prevent electric fields from interacting. [i'lek-trə'stad-ik 'shēld-ig]

electrostatic storage [ELECTR] A storage in which information is retained as the presence or absence of electrostatic charges at specific spot locations, generally on the screen of a special type of cathode-ray tube known as a storage tube. Also known as electrostatic memory. [i'lek-trə'stad-ik 'stör-ij]

electrostatic storage tube SIV storage tube. [i'lek-trə'stad-ik 'stör-ij,tüb]

electrostatic stress [ELEC] An electrostatic field acting on an insulator, which produces polarization in the insulator and causes electrical breakdown if raised beyond a certain intensity. [i'lek-trə'stad-ik 'stres]

electrostatic transducer [ENG ACOUS] A transducer consisting of a fixed electrode and a movable electrode, charged electrostatically in opposite polarity; motion of the movable electrode changes the capacitance between the electrodes and thereby makes the applied voltage change in proportion to the amplitude of the electrode's motion. Also known as condenser transducer. [i'lek-trə'stad-ik tranz'dü-sər]

electrostatic tweeter [ENG ACOUS] A tweeter loudspeaker in which a flat metal diaphragm is driven directly by a varying high voltage applied between the diaphragm and a fixed metal electrode. [i'lek-trə'stad-ik 'twēd-ər]

electrostatic units [ELEC] A centimeter-gram-second system of electric and magnetic units in which the unit of charge is that charge which exerts a force of 1 dyne on another unit charge when separated from it by a distance of 1 centimeter in vacuum; other units are derived from this definition by assigning unit coefficients in equations relating electric and magnetic quantities. Abbreviated esu. [i'lek-trə'stad-ik 'yü-nəts]

electrostatic voltmeter [ENG] A voltmeter in which the voltage to be measured is applied between fixed and movable metal vanes; the resulting electrostatic force deflects the movable vane against the tension of a spring. [i'lek-trə'stad-ik 'völt,mēd-ər]

electrostatic wattmeter [ENG] An adaptation of a quadrant electrometer for power measurements in which two quadrants are charged by

the voltage drop across a noninductive shunt resistance through which the load current passes, and the line voltage is applied between one of the quadrants and a moving vane. [i'lek-trə'stad-ik 'wät,mēd-ər]

electrostriction transducer [ENG ACOUS] A transducer which depends on the production of an elastic strain in certain symmetric crystals when an electric field is applied, or, conversely, which produces a voltage when the crystal is deformed. Also known as ceramic transducer. [i'lek-trə'strik-shən tranz'dü-sər]

electrothermal ammeter SIV thermoammeter. [i'lek-trə'thər-məl 'a,mēd-ər]

electrothermal energy conversion [ENG] The direct conversion of electric energy into heat energy, as in an electric heater. [i'lek-trə'thər-məl 'en-ər-jē kan,vär-zhən]

electrothermal process [ENG] Any process which uses an electric current to generate heat, utilizing resistance, arcs, or induction; used to achieve temperatures higher than can be obtained by combustion methods. [i'lek-trə'thər-məl 'präs-əs]

electrothermal recording [ELECTR] Type of electrochemical recording, used in facsimile equipment, wherein the chemical change is produced principally by signal-controlled thermal action. [i'lek-trə'thər-məl ri'kōrd-ig]

electrothermal voltmeter [ENG] An electrothermal ammeter employing a series resistor as a multiplier, thus measuring voltage instead of current. [i'lek-trə'thər-məl 'völt,mēd-ər]

element [COMPUT SCI] A circuit or device performing some specific elementary data-processing function. [ELECTROMAG] Radiator, active or parasitic, that is a part of an antenna. ['el-ə-mənt]

elemental area SIV picture element. [el-ə'men-təl 'er-ē-ä]

elementary item [COMPUT SCI] An item considered to have no subordinate item in the COBOL language. [el-ə'men-trē 'id-əm]

elementary stream [COMMUN] A generic term for one of the coded video, coded audio, or other coded bit streams in a digital television system. [el-ə'mən-trē 'strēm]

elevation angle [ELECTROMAG] The angle that a radio, radar, or other such beam makes with the horizontal. [el-ə'vā-shən ,əŋ-gəl]

elevation-angle error [ELECTROMAG] In radar, the error in the measurement of the elevation angle of a target resulting from the vertical bending or refraction of radio energy in traveling through the atmosphere. Also known as elevation error. [el-ə'vā-shən ,əŋ-gəl ,er-ər]

elevation error SIV elevation-angle error. [el-ə'vā-shən ,er-ər]

ELF SIV extremely low frequency

elimination factor [COMPUT SCI] In information retrieval, the ratio obtained in dividing the number of documents that have not been retrieved by the total number of documents in the file. [əlim-ə'nā-shən ,fak-tər]

eliminator [ELECTR] Device that takes the place of batteries, generally consisting of a rectifier

operating from alternating current. [ə'lim-ə ,nād-ər]

E lines [ELEC] Contour lines of constant electrostatic field strength referred to some reference base. ['ē ,līnz]

ellipsoidal floodlight [ELEC] A lighting unit used in theatrical lighting consisting of an ellipsoidal reflector with fixed spacing and a lamp; power requirements are 250-5000 watts and the reflector diameter is 10-24 inches (25-61 centimeters). Also known as scoop. [ə,lip'sōid-əl 'fləd-līt]

ellipsoidal spotlight [ELEC] A lighting unit consisting of a reflector, lamp, single or multiple lens system, and framing device; power requirements are 250-2000 watts. [ə,lip'sōid-əl 'spāt,līt]

elliptical system [ENG] A tracking or navigation system where ellipsoids of position are determined from time or phase summation relative to two or more fixed stations which are the focuses for the ellipsoids. [ə'lip-tə-kəl 'sis-təm]

elliptic-integral filter [ELECTR] An electronic filter whose gain characteristic has both an equal-ripple shape in the pass-band and equal minima of attenuation in the stop-band. Also known as Cauer filter. [ə,lip-tik ,int-ə-grəl 'fīl-tər]

ellipticity SIV axial ratio. [ə,lip'tis-əd-ē]

elongation [COMMUN] The extension of the envelope of a signal due to delayed arrival of multipath components. [ə'lon'gā-shən]

ELSE instruction [COMPUT SCI] An instruction in a programming language which tells a program what actions to take if previously specified conditions are not met. ['els in, strak-shən]

ELSE rule [COMPUT SCI] A convention in decision tables which spells out which action to take in the case specified conditions are not met. ['els ,rül]

e-mail SIV electronic mail. ['ē,māl]

emanation security [ELECTR] The protection resulting from all measures designed to deny unauthorized persons information of value which might be derived from unintentional emissions from other than telecommunications systems. [em-ə'nā-shən sə'kyūr-ə-dē]

embedded command [COMPUT SCI] In word processing, a code inserted in a text document that instructs the printer to change its print attributes. [em'bed-əd kə'mənd]

embedded pointer [COMPUT SCI] A pointer set in a data record instead of in a directory. [em'bed-əd 'pōint-ər]

embedded system [COMPUT SCI] A computer system that cannot be programmed by the user because it is preprogrammed for a specific task and embedded within the equipment which it serves. [em'bed-əd 'sis-təm]

embossed plate printer [COMPUT SCI] In character recognition, a data preparation device which accomplishes printing by allowing a raised character behind the paper to push the paper against the printing ribbon in front of the paper. [em'bəst ,plāt 'print-ər]

embossing stylus [ENG ACOUS] A recording stylus with a rounded tip that forms a groove by

- method of images** [ELEC] In electrostatics, a method of determining the electric fields and potentials set up by charges in the vicinity of a conductor, in which the conductor and its induced surface charges are replaced by one or more fictitious charges. { 'meth-əd əv 'im-ij-əz }
- metric waves** [ELECTROMAG] Radio waves having wavelengths between 1 and 10 meters, corresponding to frequencies between 30 and 300 megahertz (the very-high-frequency band). { 'me-trik 'wəvz }
- mF** See millifarad.
- MF** See medium frequency.
- Mflop** See million floating-point operations per second. { 'em,fləp }
- MFSK** See multiple-frequency-shift keying.
- MHD generator** See magnetohydrodynamic generator. { 'emjəch'dē 'jen-ə,rād-ər }
- mho** See siemens. { mō }
- MIC** See microwave integrated circuit.
- mica capacitor** [ELEC] A capacitor whose dielectric consists of thin rectangular sheets of mica and whose electrodes are either thin sheets of metal foil stacked alternately with mica sheets, or thin deposits of silver applied to one surface of each mica sheet. { 'mī-kə kə'pas-əd-ər }
- mickey-mouse** [COMPUT SCI] To play with something new, such as hardware, software, or a system, until a feel is gotten for it and the proper operating procedure is discovered, understood, and mastered. { 'mik-ē 'maʊs }
- MICR** See magnetic-ink character recognition.
- microactuator** [ENG] A very small actuator, with physical dimensions in the submicrometer to millimeter range, generally batch-fabricated from silicon wafers. { ,mī-krō'ak-cha,wād-ər }
- microalloy diffused transistor** [ELECTR] A microalloy transistor in which the semiconductor wafer is first subjected to gaseous diffusion to produce a nonuniform base region. Abbreviated MADT. { ,mī-krō'al,oi də'fyzd tran'zis-tər }
- microalloy transistor** [ELECTR] A transistor in which the emitter and collector electrodes are formed by etching depressions, then electroplating and alloying a thin film of the impurity metal to the semiconductor wafer, somewhat as in a surface-barrier transistor. { ,mī-krō'al,oi tran'zis-tər }
- microammeter** [ELEC] An ammeter whose scale is calibrated to indicate current values in microamperes. { ,mī-krō'a,mēd-ər }
- microampere** [ELEC] A unit of current equal to one-millionth of an ampere. Abbreviated μA . { ,mī-krō'am,pir }
- microcapacitor** [ELECTR] Any very small capacitor used in microelectronics, usually consisting of a thin film of dielectric material sandwiched between electrodes. { ,mī-krō-kə'pas-əd-ər }
- microchannel plate** [ELECTR] A plate that consists of extremely small cylinder-shaped electron multipliers mounted side by side, to provide image intensification factors as high as 100,000. Also known as channel plate multiplier. { ,mī-krō'chan-əl 'plāt }
- microchip** See chip. { 'mī-krō,chip }
- microcircuitry** [ELECTR] Electronic circuit structures that are orders of magnitude smaller and lighter than circuit structures produced by the most compact combinations of discrete components. Also known as microelectronic circuitry, microminiature circuitry. { ,mī-krō'sər-kə-trē }
- microcode** [COMPUT SCI] A code that employs microinstructions; not ordinarily used in programming. { 'mī-krō,kōd }
- microcomputer** [COMPUT SCI] 1. A digital computer whose central processing unit resides on a single semiconductor integrated circuit chip, a microprocessor. 2. An electronic device, typically consisting of a microprocessor central processing unit, semiconductor memory (RAM), graphics display, and keyboard. Typical configurations also include a hard disk for persistent memory, a compact disk drive, a disk drive which allows removable disks to be used to move data in and out of the machine, and a pointing device. { ,mī-krō-kəm'pyūd-ər }
- microcomputer development system** [COMPUT SCI] A complete microcomputer system that is used to test both the software and hardware of other microcomputer-based systems. { ,mī-krō-kəm'pyūd-ər di'vel-əp-mənt ,sis-təm }
- microcontroller** [ELECTR] A microcomputer, microprocessor, or other equipment used for precise process control in data handling, communication, and manufacturing. { ,mī-krō-kən'trōl-ər }
- microcoulomb** [ELEC] A unit of electric charge equal to one-millionth of a coulomb. Abbreviated μC . { ,mī-krō'kū,ləm }
- microdiagnostic program** [COMPUT SCI] A microprogram that tests a specific hardware component, such as a bus or store location, for faults. { ,mī-krō,dī-əg'näs-tik 'prō-gram }
- microdisk** [COMPUT SCI] A small floppy disk with a diameter between 3 and 4 inches (7 and 10 centimeters). Also known as microfloppy disk. { 'mī-krō,disk }
- micro-electro-mechanical system** [ENG] A system in which micromechanisms are coupled with microelectronics, most commonly fabricated as microsensors or microactuators. Abbreviated MEMS. Also known as microsystem. { ,mī-krōi ,lek-trə-mə'kan-ə-kəl ,sis-təm }
- microelectronic circuitry** See microcircuitry. { ,mī-krō-i ,lek'trən-ik 'sər-kə-trē }
- microelectronics** [ELECTR] The technology of constructing circuits and devices in extremely small packages by various techniques. Also known as microminiaturization, microsystem electronics. { ,mī-krō-i ,lek'trən-iks }
- microelement** [ELECTR] Resistor, capacitor, transistor, diode, inductor, transformer, or other electronic element or combination of elements mounted on a ceramic wafer 0.025 centimeter thick and about 0.75 centimeter square; individual microelements are stacked, interconnected,

microchip *Sv* chip. { 'mī-krō,chip }

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and potted to form micromodules. [ENG] An element of a work cycle whose time span is too short to be observed by the unaided eye. { 'mī-krō-el-ə-mənt }

microfabrication [ENG] The technology of fabricating microsystems from silicon wafers, using standard semiconductor process technologies in combination with specially developed processes. { 'mī-krō,fab-rā'kā-shən }

microfarad [ELEC] A unit of capacitance equal to one-millionth of a farad. Abbreviated μF . { 'mī-krō'far-əd }

microfloppy disk *Sv* microdisk. { 'mī-krō,fläp-ē ,disk }

microhm [ELEC] A unit of resistance, reactance, and impedance, equal to 10^{-6} ohm. { 'mī-krōm }

microimage [COMPUT SCI] A single image stored on a microform medium. { 'mī-krō,im-ij }

microinstruction [COMPUT SCI] The portion of a microprogram that specifies the operation of individual computing elements and such related subunits as the main memory and the input/output interfaces; usually includes a next-address field that eliminates the need for a program counter. { 'mī-krō-in'strāk-shən }

microlock [ELECTR] 1. Satellite telemetry system that uses phase-lock techniques in the ground receiving equipment to achieve extreme sensitivity. 2. A lock by a tracking station upon a minitrack radio transmitter. 3. The system by which this lock is effected. { 'mī-krō,läk }

micromainframe [COMPUT SCI] A main frame of a computer placed on one or more integrated circuit chips. { 'mī-krō'mān,frām }

micromechanical display [ENG] A video display based on an array of mirrors on a silicon chip that can be deflected by electrostatic forces. Abbreviated MMD. { 'mī-krō-mā,kan-i-kəl dī'splā }

micromechanics [ENG] 1. The design and fabrication of micromechanisms. 2. *Sv* composite micromechanics. { 'mī-krō-mā'kan-iks }

micromechatronics [ENG] The branch of engineering concerned with micro-electro-mechanical systems. { 'mī-krō,mek-ə'trān-iks }

microminiature circuitry *Sv* microcircuitry. { 'mī-krō,min-ə-char 'sār-kā-trē }

microminiaturization *Sv* microelectronics. { 'mī-krō,min-ə-chə-rə'zā-shən }

micromodule [ELECTR] Cube-shaped, plug-in, miniature circuit composed of potted microelements; each microelement can consist of a resistor, capacitor, transistor, or other element, or a combination of elements.

microoperation [COMPUT SCI] Any clock-timed step of an operation. { 'mī-krō,äp-ə'rā-shən }

micro-opto-electro-mechanical system [ENG] A microsystem that combines the functions of optical, mechanical, and electronic components in a single, very small package or assembly. Abbreviated MOEMS. { 'mī-krō,äp-tō i'lek-trō mā'kan-ə-kəl 'sis-təm }

micro-opto-mechanical system [ENG] A microsystem that combines optical and mechanical functions without the use of electronic de-

vices or signals. Abbreviated MOMS. { 'mī-krō ,öp-tō-mā'kan-ə-kəl ,sis-təm }

microperf [COMPUT SCI] A type of continuous-feed computer paper having extremely small perforations along the separations and edges which give separated pages the appearance of standard typewriter paper. { 'mī-krō,pərf }

microphone [ENG ACOUS] An electroacoustic device containing a transducer which is actuated by sound waves and delivers essentially equivalent electric waves. { 'mī-krō,fōn }

microphone transducer [ENG ACOUS] A device which converts variation in the position or velocity of some body into corresponding variations of some electrical quantity, in a microphone. { 'mī-krō,fōn tranz'dü-sər }

microphonics [ELECTR] Noise caused by mechanical vibration of the elements of an electron tube, component, or system. Also known as microphonism. { 'mī-krō'fān-iks }

microphonism *Sv* microphonics. { 'mī-krō-fā ,niz-əm }

microprocessing unit [ELECTR] A microprocessor with its external memory, input/output interface devices, and buffer, clock, and driver circuits. Abbreviated MPU. { 'mī-krō'prä,ses-ij ,yü-nät }

microprocessor [ELECTR] A single silicon chip on which the arithmetic and logic functions of a computer are placed. { 'mī-krō'prä,ses-ər }

microprocessor intertie and communication system [COMMUN] A data communications system which provides the communication network with its own dedicated processing resources and reduces in-terminal response time, compensating for the capacity used up by communications terminals. Abbreviated MICS. { 'mī-krō'prä,ses-ər 'in-tär,tī ən kə,myü-nə'kā-shən ,sis-təm }

microprogram [COMPUT SCI] A computer program that consists only of basic elemental commands which directly control the operation of each functional element in a microprocessor. { 'mī-krō'prō-grəm }

microprogrammable instruction [COMPUT SCI] An instruction that does not refer to a core memory address and that can be microprogrammed, thus specifying various commands within one instruction. { 'mī-krō-prä'gram-ə-bəl in'strāk-shən }

microprogramming [COMPUT SCI] Transformation of a computer instruction into a sequence of elementary steps (microinstructions) by which the computer hardware carries out the instruction. { 'mī-krō'prō,gram-i-j }

micropump *Sv* electroosmotic driver. { 'mī-krō ,pəmp }

microradiometer [ELECTR] A radiometer used for measuring weak radiant power, in which a thermopile is supported on and connected directly to the moving coil of a galvanometer. Also known as radiomicrometer. { 'mī-krō,rād-ē'äm-əd-ər }

microspec function [COMPUT SCI] The set of microinstructions which performs a specific operation in one or more machine cycles. { 'mī-krō ,spek ,fəŋk-shən }



ISBN 978-0-07-144210-7
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