

**MODERN
DICTIONARY
of
ELECTRONICS**

SEVENTH EDITION
REVISED AND UPDATED

Rudolf F. Graf



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For information, please contact:

Manager of Special Sales
Butterworth-Heinemann
225 Wildwood Avenue
Woburn, MA 01801-2041
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Fax: 781-904-2620

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the heart reduces the impedance of the finger, and the resulting change in the current between the electrodes is recorded or displayed on a cathode-ray tube.

fingers — Nonpreferred term for edge-board contact.

finished blank — A crystal product after completion of all processes. It may also include the electrodes adherent to the crystal blank.

finishing — The process of repeated hand lapping and electrical testing by which a finished crystal blank is brought up to specifications.

finishing rate — Expressed in amperes, the rate of charge to which the charging current of a battery is reduced near the end of the charge to prevent excessive gassing and temperature rise.

finish lead — The lead connected to the finish, or outer end, of a coil.

finite — Having fixed and definite limits.

finite-element method — A procedure for solving electromagnetic field problems by dividing the domain of interest into small, basic elements and by solving differential equations in each of those elements.

finite-state machine — A computer in which a set of inputs determines both the set of outputs and also the internal state of the computer.

fins — Radial sheets or discs of metal attached to metal parts of a power tube, power transistor, or other component for the purpose of dissipating heat.

fin waveguide — A waveguide in which a thin longitudinal metal fin is placed to increase the range of wavelengths over which the waveguide can transmit signals efficiently. The method usually is used with circular waveguides.

FIPS — Abbreviation for Federal Information Processing Standard. A standard approved for use by U.S. government agencies.

fire — 1. To change from a blocked condition, in which negligible current flows, to a saturated condition, in which heavy current flows. 2. The term used to describe the act of heating a thick-film circuit so that the resistors, conductors, capacitors, etc., will be transformed into their final form.

fire-control equipment — Equipment that takes in target indications from optical or radar devices and, after calculating the motion of the target and firing vehicle, properties of air, etc., puts out directions of bearing, elevation, and timing for aiming and firing the guns.

fire-control radar — Radar employed for directing gunfire against the targets it observes.

fired tube (tr, atr, and pre-tr tubes) — The condition of a tube while a radio-frequency glow discharge exists at the resonant gap, resonant window, or both.

firewall — 1. A combination of hardware and software that separates a local area network (LAN) into two or more parts for security purposes. 2. A method of partially or totally blocking access (from machines not on a LAN) or of filtering/monitoring incoming packets.

firing — 1. In any gas- or vapor-filled tube, the ionization of the gas and the start of current flow. 2. The excitation of a device during a brief pulse. 3. In a magnetic amplifier, the transition from the unsaturated to the saturated state of the saturable reactor during the conducting or gating alternation. 4. An adjective modifying phase or time, to designate when firing occurs.

firing angle — 1. The electrical angle of the plate-supply voltage at which ionization of a gaseous tube occurs. 2. In a magnetic amplifier, the point on a sine-wave control voltage at which the control ampere-turns are sufficient to saturate the core. This is the point at which the secondary winding (load) impedance drops to zero, and almost all of the supply voltage appears across the load.

firing furnace — Furnace used for the curing of multilayer ceramics for integrated electronics and for the firing of thick-film materials on substrates.

firing point — The point at which the gas or vapor in the tube ionizes and current begins to flow.

firing potential — The controlled potential at which conduction through a gas-filled tube begins.

firing profile — A graph of time versus temperature or, in a continuous thick-film furnace, of position versus temperature.

firmware — 1. A computer program or software stored permanently in PROM or ROM or semipermanently in EPROM. 2. Programs or instructions that are stored in read-only memories; firmware is analogous to software in a hardware form. These instructions are for internal processor functions only, and are transparent to the user. 3. The internal interconnections that permanently determine what functions a device or system can perform. Also called microprogram. 4. Sets of instructions cast into user-modifiable hardware. 5. A series of instructions in ROM (read-only memory). 6. Data stored in a nondestructive form such as hard-wired or in a ROM. 7. An extension to a computer's basic command repertoire to create microprograms for a user-oriented instruction set. This extension to the basic instruction set is done in ROM and not in software. The ROM converts the extended instructions to the basic instructions of the computer.

first article — A sample part or assembly manufactured prior to the start of production for the purpose of ensuring that the manufacturer is capable of manufacturing a product that will meet the requirements.

first audio stage — The first stage in an audio amplifier.

first detector — Now called the mixer. In a super-heterodyne receiver, the stage in which the local-oscillator signal is combined with the modulated incoming radio-frequency signal to produce the modulated intermediate-frequency signal.

first fit — In a computer, an algorithm for memory allocation that searches the free list only long enough to find an unused memory block that is large enough to satisfy the requesting task.

first Fresnel zone — In optics and radio communications, the circular portion of a wave front intersecting the line between an emitter and a more distant point where the resultant disturbance is being observed. The center intersects the front with the direct ray, and the radius is such that the shortest path from the emitter through the periphery to the receiving point is one half-wave longer than the ray.

first-generation computer — A computer in which vacuum-tube components are used.

first-in, first-out (FIFO) memory — 1. A type of memory with separate input and output ports. The first data to enter the input port are the first to exit the output port. One use of FIFO memory is as a buffer between a terminal and a LAN in a network interface controller. 2. A data access mechanism that implements a queue. Data elements are always extracted from the data structure in the same order that they are entered (the first element in is the first element out).

first selector — The selector that immediately follows a line-finder in a switch train. It responds to the dial pulses that represent the first digit of the called telephone number.

first-shot effect — A term used relative to solid-state (electronic) timers using a resistor-capacitor (RC) single time-constant circuit. Due to the forming effect leakage found in electrolytic capacitors when stored, the first and sometimes second and third operations have longer time delays. The repeat accuracy specification does not include