

**MODERN
DICTIONARY
of
ELECTRONICS**

SEVENTH EDITION

REVISED AND UPDATED

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partition—A portion of a hard disk with a size expressed in the disk sectors.

partitioning—Also called segmenting. 1. In a computer, subdividing a large block into smaller, more conveniently handled subunits. 2. Logical grouping of electrical functions within a given set of hardware components.

partition noise—A type of noise that appears in multielement vacuum tubes due to the random division of cathode current among the different electrodes. It has been called pseudoshot noise. It is more pronounced in pentodes and tetrodes than in triodes.

Part 95 rules—FCC rules and regulations governing the Citizens Radio Service.

part programmer—One who translates the physical operations for machining a part into a series of mathematical steps and then prepares the coded computer instructions for those steps.

parts density—The number of parts in a unit volume.

party line—A telephone line serving more than one subscriber, with discriminatory ringing for each. Usually either a two-party or a four-party line. Lines serving more than four parties are called rural lines.

Pascal—A block-structured high-level programming language in the style of ALGOL. It incorporates the control structures of structured programming (e.g., sequence, selection, repetition) and data structures (e.g., arrays, records, files, sets, and user-defined types). Named for the French physicist Blaise Pascal, it is in many ways simpler to use than BASIC. Pascal can be made machine-dependent or transportable.

pascal—The SI unit of pressure or stress. One pascal equals 1 newton per square meter. Letter symbol: Pa.

Paschen's law—The sparking potential between two terminals in a gas is proportional to the pressure times the spark length. For a given voltage, this means the spark length is inversely proportional to the pressure.

pass—One cycle of processing of a body of data.

passband—1. The band of frequencies that will pass through a filter with essentially no attenuation. 2. The frequency range in which a filter is intended to pass signals.

passband filters—Filters used in modem design to allow only the frequencies within the communication channel to pass, while rejecting all frequencies outside the channel.

passband ripple—In a filter, the difference, in decibels, between the minimum loss point and the maximum loss point in a specified bandwidth.

pass element—An automatic variable-resistance device, either a vacuum tube or power transistor, in series with the source of dc power. The pass element is driven by the amplifier error signal to increase its resistance when the output needs to be lowered or to decrease its resistance when the output must be raised. *See also* series regulator.

passivate—To treat the surface of a semiconductor with a relatively inert material in order to protect it from contamination.

passivated region—Any region covered by glass, SiO₂, nitride, or other protective material.

passivation—1. The growth of an oxide layer on the surface of a semiconductor to provide electrical stability by protecting the surface against moisture, contamination, particles, and mechanical damage. This reduces reverse-current leakage, increases breakdown voltages, and raises the power dissipation rating. 2. *See* glassivation. 3. A coating of electrically inert material, such as glass or silicon dioxide, used to protect semiconductors or resistors from environmental contamination. Unpassivated nickel-chromium resistors, for example, will open in the presence of water and a large applied dc potential. 4. The growth

of an oxide layer on the surface of a semiconductor to provide mechanical protection by isolating the transistor surface from electrical, mechanical (scratching of metal), and chemical conditions in the environment. 5. The technique of providing a semiconductor device chip with an isolating layer or "skin" that protects it from contamination by unwanted impurity atoms or molecules. With silicon devices, the isolating layer is usually composed of silicon dioxide (quartz) or silicon nitride, grown on the chip at a high temperature. 6. Electrolytical treatment of a metal or semiconductor to create a chemically bonded oxide layer on the surface to protect it from corrosion. 7. The formation of an insulating layer directly over a circuit or circuit element to protect the surface from contaminants, moisture, or particles. 8. Surface oxidation that acts as a barrier to further oxidation and corrosion.

passive—1. An inert component that may control, but does not create or amplify, energy. 2. Pertaining to a general class of device that operates on signal power alone. 3. Incapable of generating power or amplification. A nonpowered device that generally presents some loss to a system. 4. Describing a device that does not contribute energy to the signal it passes.

passive acoustic monitoring—The use of microphones and ancillary equipment to provide surveillance by monitoring the sounds in a protected premise.

passive communication satellite—A communication satellite that simply reflects a signal without amplification. In essence, it is a radio mirror. It requires a large reflecting surface and large, high-powered, complex ground stations.

passive component—1. A nonpowered component generally presenting some loss (expressed in decibels) to a system. 2. A component that has no gain characteristics, such as a capacitor or a resistor. 3. An electrical component without gain or current-switching capability. Commonly used when referring to resistors, capacitors, and inductors.

passive decoder—A device that is set so that only one specific reply code will pass a decoder and give an output from one decoder for display.

passive detection—Detection of a target by reception of signals emitted by the target rather than by means involving a signal source independent of the target.

passive device—1. A device that exhibits no transistance. It has no gain or control and does not require any input other than a signal to perform its function. Examples of passive devices are conductors, resistors, and capacitors. 2. A component that does not provide rectification, amplification, or switching, but reacts to voltage and current; e.g., resistor, capacitor. 3. An electronic component that does not require a bias voltage, e.g., a resistor, capacitor, or inductor.

passive electric network—An electric network with no source of energy.

passive element—1. A parasitic element. 2. A circuit element with no source of energy (e.g., a resistor, capacitor, inductor). 3. An electronic circuit element that displays no gain or control, such as a resistor or capacitor.

passive film circuit—A thin- or thick-film circuit network consisting entirely of passive circuit elements and interconnections.

passive homing system—A guidance system based on the sensing of energy radiated by the target. *See also* active homing; homing guidance.

passive intrusion sensor—A passive sensor in an intrusion alarm system that detects an intruder within the range of the sensor. Examples are a sound-sensing detection system, a vibration detection system, an infrared-motion detector, and an E-field sensor.