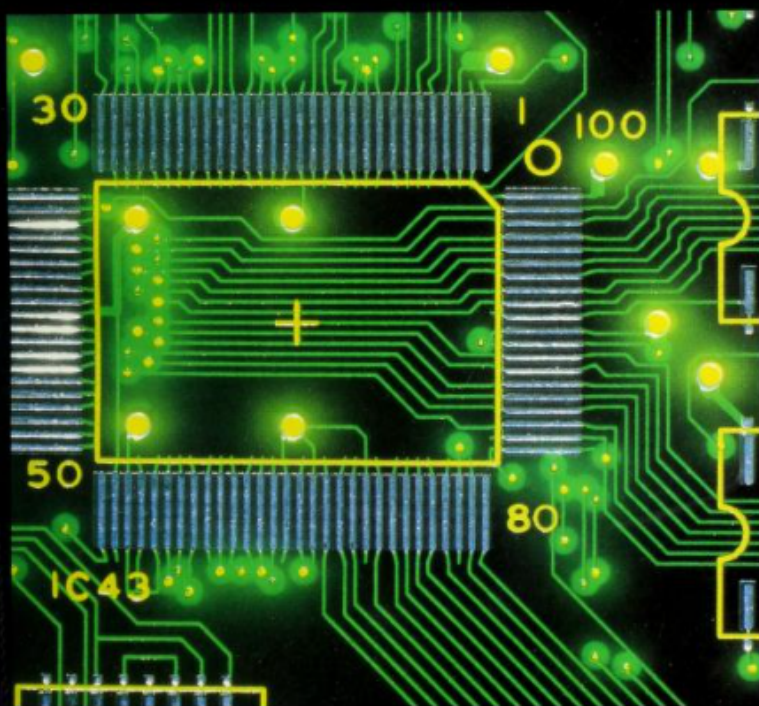


PENGUIN

DICTIONARY OF
ELECTRONICS

EDITED BY VALERIE ILLINGWORTH



NEW EDITION



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diametrical voltage ►voltage between lines.

diamond-like carbon A thin-film form of carbon that has a crystal structure of diamond, though it may contain significant crystalline defects and carbon-based impurities. It is produced by ►chemical vapour deposition. This material has a very wide ►energy band gap, and behaves like a ►semiconductor. It is being developed for flat-panel display technologies and high-speed microelectronics.

diaphragm 1. A vibrating membrane used in sound ►transducers such as microphones and loudspeakers. **2.** A porous partition in an electrolytic cell that separates the electrolytes while allowing ions to pass through.

diaphragm relay ►relay.

dibit A pair of binary bits transmitted across a channel simultaneously.

dichroic mirror A mirror designed to reflect one designated optical frequency band and transmit all others. It is used in colour TV cameras and for mixers and modulators in optical communication systems.

Dicke's radiometer An instrument that measures microwave noise power precisely by comparing it with the noise from a standard source in a waveguide.

die ►chip.

dielectric A solid, liquid, or gaseous material that can sustain an electric field and act as an insulator. A *perfect dielectric* is one in which no energy is lost from an electric field applied across the dielectric. An *imperfect dielectric* is one in which ►electric hysteresis losses occur. The displacement, D , lags behind the applied field, E , resulting in a typical hysteresis curve (►magnetic hysteresis) and in energy losses from the applied field, which appear in the form of heat.

dielectric constant *Syn.* relative permittivity. Symbol: ϵ_r . A dimensionless property of a material or medium equal to the ratio of the permittivity of the material or medium to the permittivity of free space. ►permittivity.

dielectric heating A method of heating an insulating material, such as a plastic, in which a high-frequency alternating electric field is applied to the material. The periodic alternation of the electric field causes an alternating ►dielectric polarization of the specimen, which results in the heating effect. Dielectric heating is usually effected by placing the specimen between specially shaped metal *applicators*, which form the electrodes of a capacitor, and applying the alternating field across them. A single applicator is sometimes used, applied to one surface of the specimen, when local heating only is required. The *heating depth* is the depth below the surface at which the heating effect due to the single applicator is observed. ►induction heating.

dielectric isolation A method of isolating individual regions in an integrated circuit, particularly a ►bipolar integrated circuit, by surrounding the region with insulating material (dielectric) rather than with isolating ►diffused junctions. There are many different methods used to achieve dielectric isolation.