

SEVENTH EDITION

MODERN
DICTIONARY
of
ELECTRONICS

RUDDOLF F. GRAF



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REVISED AND UPDATED

potentiometer circuit—A network arranged so that when two or more electromotive forces (or potential differences) are present in as many branches, the response of a suitable detecting device in any branch can be made zero by adjusting the electrical constants of the network.

potentiometer recorder—A null-balance type of recorder using a servo-operated voltage-balancing device; the sliding contact of a precision measuring potentiometer is adjusted automatically by a servomechanism so that the difference in voltage of the circuit becomes zero. Main feature is high sensitivity.

potentiometric transducer—A transducer in which displacement of a force-summing member is transmitted to the slider in a potentiometer, thus changing the ratio of output resistance to total resistance. Transduction is accomplished by changing the ratios of a voltage divider.

potentiometric transduction—The conversion of the measurand into a change in the position of a contact on a resistance element across which excitation is applied, the output usually being given as a voltage ratio.

pothead—An insulator for making a sealed joint between an underground cable and overhead line.

potter diagram—A vector diagram showing the voltage and current relationships in an ac generator.

pot life—Also called working life. 1. The period after the addition of a catalyst to a potting compound during which the potting operation must be completed. 2. The time period during which a compound remains suitable for the intended use after compounding ingredients, such as solvents or catalysts, have been added.

pottered circuit—A circuit that has been encapsulated in a nonconductive material.

pottered line—A pulse-forming network immersed in oil and enclosed in a metal container.

potter oscillator—A cathode-coupled multivibrator.

potting—1. An embedding process for parts that are assembled in a container or can into which the insulating material is poured, with the container remaining an integral part as the outer surface of the finished unit. 2. Sealing of a component (e.g., the cable end of a multiple-contact connector) with a plastic compound or material to exclude moisture, prevent short circuits, and provide strain relief. 3. A process of embedding a part or assembly by complete immersion in the potting compound. A container, can, or shell used as a mold is retained as an integral part of the finished product. Usually refers to protective encasements of greater than 100 mils (2.54 mm) thickness.

potting compound—A sealing material used to fill the case or enclosure in which a component is contained. particles of magnetic material mixed with a suitable bonding material and pressed into shape.

power—1. The energy dissipated in an electrical or electronic circuit or component that is conducting either ac or dc. 2. Electrical energy developed to do work, such as the voltage from an amplifier used to drive a speaker. Also acoustical energy or sound pressure developed in a room by a speaker. 3. Rate of doing work. Some units of power are the foot-pound per second, or (in the cgs system) 1 erg/sec, the watt (joule/second), and the kilowatt.

power amplification—See power gain, 1.

power amplifier—1. An amplifier intended for driving one or more speakers or other transducers. 2. The final stage in a multistage amplifier circuit, designed to give power to the load, rather than to be used mainly as a voltage amplifier. 3. A fluidic device that causes a change in output power following a change of sufficient

potentiometer circuit — power dissipation

magnitude in control power. 4. An amplifier driven by a relatively low voltage, low-power signal (of the order of 0.1 milliwatt or less) that delivers a substantial power output to low-impedance speaker loads. Typical power outputs may range from a few watts to several hundred watts, into impedances in the range of 2 to 16 ohms. The term power amplifier is commonly used to distinguish an amplifier that does not handle source signals directly and does not have volume or tone control functions. 5. A device that causes a change in output power following a change in control power. 6. An amplifier that can deliver a relatively large current and that can often operate from fairly high voltages. Power amplifiers are widely used in audio, but can also be used to drive servomotors and the like.

power amplifier input sensitivity—The input that will drive an amplifier to its maximum rated output power. Usually measured in dbm, dbV, or volts.

power-amplifier stage—1. An audio-frequency amplifier stage capable of handling considerable audio-frequency power without distortion. 2. A radio-frequency amplifier stage used in a transmitter primarily to increase the power of the carrier signal.

power attenuation—See power loss, 1.

power bandwidth—The range of audio frequencies over which an amplifier can produce half its rated power without exceeding its rated distortion. It is determined by using a measurement procedure standardized by the Institute of High Fidelity (IHF). This specification indicates how much power is available at the critical high and low frequencies. The wider the power bandwidth, the better the amplifier.

power (temperature-rise) coefficient—The maximum rise in hot-spot temperature of a resistor above ambient, per watt of dissipation, assuming free-air convection and negligible loss of heat through the leads, after thermal equilibrium has been reached, usually expressed in degrees Celsius per watt.

power conditioning—The process of maintaining uniform voltage on a power line.

power connection—British term used for the constant horsepower connection in a multispeed motor.

power consumption—The maximum wattage used by a device within its operating range during steady-state signal conditions.

power cord—Flexible, insulated cable used in such applications as supplying line power to power tools and electronic equipment.

power density—1. The radiated field strength set up by a radiating source, expressed in microvolts per meter or in db above 1 μ V/m. 2. Power in a band per hertz, or the total power in a band of frequencies divided by the bandwidth in hertz. 3. The power output of a battery, expressed in watts, per unit weight of the battery.

power derating—Use of computed curves to determine the correct power rating of a device or component to be used above its reference ambient temperature.

power detection—Detection in which the power output of the detector is used for supplying a substantial amount of power directly to a device such as a speaker or recorder.

power detector—A vacuum tube detector operating with such a high plate voltage that strong input signals can be handled without appreciable distortion.

power dissipation—1. The dispersion of the heat generated within a device or component when a current flows through it. This is accomplished by convection to the air, radiation to the surroundings, or conduction. 2. The supply power consumed by a logic circuit operating with a 50-percent duty cycle (equal times in the logical 0 and logical 1 states).

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consumer electronics, optics, microelectronics, computers, communications, and medical electronics. From the basic elements of theory to the most cutting-edge circuit technology, this book explains it all in both words and pictures. For easy reference, the author has provided definitions for standard abbreviations and equations as well as tables of SI (International System of Units) units, measurements, and schematic symbols.

Rudolf F. Graf is an author whose name is familiar to electronics professionals and hobbyists alike. Mr. Graf graduated from Brooklyn Polytechnic Institute as an electronics engineer, and did his graduate work at New York University. He has been active in the electronics industry for more than fifty years in capacities ranging from design and consulting engineer to chief instructor at electronics and television schools, as well as in sales and marketing. He currently lives in New York. His many books offer a practical and enjoyable approach to often complex material. Other Newnes titles by Mr. Graf include *Video Scrambling and Descrambling, Second Edition*, and his full five-book series on electronics circuits.

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— Larry Steckler, Editor-in-Chief of *Electronics* and *Popular Electronics*



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