

MODERN
DICTIONARY
of
ELECTRONICS

SIXTH EDITION

ORIGINAL
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ELECTRONIC



Rudolf F. Graf is an author whose name is familiar to engineers, technicians, do-it-yourselfers, and hobbyists. His many books and articles on mechanics, electricity, electronics and automobiles have a well-deserved reputation for making complex technology easily understandable and enjoyable. Mr. Graf is a graduate electronics engineer and received his MBA at New York University. He is a Senior Member of the IEEE, a licensed amateur radio operator, and holder of a first-class radiotelephone operator's license. He has been in the electronics industry for more than 35 years.

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Rudolf F. Graf

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shielding device designed to reduce the effect of stray light on an optical system.

baffle plate—A metal plate inserted into a waveguide to reduce the cross-sectional area for wave-conversion purposes.

bail—A loop of wire used to prevent permanent separation of two or more parts assembled together—e.g., the bail holding dust-caps on round connectors.

Bakelite—A trademark of the Bakelite Corp. for its line of plastic and resins. Formerly, the term applied only to its phenolic compound used as an insulating material in the construction of radio parts.

bake-out—Subjecting an unsealed (hybrid) circuit package to an elevated temperature to bake out moisture and unwanted gases prior to final sealing.

balance—1. The effect of blending the volume of various sounds coming over different microphones in order to present them in correct proportion. 2. The maintenance of equal average volume from both speaker systems of a stereo installation. 3. Relative volume, as between different voices or instruments bass and treble, or left and right stereo channels. 4. Either a condition of symmetry in an electrical circuit, such as a Wheatstone bridge, or the condition of zero output from a device when properly energized. In the latter sense, depending upon the nature of the excitation, two general categories of balance may be encountered: for dc excitation, resistive balance; for ac excitation, resistive and/or reactive balance.

balance control—1. On a stereo amplifier, a differential gain control used to vary the volume of one speaker system relative to the other without affecting the overall volume level. As the volume of one speaker increases and the other decreases, the sound appears to shift from left to center to right, or vice versa. 2. A variable

resistor used to compensate for any slight loss of signal in the right or left channel of a stereo amplifier. To some extent, this control can compensate for unbalanced speakers and be used for adjustment when the listener is not in an equidistant position between the two loudspeakers. 3. A variable component, such as a potentiometer or variable capacitor, used to balance bridges, null circuits, or phase speakers.

balanced—1. Electrically alike and symmetrical with respect to ground. 2. Arranged to provide balance between certain sets of terminals.

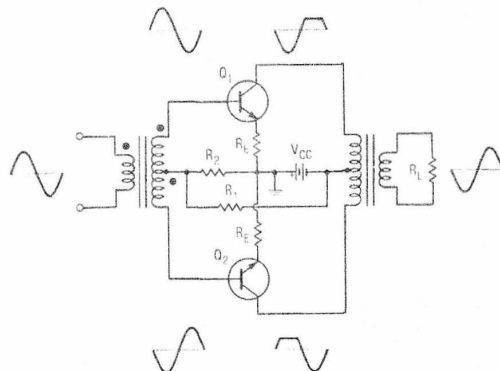
balanced amplifier—An amplifier circuit with two identical signal branches, connected to operate in phase opposition and with their input and output connections each balanced to ground; for example, a push-pull amplifier (see below).

balanced armature—An armature which is approximately in equilibrium with respect to both static and dynamic forces.

balanced-armature unit—The driving unit used in magnetic speakers, consisting of an iron armature pivoted between the poles of a permanent magnet and surrounded by coils carrying the audio-frequency current. Variations in the audio-frequency current cause corresponding changes in the armature magnetism and corresponding movements of the armature with respect to the poles of the permanent magnet.

balanced bridge—A bridge circuit with its components adjusted so that it has an output voltage of zero.

balanced circuit—1. A circuit with two sides electrically alike and symmetrical to a common reference point, usually ground. 2. A circuit terminated by a network that has infinite impedance losses. 3. A circuit terminated by a network



Balanced push-pull amplifier.

whose impedance balances that of the line, resulting in negligible return losses.

4. A circuit whose electrical midpoint is grounded, as opposed to the single-ended circuit, which has one side grounded. 5. A null bridge circuit. 6. Telephone circuit in which the two conductors are electrically balanced to each other and to ground.

balanced converter—See Balun.

balanced currents—Also called push-pull currents. In the two conductors of a balanced line, currents which are equal in value and opposite in direction at every point along the line.

balanced detector—A demodulator for frequency-modulation systems. In one form, the output consists of the rectified difference of the two voltages produced across two resonant circuits, one circuit being tuned slightly above the carrier frequency and the other slightly below.

balanced line—A line or circuit utilizing two identical conductors. Each conductor is operated so that the voltages on them at any transverse plane are equal in magnitude and opposite in polarity with respect to ground. Thus, the currents on the line are equal in magnitude and opposite in direction. A balanced line is preferred where minimum noise and crosstalk are desired.

balanced-line system—A system consisting of a generator, balanced line, and load adjusted so that the voltages of the two conductors at all transverse planes are equal in magnitude and opposite in polarity with respect to ground.

balanced low-pass filter—A low-pass filter designed to be used with a balanced line.

balanced magnetic switch—A magnetic switch that is operated by a balanced magnetic field in such a manner as to resist defeat with an external magnet. It signals an alarm when it detects either an increase or decrease in magnetic field strength.

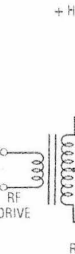
balanced method—A method of measurement in which the reading is taken at zero. It may be a visual or audible reading, and in the latter case the null is the no-sound setting.

balanced modulator—An amplitude modulator in which the control grids of two tubes are connected for parallel operation, and the screen grids and plates for push-pull operation. After modulation, the output contains the two sidebands without the carrier.

balanced network—1. A hybrid network in which the impedances of the opposite branches are equal. 2. A network in which the corresponding series impedance elements are identical and symmetrical with respect to ground.

balanced oscillator—Any oscillator in

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