

***IEEE Standard Dictionary of
Electrical and Electronics Terms***

An American National Standard
Acknowledged as An American National Standard
July 8, 1988

IEEE
Standard Dictionary
of
Electrical and
Electronics
Terms

Fourth Edition

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Published by
The Institute of Electrical and Electronics Engineers, Inc.
New York, NY

Library of Congress Catalog Number 88-082198

ISBN: 1-55937-000-9

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November 3, 1988

SH12070

Introduction

From their earliest years, both the American Institute of Electrical Engineering (AIEE) (1884) and the Institute of Radio Engineers (IRE) (1912) published standards defining technical terms. They have maintained this practice since they were combined in 1963 to become the IEEE (Institute of Electrical and Electronics Engineers).

In 1928 the AIEE organized Sectional Committee C42 on Definitions of Electrical Terms under the procedures of the American Standards Association, now the American National Standards Institute. In 1941 AIEE published its first edition of *American Standard Definitions of Electrical Terms* in a single volume. However, by the time a second edition was ready, the highly accelerated development of new terms made it impracticable to publish in a single volume, and 17 separate documents, each limited to a specific field, were published from 1956 to 1959.

Over the years, IRE published a large number of standards that either included definitions or were devoted entirely to definitions. In 1961 it published all of its then-approved definitions in an alphabetically arranged single volume.

The 1972, 1977, and 1984 editions of the *IEEE Standard Dictionary of Electrical and Electronics Terms* included all terms and definitions that had been standardized previously by IEEE, as well as many from American National Standards and the International Electrotechnical Vocabulary.

Most of the definitions that have been continued from the earlier editions have been reaffirmed because of their inherent usefulness. The committees originally responsible for these definitions still consider them to be equally appropriate at the present time.

The current 1988 edition includes terms from standards generated since 1984.

- fication; semiconductor; semiconductor rectifier stack. 245
- thermal resistance junction-to-ambient, (formerly θ_{JA}) ($R_{\theta JA}$) (light emitting diodes).** The thermal resistance (steady-state) from the semiconductor junction (s) to the ambient. 162
- thermal resistance junction-to-case, (formerly θ_{JC}) ($R_{\theta JC}$) (light emitting diodes).** The thermal resistance (steady-state) from the semiconductor junction (s) to a stated location on the case. 162
- thermal short-time current rating (current transformer).** The root-mean-square symmetrical primary current that may be carried for a stated period (five seconds or less) with the secondary winding short-circuited, without exceeding a specified maximum temperature in any winding. *See: instrument transformer.* 203
- thermal subsystem (terrestrial photovoltaic power systems).** The subsystem that receives thermal energy from the array subsystem. The thermal energy may be utilized for a thermal load application or dissipated. *See: array control* 496
- thermal telephone receiver (thermophone).** A telephone receiver in which the temperature of a conductor is caused to vary in response to the current input, thereby producing sound waves as a result of the expansion and contraction of the adjacent air. *See: loud-speaker.* 328
- thermal tuning.** *See: tuning, thermal.*
- thermal voltage converter (electric instrument).** A thermoelement of low-current input rating with an associated series impedance or transformer, such that the electromotive force developed at the output terminals gives a measure of the voltage applied to the input terminals. *See: thermal converter.* 280
- thermal watt converter.** *See: thermal power converter; thermal converter.*
- thermionic arc (gas).** An electric arc characterized by the fact that the thermionic cathode is heated by the arc current itself. *See: discharge (gas).* 244, 190
- thermionic emission (Edison effect) (Richardson effect).** The liberation of electrons or ions from a solid or liquid as a result of its thermal energy. *See: electron emission.* 333, 125
- thermionic generator.** A thermoelectric generator in which a part of the circuit, across which a temperature difference is maintained, is a vacuum or a gas. *See: thermoelectric device.* 191
- thermionic grid emission.** Current produced by electrons thermionically emitted from a grid. *See: electron emission.* 333, 125
- thermionic tube.** An electron tube in which the heating of one or more of the electrodes is for the purpose of causing electron or ion emission. *See: hot cathode tube.* 125
- thermistor (1) (general).** An electron device that makes use of the change of resistivity of semiconductor with change in temperature. *See: bolometric detector; semiconductor.* 245, 7
- (2) (power semiconductor).** A semiconductor device whose electric resistance is dependent upon temperature. 66
- (3) (waveguide components).** A form of bolometer element having a negative temperature coefficient of resistivity which typically employs a semiconductor bead. 166
- thermistor mount (bolometer mount) (waveguide).** A waveguide termination in which a thermistor (bolometer) can be incorporated for the purpose of measuring electromagnetic power. *See: waveguide.* 244, 179
- thermocouple.** A pair of dissimilar conductors so joined at two points that an electromotive force is developed by the thermoelectric effects when the junctions are at different temperatures. *See: electric thermometer (temperature meter); thermoelectric effect.* 47, 7
- thermocouple converter (thermoelement).** *See: thermal converter.*
- thermocouple extension wire.** A pair of wires having such electromotive-force-temperature characteristics relative to the thermocouple with which the wires are intended to be used that, when properly connected to the thermocouple, the reference junction is in effect transferred to the other end of the wires. 7
- thermocouple instrument.** An electrothermic instrument in which one or more thermojunctions are heated directly or indirectly by an electric current or currents and supply a direct current that flows through the coil of a suitable direct-current mechanism, such as one of the permanent-magnet moving-coil type. *See: instrument.* 328
- thermocouple leads.** A pair of electrical conductors that connect the thermocouple to the electromotive force measuring device. One or both leads may be simply extensions of the thermoelements themselves or both may be of copper, dependent on the thermoelements in use and upon the physical location of the reference junction or junctions relative to the measuring device. 7
- thermocouple thermometer.** A temperature-measuring instrument comprising a device for measuring electromotive force, a sensing element called a thermocouple that produces an electromotive force of magnitude directly related to the temperature difference between its junctions, and electrical conductors for operatively connecting the two. 7
- thermocouple vacuum gauge.** A vacuum gauge that depends for its operation on the thermal conduction of the gas present, pressure being measured as a function of the electromotive force of a thermocouple the measuring junction of which is in thermal contact with a heater that carries a constant current. It is ordinarily used over a pressure range of 10^{-1} to 10^{-3} conventional millimeter of mercury. *See: instrument.* 328
- thermoelectric cooling device.** A thermoelectric heat pump that is used to remove thermal energy from a body. *See: thermoelectric device.* 248, 191
- thermoelectric device.** A generic term for thermoelectric heat pumps and thermoelectric generators. 191
- thermoelectric effect.** *See: Seebeck effect.*
- thermoelectric effect error (bolometric power meter).**