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Terms and Definitions for Interconnecting and Packaging Electronic Circuits

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A standard developed by IPC

Association Connecting Electronics Industries

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- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feedback system on use and problems for future improvement

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- Increase cycle time
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Terms and Definitions for Interconnecting and Packaging Electronic Circuits

Developed by the IPC Terms and Definition Committee (2-30)

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Users of this publication are encouraged to participate in the development of future revisions.

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Acknowledgment

Members of the IPC Terms and Definition Committee (2-30) have worked together to develop this document. We would like to thank them for their dedication to this effort. Any document involving a complex technology draws material from a vast number of sources. While the principal members of the IPC Terms and Definitions Committee (2-30) are shown below, it is not possible to include all of those who assisted in the evolution of this standard. To each of them, the members of the IPC extend their gratitude.

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Terms and Definitions for Interconnecting and Packaging Electronic Circuits

Scope This document is designed to provide definitions for terms commonly used in the electronics industry which have meanings specific to electronics. The definitions are intended to provide sufficient clarity of detail such that a reader utilizing English as a second language could understand the subtleties of the meaning. Terms which have a specialized meaning or usage within a single IPC document may be defined differently within that document. Commonly used English language terms which do not change meaning when applied to electronics are not defined here.

Acronyms commonly used in electronics are defined in Appendix A.

Note: Changes made to this revision of the IPC-T-50 are indicated throughout by gray-shading of the term and definition and/or Figure header.

A

AABUS (As Agreed Between User and Supplier)

Indicates additional or alternate requirements to be decided between the user and the supplier in the procurement documentation. Examples include contractual requirements, modifications to purchase documentation and information on the drawing. Agreements can be used to define test methods, conditions, frequencies, categories or acceptance criteria within a test, if not already established.

Abrasion Resistance

The ability of a material to withstand surface wear.

Abrasive Trimming

Adjusting the value of a film component by notching it with a finely-adjusted stream of an abrasive material against the resistor surface.

Absolute Maximum Ratings

The range of voltages, currents, temperatures, etc., beyond which a device may suffer degradation in performance or reliability, may cease functioning or may suffer irreversible damage.

Absorption Coefficient

A measure of the absorption of radiant energy as it passes through a specific substance.

Absorptivity, Infra-red

The ratio (or percentage) of the amount of energy absorbed by a substrate as compared with the total amount of incident energy.

Accelerated Aging

A test in which the parameters such as voltage and temperature are increased above normal operating values to obtain observable or measurable deterioration in a relatively short period of time.

Accelerated Equivalent Soak (Plastic Encapsulated SMDs)

An environmental soak of a component at a higher temperature for a shorter time (compared to the standard soak), to provide roughly the same amount of moisture absorption. See also "Soak."

Accelerated Life Test

See "Accelerated Aging."

Accelerated Test

A test to check the life expectancy of an electronic component or electronic assembly in a short period of time by applying physically severe condition(s) to the unit under test.

Accelerator

See "Catalyst."

Acceleration Factor (AF)

The ratio of stress in reliability testing to the normal operating condition.

Acceptable Condition

This condition, while not necessarily perfect, will maintain the integrity and reliability of the assembly in its service environment.

Acceptance Quality Level (AQL)

A specified maximum number of defects, expressed as a percentage, that is considered to be acceptable quality and normally associated with statistically derived sampling plans.

Acceptance Tests

Those tests deemed necessary to determine the acceptability of a product and as agreed to by both purchaser and vendor.

Acceptance Inspection (Criteria)

An inspection that determines conformance of a product to design specifications as the basis for acceptance.

Access Hole (Lamination)

A blind hole that is made in a multi-layer board through one or more layers to provide access to the surface of a land on the inner layer of the board. (See Figure A-1.)

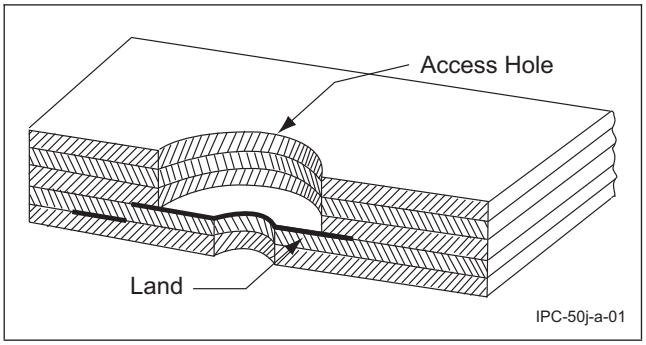

Figure A-1 Access Hole

Access Protocol

An agreed principle for establishing how nodes in a network communicate electronically.

Accordion Contact

A type of connector contact that consists of a flat spring formed into a "Z" shape in order to permit high deflection without overstress.

Accuracy

The deviation of the measured or observed value from the actual value.

Acid Flux

A solution of an acid and an inorganic, organic, or water soluble organic flux. (See also "Inorganic Flux," "Organic Flux," and "Water Soluble Organic Flux.")

Acid Number

The amount of potassium hydroxide in milligrams that is required to neutralize one gram of an acid medium.

Acid Value

See "Acid Number."

Acid Core Solder

Wire solder with a self-contained acid flux.

Acoustic Microscope

Equipment that creates an image using ultrasound to view a specimen's surface or subsurface features, including defects and damage.

Actinic Radiation

Light energy that reacts with a photosensitive material in order to produce an image.

Activated Rosin Flux

A mixture of rosin and small amounts of organic-halide or organic-acid activators. (See also "Synthetic Activated Flux.")

Activating

A treatment that renders nonconductive material receptive to electroless deposition.

Activating Layer

A layer of material that renders a nonconductive material receptive to electroless deposition.

Activator

A substance that improves the ability of a flux to remove surface oxides from the surfaces being joined.

Active Desiccant

Desiccant that is either fresh (new) or has been baked according to the manufacturer's recommendations to renew desiccant to original specifications.

Active Device

An electronic component that can change a signal or respond to the signal in a way that is dependent upon the nature of the signal and/or other controlling factors. (This includes diodes, transistors, amplifiers, thyristors, gates, ASIC's and other integrated circuits that are used for the rectification, amplification, switching, etc., of analog or digital circuits in either monolithic or hybrid form.)

Active Metal

A metal that has a very high electromotive force.

Active Trimming

Adjusting the value of a film circuit element in order to obtain a specified functional output from the circuit while it is electrically activated. (See also "Laser Trimming.")

Actual Size

The measured size.

Additive Process

A process for obtaining conductive patterns by the selective deposition of conductive material on clad or unclad base material. (See also "Semi-Additive Process" and "Fully-Additive Process.")

Add-On Component

Discrete or integrated packaged or chip components that are attached to a film circuit in order to complete the circuit's function.

Adhesion (Pressure Sensitive Tape)

The bond produced by contact between pressure-sensitive adhesive and a surface.

Adhesive

A substance such as glue or cement used to fasten objects together. In surface mounting, an epoxy adhesive is used to adhere SMDs to the substrate.

Adhesion Failure

The rupture of an adhesive bond such that the separation appears to be at the adhesive-adherend interface.

Adhesion Layer

The metal layer that adheres a barrier metal to a metal land on the surface of an integrated circuit.

Adhesion Promotion

The chemical process of preparing a surface to enhance its ability to be bonded to another surface or to accept an overplate.

Adhesive Coated Substrate

A base material upon which an adhesive coating is applied for the purpose of retaining the conductive material (either additively applied or attached as foil for subtractive processing), that becomes part of a metal-clad dielectric.

Adhesive-Coated Catalyzed Laminate

A base material with a thin polymer coating, that contains a plating catalyst, that is subsequently treated in order to obtain a microporous surface.

Adhesive-Coated Uncatalyzed Laminate

A base material with a thin polymer coating, that does not contain a plating catalyst, that is subsequently treated in order to obtain a microporous surface.

Adhesive Transfer (Pressure Sensitive Tape)

The transfer of adhesive from its normal position on the pressure sensitive tape to the surface to which the tape was attached, either during unwind or removal.

Adsorbed Contaminant

A contaminant attracted to the surface of a material that is held captive in the form of a gas, vapor or condensate.

Advanced Statistical Method

A statistical process analysis and control technique that is more sophisticated and less widely applicable than basic statistical methods.

Aging

The change of a property, e.g., solderability, with time. (See also "Accelerated Aging.")

Air Contamination

See "Air Pollution."

Air Pollution

Contamination of the atmosphere with substances that are toxic or otherwise harmful.

Algorithm

A set of procedures for the solution of a problem in a series of steps.

Alignment Mark

A stylized pattern that is selectively positioned on a substrate material to assist in alignment. (See Figure A-2.)

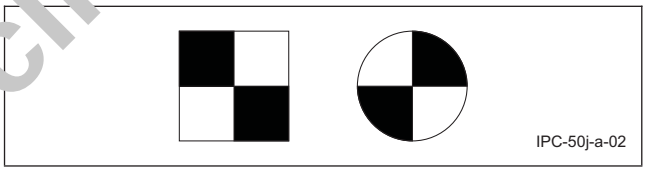

Figure A-2 Alignment Mark

Aliphatic Solvents

"Straight chain" solvents, derived from petroleum, of low solvent power.

Alkaline Cleaner

A material blended from alkali hydroxides and alkaline salts.

All Metal Package

A hybrid circuit package made solely of metal, without glass or ceramic.

Allowable Temperature

The temperature range that an electronic circuit or component can perform its intended functions.

Alloy, Tin Bismuth (Sn-Bi)

An alloy that is used as a lead free solder and consisting of tin and bismuth as the main constituents. Sn-Bi58 has a low melting point of 138 °C [280 °F], but is not widely used because of its brittle properties.