

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Printed board design, manufacture and assembly – Terms and definitions

Conception, fabrication et assemblage des cartes imprimées – Termes et définitions

Withdrawn



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Printed board design, manufacture and assembly – Terms and definitions

Conception, fabrication et assemblage des cartes imprimées – Termes et définitions

INTERNATIONAL
ELECTROTECHNICAL
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CONTENTS

FOREWORD.....	6
INTRODUCTION.....	8
1 Scope.....	9
2 Normative references	9
3 Terms and definitions	9
4 A.....	9
5 B.....	23
6 C.....	41
7 D.....	71
8 E.....	83
9 F.....	93
10 G.....	106
11 H.....	109
12 I.....	117
13 J.....	122
14 K.....	123
15 L.....	125
16 M.....	134
17 N.....	145
18 O.....	149
19 P.....	154
20 Q.....	175
21 R.....	176
22 S.....	188
23 T.....	213
24 U.....	225
25 V.....	228
26 W.....	232
27 X.....	237
28 Y.....	237
29 Z.....	238
Annex A (informative) Principles and use of the classification code	239
A.1 General.....	239
A.2 Background.....	239
A.3 List of codes	240
Annex B (informative) Abbreviations	243
B.1 – A –.....	243
B.2 – B –.....	243
B.3 – C –.....	244
B.4 – D –.....	246
B.5 – E –.....	247
B.6 – F –.....	248

B.7	– G –	248
B.8	– H –	248
B.9	– I –	249
B.10	– J –	249
B.11	– K –	249
B.12	– L –	249
B.13	– M –	250
B.14	– N –	251
B.15	– O –	252
B.16	– P –	252
B.17	– Q –	253
B.18	– R –	253
B.19	– S –	254
B.20	– T –	255
B.21	– U –	256
B.22	– V –	256
B.23	– W –	256
B.24	– Z –	256
Bibliography		257
Figure 1	– Access hole	11
Figure 2	– Alignment mark	14
Figure 3	– Lands with anchoring spurs	17
Figure 4	– Annular ring (annular width)	18
Figure 5	– Area array	19
Figure 6	– Simplified flow chart of printed board design/fabrication sequence	20
Figure 7	– Aspect ratio (hole)	21
Figure 8	– Asymmetric stripline	22
Figure 9	– Axial lead	23
Figure 10	– Back bonding	24
Figure 11	– Back-bared land	24
Figure 12	– Ball grid array (BGA)	26
Figure 13	– Barrel crack	27
Figure 14	– Example of feature location using baseline dimensions	28
Figure 15	– Bathtub curve	29
Figure 16	– Beam-lead device	30
Figure 17	– Bifurcated solder terminal	31
Figure 18	– Buried via and blind via	33
Figure 19	– Bow	36
Figure 20	– Breakaway	37
Figure 21	– Bumped die	39
Figure 22	– But plating joint (wrap plating)	41
Figure 23	– Button plating	41
Figure 24	– Castellated	44
Figure 25	– Centre to centre spacing (pitch)	44

Figure 26 – Typical characteristic curve	46
Figure 27 – Chip on board (COB).....	49
Figure 28 – Clearance hole	51
Figure 29 – Clinched-wire through connection.....	51
Figure 30 – Comb pattern	53
Figure 31 – Conductor base spacing	58
Figure 32 – Conductor spacing	59
Figure 33 – Contact angle (soldering)	61
Figure 34 – Crosshatching	68
Figure 35 – Cup solder terminal.....	69
Figure 36 – Dewetting	76
Figure 37 – Example of an embedded component.....	87
Figure 38 – Embedded passive component (device)	88
Figure 39 – Etch factor	90
Figure 40 – Etchback	90
Figure 41 – Etching indicator	91
Figure 42 – Fillet (adhesive)	96
Figure 43 – Flag	99
Figure 44 – Flare	100
Figure 45 – Flip chip	102
Figure 46 – Ground plane clearance	109
Figure 47 – Heel fillet.....	111
Figure 48 – Histogram	112
Figure 49 – Hole knee.....	113
Figure 50 – Hole breakout.....	113
Figure 51 – Hole void.....	114
Figure 52 – Hook	115
Figure 53 – Hook solder terminal.....	115
Figure 54 – Layer-to-layer spacing.....	128
Figure 55 – Leaded surface-mount component – Gull wing shaped lead	129
Figure 56 – Magnification power parameters.....	135
Figure 57 – Meniscus.....	137
Figure 58 – Microstrip	139
Figure 59 – Mirrored pattern	141
Figure 60 – Nail heading.....	145
Figure 61 – Negative etchback.....	145
Figure 62 – Nonfunctional interfacial connection	147
Figure 63 – Nonwetting	148
Figure 64 – Normal distribution	148
Figure 65 – Open point	151
Figure 66 – Outgrowth, overhang and undercut.....	152
Figure 67 – Outgrowth, overhang and undercut.....	153
Figure 68 – Overlap (drill)	153

Figure 69 – Passive array	157
Figure 70 – Perforated (pierced) solder terminal	159
Figure 71 – Pin grid array	162
Figure 72 – Plated through-hole (PTH).....	164
Figure 73 – Primary flare	170
Figure 74 – Primary taper	170
Figure 75 – Resin recession	181
Figure 76 – Printed board viewing orientations.....	185
Figure 77 – Shadowing	192
Figure 78 – Tape automated bonding.....	214
Figure 79 – Tombstoned component	221
Figure 80 – Turret solder terminal	225
Figure 81 – Via planarization	230
Figure 82 – Wrap plating.....	237

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PRINTED BOARD DESIGN, MANUFACTURE AND ASSEMBLY – TERMS AND DEFINITIONS

FOREWORD

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International Standard IEC 60194 has been prepared by subcommittee 91: Electronics assembly technology.

This sixth edition cancels and replaces the fifth edition, published in 2006 and constitutes a technical revision.

The main changes with respect to the previous edition are the following: Some two hundred terms and definitions have been updated, where applicable, and another two hundred new terms and definitions have been added.

The text of this standard is based on the following documents:

FDIS	Report on voting
91/1236/FDIS	91/1253/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This International Standard has been structured in such a way that for each letter of the alphabet a new clause has been created. For the sake of comparison, the French version is aligned to the English sequence and thus follows the alphabetical order of the English version.

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PRINTED BOARD DESIGN, MANUFACTURE AND ASSEMBLY – TERMS AND DEFINITIONS

1 Scope

This International Standard defines the terminology used in the field of printed circuit boards and printed circuit board assembly products.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-541:1990, *International Electrotechnical Vocabulary – Chapter 541: Printed circuits*

3 Terms and definitions

For the purposes of electronics assembly technology the terms and definitions from IEC 60050-541 as well as the following apply.

The terms have been classified according to the decimal classification code (DCC) as explained in Annex A.

4 A

54.1821

abrasion resistance

ability of a material to withstand surface wear

54.1318

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

40.1727

absorption coefficient

for a parallel beam of specified radiation in a given substance, the quantity μ_{abs} describes the fraction of energy absorbed in passing through a thin layer of thickness Δx

Note 1 to entry: The absorption coefficient is primarily energy dependent.

Note 2 to entry: According to whether the thickness Δx is expressed in terms of length, mass per unit area, moles per unit area or atoms per unit area, it is called the linear, mass, molar or atomic absorption coefficient.

Note 3 to entry: This entry was numbered 393-14-46 in IEC 60050-393:2003.

[SOURCE: IEC 60050-395:2014, 395-01-26]

40.0087

absorptivity

<infrared> ratio (or percentage) of the amount of energy absorbed by a substrate as compared with the total amount of incident energy

93.0001

accelerated ageing

accelerated life test

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

92.0011

accelerated equivalent soak

<plastic encapsulated SMDs> 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

Note 1 to entry: See also "soak".

93.0216

accelerated test

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

93.0260

acceleration factor

AF

ratio of stress in reliability testing to the normal operating condition

Note 1 to entry: This note applies to the French language only.

92.0288

acceptance inspection

<criterion> inspection that determines conformance of a product to design specifications as the basis for acceptance

90.0003

acceptance quality level

AQL

number of defects within a population (lot) at which the lot has the chance to be accepted with an acceptance probability of about 90 % when testing a sample

Note 1 to entry: The number of defects is given in percent.

92.0004

acceptance tests

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

60.1319

access hole

series of holes in successive layers of a multilayer board, each set having their centres on the same axis

SEE: Figure 1.

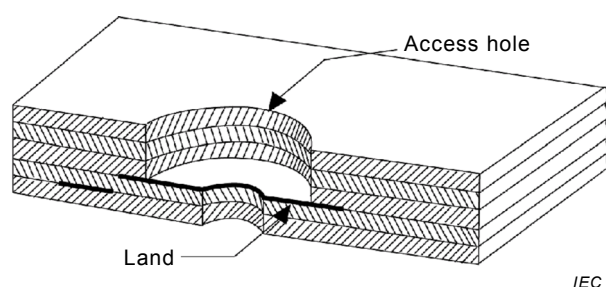


Figure 1 – Access hole

Note 1 to entry: These holes provide access to the surface of the land on one of the layers of the board.

21.0005

access protocol

protocol, used at the user-network interface, to enable the user to employ the services and/or facilities of a telecommunication network

[SOURCE: IEC 60050-716:1995, 716-04-18]

36.0006

accordion contact

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

90.0007

accuracy

degree to which the result of a measurement or calculation agrees with the true value

46.0009

acid flux

solution of an acid and an inorganic, organic, or water soluble organic flux

Note 1 to entry: See also inorganic flux, organic flux, and water soluble organic flux.

54.0010

acid number

acid value

number of milligrams of potassium hydroxide (KOH) required to neutralize the acid components present in one gram of a liquid, under standardized conditions

[SOURCE: IEC 60050-212:2010, 212-18-15, modified – Instead of the term "neutralization value", the term "acid value" has been used.]

46.0008

acid-core solder

wire solder with a self-contained acid flux

92.0021

acoustic microscope

<plastic encapsulated SMDs> equipment that creates an image using ultrasound to view a specimen's surface or subsurface features, including defects and damage

52.0011

actinic radiation

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

46.0012

activated rosin flux

mixture of rosin and small amounts of organic-halide or organic-acid activators

Note 1 to entry: See also "synthetic activated flux".

53.0013

activating

catalysing

initiating

seeding

sensitizing

treatment that renders nonconductive material receptive to electroless deposition

53.0014

activating layer

seed layer

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

46.0015

activator

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

30.0397

active desiccant

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

30.0016

active device

electronic component whose basic character changes while operating on an applied signal

Note 1 to entry: This includes diodes, transistors, thyristors, and integrated circuits that are used for the rectification, amplification, switching, etc. of analog or digital circuits in either monolithic or hybrid form.

36.0017

active metal

metal that has a very high electromotive force

54.1321

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

90.0018

actual size

measured size

53.1322

additive process

chemically-deposited printed circuit

chemically-deposited printed wiring

process for obtaining conductive patterns by the selective deposition of conductive material on unclad base material

Note 1 to entry: See also "semi-additive process" and "fully-additive process".

[SOURCE: IEC 60050-541:1990, 541-04-03, modified – Two admitted terms "chemically-deposited printed circuit" and "chemically-deposited printed wiring", as well as a note to entry have been added.]

30.0019**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

42.2038**adhesion**

<pressure sensitive tape> bond produced by contact between pressure-sensitive adhesive and a surface

46.1728**adhesive**

non-metallic materials that can join solids by surface bonding and internal strength (adhesion and cohesion)

Note 1 to entry: In surface mounting, an epoxy adhesive is used to adhere SMDs to the substrate.

[SOURCE: IEC 60050-212:2010, 212-15-44, modified – A note to entry has been added.]

96.0020**adhesion failure**

rupture of an adhesive bond such that the separation appears to be at the adhesive-adherent interface

74.0021**adhesion layer**

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

53.0022**adhesion promotion**

chemical process of preparing a surface to enhance its ability to be bonded to another surface or to accept an over-plate

41.0438**adhesive coated substrate**

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

41.1320**adhesive-coated catalyzed laminate**

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

41.1323**adhesive-coated uncatalyzed laminate**

base material with a thin polymer coating, that does not contain a plating catalyst, and is subsequently treated in order to obtain a micro-porous surface

75.0558**adhesive transfer**

<pressure sensitive tape> 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

96.0023

adsorbed contaminant

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

91.0024

advanced statistical method

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

90.0025

aging

ageing

change of a property with time

Note 1 to entry: For example solderability is a property.

Note 2 to entry: See also "accelerated aging".

14.0027

air pollution

air contamination

contamination of the atmosphere with substances that are toxic or otherwise harmful

11.0849

algorithm

finite set of well-defined rules for the solution of a problem in a finite number of steps

[SOURCE: IEC 60050-714:1992, 714-21-02]

22.0030

alignment mark

stylized pattern that is selectively positioned on a substrate material to assist in alignment

SEE: Figure 2.

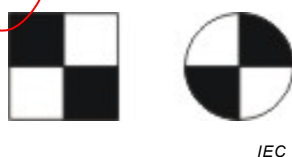


Figure 2 – Alignment mark

76.0031

aliphatic solvents

"straight chain" solvents, derived from petroleum, of low solvent power

76.0032

alkaline cleaner

material blended from alkali hydroxides and alkaline salts

33.0579

all metal package

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

75.0609**allowable temperature**

temperature range in which an electronic circuit or component can perform its intended functions

45.1947**alloy Sn-Bi**

<tin bismuth> alloy that is used as a lead free solder and consisting of tin and bismuth as its main constituents

Note 1 to entry: Sn-Bi58 has a low melting point of 138 °C, but is not widely used because of its brittle properties.

45.1948**alloy Sn-Cu**

<tin copper> alloy that is used as a lead free solder consisting of tin and copper considered to be applicable for wave or reflow soldering

45.1949**alloy Sn-Ag**

<tin silver> alloy that is used as a lead free solder and consisting of tin and silver as its main constituents used as a high temperature solder

45.1950**alloy Sn-Ag-Bi**

<tin silver bismuth> alloy that is used as a lead free solder and consisting of tin, silver and bismuth as its main constituents

Note 1 to entry: The Bi in Sn-Ag-Bi alloy reduces the melting temperature. The higher the Bi content, the higher the mechanical strength, but with poorer elongation capacity. There is a limit to Bi content.

45.1951**alloy Sn-Ag-Cu**

<tin silver copper> alloy that is used as a lead free solder consisting of tin, silver and copper as its main constituents

45.1952**alloy Sn-Zn**

<tin zinc> alloy that is used as a lead free solder and consisting of tin and zinc as its main constituents

Note 1 to entry: Zn09 alloy has the melting point of 199 °C, closest to the melting point of Sn-Pb alloy among lead free solders, which allows soldering work at similar soldering temperatures, but tends to form a stable oxide film, causing difficulty in securing a good solder wetting.

91.0033**alpha error**

producer's risk

size of a type I error or the probability of rejecting a hypothesis that is true

Note 1 to entry: See also type I error.

25.1729**alphanumeric**

pertaining to data that contain the letters of an alphabet, the decimal digits, and that may contain control characters, special characters and the space character

35.0612**alpha particle**

He⁴ nucleus generated from a nuclear decay that is capable of generating hole-electron pairs in microelectronic devices and switching cells causing soft errors in some devices

21.1793

alternating current

AC

electric current that is a periodic function of time with a zero direct component or, by extension, a negligible direct component

Note 1 to entry: For the qualifier AC, see IEC 60050-151.

Note 2 to entry: This note applies to the French language only.

[SOURCE: IEC 60050-131:2002, 131-11-24]

93.1324

alternative hypothesis

supposition that a significant difference exists between the desired results of two comparable populations

Note 1 to entry: See also “null hypothesis” and “statistical hypothesis”.

43.1730

alumina substrate

aluminum oxide used as a ceramic substrate material

29.0034

ambient

surrounding environment coming into contact with the system or component in question

40.0035

amorphous polymer

polymer with a random and unstructured molecular configuration

21.0036

amplitude

<voltage> maximum value of a voltage of an alternating voltage within one period

21.0037

analog circuit

electrical circuit that provides a continuous relationship between its input and output

91.0038

analysis of variance

ANOVA

systematic method of statistically evaluating experimental results in order to separate the sources of variation

22.1325

anchoring spur

extension of a land on a flexible printed board that extends beneath the coverlayer to assist in holding the land to the base material

SEE: Figure 3.

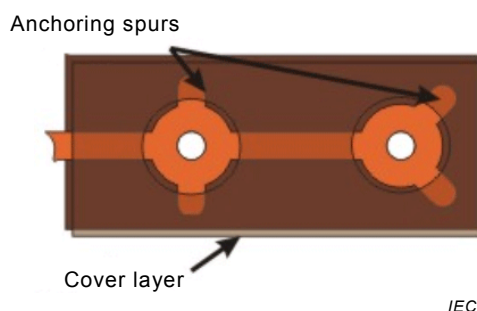


Figure 3 – Lands with anchoring spurs

74.0039

angled bond

series of bonds from which the last one or several atoms are not positioned in the same straight line as the first ones

75.0675

anisotropic conductive contact

electrical connection using an anisotropic conductive film or paste wherein conductive particles of gold, silver, nickel, solder, etc. are dispersed

Note 1 to entry: When it is compressed, an electrical connection is attained only in the direction of compression.

40.0685

anisotropy

condition for a substance having differing values for properties depending on the direction within the material

Note 1 to entry: Permittivity is an example of such a property.

45.0041

annealed wire

wire which has been heated and slowly cooled to remove the effects caused by cold working

22.0040

annotation

text, notes, or other identification, constructed by a computer-aided system, intended to be inserted on a drawing, map, or diagram

60.0041

annular ring

annular width

portion of conductive material that completely surrounds a hole

SEE: Figure 4.

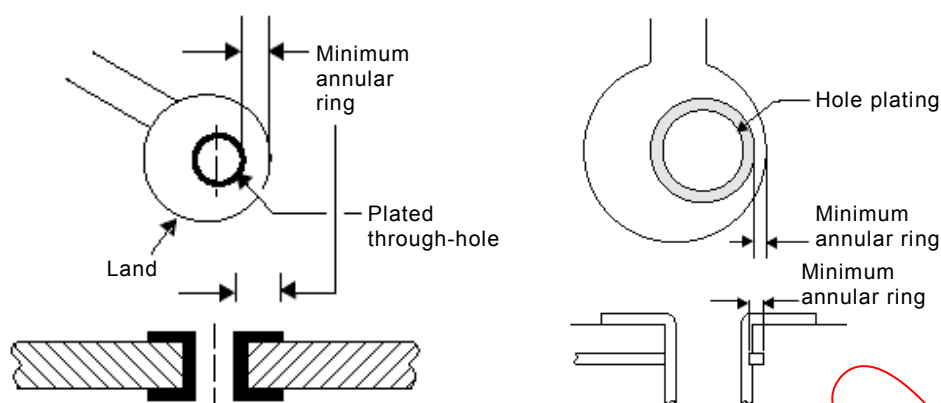


Figure 4 – Annular ring (annular width)

33.0689

anode

BGA

electrode capable of emitting positive charge carriers to and/or receiving negative charge carriers from the medium of lower conductivity

Note 1 to entry: The direction of electric current is from the external circuit, through the anode, to the medium of lower conductivity.

Note 2 to entry: In some cases (e.g. electrochemical cells), the term "anode" is applied to one or another electrode, depending on the electric operating condition of the device. In other cases (e.g. electronic tubes and semiconductor devices), the term "anode" is assigned to a specific electrode.

Note 3 to entry: This note applies to the French language only.

[SOURCE: IEC 60050-151:2001, 151-13-02, modified – The abbreviation BGA (ball grid array) has been added.]

57.0042

anodic cleaning

reverse current cleaning

electrolytic cleaning in which the work is the anode

20.0011

antipad

established clearance in the plane to accommodate a hole and its corresponding pad stack

73.0690

aperture

<stencil> opening in the stencil-foil

92.0043

apparent field-of-view angle

angular subtense of the field-of-view in the image space of an optical system

33.0692

application specific integrated circuit

ASIC

integrated circuit designed for specific applications

Note 1 to entry: This note applies to the French language only.

[SOURCE: IEC 60050-521:2002, 521-11-18]

92.0047**arc resistance**

tracking resistance

resistance of a material to the effects of a high voltage, low current arc (under prescribed conditions) passing across the surface of the material

Note 1 to entry: The resistance is stated as a measure of total elapsed time at that voltage required to form a conductive path on the surface material carbonized by the arc.

11.0046**architecture**

structure of a computer's functional elements that enables it to possess specific maximum and minimum capabilities

34.0751**area array**

bonding pattern in which edge and additional pads on the inner surface area of the chip are addressed in the bonding scheme

SEE: Figure 5.

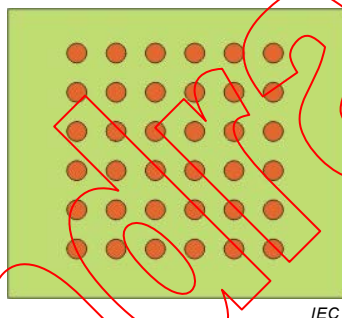


Figure 5 – Area array

34.0811**area array package**

package that has terminations arranged in a grid on the bottom of the package and contained within the package outline

74.0048**area array tape automated bonding**

tape automated bonding where some carrier tape terminations are made to lands within the perimeter of the die

73.0758**area ratio**

ratio of the area of aperture opening to the area of aperture walls

22.0049**array**

group of elements or circuits arranged in rows and columns on a base material

11.0050**artificial intelligence**

capacity of a machine to perform functions that are normally associated with human intelligence

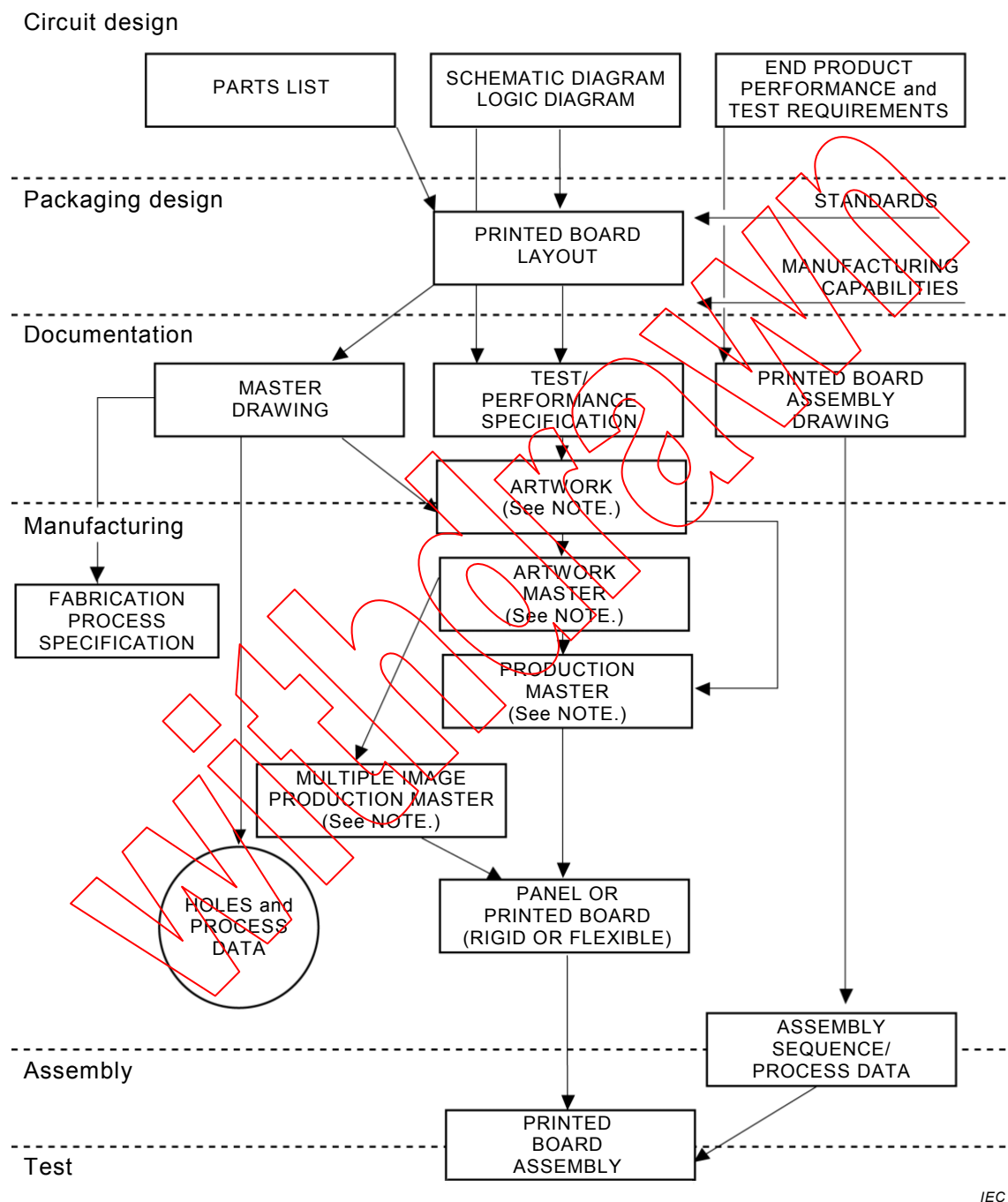
EXAMPLE Reasoning and learning.

22.0051

artwork

accurately scaled configuration that is used to produce the "artwork master" or "production master"

SEE: Figure 6.



NOTE The term "original" may be used to preface any of the drafting and photographic-tooling terms used in this figure. The "original" is not usually used in manufacturing processes. If a "copy" is made, the copy shall be of sufficient accuracy to meet its intended purpose if it is to take on the name of any one of the terms used in this figure. Other adjectives may also be used to help describe the kind of copy, i.e., "nonstable", "first generation", "record," etc.

Figure 6 – Simplified flow chart of printed board design/fabrication sequence

24.0051**artwork master**

photomaster

accurate configuration the scale of which is chosen as required to provide the necessary accuracy, and which is used to produce the original production master

Note 1 to entry: See Figure 6.

[SOURCE: IEC 60050-541:1990, 541-03-01, modified – The admitted term "photomaster" and the note to entry have been added.]

45.0054**as-fired**

condition of thick-film components or the surface condition of ceramic base materials after having been processed in a firing furnace and prior to trimming or polishing

74.0055**aspect ratio**

<film> ratio of the length of a film component to its width

53.0056**aspect ratio**

<hole> ratio of the length or depth of a hole to its preplated diameter

SEE: Figure 7.

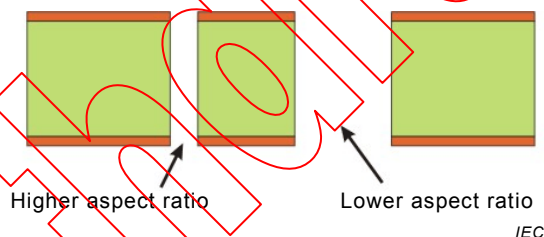


Figure 7 – Aspect ratio (hole)

73.0808**aspect ratio**

<stencil> ratio of the width of an aperture to the thickness of the stencil-foil

80.1327**assembly****assembled board**

number of parts, subassemblies or combinations thereof joined together

Note 1 to entry: This term can be used in conjunction with other terms listed herein, for example, "printed board assembly".

26.1328**assembly drawing**

document that depicts the physical relationship of two or more parts, a combination of parts and subordinate assemblies, or a group of assemblies required to form an assembly of a higher order

11.0058**assembly language**

low level language whose instructions are usually in one-to-one correspondence with computer instructions and that may provide facilities such as the use of macroinstructions

[SOURCE: IEC 60050-714:1992, 714-24-04]

70.1911

assembly manufacturer

individual, organization, or company responsible for the assembly process and verification operations necessary to ensure full compliance of assemblies

21.0060

asymmetric stripline

dual-strip line

stripline signal conductor that is embedded between two reference planes, but not centered between them

Note 1 to entry: The asymmetric stripline is also called “dual stripline”.

SEE: Figure 8.

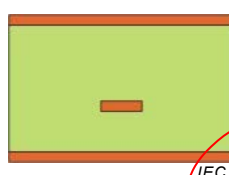


Figure 8 – Asymmetric stripline

22.1823

attachment density

average number of surface mount or through-hole solder joints, based on pitch and land size, that may be accommodated in a prescribed unit area, considering land size within the unit area to accommodate solder joint attachment

Note 1 to entry: A unit area is a square centimetre (cm²), for example.

21.0061

attenuation

<electromagnetic wave> decrease of the energy of an electromagnetic wave during its propagation, represented quantitatively by the ratio of the power flux densities at two specified points

Note 1 to entry: Attenuation is generally expressed in decibels.

[SOURCE: IEC 60050-705:1995, 705-02-05]

94.0062

attributes data

qualitative data that can be counted for recording and analysis purposes

72.0063

automated component insertion

act or operation of assembling discrete components to printed boards by means of electronically-controlled equipment

22.0029

automatic component placement

software that automatically optimizes the layout of components on a printed board

22.0124

automatic conductor routing

software that automatically determines the placement of interconnections on a printed board

25.1329**automatic dimensioning**

computer-aided drafting function that automatically generates dimensions, leaders, arrowheads, etc., that make up a complete set of documented dimensions

92.0064**automatic test equipment**

equipment that automatically analyzes functional or static parameters in order to evaluate performance.

92.0065**automatic test generation**

computer generation of a test program based solely on circuit topology with little or no manual programming effort

31.0067**axial lead**

lead wire extending from a component or module body along its longitudinal axis

SEE: Figure 9.



Figure 9 – Axial lead

49.1330**azeotropic mixture****azeotrope**

liquid mixture of two or more substances that behaves like a single substance

Note 1 to entry: The vapour produced by partial vaporization of the liquid has the same composition as the liquid.

5 B**41.1343****B-stage**

intermediate state in the curing process of a thermosetting resin, in which the material is only partly polymerized so that there is still some room for further curing

Note 1 to entry: See also C-staged resin".

41.0070**B-staged resin**

thermosetting resin in an intermediate state of cure

Note 1 to entry: See also "C-staged resin."

21.0072**back annotation**

process of extracting appropriate information from a completed printed board design and inserting it on the boards schematic diagram

74.0073**back bonding****back mounting**

attaching a die to a base material with its circuitry facing away from the base material

SEE: Figure 10.

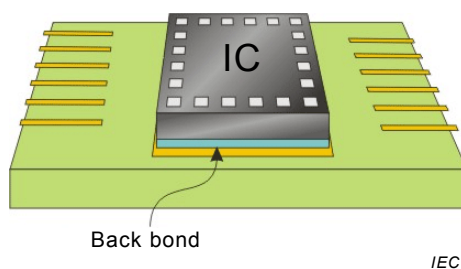


Figure 10 – Back bonding

51.0081

back taper

constant decrease in diameter along the length of the body of a drill from the tip to the bottom of the drill

22.0071

back-bared land

land in flexible printed wiring that has a portion of the side normally bonded to the base dielectric material exposed by a clearance hole

SEE: Figure 11.



Figure 11 – Back-bared land

92.0074

backdriving

in-circuit testing technique that drives digital circuitry outputs to a given logic level, by supplying pulses of sufficient electrical current magnitude in parallel with the outputs, in order to overdrive the logic state conditions of the next digital device inputs

36.0075

backfill

filling a hybrid circuit package with a dry inert gas prior to hermetic sealing

22.0076

background

<artwork> nonfunctional area of a phototool

94.0077

background variable

parameter of no experimental interest that is not held at a constant value

24.0078

backlighting

viewing or photographing by placing an object between a light source and the eye or recording medium

85.1331**backplane
backpanel**

interconnection device used to provide point-to-point electrical interconnections

Note 1 to entry: It is usually a printed board that has discrete wiring terminals on one side and connector receptacles on the other side.

Note 2 to entry: See also “mother board”.

70.0972**backup pin**

supporting pin that is located under a printed board to prevent deflection of the board during component mounting

21.1332**backward crosstalk**

near-end crosstalk

noise induced into an adjacent line, as seen at that end of the adjacent line which is closest to the signal source, when this line has been placed near an active line

Note 1 to entry: See also “forward crosstalk”.

56.0082**bake out**

subjecting a product to an elevated temperature in order to remove moisture and unwanted gases prior to certain steps in the printed board manufacturing process or prior to final coating

21.1333**balanced transmission line**

transmission line that has distributed inductance, capacitance, resistance, and conductance elements that are equally distributed between its conductors

34.0976**ball**

raised metal (or other conductive material) feature on a package substrate used to facilitate bonding to the next level of interconnect

34.1086**ball array**

group of balls arranged in rows and columns

74.9983**ball bond**

nailhead bond

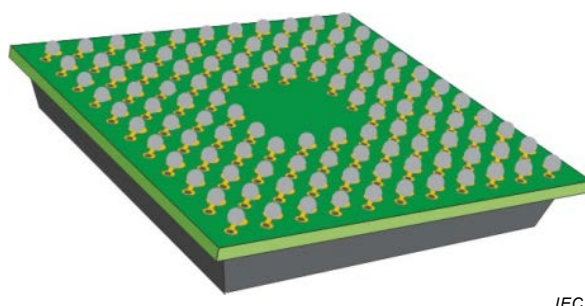
welded connection of a bond wire to the bond pad of an integrated circuit die

Note 1 to entry: The bond wire is melted to form a ball and the ball is bonded by use of thermo-compression or thermo-sonic techniques.

34.1096**ball grid array****BGA**

surface-mount package wherein the bumps for terminations are formed in a grid on the bottom of a package

SEE: Figure 12.



IEC

Figure 12 – Ball grid array (BGA)

Note 1 to entry: This note applies to the French language only.

74.2127

ball lift

category of ball bond failure in which the ball lifts off the surface of the integrated circuit die bond pad metallization or lifts the metallization from the surface of the underlying oxide or silicon

70.1238

bar

dark element of a barcode

70.1292

barcode

linear arrangement of bars and spaces in a predetermined pattern

70.1731

barcode marking

identification code consisting of a pattern of vertical bars whose width and spacing identifies the item marked

70.1353

barcode printer

printer with the ability to print barcoded labels and forms

70.1354

barcode scanner

barcode reader

device used for machine reading of a barcode

Note 1 to entry: Readers may be hand held-wands, fixed optical beams, or moving optical beams.

70.1370

barcode symbol

print of photographically reproduced barcode composed of parallel bars and spaces of various widths

Note 1 to entry: A barcode symbol contains a leading quiet zone, a start character, data characters, a stop character, and a trailing quiet zone. In some cases, a check character is included.

60.0084

bare board

unassembled (unpopulated) printed board

35.0111**bare die**

unpackaged discrete semiconductor or integrated circuit with pads on the upper surface suitable for interconnection to the substrate or package

96.1444**barrel crack**

crack of the plated metal on the internal wall of a through-hole

SEE: Figure 13.

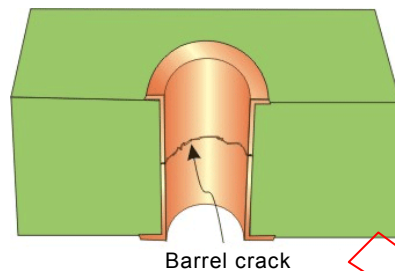


Figure 13 – Barrel crack

Note 1 to entry: See also “circumferential crack.”

74.0085**barrier metal**

metal used to seal the semiconductor-die lands

40.1471**base film**

<flexible circuits> film that is the base material for the flexible printed wiring board and on the surface of which the conductive pattern can be formed

Note 1 to entry: When the heat resistance is required, polyimide film is mostly used, and polyester film is usually used when the heat resistance is not required.

40.1334**base material**

substrate

insulating material upon which a conductive pattern may be formed

Note 1 to entry: The base material may be rigid or flexible, or both. It may be a dielectric or insulated metal sheet.

22.1604**base material thickness**

thickness of the base material excluding conductive foil or material deposited on the surfaces

46.1491**base metal**

basis metal

<solder> underlying metal surface to be wetted by solder

30.2011**base plane**

plane that includes the lowest point of the mounting surface of the package, except for packages using stand-offs

92.0089

base solderability

ease with which a metal or metal alloy surface can be wetted by molten solder under minimum realistic conditions

26.0089

baseline dimensioning

dimensioning of feature positions from the origin of the coordinate system

Note 1 to entry: In this system the maximum variation of the feature position from the true position is equal to the root of the sum of squares of the two tolerances on the dimensions in x and y directions, as shown in Figure 14.)

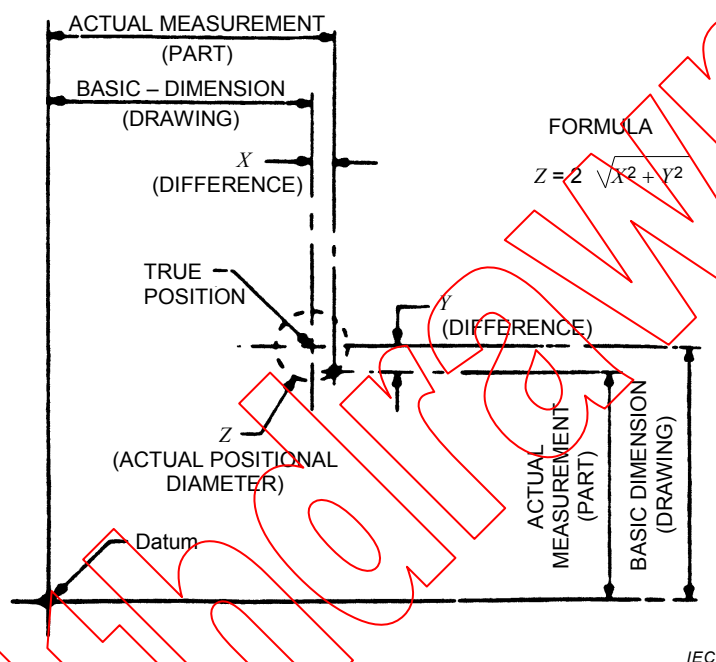


Figure 14 – Example of feature location using baseline dimensions

26.1335

basic dimension

numerical value used to describe the theoretical exact location of a feature

Note 1 to entry: A feature can be a hole, for example.

Note 2 to entry: It is the basis from which permissible variations are established given in notes or as feature control symbols.

26.1778

basic specification

BS

document that describes the common elements for a set, family or group of products, materials, or services

Note 1 to entry: This note applies to the French language only.

91.1336

basic statistical method

application of a theory of variation through the use of basic problem-solving techniques and statistical process control

Note 1 to entry: This includes control and capability analysis for both variables' and attributes' data.

70.0090**basic wettability**

ease with which a metal or metal alloy can be wetted by molten solder

40.0091**basis material**

material upon which coatings are deposited

basis metal

See 46.1491 "base metal"

56.0093**batch oven**

large temperature-controlled oven that is used to heat clean rolls of fabric

11.0094**batch processing**

executing a computer-aided program without human input

93.0096**bathtub curve**

plot of failure rates versus time, having high failure rates at the beginning and at the end of service life

SEE: Figure 15.

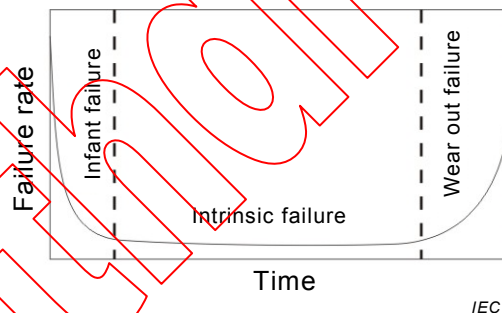


Figure 15 – Bathtub curve

40.0101**Baumé scale**

scale on aerometer for measuring the density of liquids

Note 1 to entry: This scale is named after the French chemist Baumé.

64.1555**bead**

<discrete wiring> external (surface) annular ring of copper plating around a plated through-hole on a fully additive circuit board which functions to conduct heat and promote solder wicking during the soldering of components

33.0100**beam lead**

component terminal in the form of a long metallic structural member that is not supported along its length

44.0099**beaming**

operation in which yarn from several section beams is combined on the final warp beam

33.0098

beam-lead device

active or passive chip component with beam leads to enable interconnection to lands on a base material

SEE: Figure 16.

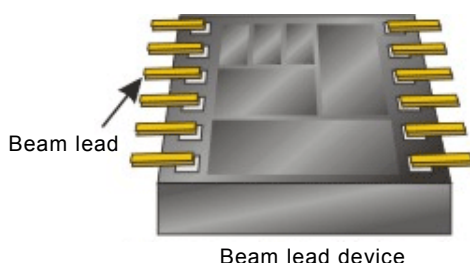


Figure 16 – Beam-lead device

92.0101

bed-of-nails fixture

test fixture consisting of a frame and a holder containing a field of spring-loaded pins that make electrical contact with a planar test object

37.0091

bellmouth

raised portion at the front and/or back of the wire barrel crimp that provides a gradual entrance and exit for the wire strands without causing damage

36.1337

bellows contact

type of connector contact that consists of a flat spring that has been folded to provide a very uniform spring rate over the full range of contact with the mating part

11.0102

benchmark

<computer> standard measure of the performance of computers relative to each other, including set-up time, program generation, and data processing capability

92.0103

benchmark

<testing> standard measure of the performance of testers relative to each other, including set-up time, test program generation, and fixturing

92.1565

bending resistance

ability of a material to withstand repeated bending to specified parameters without producing cracks and breaks in excess of the specification allowance

91.0104

beta error

consumer's risk

size of a type II error or the probability of accepting a hypothesis that is false

Note 1 to entry: See type II error.

44.0105**bias**

<fabric> filling yarn that is off-square with the warp ends of a fabric

30.0121**BiCMOS**

transistor fabrication technology, resulting in the creation of both bipolar and CMOS devices

36.1810**bifurcated contact**

type of connector contact that usually consists of a flat spring that has been slotted length-wise in order to provide independent contact points with the mating part

37.0106**bifurcated solder terminal**

solder terminal with a slot or slit opening, through which one or more wires are placed prior to soldering

SEE: Figure 17.

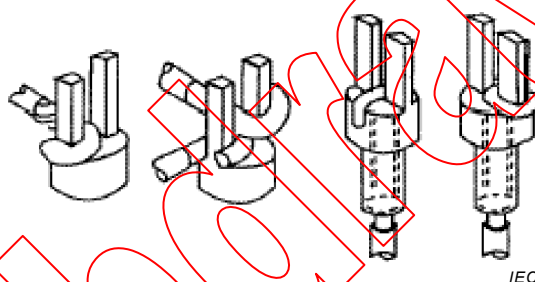


Figure 17 – Bifurcated solder terminal

26.1572**bilateral tolerance**

tolerance in which variation is permitted in both directions from the specified dimension

47.0107**binder**

material added to thick-film compositions and unfired base materials to give them additional strength for pre-fire handling

Note 1 to entry: See also "glass binder".

94.0108**binomial distribution**

distribution which provides the probability that an event A occurs at n independent tests for m times when p is the probability of occurring of the event A at each test

92.0109**biochemical oxygen demand**

quantity of oxygen required to decompose organic contamination contained in water, used as a measure of contamination of water

76.0110**biocide**

general name for any substance that kills or inhibits the growth of micro-organisms

33.1573

bipolar device

device in which both majority and minority carriers are present

Note 1 to entry: Bi-polar and Metal-Oxide Semi-conductor (MOS) are the two most common device types.

37.1338

birdcage

stranded wire whereby the strands in the stripped portion between the covering of an insulated wire and a soldered connection, or an end-tinned lead, have separated from the normal lay of the strands

41.0111

bismaleimide

resin that has the generic chemical structure of an aromatic chemical group that is attached to two (or "bis") maleimide groups

41.0112

bismaleimide triazine

resin that contains a mixture of bismaleimide and triazine resins

11.0151

bit

straight or shaped rotary cutting tool used in a power router to cut, trim or shape materials by rotary action

41.1339

blank

unprocessed or partially processed piece of base material or metal-clad base material, that has been cut from a sheet or panel, that has the rough dimensions of a printed board

Note 1 to entry: See also "panel".

51.1574

blanking

cutting a sheet of material into pieces to the specified blank design

52.0113

bleeding

condition in which a product or a part discharges water, process materials or solutions from crevices or voids, or a condition in which a resist or paint migrates beyond the image area

Note 1 to entry: Such a product or a part that discharges water is, for example, a plated hole of a printed board.

41.0114

blends

mixture of different substances or different types of the same substance

Note 1 to entry: Substances are, for example, a mixture of resins in board manufacturing.

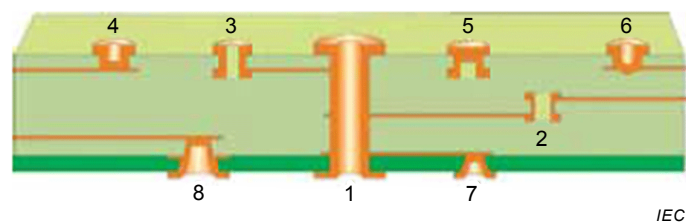
22.0115

blind via

interstitial via

via extending only to one surface of a printed board

SEE: Figure 18.

**Key:**

- | | |
|--------------------------------|----------------------------|
| 1 Standard through-hole via | 5 Reverse blind via |
| 2 Standard buried via | 6 Controlled depth drilled |
| 3 Semi-blind (semi buried) via | 7 Photo defined via |
| 4 Blind via (laser drilled) | 8 Trepanned via (laser) |

Figure 18 – Buried via and blind via**96.1340****blister**

delamination in the form of a localized swelling and separation between any of the layers of a lamination base material, or between base material and conductive foil or protective coating

94.0116**blocking variables**

relatively-homogeneous set of conditions within which different conditions of primary variables are compared

53.0117**blow hole**

void caused by outgassing

75.0121**blow through**

location where the mold material migrates through the connector insert or contacts

50.1912**board fabricator**

individual, organization, or company responsible for the fabrication of the bare printed board, including all process and verification operations necessary to ensure full compliance with customer requirements

41.1583**board thickness**

thickness of the metal-clad base material or printed wiring board including the conductive layer

51.1341**body land clearance**

portion of a drill, where the diameter is decreased compared with the minor cutting edge in order to provide a clearance behind the margin

74.0120**bond**

interconnection that performs a permanent electrical and/or mechanical function

74.0123

bond deformation

plastic-flow change in the form of a lead caused by a bonding tool during a termination process

74.0125

bond enhancement treatment

treatment or coating on a metal foil surface used for improving the bondability of the metal foil to the resin surface to which the foil is to be attached

74.0126

bond envelope

range of termination parameters within which acceptable bonds may be formed

74.0133

bond interface

common area between a lead and a land to which it has been terminated

74.0135

bond lift-off

failure mode whereby a bonded lead separates from the surface to which it has been joined

35.0121

bond pads

metallised areas on the die that are used for temporary or permanent electrical connection (bonding)

74.0136

bond schedule

values of termination machine parameters

74.0137

bond separation

distance between the termination points of the first bond and the second bond

74.0138

bond site

portion of the bonding area where the actual termination takes place

60.0139

bond strength

pull strength

force perpendicular to a board's surface required to separate two adjacent layers of the board

Note 1 to entry: Bond strength is expressed as force per unit area.

71.0121

bond-to-bond distance

distance from the bonding site on a die to the corresponding bonding site on a lead frame, interconnecting base material, etc.

71.0122

bond-to-die distance

distance from the heel of a beam lead to the die

74.1342

bondability

ability of a metal surface of being bonded

Note 1 to entry: Bondability depends to a certain degree on the surface cleanliness and qualities of the connection area.

74.0121**bonding**

terminating process that uses heat and pressure to make a joint between a termination and a feeding wire

74.0128**bonding area**

bond land

bond surface

bonding island

area defined by the extent of a land or portion of a terminal to which a lead is to be bonded

55.0130**bonding layer**

adhesive layer used in bonding together other discrete layers of a multilayer printed board during lamination

33.1585**bonding pad**

<IC> area of metallization on an integrated circuit die that permits connection of fine wires or a circuit element to the die

70.1586**bonding time**

time duration from the commencement of the thermo heat-up until the reflow profile is completed

74.0131**bonding tool**

instrument used to position leads or discrete wires over a land and to impart sufficient energy to complete the termination

74.0132**bonding wire**

gold or aluminum wire used for making electrical connections between lands, lead frames, and terminals

76.0131**boot**

form placed around wire termination of a connector to contain the liquid potting compound before it hardens

Note 1 to entry: A boot can also be preformed, heat shrinkable and can be purchased with self-adhesive or bonded with an adhesive.

76.0132**boot**

protective housing usually made from a resilient material to prevent entry of moisture into a connector

Note 1 to entry: A boot can also be preformed, heat shrinkable and can be purchased with self-adhesive or bonded with an adhesive.

75.0151**border**

peripheral tensioned mesh, either polyester or stainless steel, which keeps the stencil foil flat and taut

Note 1 to entry: The border connects the foil to the frame.

22.0142

border area

region on a base material that is external to that of the end-product in fabrication within it

22.0143

border data

patterns that appear in the border area, such as tooling features, test patterns, and registration marks

37.0415

boss

<connector> raised section on a connector that fits into a specific slot in the positive polarization or keying feature of a mating connector

64.1588

bounce pad

<discrete wiring> isolated area in a copper plane which acts solely as a stop for the laser drilling operation

44.0146

bow

warp

<fabric> filling yarn that lies in an arc across the width of a fabric

60.1218

bow

<sheet, panel, or printed board> deviation from flatness of a board characterized by a roughly cylindrical or spherical curvature such that, if the product is rectangular, its four corners are in the same plane

SEE: Figure 19.

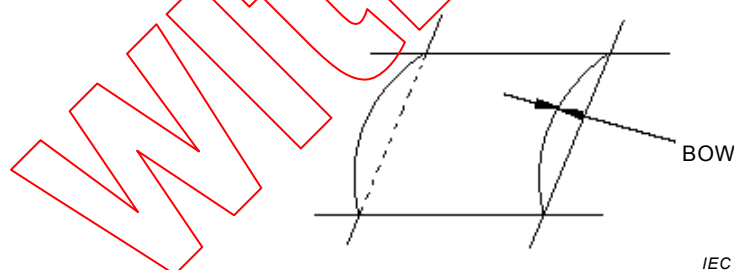


Figure 19 – Bow

Note 1 to entry: See also "twist".

37.0151

braid

fabric of bare metallic or tinned copper wire used as shielding for wires and cables and as ground wire for batteries or heavy industrial equipment

37.0152

braid

woven fibrous protective outer covering over a conductor or cable

37.0153**braid angle**

the smaller of two angles formed by the shielding strand and the axis of the cable being shielded

37.0157**braid carrier**

spool or bobbin on a braider which holds one group of strands or filaments consisting of a specific number of ends

Note 1 to entry: The carrier revolves during braiding operations.

37.0161**braid ends**

number of strands used to make up one carrier

Note 1 to entry: The strands are wound side by side on the carrier bobbin and lie parallel in the finished braid.

37.0165**braid fold back**

portion of the braid that is folded back to allow a solder connection between the braid and another conductor

94.0147**brainstorming**

generation of a list of potential causal factors or ideas that may be possible contributors to improve/change problems including in processes

54.1589**breakaway**

function of excising printed boards or printed board assemblies from their panel structure after all processing has been completed

SEE: Figure 20.

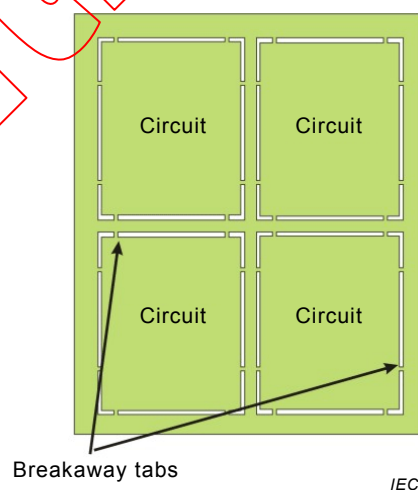


Figure 20 – Breakaway

21.1351**break-down voltage**

voltage at which the insulation between two conductors ruptures

60.0418
breakout

point at which a conductor or group of conductors is separated from a multiconductor cable or wiring harness to complete circuits at other points

Note 1 to entry: See “hole breakout”.

70.0149
bridging

<electrical> unintentional formation of a conductive path between conductors

Note 1 to entry: See also “solder bridging”.

35.0151
broken pick

filling yarn that is missing from a portion of the width of a fabric

41.0152
brominated epoxy

epoxy resin containing chemically-bound bromine which is added to act as a flame retardant

40.1590
brown streak
brown thread

<base materials> thin vein or stain seen in the reinforcement that can range from light amber to nearly chocolate brown

Note 1 to entry: It usually runs within a fibre bundle for 3 mm to 13 mm (0,13 in to 0,512 in). It is most commonly found in the warp yarns and may appear singly or in multiples, or in a pattern. It is due to the remnants of the glass binder agent, which the weaver did not remove.

41.0161
bubbles

spherical voids in a molding material

76.0153
bubble effect

entrapment of air, solvent or moisture bubbles in a protective coating

76.0154
buffer material

resilient material that is used to protect a crack-sensitive component from the stresses generated by a conformal coating

74.0155
bugging height

distance between a land and the lower surface of a beam lead caused by the deformation of the lead during bonding

60.0156
bulge

swelling of a printed board that is usually caused by internal delamination or separation of fibres

92.0157
bulk conductance

conductance between two points of a homogeneous material

20.0158**bulls-eye**

stylized pattern located in the border area in order to aid in alignment

30.1596**bulk packaging**

method for packaging loose parts, into a bag or case

75.1597**bulk reflow**

reflow of multiple components, with simultaneous attachment, by an infrared (IR), convection/IR, convection, or vapour phase reflow (VPR) process

34.1598**bump**

means of providing a (electrical) connection to the terminal area of a device

Note 1 to entry: A small mound is formed on the device or substrate pads and is used as a contact for face-down loading.

74.0159**bump**

<die> raised metallized area on the die that is used for temporary or permanent electrical connection

34.1599**bump array**

group of bumps arranged in rows and columns

34.1601**bump contact**

contacting pad that rises substantially above the surface level of the chip

74.0160**bumped die**

semiconductor die with raised metal features that facilitate inner-lead bonding

SEE: Figure 21.

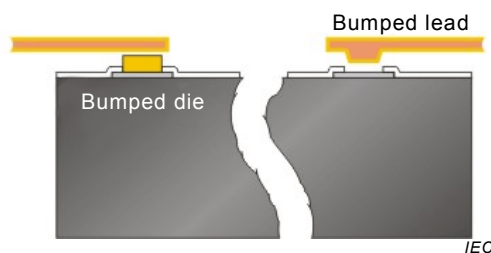


Figure 21 – Bumped die

74.0161**bumped tape**

carrier tape with raised metal features that facilitate inner-lead bonding

74.0162**bumped wafer**

semiconductor wafer with raised metal feature on its die lands that facilitate inner-lead bonding

22.0163

buried via

via that does not extend to the surface of a printed board

95.0164

burn-in

process of electrically stressing a device at an elevated temperature, for a sufficient amount of time to cause the failure of marginal devices (infant mortality)

95.0165

burn-in

<dynamic burn-in> simulation of actual operating conditions by the application of high temperatures

95.0166

burn-in

<static burn-in> application of high temperatures with unvarying voltage, either forward or reverse bias

92.1603

burr

small lumps or masses with an irregular shape, convex to a surface, which is the result of a machine process such as drilling or gouging

21.0168

bus

one or more conductors used for transmitting data signals or power

37.0169

bus bar

type of conduit, such as a component or conductor on a printed board, that is used to distribute electrical energy

Note 1 to entry: See also "plating bar".

36.1732

butt leads

<SMT> leads extending horizontally from about the centre of a component body, formed down at a 90° angle and ending immediately below the component body without additional bends

Note 1 to entry: Lead form used in surface-mount technology.

75.0181

butt plating joint

joint between two or more conductors of a printed board, at the end of one or both, and either at right angles or oblique to the grain of the conductors, with no overlap of the conductors

53.0151

butt plating joint

wrap plating

consequent via structure of a surface interconnect termination with the absence of wrap plating

SEE: Figure 22.

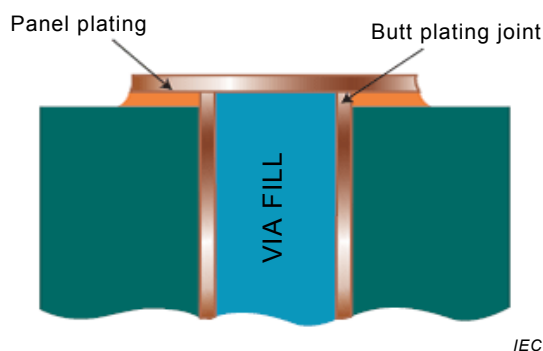


Figure 22 – But plating joint (wrap plating)

53.0161

butt splice

device for joining conductors by butting them end to end

41.0170

butter coat

increased amount of resin on the outer surface of a base material

53.0171

button plating

process of plating only in the holes and on pads

SEE: Figure 23.

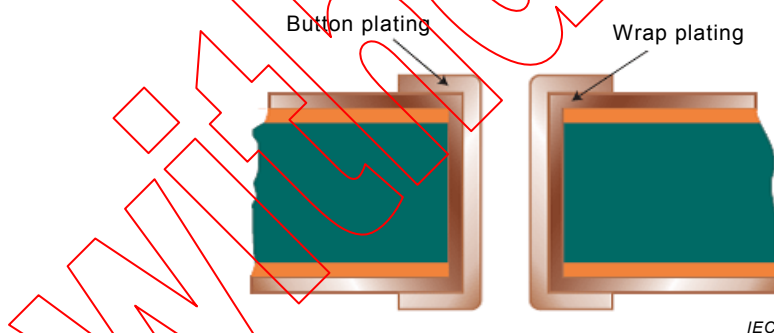


Figure 23 – Button plating

6 C

41.0171

C-staged resin

resin in its final state of cure

Note 1 to entry: See also “B-staged resin”.

92.0172

camber

planar deflection of a flat cable or flexible laminate from a straight line

55.0176

cap lamination

process to produce multilayer printed boards using one-sided metal clad base material for the external layers

Note 1 to entry: See also “foil lamination”.

26.1780

capability detail specification

CapDS

document that establishes the specific requirements, noted in a detailed specification, in order to establish the level of capability that a manufacturer possesses when he/she has demonstrated that these requirements are met

Note 1 to entry: This note applies to the French language only.

79.1806

capability performance index

Cp

capability index

ratio of the measured performance of a process compared to specified limits

Note 1 to entry: This note applies to the French language only.

91.1367

capability performance

Cpkl

<lower performance> measure of the relationship between the performance of a process and the lower specification limit

Note 1 to entry: See also “capability performance, upper performance”.

91.1344

capability performance

Cpku

<upper performance> measure of the relationship between the performance of a process and the upper specification limit

Note 1 to entry: See also “capability performance, lower performance”.

94.1784

capability test board

CTB

printed board specifically designed to act as a capability qualifying component (CQC), or to be used by a manufacturer to evaluate process variation, process control, or continuous improvement procedures

Note 1 to entry: This note applies to the French language only.

94.1785

capability test segment

CTS

segment or portion of a capability test board (CTB), containing a set or group of individual test patterns (ITP), intended to be used to demonstrate a specific level of printed board complexity or manufacturing capability

Note 1 to entry: This note applies to the French language only.

21.1794

capacitance

measure of the ability of two adjacent conductors separated by an insulator to hold a charge when a voltage is impressed between them

[SOURCE: IEC 60050-131:2008, 131-12-13, modified – The entire definition has been changed and notes 1 and 2 have been deleted.]

21.0173**capacitance density**

amount of capacitance available per unit of the conductor area

21.0174**capacitive coupling**

electrical interaction between two conductors that is caused by the capacitance between them

74.0175**capillary**

tube with a very small inner diameter space or a hollow, often used in assembly to guide wire to the bonding site and used to apply pressure during the bonding cycle

Note 1 to entry: See also “wedge tool”.

22.2116**capture land**

land where the microvia starts which varies in shape and size based on use

EXAMPLE Component mounting, via entrance, and conductor.

30.1605**carrier**

container that directly holds components

Note 1 to entry: Components include, for example, a tray, a tube, or a tape and reel.

45.0180**carrier**

<foil> temporary support medium that facilitates the handling of thin and soft-metal foils

36.1345**carrier tape**

tape

carrier for conductors used in tape-automated bonding

Note 1 to entry: See also “multilayer carrier tape”, “single-layer carrier tape”, “two-layer carrier tape” and “three-layer carrier tape”.

51.0181**carry-out**

curved back portion of the flute of a drill

30.1606**cartridge**

container for components that facilitates the loading and unloading of them

33.0182**castellation**

recessed metallised feature on the edge of a leadless chip carrier that is used to interconnect a conducting surface or planes within or on the chip carrier

SEE: Figure 24.

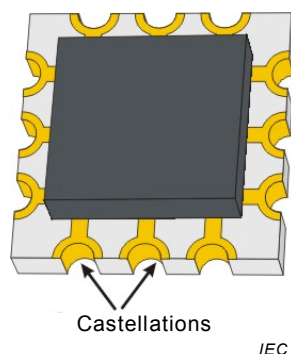


Figure 24 – Castellations

53.0183

**catalyst
accelerator**

<resin> chemical that is used to initiate the reaction or increase the speed of the reaction between a resin and a curing agent

57.0185

cathodic cleaning

direct cleaning

direct current cleaning

electrolytic cleaning in which the work is the cathode

59.0187

cationic reagent

surface-active substances that have the active constituent in the positive ion

94.0188

cause-and-effect diagram

fishbone diagram

problem solving tool that uses a graphic description of various process elements in order to analyze potential sources of process variation

22.1346

centre-to-centre spacing

spacing

nominal distance between the centres of adjacent features on any single layer of a printed board

SEE: Figure 25.

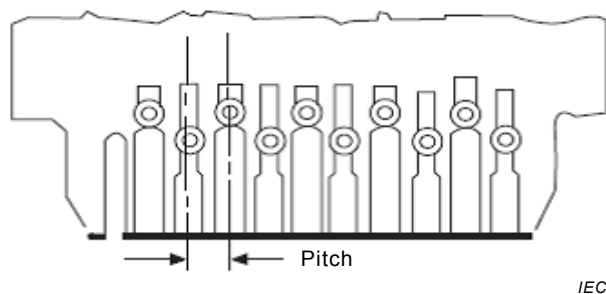


Figure 25 – Centre to centre spacing (pitch)

Note 1 to entry: See also "pitch".

73.1733**centering force**

force required by the pick-up tooling to centre a surface-mounting device in its proper location on a substrate

74.0189**centrewire break**

failure mode in a wire pull test whereby the wire fractures at approximately its midspan

91.0190**central line**

line on a control chart that depicts the average or median value of the items being plotted

31.1611**ceramic dual-in-line package****CERDIP**

dual in-line-package that has a package body of ceramic material and is hermetically sealed by a glass

Note 1 to entry: See also "dual-in-line package".

Note 2 to entry: This note applies to the French language only.

31.1612**ceramic pin grid array****ceramic PGA**

pin grid array package (PGA) made of a ceramic material, hermetically sealed by metal, with leads formed on a grid extending from the bottom of the package

Note 1 to entry: See also "pin grid array package".

33.1613**ceramic quad flat package****CQFP**

quad flat package (QFP) made of a ceramic material, hermetically sealed by metal, with leads extending from all four sides

Note 1 to entry: This note applies to the French language only.

17.0191**certification**

verification that specified training or testing has been performed and that required proficiency or parameter values have been attained

26.0192**chain dimensioning**

dimensioning of drawing in the way that a second measure starts at the end of the first measure, and so on

Note 1 to entry: In this system the maximum variation of the last feature of the chain will be the sum of the tolerances of the features before.

47.0201**chalking**

<cured solder mask> degraded solder mask such that fine particles can be removed from the surface

51.0193**chamfer**

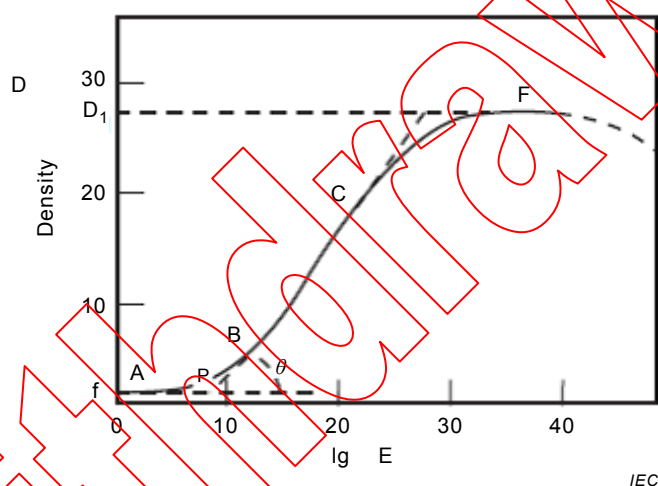
<drill> angle at the end of a drill shank

result of excess heat causing a charcoal/carbon residue of base material

letter, digit, or other special form that is used to represent data in a barcode symbol

Note 1 to entry: See also “barcode symbol”.

SEE: Figure 26.



$\lg = \log_{10}$

Figure 26 – Typical characteristic curve

quantity defined for a mode of propagation at a given frequency in a specific uniform transmission line or uniform waveguide by one of the three following relations:

$$\underline{Z}_1 = \underline{S} / |\underline{I}|^2$$

$$\underline{Z}_2 = |\underline{U}|^2 / \underline{S}$$

$$\underline{Z}_3 = \underline{U} / \underline{I}$$

where

Z is the complex characteristic impedance,

S is the complex power, and

U and I are the values, usually complex, respectively of a voltage and a current conventionally defined for each type of mode by analogy with transmission line equations

EXAMPLES:

- 1) For a parallel-wire transmission line, $\underline{U}$ and $\underline{I}$ can be uniquely defined and the three equations are consistent. If the transmission line is lossless, the characteristic impedance is real.
- 2) For a waveguide, the conventional definitions for $\underline{U}$ and $\underline{I}$ depend on the type of mode and generally lead to three different values of the characteristic impedance.
- 3) For a circular waveguide in the dominant mode TE_{11} , U = r.m.s. voltage along the diameter where the magnitude of the electric field strength vector is a maximum, I = the r.m.s. longitudinal current.
- 4) For a rectangular waveguide in the dominant mode TE_{10} , U = the r.m.s. voltage between midpoints of the two conductor faces normal to the electric field strength vector, I = the r.m.s. longitudinal current following on one surface normal to the electric field strength vector.

[SOURCE: IEC 60050-726:1982, 726-07-01, modified – The term's domain has been deleted.]

94.1219**check list**

compilation of the specified criteria that may be evaluated during an audit or inspection

94.0195**check plot**

interim drawing used for graphical data verification

94.0196**check sheet**

form that is used for data collection

76.0197**chelate compound**

compound in which metal is contained as an integral part of a ring structure

76.0198**chelating agent**

compound capable of forming a chelate compound with a metal ion

57.0199**chemical conversion coating**

protective coating produced by the chemical reaction of a metal with a chemical solution

40.1616**chemical resistance**

resistance of an insulating material to the degradation of surface characteristics beyond the specified allowance by exposure to chemicals

Note 1 to entry: Surface characteristics are surface roughness, swelling, tackiness, blistering or colour change.

Note 2 to entry: Such chemicals include acids, alkalis, salts, or solvents.

45.0202**chemical vapour deposition**

process in which vapours and gases react chemically to produce deposits at the surface of a substrate

[SOURCE: IEC 60050-841:2004, 841-22-07, modified – The abbreviation "CVD" has been deleted.]

37.0203**chemical wire stripping**

process of removing insulation from wire using chemical compounds

74.1348

chemisorption

formation of bonds between the surface molecules of a metal, or other material of high surface energy, and another gas or liquid substance in contact with it

74.0204

chessman

disk, knob or lever used to manually control the position of a bonding tool with respect to land

chip

See 35.0375 “die”.

Note 1 to entry: Common parlance for die.

33.0208

chip carrier

low-profile, usually square, surface-mount component semiconductor package whose die cavity or die mounting area is a large fraction of the package size and whose external connections are usually on all four sides of the package

Note 1 to entry: It may be leaded or leadless.

74.0206

chip-and-wire

assembly method that uses discrete wires to interconnect back-bonding die to lands, lead frames, etc.

74.1617

chip-in-board

CIB

electronic component where a chip is inserted into an opening of a ceramic or glass-epoxy substrate and bonded by wire bonding or TAB techniques

Note 1 to entry: The object of the TAB technique is to reduce the thickness of the COB assembly.

Note 2 to entry: The chip may be covered by a resin after bonding.

Note 3 to entry: This note applies to the French language only.

86.0207

chip-on-board

COB

printed board assembly technology that places unpackaged semiconductor dices and interconnects them by wire bonding or similar attachment techniques

SEE: Figure 27.