

INTERNATIONAL STANDARD

IEC
62258-1

First edition
2005-08

Semiconductor die products –

Part 1: Requirements for procurement and use

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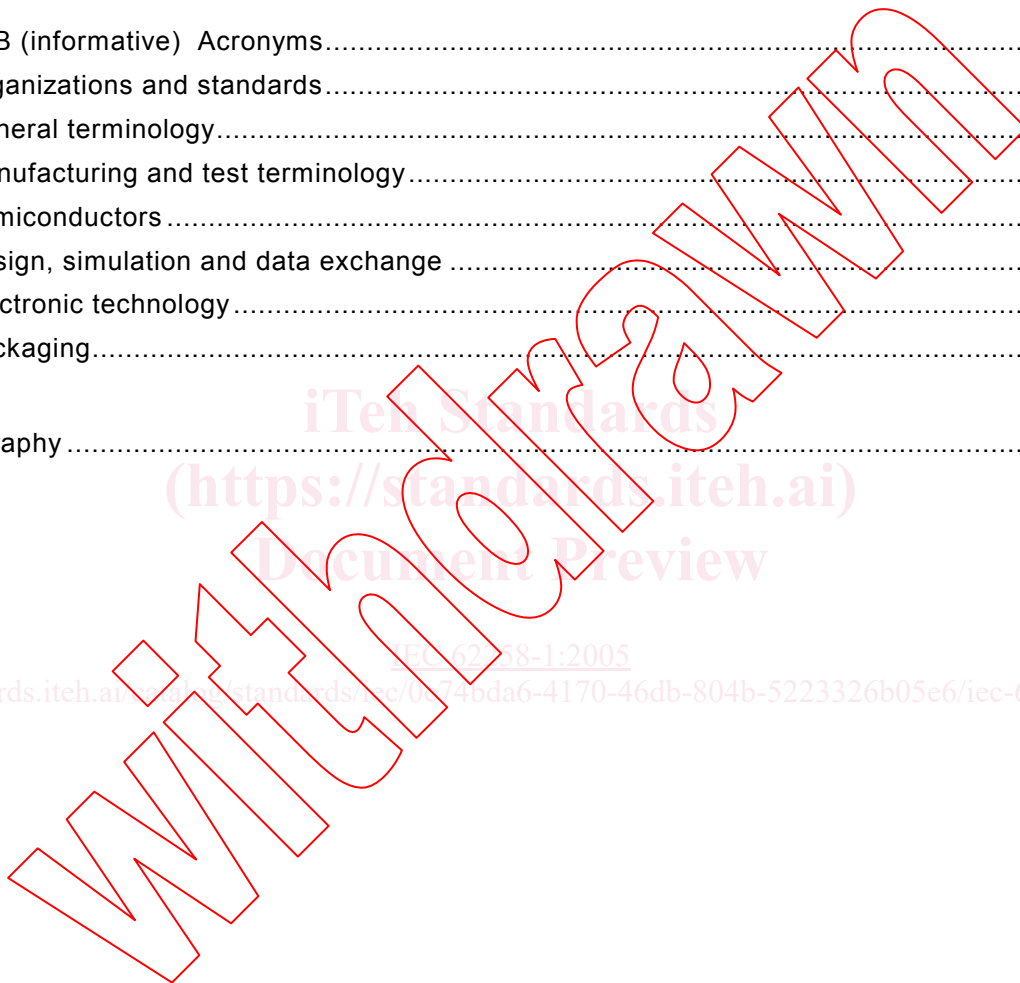
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DIE PRODUCTS –

Part 1: Requirements for procurement and use

FOREWORD

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International Standard IEC 62258-1 has been prepared by IEC technical committee 47: Semiconductor devices.

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

FDIS	Report on voting
47/1820/FDIS	47/1832/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.

IEC 62258, as currently conceived, consists of the following parts, under the general title *Semiconductor die products*:

- Part 1: Requirements for procurement and use
- Part 2: Exchange data formats ¹
- Part 3: Recommendations for good practice in handling, packing and storage (Technical Report) ¹
- Part 4: Questionnaire for die users and suppliers (Technical Report) ²
- Part 5: Requirements for information concerning electrical simulation ²
- Part 6: Requirements for information concerning thermal simulation ²

Further parts may be added as required.

A bilingual version of this publication may be issued at a later date.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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- withdrawn;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.

¹ To be published.

² In preparation.

INTRODUCTION

This International Standard is based on the work carried out in the ESPRIT 4th Framework project GOOD-DIE which resulted in the publication of the ES59008 series of European specifications. Organizations that helped prepare this standard include the ESPRIT GOOD-DIE project, The Die Products Consortium, JEITA, JEDEC and ZVEI.

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SEMICONDUCTOR DIE PRODUCTS –

Part 1: Requirements for procurement and use

1 Scope

This part of IEC 62258 has been developed to facilitate the production, supply and use of semiconductor die products, including

- wafers,
- singulated bare die,
- die and wafers with attached connection structures,
- minimally or partially encapsulated die and wafers.

This standard defines the minimum requirements for the data which are needed to describe such die products and is intended as an aid in the design of and procurement of assemblies incorporating die products. It covers the requirements for data, including

- product identity,
- product data,
- die mechanical information,
- test, quality, assembly and reliability information,
- handling, shipping and storage information.

This standard covers the specific requirements for data needed to describe the geometrical properties of die, their physical properties and the means of connection necessary for their use in the development and manufacture of products. It also contains, in Annexes A and B, terminology and a list of common acronyms, respectively.

2 Normative references

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

IEC 60191-4:1999, *Mechanical standardization of semiconductor devices – Part 4: Coding system and classification into forms of package outlines for semiconductor device packages*
Amendment 1 (2001)
Amendment 2 (2002)

IEC 61360-1:2002, *Standard data element types with associated classification scheme for electric components – Part 1: Definitions – Principles and methods*

IEC 62258-2, *Semiconductor die products – Part 2: Exchange data formats*³

ISO 14644-1:1999, *Cleanrooms and associated controlled environments – Part 1: Classification of air cleanliness*

³ To be published.

3 Terms and definitions

For the purposes of this document, the following terms apply.

NOTE 1 All terms defined here are in addition to relevant terms defined in IEC 60050: International Electrotechnical Vocabulary.

NOTE 2 Additional terms and acronyms are given for information in Annexes A and B.

3.1 Basic definitions

3.1.1

die (singular or plural)

separated piece(s) of semiconductor wafer that constitute(s) a discrete semiconductor or whole integrated circuit

3.1.2

wafer

slice or flat disc, either of semiconductor material or of such a material deposited on a substrate, in which devices or circuits are simultaneously processed and which may be subsequently separated into die

3.1.3

singulated die

individual and distinct die which have been separated from the wafer

3.1.4

bare die

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

3.1.5

bare die with connection structures

unpackaged die that have had added bumps, lead frames or other terminations to interconnect for electrical attachment

NOTE Typically these can be die that have had solder or other metallic bumps added to the metallized pads on the die in the form of peripheral bumps or arrays (also known as flip-chip) or die that have had fine leads attached to the metallized pads on the die known as TAB.

3.1.6

minimally packaged die

MPD

die that have had some exterior packaging medium and interconnection structure added for protection and ease of handling

NOTE This definition includes such packaging technologies as chip scale packages (CSP) in which the area of the package is not significantly greater than the area of the bare die.

3.1.7

die device

bare die, with or without connection structures, or a minimally packaged die

3.2 General terminology

3.2.1

chip

common parlance for die

3.2.2

chip scale package

chip size package

CSP

generic term for packaging technologies that result in a packaged part that is only marginally larger than the internal die

3.2.3

discrete (semiconductor)

single two-, three- or four-terminal semiconductor device

NOTE Discrete semiconductors include such devices as individual diodes, transistors and thyristors.

3.2.4

hybrid (circuit)

module or encapsulated sub-assembly that comprises semiconductor die and printed or otherwise attached passive components

NOTE Also see multi-chip module and multi-chip package.

3.2.5

known good die

KGD

qualification of a semiconductor die which indicates that the die has been tested to a specified or determined level of quality or “goodness”

NOTE A commonly accepted definition of KGD is a die that has been tested and/or screened to quality levels that are of the same order as those applicable to the equivalent packaged parts

3.2.6

package

total assembly which protects one or more electronic components from mechanical, environmental and electrical damage throughout its operational life and which provides means of interconnection

3.2.7

packaging

process of assembling one or more electronic components into a package

NOTE The use of “packaging” as a participle (e.g. “When packaging ICs into dual-in-line packages ...”) is deprecated.

3.2.8

packing

material which is used to protect electronic items from mechanical, environmental and electrical damage during transportation or storage and which is discarded prior to the incorporation of the item into its end application

3.2.9

multi-chip module

MCM

module that contains two or more die and/or minimally packaged die

NOTE Also see hybrid and multi-chip package.

3.2.10

multi-chip package

MCP

package that contains two or more die and/or minimally packaged die

NOTE Also see hybrid and multi-chip module.