

Semiconductor die products —

Part 7: XML schema for data exchange

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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TECHNICAL REPORT

Semiconductor die products – Part 7: XML schema for data exchange

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INTRODUCTION

This technical report is based on the work carried out in the ESPRIT 4th Framework project GOODDIE which resulted in the publication of the ES 59008 series of European specifications. Organizations that helped prepare this report included the ESPRIT ENCAST and IST ENCASIT projects, the Die Products Consortium, JEITA, JEDEC and ZVEI.

SEMICONDUCTOR DIE PRODUCTS –

Part 7: XML schema for data exchange

1 Scope

IEC/TR 62258-7, which is a technical report, 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 report contains an XML schema that describes the elements needed for data exchange and that will allow the implementation of the requirements of IEC 62258-1, IEC 62258-5 and IEC 62258-6, as well as providing an exchange structure that is complementary to those defined in IEC 62258-2. It is also complementary to and compatible with the questionnaire in IEC/TR 62258-4.

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 60050 (all parts), *International Electrotechnical Vocabulary*

IEC 62258-1: *Semiconductor die products – Part 1: Requirements for procurement and use*

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

IEC/TR 62258-4: *Semiconductor die products – Part 4: Questionnaire for die users and suppliers*

IEC 62258-5: *Semiconductor die products – Part 5 Requirements for information concerning electrical simulation*

IEC 62258-6: *Semiconductor die products – Part 6 Requirements for information concerning thermal simulation*

3 Terms and definitions

For the purposes of this document, relevant terms, which are defined in IEC 60050, together with additional terms and acronyms as given in IEC 62258-1, apply.

4 General

The schema given in this technical report complies with Version 1.0 (Third edition) of the Extensible Markup Language (XML) as defined by the World Wide Web Consortium (W3C). Links to the XML standard are given in the bibliography.

To comply with IEC 62258-1, that standard requires that suppliers of die devices shall furnish information that is necessary and sufficient for users of die devices at all stages of design, procurement, manufacture and test of products containing them. The schema in Annex A defines an exchange mechanism for structuring such information using an XML representation and as such is intended as an aid to compliance with the standard.

Whilst it is expected that much of the information supplied will be in the public domain and available from such sources as manufacturers' data sheets, neither the standard nor the schema places an obligation on a supplier to make information public. Any information that a supplier considers to be proprietary or commercially sensitive may be supplied under the terms of a non-disclosure agreement.

5 Data exchange

The schema in Annex A implements all the entities as defined by IEC 62258-2 for the DDX format. In addition, it includes additional entities extending the range of that data as follows:

- expansion of data on organisations (manufacturer, supplier etc.) to include addresses and contacts;
- sub-division of some entities to make their values clearer.

Annex B contains an example of an XML file based on the schema using a fictitious example similar to that employed in IEC 62258-2, and extended to cover additional data requirements. It is possible that software may be available for conversion of data produced using the spreadsheet associated with IEC/TR 62258-4 into this format. In any case, a wide range of tools is available commercially for handling and processing XML files.

The electronic form of the schema contained in this technical report may be downloaded from the IEC website. The copyright conditions applying to the use of the electronic file are those that apply to IEC database standards, which permit the use of such information in electronic form for bona-fide e-commerce but do not permit its sale to third parties or other commercial use.

Annex A (normative)

XML schema

In electronic form, for use by the example file shown in Annex B, the file containing this schema is assumed to have the name DDXschema.xsd

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

<!-- Declaration of simple types -->

<xs:simpleType name="NAME_Type">
  <xs:restriction base="xs:string"/>
</xs:simpleType>

<xs:simpleType name="LIST_Type">
  <xs:list itemType="xs:string"/>
</xs:simpleType>

<xs:simpleType name="DATE_Type">
  <xs:restriction base="xs:date"/>
</xs:simpleType>

<xs:simpleType name="COUNT_Type">
  <xs:restriction base="xs:integer">
    <xs:minInclusive value="1"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="LENGTH_Type">
  <xs:restriction base="xs:decimal">
    <xs:minInclusive value="0"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="NEGATIVE_LENGTH_Type">
  <xs:restriction base="xs:decimal">
    <xs:maxInclusive value="0"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="ANGLE_Type">
  <xs:restriction base="xs:decimal">
    <xs:minInclusive value="0"/>
    <xs:maxInclusive value="360"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="TEMPERATURE_Type">
  <xs:restriction base="xs:decimal"/>
</xs:simpleType>

<xs:simpleType name="TIME_Type">
  <xs:restriction base="xs:decimal"/>
</xs:simpleType>

<xs:simpleType name="POWER_Type">
  <xs:restriction base="xs:decimal">
    <xs:minInclusive value="0"/>
  </xs:restriction>
</xs:simpleType>
```

```

<xs:simpleType name="DEVICE_FORM_Type">
  <xs:restriction base="xs:string">
    <xs:enumeration value="bare_die"/>
    <xs:enumeration value="bumped_die"/>
    <xs:enumeration value="lead_frame_die"/>
    <xs:enumeration value="minimally_packaged_device"/>
    <xs:enumeration value="MPD"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="SIGNAL_TYPE_Type">
  <xs:restriction base="xs:string">
    <xs:enumeration value="I"/>
    <xs:enumeration value="O"/>
    <xs:enumeration value="B"/>
    <xs:enumeration value="G"/>
    <xs:enumeration value="V"/>
    <xs:enumeration value="A"/>
    <xs:enumeration value="N"/>
    <xs:enumeration value="U"/>
    <xs:enumeration value="T"/>
    <xs:enumeration value="X"/>
    <xs:enumeration value="H"/>
    <xs:enumeration value="L"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="CONNECTION_REQUIREMENT_Type">
  <xs:restriction base="xs:string">
    <xs:enumeration value="CONN"/>
    <xs:enumeration value="ISOL"/>
    <xs:enumeration value="OPT"/>
    <xs:enumeration value="N/A"/>
    <xs:enumeration value="N/K"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="VIEW_Type">
  <xs:restriction base="xs:string">
    <xs:enumeration value="top"/>
    <xs:enumeration value="bottom"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="GEOMETRIC_UNIT_Type">
  <xs:restriction base="xs:string">
    <xs:enumeration value="metre"/>
    <xs:enumeration value="millimetre"/>
    <xs:enumeration value="micrometre"/>
    <xs:enumeration value="micron"/>
    <xs:enumeration value="mil"/>
    <xs:enumeration value="mm"/>
  </xs:restriction>
</xs:simpleType>

<xs:simpleType name="MIRROR_Type">
  <xs:restriction base="xs:string">
    <xs:enumeration value="MX"/>
    <xs:enumeration value="MY"/>
    <xs:enumeration value="MXMY"/>
    <xs:enumeration value="MYMX"/>
  </xs:restriction>
</xs:simpleType>

```