ICS 31.180, 31.190 SLOVENSKÁ TECHNICKÁ NORMA Apríl 2020

STN	**Technológia montáže zabudovaných súčiastok Časť 1: Kmeňová špecifikácia pre substráty so zabudovanými súčiastkami**	**STN EN IEC 62878-1** 34 6510

Device embedding assembly technology - Part 1: Generic specification for device embedded substrates

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/20

Obsahuje: EN IEC 62878-1:2019, IEC 62878-1:2019

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62878-1

December 2019

ICS 31.180; 31.190

English Version

Device embedding assembly technology - Part 1: Generic specification for device embedded substrates (IEC 62878-1:2019)

Techniques d'assemblage avec appareil(s) integre(s) - Partie 1: Spécification générique pour substrats avec appareil(s) intégré(s) (IEC 62878-1:2019)

Montageverfahren für eingebettete Bauteile - Teil 1: Fachgrundspezifikation für Trägermaterial mit eingebetteten Bauteilen (IEC 62878-1:2019)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 62878-1:2019 (E)

European foreword

The text of document 91/1597/FDIS, future edition 1 of IEC 62878-1, prepared by IEC/TC 91 "Electronics assembly technology" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62878-1:2019.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-08-18
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-11-18

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Endorsement notice

The text of the International Standard IEC 62878-1:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60068-1:2013	NOTE	Harmonized as EN 60068-1:2014 (not modified)
IEC 60068-2-45	NOTE	Harmonized as EN 60068-2-45
IEC 60068-2-58	NOTE	Harmonized as EN 60068-2-58
IEC/TR 61340-5-2	NOTE	Harmonized as CLC/TR 61340-5-2
IEC 62421	NOTE	Harmonized as EN 62421

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-1	-	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-14	-	Environmental testing - Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-21	-	Environmental testing - Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	-
IEC 60068-2-27	-	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock	EN 60068-2-27	-
IEC 60068-2-69	-	Environmental testing – Part 2-69: Tests – Test Te/Tc: Solderability testing of electronic components and printed boards by the wetting balance (force measurement) method	EN 60068-2-69	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60194-2	-	Printed boards design, manufacture and assembly - Vocabulary - Part 2: Common usage in electronic technologies as well as printed board and electronic assembly technologies	-	-
IEC 61340-5-1	-	Electrostatics - Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements	EN 61340-5-1	-

EN IEC 62878-1:2019 (E)

Publication	Year	Title	EN/HD	Year
IEC 61340-5-3	-	Electrostatics - Part 5-3: Protection of electronic devices from electrostatic phenomena - Properties and requirements classification for packaging intended for electrostatic discharge sensitive devices	EN 61340-5-3	-
IEC 61760-4	-	Surface mounting technology - Part 4: Classification, packaging, labelling and handling of moisture sensitive devices	EN 61760-4	-
IEC 62137-1-4	-	Surface mounting technology - Environmental and endurance test methods for surface mount solder joint - Part 1-4: Cyclic bending test	EN 62137-1-4	-
IEC 62878-1-1	-	Device embedded substrate - Part 1-1: Generic specification - Test methods	EN 62878-1-1	-
IEC/TR 62878-2-2	-	Device embedded substrate - Part 2-2: Guidelines - Electrical testing	-	-
IEC/TS 62878-2-1	-	Device embedded substrate - Part 2-1: Guidelines - General description of technology	-	-
IEC/TS 62878-2-3	-	Device embedded substrate - Part 2-3: Guidelines - Design guide	-	-
IEC/TS 62878-2-4	-	Device embedded substrate - Part 2-4: Guidelines - Test element groups (TEG)	-	-
J-STD 033	-	Handling, Packing, Shipping, and Use of Moisture/Reflow and/or Process Sensitive Components	-	-

IEC 62878-1

Edition 1.0 2019-10

INTERNATIONAL STANDARD

Device embedding assembly technology – Part 1: Generic specification for device embedded substrates

IEC 62878-1:2019-10(en)

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IEC 62878-1

Edition 1.0 2019-10

INTERNATIONAL STANDARD

Device embedding assembly technology – Part 1: Generic specification for device embedded substrates

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 31.180; 31.190 ISBN 978-2-8322-7460-6

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DEVICE EMBEDDING ASSEMBLY TECHNOLOGY –

Part 1: Generic specification for device embedded substrates

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62878-1 has been prepared by IEC technical committee 91: Electronics assembly technology.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
91/1597/FDIS	91/1616/RVD

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

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

A list of all parts in the IEC 62878 series, published under the general title *Device embedded substrate*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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

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

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

INTRODUCTION

This document is a generic specification for device-embedded substrates fabricated by embedding discrete active and/or passive electronic devices into one or multiple inner layers of an organic substrate with electric connections by means of vias, conductor plating, conductive paste, and printing. Other special technologies for the realization of conductive or isolating structures and electronic components functions inside of substrates, like electronic modules or redistribution layers of integrated circuit packages are not covered by this document.

The device-embedded substrate can be used as a substrate to mount SMDs or THDs to form electronic circuits, as conductor and insulator layers can be formed after embedding electronic devices.

The purpose of this series of documents is to obtain common understanding in structures, test methods, design and fabrication processes and use of device-embedded substrate in the industry. These documents do not specify details of the manufacturing processes, design criteria and requirements, as those normally constitute intellectual property of the manufacturers and are very specific to the individual embedding technologies and applications.

Generic specification

The generic specification covers all subjects mainly common to device-embedded substrates for use in electronic equipment, such as terminology, methods of measurement and tests. Where the individual subjects require the prescription of conditions or parameters specific to the particular sub-family or type of embedded substrates, such prescriptions are required to be given by one of the subordinate specifications.

The numeric reference of the generic specification is IEC 62878-1.

Sectional and detail specifications (requirements to technology and components)

Sectional specifications cover all subjects additional to those given in the generic specification, which are specific to a defined sub-group of device-embedded substrate technologies. These subjects normally are preferred values for characteristics, additional test methods and relevant prescriptions for test methods given in the generic specification, prescriptions for sampling and for the preparation of specimens, recommended test severities and preferred acceptance criteria. The sectional specification also outlines the structure and scope of the test schedules that are to be applied in all subordinate detail specifications.

The numeric reference of the sectional and related detail specifications is IEC 62878-3-x.

Guidelines and supporting documentation

Supporting documentation and guidelines provide information in addition to the provisions of generic, sectional and detail specifications.

The numeric reference of supporting documentation and guidelines is IEC 62878-2-x.

DEVICE EMBEDDING ASSEMBLY TECHNOLOGY –

Part 1: Generic specification for device embedded substrates

1 Scope

This part of IEC 62878 specifies the generic requirements and test methods for device-embedded substrates. The basic test methods for printed board substrate materials and substrates themselves are specified in IEC 61189-3.

This part of IEC 62878 is applicable to device-embedded substrates fabricated by use of organic base material, which includes, for example, active or passive devices, discrete components formed in the fabrication process of electronic printed boards, and sheet-formed components.

The IEC 62878 series applies neither to the re-distribution layer (RDL) nor to electronic modules defined in IEC 62421.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14, *Environmental testing – Part 2-14: Tests – Test N: Change of temperature*

IEC 60068-2-21, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-69, *Environmental testing – Part 2-69: Tests – Test Te/Tc: Solderability testing of electronic components and printed boards by the wetting balance (force measurement) method*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60194-2, *Printed board design, manufacture and assembly – Vocabulary – Part 2: Common usage in electronic technologies as well as printed board and electronic assembly technologies*

IEC 61340-5-1, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

IEC 61340-5-3, *Electrostatics – Part 5-3: Protection of electronic devices from electrostatic phenomena – Properties and requirements classification for packaging intended for electrostatic discharge sensitive devices*

IEC 61760-4, *Surface mounting technology – Part 4: Classification, packaging, labelling and handling of moisture sensitive devices*

IEC 62137-1-4, *Surface mounting technology – Environmental and endurance test methods for surface mount solder joint – Part 1-4: Cyclic bending test*

IEC 62878-1-1, *Device embedded substrate – Part 1-1: Generic specification – Test methods*

IEC TS 62878-2-1, *Device embedded substrate – Part 2-1: Guidelines – General description of technology*

IEC TR 62878-2-2, *Device embedded substrate – Part 2-2: Guidelines – Electrical testing*

IEC TS 62878-2-3, *Device Embedded Substrate – Part 2-3: Guidelines – Design Guide*

IEC TS 62878-2-4, *Device Embedded Substrate – Part 2-4: Guidelines – Test element groups (TEG)*

J-STD 033, *Handling, Packing, Shipping, and Use of Moisture/Reflow and/or Process Sensitive Components*