ICS 31.080.99 SLOVENSKÁ TECHNICKÁ NORMA Január 2022

STN	Polovodičové zariadenia Polovodičové zariadenia na bezdrôtový prenos energie a nabíjanie Časť 1: Všeobecné požiadavky a špecifikácia	STN EN IEC 63244-1 35 8793

Semiconductor devices - Semiconductor devices for wireless power transfer and charging - Part 1: General requirements and specifications

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. 12/21

Obsahuje: EN IEC 63244-1:2021, IEC 63244-1:2021

obsahuje farebné strany

134120

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 63244-1

October 2021

ICS 31.080.99

English Version

Semiconductor devices - Semiconductor devices for wireless power transfer and charging - Part 1: General requirements and specifications (IEC 63244-1:2021)

Dispositifs à semiconducteurs - Dispositifs à semiconducteurs pour le transfert de puissance et la charge sans fil - Partie 1: Exigences et spécifications générales (IEC 63244-1:2021)

Halbleiterbauelemente - Halbleiterbauelemente für die drahtlose Leistungsübertragung und Ladung - Teil 1: Allgemeine Anforderungen und Festlegungen (IEC 63244-1:2021)

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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

Ref. No. EN IEC 63244-1:2021 E

European foreword

The text of document 47/2706/FDIS, future edition 1 of IEC 63244-1, prepared by IEC/TC 47 “Semiconductor devices” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63244-1:2021.

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) 2022–07–19
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024–10–19

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users’ national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 63244-1:2021 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 60747-16-1 NOTE Harmonized as EN 60747-16-1

IEC 63028 NOTE Harmonized as EN 63028

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 60068-2-14	-	Environmental testing - Part 2–14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-30	-	Environmental testing - Part 2–30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60749-10	-	Semiconductor devices - Mechanical and climatic test methods - Part 10: Mechanical shock	EN 60749-10	-
IEC 61967-2	-	Integrated circuits - Measurement of electromagnetic emissions, 150 kHz to 1 GHz - Part 2: Measurement of radiated emissions - TEM cell and wideband TEM cell method	EN 61967-2	-
IEC 61967-4	-	Integrated circuits - Measurement of electromagnetic emissions - Part 4: Measurement of conducted emissions – 1 Ω /150 Ω direct coupling method	EN IEC 61967-4	-
IEC 61967-8	-	Integrated circuits - Measurement of electromagnetic emissions - Part 8: Measurement of radiated emissions - IC stripline method	EN 61967-8	-
IEC 62132-2	-	Integrated circuits - Measurement of electromagnetic immunity - Part 2: Measurement of radiated immunity - TEM cell and wideband TEM cell method	EN 62132-2	-

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IEC 62132-4	-	Integrated circuits - Measurement of electromagnetic immunity 150 kHz to 1 GHz - Part 4: Direct RF power injection method	EN 62132-4	-
IEC 62132-8	-	Integrated circuits - Measurement of electromagnetic immunity - Part 8: Measurement of radiated immunity - IC stripline method	EN 62132-8	-
IEC 62262	-	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	EN 62262	-
IEC 62969-2	2018	Semiconductor devices - Semiconductor interface for automotive vehicles - Part 2: Efficiency evaluation methods of wireless power transmission using resonance for automotive vehicles sensors	EN IEC 62969-2	2018
IEC CISPR 11	-	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement	EN 55011	-

IEC 63244-1

Edition 1.0 2021-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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IEC 63244-1:2021-09(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 31.080.99

ISBN 978-2-8322-1023-2

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR WIRELESS POWER TRANSFER AND CHARGING –

Part 1: General requirements and specifications

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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IEC 63244-1 has been prepared by IEC technical committee 47: Semiconductor devices. It is an International Standard.

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

Draft	Report on voting
47/2706/FDIS	47/2723/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all the parts in the IEC 63244 series, published under the general title *Semiconductor devices – Semiconductor devices for wireless power transfer and charging*, can be found on the IEC website.

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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The IEC 63244 series is planned to comprise the following parts:

- IEC 63244-1: Semiconductor devices – Semiconductor devices for wireless power transfer and charging – Part 1: General requirements and specifications
- IEC 63244-2: Semiconductor devices – Semiconductor devices for wireless power transfer and charging – Part 2: Far-field based wireless power transfer – Electromagnetic-wave based wireless power transfer
- IEC 63244-3-1: Semiconductor devices – Semiconductor devices for wireless power transfer and charging – Part 3-1: Near-field based wireless power transfer – Magnetic-field based wireless power transfer
- IEC 63244-3-2: Semiconductor devices – Semiconductor devices for wireless power transfer and charging – Part 3-2: Near-field based wireless power transfer – Electric-field based wireless power transfer

The standardization bodies for wireless power transfer and charging technologies is as follow:

1) Wireless power consortium (WPC): Wireless power consortium covers MF WPT technology such as inductive WPT and magnetic resonance WPT. WPC has Qi certification process to ensure the safety and quality.
2) AirFuel alliance: AirFuel alliance covers NF WPT technology such as resonant mode of magnetic-field based wireless power transfer. And also, AirFuel alliance is working on FF WPT technology such as electromagnetic-wave based wireless power transfer. AirFuel alliance has Rezence certification process for resonant mode of MF WPT to ensure the safety and quality. AirFuel alliance was formed by the merge of Alliance for Wireless Power (A4WP) and Power Matters Alliance (PMA) in 2015.

SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR WIRELESS POWER TRANSFER AND CHARGING –

Part 1: General requirements and specifications

1 Scope

This part of IEC 63244 provides general requirements and specifications of the semiconductor devices for the performance and reliability evaluations of wireless power transfer and charging systems. For the performance evaluations, this part covers various characterization parameters and symbols, general system diagrams, and test setups and test conditions.

This document also describes classifications of the wireless power transfer technologies.

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

IEC 60068-2-30, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 + 12 h cycle)*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60749-10, *Semiconductor devices – Mechanical and climatic test methods – Part 10: Mechanical shock*

IEC 61967-2, *Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 2: Measurement of radiated emissions – TEM cell and wideband TEM cell method*

IEC 61967-4, *Integrated circuits – Measurement of electromagnetic emissions – Part 4: Measurement of conducted emissions – 1 Ω /150 Ω direct coupling method*

IEC 61967-8, *Integrated circuits – Measurement of electromagnetic emissions – Part 8: Measurement of radiated emissions – IC stripline method*

IEC 62132-2, *Integrated circuits – Measurement of electromagnetic immunity – Part 2: Measurement of radiated immunity – TEM cell and wideband TEM cell method*

IEC 62132-4, *Integrated circuits – Measurement of electromagnetic immunity 150 kHz to 1 GHz – Part 4: Direct RF power injection method*

IEC 62132-8, *Integrated circuits – Measurement of electromagnetic immunity – Part 8: Measurement of radiated immunity – IC stripline method*

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62969-2:2018, *Semiconductor devices – Semiconductor interface for automotive vehicles – Part 2: Efficiency evaluation methods of wireless power transmission using resonance for automotive vehicles sensors*

IEC CISPR 11, *Industrial, scientific and medical equipment – Radio-frequency disturbance characteristics – Limits and methods of measurement*