

SLOVENSKI STANDARD SIST EN IEC 63364-1:2023

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Semiconductor devices - Semiconductor devices for IoT system - Part 1: Test method of sound variation detection (IEC 63364-1:2022)

Halbleiterbauelemente - Halbleiterbauelemente für IOT-Systeme - Teil 1: Prüfverfahren für die Erkennung von Schallschwankungen (IEC 63364-1:2022)

Dispositifs à semiconducteurs - Dispositifs à semiconducteurs pour système IDO - Partie 1: Méthode d'essai de détection de variation acoustique (IEC 63364-1:2022)

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Semiconductor devices in general

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en

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European foreword

The text of document 47/2782/FDIS, future edition 1 of IEC 63364-1, prepared by IEC/TC 47 "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 63364-1:2023.

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NORME INTERNATIONALE

Semiconductor devices – Semiconductor devices for IoT system – Part 1: Test method of sound variation detection

Dispositifs à semiconducteurs – Dispositifs à semiconducteurs pour système IDO – SISTEN IEC 6364-12023 Partie 1: Méthode d'essai de détection de variation acoustique sistemed de la semiconducteurs pour système

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR IOT SYSTEM –

Part 1: Test method of sound variation detection

FOREWORD

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IEC 63364-1 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
47/2782/FDIS	47/2792/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.

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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/publications.

A list of all parts in the IEC 63364 series, published under the general title *Semiconductor devices* – *Semiconductor devices for IoT system*, 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 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.

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SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR IOT SYSTEM –

Part 1: Test method of sound variation detection

1 Scope

This part of IEC 63364 specifies terms, the test method, and the report of sound variation detection system based on IoT. It provides the evaluation method for each part of the sound variation detection system based on IoT in the block diagram, the characterization parameters, symbols, test setups and the conditions. In addition, this document defines the configuration items and criteria of standard space and firing situation for the quality evaluation measurement of sound field variation detection system with IoT.

2 Normative references

There are no normative references in this document.

3 Terms and definitions ANDARD PREVIEW

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses: SIST EN IEC 63364-1:2023

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1

transfer function

response characteristics function of sound pressure which transfers to microphone in the securing sound space

3.2

standard space

securing sound space which is controlled and frequency pre-scanned for the occurrence of event

3.3

SNR

signal to noise ratio value which is defined by the ratio of the value of event occurred and without the event

3.4

frequency shift index

characteristic frequency shift value for the event occurred

4 Evaluation method and test setup

4.1 General

Changing sound field composed of low-cost speaker and microphone in the sensor module, a sound field is generated by the speaker in the standard space. The extent to which the generated sound field is distorted by firing objects is measured and detected with a microphone, in a dark environment. The extent is about the primary space when events are monitored. In this securing space, the modelling is described by the governing equation of acoustic wave propagation and boundary conditions of wave source, speed and wave pressure. In order to make a sound field, the speaker should generate the 4 kHz wave. Figure 1 shows a sound field sphere,

where

- *P* is the pressure of the sound;
- $S_{\rm u}$ is the sound velocity boundary;
- S_{p} is the sound pressure boundary;
- U is the velocity of the sound.



