SLOVENSKI STANDARD
SIST EN 60862-1:2016

01-marec-2016

Nadomešča:
SIST EN 60862-1:2004

Filtri za površinske akustične valove (SAW) ocenjene kakovosti - 1. del: Splošna specifikacija

Surface acoustic wave (SAW) filters of assessed quality - Part 1: Generic specification

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Filtres à ondes acoustiques de surface (OAS) sous assurance de la qualité - Partie 1: Spécification générique

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[illegible]

Ta slovenski standard je istoveten z: EN 60862-1:2015

ICS:

31.160 Električni filtri Electric filters

SIST EN 60862-1:2016 en

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60862-1

November 2015

ICS 31.140

Supersedes EN 60862-1:2003

English Version

Surface acoustic wave (SAW) filters of assessed quality - Part 1: Generic specification (IEC 60862-1:2015)

Filtres à ondes acoustiques de surface (OAS) sous assurance de la qualité - Partie 1: Spécification générique (IEC 60862-1:2015)

Oberflächenwellenfilter (OFW-Filter) mit bewerteter Qualität - Teil 1: Fachgrundspezifikation (IEC 60862-1:2015)

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

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Ref. No. EN 60862-1:2015 E

SIST EN 60862-1:2016

European foreword

The text of document 49/1151/FDIS, future edition 3 of IEC 60862-1, prepared by IEC/TC 49 "Piezoelectric and dielectric devices for frequency control and selection" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60862-1:2015.

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) 2016-06-24
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-09-24

This document supersedes EN 60862-1:2003.

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Endorsement notice

The text of the International Standard IEC 60862-1:2015 was approved by CENELEC as a European Standard without any modification.

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

IEC 60068-2-10:2005	NOTE	Harmonized as EN 60068-2-10:2005 (not modified).
IEC 60862-2:2012	NOTE	Harmonized as EN 60862-2:2012 (not modified).
IEC 60862-3	NOTE	Harmonized as EN 60862-3.

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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

NOTE 1 When 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 60027	series	Letter symbols to be used in electrical technology	EN 60027	series
IEC 60050	series	International electrotechnical vocabulary	-	-
IEC 60068-1	2013	Environmental testing -- Part 1: General and guidance	EN 60068-1	2014
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 60068-2-7	-	Basic environmental testing procedures - Part 2-7: Tests - Test Ga and guidance: Acceleration, steady state	EN 60068-2-7	-
IEC 60068-2-13	-	Basic environmental testing procedures - Part 2-13: Tests - Test M: Low air pressure	EN 60068-2-13	-
IEC 60068-2-14	-	Environmental testing -- Part 2-14: Tests - Test N: Change of temperature	EN 60068-2-14	-
IEC 60068-2-17	1994	Basic environmental testing procedures - Part 2-17: Tests - Test Q: Sealing	EN 60068-2-17	1994
IEC 60068-2-20	-	Environmental testing -- Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	-
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 60068-2-30	-	Environmental testing -- Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	-
IEC 60068-2-31	-	Environmental testing -- Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2-31	-

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IEC 60068-2-45	-	Basic environmental testing procedures - Part 2-45: Tests - Test XA and guidance: Immersion in cleaning solvents	EN 60068-2-45	-
IEC 60068-2-52	-	Environmental testing -- Part 2-52: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)	EN 60068-2-52	-
IEC 60068-2-58	-	Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)	-	-
IEC 60068-2-64	-	Environmental testing -- Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance	EN 60068-2-64	-
IEC 60068-2-78	-	Environmental testing -- Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60122-1	-	Quartz crystal units of assessed quality -- Part 1: Generic specification	EN 60122-1	-
IEC 60617	-	Standard data element types with associated classification scheme for electric components -- Part 4: IEC reference collection fo standard data element types and component classes	-	-
IEC 60642	-	Piezoelectric ceramic resonators and resonator units for frequency control and selection - Chapter I: Standard values and conditions - Chapter II: Measuring and test conditions	-	-
IEC 60695-11-5	-	Fire hazard testing -- Part 11-5: Test flames - Needle-flame test method - Apparatus, confirmatory test arrangement and guidance	EN 60695-11-5	-
IEC 60749-28	201X[1)]	Semiconductor devices - Mechanical and climatic test methods -- Part 28: Electrostatic Discharge (ESD) Sensitivity Testing Direct contact charged device model (DC-CDM)	FprEN 60749-28	201X
IEC 61000-4-2	-	Electromagnetic compatibility (EMC) -- Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	-
IEC 61340-3-1	-	Electrostatics -- Part 3-1: Methods for simulation of electrostatic effects - Human body model (HBM) electrostatic discharge test waveforms	EN 61340-3-1	-
IEC 61340-3-2	-	Electrostatics -- Part 3-2: Methods for simulation of electrostatic effects - Machine model (MM) electrostatic discharge test waveforms	EN 61340-3-2	-
IEC 80000	series	Quantities and units	EN 80000	series
ISO 80000	series	Quantities and units	EN ISO 80000	series

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SURFACE ACOUSTIC WAVE (SAW) FILTERS OF ASSESSED QUALITY –

Part 1: Generic specification

FOREWORD

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International Standard IEC 60862-1 has been prepared by IEC technical committee 49: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection.

This third edition cancels and replaces the second edition published in 2003. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- the terms and definitions from IEC 60862-2:2002 are included;
- the measurement method for the balanced type filter is described;
- the electrostatic discharge (ESD) sensitivity test procedure is considered.

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

FDIS	Report on voting
49/1151/FDIS	49/1164/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.

A list of all parts in the IEC 60862 series, published under the general title *Surface acoustic wave (SAW) filters of assessed quality*, can be found on the IEC web site.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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.

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SURFACE ACOUSTIC WAVE (SAW) FILTERS OF ASSESSED QUALITY –

Part 1: Generic specification

1 Scope

This part of IEC 60862 specifies the methods of test and general requirements for SAW filters of assessed quality using either capability approval or qualification approval procedures.

2 Normative references

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

IEC 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at www.electropedia.org)

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IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

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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 60068-2-7, *Basic environmental testing procedures – Part 2-7: Tests – Test Ga and guidance: Acceleration, steady state*

IEC 60068-2-13, *Basic environmental testing procedures – Part 2-13: Tests – Test M: Low air pressure*

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

IEC 60068-2-17:1994, *Basic environmental testing procedures– Part 2-17: Tests – Test Q: Sealing*

IEC 60068-2-20, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

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

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IEC 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60068-2-45, *Basic environmental testing procedures – Part 2-45: Tests – Test XA and guidance: Immersion in cleaning solvents*

IEC 60068-2-52, *Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

IEC 60068-2-58, *Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderabilitly, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*

IEC 60068-2-64, *Environmental testing – Part 2-64: Tests – Test Fh: Vibration, broad-band random and guidance*

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

IEC 60122-1, *Quartz crystal units of assessed quality – Part 1: Generic specification*

IEC 60617, *Graphical symbols for diagrams* (available at http://std.iec.ch/iec60617)

IEC 60642, *Piezoelectric ceramic resonators and resonator units for frequency control and selection – Chapter I: Standard values and conditions – Chapter II: Measuring and test conditions*

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IEC 60695-11-5, *Fire hazard testing – Part 11-5: Test flames – Needle-flame test method – Apparatus, confirmatory test arrangement and guidance*

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IEC 60749-28[1], *Semiconductor devices – Mechanical and climatic test methods – Part 28: Electrostatic discharge (ESD) sensitivity testing direct contact charged device model (DC-CDM)*

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61340-3-1, *Electrostatics – Part 3-1: Methods for simulation of electrostatic effects – Human body model (HBM) electrostatic discharge test waveforms*

IEC 61340-3-2, *Electrostatics – Part 3-2: Methods for simulation of electrostatic effects – Machine model (MM) electrostatic discharge test waveforms*

IEC 80000 (all parts), *Quantities and units*

ISO 80000 (all parts), *Quantities and units*

[1] To be published.

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3 Terms, definitions, units and symbols

3.1 Terms and definitions

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

3.1.1 General terms

3.1.1.1
surface acoustic wave
SAW
acoustic wave, propagating along a surface of an elastic material, whose amplitude decays exponentially with the depth

3.1.1.2
surface acoustic wave filter
SAW filter
filter characterized by one or more surface acoustic wave transmission line or resonant elements, where the surface acoustic wave is usually generated by an interdigital transducer and propagates along a material surface

3.1.1.3
power flow vector
vector, analogous to a Poynting vector, characterizing energy propagation caused by a surface acoustic wave

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3.1.1.4
propagation vector
vector characterizing the phase progression of a wave

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3.1.1.5
power flow angle
angle between the direction of the power flow vector and the direction of the propagation vector

3.1.1.6
SAW beam steering
SAW propagation phenomenon in anisotropic materials described by an angle of powerflow which is not zero

3.1.1.7
SAW diffraction
phenomenon, analogous to diffraction of light from a source of finite aperture, which causes SAW beam spreading and wave-front distortion

3.1.1.8
SAW coupling coefficient
k_s^2
electromechanical coupling coefficient defined as follows:

$$k_s^2 = 2\left|\frac{\Delta v_s}{v_s}\right|$$

where

v_s is the SAW propagation velocity on the free surface;

Δv_s is the change of SAW velocity due to short-circuiting the surface potential;