



SLOVENSKI STANDARD
SIST EN 166000:2003
01-oktober-2003

Generic Specification: Surface acoustic wave (SAW) filters

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Fachgrundspezifikation: Oberflächenwellen (OFW-) Filter

Spécification générique: Filtres à ondes acoustiques de surface (OAS)

Ta slovenski standard je istoveten z: EN 166000:1995

[SIST EN 166000:2003](https://standards.iteh.ai/catalog/standards/sist/ee8072d8-2d54-4bcf-a5c3-786bf9c55125/sist-en-166000-2003)

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ICS:

31.160 Elektronska oprema Electric filters

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English version

**Generic Specification:
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(OAS)

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Oberflächenwellen (OFW-) Filter

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This European Standard was approved on 1995-06-24. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung
Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by Working Group CLC/TC CECC/WG 17.

The text of the draft based on document CECC(Secretariat)3278 was submitted to the formal vote; together with the voting report, circulated as document CECC(Secretariat)3656, it was approved as EN 166000 on 1995-06-24.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1996-07-01
 - latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 1997-07-01
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SECTION 1 - SCOPE

This document specifies the methods of test and general requirements for surface acoustic wave filters of assessed quality using either capability approval or qualification approval procedures.

SECTION 2 - GENERAL2.1 Order of precedence

Where any discrepancies occur for any reason, documents shall rank in the following order of precedence:

- the detail specification
- the sectional specification
- the generic specification;
- the CENELEC internal regulations:
- any other international documents (for example, of the IEC) to which reference is made

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The same order of precedence shall apply to equivalent national documents.

2.2

Related documents

[SIST EN 166000:2003](https://standards.iteh.ai/catalog/standards/sist/ee8072d8-2d54-4bcf-a5c3-786bf9c55125/sist-en-166000-2003)

		h.ai/catalog/standards/sist/ee8072d8-2d54-4bcf-a5c3-786bf9c55125/sist-en-166000-2003
ISO 1000	(1973)	SI units and recommendations for use of their multiples and of certain other units
IEC 27-1	(1971)	Letter symbols to be used in electrical technology : Part I : General
IEC 27-2	(1972)	Letter symbols to be used in electrical technology: Part 2 : Telecommunications and electronics
IEC 50	-	International Electrotechnical Vocabulary
IEC 50 (561)	(1991)	Chapter 561: Piezoelectric devices for frequency control and selection
IEC 68		Basic environmental testing procedures
IEC 68-1	(1988)	Part I: General and guidance
IEC 68-2	(1990)	Part 2: Tests

IEC 68-2-1	(1990)	Test A: Cold
IEC 68-2-2	(1974) (1976)	Test B : Dry heat Supplement A
IEC 68-2-3	(1969) (1984)	Test Ca : Damp heat, steady state Amendment No.1
IEC 68-2-6	(1982) (1983) (1985)	Test Fc and guidance : Vibration(sinusoidal) Amendment No.1 Amendment No.2
IEC 68-2-7	(1983) (1986)	Test Ga and guidance: Acceleration, steady state Amendment No.1
IEC 68-2-10	(1988)	Test J and guidance: Mould growth
IEC 68-2-13	(1983)	Test M Low air pressure
IEC 68-2-14	(1984) (1986)	Test N Change of temperature e Amendment No.1
IEC 68-2-17	(1978) (1991)	Test Q : Sealing Amendment No.4
IEC 68-2-20	(1979) (1986) (1987)	Test T : Soldering Amendment No.1 Amendment No.2
IEC 68-2-21	(1983) (1991)	Test U : Robustness of terminations and integral mounting devices Amendment No.2
IEC 68-2-27	(1987)	Test Ea and guidance: Shock
IEC 68-2-29	(1987)	Test Eb: Bump
IEC 68-2-30	(1980) (1990)	Test Db and guidance: Damp heat cyclic Amendment No.2
IEC 68-2-32	(1975) (1990)	Test Ed: Free fall Amendment No.2
IEC 68-2-36	(1973) (1983)	Test Fdb : Random vibration wide band- reproducibility medium Amendment No.1
IEC 68-2-45	(1980)	Test XA and guidance: Immersion in cleaning solvents

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IEC 68-2-52	(1984)	Test Kb: Salt mist, cyclic (sodium chloride solution)
IEC 410	(1973)	Sampling plans and procedures for inspection by attributes
IEC 617 IEC 695-2-2	--- (1991)	Graphical symbols for diagrams Fire hazard testing Part 2: Test methods Section 2: Needle -flame test
IEC 862-1	(1989)	Surface acoustic wave (SAW) filters Part 1: General information, standard values and test conditions
IEC 862-2	(1991)	Surface acoustic wave (SAW) filters Part- 2: Guide to the use of surface acoustic wave filters
IEC 862-3	(1986)	Surface acoustic wave (SAW) filters Part 3: Standard outlines
CECC 00 015/1	(1991)	Basic Specification: Protection of electrostatic sensitive devices: Part 1: General requirements.
CECC 00 016	(1990)	Basic requirements for the use of Statistical Process Control(SPC) in the CECC System.
CECC 00 114/I	(1990)	Quality assessment procedures Part I: Approval of manufacturers and other organizations
CECC 00 114/II	(1991)	Quality assessment procedures Part II: Qualification approval of electronic components
CECC 00 114/III	(1989)	Quality assessment procedures Part III: Capability approval of an electronic component manufacturing activity
CECC 00 109	(1974)	Certified test records
CECC 00 111	(1991)	Specifications
CECC 00 200	(1994)	Register of firms, products and services approved under the CECC System
CECC 00 802	(1990)	CECC Standard method for specification of surface mounting components (SMDs) of assessed quality

2.3 Units, symbols and terminology

2.3.1 General

Units, graphical symbols, letter symbols and terminology shall, wherever possible, be taken from the following documents:

ISO 1000	SI units and recommendations for the use of multiples and of certain other units
IEC 27	Letter symbols to be used in electrical technology
IEC 50	International Electrotechnical Vocabulary
IEC 50(561)	International Electrotechnical Vocabulary Chapter 561: Piezoelectric devices for frequency control and selection
IEC 862-1	Surface acoustic wave (SAW) -filters Part 1: General information, standard values and test conditions.
IEC 617	Graphical symbols for diagrams

The following paragraphs contain additional terminology applicable to surface acoustic wave (SAW) filters and the latest IEV definitions.

2.3.2 Surface acoustic wave (SAW) (561-06-01)

An acoustic wave, propagating along a surface of an elastic substrate, whose amplitude decays exponentially with substrate depth.

2.3.3 Surface acoustic wave filter (SAW filter) (561-06-2)

A filter characterized by a surface acoustic wave which is usually generated by an interdigital transducer and propagates along a substrate surface to a receiving transducer.

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2.3.4 Power flow vector (561-06-03)

A vector, analogous to a Poynting vector, characterizing energy propagation caused by a surface acoustic wave.

2.3.5 Propagation vector (561-06-04)

A vector characterizing the phase progression of a wave.

2.3.6 Power flow angle (561-06-05)

The angle between the direction of power flow vector and the direction of propagation vector.

2.3.7 SAW beam steering (561-06-06)

SAW propagation phenomenon in anisotropic materials described by an angle of power flow, which is not zero.

2.3.8 SAW diffraction (561-06-07)

A phenomenon (analogous to diffraction of light from a source of finite aperture) which causes SAW beam spreading and wave front distortion.

2.3.9 SAW coupling coefficient (k_s) (561-06-08)

SAW electromechanical coupling coefficient is defined as follows:

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

where $\Delta v/v$ is the relative velocity change produced by short-circuiting the surface potential from the open-circuit condition.

2.3.10 Interdigital transducer (IDT) (561-06-09)

A SAW transducer made of a comb-like conductive structure deposited on a piezoelectric substrate transforming electrical energy into acoustic energy or vice versa.

2.3.11 Unidirectional interdigital transducer (UDT) (561-06-10)

A transducer capable of radiating and receiving surface acoustic waves in or from a single direction.

2.3.12 Multiphase transducer (561-06-11) EN 166000:2003

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An interdigital transducer having more than two inputs which are driven in different phases. Usually used as unidirectional transducer.

2.3.13 Finger (561-06-12)

An element of the IDT electrode.

2.3.14 Dummy finger (561-06-13)

A passive finger which may be included in order to suppress wavefront distortion.

2.3.15 Split finger (561-06-14)

A finger formed of more than one element, so as to produce antireflection properties in a surface acoustic wave filter.

2.3.16 Bus bar (561-06-15)

A common electrode which connects individual fingers together and also connects the filter to an external circuit.

2.3.17 Weighted-response transducer (561-06-16)

A transducer intended to produce a specified impulse response by design of the structure.

2.3.18 Finger overlap; source strength (561-06-17)

The length of a finger pair between which only electromechanical interaction is generated.

2.3.19 Apodization (561-06-18)

Weighting produced by the change of finger overlap over the length of the IDT.

2.3.20 Withdrawal weighting (561-06-19)

Weighting by removal of fingers or sources.

2.3.21 Capacitive weighting (561-06-21.)

Weighting by change of capacitance between electrodes

2.3.22 Series weighting (561-06-21)

Weighting by separation of a finger into individual elements having capacitive coupling between them. The elements may be separated from the bus bar.

2.3.23 Phase weighting (561-06-22)

Weighting by change in period of a finger arrangement inside the IDT.

2.3.24 Aperture (561-06-23)

Normalized beamwidth of the SAW generated at centre frequency and normalized to the corresponding wavelength.

2.3.25 Multistrip coupler (MSC) (561-06-24)

An array of additional metal strips deposited on a piezoelectric substrate in a direction transverse to the propagation direction which transfers acoustic power from one acoustic track to an adjacent track.

2.3.26 Reflector (561-06-25)

A SAW reflecting component which normally makes use of the periodic discontinuity provided by a metal strip array or a grooved array.