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SIST EN 60368-2-2:2002

01-september-2002

Piezoelectric filters - Part 2: Guide to the use of piezoelectric filters - Section 2: Piezoelectric ceramic filters (IEC 60368-2-2:1996)

Piezoelectric filters -- Part 2: Guide to the use of piezoelectric filters -- Section 2: Piezoelectric ceramic filters

Piezoelektrische Filter -- Teil 2: Leitfaden für die Anwendung von piezoelektrischen Filtern -- Hauptabschnitt 2: Piezoelektrische Keramikfilter

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Filtres piézoélectriques -- Partie 2: Guide d'emploi des filtres piézoélectriques -- Section 2: Filtres à céramique piézoélectrique

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Ta slovenski standard je istoveten z: **EN 60368-2-2:1999**

ICS:

31.140	Piezoelektriļ ne in dielektriļ ne naprave	Piezoelectric and dielectric devices
31.160	Elektriļ ni filtri	Electric filters

SIST EN 60368-2-2:2002 **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 60368-2-2

February 1999

ICS 31.140; 31.160

English version

Piezoelectric filters
Part 2: Guide to the use of piezoelectric filters
Section 2: Piezoelectric ceramic filters
(IEC 60368-2-2:1996)

Filtres piézoélectriques
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(CEI 60368-2-2:1996)

Piezoelektrische Filter
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Hauptabschnitt 2: Piezoelektrische Keramikfilter
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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.

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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

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Ref. No. EN 60368-2-2:1999 E

SIST EN 60368-2-2:2002

Foreword

The text of the International Standard IEC 60368-2-2:1996, prepared by IEC TC 49, Piezoelectric and dielectric devices for frequency control and selection, was submitted to the formal vote and was approved by CENELEC as EN 60368-2-2 on 1999-01-01 without any modification.

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) 2000-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2000-01-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60368-2-2:1996 was approved by CENELEC as a European Standard without any modification.

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SIST EN 60368-2-2:2002
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SIST EN 60368-2-2:2002

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60368-1	1992	Piezoelectric filters Part 1: General information, standard values and test conditions	-	-
IEC 61261-1	1994	Piezoelectric ceramic filters for use in electronic equipment - A specification in the IEC quality assessment system for electronic components (IECQ) Part 1: Generic specification - Qualification approval	-	-
IEC 61261-2	1994	Part 2: Sectional specification - Qualification approval	-	-
IEC 61261-2-1	1994	Part 2: Sectional specification - Qualification approval Section 1: Blank detail specification Assessment level E	-	-

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SIST EN 60368-2-2:2002
https://standards.iteh.ai/catalog/standards/sist/f8ef79bc-527f-4f61-9740-6be85c21cd24/sist-en-60368-2-2-2002

SIST EN 60368-2-2:2002

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SIST EN 60368-2-2:2002
https://standards.iteh.ai/catalog/standards/sist/f8ef79bc-527f-4f61-9740-6be85c21cd24/sist-en-60368-2-2-2002

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NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
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60368-2-2

Première édition
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Filtres piézoélectriques

Deuxième partie:
Guide d'emploi des filtres piézoélectriques
Section 2 – Filtres à céramique piézoélectrique

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Piezoelectric filters

Part 2:
Guide to the use of piezoelectric filters
Section 2 – Piezoelectric ceramic filters

SIST EN 60368-2-2:2002
https://standards.iteh.ai/catalog/standards/sist/f8ef79bc-527f-4f61-9740-
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International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http: //www.iec.ch

IEC

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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SIST EN 60368-2-2:2002

CONTENTS

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 60368-2-2:2002
https://standards.iteh.ai/catalog/standards/sist/f8ef79bc-527f-4f61-9740-6be85c21cd24/sist-en-60368-2-2-2002

SIST EN 60368-2-2:2002

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PIEZOELECTRIC FILTERS –

Part 2: Guide to the use of piezoelectric filters – Section 2: Piezoelectric ceramic filters

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters, express as nearly as possible an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
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6be85c21cd24/sist-en-60368-2-2-2002

International Standard IEC 368-2-2 has been prepared by IEC technical committee 49: Piezoelectric and dielectric devices for frequency control and selection.

IEC 368-2-2 cancels and replaces IEC 368B, published in 1975, and constitutes a technical revision.

IEC 368: Piezoelectric filters, comprises:

- IEC 368-1: Part 1: General information, standard values and test conditions (1992).
- IEC 368-2: Part 2: Guide to the use of piezoelectric filters, which comprises:
- IEC 368-2-1: Section 1: Quartz crystal filters (1988).
- IEC 368-2-2: Section 2: Piezoelectric ceramic filters (1996).
- IEC 368-3: Part 3: Standard outlines (1991).

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

FDIS	Report on voting
49/317/FDIS	49/348/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.

SIST EN 60368-2-2:2002

INTRODUCTION

In accordance with the progress in research and development of stable piezoelectric ceramic materials a new, rather promising field has appeared in designing high quality, miniature and economical filters using piezoelectric ceramic resonators (hereinafter referred to as ceramic resonators).

The availability of ceramic resonators with a high coupling factor, a high quality factor, and a satisfactory stability has permitted a design of a piezoelectric ceramic filter which can be used as an alternative to conventional LC filters, mechanical filters, as well as for new applications.

Piezoelectric ceramic filters (hereafter referred to as ceramic filters) are at present widely used in communication (in IF amplifiers of communication receivers), in equipment for forming a set of reference frequencies, and also in telemetry and measurement application, as well as in the IF amplifiers of broadcast receivers. Although specifications for these filters are very diverse, many of the above needs can be served by a few standard types of ceramic filters.

The standard detail specifications (in the IEC 368 and IEC 1261 series) and national specifications or data sheets issued by manufacturers will define the available combinations of reference frequency, pass bandwidth, ripple, shape factor, terminating impedance, etc. These sheets are compiled to include a wide range of ceramic filters with standardized performances. It cannot be overemphasized that the user should, wherever possible, select his ceramic filters from these specification sheets, when available, even if it may lead to making small modifications to his circuit to enable standard filters to be used. This is especially so in the case of the selection of the reference frequency.

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SIST EN 60368-2-2:2002
https://standards.iteh.ai/catalog/standards/sist/f8ef79bc-527f-4f61-9740-6be85c21cd24/sist-en-60368-2-2-2002

In contrast to conventional LC filters, ceramic filters, as well as quartz crystal filters, offer substantial advantages in design and production costs, when their reference frequencies are limited to a few narrow frequency ranges. Hence, an order which does not specify one of the more commonly used reference frequencies may be uneconomical.

It should be understood that standardization is not a fixed process, but rather a continuing one. As new requirements arise, new detail specifications are prepared to meet these requirements.

It is of prime interest to a user that the filter characteristics should satisfy the requirements of a specification sheet. The selection of internal filter and resonator networks to meet that specification should be an option of the manufacturer.

The amplitude versus frequency characteristics of a filter are usually expressed in terms of transducer attenuation as a function of frequency, as shown in figure 1. In some applications, such characteristics as transient response or group delay time are more important than transducer attenuation.

SIST EN 60368-2-2:2002

Transducer attenuation characteristics are further specified by reference frequency, minimum transducer attenuation, pass-band ripple and shape factor, of which standard values are given in IEC 368-1 and IEC 1261-1. The specification is to be satisfied between the lowest and highest temperature of the specified operating temperature range. This condition should also be satisfied before and after the environmental tests. In some cases, particularly for filters for broadcast receivers, the maximum variation of characterisics over a given temperature range may be specified.

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