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Semiconductor devices - Micro-electromechanical devices -
Part 4: Generic specification for MEMS

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC 62047-4 has been prepared by subcommittee 47F: Micro-electromechanical systems, of IEC technical committee 47: Semiconductor devices. It is an International Standard.

This second edition cancels and replaces the first edition published in 2008. This edition constitutes a technical revision.

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

a) in the Scope, optical MEMS, bio-MEMS, micro TAS, and power MEMS for various types of MEMS applications were included;
b) MEMS categories and terms in Table 1 were slightly modified such consumer electronics and automotive were added that in application technology.

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

Draft	Report on voting
47F/532/FDIS	47F/540/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.

A list of all parts in the IEC 62047 series, published under the general title *Semiconductor devices - Micro-electromechanical devices*, can be found on the IEC website.

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.

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– withdrawn, or
– revised.

1 Scope

This part of IEC 62047 describes generic specifications for micro-electromechanical systems (MEMS) made by semiconductors, which are the basis for specifications given in other parts of this series for various types of MEMS applications such as sensors, RF MEMS, ~~excluding~~ optical MEMS, bio-MEMS, micro TAS, and power MEMS. This document specifies general procedures for quality assessment ~~to be used in IECQ-CECC systems~~ and establishes general principles for describing and testing of electrical, optical, mechanical and environmental characteristics.

This part of IEC 62047 aids in the preparation of standards that define devices and systems made by micromachining technology, including but not limited to, material characterization and handling, assembly and testing, process control and measuring methods. MEMS described in this document are basically made of semiconductor material. However, the statements made in this document are also applicable to MEMS using materials other than semiconductor, for example, polymers, glass, metals and ceramic materials.

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

IEC 60050-523, *International Electrotechnical Vocabulary (IEV) - Part 523: Micro-electromechanical devices* (available at www.electropedia.org)

IEC 60068-2 (all parts), *Environmental testing - Part 2: Tests*

IEC 60617, *Graphical symbols for diagrams*

~~IEC 60747-1:2006, *Semiconductor devices – Part 1: General*~~

~~IEC 60749 (all parts), *Semiconductor devices – Mechanical and climatic test methods*~~

IEC 61193-2, *Quality assessment systems - Part 2: Selection and use of sampling plans for inspection of electronic components and packages*

IEC 62047-1, *Semiconductor devices - Micro-electromechanical devices - Part 1: Terms and definitions*

~~IEC QC 001002-3:2005, *IEC Quality Assessment System for Electronic Components (IECQ) – Rules of Procedure – Part 3: Approval procedures*~~

~~ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units*~~

ISO 2859-1:1999, *Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*
ISO 2859-1:1999/AMD1:2011

ISO 80000-1, *Quantities and units - Part 1:General*