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

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CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Terms, definitions, units and symbols 5
4 Standard environmental conditions 7
5 Marking 7
5.1 Device identification 7
5.2 Device traceability 7
5.3 Packing 7
6 Test schedule 8
6.1 General 8
6.1.1 Overview 8
6.1.2 Eligibility for qualification and capability approval 8
6.1.3 Primary stage of manufacture 8
6.1.4 Formation of inspection lots 8
6.1.5 Structurally similar device 8
6.1.6 Subcontracting 8
6.1.7 Incorporated components 8
6.1.8 Validity of release 8
6.2 Qualification approval procedure 8
6.2.1 Qualification approval testing 8
6.2.2 Environmental and climatic tests 9
6.2.3 Granting of qualification approval 9
6.2.4 Statistical sampling procedures 11
6.2.5 Endurance tests 11
6.2.6 Endurance tests where the failure rate is specified 11
6.2.7 Accelerated test procedures 12
7 Test and measurement procedures 13
7.1 Standard conditions and general precautions 13
7.1.1 Standard conditions 13
7.1.2 General precautions 13
7.1.3 Precision of measurements 13
7.2 Physical examination 13
7.2.1 Visual examination 13
7.2.2 Dimensions 13
7.3 Climatic and mechanical tests 13
7.4 Alternative test methods 13
Annex A (normative) Sampling procedures 14
A.1 General 14
A.1.1 General 14
A.1.2 Selection of samples 14
A.1.3 Failures 14
A.2 Single-lot sampling method 14
A.2.1 General 14
A.2.2 Sample size 14
A.2.3 Acceptance procedure 14

A.3 Multiple criteria 14
A.4 100 % inspection 14
Annex B (informative) Classification for MEMS technologies and devices 15
B.1 Manufacturing process technology 15
B.1.1 Basic technology 15
B.1.2 Bulk micromachining technology 15
B.1.3 Surface micromachining technology 15
B.1.4 Assembly and packaging 15
B.1.5 LIGA process 15
B.1.6 Laser micromachining 15
B.1.7 Micro moulding 15
B.1.8 Other 15
B.2 Assembly (interfacing) technology 15
B.3 Applications 15
B.3.1 Bio-medical 15
B.3.2 Communications 16
B.3.3 Consumer electronics 16
B.3.4 Automotive 16
B.3.5 Environmental 16
B.3.6 Defence and space 17
B.3.7 Others 17
B.4 Test and measurement procedures 17
B.4.1 Material properties 17
B.4.2 Device and system characteristics 18
B.4.3 Other 18
Bibliography 19

Table 1 – MEMS categories and terms 6
Table 2 – Subgrouping for Group B and Group C 10

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

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, optical MEMS, bio-MEMS, micro TAS, and power MEMS. This document specifies general procedures for quality assessment 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 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*

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*

3 Terms, definitions, units and symbols

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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