

Semiconductor devices - Micro-electromechanical devices - Part 26: Description and measurement methods for micro trench and needle structures

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

Semiconductor devices - Micro-electromechanical devices –
Part 6: Description and measurement methods for micro trench
and needle structures
(IEC 62047-26:2016)

Dispositifs à semiconducteurs - Dispositifs
microélectromécaniques - Partie 26: Description et
méthodes de mesure pour structures de microtranchées et
de microaiguille
(IEC 62047-26:2016)

Halbleiterbauelemente - Bauelemente der
Mikrosystemtechnik - Teil 26: Beschreibung und
Messverfahren für Mikro-Rillen und Nadelstrukturen
(IEC 62047-26:2016)

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

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European foreword

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In the official version, for Bibliography, the following note has to be added for the standard indicated :

ISO 3274:1996 NOTE Harmonized as EN ISO 3274:1997 (not modified).

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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 26: Description and measurement methods for micro trench and needle structures

1 Scope

This part of IEC 62047 specifies descriptions of trench structure and needle structure in a micrometer scale. In addition, it provides examples of measurement for the geometry of both structures. For trench structures, this standard applies to structures with a depth of 1 μm to 100 μm ; walls and trenches with respective widths of 5 μm to 150 μm ; and aspect ratio of 0,006 7 to 20. For needle structures, the standard applies to structures with three or four faces with a height, horizontal width and vertical width of 2 μm or larger, and with dimensions that fit inside a cube with sides of 100 μm .

This standard is applicable to the structural design of MEMS and geometrical evaluation after MEMS processes.

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.

None.

3 Terms and definitions

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

3.1

trench structure

one or more rectangular structures engraved in a planar substrate, with a constant trapezoidal cross section profile

3.2

needle structure

projecting structures with a pointed tip formed of three or more faces, formed on a planar substrate with the plane of symmetry in the vertical plane

3.3

wall and trench

two or more of the trench structures arranged in parallel at regular intervals

3.4

scallop

irregularity formed cyclically in the side walls after a deep-reactive ion etching (DRIE) process with repeated deposition and selective etching of polymeric passivation layer and then etching of a silicon substrate