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**Semiconductor devices – Micro-electromechanical devices –
Part 31: Four-point bending test method for interfacial adhesion energy of
layered MEMS materials**

INTERNATIONAL
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CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 Terms, definitions, symbols and designations	5
3.1 Terms and definitions.....	5
3.2 Symbols and designations	6
4 Test piece	6
4.1 General.....	6
4.2 Shape of a test piece	6
4.3 Measurement of dimensions	7
4.4 Evaluation of energy release rate.....	7
5 Testing method and test apparatus.....	7
5.1 Test principle	7
5.2 Test machine	8
5.3 Test procedure.....	8
5.4 Test environment	9
6 Test report.....	9
Annex A (informative) Failure modes during the four-point bending test.....	10
A.1 General.....	10
A.2 Some failure modes	10
Bibliography.....	12
Figure 1 – Four-point bending test piece	6
Figure 2 – Picture of a four-point bending fixture.....	9
Figure A.1 – Several failure modes during the four-point bending test.....	11
Table 1 – Symbols and designations of a test piece.....	6

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**SEMICONDUCTOR DEVICES –
MICRO-ELECTROMECHANICAL DEVICES –**

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Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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.

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- replaced by a revised edition, or
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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 31: Four-point bending test method for interfacial adhesion energy of layered MEMS materials

1 Scope

This part of IEC 62047 specifies a four-point bending test method for measuring interfacial adhesion energy of the weakest interface in the layered micro-electromechanical systems (MEMS) based on the concept of fracture mechanics. In a variety of MEMS devices, there are many layered material interfaces, and their adhesion energies are critical to the reliability of the MEMS devices. The four-point bending test utilizes a pure bending moment applied to a test piece of layered MEMS device, and the interfacial adhesion energy is measured from the critical bending moment for the steady state cracking in the weakest interface. This test method applies to MEMS devices with thin film layers deposited on semiconductor substrates. The total thickness of the thin film layers should be 100 times less than the thickness of a supporting substrate (typically a silicon wafer piece).

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.

There are no normative references in this document.