

INTERNATIONAL STANDARD



**Semiconductor devices – Micro-electromechanical devices –
Part 30: Measurement methods of electro-mechanical conversion characteristics
of MEMS piezoelectric thin film**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 30: Measurement methods of electro-mechanical conversion characteristics of MEMS piezoelectric thin film

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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.

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SEMICONDUCTOR DEVICES – MICRO-ELECTROMECHANICAL DEVICES –

Part 30: Measurement methods of electro-mechanical conversion characteristics of MEMS piezoelectric thin film

1 Scope

This part of IEC 62047 specifies measuring methods of electro-mechanical conversion characteristics of piezoelectric thin film used for micro sensors and micro actuators, and its reporting schema to determine the characteristic parameters for consumer, industry or any other applications of piezoelectric devices. This document applies to piezoelectric thin films fabricated by MEMS process.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

unimorph beam

beam composed of piezoelectric thin film on substrate

3.2

direct transverse piezoelectric coefficient

transverse piezoelectric coefficient of the piezoelectric thin film calculated from generated charge or voltage caused by strain or stress

3.3

converse transverse piezoelectric coefficient

transverse piezoelectric coefficient of the piezoelectric thin film calculated from strain or stress caused by electric field or voltage

4 Test bed of MEMS piezoelectric thin film

4.1 General

These measuring methods of the transverse piezoelectric properties apply to the unimorph beam. Symbols and designations of test bed are shown in Table 1.