IEC 62830-7

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INTERNATIONAL STANDARD

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Semiconductor devices – Semiconductor devices for energy harvesting and generation – Part 7: Linear sliding mode triboelectric energy harvesting

Dispositifs à semiconducteurs – Dispositifs à semiconducteurs pour récupération et génération d'énergie – Partie 7: Récupération d'énergie triboélectrique en mode de coulissement linéaire

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SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR ENERGY HARVESTING AND GENERATION –

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FOREWORD

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

FDIS	Report on voting
47/2676/FDIS	47/2686/RVD

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 62830 series, published under the general title *Semiconductor devices – Semiconductor devices for energy harvesting and generation*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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- withdrawn,
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SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR ENERGY HARVESTING AND GENERATION –

Part 7: Linear sliding mode triboelectric energy harvesting

1 Scope

This part of IEC 62830 defines terms, definitions, symbols, configurations, and test methods that can be used to evaluate and determine the performance characteristics of linear sliding mode triboelectric energy harvesting devices for practical use. This document is applicable to energy harvesting devices for consumer, general industries, military and aerospace applications without any limitations on device technology and size.

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 General terms

3.1.1
linear sliding
physical sliding of one material on another material in horizontal direction

3.1.2
sliding-based energy harvester
energy transducer that transforms physical sliding energy into electrical energy

Note 1 to entry: A linear sliding mode triboelectric energy harvester to convert linear sliding to electricity comprises dielectric materials, a surface electrode, an external load, and a relative displacement between dielectric materials as shown in Figure 1. The sliding makes the two dielectric material surfaces come into physical touch, and relative displacement makes the gap between those two materials. The top and bottom electrodes on the two dielectric materials harvest charges generated from the coupling of triboelectrification and electrostatic induction. The triboelectric charges are generated by the charge transfer between two thin organic/inorganic films that exhibit distinct surface electron affinity, and the potential difference results from the separation of the triboelectric charges; under short-circuit conditions, electrons are driven to flow between two electrodes attached on the back side of the films through the load in order to balance the potential difference resulting from mechanical action.

3.2 Triboelectric transducer

3.2.1
triboelectric effect
type of contact electrification in which certain materials become electrically charged after they come into frictional contact with a different material