IEC 62830-2

Edition 1.0 2017-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Semiconductor devices – Semiconductor devices for energy harvesting and generation –
Part 2: Thermo power based thermoelectric energy harvesting

Dispositifs à semiconducteurs – Dispositifs à semiconducteurs pour recupération et production d'énergie –
Partie 2: Récupération d'énergie thermoélectrique basée sur la puissance thermoélectrique

IEC 62830-2:2017-01(en-fr)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR ENERGY HARVESTING AND GENERATION –

Part 2: Thermo power based thermoelectric energy harvesting

FOREWORD

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The text of this standard is based on the following documents:

FDIS	Report on voting
47/2329/FDIS	47/2352/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 the 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

SEMICONDUCTOR DEVICES – SEMICONDUCTOR DEVICES FOR ENERGY HARVESTING AND GENERATION –

Part 2: Thermo power based thermoelectric energy harvesting

1 Scope

This part of IEC 62830 describes procedures and definitions for measuring the thermo power of thin films used in micro-scale thermoelectric energy generators, micro heaters and micro coolers. This part of IEC 62830 specifies the methods of tests and the characteristic parameters of the thermoelectric properties of wire, bulk and thin films which have a thickness of less than 5 μm and energy harvesting devices that have thermoelectric thin films, in order to accurately evaluate their performance and practical uses. This part of IEC 62830 is applicable to energy harvesting devices for consumer, general industries, military and aerospace applications without any limitations of 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
Seebeck coefficient
S
magnitude of an induced thermoelectric voltage in response to a temperature difference across a material, and the entropy per charge carrier in the material

3.2
thermal conductivity
k
at a point fixed in a medium with a temperature field, scalar quantity λ characterizing the ability of the medium to transmit heat through a surface element containing that point: φ=-k grad T, where φ is the density of heat flow rate and T is thermodynamic temperature

Note 1 to entry: In an anisotropic medium, thermal conductivity is a tensor quantity.

Note 2 to entry: The coherent SI unit of thermal conductivity is watt per metre kelvin, W/(m·K).

[SOURCE: IEC 60050-113:2011, 113-04-38]

3.3
electrical conductivity
specific conductance
σ
value of a material’s ability to conduct an electrical current