INTERNATIONAL STANDARD

IEC 60749-34

First edition
2004-03

Semiconductor devices – Mechanical and climatic test methods –

Part 34: Power cycling

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**SEMICONDUCTOR DEVICES –
MECHANICAL AND CLIMATIC TEST METHODS –**

Part 34: Power cycling

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International Standard IEC 60749-34 has been prepared by IEC technical committee 47: Semiconductor devices.

This standard cancels and replaces IEC/PAS 62206 published in 2000. This first edition constitutes a technical revision.

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

FDIS	Report on voting
47/1738/FDIS	47/1748/RVD

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

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

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

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- withdrawn;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

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SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 34: Power cycling

1 Scope and object

This test method is used to determine the resistance of a semiconductor device to thermal and mechanical stresses due to cycling the power dissipation of the internal semiconductor die and internal connectors. This happens when low-voltage operating biases for forward conduction (load currents) are periodically applied and removed causing rapid changes of temperature. The power cycling test is intended to simulate typical applications in power electronics and is complementary to high temperature operating life (see IEC 60749-23). Exposure to this test may not induce the same failure mechanisms as exposure to air-to-air temperature cycling, or to rapid change of temperature using the two-fluid-baths method. This test causes wear-out and is considered destructive.

NOTE It is not the intention of this specification to provide prediction models for lifetime evaluation.

2 Normative references

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The following referenced documents are indispensable for the application 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.

IEC 60747 (all parts), *Semiconductor devices – Discrete devices and integrated circuits*

IEC 60747-1, *Semiconductor devices – Discrete devices and integrated circuits – Part 1: General*

IEC 60749-34:2004
https://standards.iteh.ai/catalog/standards/iec/965a8199-d069-4494-8732-48df2168b8ef/iec-60749-34-2004

IEC 60747-2, *Semiconductor devices – Discrete devices and integrated circuits – Part 2. Rectifier diodes*

IEC 60747-6, *Semiconductor devices – Part 6: Thyristors*

IEC 60748 (all parts), *Semiconductor devices – Integrated circuits*

IEC 60749-3, *Semiconductor devices – Mechanical and climatic test methods – Part 3: External visual examination*

IEC 60749-23, *Semiconductor devices – Mechanical and climatic test methods – Part 23: High temperature operating life*

Withdrawn

3 Terms and definitions

For the purposes of this document, the terminology of IEC 60747 and IEC 60748, together with the following terms and definitions, apply.

3.1
load current
current to which the devices are subjected to produce power loss P