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**Semiconductor devices – Guidelines for reliability, qualification plans –
Part 2: Concept of mission profile**

**Dispositifs à semiconducteurs – Lignes directrices concernant les plans de
qualification de la fiabilité –
Partie 2: Concept de profil de mission**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SEMICONDUCTOR DEVICES – GUIDELINES FOR RELIABILITY QUALIFICATION PLANS –

Part 2: Concept of mission profile

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

Draft	Report on voting
47/2796/FDIS	47/2803/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

This International Standard is to be read in conjunction with IEC 63287-1.

A list of all parts in the IEC 63287 series, published under the general title *Semiconductor devices*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

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SEMICONDUCTOR DEVICES – GUIDELINES FOR RELIABILITY QUALIFICATION PLANS –

Part 2: Concept of mission profile

1 Scope

This part of IEC 63287 gives guidelines for the development of reliability qualification plans using the concept of mission profile, based on the environmental conditioning and proposed usage of the product. This document is not intended for military- and space-related applications.

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.

IEC 63287-1:2021, *Semiconductor devices – Generic semiconductor qualification guidelines – Part 1: Guidelines for IC reliability qualification*

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 <https://www.iso.org/obp>

3.1 failure mode

style classification of a fault phenomenon which causes product failure

Note 1 to entry: Disconnection, a short circuit, occasional loss, abrasion, characteristic deterioration, etc. are typical items considered as failure modes.

4 Mission profile

4.1 Concept of mission profile

In designing the reliability test plan, the test plan greatly changes depending on how the environmental conditions of the LSI is assumed. For example, in the case of electronic units for automotive application installed in the vicinity of the engine, operational temperature gradually rises by the heat generated by the engine but the temperature decreases after the engine stops, meaning that the unit is not always subjected to severe temperature conditions. The set of changing environmental temperature conditions and their time ratio is called the “mission profile”. Because mission profile depends on multiple factors such as operational duty of LSI, installation environment, generation of heat by peripheral parts, etc., it cannot be unconditionally standardized. Therefore, it is important to agree the mission profile between the LSI vendor and the user and decide on accurate test conditions.