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Space systems — Semiconductor integrated circuits for space applications — Design requirements

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Foreword

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The committee responsible for this document is ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

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Introduction

Normative design requirements of semiconductor integrated circuits for space applications largely determine the reliability of an integrated circuit (IC) and its adaptability to space environment, thereby affecting the reliability of space systems. IC tests and experiments based on product specification only can provide a comprehensive evaluation of its reliability. Once applied to space systems, the design flaws will directly affect the implementation of aerospace engineering. The development of design requirements for semiconductor ICs for space applications can ensure its reliability and space suitability from its very source to meet the space application requirements.

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Space systems — Semiconductor integrated circuits for space applications — Design requirements

1 Scope

This document specifies the basic design requirements for semiconductor ICs for space applications, including its design process, as well as required tasks and requirements of each stage. Requirements of specific circuit design are not included.

2 Normative references

The following documents are referred to in 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 61967-2, *Integrated circuits — Measurement of electromagnetic emissions*

IEC 62132, *Integrated circuits — Measurement of electromagnetic immunity*

IEC 62215-3:2013, *Integrated circuits — Measurement of impulse immunity — Part 3: Non-synchronous transient injection method*

IEEE 1149.1, *IEEE standard for test access port and boundary — Scan architecture*

3 Terms and definitions

For the purposes of this document, the terms defined in ISO 10795 and the following 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
programmable logic device
PLD
hardware-programmable device

EXAMPLE FPGA, CPLD, etc.

3.2
suitability
degree to which a product meets its requirements

3.3
environment adaptability
ability to achieve the entire product's intended functions, performance and (or) capacity for protecting itself under various environments within its life cycle

3.4
testability
ability to perform function and performance testing of the circuit, position the failure of the circuit and select qualified circuit chip as soon as possible

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