IEC TS 62686-1

Edition 3.0 2020-04
REDLINE VERSION

TECHNICAL SPECIFICATION

colour inside

Process management for avionics – Electronic components for aerospace, defence and high performance (ADHP) applications – Part 1: General requirements for high reliability integrated circuits and discrete semiconductors

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 03.100.50; 31.020; 49.060

ISBN 978-2-8322-8246-5

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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PROCESS MANAGEMENT FOR AVIONICS – ELECTRONIC COMPONENTS FOR AEROSPACE, DEFENCE AND HIGH PERFORMANCE (ADHP) APPLICATIONS –

Part 1: General requirements for high reliability integrated circuits and discrete semiconductors

FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical Specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62686-1, which is a Technical Specification, has been prepared by IEC technical committee 107: Process management for avionics.

This third edition cancels and replaces the second edition, published in 2015. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) update related to obsolescence of STACK Specification S/0001 revision 14 notice 3;
b) addition of alternative automotive methods of compliance and revision of Annex B initially related to cross-reference to STACK Specification S/0001;
c) addition of an Annex C to include a requirement matrix for IEC TS 62686-1 verification.

The text of this Technical Specificationis based on the following documents:

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107/349/DTS	107/361A/RVDTS 107/361/RVDTS

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A list of all parts in the IEC 62686 series, published under the general title *Process management for avionics – Electronic components for aerospace, defence and high performance (ADHP) applications,* can be found on the IEC website.

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- transformed into an International standard,
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- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

This part of IEC 62686 includes all the requirements of the now obsolete STACK Specification S/0001 revision 14 notice 3 and also contains revisions for alternative ~~IEC~~ strategies using for example automotive standards together with the option of using various qualification test methods and additional test information.

This document complements IEC TS 62564-1 which is used for ADHP applications when additional manufacturers' data is required beyond the publicly available ~~manufacturer~~ original component manufacturers' published data sheets (for example when additional thermal performance data is required for thermally challenging applications or when additional verification data ~~are~~ is needed, for example to comply with the requirements of RTCA DO-254/EUROCAE ED-80 for complex components for flight critical applications, etc.).

This document can also be used to comply with the typical qualification requirements of IEC TS 62564-1. Further guidance is given in IEC ~~TS~~ 62239-1.

NOTE ~~With the adoption of the STACK Specification S/0001 revision 14 notice 3 it will be possible for all~~ Existing STACK certified manufacturers ~~to~~ can be audited by IECQ under the new STACK-IECQ joint venture or alternatively to the new IECQ automotive scheme.

PROCESS MANAGEMENT FOR AVIONICS – ELECTRONIC COMPONENTS FOR AEROSPACE, DEFENCE AND HIGH PERFORMANCE (ADHP) APPLICATIONS –

Part 1: General requirements for high reliability integrated circuits and discrete semiconductors

1 Scope

This part of IEC 62686, which is a Technical Specification, defines the minimum requirements for general purpose "off the shelf" COTS (commercial off-the-shelf) integrated circuits and discrete semiconductors for ADHP (aerospace, defence and high performance) applications.

This document applies to all components that can be operated in ADHP applications within the manufacturers' publicly available data sheet limits in conjunction with IEC ~~TS~~ 62239-1. It ~~may~~ can be used by other high performance and high reliability industries, at their discretion.

ADHP application requirements ~~may~~ are not necessarily ~~be~~ fulfilled by this document alone. ADHP OEMs (original equipment manufacturers) ~~may~~ might need to consider redesigning their products or conducting further testing to verify suitability in ADHP applications using their IEC ~~TS~~ 62239-1 ECMP procedures. Alternatively, a component in accordance with IEC TS 62564-1 ~~may~~ can be more suitable.

NOTE Component qualification and outgoing quality discussed herein do not addres component atmospheric radations SEE effects per IEC 62396-1.

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.

~~ISO 9001, *Quality management systems – Requirements*~~

~~ISO TS 16949, *Quality management systems – Particular requirements for the application of ISO 9001:2008 for automotive production and relevant service part organizations*~~

ANSI/EIA-556, *Outer Shipping Container Bar Code Label Standard*

ANSI/ESD S541, *Packaging Materials Standards for ESD Sensitive Items*

~~AS/EN/JISQ 9100, *Aerospace series – Quality management systems – Requirements for aviation, space and defense organisations*~~

~~IPC/JEDEC J-STD-020, *Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices*~~

~~IPC/JEDEC J-STD-033, *Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices*~~

IPC/JEDEC J-STD-609, *Marking and Labeling of Components, PCBs and PCBAs to Identify Lead (Pb), Lead-Free (Pb-Free) and Other Attributes*

JEDEC/IPC/ECIA J-STD-048, *Notification Standard for Product Discontinuance*

JEP130, *Guidelines for Packing and Labeling of Integrated Circuits in Unit Container Packing*

JESD471, *Symbol and Label for Electrostatic Sensitive Devices*

~~TL 9000, *Quality management system*[1]~~

~~JESD46~~ J-STD-046, *Customer Notification of Product/Process Changes by Solid-State Suppliers*

~~[1] For the telecommunications industry.~~

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