IEC/TS 62239

Edition 2.0 2008-10

TECHNICAL SPECIFICATION

Process management for avionics – Preparation of an electronic components management plan



IEC/TS 62239:2008(E)



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE T

ICS 03.100.50; 31.020; 49.060

ISBN 2-8318-1003-8

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PROCESS MANAGEMENT FOR AVIONICS –

Preparation of an electronic components management plan

FOREWORD

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- 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 62239, which is a technical specification, has been prepared by IEC Technical Committee 107: Process management for avionics.

This second edition cancels and replaces the first edition published in 2003. This edition constitutes a technical revision.

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

1) 4.2.2 – Derating and stress analysis, addition of JEP149.
2) 4.2.3 – Derating and stress analysis, thermal analysis allowed using provisions of JEP149.
3) 4.3.4.2.1 – Component manufacturing technology qualification data, added JESD47, JESD94, AEC-Q100, AEC-Q101, and AEC-Q200.
4) 4.3.4.2.1.1- Added avionics qualified electronic component program.
5) 4.5 – Component dependability, added integrated circuit wear out criteria from JESD47.
6) 4.8 – Configuration control, added counterfeit parts requirement.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
107/60/DTS	107/78A/RVC

Full information on the voting for the approval of this technical specification 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 the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this technical specification may be issued at a later date.

INTRODUCTION

This Technical Specification is intended to help aerospace equipment manufacturers, subcontractors, maintenance facilities, and other aerospace component users develop their own Electronic Component Management Plans (ECMPs), hereinafter also referred to as ‘plan’. This Technical Specification states objectives to be accomplished; it does not require specific tasks to be performed, specific data to be collected or reports to be issued. Those who prepare plans in compliance with this Technical Specification are encouraged to document processes that are the most effective and efficient for them in accomplishing the objectives of this Technical Specification. In order to allow flexibility in implementing and updating the documented processes, plan authors are encouraged to refer to their own internal process documents instead of including detailed process documentation within their plans.

This component management Technical Specification is intended for aerospace users of electronic components. This standard is not intended for use by the manufacturers of electronic components. Components selected and managed according to the requirements of a plan compliant to this Technical Specification may be approved by the concerned parties for the proposed application, and for other applications with equal or less severe requirements.

Organizations that prepare such plans may prepare a single plan, and use it for all relevant products supplied by the organization, or may prepare a separate plan for each relevant product or customer.

NOTE Verification of compliance with IEC/TS 62239 will be done in accordance with IECQ documentation listed in the bibliography.

PROCESS MANAGEMENT FOR AVIONICS –

Preparation of an electronic components management plan

1 Scope

This Technical Specification defines the requirements for developing an Electronic Components Management Plan (ECMP) to assure customers and regulatory agencies that all of the electronic components in the equipment of the plan owner are selected and applied in controlled processes compatible with the end application and that the technical requirements detailed in Clause 4 are accomplished. In general, the owners of a complete electronic components management plan are avionics equipment manufacturers.

2 Normative references

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 61340-5-1:2007, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

IEC/TR 61340-5-2:2007, *Electrostatics – Part 5-2: Protection of electronic devices from electrostatic phenomena – User guide*

IEC/TR 62240, *Process management for avionics – Use of semiconductor devices outside manufacturers' specified temperature range*

IEC/TS 62396 (all parts), *Process management for avionics – Atmospheric radiation effects*

IEC 62402:2007, *Obsolescence management – Application guide*

JEP149 (Nov 2004), *JEDEC Publication, JEDEC Standard Application Thermal Derating Methodologies*

JESD47, *JEDEC Standard, Stress – Test-Driven Qualification of integrated circuits*

JESD94.01, *JEDEC Standard, Application Specific Qualification Using Knowledge Based Test Methodology*

MIL-HDBK-263, *Revision B Electrostatic Discharge Control Handbook*

AEC–Q100, *Failure Mechanism based Stress Test Qualification for Integrated Circuits*

AEC–Q101, *Stress Test Qualification for Automotive Grade discrete Semiconductors*

AEC–Q200, *Stress Test Qualification for Passive components*