



BSI Standards Publication

Process management for avionics — Aerospace qualified electronic components (AQEC)

Part 1: Integrated circuits and
discrete semiconductors

National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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TECHNICAL SPECIFICATION

**Process management for avionics – Aerospace qualified electronic components (AQEC) –
Part 1: Integrated circuits and discrete semiconductors**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PROCESS MANAGEMENT FOR AVIONICS –
AEROSPACE QUALIFIED ELECTRONIC COMPONENTS (AQEC) –****Part 1: 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 62564-1, 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 2011. This edition constitutes a technical revision.

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

- a) IEC TS 62239 changed to IEC TS 62239-1, and IEC PAS 62686-1 changed to IEC TS 62686-1;
- b) JESD48 changed to J-STD-048 and added to the Bibliography;
- c) AEC-Q100 revision G changed to AEC-Q100:2014 in 4.5 (which is now revision H);
- d) revision of AEC-Q101 removed in Bibliography;
- e) J-STD-609 for “Marking and labelling” added to the Bibliography;
- f) information added regarding components' life expectancy in 4.2.5.

GEIA-STD-0002-001 (June 2006), *Aerospace Qualified Electronic Component (AQEC) Requirements, Volume 1 – Integrated Circuits and Semiconductors*, has served as a basis for the elaboration of this technical specification.

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

| | |
|---------------|------------------|
| Enquiry draft | Report on voting |
| 107/276/DTS | 107/283/1 V |

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.

A list of all parts in the IEC 62564 series under the general title *Process management for avionics – Aerospace qualified electronic components (AQEC)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website 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 corrigendum version of this publication may be issued at a later date.

INTRODUCTION

Aerospace qualified electronic components (AQEC) plans are developed by manufacturers in order to document compliance with AQEC requirements. For AQEC designated components, the intention is to

- a) provide AQEC users access to information from the AQEC manufacturers that is necessary for using commercial-off-the-shelf (COTS) products;
- b) better enable AQEC users to assess whether these parts are capable of operating reliably in their applications;
- c) minimize deviations from the AQEC manufacturers' COTS products;
- d) have minimal impact on the AQEC manufacturers' standard operating or business procedures;
- e) promote communication between the AQEC manufacturers and users.

PROCESS MANAGEMENT FOR AVIONICS – AEROSPACE QUALIFIED ELECTRONIC COMPONENTS (AQEC) –

Part 1: Integrated circuits and discrete semiconductors

1 Scope

This part of IEC 62564, which is a Technical Specification, defines the minimum requirements for integrated circuits and semiconductors which are designated as an “aerospace qualified electronic component (AQEC)”. It applies to integrated circuits and semiconductors exhibiting the following attributes:

- a) a minimum set of requirements, or information provided by the part manufacturer, which will allow a standard COTS component to be designated AQEC by the manufacturer;
- b) as a minimum, each COTS component (designated AQEC) will have been designed, fabricated, assembled, and tested in accordance with the component manufacturer's requirements for standard data book components;
- c) qualification of, and quality systems for, the COTS components to be designated as AQEC should include the manufacturer's standards, operating procedures, and technical specifications. This information should be available when requested;
- d) components manufactured before the manufacturer has addressed AQEC requirements, but utilizing the same processes, are also considered AQEC compliant;
- e) additional desired attributes of a device designated AQEC (that will support AQEC users) are found in Annex B of this technical specification.

NOTE Parts qualified to military specifications (except those identified as being for “logistic support” purposes only) are considered AQEC; the remainder of this technical specification only addresses non-military specification parts.

Parts qualified to AEC-Q100, grade 0 through to grade 3 are considered AQEC. For those applications where a 0 °C to +70 °C temperature range is appropriate, grade 4 is also considered to be AQEC. The users should document that the grade category used is compatible with the application in accordance with their IEC TS 62239-1 electronic components management plan (ECMP).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitute 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 TS 62239-1, *Process management for avionics – Management plan – Part 1: Preparation and maintenance of an electronic components management plan*

IEC 62396-1, *Process management for avionics – Atmospheric radiation effects – Part 1: Accommodation of atmospheric radiation effects via single event effects within avionics electronic equipment*

IEC TS 62668-1, *Process management for avionics – Counterfeit prevention – Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic components*

ISO 9001, *Quality management systems – Requirements*