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Long duration storage of electronic components – Specification for implementation

Stockage longue durée des composants électroniques – Guide de mise en oeuvre

Langzeitlagerung von elektronischen Bauelementen – Spezifikation für die Ausführung

This Technical Specification was approved by CENELEC on 2005-12-03.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This Technical Specification was prepared by the Technical Committee CENELEC TC 107X, Process management for avionics.

The text of the draft was submitted to the formal vote and was approved by CENELEC as CLC/TS 50466 on 2005-12-03.

The following date was fixed:

- latest date by which the existence of the CLC/TS has to be announced at national level (doa) 2006-06-03

This document, which is in line with IEC/PAS 62435 relating to the management of obsolescence of electronic components, is first of all a practical guide to methods of long duration storage (more than 5 years) which summarizes the existing practices in the industry.

The application of the approach proposed in this guide in no way guarantees that the stored components are in perfect operating condition at the end of this storage. It only comprises a means of minimizing potential and probable degradation factors.

Unless otherwise specified, the approach, as well as the methods presented apply to all families of electronic components:

- passive components, including quartz crystals, connectors and relays. However, components with "manufacturer's" specifications showing an expiry date, or specific storage conditions, are excluded from this guide (e.g. primary cells, storage cells, etc...),
- encapsulated or non-encapsulated active components of a silicon [Si] or gallium arsenide [GaAs] technology,
- micro-electronic assemblies.

Contents

1 General

Although it has always existed to some extent, obsolescence of electronic components, and particularly integrated circuits, has become increasingly intense over the last few years.

Indeed, with the existing technological boom, the commercial life of a component has become very short compared with the life of industrial equipment such as those encountered in the aeronautical field, the railway industry or the energy sector.

The many solutions enabling obsolescence to be resolved are now identified. However, selecting one of these solutions must be preceded by a case by case technical and economic feasibility study, depending on whether storage is envisaged for field service or production.

Remedial storage as soon as components are no longer marketed.

Preventive storage anticipating declaration of obsolescence.

Taking into account the expected life of some installations, sometimes covering several decades, the qualification times, and the unavailability costs, which can also be very high, the solution to be adopted to resolve obsolescence must often be rapidly implemented. This is why the solution retained in most cases consists in systematically storing components which are in the process of becoming obsolescent.

The technical risks of this solution are, a priori, fairly low. However, it requires the perfect mastery of the implemented process, and especially of the storage environment, although this mastery becomes critical when it comes to long term storage.

All handling, protection, storage and test operations should be performed in accordance with the technology requirements of the component.

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.

EN 190000:1995, *Generic specification: Integrated monolithic circuits*

EN 60068-2-17:1994, Environmental testing - Part 2: Tests - Test Q: Sealing (IEC 60068-2-17:1994)

HD 323.2.20 S3:1988, *Basic environmental testing procedures - Part 2: Tests - Test T: Soldering* (IEC 60068-2-20:1979 + A2:1987)

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*