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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 34954.1-2026

Replacing GB/T 34954.1-2017

**Process management for avionics - Electronic components
capability in operation - Part 1: Temperature uprating**

航空电子过程管理 电子器件使用性能 第1部分：温度升额

(English Translation)

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References

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 1 of GB/T 34954 "Performance of Electronic Devices for Aerospace Electronics Process Management". GB/T 34954 has been...

The following sections were published.

---Part 1: Temperature Rise.

This document replaces GB/T 34954.1-2017 "Performance of Electronic Devices for Avionics Process Management - Part 1: Temperature Rise".

Compared with GB/T 34954.1-2017, the main technical changes in the "Equity" standard, apart from structural adjustments and editorial modifications, are as follows.

---Added "Commercial Shelf Products", "Equipment/Components", "Environmental Stress Screening/High-Accelerated Stress Screening", and "High-Accelerated Testing/High-Accelerated Life Testing".

Terms and definitions for "life test" and "PCB assembly aging/circuit card assembly aging" (see 3.1.5, 3.1.8, 3.1.10, 3.1.18);

---Added abbreviations AQEC, CCA, COTS, ESD, HALT, HAT, HASS, PCB, PPM (see 3.2);

---The abbreviation LRU has been removed (see section 3.2 of the 2017 edition);

This document is equivalent to IEC TR62240-1:2018 "Aeronautical Electronics Process Management - Performance of Electronic Devices - Part 1: Temperature" the document type has been changed from an IEC technical report to a Chinese national standard.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Avionics Process Management (SAC/TC427).

Introduction

The traditional manufacturing of environmentally resistant electronics relies on semiconductor devices that meet military standards, manufactured by factories producing military-standard semiconductors.

Suppliers provide the goods, thus ensuring that the operating temperature range of the semiconductor devices used covers the actual application temperature range. In recent years, foreign...

Many manufacturers have withdrawn from the military market, resulting in a significant reduction in the availability of wide-temperature-range devices. The typical temperature range of devices used in the market...

Enclosure.

---Military grade. -55°C~ 125°C;

---Automotive grade. -40°C~ 125°C;

Industrial grade. -40°C to 85°C;

---Commercial grade. 0°C~ 70°C.

The specified temperature range.

This document provides methods and guidelines for device selection, performance evaluation, and quality assurance over a wider temperature range, and also provides guidance on over a wider temperature range.

The required documentation for using devices within a specified range.

This document can be implemented through consultation with the original equipment manufacturer (OEM).

Using the device outside the temperature range specified by the manufacturer may result in the loss of quality assurance provided by the device manufacturer.

GB/T 34954, "Performance Specifications of Electronic Devices in Avionics Process Management," is a standard for regulating the management of electronic devices in avionics systems.

The proposed technical standardization document will consist of two parts.

---Part 1: Temperature Rating. The purpose is to provide a guideline for the use of electronic devices outside the manufacturer's specified operating temperature range.

method.

---Part 2: Semiconductor Microcircuit Lifetime. The aim is to provide a method for evaluating the long-term reliability of commercial off-the-shelf products during the design phase.

This approach is particularly relevant for original equipment manufacturers (OEMs) using such components in safety-critical systems.

Performance of avionics process management electronic devices Part 1: Temperature Rise

1 Scope

This document specifies the usage requirements for semiconductor devices outside the manufacturer's specified temperature range. During device use, if no suitable...

If alternative devices are available, the rating shall be increased in accordance with the terms and conditions specified in this document; otherwise, the devices shall be used under the conditions specified in the device manual.

The terms "rating" and "temperature rating" are clearly defined in Chapter 3 and are special methods for device selection in circuit design.

This document specifies the methods and procedures for device temperature derating. All methods and procedures in this document adopt current, most practical engineering applications.

Optimal Method. Unless otherwise specified, strictly adhere to this procedure during use.

This will not affect its performance parameters or reliability during use. This document does not imply that the application of the product should exceed the original equipment manufacturer's specifications.

The device should be used within its absolute maximum rated limits. This document also specifies.

---Only when no other suitable alternative is available can a device be used outside the temperature range specified by the original device manufacturer. Replacement must be...

Perform verification;

---If the device needs to be used outside the temperature range specified by the original equipment manufacturer (OEM), documentation and control procedures must be established to ensure...

The equipment is intact.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

IEC TS62239-1 Avionics Process Management - Management Plan - Part 1: Preparation and Maintenance of Electronic Component Management Plans Note. GB/Z 31478-2015