ICS 31.020
CCS L 05

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 7289-2017

Replacing GB/T 7289-1987

Electric components -- Reliability -- Reference conditions for failure rates and stress models for conversion

Issued on: November 1, 2017 **Implemented on: May 1, 2018**

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, Standardization Administration of the People's Republic of China

Table of Contents

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 7289-1987 "reliability, maintainability and validity of the preparation of the report preparation guide." This standard and

GB/T 7289-1987 compared to the main changes there.

--- Standard name changed to "failure rate of electrical components reliability of the benchmark conditions and failure rate conversion stress model";

--- Provided based on the benchmark failure rate data on the device in the electronic components for the reliability of specific methods.

This standard uses the translation method identical with IEC 61709.2011 "Failure rate of electrical components reliability benchmark conditions and failure rate

Transformed stress model ".

The documents of our country that are consistent with the corresponding international documents that are normative references in this standard are as follows.

International Electrotechnical Terminology Part 191. Credibility and Quality of Service (IEC 60050-191).

1990);

Reliability testing of equipment - Tests for validity of a constant failure rate assumption (IEC 60605-6..1996).

1989);

--- GB/T 4798.3-2007 Environmental conditions for the application of electrical and electronic products Part 3. There is a fixed use of climate protection sites

(IEC 60721-3-3.2002);

--- GB/T 4798.4-2007 Environmental conditions for the application of electrical and electronic products Part 4. Stationary use of non-climate protection

(IEC 60721-3-4.1995);

--- GB/T 4798.5-2007 Environmental conditions for the application of electric and electronic products - Part 5. Ground vehicles (IEC 60721-3-

5.1997);

--- GB/T 4798.7-2007 Environmental conditions for the application of electrical and electronic products Part 7. Portable and non-fixed use

(IEC 60721-3-7.2002).

This standard made the following editorial changes.

--- Modify the original text of the error, the 6.11.2.1 in the "stress factor values see 6.11.2.3 and 6.11.2.4." For "each stress factor value

See 6.11.2.2, 6.11.2.3 and 6.11.2.4. ".

Please note that some of this document may be patentable. The issuing agencies of this document do not bear the responsibility of identifying these patents.

This standard proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This standard by the National Electrical and Electronic Product Reliability and Maintenance of Standardization Technical Committee (SAC/TC24) centralized.

This standard was drafted Unit. Institute of Electronics and the Fifth Ministry of Industry and Information Technology.

1 Scope

This standard specifies how to use the failure rate data for the reliability of electronic components in electronic equipment is expected.

The reference condition is a typical value of component stress observed in a large number of applications. The base condition is useful because it passes

The stress model considering real working conditions is used to calculate the failure rate under any conditions. In the early design stage, failure under the baseline conditions

The rate allowed for the actual reliability is estimated.

The stress model described in this standard is a general-purpose model that can be used to convert failure rate data to true working conditions when needed

Under the failure rate of the basis, which simplifies the estimation method, the conversion of failure rate data only allows the use of functional components within the specified limits

get on.

This standard also provides guidance on how to construct a component failure rate database to provide a failure rate that can be used in this standard stress model.

The baseline condition for specifying failure rate data is to allow data from different sources to be compared on the same basis. If the failure rate data according to

According to this standard is given, you do not need to attach specific conditions of the information.

This standard does not provide the basic failure rate of components, but to provide models to obtain failure rates obtained by other means by a working condition

Conversion to another working condition of the failure rate.

The methods described in this standard assume that components are used during their useful life. The standard method has versatility, but clear appropriate

For the component types given in Chapter 6 and Appendix E.2.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

IEC 60050-191 International Electrotechnical terminology - Part 191. Credibility and quality of service (Internationalelectrotechnical

vocabulary-Part 191.Dependabilityandqualityofservice)

IEC 60605-6, Equipment reliability testing - Part 6. Validity tests of constant failure rates and constant failure density assumptions

(Equipmentreliabilitytesting-Part 6.Testsforthevalidityandestimationoftheconstantfailure

rateandconstantfailureintensity)

IEC 60721-3-3 Classification of electric and electronic products application environment - Part 3. Fixed place with climate protection place

ofenvironmentalconditions-Part 3.Classificationofgroupsofenvironmentalparametersandtheir

severities-Section3.Stationaryuseatweatherprotectedlocations)

IEC 60721-3-4 Classification of electrical and electronic equipment - Environmental classification - Part 4. Classification of non-weather protective equipment

ofenvironmentalconditions-Part 3.Classificationofgroupsofenvironmentalparametersandtheir

severities-Section4.Stationaryuseatnonweatherprotectedlocations)

IEC 60721-3-5 Classification of electrical and electronic products application environment Part 5. Use of ground vehicles (Classificationofenviron-

mentalconditions-Part 3.Classificationofgroupsofenvironmentalparametersandtheirseverities-

Section4.Groundvehicleinstalations)

IEC 60721-3-7 Classification of electrical and electronic products application environment Part 7. Carrying and non-fixed use (Classificationofen-

vironmentalconditions-Part 3.Classificationofgroupsofenvironmentalparametersandtheirseveri-