



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN IEC 60749-5:2024

Semiconductor devices - Mechanical and climatic test methods - Part 5: Steady-state temperature humidity bias life test

Dispositifs à semiconducteurs - Méthodes
d'essais mécaniques et climatiques -
Partie 5: Essai continu de durée de vie
sous température et humidité avec

Halbleiterbauelemente - Mechanische
und klimatische Prüfverfahren - Teil 5:
Lebensdauerprüfung bei konstanter
Temperatur und Feuchte unter

01/2024



National Foreword

This European Standard EN IEC 60749-5:2024 was adopted as Luxembourgish Standard ILNAS-EN IEC 60749-5:2024.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

ILNAS-EN IEC 60749-5:2024

EUROPEAN STANDARD **EN IEC 60749-5**

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2024

ICS 31.080.01

Supersedes EN 60749-5:2017

English Version

**Semiconductor devices - Mechanical and climatic test methods -
Part 5: Steady-state temperature humidity bias life test
(IEC 60749-5:2023)**

Dispositifs à semiconducteurs - Méthodes d'essais
mécaniques et climatiques - Partie 5: Essai continu de
durée de vie sous température et humidité avec polarisation
(IEC 60749-5:2023)

Halbleiterbauelemente - Mechanische und klimatische
Prüfverfahren - Teil 5: Lebensdauerprüfung bei konstanter
Temperatur und Feuchte unter elektrischer Beanspruchung
(IEC 60749-5:2023)

This European Standard was approved by CENELEC on 2024-01-23. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 47/2820/FDIS, future edition 3 of IEC 60749-5, prepared by IEC/TC 47 "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60749-5:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-10-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-01-23

This document supersedes EN 60749-5:2017 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60749-5:2023 was approved by CENELEC as a European Standard without any modification.

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60749-4	-	Semiconductor devices - Mechanical and climatic test methods - Part 4: Damp heat, steady state, highly accelerated stress test (HAST)	EN 60749-4	-



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Semiconductor devices – Mechanical and climatic test methods –
Part 5: Steady-state temperature humidity bias life test**

**Dispositifs à semiconducteurs – Méthodes d'essais mécaniques et climatiques –
Partie 5: Essai continu de durée de vie sous température et humidité avec
polarisation**

CONTENTS

FOREWORD	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 General	5
5 Equipment	5
5.1 Equipment summary	5
5.2 Temperature and relative humidity	6
5.3 Devices under stress	6
5.4 Minimizing release of contamination	6
5.5 Ionic contamination	6
5.6 Deionized water	6
6 Test conditions	6
6.1 Test conditions summary	6
6.2 Temperature, relative humidity and duration	6
6.3 Biasing guidelines	7
6.4 Biasing choice and reporting	7
7 Procedures	8
7.1 Mounting	8
7.2 Ramp-up	8
7.3 Ramp-down	8
7.4 Test clock	8
7.5 Bias	8
7.6 Read-out	8
7.7 Handling	8
8 Failure criteria	9
9 Safety	9
10 Summary	9
Table 1 – Temperature, relative humidity and duration	6
Table 2 – Criteria for choosing continuous or cyclical bias	7