

Semiconductor devices — Mechanical and climatic test methods —

Part 18: Ionizing radiation (total dose)

The European Standard EN 60749-18:2003 has the status of a
British Standard

ICS 31.080.01

National foreword

This British Standard is the official English language version of EN 60749-18:2003. It is identical with IEC 60749-18:2002.

The UK participation in its preparation was entrusted to Technical Committee EPL/47, Semiconductors, which has the responsibility to:

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 13 March 2003

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 14, an inside back cover and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments
14531 Corrigendum No. 1	7 July 2003	Correction of supersession details in national foreword.
15225 Corrigendum No. 2	29 June 2004	Changes to first paragraph in the national foreword

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ISBN 0 580 41385 3

**Semiconductor devices –
Mechanical and climatic test methods
Part 18: Ionizing radiation (total dose)
(IEC 60749-18:2002)**

Dispositifs à semiconducteurs –
Méthodes d'essais mécaniques
et climatiques
Partie 18: Rayonnements ionisants
(dose totale)
(CEI 60749-18:2002)

Halbleiterbauelemente –
Mechanische und klimatische
Prüfverfahren
Teil 18: Ionisierende Strahlung
(Gesamtdosis)
(IEC 60749-18:2002)

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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

The text of document 47/1657/FDIS, future edition 1 of IEC 60749-18, prepared by IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60749-18 on 2003-02-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2003-11-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2006-02-01

Endorsement notice

The text of the International Standard IEC60749-18:2002 was approved by CENELEC as a European Standard without any modification.

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SEMICONDUCTOR DEVICES – MECHANICAL AND CLIMATIC TEST METHODS –

Part 18: Ionizing radiation (total dose)

1 Scope

This part of IEC 60749 provides a test procedure for defining requirements for testing packaged semiconductor integrated circuits and discrete semiconductor devices for ionizing radiation (total dose) effects from a cobalt-60 (^{60}Co) gamma ray source.

This standard provides an accelerated annealing test for estimating low dose rate ionizing radiation effects on devices. This annealing test is important for low dose rate or certain other applications in which devices may exhibit significant time-dependent effects.

This standard addresses only steady-state irradiations, and is not applicable to pulse type irradiations.

It is intended for military- and space-related applications.

This standard may produce severe degradation of the electrical properties of irradiated devices and thus should be considered a destructive test.

2 Terms and definitions

For the purposes of this part of IEC 60749, the following terms and definitions apply.

2.1

ionizing radiation effects

changes in the electrical parameters of a device or integrated circuit resulting from radiation-induced charge

NOTE These are also referred to as total dose effects.

2.2

in-flux test

electrical measurements made on devices during irradiation exposure

2.3

non in-flux test

electrical measurements made on devices at any time other than during irradiation

2.4

remote tests

electrical measurements made on devices that are physically removed from the radiation location