SLOVENSKI STANDARD
SIST EN 60747-5-2:2002

01-september-2002

Discrete semiconductor devices and integrated circuits - Part 5-2: Optoelectronic devices - Essential ratings and characteristics (IEC 60747-5-2:1997)

Discrete semiconductor devices and integrated circuits -- Part 5-2: Optoelectronic devices - Essential ratings and characteristics

Einzel-Halbleiterbauelemente und integrierte Schaltungen -- Teil 5-2: Optoelektronische Bauelemente - Wesentliche Grenz- und Kennwerte

Dispositifs discrets à semiconducteurs et circuits intégrés -- Partie 5-2: Dispositifs optoélectroniques - Valeurs limites et caractéristiques essentielles

Ta slovenski standard je istoveten z: **EN 60747-5-2:2001**

ICS:

31.080.01	Polprevodniški elementi (naprave) na splošno	Semiconductor devices in general
31.200	Integrirana vezja, mikroelektronika	Integrated circuits. Microelectronics
31.260	Optoelektronika, laserska oprema	Optoelectronics. Laser equipment

SIST EN 60747-5-2:2002 **en**

EUROPEAN STANDARD **EN 60747-5-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM July 2001

ICS 31.260

English version

Discrete semiconductor devices and integrated circuits Part 5-2: Optoelectronic devices - Essential ratings and characteristics

(IEC 60747-5-2:1997)

Dispositifs discrets à semiconducteurs et circuits intégrés
Partie 5-2: Dispositifs optoélectroniques - Valeurs limites et caractéristiques essentielles
(CEI 60747-5-2:1997)

Einzel-Halbleiterbauelemente und integrierte Schaltungen
Teil 5-2: Optoelektronische Bauelemente - Wesentliche Grenz- und Kennwerte
(IEC 60747-5-2:1997)

This European Standard was approved by CENELEC on 2000-12-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 60747-5-2:2001 E

Foreword

The text of the International Standard IEC 60747-5-2:1997, prepared by SC 47C, Flat panel display devices, of IEC TC 47, Semiconductor devices, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60747-5-2 on 2000-12-01 without any modification.

This standard should be read jointly with IEC 60747-1, EN 62007-1 and EN 62007-2.

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) 2002-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2004-01-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annexes B and ZA are normative and annex A is informative.
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60747-5-2:1997 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60065 (mod)	1985	Safety requirements for mains operated electronic and related apparatus for household and similar general use	EN 60065[1)]	1993
IEC 60068-2-1	1990	Environmental testing Part 2: Tests - Tests A: Cold	EN 60068-2-1	1993
IEC 60068-2-2	1974	Part 2: Tests - Test B: Dry heat	HD 323.2.2 S1[2)]	1988
IEC 60068-2-3	1969	Part 2: Tests - Test Ca: Damp heat, steady state	HD 323.2.3 S2[3)]	1987
IEC 60068-2-6 + corr. March	1995 1995	Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-14	1984	Part 2: Tests - Test N: Change of temperature	EN 60068-2-14[4)]	1999
IEC 60068-2-17	1994	Part 2: Tests - Test Q: Sealing	EN 60068-2-17	1994
IEC 60068-2-27	1987	Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993
IEC 60068-2-30	1980	Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)	EN 60068-2-30[5)]	1999
IEC 60306-1	1969	Measurement of photosensitive devices Part 1: Basic recommendations	-	-

1) EN 60065:1993 is superseded by EN 60065:1998 + corrigendum Jun. 1999, which is based on IEC 60065:1998 (mod.).

2) EN 60068-2-2 includes supplement A:1976 to IEC 60068-2-2.

3) HD 323.2.3 S2:1987 includes A1:1984 to IEC 60068-2-3.

4) EN 60068-2-14:1999 includes A1:1986 to IEC 60068-2-14.

5) EN 60068-2-30:1999 includes A1:1985 to IEC 60068-2-30.

Publication	Year	Title	EN/HD	Year
IEC 60664-1 (mod)	1992	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	HD 625.1 S1 + corr. November	1996 1996
IEC 60695-2-2	1991	Fire hazard testing Part 2: Test methods -- Section 2: Needle-flame test	EN 60695-2-2	1994
IEC 60747-5-1	1997	Discrete semiconductor devices and integrated circuits Part 5-1: Optoelectronic devices - General	EN 60747-5-1	2001
IEC 60747-5-3	1997	Part 5-3: Optoelectronic devices - Measuring methods	EN 60747-5-3	2001

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Dispositifs discrets à semiconducteurs et circuits intégrés –

Partie 5-2: Dispositifs optoélectroniques – Valeurs limites et caractéristiques essentielles

Discrete semiconductor devices and integrated circuits –

Part 5-2: Optoelectronic devices – Essential ratings and characteristics

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

DISCRETE SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS –

Part 5-2: Optoelectronic devices – Essential ratings and characteristics

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60747-5-2 has been prepared by subcommittee 47C: Optoelectronic, display and imaging devices, of IEC technical committee 47: Semiconductor devices.

This first edition replaces partially the second edition of IEC 60747-5 (1992) and constitutes a technical revision (see also Annex A: Cross references index).

It should be read jointly with IEC 60747-1, IEC 62007-1 and IEC 62007-2.

The text of this standard is based partially on IEC 60747-5 (1992) and partially on the following documents:

FDIS	Report on voting
47C/173/FDIS	47C/186/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

Annex A is for information only.

Annex B forms an integral part of this standard.

DISCRETE SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS –

Part 5-2: Optoelectronic devices – Essential ratings and characteristics

1 Scope

This part of IEC 60747 gives the essential ratings and characteristics of the following categories or subcategories of optoelectronic devices which are not intended to be used in the field of fibre optic systems or subsystems:

– Semiconductor photoemitters, including:
  . light-emitting diodes (LEDs);
  . infrared-emitting diodes (IREDs);
  . laser diodes.
– Semiconductor photoelectric detectors, including:
  . photodiodes;
  . phototransistors.
– Semiconductor photosensitive devices.
– Semiconductor devices utilizing the optical radiation for internal operation, including:
  . photocouplers, optocouplers.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60747. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60747 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60065:1985, *Safety requirements for mains operated electronic and related apparatus for household and similar general use*

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests – Tests A: Cold*

IEC 60068-2-2:1974, *Environmental testing – Part 2: Tests – Tests B: Dry heat*

IEC 60068-2-3:1969, *Environmental testing – Part 2: Tests – Test Ca: Damp heat, steady state*

IEC 60068-2-6:1995, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14:1984, *Environmental testing – Part 2: Tests – Test N: Change of temperature*

IEC 60068-2-17: 1994, *Environmental testing – Part 2: Tests – Test Q: Sealing*

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests – Test Ea and guidance: Shock*

IEC 60068-2-30:1980, *Environmental testing – Part 2: Tests – Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)*

IEC 60306-1:1969, *Measurement of photosensitive devices – Part 1: Basic recommendations*

IEC 60664-1:1992, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60695-2-2:1991, *Fire hazard testing – Part 2: Test methods – Section 2: Needle-flame test*

IEC 60747-5-1:1997, *Discrete semiconductor devices and integrated circuits – Part 5-1: Optoelectronic devices – General*

IEC 60747-5-3:1997, *Discrete semiconductor devices and integrated circuits – Part 5-3: Optoelectronic devices – Measuring methods*

3 Light-emitting diodes
(excluding devices for fibre optic systems or subsystems)

3.1 Type

Ambient-rated or case-rated light-emitting diode.

3.2 Semiconductor material

Gallium arsenide-phosphide, etc.

3.3 Colour

3.4 Details of outline and encapsulation

3.4.1 IEC and/or national reference number of the outline drawing.

3.4.2 Method of encapsulation: glass/metal/plastic/other.

3.4.3 Terminal identification and indication of any connection between a terminal and the case.

3.5 Limiting values (absolute maximum system) over the operating temperature range, unless otherwise stated

3.5.1 Minimum and maximum storage temperatures (T_{stg}).

3.5.2 Minimum and maximum operating ambient or case temperature (T_{amb} or T_{case}).

3.5.3 Maximum reverse voltage (V_R).

NOTE – Not applicable to dual-diode devices connected anode-to-cathode and cathode-to-anode.

3.5.4 Maximum continuous forward current (I_F) at an ambient or case temperature of 25 °C and derating curve or derating factor.