SLOVENSKI STANDARD
SIST EN 60747-5-1:2002/A2:2004

01-november-2004

Diskretni polprevodniki in integrirana vezja - 5-1. del: Optoelektronske naprave - Splošno - Dopolnilo A2 (IEC 60747-5-1:1997/A2:2002)

Discrete semiconductor devices and integrated circuits -- Part 5-1: Optoelectronic devices - General

Einzel-Halbleiterbauelemente und integrierte Schaltungen -- Teil 5-1: Optoelektronische Bauelemente - Allgemeines

Dispositifs discrets à semiconducteurs et circuits intégrés -- Partie 5-1: Dispositifs optoélectroniques - Généralités

Ta slovenski standard je istoveten z: **EN 60747-5-1:2001/A2:2002**

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 60747-5-1:2002/A2:2004 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60747-5-1/A2

May 2002

ICS 31.080.99

English version

Discrete semiconductor devices and integrated circuits
Part 5-1: Optoelectronic devices -
General
(IEC 60747-5-1:1997/A2:2002)

Dispositifs discrets à semiconducteurs
et circuits intégrés
Partie 5-1: Dispositifs optoélectroniques -
Généralités
(CEI 60747-5-1:1997/A2:2002)

Einzel-Halbleiterbauelemente
und integrierte Schaltungen
Teil 5-1: Optoelektronische Bauelemente -
Allgemeines
(IEC 60747-5-1:1997/A2:2002)

This amendment A2 modifies the European Standard EN 60747-5-1:2001; it was approved by CENELEC on 2002-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment 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 amendment 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, Malta, 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

Foreword

The text of document 47E/208/FDIS, future amendment 2 to IEC 60747-5-1:1997, prepared by SC 47E, Discrete semiconductor devices, of IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60747-5-1:2001 on 2002-05-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-02-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2005-05-01

Endorsement notice

The text of amendment 2:2002 to the International Standard IEC 60747-5-1:1997 was approved by CENELEC as an amendment to the European Standard without any modification.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
60747-5-1

1997

AMENDEMENT 2
AMENDMENT 2
2002-03

Amendement 2

Dispositifs discrets à semiconducteurs et circuits intégrés –

Partie 5-1: Dispositifs optoélectroniques – Généralités

Amendment 2

Discrete semiconductor devices and integrated circuits –

Part 5-1: Optoelectronic devices – General

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CODE PRIX
PRICE CODE H

Pour prix, voir catalogue en vigueur
For price, see current catalogue

FOREWORD

This amendment has been prepared by subcommittee 47E: Discrete semiconductor devices, of IEC technical committee 47: Semiconductor devices.

The text of this amendment is based on the following documents:

FDIS	Report on voting
47E/208/FDIS	47E/213/RVD

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

The committee has decided that the contents of the base publication and its amendments will remain unchanged until 2004. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

Page 5

Add the following new introduction:

INTRODUCTION

This part of IEC 60747 provides basic information on semiconductors:

– terminology,
– letter symbols,
– essential ratings and characteristics,
– measuring methods,
– acceptance and reliability.

Page 49

Replace the existing subclauses 6.4.6 to 6.4.16.1 with the following new subclauses 6.4.6 to 6.4.16.1:

6.4.6 Photocoupler providing protection against electrical shock

A photocoupler designed to maintain protection against electrical shock after it has been subjected to operating conditions (safety ratings) that exceed the specified ratings (limiting values) for normal operation.

6.4.7 Safety ratings (of a photocoupler for reinforced isolation)

Electrical, thermal, and mechanical operating conditions that exceed the specified ratings (limiting values) for normal operation, and to which the specified safety requirements refer.

6.4.8 Electrical safety requirements (of a photocoupler for reinforced isolation)

Electrical requirements that have to be met and maintained after the photocoupler has been subjected to the specified safety ratings to ensure protection against electrical shock.

NOTE The photocoupler may become permanently inoperative when safety ratings are applied.

6.4.9 Partial discharge (pd)

Localized electrical discharge which occurs in the insulation between input and output terminals of the photocoupler.

6.4.10 Apparent charge q_{pd}, q

Electrical discharge caused by a partial discharge in the photocoupler.

6.4.11 Threshold apparent charge $q_{pd(TH)}$, q_{TH}

A specified value of apparent charge that is as small as technically feasible and to which measured values of the partial-discharge inception voltage or extinction voltage, respectively, refer.

NOTE 1 A threshold apparent charge of 5 pC was found to be a practicable criterion for photocouplers. Smaller values are desirable but are not viable at this time.

NOTE 2 In actual tests, this criterion applies to the apparent charge pulse with the maximum value.

NOTE 3 The term "specified discharge magnitude" (see 1.3.18.2 of IEC 60664-1) is synonymous with "threshold apparent charge".

6.4.12 Test voltages (for the partial-discharge test of a photocoupler)

See figure 14. All voltages used are a.c. peak voltages.

6.4.12.1 Test voltage $V_{pd(t)}$, V_t

The voltage applied during the test period between the input terminals (connected together) and the output terminals (connected together), respectively, of the specimen under test.

Partial discharge test voltage: $V_{pd(t)}$

The isolation voltage applied during the partial discharge test period.

NOTE 1 Specified values of this voltage may be expressed as a multiple of the specified value of the rated isolation voltage or rated repetitive peak isolation voltage: $V_{pd(m)} = F \times V_{IOWM}$ or $V_{pd(m)} = F \times V_{IORM}$, whichever is higher. Refer to 6.4.12.2 c), multiplying factor.

NOTE 2 Test voltage, where the apparent charge has to be equal or less than the specified value.

6.4.12.2 Initial test voltage $V_{pd(ini)}$, V_{ini}

The test voltage applied during the initial test time t_{ini}.

NOTE 1 The initial test voltage is higher than or equal to the test voltage in the second part of the test period in which partial discharge characteristics are measured; see 6.4.12.3.

NOTE 2 For method a), the specified value for the initial test voltage is equal to the specified limiting value of the rated impulse isolation voltage V_{IOTM}.

NOTE 3 For method b), the specified value for the initial test voltage (isolation voltage) is equal to or lower than the specified limiting value of the rated impulse isolation voltage V_{IOTM}.

a) Initial voltage: $V_{pd(ini),a}$; $V_{ini,a}$ (see table 1 of IEC 60664-1 for minimum voltages, interpolation is possible.)

   The value of the voltage applied at the beginning of the measurement, for a specified time t_{ini}, which is intended to simulate the occurrence of a transient overvoltage.

b) Initial test voltage: $V_{pd(ini),b}$; $V_{ini,b}$

   The isolation test voltage applied between the short-circuited input and the short-circuited output terminals at routine test (method b)). A withstand voltage equal to the manufacturer's rating with a maximum of V_{IOTM}.

   NOTE The equivalent r.m.s. value of an a.c. test voltage may also be used.

c) Multiplying factor: F

   At routine test stage: F = 1,875

   At sample test stage and after life tests, subgroup 1: F = 1,6

   After life tests, subgroups 2 and 3: F = 1,2

NOTE When the test result using the above F factors is certainly affected by testability on, for example, the device package size, package leads or the test system, the following F factors can be chosen instead by manufacturer's decision: F = 1,6, F = 1,2 and F = 1,0 respectively.

6.4.12.3 Apparent charge measuring voltage $V_{pd(m)}$, V_m

The test voltage for which apparent charge is measured.

6.4.13 Partial-discharge inception voltage $V_{pd(i)}$, V_i

The lowest peak value of an a.c. test voltage at which the apparent charge is greater than the specified threshold apparent charge, if the test voltage is increased from a lower value where no partial discharge occurs.

NOTE The equivalent r.m.s. value of an a.c. test voltage may also be used.

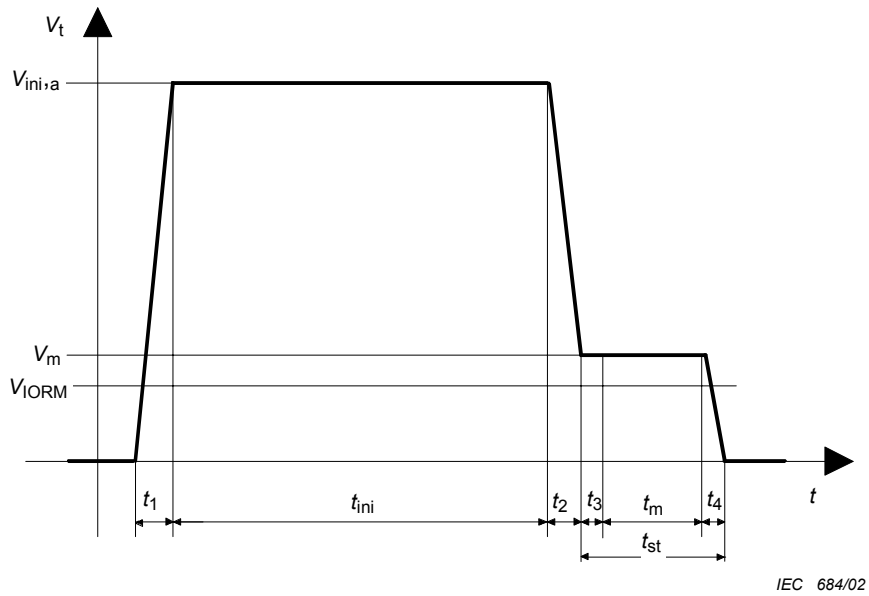
6.4.14 Partial-discharge extinction voltage $V_{pd(e)}$, V_e

The lowest peak value of an a.c. test voltage at which the apparent charge is smaller than the specified threshold apparent charge, if the test voltage is reduced from a higher value where such discharge occurs.

NOTE The equivalent r.m.s. value of an a.c. test voltage may also be used.

6.4.15 Time intervals of the test voltage

See the terms and letter symbols indicated in figures 14a and 14b.



t_{ini} Initial time (method a) only)
t_{st} (Partial-discharge) stress time
t_m (Partial-discharge) measuring time
t_1, t_2, t_3, t_4 Settling times

Figure 14a – Time intervals for method a)