SIST

SLOVENSKI STANDARD
SIST EN 60747-5-5:2011/A1:2015

01-september-2015

Polprevodniški elementi - Diskretni elementi - 5-5. del: Optoelektronske naprave - Optični sklopniki (IEC 60747-5-5:2007/A1:2013)

Semiconductor devices - Discrete devices - Part 5-5: Optoelectronic devices - Photocouplers (IEC 60747-5-5:2007/A1:2013)

Halbleiterbauelemente - Einzel-Halbleiterbauelemente - Teil 5-5: Optoelektronische Bauelemente - Optokoppler (IEC 60747-5-5:2007/A1:2013)

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Dispositifs à semiconducteurs - Dispositifs discrets - Partie 5-5: Dispositifs optoélectroniques - Photocoupleurs (IEC 60747-5-5:2007/A1:2013)

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Ta slovenski standard je istoveten z: EN 60747-5-5:2011/A1:2015

ICS:

31.080.01	Polprevodniški elementi (naprave) na splošno	Semiconductor devices in general
31.260	Optoelektronika, laserska oprema	Optoelectronics. Laser equipment

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60747-5-5:2011/A1

April 2015

ICS 31.080.01; 31.260

English Version

Semiconductor devices - Discrete devices - Part 5-5: Optoelectronic devices - Photocouplers (IEC 60747-5-5:2007/A1:2013)

Dispositifs à semiconducteurs - Dispositifs discrets - Partie 5-5: Dispositifs optoélectroniques - Photocoupleurs (IEC 60747-5-5:2007/A1:2013)

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

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Foreword

This document (EN 60747-5-5:2011/A1:2015) consists of the text of IEC 60747-5-5:2007/A1:2013 prepared by SC 47E “Discrete semiconductor devices” of IEC/TC 47 "Semiconductor devices".

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)	2016-01-19
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2018-01-19

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

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Semiconductor devices – Discrete devices –
Part 5-5: Optoelectronic devices – Photocouplers

Dispositifs à semiconducteurs – Dispositifs discrets –
Partie 5-5: Dispositifs optoélectroniques – Photocoupleurs

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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:

CDV	Report on voting
47E/437/CDV	47E/451/RVC

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

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

Delete the NOTE at the end of this subclause.

7.4.3

Delete the following text below the paragraph "Package construction":

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Periodic testing shall be carried out at the latest 5 years after type testing and shall be repeated at the latest every 5 years.

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Delete the words "and periodic tests" *in the sentence* "Type tests and periodic tests shall include at least the following subgroups (7.4.3.1 to 7.4.3.8), with the following conditions:" *above the fourth dashed item.*

7.4.3.1 Preconditioning

Add, in the second paragraph, the terms "(IEC 60068-2-20, Test Tb, Method 1A)", *as follows*:

Resistance to soldering heat 260 °C ± 5 °C, 5 s ± 1 s
(IEC 60068-2-20, Test Tb, Method 1A)

7.4.3.2.1 Tests

Replace, in the paragraph "Vibration"*, the words* "Amplitude: 75 mm" *by* "Amplitude: 0,75 mm".

7.4.3.2.2 Final measurements

*Replace, in the paragraph "*Apparent charge", "F = 1,6 or 1,2 (see 5.2.7 c)" *by* "F = 1,6 (see 5.2.7 c)".

7.4.3.3.2 Final measurements:

Replace, in the paragraph "Apparent charge", "F = 1,2 or 1,0 (see 5.3.1 a); " *by* "F = 1,2 (see 5.2.7 c); ".

Table 2 – Tests and test sequence for photocoupler providing protection against electrical shock

Replace the existing Table 2 by the following new Table 2:

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Table 2 – Tests and test sequence for photocoupler providing protection against electrical shock

1) Routine test (non-destructive), see 7.4.1

- 1.1 Apparent charge magnitude at 1,875 V_{IORM}, method b1), b2) or b3), $q_c \le 5$ pC, $V_{ini,b} \le V_{ini,a}$ See 5.2.11
- 1.2 Parametric test according to manufacturer's specification

2) Sample test (destructive), *n* = 20/platform, with minimum *n* = 80 in total, *c* = 0, see 7.4.2

- 2.1 Visual inspection according to manufacturer's specification see 7.4.3.1
- 2.2 Resistance to soldering heat see 7.4.3.1
- 2.3 Apparent charge magnitude at 1,6 × V_{IORM}, method a), $q_c \le 5$ pC, $V_{ini,a,}$ see 5.2.7 c)
- 2.4 Parametric test according to manufacturer's specification
- 2.5 Isolation resistance see 7.4.3.1
- 2.6 External creepage distance and clearance, *n* = 10, *c* = 0, see 7.4.3.1
- 2.7 Isolation resistance at high temperatures, *n* = 40, *c* = 0, see 7.4.3.5.1
  - a) T_{amb} max, min 100 °C
  - b) T_s

3) Type test, destructive, *n* = 130, *c* = 0, see 7.4.3

Subgroup 1 7.4.3.2 *n* = 20	Subgroup 2 7.4.3.3 *n* = 30	Subgroup 3 7.4.3.4 *n* = 30	Subgroup 4 7.4.3.5 *n* = 40	Subgroup 5 7.4.3.6 *n* = 10
Preconditioning 7.4.3.1	Preconditioning 7.4.3.1	Preconditioning 7.4.3.1	Isolation resistance T_{amb} max. ≥100 °C, T_s	Ext. creepage distance Ext. clearance
Rapid change of temperature	Input safety test	Output safety test		Flammability
Vibration	Final measurement	Final measurement		
Shock				
Sealing				
Dry heat				
Accelerated damp heat				
Temperature storage				
Damp heat				
Final measurements				

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Testing of insulating materials (type test only) see 7.4.3.7
Marking, labels, information in datasheets see 7.4.3.8

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Table 3 – Test conditions

Replace the existing Table 3 by the following new Table 3:

Table 3 – Test conditions

Method a)	Parameter	Method b)
t_{ini} = 60 s	Initial time	$t_{ini,b}$ = 1 s
$V_{ini,a}$	Initial voltage	$V_{ini,b} \leq V_{ini,a}$
$V_{pd} = F \times V_{IORM}$ or V_{IOWM}	Apparent charge test voltage	V_{pd} = 1,875 × V_{IORM} or V_{IOWM}
t_m = 10 s	Apparent charge measuring time	t_m = 1 s
t_{st} typ. 12 s	Specified test time	t_{st} typ. 1,2 s
		t_{st2} typ. 1,2 s
dV/dt during t_1, t_2 = 100 V/s to 1 000 V/s	Rate of rise/fall (V_{ini})	-
t_3, t_4 typ. 1 s	Transient recovery time	-
T_{amb} = 15 °C to 35 °C	Ambient temperature	T_{amb} = 15 °C to 35 °C
150 kHz ≤ f_0 ≤ 5 MHz	Centre frequency	150 kHz ≤ f_0 ≤ 5 MHz
Δf ≤ 15 kHz	Bandwidth	Δf ≤ 15 kHz
q_0 = 5 pC	Calibration value	q_0 = 5 pC
q_{min} = 1 pC	Smallest measurable value	q_{min} = 1 pC
q_{pd} = 5 pC	Apparent charge test limit	q_{pd} = 5 pC
C_C ≥ 1 nF	Coupling capacitor	C_C ≥ 1 nF
$V_{pd} = F \times V_{IORM}$ or V_{IOWM} (F factor: See 5.2.7 c)		

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8.4 Isolation test

Replace the last sentence of item c) by the following:

The voltage is maintained for 1 min for type testing, and 1 s or 2 s at 100 % or maximum 120 % of the type testing voltage for routine testing.