SLOVENSKI STANDARD
SIST EN 150001:2002

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Blank detail specification: General purpose semiconductor diodes

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Vordruck für Bauartspezifikation: Allzweck-Halbleiterdioden

Spécification particulière cadre: Diodes à semiconducteur d'usage général

Ta slovenski standard je istoveten z: **EN 150001:1991**

ICS:

31.080.10 Diode Diodes

SIST EN 150001:2002 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 150001

December 1991

UDC:

Descriptors: Quality, electronic components, diodes

English version

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This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 25 November 1991. The text of this standard consists of the text of CECC 50001 Issue 2 1980 of the corresponding CECC Specification. CENELEC members are bound to comply with 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 General Secretariat of the CECC 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 CECC General Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom. The membership of the CECC is identical, with the exception of the national electrotechnical committees of Greece, Iceland and Luxembourg.

CECC

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 150001:1991 E

blank

European Committee for Electrotechnical Standardization (CENELEC)
Cenelec Electronic Components Committee

CECC

English version

Harmonized System of Quality Assessment for
Electronic Components

BLANK DETAIL SPECIFICATION:

GENERAL PURPOSE SEMICONDUCTOR DIODES

Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION PARTICULIERE CADRE:

DIODES A SEMICONDUCTEURS D'USAGE GENERAL

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

VORDRUCK FÜR BAUARTSPEZIFIKATION:

ALLZWECK-HALBLEITERDIODEN

2 Edition
Issue
Ausgabe

CECC 50001

1980

Foreword

The CENELEC Electronic Components Committee (CECC) is composed of those member countries of the European Committee for Electrotechnical Standardization (CENELEC) who wish to take part in a harmonized System for electronic component of assessed quality.

The object of the System is to facilitate international trade by the harmonization of the specifications and quality assessment procedures for electronic components, and by the grant of an internationally recognised Mark or Certificate, of Conformity. The components produced under the System are thereby accepted by all member countries without further testing.

This document has been formally approved by the CECC, and has been prepared for those member countries taking part in the System who wish to issue national harmonized specifications for GENERAL PURPOSE SEMICONDUCTOR DIODES. It should be read in conjunction with document CECC 00100: Basic Rules (1974).

Preface

This blank detail specification was prepared by CECC Working Group 5: "*Semiconductor diodes and transistors*". It is one of a series of blank detail specifications for discreate semiconductor devices, relating to the generic specification CECC 50000.

1) the addition of a Sub-Group A2a to check non-operative devices, which will become obligatory in all existing detail specifications by 1st January 1981. Until that date, implementation is optional (see below)

2) the addition of requirements for controlled-avalanche diodes

3) the addition of clauses **6**, **7** and **9**

4) the change in lay-out

Implementation

All qualifications according to Issue 1 remain technically valid, as well as all detail specification prepared in accordance with Issue 1 even if they are not completely in line with items 2), 3) and 4) above. Before 1st January 1981, however, all detail specifications shall be amended — and their issue number raised by one by any suitable means, to conform with item 1).

Issue 1 will be withdrawn on 1st January 1961

Lay-out

The lay-out of this blank detail specification is amended from that of Issue 1 and will be adopted for all other blank detail specifications. In the meantime this lay-out should be followed, as far as possible, for all detail specifications in the 50000 series. Existing detail specifications need not be changed.

Voting

The text of this revised blank detail specification was circulated to the CECC for voting in the documents listed below, and was ratified by the CECC Management Committee for printing as a CECC specification.

Document	Voting Date	Report on the Voting	Circulation Date
CECC (Secretariat) 691	July 1978	CECC (Secretariat) 753	September 1978
CECC (Secretariat) 705	August 1978	CECC (Secretariat) 765 + A	June 1979
CECC (Secretariat) 767	March 1979	CECC (Secretariat) 816	August 1979
CECC (Secretariat) 768	March 1979	CECC (Secretariat) 817	August 1979
CECC (Secretariat) 771	April 1979	CECC (Secretariat) 818	August 1979
CECC (Secretariat) 855	October 1979	CECC (Secretariat) 909	February 1980

TEXTS BETWEEN SQUARE BRACKETS GIVE GUIDELINES ON HOW TO FILL IN THE BLANK DETAIL SPECIFICATION

GENERAL PURPOSE SEMICONDUCTOR DIODES

[Name (address) of responsible CNH ① (and possibly of body from which specification is available)]	Page of	CECC 50001-XXX ② [CECC detail specification number plus issue number and/or date]
ELECTRONIC COMPONENT OF ASSESSED ③ Quality in accordance with: CECC 50000, issue ... [and national references if different]		National number of detail specification. ④ [This box may not be used if National number includes CECC number]

1 Mechanical description ⑦

Either outline references (code A) or base and case references (codes B + C)
— from IEC 191-2:
— national [if desired]

OUTLINE DRAWING AND CONNECTIONS
(Terminal connected to case, if any)

[may be transferred to, or given with more details in, clause 9 of this document]

Marking: letters and figures/colour code

[see 2.5.6 of CECC 50000 and/or clause 6 of this document]

Polarity indication if special method is used

Detail specification for: ⑤

[Type number (s) of relevant devices (s) and, if appropriate structurally similar devices]
Ordering information: see clause 7 of this document

2 Short description ⑥

Semiconductor material: Ge/Si/...
Encapsulation: metal/glass/plastic/...

Application:	Signal	(Sig)
	Switching	(Sw)
	Controlled Avalanche	(C-A)
Power:	ambient-rated	(Tamb)
	case-rated	(Tcase)

[Some important quick reference data: voltage, power,... may be added]

3 Level (s) of quality assessment ⑧

[chosen from Appendix IIA of CECC 50000

4 Limiting values (Absolute maximum rating system) ⑨

These apply over the operating temperature range unless otherwise stated. X denotes that a value shall be inserted in the detail specification

Clause CECC 0001	[Repeat only clause numbers used, with text. Additional values, if any, shall be given at the appropriate place without clause number (s). Curves should preferably be given in clause 9 of this documents.]	Symbol	Value min	Value max	Unit
4.1	Operating ambient or case temperatures	Tamb/case	X	X	
4.2	Storage temperatures	Tstg	X	X	
4.3	Reverse voltage, with temperature derating curve if necessary (See 9):	V_R		X	
4.3.1	— continuous (direct) reverse voltage	V_{RM}		X	
4.3.2	— peak reverse voltage (if different) under specified pulse conditions				
4.4	Forward current, where appropriate under specified mounting conditions:	I_F (T)		X	
		I_{FRM}		X	
4.4.1	— continuous (direct) forward current versus temperature (See 9)				
4.4.2	— peak forward current under specified operating conditions:				
	— and, only for Sw, C-A	I_{FSM}		X	

4.5	For CA and, where appropriate, for Sig and Sw, power dissipation (special requirements for ventilation/mounting should be specified)				
4.5.1	— either: max. power dissipation versus temperature (see **9**)	Ptot (T)		X	
4.5.2	— or: max. virtual (equivalent) junction temperature and absolute limit of power dissipation	T_{vt} P_{tot}		X X	
4.5.3	plus, for C-A only: peak repetitive and/or non repetitive (surge) reverse energy and/or power (with any qualification such as time, frequency)	$P_{RRM/RSM}$ $W_{RRM/RSM}$		X	
See the relevant Qualified Products List for availability of components made to this specification					

5 Electrical characteristics See clause 8 of this document for inspection requirements (Groups A and C)

[In the following table, characteristics marked X in the "value" columns shall be inserted in the detail specifications; characteristics marked + in the "measured" column are measured in Group A or Sub-Group C2.

Signs between brackets correspond to characteristics given as "Where appropriate" or as alternatives:

— Those characteristics marked "where appropriate" in this clause and in the inspection section shall either be omitted or, if specified, shall then be measured

— For equivalent characteristics given as alternatives, the choice should preferably be left open to allow the use of the same detail specification by different manufacturers or countries.

Repeat only clause numbers used, with text. Additional characteristics, if any, shall be given at the appropriate place without clause number (s).

When several devices are included in the same detail specification, the relevant values should be given on successive lines, where possible avoiding repeating identical value.]

Clause CECC 50001	Measured	Characteristics and conditions, at T_{amb} or T_{case} = 25 °C unless otherwise stated	Symbol	Value min	Value max	Unit
5.1	+	Reverse current at max continuous reverse voltage V_R max	I_{R1}		X	
5.2	+	Reverse current at specified continuous reverse voltage V_{R2}, (preferably V_R max) and at a high temperature (**4.3.3** of CECC 50000)	I_{R2}		X	
5.3	+	Forward voltage at high forward current I_{F1} (d.c. or pulse as specified)	V_{F1}		X	
5.4	(+)	Where appropriate, forward voltage at low forward current I_{F2} (d.c. or pulse as specified)	V_{F2}	(X)		
5.5	+	Capacitance at specified low V_R, f = 1 MHz (preferred)	C_{tot}		X	
5.6	+	Sw only: Reverse recovery time or recovered charge under specified conditions	t_{rr}/Q_s		X	
5.7	(+)	Sw and C-A only: Where appropriate, forward recovery time under specified conditions	t_{fr}		(X)	
5.8	(+)	For detector applications only: detector voltage efficiency under specified conditions	η	(X)		
5.9		When virtual junction temperature is quoted as a limiting value, thermal resistance junction to ambient or case, shall be given only for information	$R_{th(j-amb)}$ or $R_{th(j-case)}$		X	
5.10	+	C-A only: Avalanche breakdown voltage at specified reverse current I_R (pulse as specified)	$V_{(BR)}$	X	X	

6 Marking

[Any particular information other than given in box ⑦ on page 1 and/or **2.5.6** of CECC 50000 shall be specified here.]

7 Ordering information

The following minimum information is necessary to order a specific device, unless otherwise specified:

— precise type number

— CECC reference of detail specification with issue number and/or date when relevant

— level of quality assessment as defined in Appendix II A of CECC 50000, and, if required, screening sequence as defined in Appendix VI of CECC 50000

— any other particulars.

[example: 1N000 to CECC 50001-000 Issue 2, level F]

8 Test conditions and inspection requirements

These are given in the following tables, where the values and exact test conditions to be used should be specified as required for a given type, and as required by the relevant test in CECC 50000.

[When several devices are included in the same detail specification, the relevant conditions and/or values should be given on successive lines, where possible avoiding repetition of identical conditions and/or values.

The choice between alternative tests should preferably be left open, unless very sound technical reasons forbid this. Although such tests are not strictly equivalent, they are meant to achieve the same results which are to assess the correct manufacture of a device. Alternatives were provided to take into account different equipments or methods of measurement used in various countries.]

In this section, references to clause numbers are made with respect to CECC 50000 unless otherwise stated.

Group A — Lot by lot

All tests are non destructive (**3.5.6**)

Examination or test (Ref. 4.3.4/....)	Conditions at T_{amb} or T_{case} = 25 °C unless otherwise stated	Inspection			Assessment
		Limits (see note)			
		min	max	Unit	
Sub-Group A1 Visual inspection	**4.2.1**				[FOR SAMPLING REQUIREMENTS EITHER REFER TO, OR REPRODUCE, VALUES OF APPENDIX II A OF CECC 50000 (according to applicable level (s) ofquality assessment stated in box ⑧ on page 1)]
Sub-Group A2a Non operative devices	[State relevant limits —→] See **4.3.4** (inverted polarity, $V_F > 10\ V_{F1}$ max, or $I_R > 100\ I_{R1}$ max)				
Sub-Group A2b I_{R1} (D-002) V_{F1} (D-001) C-A only $V_{(ER)}$ (D-009)	 V_R = max continuous I_{F1} = high (d.c. or pulse[a] as specified) I_R = specified (pulse[a] as specified)	 X	 X X X		
Sub-Group A3 Sw only t_{rr} (D-004) or Q_s (D-003) Sw/C-A only: Where appropriate: t_{fr} (D-005)	 I_F, i_{rr} and (V_R, R_L) or I_{RM} = specified I_F, reverse circuit conditions = specified V_R, I_F = specified recovery voltage — see D-005		 X or X X		
Sub-Group A4 Available if required					

NOTE The relevant min and max limits of Group A are referred to later on, in Groups B and C, as LSL and USL (lower/upper specification limit)

[a] preferred pulse conditions: t_p = 300 µs $\delta \leq 2$ %