



SLOVENSKI STANDARD

SIST EN 150014:2002

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Blank detail specification: Thyristor-diodes, transient overvoltage suppressor

Blank Detail Specification: Thyristor-diodes, transient overvoltage suppressor

Vordruck für Bauartspezifikation: Thyristor-Dioden, Überspannungs-Begrenzer

Spécification particulière cadre: Diodes-thyristor limiteurs de surtensions transitoires

Ta slovenski standard je istoveten z: EN 150014:1996

[SIST EN 150014:2002](https://standards.iteh.ai/catalog/standards/sist/6f064b0f-c8d4-4809-bdc0-25fa587a3039/sist-en-150014-2002)

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ICS:

31.080.10	Diode	Diodes
31.080.20	Tiristorji	Thyristors

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EUROPEAN STANDARD
NORME EUROPÉENNE
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EN 150014

February 1996

ICS 81.080.10

Supersedes CECC 50014:1994

Descriptors: Quality, blank detail specification, thyristor diode

English version

Blank Detail Specification:
Thyristor diodes, transient overvoltage suppressor

Spécification particulière cadre:
Diodes-thyristor, limiteurs de surtensions
transitoires

Vordruck für Bauartspezifikation:
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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

At the request of Working Group CLC/TC CECC/WG 5, the text of CECC 50014:1994, Issue 1, was submitted to the formal vote for conversion into a European Standard. It was approved by CENELEC as EN 150014 on 1995-09-020

The following date was 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) 1996-09-01

Preface

This specification was prepared by CECC WG 5. It is based, wherever possible, on the publications of the International Electrotechnical Commission.

The text of this specification was circulated to the CECC for voting in the document indicated below and was ratified by the President of the CECC for printing as a CECC Specification.

Document	Date of Voting	Report on the Voting
CECC (Secretariat) 2039	February 1989	CECC (Secretariat) 2193

Contents

	Page
Foreword	2
1 Mechanical description	3
2 Short description	3
3 Quality assessment level(s)	3
4 Limiting values	3
5 Electrical characteristics	4
6 Marking	5
7 Ordering information	5
8 Test conditions and inspection requirements	5
9 Additional information	9
Annex A Typical waveforms	10
Annex B Measurements methods	11
Annex C Electrical endurance	13

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THYRISTOR DIODE TRANSIENT SUPPRESSOR					
[Name (address) of responsible ONH (and possibly of body from which specification is available)] [1]		Page	CECC 50014-xxx [2] [CECC detail specification number plus issue number and/or date]		
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH: CECC 50000, issue ... [and national references if different] [3]		[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 and D) — according to IEC 191-2 — national (if desired) OUTLINE DRAWING AND CONNECTIONS (terminal connected to case, if any) [Characteristics of the optical port of the device, defined with regard to its mechanical axis] MARKING [See 2.5 of CECC 50000 and/or 6 of this specification] TERMINAL IDENTIFICATION [See 2.5.1 of CECC 50000]		DETAIL SPECIFICATION FOR: [5] [Type number(s) of relevant device(s) and, if appropriate, structurally similar devices] ORDERING INFORMATION See 7 of this specification 2 Short description [6] Construction Semiconductor material: Case material: Transient overvoltage protection, etc. 3 Quality assessment level(s) [8] [Chosen from Annex IIA of CECC 50000]			
4 Limiting values (Absolute maximum rating system IEC 134) [9] These apply over the operating temperature range unless otherwise stated. [X denotes that a value shall be inserted in the detail specification]					
Paragraph CECC 50014	[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 9 of this specification.]	Symbol	Value		Unit
			min.	max.	
4.1	Minimum and maximum operating ambient or case temperature	T _{amb} T _{case}	X X	X X	°C °C
4.2	Minimum and maximum storage temperature	T _{stg}	X	X	°C
4.3	Maximum soldering temperature at specified conditions	T _{sld}		X	°C
Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00200.					

Paragraph CECC 50014	[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 9 of this specification.]	Symbol	Value		Unit
			min.	max.	
4.4	Power dissipation Special requirements for ventilation/mounting shall be specified				
4.4.1	Maximum power dissipation under specified conditions (T_{amb} or $T_{case} = 25\text{ °C}$) and according to temperature derating curves or:	P_{tot}		X	W
4.4.2	Maximum virtual junction temperature and absolute limit of power dissipation	$T_{(vj)}$		X	°C
4.5	Maximum value of non repetitive on-state surge current	P_{tot} I_{TSM}		X	W A
4.6	Maximum value of peak repetitive on-state current	I_{TRM}		X	A
4.7	Maximum value of rate of change of off-state voltage	$\frac{(dV)}{(dt)_{crit}}$		X	kV/ μ s
4.8	Maximum value of peak repetitive reverse voltage	V_{RRM}		X	V

5 Electrical characteristics

See [8] of this specification for inspection requirements (Groups A and C)

In the following table, characteristics marked "X" in the "value" column shall be given; 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. Any additional characteristics shall be given at the appropriate place without clause numbers.

When several devices are included in the same detail specification, the relevant values should be given on successive lines, not repeating identical values.]

Paragraph CECC 50014	Measured	Characteristics and conditions at T_{amb} or $T_{case} = 25\text{ }^{\circ}\text{C}$, unless otherwise stated	Symbol	Value		Unit
				min.	max.	
5.1	+	Minimum and maximum value of forward breakdown voltage at a specified breakdown current (I_Z)	V_{FZ}	X	X	V
5.2	+	Minimum value of reverse breakdown voltage at a specified current	V_R	X		V
5.3	+	Maximum value of breakover voltage	$V_{(BO)}$		X	V
5.3.1	+	Maximum value of dynamic breakover voltage at a specified voltage rate	$V_{(BO)dyn}$		X	V
5.4	+	Maximum value of on-state voltage at a specified pulse	V_T		X	V
5.5	+	Maximum and minimum value of breakover current	$I_{(BO)}$	X	X	mA
5.6	+	Minimum value of holding current at a specific condition, as specified in detail specification	I_H	X		mA
5.7	+	Maximum value of off-state current at a specified voltage (V_D)	I_D		X	μA
5.8	(+)	Maximum value of turn-on-time at a specified voltage	t_{on}		(X)	ns
5.9	(+)	Maximum value of diode capacitance at a specified voltage rate	C_{tot}		(X)	pF
5.10	(+)	When virtual junction temperature is quoted as a rating: maximum value of thermal resistance junction to ambient	R_{thja}		(X)	$^{\circ}\text{C/W}$
5.11	(+)	Maximum value of forward breakdown voltage temperature coefficient	$\frac{dV_{FZ}}{dT_j}$		(X)	$\%/^{\circ}\text{C}$
5.12	(+)	Maximum value of holding current temperature coefficient	$\frac{dI_H}{dT_j}$		(X)	$\%/^{\circ}\text{C}$

6 Marking

[Any particular information other than given in box [7] on page 3 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 specified in Annexe IIA of CECC 50000, and, if required, screening sequence as defined in Annex VI of CECC 50000;
- any other particulars.

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.

“X” shows that a value is to be inserted in the detail specification.

[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 are provided to take into account different equipments or methods of measurements used in various countries.]

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

[For sampling requirements either refer to, or reproduce, values of Annex IIA of CECC 50000 (according to applicable level(s) of quality assessment in box on page 3).]

GROUP A — Lot by lot

Examination or test (Ref. 4.3.4/...)	Conditions at T_{amb} or $T_{case} = 25\text{ °C}$ unless otherwise stated	Inspection			
		Limits			Assessment
		min.	max.	Unit	
SUB-GROUP A1					[For sampling requirement either refer to, or reproduce, values of Annex IIA of CECC 50000 (according to applicable level(s) of quality assessment stated in box [8] on page 3)]
Visual inspection	4.2.1				
SUB-GROUP A2a					
Non operative devices	$I_D > 100 \times I_{Dmax. \text{ in A2b or } V_T > 10 \times V_{Tmax. \text{ in A2b}}$	X	X	μA V	
SUB-GROUP A2b					
Diode current (T-103) I_D	V_D specified		X	μA	
Forward break-down voltage V_{FZ} (D-021)	I_D specified	X	X	V	
Breakover voltage $V_{(BO)}$	As specified (see B.1 to this specification)		X	V	X
Breakover current $I_{(BO)}$	As specified (see B.2 to this specification)		X	mA	
Holding current I_H	As specified (see B.3 to this specification)		X	mA	
On-state voltage V_T	As specified (see B.4 of this specification)		X	V	

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 and Upper Specification Limit).

GROUP B — Lot by lot

Only tests marked "D" are destructive
(see 3.5.6 of CECC 50000)

LSL = Lower Specification Limit
USL = Upper Specification Limit } from Group A

Examination or test and reference	Conditions at T_{amb} or $T_{case} = 25\text{ }^{\circ}\text{C}$ unless otherwise stated	Inspection			Assessment
		Limits			
		min.	max.	Unit	
SUB-GROUP B1					[For sampling requirements either refer to, or reproduce, values of Annex IIA of CECC 50000 (according to applicable level(s) of quality assessment stated in box [8] on page 3)]
Dimensions (4.2.2)	4.2.2/Annex III	4.2.2 or see box [7]			
SUB-GROUP B3					
Lead bending (D) (4.4.9)	Force = [see 4.4.9 Test Ub]	No damage			
SUB-GROUP B4					
Solderability (4.4.7)	As specified; solder bath preferred	Good wetting			
SUB-GROUP B5					
Change of temperature (4.4.4) followed by either: For non-cavity devices: — accelerated damp heat (D) (4.4.2) or for cavity devices (only): — Sealing (4.4.10) <u>Final measurements:</u> I_D V_{FZ}	[Applied in C5 instead of B5, depending on assessment level] As specified (Note 1) Test Na, Nb or Nc Method I SIST EN 150014:2002 Test Qk, Qc or Ql As for A2b As for A2b	LSL	USL USL		
SUB-GROUP B8					
Electrical endurance 					