
Blank detail specification: Variable capacitance diodes

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Vordruck für Bauartspezifikation: Kapazitäts- (Variations-) Dioden für Abstimmzwecke

Spécification particulière cadre: Diode(s) à capacité variable

Ta slovenski standard je istoveten z: EN 150006:1991

[SIST EN 150006:2002](https://standards.iteh.ai/catalog/standards/sist/72766329-f872-4a8d-9269-ccf619ce6fdd/sist-en-150006-2002)

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ICS:

31.080.10 Diode Diodes

SIST EN 150006:2002**en**

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EUROPEAN STANDARD
 NORME EUROPÉENNE
 EUROPÄISCHE NORM

EN 150006

December 1991

UDC:

Descriptors: Quality, electronic components, diodes

English version

Blank Detail Specification: Variable capacitance diodes

Spécification Particulière Cadre:
 Diode(s) à capacité variable

Vordruck für Bauartspezifikation:
 Kapazitäts- (Variations-) Dioden für
 Abstimmzwecke

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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 50006 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.

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CECC


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

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[1]	page: of:	[2] CECC 50006 Issue 2 												
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH: [3]	[4]													
DETAIL SPECIFICATION FOR: VARIABLE CAPACITANCE DIODE(S) [5] TYPE NUMBER(S): <u>CONSTRUCTION</u> : Semiconductor material: germanium/silicon/etc.. Case material: glass/metal/plastic/other [6]														
1 Mechanical description [7] Outline references (code A) from IEC 191-2: National: OR Base and case references (codes B + C) from IEC 191-2: National: AND/OR Outline drawing POLARITY: if necessary TERMINAL CONNECTED TO CASE: (if any) MARKING: letters and figures or colour code	2 Electrical application [8] TUNING 3 Levels of quality assessment F – L E — refer to CECC 50000 Appendix II A													
4 Limiting values (absolute maximum system) [9] These apply over the operating temperature range, unless otherwise stated. <table border="0" style="width: 100%;"> <tr> <td style="width: 5%;">4.1</td> <td style="width: 75%;">Minimum and maximum operating ambient temperatures</td> <td style="width: 15%; text-align: right;">T_{amb}</td> <td style="width: 5%; text-align: right;">max min</td> </tr> <tr> <td>4.2</td> <td>Minimum and maximum storage temperatures</td> <td style="text-align: right;">T_{stg}</td> <td style="text-align: right;">max min</td> </tr> <tr> <td>4.3</td> <td>Maximum continuous reverse voltage</td> <td style="text-align: right;">V_R</td> <td style="text-align: right;">max</td> </tr> </table>			4.1	Minimum and maximum operating ambient temperatures	T_{amb}	max min	4.2	Minimum and maximum storage temperatures	T_{stg}	max min	4.3	Maximum continuous reverse voltage	V_R	max
4.1	Minimum and maximum operating ambient temperatures	T_{amb}	max min											
4.2	Minimum and maximum storage temperatures	T_{stg}	max min											
4.3	Maximum continuous reverse voltage	V_R	max											
See the relevant Qualified Parts List for availability of components qualified under this detail specification.														

5 Characteristics See clause 6 for inspection

The characteristics marked x shall be given, at T_{amb} 25 °C unless otherwise stated.

Sign* indicates characteristic is verified under the Inspection requirements.

Sign between brackets correspond to characteristics indicated "where appropriate" or given as alternatives.

5.1 Terminal capacitance

* 5.1.1	Minimum and maximum values at a specified reverse bias voltage and at a specified frequency	C_{tot}	x
5.1.2	A curve showing the typical relationship between terminal capacitance and reverse bias voltage or mathematical relationship between junction capacitance and bias voltage	Curve	x
* 5.1.3	Minimum and, where appropriate, maximum value of the capacitance ratio over specified reverse bias voltage range $V_{R(1)}$ to $V_{R(2)}$ ($V_{R(2)} > V_{R(1)}$)	$\frac{C_{tot(1)}}{C_{tot(2)}}$	(x)
	and/or: Where appropriate: Maximum value of the tracking error relative to the curve given in 5.1.2, over specified reverse bias voltage range $V_{R(1)}$ to $V_{R(2)}$ and over the specified operating temperature range	e_{TK}	(x)
* 5.1.4	Maximum value of the temperature coefficient of capacitance over the working voltage range and over the operating temperature range, where appropriate expressed as curves	$\alpha_{c(V,T)}$	x
* 5.2	Either: Minimum effective Q value at one or more specified frequencies, under specified reverse bias voltage or: Maximum series resistance under the same conditions	Q r_s	(x) (x)
* 5.3	Maximum value of reverse current at a specified reverse voltage (preferably high)	$I_{R(1)}$	x
* 5.4	Maximum value of reverse current at a specified reverse voltage and at a high temperature (see 4.3.3 of CECC 50000)	$I_{R(2)}$	x

6 Test conditions and inspection requirements

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

The tables refer to two levels of quality assessment arbitrarily designated F and L, it being understood that there may be other levels in other blank detail specifications.

All references to clause numbers are made with respect to CECC 50000 unless otherwise stated.

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: Type number — Detail specification number — issue number — level.

Group A — Lot by lot							
<u>All tests are non-destructive</u> (3.5.6 of CECC 50000)				AQL — given in %			
Examination or Test	Ref.	Conditions at $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise stated	Limits	Inspection requirements			
				Levels			
				F		L	
IL	AQL	IL	AQL				
<u>Sub-Group A1</u> Visual inspection	4.2.1	4.2.1	4.2.1	I	1,5	I	1,5
<u>Sub-Group A2a</u> Non-operative devices	4.3.4. (1)	$V_F > 10 V_{Fmax}$ $I_R > 100 I_{Rmax}$	max. max.	II	0,10	II	0,10
<u>Sub-Group A2b</u> Reverse current $I_{R(1)}$	4.3.4 D.002	$V_R = \text{specified}$ (preferably high)	max	II	0,65	II	0,65
Terminal capacitance C_{tot}	4.3.4 D.006	$V_R = \text{specified}$ $f = \text{specified}$	max min				
Capacitance ratio $C_{tot(1)}/C_{tot(2)}$	4.3.4 D.006	Over specified range $V_{R(1)}$ to $V_{R(2)}$ ($V_{R(2)} > V_{R(1)}$) $f = \text{specified}$	(min)				
and/or: Where appropriate: Tracking error e_{TK} (see note 1)	note 2	Over specified range $V_{R(1)}$ to $V_{R(2)}$	(max)				
<u>Sub-Group A3</u> Either: Effective Q value Q	4.3.4 D.032	$V_R = \text{specified}$ $f = \text{specified}$ (one or more)	(min)	I	2,5	I	2,5
or: Series resistance r_s	4.3.4 D.033		(max)				
Where appropriate: Tracking error e_{TK} (if not performed in A2)	note 2	see A2	(max)				

NOTE 1 When both capacitance ratio and tracking error are performed, the latter should be performed in A3.
NOTE 2 Method 4.3.4/D.031 or any other methods described in the detail specification.

Group B — Lot by lot							
Only tests marked: (D) are destructive (3.5.6 of CECC 50000) LSL = lower specification limit (Group A) AQL : given in % USL = upper specification limit (Group A) na : not applied							
Examination or Test	Ref.	Conditions à $T_{amb} = 25\text{ °C}$ unless otherwise stated	Inspection requirements				
			Limits	Levels			
				F		L	
IL	AQL	IL	AQL				
<u>Sub-Group B1</u> Dimensions	4.2.2	4.2.2/App. III	4.2.2	S2	2,5	S2	2,5
<u>Sub-Group B3</u> Lead bending if applicable (D)	4.4.9	4.4.9	4.4.9	S3	2,5	S2	4
<u>Sub-Group B4</u> Solderability where applicable	4.4.7	As specified	4.4.7	S4	2,5	S4	S,5
<u>Sub-Group B5</u> Change of temperature followed by: accelerated damp heat of sealing (D)	4.4.4 4.4.2 4.4.10	As specified See note P	$I_{R(1)}$ and C_{tot} within original (A2) limits	S4	2,5	na	na
<u>Sub-Group B8</u> Electrical endurance (168 h)	4.5	4.5.2.1 High temperature reverse bias	$I_{R(1)} \leq 2\text{ USL}$ $LSL \leq C_{tot} \leq USL$	S4	1,5	na	na
<u>Sub-Group CTR</u>	Attributes information for B3, B4, B5 and B8						

NOTE P See CECC 50000:1980 for plastic encapsulated (non-cavity) devices.

Group C — Periodic									
Only tests marked: (D) are destructive (3.5.6 of CECC 50000)									
na = not applied LSL = lower specification limit (Group A) USL = upper specification limit (Group A)			P = periodicity in months n = sample size c = acceptance criterion						
Examination or Test	Ref.	Conditions à $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise stated	Inspection requirements						
			Limits	Levels					
				F		L			
P	n	c	P	n	c				
<u>Sub-Group C1</u> Dimensions	4.2.2	4.2.2/App. III	4.2.2	3	8	1	3	8	1
<u>Sub-Group C2a</u> Not applied		na		na	na	na	na	na	na
<u>Sub-Group C2b</u> Reverse current $I_{R(2)}$ at high temperature	4.3.4 D.002 4.3.3	$V_R =$ specified $T_{amb} =$ specified high	max	3	18	1	3	18	1
<u>Sub-Group C3</u> Tensile (D), and/or Torque	4.4.9	4.4.9 May not be required for special outlines such as microminiature devices	4.4.9 or as specified	3	8	1	6	8	1
<u>Sub-Group C4</u> Resistance to soldering heat (D) where applicable	4.4.8	4.4.8	$I_{R(1)}$ and C_{tot} within original (A2) limits	3	18	1	na	na	na
<u>Sub-Group C5</u> Change of temperature followed by: accelerated damp heat (D) or sealing	4.4.4 4.4.2 4.4.10	As specified See note P	$I_{R(1)}$ and C_{tot} within original (A2) limits	na	na	na	3	13	1
<u>Sub-Group C6</u> — Shock or acceleration — Vibration	4.4.4 or 4.4.11 4.4.6	As specified Not applicable to plastic encapsulated (non-cavity) devices	$I_{R(1)}$ and C_{tot} within original (A2) limits	3	8	1	6	8	1
<u>Sub-Group C7</u> Damp heat (steady state) if applicable (D)	4.4.3	As specified See note P	As specified	3	18	1	na	na	na

NOTE P See CECC 50000:1980 for plastic encapsulated (non-cavity) devices.