



# SLOVENSKI STANDARD

## SIST EN 150003:2002

01-september-2002

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### Blank detail specification: Case-rated bipolar transistors for low frequency amplification

Blank Detail Specification: Case-rated bipolar transistors for low frequency amplification

Vordruck für Bauartspezifikation: Gehäusebezogene bipolare Transistoren für NF-Verstärkung

**iTeh STANDARD PREVIEW**

Spécification particulière cadre: Transistors bipolaires à température de boîtier spécifiée, pour amplification en basse fréquence

[SIST EN 150003:2002](https://standards.itih.ai/catalog/standards/sist/d1a20a48-8d66-4962-8a3e-9b9495c83f04/sist-en-150003-2002)

Ta slovenski standard je istoveten z: **EN 150003:1991**

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#### **ICS:**

31.080.30      Tranzistorji                                      Transistors

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**en**

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EUROPEAN STANDARD  
 NORME EUROPÉENNE  
 EUROPÄISCHE NORM

EN 150003

December 1991

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Descriptors: Quality, electronic components, transistors

English version

## Blank Detail Specification: Case-rated bipolar transistors for low frequency amplification

Spécification Particulière Cadre:  
 Transistors bipolaires à température  
 de boîtier spécifiée, pour  
 amplification en basse fréquence

Vordruck für Bauartspezifikation:  
 Gehäusebezogene bipolare  
 Transistoren für NF-Verstärkung

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 50003 Issue 3 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

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The numbers between square brackets on the first page correspond to the following indications.

**Identification of the detail specification**

- [1] The name of the National Standards Organization under whose authority the detail specification is drafted.
- [2] The CECC number of the relevant blank detail specification.
- [3] The number and issue number of the national generic specification.
- [4] The national number of the detail specification, date of issue and any further information required by the national system.

**Identification of the component**

- [5] A short description of the type of component.
- [6] Information on typical construction (where applicable).
- [7] Outline drawing and/or reference to the relevant document for outlines.
- [8] Application or group of applications covered.
- [9] Reference data on the most important properties, to allow comparison between the various component types.

This layout may be used by the other member countries of the CECC.

NOTE When a device is so designed that it can satisfy several applications, this should be stated in the detail specification, in which case the characteristics and inspection requirements relevant to these applications should be met simultaneously (these may appear in different columns of a blank detail specification or in different blank detail specifications, as the case may be).

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[4]	page: of:	[2] CECC 50003 Issue 3 
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH:  [3]	[4]	
DETAIL SPECIFICATION FOR: BIPOLAR TRANSISTOR(S) [5] TYPE NUMBER(S): CONSTRUCTION: Semiconductor material: germanium/silicon/etc... Polarity: NPN/PNP Case material: glass/metal/plastic/other [6]		
<b>1 Mechanical description</b> [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  TERMINAL CONNECTED TO CASE: (if any) MARKING: letters and figures or colour code	<b>2 Electrical application</b> [8] power : CASE-RATED frequency : LOW use : AMPLIFICATION  <b>3 Levels of quality assessment</b> F — L E — refer to CECC 50000 Appendix IIA	
<b>4. Limiting values (absolute maximum system)</b> [9] These apply over the operating temperature range, unless otherwise stated.		
4.1 Minimum and maximum operating case temperatures		T <sub>case</sub> max min
4.2 Minimum and maximum storage temperatures		T <sub>stg</sub> max min
4.3 Collector-base voltage: Maximum collector-to-base continuous (direct) voltage		V <sub>CBO</sub> max
4.4 Collector-emitter voltage: One (preferably V <sub>CEO</sub> ) or more of the following shall be specified:		
Maximum collector-emitter continuous (direct) voltage with zero base current		V <sub>CEO</sub> max
Maximum collector-emitter continuous (direct) voltage with reverse base voltage		V <sub>CEX</sub> max
Maximum collector-emitter continuous (direct) voltage with base short-circuited to emitter		V <sub>CES</sub> max
Maximum collector-emitter continuous (direct) voltage with specified external resistance R <sub>BE</sub>		V <sub>CER</sub> max
See the relevant Qualified Parts List for availability of components qualified under this detail specification.		

4.5	Emitter-base voltage: Maximum emitter-to-base continuous (direct) reverse voltage	$V_{EBO}$	max
4.6	Maximum collector current (d.c. or mean current)	$I_C$ or $I_{C(AV)}$	max
4.7	Where appropriate: — Maximum base current	$(I_B)$	(max)
4.8	Power dissipation		
4.8.1	Maximum total power dissipation as a function of temperature or	$P_{tot}$	max (T)
4.8.2	Maximum virtual (equivalent) junction temperature, and absolute limit of power dissipation	$T_{(vj)}$ $P_{tot}$	max
4.9	Where appropriate: — Area of safe operation (e.g. curves $I_C$ versus $V_{CE}$ ), d.c. and pulse		
5	<b>Characteristics</b> See clause 6 for inspection requirements The characteristics marked x shall be given, at $T_{case} = 25\text{ °C}$ unless otherwise stated. Sign * indicates characteristic is verified under the inspection requirements. Signs between brackets correspond to characteristics indicated “where appropriate”, or given as alternative.		
5.1*	Minimum and where appropriate maximum static values of the common-emitter forward current transfer ratio at specified $V_{CE}$ and $I_C$ (or $V_{CB}$ and $I_E$ ), preferably at typical operating current. (d.c. or pulse, as specified)	$h_{21E(1)}$	x
5.2(*)	Where appropriate: Minimum static value of the common-emitter forward current transfer ratio at specified low $V_{CE}$ and high $I_C$ (or $V_{CB}$ and $I_E$ ) (d.c. or pulse, as specified)	$h_{21E(2)}$	x
5.3*	Minimum and, where appropriate, maximum transition frequency at specified $V_{CE}$ , $I_C$ (or $V_{CB}$ , $I_E$ ) and $f$	$f_T$	x
5.4*	Leakage currents: One (preferably $I_{CBO}$ ) or more of the following shall be specified		x
	Maximum collector-base cut-off current with the emitter open-circuited, preferably at maximum rated $V_{CBO}$	$I_{CBO(1)}$	(x)
	Maximum collector-emitter cut-off current, under specified base-emitter bias conditions, preferably at maximum rated $V_{CEX}$	$I_{CEX(1)}$	(x)
	Maximum collector emitter leakage current with specified base-emitter resistance, preferably at maximum rated $V_{CER}$	$I_{CER(1)}$	(x)
	Maximum collector-emitter leakage current with the base short-circuited to the emitter, preferably at maximum rated $V_{CES}$	$I_{CES(1)}$	(x)
	Maximum collector emitter cut-off current with the base open-circuited, preferably at maximum rated $V_{CEO}$	$I_{CEO(1)}$	(x)



5.5*	Leakage currents at high temperature: One (preferably $I_{CBO}$ ) or more of the following shall be specified:	x
	Maximum collector-base cut-off current at $V_{CB}$ preferably between 65 % and 85 % of maximum rated $V_{CBO}$ , $I_E=0$ and at a high temperature (see 4.3.3 of CECC 50000)	$I_{CBO(2)}$ (x)
	Maximum collector-emitter cut-off current under specified base-emitter bias conditions at $V_{CE}$ preferably between 65 % and 85 % of maximum rated $V_{CEX}$ and at a high temperature (see 4.3.3 of CECC 50000)	$I_{CEX(2)}$ (x)
	Maximum collector-emitter leakage current with specified base-emitter resistance, at $V_{CE}$ preferably between 65 % and 85 % of maximum rated $V_{CER}$ and at a high temperature (see 4.3.3 of CECC 50000)	$I_{CER(2)}$ (x)
	Maximum collector-emitter leakage current with the base short-circuited to the emitter, at $V_{CE}$ preferably between 65 % and 85 % of maximum rated $V_{CES}$ and at a high temperature (see 4.3.3 of CECC 50000)	$I_{CES(2)}$ (x)
	Maximum collector-emitter cut-off current with the base open-circuited, at $V_{CE}$ preferably between 65 % and 85 % of maximum rated $V_{CEO}$ and at a high temperature (see 4.3.3 of CECC 50000)	$I_{CEO(2)}$ (x)
5.6	Where appropriate: Maximum collector-emitter saturation voltage at specified $I_B$ and high $I_C$ (d.c. or pulse as specified)	$V_{CEsat}$ (x)
5.7	Either: Maximum base-emitter voltage with $V_{CE}$ and $I_C$ preferably specified under the same conditions as in 5.1.	$V_{BE}$ (x)
	or: Maximum base-emitter saturation voltage, with $I_C$ and $I_B$ specified (d.c. or pulse as specified)	$V_{BEsat}$ (x)
5.8	When virtual junction temperature is quoted as a rating: Maximum value of thermal resistance junction to case shall be given (d.c. or pulse as specified)	$R_{th(j-case)}$ (x)
5.9	Where appropriate: curves of maximal thermal impedance under pulse conditions	$Z_{(th)p}$ (x)

## 6 Test conditions and inspection requirements (see 3.5.2 of CECC 50000)

These are given in the following tables, where the values and exact test 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 50 000 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 reference 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 IIA 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.