SLOVENSKI STANDARD
SIST EN 120003:2002

01-september-2002

Blank detail specification: Phototransistors, photodarlington transistors, phototransistor arrays

Blank Detail Specification: Phototransistors, photodarlington transistors, phototransistor arrays

VFB: Phototransistoren, Photo-darlingtontransistoren, Phototransistorzeilen

SPC: Phototransistors, transistors photodarlington, réseaux de phototransistors

Ta slovenski standard je istoveten z: EN 120003:1992

ICS:

31.080.30 Tranzistorji Transistors

SIST EN 120003:2002 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 120003

July 1992

UDC:

Supersedes CECC 20003 Issue 1:1986

Descriptors: Quality, electronic components, Phototransistors, photodarlington transistors, phototransistor arrays

English version

Blank Detail Specification: Phototransistors, photodarlington transistors, phototransistor arrays

Spécification Particulière Cadre: Phototransistors, transistors photodarlington, réseaux de phototransistors

Vordruck für Bauartspezifikation: Phototransistoren, Photo-Darlington-Transistoren, Phototransistorzeilen

This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 27 January 1992. 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

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 components 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 recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby acceptable in all member countries without further testing.

This European Standard was prepared by CECC WG 20, "*Opto-Electronic Components and Liquid Crystal Devices*".

The text of the draft based on document CECC 20003 Issue 1:1986 was submitted to the formal vote for conversion to a European Standard; together with the voting report, circulated as document CECC(Secretariat)3000 the following documents were approved by CECC as EN 120003 on 27 January 1992:

CECC 20003 Issue 1:1986 with Amendment 1

The following dates were fixed:

- latest date of announcement of the EN at national level (doa) 1992-12-22
- latest date of publication of an identical national standard (dop) 1993-06-22
- latest date of declaration of national standards obsolescence 1993-06-22
- latest date of withdrawal of conflicting national standards (dow) 2002-12-22

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Förderverein für Elektrotechnische Normung (FEN) e. V.
Cenelec Electronic Components Committee

CECC

English version

Harmonized System of Quality Assessment for Electronic Components

BLANK DETAIL SPECIFICATION:

PHOTOTRANSISTORS, PHOTODARLINGTON TRANSISTORS, PHOTOTRANSISTOR ARRAYS

Système Harmonisé d'Assurance de la Qualité des Composants Electroniques

SPECIFICATION PARTICULIERE CADRE:

PHOTOTRANSISTORS, TRANSISTORS PHOTODARLINGTON, RESEAUX DE PHOTOTRANSISTORS

Harmonisiertes Gütebestätigungssystem für Bauelemente der Elektronik

VORDRUCK FÜR BAUARTSPEZIFIKATION:

PHOTOTRANSISTOREN, PHOTO-DARLINGTON-TRANSISTOREN, PHOTOTRANSISTORZEILEN

1 Issue Edition Ausgabe

CECC 20003

1986

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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 recognized Mark, or Certificate, of Conformity. The components produced under the System are thereby accepted by all member countries without further testing.

This specification has been formally approved by the CECC, and has been prepared for those countries taking part in the System who wish to issue national harmonized specifications for PHOTOTRANSISTORS, PHOTODARLINGTON TRANSISTORS, PHOTOTRANSISTOR ARRAYS. It should be read in conjunction with the current regulations of the CECC System.

At the date of printing of this document the member countries of the CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United-Kingdom.

Preface

This blank detail specification was prepared by the CECC Working Group 20: "SEMICONDUCTOR OPTOELECTRONIC AND LIQUID CRYSTAL DEVICES". It is one of a series of blank detail specifications for semiconductor devices, based on the generic specification CECC 20000.

Voting

The text of this blank detail 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	Voting Date	Report on the Voting
CECC(Secretariat)1452	2 April 1984	CECC(Secretariat)1622

NOTE This specification is published initially in English and French. The German text will follow as soon as it has been prepared.

PHOTOTRANSISTORS, PHOTODARLINGTON TRANSISTORS, PHOTOTRANSISTOR ARRAYS

[Name (address) of responsible ONH (and possibly of body from which specification is available)] ①	Page of	CECC 20003-XXX ② [CECC detail specification number plus issue number and/or date]
ELECTRONIC COMPONENT OF ASSESSED QUALITY IN ACCORDANCE WITH: CECC 20000, 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 + C):

— from IEC 191-2:
— national [if desired]

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

[The outline drawing may correspond to the device itself and/or the device with its mounting clip]

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

MARKING: letters and figures/colour code [see 2.5 of CECC 20000 and/or clause 6 of this specification]

Polarity indication if special method is used

Detail Specification For: ⑤

[Type number (s) of relevant device (s) and, if appropriate, structurally similar devices]

ORDERING INFORMATION: see clause 7 of this specification

2 Short description ⑥

PHOTOTRANSISTORS/PHOTODARLINGTON/ . . .

Semiconductor material: Si/. . .
Encapsulation: metal/glass/plastic/ . . .
Application: Signal and switching application
Power: ambient-rated (T_{amb})
[Some important quick reference data may be added]

3 Level (s) of quality assessment ⑧

[if relevant]

4 Limiting values (Absolute maximum rating system) ⑨

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

Clause CECC 20003	[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 specification]	Symbol	Value min.	Value max.	Unit
4.1	Operating ambient temperatures	T_{amb}	X	X	°C
4.2	Storage temperatures	T_{stg}	X	X	°C
4.3	Soldering temperature [Soldering time and minimum distance to case shall be given Recommended mounting conditions (temperature, duration. . .) may be given in clause 9.1 of this specification.]	T_{sld}		X	°C
4.4	Collector emitter voltage, direct voltage with $I_B = 0$	V_{CE0}		X	V
4.5	Where the base connection is present, collector base voltage, direct voltage with $I_E = 0$	V_{CB0}		X	V
4.6.1	Where the base connection is present, emitter base voltage, direct voltage with $I_C = 0$ or	V_{EBO}		X	V
4.6.2	Emitter collector voltage (where no base connection is present)	V_{ECO}		X	V
4.7	Collector current at 25 °C	I_C		X	mA
4.8	Total power dissipation at ambient temperature of 25 °C with derating curve if necessary (see 9.2)	$P_{(tot)}$		X	W

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00200: Qualified Products List.

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

[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 to be given at appropriate place but without clause number.

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

Clause CECC 20003	Measured	Characteristics and conditions, at T_{amb} = 25 °C and I_B = 0 unless otherwise stated	Symbol	Value		Unit
				min.	max.	
5.1	A2b	Collector current under irradiation at specified V_{CE} and E_e or E_v (see note 4).	$I_C(H)(1)$ $I_C(e)(1)$	X		mA
5.2	C2a	Where appropriate: collector current under irradiation at specified V_{CE} and E_e or E_v (see note 4).	$I_C(H)(2)$ $I_C(e)(2)$		X	mA
5.3	C2a	Where appropriate: collector current under irradiation at specified V_{CE} and low value of E_e or E_v (see note 4).	$I_C(H)(3)$ $I_C(e)(3)$	X		mA
5.4	A2b	Collector emitter saturation voltage at specified I_C and E_v or E_e (see note 4) preferably under the same conditions of measurements as for **5.1**.	$V_{CE}(sat)$		X	V
5.5	A2b	Collector emitter dark current at specified V_{CE} and irradiance E_e = 0.	$I_{CEO}(1)$		X	µA
5.6	A4	Collector emitter dark current at specified V_{CE}, irradiance E_e = 0 and specified T_{amb}.	$I_{CEO}(2)$		X	µA
5.7	A3	Emitter collector dark current (where no base connection is present) at V_{EC} specified, E_e = 0.	I_{ECO}		X	µA
5.8	A3	Emitter base dark current (where base connection is present) at V_{EB} specified, E_e = 0.	I_{EBO}		X	µA
5.9	C2a	Rise time under specified supply voltage V, I_C peak, R_2 (if other than 100 Ω), t_w, δ, λ_p, Δλ.	t_r		X	µs
5.10	C2a	Fall time under specified conditions (same as for **5.9**).	t_f		X	µs
5.11		Responsivity diagram at specified V_{CE} and ϕ_e or ϕ_v (see note 4) (see **9.3**).				
5.12		Collector current under irradiation versus illuminance E_v (see note 4) or irradiance E_e expressed as a curve at specified V_{CE} (see **9.4**).				
5.13		Relative responsivity.expressed as a curve at specified V_{CE} and ϕ_e (see **9.5**).				
5.14	A2b	For arrays only, matching factor $m = \frac{I_C(H)\ (highest)}{I_C(H)\ (lowest)}$ or $\frac{I_C(e)\ (highest)}{I_C(e)\ (lowest)}$ at specified V_{CE} and E_e or E_v (see note 4).	m		X	—
Notes on page 7						

6 Marking [Information actually marked on the device and on the primary pack]

[Any particular information other than given in box ⑦ on front cover and/or **2.5** of CECC 20000 shall be specified here.]

7 Ordering information

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

— type number
— CECC reference of detail specification with issue number and/or date when relevant
— 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 20000. [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 measurement used in various countries.]

In this section, reference to clause numbers are made with respect to CECC 20000, 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} = 25 °C and I_B = 0 unless otherwise stated		Inspection				
			Limits (see Note 1)			Assessment	
			min.	max.	Unit	IL	AQL
Sub-Group A1 Visual inspection	**4.2.1**					I	1,5 %
Sub-Group A2a Non-operative devices	[State relevant limits See Note 2 →]					II	0,15 %
Sub-Group A2b						II	0,65 %
I_C(H)(1), I_C(e)(1) (P-001)	V_{CE} =	E_v or E_e =	X		mA		
m (for arrays) (P-001)	V_{CE} =	E_v or E_e =		X	—		
I_{CEO}(1) (P-002)	V_{CE} =	E_e = 0		X	µA		
V_{CE}(sat) (P-003)	I_C =	E_v or E_e =		X	V		
Sub-Group A3						II	0,65 %
I_{ECO} (P-002)	V_{EC} =	E_e = 0		X	µA		
or							
I_{EBO} (P-002)	V_{EB} =	E_e = 0		X	µA		
Sub-Group A4						II	0,65 %
I_{CEO} (2) (P-002)	V_{CE} = T_{amb} =	E_e = 0		X	µA		
Notes on page 7							