

**Harmonized system of quality
assessment for electronic components**

Sectional specification: Single and double sided printed boards with plated through holes

The European Standard EN 123200:1992 has the status of a
British Standard

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Electronic Components Standards Policy Committee (ECL/-) to Technical Committee ECL/19 upon which the following bodies were represented:

- British Telecommunications plc
- ERA Technology Ltd.
- Electrical and Electronic Insulation Association (BEAMA Ltd.)
- Electronic Components Industry Federation
- Electronic Engineering Association
- GAMBICA (BEAMA Ltd.)
- Institute of Circuit Technology
- Institute of Metal Finishing
- Institution of Production Engineers
- Ministry of Defence
- National Supervising Inspectorate
- Printed Circuit Association
- Telecommunication Engineering and Manufacturing Association (TEMA)

This British Standard, having been prepared under the direction of the Electronic Components Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 29 September 1989

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Amd. No.	Date of issue	Comments
7361	November 1992	Adoption as a European standard: renumbering as BS EN 123200:1992
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National foreword

This British Standard has been prepared under the direction of the Electronics Components Standards Policy Committee. It is identical with CENELEC Electronics Components Committee (CECC) 23200:1985 “*Harmonized system of quality assessment for electronic components: Sectional specification: Single and double sided printed boards with plated through holes*”.

This standard is a harmonized specification within the CECC system and should be read in conjunction with BS CECC 23000

In 1992 the CENELEC Electronic Components Committee (CECC) accepted CECC 23200:1985 as European Standard EN 123200:1992.

Cross-references

International Standard	Corresponding British Standard
IEC 68	BS 2011 <i>Basic environmental testing procedures</i> (Most Parts are identical)
IEC 249	BS EN 60249 <i>Base materials for printed circuits</i> (Most parts are identical)
IEC 326-2	BS 6221: <i>Printed wiring boards</i> Part 2:1982 <i>Methods of test</i> (Technically equivalent)
IEC 326-5	Part 5:1982 <i>Method for specifying single and double sided printed wiring boards with plated through holes</i> (Identical)
CECC 23000	BS CECC 23000:1988 <i>Harmonized system of quality assessment for electronic components: generic specification: printed boards</i> (Identical)

There is no British Standard equivalent to CECC 00010 which comprises only a list of the tests in IEC 326-2 and its supplement IEC 326-2A.

The Technical Committee has reviewed the provisions of IEC 194, IEC 321 and IEC 326-3, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 26, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

ICS 31.180

Descriptors: Printed boards, single and double sided, plated-through holes, test specimens, capability test, quality conformance inspection, test patterns

English version

Sectional Specification: Single and double sided printed boards with plated-through holes

(includes amendment A1:1995)

Spécification intermédiaire: Cartes imprimées
simples et doubles faces avec trous métallisés
(inclut l'amendement A1:1995)

Rahmenspezifikation: Leiterplatten mit
Leiterbildern auf einer oder auf beiden Seiten
mit metallisierten Löchern
(enthält Änderungen A1:1995)

This European Standard was approved by the CENELEC Electronic Components Committee (CECC) on 12 December 1991. CENELEC members are bound to comply with the 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 Central Secretariat 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 Central 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.

CENELEC

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

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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 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 SECTIONAL SPECIFICATIONS for SINGLE AND DOUBLE SIDED PRINTED BOARDS WITH PLATED-THROUGH HOLES. It should be read in conjunction with the current regulations for the CECC System.

Preface

This Sectional Specification was prepared by CECC Working Group 23: Printed Circuits.

It is based on publications of the International Electrotechnical Commission (IEC).

The text of this specification was circulated to the CECC for voting in the documents 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) 1053/1053A	November 1981	CECC(Secretariat) 1251
CECC(Secretariat) 1548	August 1984	CECC(Secretariat) 1619

SECRETARIAT NOTE:

DUE TO THE URGENT INDUSTRIAL NEED FOR THIS SPECIFICATION, THE PRESIDENT OF THE CECC HAS RULED THAT IT BE PUBLISHED WITHOUT THE FULL EDITORIAL PROCEDURE BEING APPLIED. USERS OF THE SPECIFICATION ARE ASKED TO REPORT TO THE CECC GENERAL SECRETARIAT ANY ERRORS THEY FIND SO THAT AMENDING ACTION CAN BE INITIATED.

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

Foreword to amendment A1

This amendment was prepared by CLC/TC CECC/WG 23.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as amendment A1 to EN 123200:1992 on 1995-07-04.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-07-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 1996-07-01

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1 Introduction

IEC 326-5 is the IEC-Standard for single and double sided printed boards with plated-through holes. The following document comprises this IEC-Standard and in accordance with the generic specification CECC 23000 the information additionally necessary for printed boards intended to be handled within the CENELEC system for Electronic Components of Assessed Quality.

1.1 Scope and object

This document is a Sectional Specification (SS) relating to single and double sided printed boards with plated-through holes irrespective of their method of manufacture, when they are ready for mounting of the components. It defines the characteristics to be assessed and the test methods to be used for capability approval testing and for quality conformance inspection (lot-by-lot and periodic inspection).

1.2 Related documents

IEC 68, *Basic environmental testing procedures*.

IEC 194, *Terms and definitions for printed circuits*.

IEC 249, *Metal-clad base materials for printed circuits*.

IEC 321, *Guidance for the design and use of components intended for mounting on printed boards*.

IEC 326-2, *Printed boards — test methods*.

IEC 326-3, *Design and use of printed boards*.

IEC 326-5, *Specification for single and double sided printed boards with plated-through holes*.

CECC 00010, *Printed boards — test methods*.

CECC 23000, *Generic Specification — Printed boards of assessed quality*.

2 General

This Sectional Specification (SS) applies to single and double sided printed boards with plated-through holes and is intended as a basis for the preparation of

— Capability Detail Specification (Cap DS) applying to specific materials, e.g. according to IEC 249-2, and to be used for capability approval procedures.

It may be necessary to have a Cap DS for each type of material. A Cap DS may be prepared by an international or a national body or by a manufacturer (see also CECC 00111).

— Customer Detail Specification (CDS) for the custom built printed boards, according to 5 of CECC 23000. The CDS will normally be written by the customer and allocated a number within his own system.

Further details are also given in CECC 23000 and in CECC 00107-III.

Table I contains the basic characteristics that will normally be important for single and double sided printed boards with plated-through holes and makes reference to the appropriate tests to verify these characteristics.

Table II contains the additional characteristics that may be important for certain single and double sided printed boards with plated-through holes and/or certain applications and makes reference to the appropriate tests to verify these characteristics. Where necessary, the relevant specification may quote characteristics and tests from this Table II.

Where additional details for a test have to be specified in the relevant specification, this is indicated by an asterisk in the relevant column. These details shall then be specified in accordance with CECC 00010 (IEC 326-2).

Table III contains the capability test programme. A specified composite test pattern (CTP) is used as capability qualifying component.

Table IV contains the information for the quality conformance inspection.

The tables are not intended to prescribe a test sequence, the tests may be carried out in any sequence, unless otherwise specified.

3 Test specimens

3.1 Capability Approval

3.1.1 Basic Capability

The test shall be carried out on the composite test pattern given in 8.

3.1.2 Additional Capability

3.5.3 of CECC 23000 shall apply. For multiple arrangements see also 8.

3.1.3 Maintenance of Capability Approval

3.8 of CECC 23000 shall apply.

3.2 Quality conformance inspection

Unless otherwise specified production boards and/or specially designed test patterns may be used for carrying out tests for the lot-by-lot and the periodic inspection.

Where specially designed test patterns shall be used they may be included in the panel. They may be based on the appropriate pattern of the composite test pattern clause 8. Consultation between manufacturer and customer will usually be necessary.

4 Relevant specification

The term “Relevant Specification” means a product specification for an actual printed board, i.e. a CDS as well as a Cap DS applied to a specific material and technique, as applicable.

The relevant specification shall contain all information necessary to define the printed board clearly and completely. The recommendations given in IEC 326-3 shall preferably be followed.

Care should be taken to avoid unnecessary prescriptions. Permissible deviations shall be stated where necessary, nominal values without tolerances or simple maxima or minima shall be given where sufficient. Where tolerances are necessary for certain areas or parts of the printed board only, they shall be applied and restricted to those areas or parts.

If there are several possibilities of presentation, of tolerance classes etc., the selections given in IEC 326-3 shall preferably be applied.

In case of discrepancy between the CDS and any other pertinent specification (e.g. BS, GS, or SS), the CDS shall prevail.

5 Characteristics of printed boards

Basic characteristics of single and double sided printed boards with plated-through holes are given in Table I.

Additional characteristics of single and double sided printed boards with plated-through holes are given in Table II.