

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

**Guidance document:
CECC Standard method for the
specification of surface
mounting components (SMDs)
of assessed quality**

Committees responsible for this British Standard

This British Standard was prepared by the Electronic Components Standards Policy Committee (ECL/-) upon which the following bodies were represented:

- British Standards Society
- British Telecommunications plc
- Federation of the Electronics Industry
- Ministry of Defence
- National Supervising Inspectorate

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Association of Contract Electronics Manufacturers (ACEM)
- Membrane Switch Manufacturers' Association - MSMA (BEAMA) Ltd.
- Surface Mount and Related Technologies (SMART GROUP) Ltd.

This British Standard, having been prepared under the direction of the Electronic Components Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 November 1994

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Committee reference ECL/-
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National foreword

This British Standard has been prepared under the direction of the Electronic Components Standards Policy Committee. It is identical with CECC 00802 : 1994 *Harmonized system of quality assessment for electronic components. Guidance document: CECC standard method for the specification of surface mounting components (SMDs) of assessed quality*, published by the European Committee for Electrotechnical Standardization (CENELEC) Electronic Components Committee (CECC).

This standard applies to all electronic components covered by the CECC system where these components are required to be assessed with respect to their application to surface mounting. It supersedes BS CECC 00802 : 1991 which is withdrawn.

Cross-references

International standard	Corresponding British Standard
IEC 68-1	BS 2011 <i>Environmental testing</i> Part 1.1 : 1989 <i>General and guidance</i> (Identical)
IEC 68-2-20	Part 2.1T : 1981 <i>Test T. Soldering</i> (Identical)
IEC 68-2-45	Part 2.1XA : 1981 ¹⁾ <i>Test XA and guidance. Immersion in cleaning solvents</i> (Identical)
IEC 68-2-58	Part 2.1Td : 1990 <i>Test Td. Solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)</i> (Identical)
IEC 191-6	BS 3934 <i>Mechanical standardization of semiconductor devices</i> Part 6 : 1992 <i>Specification for the preparation of outline drawings of surface mounted semiconductor device packages</i> (Identical)
IEC 249-2-5	BS 4584 <i>Metal-clad base materials for printed wiring boards</i> Part 102 <i>Copper-clad base materials</i> Section 102.5 : 1990 <i>Specification for epoxide woven glass fabric copper-clad laminated sheet of defined flammability (vertical burning test)</i> (Identical)
IEC 286-3	BS 6062 <i>Packaging of electronic components for automatic handling</i> Part 3 : 1993 <i>Specification for packaging of leadless components on continuous tapes</i> (Identical)
EN 100015	BS EN 100015 <i>Harmonized system of quality assessment for electronic components. Basic specification. Protection of electrostatic sensitive devices</i> (Identical)
CECC 00111	BS CECC 00111 <i>Rule of Procedure 11. Specifications</i> (Identical)

The British Standard which implements the CECC Rules of Procedure is BS 9000 *General requirements for a system for electronic components of assessed quality Part 2 : 1991 Specification for the national implementation of the CECC system*.

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

¹⁾ Renumbered as BS EN 60068-2-45.

Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

DOCUMENT GUIDE:

**METHODE DE NORMALISATION
POUR LA SPECIFICATION DES
COMPOSANTS MONTES EN SURFACE (CMS)
DE QUALITE ASSUREE**

Harmonized System of Quality Assessment for
Electronic Components

GUIDANCE DOCUMENT:

**CECC STANDARD METHOD
FOR THE SPECIFICATION OF SURFACE
MOUNTING COMPONENTS (SMDs)
OF ASSESSED QUALITY**

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

LEITFADEN:

**GENORMTES CECC VERFAHREN
ZUR SPEZIFIZIERUNG OBERFLÄCHEN-
MONTIERBARER BAUELEMENTE (SMDs)
MIT GÜTEBESTÄTIGUNG**



2 Edition
Issue
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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.

At the date of printing of this specification, the member countries of CECC are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom, and copies of it can be obtained from the addresses shown on the blue fly sheet.

PREFACE

This guidance document was prepared by CECC WG Surface Mounting Devices.

The text of this specification was circulated to the CECC for voting in the documents listed below and was approved by the CECC for printing as a CECC Specification.

<u>Document</u>	<u>Date of Voting</u>	<u>Report on the Voting</u>
CECC(Sec)3162	November 1992	CECC(Sec)3405

1. Introduction

Traditionally specifications for electronic components have been developed within each component family, with environmental and mechanical tests being selected from IEC 68 and other IEC, ISO and CECC Publications in an acknowledgement that all components, once in an equipment, must satisfy certain criteria.

The introduction and increasing use of surface mounting techniques make it necessary to extend the traditional requirements with those arising from the assembly processing.

Irrespective of component family, all components on the same side of a substrate are likely to pass through the same initial soldering process, endure approximately the same time/temperature profile and encounter approximately the same environmental conditions. The additional requirements arising from the assembly process are identical for all component families.

It is the purpose of this standard to give these additional requirements. This is achieved in two steps:

The first step is the definition of reference process conditions as representative of a group of assembly processes.

In the second step the additional requirements arising from these reference process conditions are given.

There is a need to include the ability of a component to withstand a particular assembly process in the quality assessment under the CECC System. Such a target can only be achieved by defining appropriate tests relevant to the various assembly processes. This calls for a classification of components according to their suitability for a particular assembly process.

In this standard the classification of surface mounting components is based on assembly processes according to the reference process conditions defined in this standard. For each class the appropriate tests and requirements are given.

It is the responsibility of the manufacturer to declare a component to be a surface mounting component and to give its class, which is given in the Detail Specification together with the appropriate test procedures selected from this standard.

Mixed technology boards, i.e. boards containing through-hole components and SMDs, require additional consideration with respect to the through-hole components. These may experience the same process conditions as the SMDs, and specifications writers wishing to include an assessment of the ability to withstand surface mounting conditions in detail specifications for 'non surface mounting components' should use classifications and tests of this specification.

2. Scope

This standard gives a reference set of process conditions and related test conditions which shall be used when compiling component specifications.

The objective of the standard is that SMDs of different natures (passive, active), conforming to this standard and to the appropriate component standard, can be assembled and mounted on a substrate by the use of a common soldering process. To this end the components should be classified according to the severities of the process for which they are designed.

This standard applies to all electronic components covered by the CECC System where these components are required to be assessed with respect to their application to surface mounting.

3. Terminology

NOTE. Use of "chip". This is deprecated as a surface mounting term. CECC should use either "SMD" or "Surface mounting component".

3.1 Substrate. The basic material which forms the support structure of an electronic circuit.

3.2 Surface mounting device. An electronic component designed for mounting on to pads or tracks on the surface of a conductive pattern of a substrate.

3.3 Pick - up force. Dynamic force exerted on the top and bottom face of the component body during the pick-up of the component from its packaging medium (such as tape or tray). Normally, the maximum value is considered.

3.4 Centering force. Dynamic force exerted on the side faces of the component body and/or the terminations of a component during its mechanical alignment in a placement equipment. Normally, the maximum value is considered.

3.5 Placement force. Dynamic force exerted on the top and bottom face of the component. This occurs in the period between the moment of first contact of the component with the substrate (or paste or adhesive, etc.) and the moment at which the component has come to rest. Normally, the maximum value is considered.