

Generic Specification: Monolithic integrated circuits — Procedure for approval and quality management

Cooperating organizations

The European Committee for Electrotechnical Standardization (CENELEC), under whose supervision this European Prestandard was prepared, comprises the national committees of the following countries:

Austria	Italy
Belgium	Luxembourg
Denmark	Netherlands
Finland	Norway
France	Portugal
Germany	Spain
Greece	Sweden
Iceland	Switzerland
Ireland	United Kingdom

This Draft for Development, 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 August 1994

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National foreword

This Draft for Development has been prepared under the direction of the Electronic Components Standards Policy Committee. It is identical with European Prestandard ENV 190000-6:1993 *Generic Specification: Monolithic integrated circuits. Procedure for approval and quality management* published by the European Committee for Electrotechnical Standardization (CENELEC).

The UK actively participated through BSI Technical Committee ECL/24.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature because the subject matter is still under technical development requiring wider exposure. It should be applied on this provisional basis so that information and experience of its practical application may be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the European organization responsible for its conversion to a European Standard. A review of this publication will be initiated 2 years after its publication by the European organization so that a decision can be taken on its status at the end of its three-year life. The commencement of the review period will be notified by an announcement in *BSI News*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into a European Standard, to extend the life of the prestandard or to withdraw it. Comments should be sent in writing to the Secretary of BSI Technical Committee ECL/24, at 2 Park Street, London W1A 2BS giving the document reference and clause number and proposing, where possible, an appropriate revision of the text.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ENV title page, pages 2 to 16, 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.

UDC

Descriptors: Quality, electronic components, monolithic integrated circuits

English version

Generic Specification: Monolithic integrated circuits Procedure for approval and quality management

Spécification générique: Circuits intégrés
monolithiques Procédure pour l'agrément et la
gestion de la qualité

Fachgrundspezifikation: Monolithische
integrierte Schaltungen
Anerkennungsverfahren und Qualitätslenkung

This European Prestandard (ENV) was approved by the CENELEC Electronic Components Committee (CECC) on 28 October 1992 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of the CENELEC Electronic Components Committee (CECC) will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard (EN).

CENELEC Electronic Components Committee (CECC) members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

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 Prestandard was prepared by CECC WG 9, Integrated Circuits.

The text of the draft based on document CECC(Secretariat)3117 was submitted to the formal vote; together with the voting report, circulated as document CECC(Secretariat)3251, it was approved by CECC as ENV 190000-6 on 28 October 1992.

The following dates were fixed:

- latest date of announcement of the ENV at national level (doa) 1994-01-11

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1.1 Introduction

Products dedicated to one application and produced in (relatively) small quantities cannot be fully identified in a QA system and do not lend themselves to cost effective sampling systems for assessed quality.

Qualification Approval or Capability Approval can be used in "Product Oriented Manufacture" (POM) processes whereas "Design Oriented Manufacture" (DOM) processes require the adoption of a non "Product Oriented" Qualification System.

This has resulted in the consideration of a new standard for ICs and ASICs based on QA systems already in use in the CECC and National organizations. The new system being based on built-in quality from the design phase to the fabrication.

This is the aim of the so called "QML" US approach, this forms the basis of the current standard which proposes European QML (EQML: European Qualified Manufacturing Line) as a third way for implementing Quality Assurance in Europe (as an alternative to QPL and Capability Approval systems).

This approach puts the emphasis on:

- application of the Total Quality Management principles;
- built-in quality;
- constant improvement plan for Quality and Reliability;
- responsibility of the manufacturer/design centre for quality;
- use of statistical process control (SPC) techniques, where applicable, for process quality management and improvement;
- delivery of suitable components with the suitable quality for all the market segments;
- changes to be permitted, more so they are recommended as a fundamental way of improving process quality.

1.2 Scope

This specification establishes the general requirements for components and the quality and reliability assurance requirements which shall be met for their acceptance within Europe. Detail requirements, specific characteristics of components and other provisions which are sensitive to the particular use intended shall be specified in the detail specification.

The foundation of the manufacturing process approval is the basis of Total Quality Management (TQM) within the manufacturing environment. TQM requires that all levels of management be actively involved in the commitment to quality.

A Technology Review Board (TRB) shall be established to control, stabilize, monitor and improve the qualified technology. The TRB shall develop a Total Quality Management Plan that outlines how the manufacturing operation for a given manufacturing flow is controlled, monitored and improved throughout its entire "Life Cycle". Key aspects of this plan are the establishment of Statistical Process Control, Field Failure Return Programmes, Corrective Action Procedures, Quality Improvement and any other approaches required to control and improve product quality, reliability and service. These requirements are detailed in this document.

Quality assurance requirements outlined herein are for all components built on a manufacturing line which is controlled through a manufacturer Total Quality Management (TQM) programme and has been certified and qualified as per the requirements herein. The manufacturing line shall be a continuous process flow for all components. **A single level of product assurance is provided for in this specification.** The certification and qualification requirements found herein are the requirements which allow manufacturers to be registered in the list of qualified manufacturers (EQML).

The manufacturer Process Qualification leading to EQML requires a manufacturing line or technology flow certification and qualification. On-going monitoring techniques will be used to maintain EQML status. The manufacturing line consists of facilities and procedures appropriate to accomplish the design, specific tool making, fabrication, material procurement, testing, packing and delivery of components and the customer support (see Figure 1).

After registration on the EQML list, the manufacturer shall continually meet the baseline certified/qualified procedures, the TQM Programme, the TRB, the Status Reporting and specific requirements for all EQML products of the appropriate technology. The tests which shall be performed on each product built are defined in the relevant CECC specification.