

**Film and hybrid integrated circuits -
Part 3: Self-audit checklist and report
for film and hybrid integrated circuit
manufacturers**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 165000-3:2002 sisaldab Euroopa standardi EN 165000-3:1996 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 18.12.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 165000-3:2002 consists of the English text of the European standard EN 165000-3:1996.</p> <p>This document is endorsed on 18.12.2002 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

ICS 31.200

Standardite reprodutseerimis- ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute Estonian Standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: +372 605 5050; E-mail: info@evs.ee

English version

Film and hybrid integrated circuits
Part 3: Self-audit checklist and report for film and
hybrid integrated circuit manufacturers

This European Standard was approved by CENELEC on 1996-03-05. 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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by CLC/TC CECC SC 47AX (former CECC/WG 21), Film and hybrid integrated circuits.

The text of the draft was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 165000-3 on 1996-03-05.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 1997-03-01
- latest date by which the national standards
conflicting with the EN have to be withdrawn (dow) 1997-03-01

The present standard, EN 165000-3, Film and hybrid integrated circuits - Part 3: Self-audit checklist and report for film and hybrid integrated circuit manufacturers, is intended to be read in conjunction with the other parts of EN 165000, which are:

Part 1: Generic Specification - Capability approval procedure

Part 2: Part 2: Internal visual inspection and special tests

Part 4: Customer information, product assessment level schedules and blank detail specification

This part 3 is primarily intended as a pro-forma for the manufacturer and is not considered *essential* for a customer *in this form*.

Part 4 is considered an essential document for all users; in particular it includes a helpful introductory section which is aimed at potential customers and seeks to explain the underlying philosophy upon which the whole standard is based.

TABLE OF CONTENTS

	Page No.
1. SCOPE	5
2. DOCUMENT INFORMATION	
2.1 Introduction and use	5
2.2 Related documents	5
3. GENERAL REQUIREMENTS	
3.1 Report front sheets and authentication	7
3.2 Description of report/company structure	8
3.3 Approval information	11
3.4 Summary of testing	13
3.5 Analytical methods	15
3.6 Control of procurement sources and incoming material	17
3.7 Environmental control and static handling	19
3.8 Major change notification	20
3.9 Hybrid design	21
4. THICK FILM PROCESSING	
4.1 Artwork & Screen fabrication	24
4.2 Substrates	25
4.3 Substrate saw or scribe and break and substrate hole drilling	26
4.4 Thick film pastes and printing	27
4.5 Drying and firing	31
4.6 Resistor trimming	33
4.7 Inspection and test of processing	34
4.8 Rework	35
5. THIN FILM PROCESSING	
5.1 Artwork and mask fabrication	37
5.2 Substrates	38
5.3 Substrate saw or scribe and break and substrate hole drilling	40
5.4 Thin film processing materials and pattern forming	41
5.5 Drying and stabilization	43
5.6 Resistor trimming	44
5.7 Rework	45
6. HYBRID ASSEMBLY	
6.1 Solder assembly	47
6.1.1 Kitting	47
6.1.2 Cleaning	48
6.1.3 Component placement	49
6.1.4 Substrate attach	51
6.1.5 Soldering	52
6.1.6 Encapsulation	53
6.1.7 Rework	54
6.1.8 Marking	55

TABLE OF CONTENTS, continued

	Page No.
6.2 Chip & Wire	56
6.2.1 Kitting	56
6.2.2 Cleaning	57
6.2.3 Component placement	58
6.2.4 Substrate attach	62
6.2.5 Wirebonding	63
6.2.6 Package seal	65
6.2.7 Rework	67
6.2.8 Marking	68
 7. TEST AND SHIPPING	
7.1 Electrical tests	70
7.2 Burn-in	72
7.3 Endurance	74
7.4 Dry heat (stabilization bake)	76
7.5 Change of temperature	77
7.6 Damp heat testing	78
7.7 Particle impact noise detection	80
7.8 Fine leak testing	81
7.9 Gross leak testing	82
7.10 Resistance to soldering heat	83
7.11 Termination robustness	84
7.12 Acceleration	85
7.13 Vibration	86
7.14 Shock	87
7.15 Dimensions	88
7.16 Bond-pull testing	89
7.17 Salt mist	90
7.18 Flammability	91
7.19 Solderability	92
7.20 Resistance to solvents	94
7.21 Internal visual inspection	95
7.22 External visual inspection	96
7.23 Radiographic inspection	97
7.24 Acceptance to dispatch	98

1. SCOPE

This checklist is intended for the use of a hybrid microcircuit manufacturer's internal assessment team. It will provide the hybrid manufacturer and the ONS with ongoing information on process control demonstrating compliance with EN 165000-1. It is not intended to include Quality System requirements.

2. DOCUMENT INFORMATION

2.1 Introduction

The checklist and subsequent report is for submission to the ONS in support of an application for approval to EN 165000-1 or as demonstration of continuing compliance at intervals not exceeding 1 year. Each section shall be completed or marked not applicable; sections which invoke mandatory process or inspection requirements are shown in ***bold italics***.

It should be noted that it is not the requirement or the intention that each section has to be answered with an affirmative, excepting mandatory requirements. The objective of the report is for the manufacturer to demonstrate that all manufacturing processes are under control by whatever means this is achieved.

Where supporting evidence is included, for example Engineering reports, SPC data etc, it should be appended to the report.

The manufacturer may use his own style of typeface to reproduce this document and produce his report.

The ONS may subsequently validate any part of the submission as a process assessment.

2.2 Related documents.

EN 165000-1	Generic Specification for film and hybrid integrated circuits, capability approval procedure
EN 100114-1	Quality assessment procedures: Approval of manufacturers and other organisations.
CECC 00114/111	Quality assessment procedures. Capability approval of an electronic component manufacturing activity.
EN 100012	Basic specification: Radiographic inspection of electronic components.
EN 100015	Basic specification: Protection of electrostatic sensitive devices.
CECC 00016	Basic specification: Basic requirements for the use of statistical process control (SPC) in the CECC system.