

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

CECC

Système Harmonisé d'Assurance de la Qualité
des Composants Electroniques

SPECIFICATION PARTICULIERE CADRE:

**CIRCUITS INTEGRES
HYBRIDES
ET A COUCHES**

Harmonized System of Quality Assessment for
Electronic Components

BLANK DETAIL SPECIFICATION:

**FILM AND HYBRID
INTEGRATED CIRCUITS**

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

**VORDRUCK
FÜR BAUARTSPEZIFIKATION:
INTEGRIERTE HYBRID-
UND
SCHICHTSCHALTUNGEN**



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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 specifications for FILM and HYBRID INTEGRATED CIRCUITS (F&HICs). It should be read in conjunction with the current regulations for the CECC System.

At the date of printing of this specification, 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, and copies of it can be obtained from the addresses shown on the blue flysheet.

PREFACE

This blank detail specification was prepared by CECC Working Group 21 : "HYBRID MICRO-CIRCUITS".

It is based, wherever possible, on the Publications of the International Electrotechnical Commission and in particular on IEC Publication 147 : Essential ratings and characteristics of semiconductor devices and general principles of measuring methods.

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

<u>Documents</u>	<u>Voting date</u>	<u>Report on the voting</u>
CECC(Secretariat)1182	August 1982	CECC(Secretariat)1279
CECC(Secretariat)1368	July 1983	CECC(Secretariat)1415

At present this specification covers F&HICs using thick film techniques only but amendments are under preparation to cover F&HICs manufactured using thin film techniques as well.

BLANK DETAIL SPECIFICATION

A blank detail specification is a supplementary document to the sectional specification and contains requirements for style and layout and minimum content of detail specifications.

In the preparation of detail specifications the content of 2.3 of CECC 63 100 shall be taken into account.

The numbers between square brackets on page 3 correspond to the following indications which should be given :

Identification of the detail specification and of the F&HICs

- [1] The name of the National Standards Organization under whose authority the detail specification is published and, if applicable, the organization from whom the detail specification is available.
 - [2] The CECC Symbol and the number allotted to the detail specification by the CECC General Secretariat.
 - [3] The number and issue number of the CECC generic or sectional specification as relevant; also national reference if different.
 - [4] If different from the CECC number, the national number of the detail specification, date of issue and any further information required by the national system, together with any amendment numbers.
 - [5] A brief description of the technique and the type or function of the hybrid circuit.
 - [6] Information on typical construction (where applicable).
- For [5] and [6] the text to be given in the detail specification should be suitable for an entry in CECC 00 200 (QPL) and CECC 00 300 (Library List).
- [7] An outline drawing with main dimensions which are of importance for interchangeability and/or reference to the appropriate national or international document for outlines. Alternatively, this drawing may be given in an appendix to the detail specification.
 - [8] The levels of quality assessment covered by the detail specification.
 - [9] Reference data giving information on the most important properties of the F&HIC which allow comparison between the various F&HIC types intended for the same, or for similar, applications.

SECTION ONE - GENERAL DATA

1.1 RECOMMENDED METHODS OF MOUNTING

In accordance with CECC 63 100

1.2 DIMENSIONS, CHARACTERISTICS AND CONDITIONS OF USE

TABLE 1 [9]

Where a range of products have the same basic function and are made in the same technology and envelope, this table will be used to detail the differences in characteristics.

The detail specification shall contain all information needed to describe adequately :

1.2.1 Performance and design of the circuit

- (1) Schematic circuit diagram
- (2) Resistance and capacitance values, tolerances, matching, tracking, power dissipation, temperature coefficients of resistors/temperature coefficients of capacitors where applicable
- (3) Limitations on resistance of conductors where applicable
- (4) Test circuit or method and performance limits
- (5) Added components (see 3.6.2 of CECC 63 000).

1.2.2 Limiting conditions of use

Examples : Operating temperature range
Storage temperature range
Vibration, shock, bump severities
Climatic category
Maximum voltage.

Note : Any interrelationship between the details specified in 1.2.1 and 1.2.2 shall be stated.

1.2.3 Derating

See "Rated dissipation" of 2.2.2 (2) of CECC 63 100.
(Where applicable, derating curve to be included in the detail specification).

1.3 RELATED DOCUMENTS

Generic specification : CECC 63 000 (1984)
 Sectional specification : CECC 63 100 (1984)

National Authorized Institutions will complete this section, making reference to any documents, recommendations or specifications directly referred to in their national equivalent of this document.

1.4 MARKING

The marking of the circuit and primary package shall be in accordance with the requirements of 2.5 of CECC 63 000.

Note : The details of the marking of the circuit and primary package shall be given in full in the detail specification.

1.5 ORDERING INFORMATION

Orders for F&HICs covered by this specification shall contain the following information :

- (1) Thick film hybrid integrated circuit
- (2) Number of the detail specification with style reference and assessment level, if appropriate
- (3) Function of the circuit, if appropriate
- (4) Basic functional characteristics with tolerance, if appropriate.

1.6 CERTIFIED TEST RECORDS

1.6.1 Catalogue product

Certified test records shall conform to 3.7.3 (1) of CECC 63 000.

1.6.2 Custom built product

The detail specification shall prescribe the requirements for certified test records; customers are advised to refer to 3.7.3 (2) of CECC 63 000.

1.7 ADDITIONAL INFORMATION (not for inspection purposes)

The detail specification may include information (which is not normally required to be verified by the inspection procedure) such as circuit diagrams, curves, drawings and notes for the clarification of the detail specification.

1.8 ADDITIONAL OR INCREASED SEVERITIES OR REQUIREMENTS TO THOSE SPECIFIED IN THE GENERIC AND/OR SECTIONAL SPECIFICATION

Note : Additions or increased requirements should be specified only when essential.

SECTION TWO - INSPECTION REQUIREMENTS

(See Tables 2 and 3)

2.1 PROCEDURES

- 2.1.1 For qualification approval the procedure shall be in accordance with CECC 63 100.
- 2.1.2 For quality conformance inspection the test schedule includes sampling, periodicity, severities and requirements. The formation of inspection lots is covered by 3.2.2 (1) of CECC 63 100.

TABLES 2 AND 3Notes :

1. Clause numbers of tests and performance requirements refer to CECC 63 000.
2. ILs and AQLs given in Table 3A of CECC 63 100 are selected from IEC 410.
3. In these tables :

p = periodicity (in months)
n = sample size
c = acceptance criterion (permitted number of defectives)
D = destructive
ND = non-destructive
IL = inspection level
AQL = acceptable quality level } IEC 410

TABLE 2

(See notes on page 9)

CLAUSE NUMBERS, TESTS AND TEST SEQUENCES	D or ND	CONDITIONS OF TEST	SAMPLE SIZE AND CRITERION OF ACCEP- TABILITY		PERFORMANCE REQUIREMENTS
SCREENING 100 % (1) 4.3.1 (a) Precap visual inspection 4.5.14 (b) Endurance 168 h as burn in	ND		Required/ Not required		
GROUP A INSPECTION To be conducted on a sampling basis, lot-by-lot Sub-Group A1 4.3.2 External visual exami- nation and marking	ND		IL	AQL	
Sub-Group A2 4.4.11 Major static/dynamic electrical characte- ristics at room temperature (2)	ND				
Sub-Group A3 4.4.11 Major static/dynamic electrical characte- ristics at extreme operating temperatures	ND				
GROUP B INSPECTION To be conducted on a sampling basis, lot-by-lot Sub-Group B1 4.5.10 Solderability (3) (4)	D				
Sub-Group B2 4.3.3 Dimensions	ND				

Continued

TABLE 3

(See notes on page 9)

CLAUSE NUMBERS, TESTS AND TEST SEQUENCES	D OR ND	CONDITIONS OF TEST	SAMPLE SIZE AND CRITERION OF ACCEPT- TABILITY			PERFORMANCE REQUIREMENTS
<u>GROUP C INSPECTION</u> To be conducted on a sampling basis at prescribed periodicity			<u>p</u>	<u>n</u>	<u>c</u>	
<u>Sub-Group C1</u> 4.4.11 Major static/dynamic electrical character- istics at extreme operating temperatures	ND					
<u>Sub-Group C2</u> Sequence (5) (6) Initial measurements 4.5.6 Vibration, swept frequency and 4.5.7 Acceleration, steady state or (7) 4.5.5 Shock and 4.5.7 Acceleration, steady state Final measurements	D/ ND	4.4.11 Sub-Group 05 4.5.9 Sealing 4.4.11 Sub-Group 05				
<u>Sub-Group C3</u> Sequence Initial measurements 4.5.11 Resistance to soldering heat 4.5.15 Resistance to solvents 4.5.8 Change of temperature 4.5.3 Damp heat, steady state (8) Final measurements	D	4.4.11 Sub-Group 05 4.5.9 Sealing (5) 4.4.11 Sub-Group 05 4.3.2 External visual exa- mination and marking				
<u>Sub-Group C4</u> Sequence Initial measurements 4.5.2 Cold 4.5.1 Storage at high tempe- rature Final measurements	ND	4.4.11 Sub-Group 05 Temperature : .. °C Temperature : .. °C 4.4.11 Sub-Group 05				

Continued