

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

**RESEAUX RESISTIFS
A COUCHES**

(AGREMENT DE SAVOIR-FAIRE)

Harmonized System of Quality Assessment for
Electronic Components

BLANC DETAIL SPECIFICATION

**FILM RESISTOR
NETWORKS**

(CAPABILITY APPROVAL)

Harmonisiertes Gütebestätigungssystem für
Bauelemente der Elektronik

VORDRUCK FÜR
BAUARTSPEZIFIKATION

**NETZWERKE AUS
FESTWIDERSTÄNDEN
IN SCHICHTTECHNIK**
(ANERKENNUNG DER BEFÄHIGUNG)



1

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CECC 64 201

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Information about the System may be obtained from:



FEN Secretariat
and
CECC General Secretariat
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D-6000 Frankfurt/Main 70
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Telefax Int.+ (49) 69 6 30 82 83 (Gr. 2/3)
or from the National Authorized Institutions
of the participating countries listed
who can supply copies of:

- 1 The Internal Regulations of the FEN e.V.
- 2 CECC Specifications of the FEN and National Specifications for the System
- 3 CECC 00 200: Qualified Products List (QPL)
- 4 CECC 00 300: CECC Publications and their related national documents

Austria

Österreichischer Verband
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Eschenbachgasse 9
A-1010 Vienna

Belgium

Comité Electrotechnique Belge
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B-1000 Brussels

Denmark

Dansk Elektroteknisk Komite
Strandgade 36
DK-1401 Copenhagen K

Finland

Finnish Electrotechnical
Standards Association
P.O. Box 134
SF-00211 Helsinki 21

France

Union Technique de l'Electricité
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12, Place des Etats-Unis
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Germany

Deutsche Elektrotechnische
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Stresemannallee 15
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Ireland

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Technology Agency
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Viale Monza, 259
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Postfach
CH- 8008 Zürich

United Kingdom

British Electrotechnical Committee
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GB-London W1A 2BS

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. 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 fly sheet.

PREFACE

This specification was prepared by CECC WG 21 : "HYBRID MICRO-CIRCUITS".

It is based, wherever possible, on the Publications of the International Electrotechnical Commission.

The text of this specification was circulated to the CECC for voting in the document indicated below and was ratified by the President of the CECC for printing as a CECC Specification.

<u>Document</u>	<u>Date of voting</u>	<u>Report on the voting</u>
CECC(Secretariat)1923	May 1986	CECC(Secretariat)2104

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.

For customer circuits which will not be published, the layout requirements of the blank detail specification are optional. For the minimum contents of the inspection requirements, see clause 3.3.3 of CECC 64 200 and Section 2 of this specification.

The blank detail specification shall be used for the writing of detail specifications by :

- a customer who requires resistor networks which fall within the scope of a manufacturers capability approval
- a manufacturer who requires to specify resistor networks which fall within the scope of his capability approval.

The completed detail specification will give the technical data and inspection requirements of Resistor Networks for release under the authority of the CECC capability approval procedure.

In the preparation of detail specifications the content of 2.3 of the sectional specification shall be taken into account.

The numbers between square brackets on the first page correspond to the following information which shall be inserted in the position indicated :

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.

Identification of customer produced detail specifications (normally not published)

Instead of [1], [2], [3] and [4] above the completed detail specification shall be given an identity number and shall then be considered a contractual part of the order.

The identity number of customer produced detail specifications shall be allocated by agreement between the customer and the manufacturer.

Copies of all detail specifications shall be retained by the manufacturer's Chief Inspector.

Identification of the resistor network

- [5] If possible, a short description of the technique and of the type or function of the film resistor network.
- [6] Electrical circuit drawing showing all resistors and connections contained in the network. Terminal pin number shall be shown. Individual resistors shall be marked as R₁, R₂, R₃, etc.
- [7] Information on typical construction (when applicable)

Note : When the resistor network is not designed for use on printed board applications, this shall be clearly stated in the detail specification in this position.

- [8] Outline drawing with main dimensions which are of importance for interchangeability and/or reference to the national or international documents for outlines. Alternatively, this drawing may be given in an annex to the detail specification.
- [9] Application or group of applications covered and/or assessment level, except for customer produced detail specifications.

Note : The assessment level(s) to be used in a detail specification shall be selected from 3.3.1 of CECC 64 200. This implies that one blank detail specification may be used in combination with several assessment levels, provided the grouping of the tests does not change.

- [10] Reference data on the most important properties to allow comparison between the various resistor network types.

Specification available from :	[1]	CECC 64 201-XXX	[2]
		Page 1 of ...	
ELECTRONIC COMPONENTS OF ASSESSED QUALITY IN ACCORDANCE WITH :	[3]		[4]
Outline and dimensions - (see Table 1) (first angle projection) :	[8]	FIXED THICK FILM RESISTOR NETWORK	[5]
		ENCAPSULATED/EMBEDDED	[7]
(Other shapes are permitted within the dimensions given) (1) All dimensions in mm		ASSESSMENT LEVEL(S) : E	[9]

NOTE 1 : The non-dimensioned details do not affect the performance of the devices.

[6] [10]

Information about manufacturers who have components qualified to this detail specification is available in the current CECC 00 200 : Qualified Products List.

SECTION 1

GENERAL DATA

1.1 RECOMMENDED METHOD(S) OF MOUNTING (to be inserted)

In accordance with 2.3.2 of CECC 64 200.

1.2 DIMENSIONS, RATINGS AND CHARACTERISTICS

TABLE 1

Style	Rated network dissipation at 70 °C (W)	Isolation voltage between elements (if applicable) (V)	Dimensions

1.2.1 Ratings and characteristics of the resistor elements

TABLE 2

Resistor elements	Rated resistance (Ω)	Resistance tolerance (%)	Rated element dissipation at 70 °C (W)	Limiting element voltage V d.c. or a.c. r.m.s. (V)	Temperature coefficient ($10^{-6}/^{\circ}\text{C}$)	Stability class (%)	Stability long term test (% + Ω)	Stability short term test (% + Ω)
R ₁								
R ₂								
R ₃								
R ₄								
↓								

Note : Other presentations of the above information may be necessary, but the above presentation should be followed as much as possible.

1.2.2 Ratings and characteristics of the network

Climatic category	-/-/-
Low air pressure	8,5 kPa (85 mbar)
Functional characteristics (if applicable)	
Differential temperature resistance characteristic between Rx and Ry (if applicable)	... %
Tolerance on rated ratio between Rx and Ry (if applicable)	... %
Differential resistance change between Rx and Ry (if applicable)	... %
Test method for differential drift	
In the case of a "Capability Qualifying Circuit" : Range of electrical ratings and characteristics covered (see 3.1 of CECC 64 200)	

1.2.3 Derating

Resistors covered by this specification are derated according to the following curve :

(A suitable curve to be included in the detail specification)

Note : See also 2.2.5 of CECC 64 200.

1.3 RELATED DOCUMENTS

Generic Specification : CECC 64 000 (1988)

Sectional Specification : CECC 64 200 (1988)

1.4 MARKING

The marking of the components and package shall be in accordance with the requirements of 2.5 of CECC 64 000.

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

1.5 ORDERING INFORMATION

Orders for networks covered by this specification shall contain, in clear or in coded form, the following minimum information :

- 1) Circuit type for example : thick film resistor network
- 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 tolerances, if appropriate.

1.6 CERTIFIED TEST RECORDS

When certified test records are required, they shall include the results of the testing of the CQCs in accordance with 3.7 of CECC 64 000.

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 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 2

INSPECTION REQUIERMENTS

2.1 PROCEDURES

- 2.1.1 For Capability Approval the procedure shall be in accordance with 3.3 of CECC 64 200.
- 2.1.2 For maintenance of Capability Approval and Quality Conformance Inspection the test schedule Table 3 includes sampling, periodicity, severities and requirements.

TABLE 3

- Notes :
1. Sub-clause numbers of test refer to CECC 64 000 for fixed film resistor networks except for functional characteristics, resistance ratio, differential resistance/ temperature characteristic which refer to CECC 64 200. Since performance requirements depend very much on the configuration of the network, they will be given by the detail specification. When appropriate these performance requirements shall be selected from Tables 1a, 1b and 2 of CECC 64 200
 2. Inspection Levels and AQLs are selected from IEC 410 : Sampling Plans and Procedures for Inspection by Attributes.
 3. In this table : 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
 4. Normally Groups A and B are carried out on customer circuits, groups C and D on CQCs. Any additional test required by the customer shall be specified at this point.