IEC 60738-1-2

Edition 2.0 2008-02

INTERNATIONAL STANDARD

QC 440002

Thermistors – Directly heated positive step-function temperature coefficient – Part 1-2: Blank detail specification – Heating element application – Assessment level EZ

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE M

ICS 31.040.30

ISBN 2-8318-9574-X

INTERNATIONAL ELECTROTECHNICAL COMMISSION

THERMISTORS – DIRECTLY HEATED POSITIVE STEP-FUNCTION TEMPERATURE COEFFICIENT –

Part 1-2: Blank detail specification – Heating element application – Assessment level EZ

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 60738-1-2 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

This second edition cancels and replaces the first edition issued in 1998. It constitutes a technical revision.

This edition contains changes with respect to the referenced subclauses of the revised generic specification IEC 60738-1.

This publication is to be read in conjunction with IEC 60738-1.

The text of this standard is based on the following documents:

FDIS	Report on voting
40/1875/FDIS	40/1892/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

The QC number that appears on the front cover of this publication is the specification number in the IEC Quality Assessment System for Electronic Components (IECQ).

The list of all parts of the IEC 60738 series, under the (new) general title *Thermistors – Directly heated positive step-function temperature coefficient*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

Blank detail specification

A blank detail specification is a supplementary document to the generic specification and contains requirements for style and layout and minimum content of detail specifications. Detail specifications not complying with these requirements shall not be considered as being in accordance with IEC specifications nor shall they so be described.

In the preparation of detail specifications the content of IEC 60738-1:2006, 1.4 shall be taken into account.

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

Identification of the detail specification

[1] The "International Electrotechnical Commission" or the National Standards Organization under whose authority the detail specification is drafted.

[2] The IEC or National Standards number of the detail specification, date of issue and any further information required by the national system.

[3] The number and issue number of the IEC or national generic specification.

[4] The IEC number of the blank detail specification.

Identification of the thermistor

[5] A short description of the type of thermistor.

[6] Information on typical construction (if applicable).

NOTE When the thermistor is not designed for use on printed boards, this should clearly be stated in the detail specification in this position.

[7] 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.

[8] Application or group of applications covered and/or assessment level.

[9] Reference data on the most important properties, to allow comparison between the various thermistor types.

[1]	IEC 60738-1-2-XXX [2] QC 440002
ELECTRONIC COMPONENTS OF ASSESSED QUALITY IN ACCORDANCE WITH: [3]	IEC 60738-1-2 [4] QC 440002
Outline drawing: [see 1.2] [… angle projection] [7] [Other shapes are permitted within the dimensions given]	DIRECTLY HEATED POSITIVE STEP-FUNCTION TEMPERATURE COEFFICIENT THERMISTORS FOR HEATING ELEMENT APPLICATION [5] MODIFIED FERRO-ELECTRIC CERAMIC MATERIAL [6] Assessment level: EZ [8]

Information on the availability of components qualified to this detail specification is given in the Register of Approvals. [9]

THERMISTORS – DIRECTLY HEATED POSITIVE STEP-FUNCTION TEMPERATURE COEFFICIENT –

Part 1-2: Blank detail specification – Heating element application – Assessment level EZ

1 General data

1.1 Method(s) of mounting (to be inserted)

(See IEC 60738-1:2006, 7.30).

1.2 Dimensions

(All dimensions are in millimetres or inches and millimetres; it shall be stated which dimensions are suitable for gauging).

Dimensioned drawing(s) shall be given in the detail specification. If necessary, the dimensions may be listed in tabular form with reference to styles or codes.

1.3 Coating

The detail specification shall state

a) whether the thermistor is insulated or non-insulated,
b) the material,
c) the colour, if applicable.

1.4 Terminations

The detail specification shall state whether the terminations are suitable for soldering. If they are not, suitable methods of connection shall be stated for example: welding, clamping or crimping.

1.5 Flammability

The detail specification shall state whether the thermistor is actively or passively flammable if applicable. The test method shall be given in the test schedule.

1.6 Resistance to solvents

The detail specification shall state whether the coating and the marking of the thermistor are solvent resistant if applicable. The test methods shall be given in the test schedule.

1.7 Packaging

The detail specification shall give the following information (if required):

a) whether bulk packed or taped and if taped, drawing or references;
b) the dimensions of the immediate packaging and the number of thermistors packed;
c) the dimensions of the outer package and the number of immediate packages;
d) methods of disposal of the packaging material.

1.8 Electrical data/Ratings and characteristics

The detail specification shall give units and tolerances or limiting values for the following parameters. If necessary, electrical data may be listed in tabular form, with reference to styles and codes.

Upper/Lower category temperatures (UCT/LCT);

Operating temperature range at maximum voltage;

Maximum voltage ($U_{max.}$);

Zero-power resistance (R_T);

Switching temperature (T_b);

Either inrush current (I_{in});

or minimum resistance ($R_{min.}$);

Either residual current (I_{res});

or

Resistance(R_p);

or

Final surface temperature (T_{FS})[1].

1.9 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-2-58, *Environmental testing – Part 2-58: Tests – Test Td: Test methods for solderability, resistance to dissolution of metallization and to soldering heat of surface mounting devices (SMD)*

IEC 60410:1973, *Sampling plans and procedures for inspection by attributes*

IEC 60738-1:2006, *Thermistors – Directly heated positive step-function temperature coefficient – Part 1: Generic specification*

[1] Test method shall be given in the detail specification.