# DOCUMENT CHANGE REQUEST

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| DCR number 718 | Changes required for: General | Originator: Steve Jeffery |
| Date: 2013/12/09 | Date sent: 2012/03/02 | Organisation: ESCC Executive |
| Status: IMPLEMENTED | | |

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|---|---|---|---|
| Title: | Thermistors (thermally Sensitive Resistors) Range 2000 to 100000 Ohms at +25C with a | | |
| Number: | 4006/014 | Issue: | 9 |

Other documents affected:

Page:

See below

Paragraph:

See below

Original wording:

As per ESCC 4006/014 Issue 8

Proposed wording:

This Detail Specification is totally reformatted as part of the ongoing process of converting legacy ESA/SCC Specifications to the ESCC format. See below and attached ESCC 4006/014 Draft 9C.

Note: there is known support for this specification (which currently contains six Type Variants, Variants 08 - 12, Based on Type G15K4D489, G10K4D453, G2K7D411, G4K7D421, G100K6D487, G15K4D589) from Manufacturer Measurement Specialties of Ireland [MEAS Ireland (Betatherm) Ltd].

Summary of the proposed changes to the current format, layout and content as follows:

1) Title Page: deg.C added to minimum temperature for clarification.

2) Para. 1.1, Scope, is re-written with the standard wording for the Scope Para. in converted ESCC Detail Specifications.

3) Para. 1.2, Component Type Variants
This Para. is deleted and replaced by Component Type Variants and Range of Components. The Type Variants Table is incorporated into this Para.

4) Para. 1.3, Maximum Ratings, is re-written with the standard wording for the Maximum Ratings Para. in converted ESCC Detail Specifications. The Maximum Ratings table is incorporated into this Para.

5) Para. 1.4, Parameter Derating Information
This Para. is unnecessary and is therefore deleted.

6) Para. 1.5, Physical Dimensions

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The original wording is deleted. The Physical Dimensions Figure, Table of Dimensions and Notes are incorporated into this Para.

7) Para. 1.6, Functional Diagram
The original wording is deleted. The Functional Diagram is incorporated into this Para.

8) Para. 2, Applicable Documents
IEC Publication No. 60410 is not used in the ESCC System and therefore this Para. is updated accordingly.

9) Table 1(a) - Type Variants
The table is included in Para. 1.4.2, Component Type Variants and Range of Components, with modifications to bring it into line with the ESCC format for Detail Specifications:
Column numbers are deleted.
Weight max (g) column is added.
The RZ and Resistance/Temperature Characteristics columns are combined.
Note 1 is amended to verify that RZ (Zero Power Resistance) is also considered to be the nominal resistance value.

10) Table 1(b) - Maximum Ratings
The table is included in Para. 1.5, Maximum Ratings, with modifications to bring it into line with the ESCC format for Detail Specifications:
The first column is unnecessary and is therefore deleted.
Note 2 is re-worded See Component Type Variants and Range of Components, as the minimum and maximum operating temperatures of the Variant are now defined (within the table) in that Para.
Note 3 is re-worded - the maximum operating temperature, as mentioned above, is defined in the table within the Component Type Variants and Range of Components Para.
Note 4 is re-worded to update the reference to Figure 2, the correct reference being Physical Dimensions (see 12 below).

11) Figure 1 is deleted.

12) Figure 2 - Physical Dimension (sic)
Figure 2 is deleted and its content moved to Para. 1.6, Physical Dimensions.
Note 1 is amended. Within dimension D (housing/crimp) no part of the housing or leads shall protrude below the... is now Within this dimension (housing and crimp section) no part of the housing, or leads, shall protrude below the....

13) Figure 3 - Functional Diagram
Figure 3 is deleted and its content moved to Para. 1.7, Functional Diagram.

14) Para. 4.1, General, is re-written with the standard wording for the General Requirements Para. in converted ESCC Detail Specifications.

15) Para. 4.2 and Subparagraphs, Deviations from Generic Specification
Revised in order to meet the new format for ESCC Generic Specifications.
Due to the revision to Thermal Shock in the Generic Specification the deviation to Thermal Shock is no longer a deviation;

the conditions and requirements for the Thermal Shock test are included in a new Para. titled Thermal Shock.

16) Para. 4.3.1, Dimension Check, is not required for the new ESCC format Detail Specification and is deleted accordingly.

17) Para. 4.3.2, Weight, is deleted to avoid repetition (per the new ESCC format, there is now a Weight max (g) column in the Component Type Variants and Range of Components table).

18) Para. 4.3.3, Terminal Strength
Due to the new format for the Generic Specification, the following changes are made to the wording:
The requirements for terminal strength testing are specified in Para. 9.13 of ESCC Generic Specification No. 4006. The test conditions shall be as follows:- is replaced by The test conditions for Terminal Strength, tested as specified in the Generic Specification, shall be as follows:.

19) Para. 4.4, Materials and Finishes
The text of this Paragraph is no longer necessary and is therefore deleted.

20) Subparagraph 4.4.1, Case
Re-named Body for correctness.
The housing shall be is unnecessary and is therefore deleted.

21) Subparagraph 4.4.2, Lead Material
Re-worded in order to meet the new format for ESCC Detail Specifications (see 9 above).

22) Para. 4.5 and Subparagraphs, Marking
Revised in order to meet the new format for ESCC Generic Specifications.
Subparagraph 4.5.2, The ESCC Component Number, is now a Subparagraph of Para. 1.4, The ESCC Component Number and Component Type Variants, with the wording and marked deleted accordingly.

23) Para. 4.6, Electrical Measurements, is re-named Electrical Measurements at Room, High and Low Temperatures and the clause Electrical measurements shall be performed at room, high and low temperatures. is added for clearness and consistency.

24) Para. 4.6.1, Electrical Measurements at Room Temperature
Re-named Room Temperature Electrical Measurements and first sentence (referring to Table 2) deleted in order to meet the standard wording for this Para. in converted ESCC Detail Specifications.
A table (formerly Table 2) detailing the required room temperature electrical measurements, and associated Notes, are added.

25) Para. 4.6.2, Electrical Measurements at High and Low Temperatures
Re-named High and Low Temperatures Electrical Measurements and first sentence (referring to Table 3) deleted in order to meet the standard wording for this Para. in converted ESCC Detail Specifications.
A table (formerly Table 3) detailing the required high and low temperatures electrical measurements, and associated Notes, are added.

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Due to the changes made to Table 3, the clause The temperature tolerance shall be +/-0.01 deg.C is re-written The measurements shall be performed at each applicable temperature (with a tolerance of +/-0.01 deg.C) specified in Component Type Variants and Range of Components..

26) Para. 4.6.3, Circuits for Electrical Measurements (Figure 4), is not required for the new ESCC format Detail Specification and is deleted accordingly.

27) Para. 4.7 and Subparagraphs, Burn-in Tests
Revised in order to meet the new format for ESCC Generic Specifications.
Subparagraph 4.7.1, Parameter Drift Values, includes a table of the relevant drift value limits and absolute limits.
Subparagraph 4.7.2, Conditions for Burn-in, is amended to include Table 5.
Subparagraph 4.7.3, Electrical Circuits for Burn-in (Figure 5), is not required for the new ESCC format Detail Specification and is deleted accordingly.

28) Table 2 - Electrical Measurements at Room Temperature
This table is moved to Para. 2.5.1, Room Temperature Electrical Measurements, with modifications to bring it into line with the ESCC format for Detail Specifications:
The first column is unnecessary and is therefore deleted.
The ESCC 4006 Test Method and Conditions column is re-named Test Method and Conditions and 4006 Paragraph references are replaced by ESCC No. 4006.
Note 1 is re-worded to See Component Type Variants and Range of Components for resistance values and tolerances..
The Note on sampling, Note 2, is amended to include specific sampling (IEC 60410 is not used as the reference document for sampling within the ESCC System).
Note 3 is re-worded, with reference to Production Control Tests instead of Chart II.

29) Table 3 - Electrical Measurements at High and Low Temperatures
This table is moved to Para. 2.5.2, High and Low Temperatures Electrical Measurements, with modifications to bring it into line with the ESCC format for Detail Specifications:
The first column is unnecessary and is therefore deleted.
The ESCC 4006 Test Method and Conditions column is re-named Test Method and Conditions and the Zero Power Resistance test method and conditions, Para. 9.3.1.1 At each specified temperature, over operating range is amended to ESCC No. 4006 (see also 25 above).
Note 1 is re-worded to See Component Type Variants and Range of Components for resistance values and tolerances..

30) Figure 4 is deleted.

31) Table 4 - Parameter Drift Values
This table is moved to Para. 2.6, Parameter Drift Values, with modifications to bring it into line with the ESCC format for Detail Specifications:
The first column is unnecessary and is therefore deleted.
Change is deleted from the Characteristic.
The Symbol is amended.
The Methods and Test Conditions column is not required and is deleted accordingly.

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The absolute limits and corresponding Note See Component Type Variants and Range of Components for resistance values and tolerances. are added.

32) Table 5 - Conditions for Burn-in and Operating Life Tests
This table is moved to Para. 2.8, Burn-in Conditions, with modifications to bring it into line with the ESCC format for Detail Specifications:
The first column is unnecessary and is therefore deleted.
Notes 1 and 2 are combined, for simplification, into a single Note, as the ambient temperature during the burn-in shall be the Maximum Operating Temperature specified in Component Type Variants and Range of Components (+0 -3) deg.C.

33) Figure 5 is deleted.

34) Subparagraphs 4.8.1, 4.8.2 and 4.8.3 of Para. 4.8, Environmental and Endurance Tests (Charts IV and V of ESCC Generic Specification No. 4006)
In order to meet the new format for ESCC Generic Specifications, these Subparagraphs are combined into a single Para. named Intermediate and End-Point Electrical Measurements.
A table detailing the required electrical measurements (effectively the tests defined in Table 6 which are either Electrical Measurements in their own right, or are tests which require one or more electrical measurements) and associated Note are added.

35) Subparagraph 4.8.4, Conditions for Operating Life Tests (Part of Endurance Testing)
Re-named Operating Life Conditions per other converted ESCC Detail Specifications.
As the Burn-in (Chart F3) and the Operating Life (Chart F4) conditions are identical, the existing wording is deleted and replaced by The conditions shall be as specified for Burn-in..

36) Subparagraph 4.8.5, Electrical Circuits for Operating Life Tests, is not required for the new ESCC format Detail Specification and is deleted accordingly.

37) Table 6 - Measurements and Inspections on Completion of Environmental Tests and at Intermediate Points and on Completion of Endurance Tests
This table is not required for the new ESCC format Detail Specification and is deleted accordingly.

38) Appendix A, Agreed Deviations for MEAS Ireland (Betatherm) Ltd, is revised in order to meet the new format for ESCC Generic Specifications (specifically the change of Charts II, III, IV and V to Charts F2, F3 and F4).

Justification:

(See also change details for each item above)

1) Part of the ongoing activity to convert cover-sheeted ESA/SCC Specifications to the ESCC format.

2) To make the format and presentation consistent with the various other ESCC Detail Specifications already converted to the ESCC format.

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3) To make the content consistent with the proposed ESCC Generic Specification No. 4006 Draft 2B.

4) To incorporate changes requested by the ESCC QPL-listed Manufacturer MEAS Ireland which are considered technically acceptable.

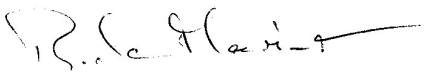
Attachments:

4006014_draft_9c.pdf, null

Modifications:

Change wording to Item 38)
Addition of a dviation to Screening Tests - Chart F3 (Appendix A) due to the fact that the Burn-in of Meas-Spec Thermistors shall be performed for 168 (+14, -0) hrs with Power Dissipation = 0W.
Justification:
Technically acceptable deviation to Burn-in for Thermistors produced and screend by Measurement Specialties (Screening Tests per Chart F3 of converted Generic 4006, ref. DCR 696)

Approval signature:



Date signed:

2013-12-09