



DOCUMENT CHANGE REQUEST

DCR number 1228

Changes required for: General

Originator: Isabelle Cotteret

Date: 2019/06/14

Date sent: 2018/12/14

Organisation: Minco

Status: IMPLEMENTED

Title: Resistors, Heater, Flexible, Single and Double Layer, Based on Type FHK

Number: 4009/003

Issue: 3

Other documents affected:

Page:

-

Paragraph:

-

Original wording:

-

Proposed wording:

-

Justification:

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Original wording:

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Proposed wording:

Several proposed changes as described in the attached documents.

Justification:

Attachments:

proposed_dcr_changes_minco.xlsx, escc4009003iss4.docx

Modifications:

I (ESCC Technical Writer) have the following comments on the contents of DCR1228 for consideration:

Note: all the following proposed modifications to DCR1228 are implemented into the attached markup 4009003 Draft 4B. Some additional minor editorial changes are also included. All changes are highlighted yellow.

1) Para 1.4.2 Note 2, table item: Number of Heater Resistive Elements and Heater Layers

I propose to delete the added phrase "magnetically compensated" and retain the current "x-Element" & "y-Layer" format of this box for each available option for consistency & clarification; see below.

Note: The 'magnetic compensation' is simply achieved by a particular heater track design that itself is not required to be specified in this Detail Spec (it is part of the particular Heater Design Drawing); no testing of the magnetic performance of such components is included in the Detail spec so it has no particular meaning in terms of this procurement spec.

I propose the following to replace the DCR for Para 1.4.2 Note 2 row 2:

- Number of Heater Resistive Elements and Heater Layers

- Available Options:

1 Element, Single Layer

2 or more Elements, Single Layer

2 Elements, Double Layer (2 elements, 1 element circulating in each layer)

1 Element, Double Layer (1 element circulating in both layers)

2 Elements, Double Layer (2 elements, each element circulating in both layers)

OK

2) Para 1.5 Note 5 design rule change: OK

OK

3) Para 1.6 Original Drawing

Note: the purpose of this drawing is to specify the limitations in any particular dimensions for the range of heaters; if a dimension does not have a limiting effect on the physical design of the heaters, it is not specified here. All other dimensions would be specified in the particular Heater Design Drawing.

Original Dimension 'H' = 0.3mm minimum (connection pads clearances) plus note 3 are deleted by the DCR. Minco to explain why these clearances are to be removed. I would expect they should be specified & hence propose to keep this unchanged.

H was not relevant. Indeed in the X direction of the graph the strands start at connection pad level. On the sides (in the Y direction) there is a distance which is as H and I mentioned in my last version governed by wire gauge.

So if you want to remove H and I the old H should be removed too. Note 3 from your version should be removed as well as. "or the connection pads » from Note 4 and Note 5 should be removed too.

M is a manufacturing limiting point for the same reason as K . So we would like to keep M & the 2nd schematics.

4) Para 1.6 Dimensions A, B minimum limit change: OK

5) Para 1.6

Dimensions A, B, C tolerance change (to be: "as specified in the Heater Design Drawing"): OK (Note 4 can be deleted)

6) Para 1.6

New dimensions 'H' 'I' 'J' (pad area) plus new note: The dimension limitations for the pad area & lead-bulge are currently unspecified as these clearly will vary depending on the particular heater design (only the pad clearance is specified).

The addition of new Dims 'H' 'I' 'J' with unspecified limits plus the new note do not add anything to the spec. As these dimensions do not have a limiting effect on any heater design, I propose no change is needed.

OK.

7) Para 1.6 Original Note 6:

The DCR deletes the requirement to have dimension F (0.76mm) clearance between the heating element and any holes. Minco to explain why this 'F' clearance is to be removed. I would expect that this clearance should be maintained.

I would propose the following to replace Note 6 (for new Dimensions 'K' & 'L'):

"Internal holes or cutouts are allowed within the Heating Area, S, provided that the distance between the edge of any hole and the heater resistive element or connection pad is equal to or greater than dimension F."

OK with removal of "or connection pad" as mentioned in 3)

The DCR also changes the content of Note 6. I propose the following modification to the DCR (text to be added in the first para of 1.6): "The shape, layout and configuration of the heater may be customised within the limitations specified herein."

OK

8) Para 1.6

New figure with Dimensions 'K' 'L' ("Holes/Cutouts in Heating Area") plus new note 10: OK (see comment 7 on Note 6 above) but no tolerance applies as these are absolute minimums.

You say my Note 10 is OK but you removed it from your new version

OK for removal of tolerances

9) Para 1.6

New figure with Dimension 'M' = 3.5mm minimum ("non-heating flex minimum width"): this new dimension 'M' is already effectively covered by the existing dimensions 'A' & 'B' which have a new minimum value of 3.8mm. I would propose that 'M' and the new figure are deleted from this DCR. Minco to advise their position on my proposal.

Note: if Minco advises that this dimension (3.5mm) is still required in the dimension table due to the difference between 3.8mm & 3.5mm, then I would suggest that a note is added for dimensions 'A' & 'B' as follows:

'A' & 'B' = 3.8mm minimum: Applicable to any area of the heater that contains the heater resistive element.

'A' & 'B' = 3.5mm minimum: Applicable to any area of the heater that does not contain any heater resistive element."

We would like to keep this distinctive point as it clearly states that we can manufacture heaters with non-heating flex connection between heating zones. It was unclear to our customers in the previous version

10) Para 2.2 Marking:

The change to the Marking is considered acceptable but I propose some modifications for proper implementation of the changes; see proposed DCR modifications as follows:

Note: this allows generally the marking to be only be included on the components individual primary package or for Minco to also put it on a label applied to the leads as per the DCR.

.....

Modifications

The details of the change shall be replaced as follows:

Para. 2.2. Amend 2nd sentence to read:

"The information to be marked on the component or its primary package shall be:"

OK

Appendix A:

Add new item as follows:

Items Affected: Para. 2.2 Marking

Description of Deviations:

When marking of the heater body is not possible, the marking may be performed on a Kapton tape label applied to the heater leads.

OK

11) Para 2.2 resistance tolerance marking:

As the resistance tolerance is not actually included within the definition of the ESCC Component Number in Para 1.4.1 (i.e. only the Manufacturer Specific Heater Identification is marked as part of the ESCC Component Number), no change to the specification is required. I propose to delete this change from the DCR.

Note: Para. 1.4.2 Note 2 allows any tolerance from +/-1% to +/-10%. The limited range of tolerance values in ESCC 21700 need not apply to this specification.

Note: The Manufacturer is permitted to mark any specific information on the components per ESCC 21700 Para 6.8 'Manufacturer's Own Marking'. Accordingly, resistance tolerance could be marked under this category with any letters defined by the Manufacturer (as should then be included in the particular Heater Design Drawing).

Approval signature:



Date signed:

2019-06-14