DOCUMENT CHANGE REQUEST

DCR number 969	Changes required for: General	Originator: Steve Jeffery
Date: 2016/02/05	Date sent: 2015/12/18	Organisation: ESCC Executive
Status: IMPLEMENTED		

Title:	Diodes, Microwave, Silicon, Hyper-Abrupt Junction Tuning Varactor, based on Types DH76XXX		
Number:	5512/023	Issue:	2

Other documents affected:

Page:

Total reformat/re-write of ESCC Detail Specification 5512/023 issue 2 as part of the ongoing conversion of legacy ESA/SCC specifications to the ESCC format, as well as reflecting changes resulting from the conversion of ESCC Generic Specification No. 5010.

The layout, format and general content of 5512/023 issue 3 is based on other converted ESCC Detail Specifications (see attached for proposed 5512/023 issue 3).

The technical content of ESCC 5512/023 6 issue 3 remains closely based on the original ESCC 5512/023 issue 2 except as detailed herein.

Paragraph:

All.

Original wording:

See ESCC 5512/023 issue 2.

Proposed wording:

Total reformat of this Detail Specification (from the range of various ESCC Detail Specifications, 5xxx/xxx, for microwave discrete semiconductors under Generic Specification No. 5010) as part of the ongoing conversion to the ESCC format.

Note: known support for active procurement against all these specifications includes the following Manufacturers:
• Cobham Microwave.

In addition, specific changes requested by Cobham Microwave are incorporated into this DCR. See 24 below for details.

See below for summary of changes, also see attached proposed 5512/023 issue 3.

Summary of changes to the current format, layout and content of each specification is as follows:

1) General
Rewording and restructure of various sections and paragraphs of the specification, plus other editorial changes including deletion of any redundant paragraphs and information, based on the layout and editorial content of other Detail

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Specifications already converted to ESCC format.

Specific amendments include:
2) Front sheet based on types range: DH76XXX amended to include new Naked Die Component Types i.e. EH76XXX.

3) Para 3: remove symbol (redundant information): CT = Total Capacitance.

4) Table 1(a) (= Component Type Variants):
'Figure' column 3 is replaced by new 'Package Type / Description'.
'Tuning Ratio CT1/CT20' column 6 is deleted (as it is not usual in ESCC to include parameters with only typical limits).
'Quality Factor' column 7 is deleted (moved to Table 2 [= Room Temperature Electrical Measurements]).
'Body-Lid and Lead Material and Finish' Column 8 is replaced by 'Lead/Terminal Material and Finish' with details for the anode & cathode terminals (from Para 4.4.2).
Weight is added to Table 1(a) for Packaged Components (from Para 4.3.2)
Note 1 is deleted (requirements are moved to be in Table 2 (= Room Temperature Electrical Measurements).

5) Table 1(b) Note 1 & Figure 1:
Note 1 IR measurement conditions for VR rating is deleted (irrelevant information).
Figure 1 is replaced by the equivalent text description (Note 1 in Maximum Ratings).

6) Table 1(b) Note 2: the text 'at a distance of not less than 1.5mm from the device body' is deleted (to be consistent with 5513/031 etc.). Maximum soldering temperature is confirmed as applying to all Packaged Components.

7) Figures 2(a) to 2(g), & 2(h), 2(i):
All figures are redrawn including terminal identification details plus Package Type / Description (to match the same/equivalent requirements as in 5513/031 etc.).
Redundant dimensions are deleted (e.g. in Figure 2(a): dimensions A1, B1, DiaH; in Figure 2(h): dimensions B1, B2; in Figure 2(i): dimensions A1, B1).

8) Paras 4.2.4 & 4.2.5:
Terminal Strength deviation is moved to Terminal Strength.
Special Testing deviation is deleted (redundant information).

9) Para 4.3.2: Weight is moved to Table 1(a) (= Component Type Variants).

10) Para 4.3.3: Variants where terminal strength test shall not be performed are specified (from Paras 4.2.4 & 4.2.5).

11) Para 4.3.4: Bond Strength requirements are moved to Cobham Appendix A as a deviation to the Generic spec 5010 (Special In-Process Controls Chart F2 only).

12) Para 4.3.5: Para is rewritten to clarify the requirements/test method.

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13) Para 4.3.6: HT Stabilisation Bake is deleted (as the latest Generic Spec 5010 already covers this requirement).

14) Para 4.4.1: reference to the metal base and lid is added plus the sentence “The lid shall be welded or preform soldered” is deleted (clarification and removal of irrelevant information).

15) Para 4.4.2: Requirements as applicable to the materials & finish requirements for the anode & cathode terminals are extracted from this Para and moved to Table 1(a) (= Component Type Variants).
Requirements applicable to only ‘body’ & ‘lid’ (i.e. those with leads) are effectively deleted (removal of irrelevant information).

16) Paras 4.5.1 & 4.5.2:
‘The ESCC qualified components symbol’ bullet is added.
‘Cathode’ Identification (Para 4.5.2) is renamed ‘Terminal identification, as specified in Physical Dimensions and Terminal Identification.’.

17) Para 4.5.3:
Testing Level (‘B’ or ‘C’) is deleted.
Total Dose Irradiation Level letter ‘F’ and the final paragraph are deleted (as radiation testing is not applicable to this spec).

18) Paras 4.7, 4.7.4, 4.7.5, 4.8 & all sub-paragraphs, 4.9, 4.10 & Figures 4, 5(a) & (b), 6 and Table 7: are deleted.

19) Table 2 No. 6 Tuning Ratio (& Notes 4, 5) are deleted (as it is not usual in ESCC to include parameters with only typical limits).

20) Table 3: New note 1 added to clarify sampling per the Generic spec 5010 applies to High and Low Temperatures Electrical Measurements.

21) Table 4:
Absolute limits from Table 2 are added (for clarification purposes).
Note 2 is deleted (not relevant to the specified range of values).

22) Table 6: The minimum limit for Total Capacitance is added to Table 6 (= Intermediate and End-Point Electrical Measurements) (to be consistent with Table 2).

23) Appendix A for Cobham:
Para 4.2.1: SEM deviation is reworded (to be consistent with wording in 5513/031 etc.).
Para 4.2.2 & 4.2.3: Deviations on the test position of Radiographic Inspection is deleted (as the latest Generic Spec 5010 already covers this requirement).
Deviations on Bond Strength in Special In-Process Controls Chart F2 is moved from the main body of the spec into the appendix.
Deviation on Radiographic Inspection is added (to be consistent with wording in 5513/031 etc.).

24) Cobham Microwave’s requested changes:

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a) Tables 1(a), 2, 4, 6; Paras. 1.5, 4.4.2, 4.3.3; Figure 2; Appendix A: Requirements & deviations for new Variants 73 to 80 (Naked Die Components) are added.

b) Radiographic Inspection: Additional deviation permitting the performance of Radiographic Inspection without serialisation and therefore at any point during Screening Tests per Chart F3.

c) Paras. 4.3.4 and 4.3.5 Bond Strength and Die Shear (and Internal Visual Inspection) during Qualification and Periodic Tests Chart F4A and F4B
A deviation is added to Appendix A for Cobham such that Internal Visual Inspection, Bond Strength and Die Shear during the De-encapsulation Subgroups in Charts F4A and F4B may be replaced by die solder integrity and wire integrity tests (specifically Thermal Impedance per MIL-STD-750 Test Method 3101 and Forward Current per MIL-STD-750 Test Method 4011).

Justification:

Part of the ongoing conversion of legacy ESA/SCC specifications to the ESCC format. Amendments are made to the format and presentation to be consistent with the various other ESCC Detail Specifications, already converted to ESCC format, as well as the current issue of ESCC Generic Specification No. 5010.

See also change details above for justification for specific items.

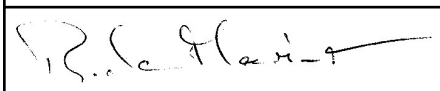
Attachments:

5512023_draft_3c.docx

Modifications:

In appendix A, replace "Current" by "Voltage", "Vf = 1.2V" by "If= 100 mA" and ""the Forward Current ... shall not exceed 100 mA" by "the Forward Voltage ... shall not exceed 1.2V"
Justification:
Voltage and Current have been inverted. Method 4011 is a Forward Voltage Test

Approval signature:



Date signed:

2016-02-05