DOCUMENT CHANGE REQUEST

DCR number 1230	Changes required for: General	Originator: Steve Thacker
Date: 2020/07/09	Date sent: 2019/01/09	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Title:	Generic Specification for Capacitors Fixed Tantalum Non-Solid Electrolyte		
Number:	3003	Issue:	2

Other documents affected:

Page:

Total reformat/re-write of ESCC Generic Specification 3003 issue 2 as part of the ongoing conversion of legacy ESA/SCC specifications to the ESCC format.

Paragraph:

All

Original wording:

See 3003 issue 2

Proposed wording:

The Generic Specification is proposed to be extensively amended to incorporate various policy, technical & editorial amendments & corrections in order to bring it in line with other legacy ESCC Generic Specifications that have already been converted to the new ESCC format.

The layout, format and general structure, and editorial content of ESCC 3003 draft 3 are based on other published, converted ESCC Generic Specifications such as ESCC 5000, 9000, 4001, 3001, etc.

The proposed technical content of ESCC 3003 draft 3 is based on the current content of ESCC 3003 issue 2 plus additional changes proposed for the purposes of general improvement.

This DCR summarises all the amendments to ESCC 3003 issue 2, plus identifies the additional technical changes not already generally detailed and justified by previous, approved DCRs related to conversion of other ESCC Generic Specifications.
For full details of the proposed contents of ESCC 3003 issue 3, see the attached draft Generic specification ESCC 3003 Draft 3 that implements all the proposed changes.

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Change Details:

A) Main General Changes (similar to those already incorporated into other converted ESCC generic specifications e.g. ESCC5000, etc, including rewording and restructure of various sections, paragraphs and Charts of the specification, plus other editorial changes based on the layout and editorial content of other Generic Specifications already converted to ESCC

format):

1) Chart I, The General Flow Chart is replaced by Chart F1; It clarifies the flow of components for Procurement.

2) Charts II & III have been replaced by Chart F2 Production Control & Chart F3, Screening Tests.

3) Chart IV & V, Qualification and Lot Acceptance Testing charts have been incorporated, with some modifications, into a single Chart F4, Qualification, Periodic Testing and Lot Validation Testing. The tests included in Chart F4 are based on a mix of qualification and LAT level 1 requirements.

Modifications include:
• Periodic testing is mandatory for ESCC qualified components with a defined testing schedule (i.e. 12 months for Endurance Subgroup and 24 months for all other testing).

• Para 8.2 & Chart IV, etc, Lot Acceptance Testing has been deleted but an Orderer option for similar Lot Validation Testing, for procurement, has been added. Lot Validation Testing is not mandatory and will only be done if specifically stipulated by the Orderer in the PO.

• Para 8.2.1, The requirement for LAT level 3 as a minimum for non-qualified component procurement is removed.

• Para 9.16, Life test is 2000 hours for Qualification Testing and when Periodic Testing is being performed due to lapse of qualification; 1000 hours for Periodic Testing performed to achieve extension of qualification (previously was 2000 hours for Qual / 1000 hours for LAT).

• No failures are allowed during Chart F4 testing.

• Sampling for the Environmental/Mechanical and Assembly Capability subgroups in Chart F4 is based on Chart IV sampling.

4) Para 1.2, etc, Introduction of Technology Flow Qualification per ESCC No. 25400 to the Generic spec.

5) Para 1.2, etc, Introduction of ESCC 23100 (ESCC Recommendations on the use of the ESCC Specification System for the Evaluation and Procurement of Unqualified Components) to the generic spec.

6) Para 1.2, etc, The Generic Specification has been made applicable and fully usable for procurement of unqualified components as well as for ESCC Qualified components.

7) Para 2.1, etc, Clarification that the term PID is specific to ESCC qualified components.

8) Para 2.2 & 4.5, Material outgassing reference document is corrected to be ESCC No. 22600 (not ESA PSS-01-702). Material restrictions per ESCC No. 22600 are specified.

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9) Para 4.1, 4.3, 4.3.2, Chart I, Chart III, etc, The SCC testing levels B and C have been deleted; there is now only a single ESCC testing level, equivalent to old SCC level C, but it is not given a specific designation. All requirements applicable to ESCC level B are deleted (e.g. Parameter Drift Value measurements, serialisation during screening, documentation requirements).

10) Para 4.3, When using the ESCC System to procure components from an unqualified source and marking the parts with the ESCC component number, the Manufacturer should possess a manufacturing and quality assurance system that is compatible with space application. As such, the user expectation should be that parts would be compatible with passing the testing requirements of Chart F4. Accordingly the requirement placed on qualified sources to not knowingly supply components that cannot meet the Chart F4 testing is extended to unqualified sources.

11) Para 4.3.1, The maximum allowed delay for Lot failure notification (provided by the Manufacturer) is now 5 working days (was 2).

12) Para 4.4, Marking requirements per ESCC No. 21700 shall apply.

13) Para 5 & Chart F2, Production Control/Special In-Process Controls, replaces Paras 5 & 6 and Chart II. Redundant/duplicated tests in Chart II are removed (i.e. Seal, External Visual Inspection). Some tests are moved to new Chart F3.

14) Para 7.4.1, etc, Check for lot failure during Screening (PDA), only includes Electrical Parameter limit failures (excluding the mechanical, handling and lost failures counting towards PDA in ESCC 3003 issue 2).

15) Para. 8.1.2, Qualification Test Lot and test vehicle requirements are clarified.

16) Para. 8.3.3, other failures categories are clarified.

17) Para. 8.4, storage period for failed components is amended.

18) Para 9.2.3, Electrical Measurements at High and Low Temperatures: A default sample of 5 components with 0 failures (otherwise 100%) is fixed for this test.

19) Para 9.4 & Chart II, Dimension Check is performed on 3 samples instead of 5.

20) Para 10.1.2, 10.1.3, The minimum required delivered documentation to the customer for procurement is a Certificate of Conformity & a Cover sheet.

B) Other Technical Changes (specific to ESCC 3003):

21) Para 2.1 & 2.2:
Reference documents that are not actually referenced in 3003 are removed, i.e. ESA PSS-01-702, IEC No. 410.

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ESCC 22600, 23100, 23500, 25400 are added.

22) Weight requirements are added (to Para 5.2.2 & Chart F2).

23) Para 7.1.1 & 7.1.2; dedicated test para is added for Burn-in; Generic IEC test method is added. Recovery period after burn-in is added (based on recovery requirements specified in Detail specs)

24) Para. 9.1,
Test method 1 added for fine leak. Leak rate units corrected.
Gross leak test liquid corrected.

25) Para. 9.2.1.1, Generic IEC test method is added. Add default test temperature details (for UR & UC)

26) Para. 9.2.1.1 & 9.16, delete references to ‘non-polarized’ capacitors.

27) Para. 9.2.1.3, Generic IEC test method is added. Copy test details from Capacitance test.

28) Para. 9.2.1.4, Generic IEC test method is added

29) Para. 9.2, add Voltage Proof as a test (based on test specified in Paras 9.11 & 9.16)

30) Para. 9.6, Vibration amplitude clarified as a peak value.

31) Para. 9.7, mounting requirements simplified.

32) Para. 9.8, Test method 1 is added as reference.

33) Para. 9.11, tests requirements replaced due to obsolete IEC test method

34) Para. 9.14, IEC clause number corrected. Test temperature & charge resistor tolerances are included.

35) Para 9.16, Generic IEC test method is added. Default test requirements are specified here: duration & tolerance; Test temperature & tolerance, Operating conditions (UR). Capacitance change is added to each intermediate test measurement.

36) Para. 9.17,
IEC clause number corrected.
‘Accelerated Damp Heat’ tests requirements replaced due to obsolete IEC test method.
Recovery details specified for each test step. Duration is set at 56 days. Initial Capacitance & Capacitance Change are now included in the measurements.

37) Chart III (= Chart F3),
Initial electrical measurements are included as an optional test (moved from Chart II)
Body Insulation Sleeving step is added

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38) Charts IV & V (= chart F4),
Some test have been moved between subgroups (i.e. Solderability, Robustness of Terminations, Permanence of Marking now form the Assembly Capability Subgroup)

39) Chart F4, etc, The Chart title is amended in line with general DCR1027.

Justification:

All changes have been defined and included to serve the purposes of technical improvement, clarification, accuracy, completeness, simplification, harmonisation and consistency. The aim is to simplify and improve the content and interpretation of the specification and its requirements whilst maintaining an efficient and acceptable technical baseline.

ESCC 3003 draft 3 is written to closely follow the layout, format and content of the latest converted ESCC Generic specifications such as ESCC 5000, 9000, 4001, 3001, etc. The justifications for the related policy and editorial changes given in all other previous DCRs related to the conversion of ESCC Generic Specifications also apply to this DCR

Attachments:

escc3003_draft_3e_(converted___for_dcr_review).docx,
3003006_draft_4c_for_information_for_review_of_generic_3003.docx

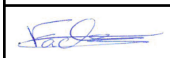
Modifications:

DCR item A3): Sampling for Chart F4
Sampling for Chart F4 is based on original Chart IV & Chart V sampling with some changes based on various review comments received including a defined minimum quantity of components per test vehicle for each test subgroup; see attached for details.

DCR item B37): An additional Room Temperature Electrical Measurement is added after the new Body Insulation Sleeving step (as requested by Exxelia).

New DCR item B40) Paras. 9.12 & 9.17: Implement the changes per approved DCR1257 (in Dry Heat & Cold tests).

Approval signature:



Date signed:

2020-07-09