DOCUMENT CHANGE REQUEST

DCR number 695	Changes required for: General	Originator: Steve Thacker
Date: 2015/04/17	Date sent: 2011/12/22	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Title:	Generic Specification for Capacitors Fixed Chips Ceramic Dielectric Types I and II		
Number:	3009	Issue:	1

Other documents affected:

Page:

Total reformat/re-write of ESCC Generic Specification 3009 issue 1 as part of the ongoing conversion of legacy ESA/SCC specifications to the ESCC format.

Paragraph:

all

Original 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 ESCC Generic Specifications that have already been converted to the new ESCC format.

The layout, format and general structure, and editorial content of ESCC 3009 issue 2 draft C are based closely on ESCC 5000 issue 6 per DCRs 149, 236, 286, 313 & 399 (all approved).
The proposed technical content of ESCC 3009 draft 2C is based on the current content of ESCC 3009 issue 1.

This DCR summarises all the amendments to ESCC 3009 issue 1, plus identifies the additional editorial & technical changes to ESCC 3009 issue 1 not already generally detailed and justified by DCRs 149/236/286/313/399.

For full details of the proposed contents of ESCC 3009 issue 2 see the attached draft Generic specification ESCC 3009 issue 2 draft C.

Note - the content of ESCC 3009 draft 2C per this DCR is very similar to the content of ESCC 3001 draft 2C.

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Change Details:

A) Main General Changes (similar to those already incorporated into ESCC5000 issue 6):

1) 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, Radiographic Inspection and serialisation during screening, documentation requirements)

2) Qualification and Lot Acceptance Testing charts have been incorporated, with some modifications, into a single Chart F4,

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Qualification and Periodic Tests. Modifications include:
- Periodic testing is mandatory for ESCC qualified components with a defined testing schedule.
- 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. The requirement for LAT level 3 as a minimum for non-qualified component procurement is removed.
- Operating Life is always 2000hours (previously was 2000hours for Qual / 1000hours for LAT2)
- No failures are allowed during Chart F4 testing.

3) Introduction of Technology Flow Qualification per ESCC No. 25400 to the Generic spec.

4) 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.

5) The Generic Specification has been made applicable and fully usable for procurement of unqualified components as well as for ESCC Qualified components.

6) Clarification that the term PID is specific to ESCC qualified components.

7) The minimum required delivered documentation to the customer for procurement is a Certificate of Conformity & a Cover sheet.

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

9) Check for lot failure during Screening (PDA), only includes Electrical Parameter limit failures (excluding the mechanical, handling, lost and visual failures counting towards PDA in ESCC 3009 issue 1)

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

11) Para 5 & Chart F2, Production Control/Special In-Process Controls, replaces Paras 5 & 6 and Chart II.

12) Chart III Burn-in and Electrical Measurements, has been replaced by Chart F3, Screening Tests.

13) 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.

14) Material outgassing reference document is corrected to be ECSS-Q-ST-70-02.

15) Para 9.3 & Chart II, Dimension Check is performed on 3 samples instead of 5.

16) Para 9.4.3, Electrical Measurements at High and Low Temperatures (Para 8.3.3 in ESCC 3009 draft 2C): A default

sample of 5 components with 0 failures (otherwise 100%) is fixed for this test.

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B) Other Editorial and/or Technical Changes (specific to ESCC3009):

17) Para 2.2, (Para 2.2 in ESCC 3009 draft 2C)
Reference documents that are not actually referenced in 3009 are removed, i.e. IEC No.410.
Obsolete IEC and ECSS references are corrected.

18) Para 5.2.2, Steady State Humidity Test (Para 8.2 in ESCC 3001 draft 2C): It is clarified that Capacitance, Tangent of Loss Angle & Insulation Resistance are all measured at 1.5V during the final measurements.

19) Para 8.1.2, Distribution of the Qualification Test Lot (Para 7.1.2 in ESCC 3009 draft 2C)
The sample distribution of the Qualification Test Lot is amended. The target distribution is detailed without prescribing the actual quantity of 'test vehicles' for each subgroup in Chart F4.

20) Para 9.2 & Chart II, Preconditioning (ref. Para 8.3.1.1 in ESCC 3009 draft 2C)
Preconditioning as an individual test is removed and replaced to be part of the test method for measurement of Capacitance, that is optional at the Manufacturer's discretion (for type II capacitors only). The exposure temperature is fixed at 150C. A reference age of 1000hours for capacitance measurement meeting the specified tolerance is added to take into account capacitance ageing.

21) Chart II: The optional Electrical Measurements at High and Low Temperatures is deleted.

22) Para 9.1 Visual Inspection (Para 8.5 in ESCC 3009 draft 2C)
Reference to both ESCC 20400 & 20500 are made as are applicable to chip capacitors.

23) Para 9.4.1.1, 9.4.1.2, 9.4.1.3, 9.4.1.4 Electrical Measurements (Para 8.3 in ESCC 3009 draft 2C)
Test methods for Capacitance, Tangent of Loss Angle, Insulation Resistance and Voltage Proof are made by reference to IEC 60384-1 methods (all are equivalent to the currently specified ESCC methods).

24) Para 9.4.4 (Para 8.3.2 in ESCC 3009 draft 2C), reference to the option to omit Voltage Proof during Chart II testing is deleted.

25) Para 9.5 Adhesion (Para 8.7 in ESCC 3009 draft 2C),
Test method for adhesion (renamed as Robustness of Terminations) is made by reference to IEC 60384-1 methods (equivalent to the currently specified ESCC method)

26) Para 9.7.1 Rapid Change in Temperature (per Chart II only), Para is deleted.

27) Para 9.8 Climatic Test Sequence (Para 8.8 in ESCC 3009 draft 2C)
The post test recovery period for each test is added as per the applicable IEC method.

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28) Para 9.9 Damp Heat Steady State (Para 8.10 in ESCC 3009 draft 2C)
The obsolete IEC method is replaced by the equivalent IEC60068-2-78 details.

29) Para 9.11 & 9.12 Temperature Coefficient & Temperature Characteristic (Para 8.12, 8.3.1.5 & 8.3.1.6 in ESCC 3009 draft 2C)
Redundant test steps are deleted [9.11(a), 9.12(a) & 9.12(h)]
Unnecessary equation is deleted.

30) Para 9.13 Burn-in (Para 8.4 in ESCC 3009 draft 2C)
General test conditions are added (duration, temperature, applied voltage)(similar to Operating life except for duration).

31) Para 9.15.2 Mounting (Para 8.6 in ESCC 3009 draft 2C)
Visual inspection after mounting details, are amended.

32) Para 10.5 Chart F2 Data (Para 9.5 in ESCC 3009 draft 2C)
Specific references to data for microsection is deleted.

Proposed wording:

see above and attached draft specification 3009 Draft 2C

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 3009 issue 2 draft C is written to closely follow the layout, format and content of the latest ESCC 5000 issue 6. The justifications for the related policy and editorial changes given in all other previous DCRs related to ESCC 5000 issue 6 (i.e. DCRs 149, 236, 286, 313, 399) also apply to this DCR.

Item 20): Preconditioning details have been clarified to reflect the details as applied by ESCC qualified Manufacturers (AVX-NI, AVX/TPC, Eurofarad).

Attachments:
rationale_for_changes_to_dcr695_to_escc_3009.pdf, 3009_draft_2c_for_review.pdf, 3009_issue_2_draft_j_for_pswg.pdf
Modifications:
as per draft J (see attached rationale regarding changes from the WG) accepted DCR 706 will be implemented at the same issue
Approval signature:

Date signed:
2015-04-17