APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: Diodes Power Rectifier and Schottky Barrier

Executive Member: CNES Date: 29/11/2016

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Appl. No. 274F

1 Components (including series and families) submitted for Extension of Qualification Approval:

ESCC COMPONENT NO.	VARIANTS	RANGE OF COMPONENTS	BASED ON	TEST VEHICLE / S	COMPONENT SIMILAR
5103/029	05, 07, 08	TO-254, SMD0.5	BYW81-200		
5103/031	02, 05	TO254, TO254AA	BYV54-200	ID33422004ZZ & ID33443001ZX	

2 Component Manufacturer
STMicroelectronics

3 Location of Manufacturing Plant(s)
3, rue de Suisse BP4199, 35041 Rennes Cedex

4 Date of original qualification approval:
Date: 01/08/2003

Certificate Ref No. 274

5 ESCC Specifications used for Maintenance of qualification testing:
Generic: 5000 Issue: 3
Detail(s): 5103/029 Issue: 9
5103/031 7

6 Deviations to LVT testing and Detail Specification used:
No ☒ Yes ☐ (supply details in Box 15)
Deviation from current Specifications:
No ☒ Yes ☐ (Supply details)

7 Qualification Extension Report reference and date:
Datapack BYV54S200 Lot ID33422004ZZ_Chart F4 22/06/2015
Datapack STPS1045 Lot ID33125209ZN_Chart F4 2/03/2016
Datapack STPS20100 Lot ID33125118ZR_Chart F4 9/01/2015
Datapack BYV54S200 Lot ID33443001ZX_Chart F4 01/12/2015

8 Summary of procurement or equivalent test results during current validity period in support of this application (those to ESCC listed first)

Project Name	Testing Level	LAT	Date code	Quantity Delivered
TAS ETCA			1532A	
ALTER/SPAIN			1514A, 1515A, 1515B,	
TESAT/SPACECOM			1526A, 1528A	
ASTRIUM SAS			1530A	

9 **PID** changes since start of qualification
None ☐
Minor* ☒
Major* ☐ *Provide details in box:

10 Current **PID** Verified by: CNES
Name of Excutive Representative
Ref No: 8097046 (generic) Rev 16 and 8122351 (specific Power Rectifier and Schottky Diodes) rev 12
Issue: Date: 06/10/2016
Rev Date:

11 Current Manufacturing facilities surveyed by: ESA & CNES on 31/08/2016
(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: ESCC-STMF-AUD-2016/DCT_AQ_CQ_2016_13092

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Failure Analysis, DPA, NCCS available: Yes ☐ No ☒ (Supply data)

Ref. No's and purposes:

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The undersigned hereby certifies on behalf of the ESCC Executive - that the above information is correct; - that the appropriate documentation has been evaluated; - that full compliance to all ESCC requirements is evidence (except as stated in box 15;) - that the reports and data are available at the ESCC Executive and therefore applies on behalf of CNES as the responsible Executive Member for ESCC qualification status to be extended to the component(s) listed herein.

Date: 30/11/2016

JP. BUSSENOT

(Signature of the Executive Coordinator)

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Continuation of Boxes above:

SG2 (Die test) cover by:

Lot ID33422004ZZ on BYV54S200HYG DC1434A
Lot ID33443001ZX on BYV54S200HYG DC1514A

SG1 & SG3 (Package tests) cover by:

Lot ID33422004ZZ on BYV54S200HYG in TO254AA, DC1434A and Lot ID33443001ZX on BYV54S200HYG in TO254AA, DC1514A
Lot ID33125118ZR on STPS20100SGE in SMD0.5, DC1432B and Lot ID33125209ZN on STPS1045SG in SMD0.5, DC1529A

Non compliance to ESCC requirements: 15

No.:	Specification	Paragraph	Non compliance

Additional tasks required to achieve full compliance for ESCC qualification or rationale for acceptability of noncompliance: 16

- Environmental/mechanical subgroup and assembly/capability subgroup :
  SMD0.5 package covers by tests on STPS20100 in SMD0.5 and STPS1045 in SMD0.5.
  TO254 package covers by tests on BYV54S200 in TO254AA
- Endurance subgroup :
  BYW81-200 covers by tests on BYV54-200.

Executive Manager Disposition 17

Application Approval: Yes ☐ No ☐

Action / Remarks:

Date:

Signature, ESA Representative

ANNEX 1: LIST OF TESTS DONE TO SUPPORT EXTENSION OF QUALIFICATION

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Tests conducted in compliance with:

- ESCC 5000 generic specification; Chart F4 (for ESCC/QPL parts);
- or PID-TFD (for ESCC/QML parts)

Tests vehicle identification/description:

BYV54S200HYG Lot ID33422004ZZ DC1434A BYV54S200HYG Lot ID33443001ZX DC1514A	Chart F4 sg1 sg2 sg3
STPS20100 Lot ID33125118ZR DC1432B STPS1045 Lot ID33125209ZN DC1529A	Chart F4 sg1, sg3 Chart F4 sg1, sg3

Detail Specification reference:

Chart F4	Test	Tick when done	Conditions	Date Code Diffusion Lot	Tested Qty	N° of Rejects	Comments if not performed. Comments on Rejection
Environmental/Mechanical Subgroup	Mechanical shock	☒	MIL-STD-750 TM2016	1432B 1529A 1434A 1514A	15 +15 + 15 + 15	0	
	Vibration	☒	MIL-STD-750 TM2056	1432B 1529A 1434A 1514A	15 +15 + 15 + 15	0	
	Constant acceleration	☒	MIL-STD-750 TM2006	1432B 1529A 1434A 1514A	15 +15 + 15 + 15	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	1432B 1529A 1434A 1514A	15 +15 + 15 + 15	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	1432B 1529A 1434A 1514A	15 +15 + 15 + 15	0	
	External Visual	☒	ESCC Basic Spec 20500	1432B 1529A 1434A 1514A	15 +15 + 15 + 15	0	
	Thermal shock	☐	MIL-STD-750 TM1056	Click here to enter text.			Only applicable to axial lead glass diodes
	Temperature Cycling	☒	MIL-STD-750 TM1051	1432B 1529A 1434A 1514A	15 +15 + 15 + 15	0	
	Moisture Resistance	☒	MIL-STD-750 TM1021	1432B 1529A 1434A 1514A	15 + 15 + 15 + 15	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	1432B 1529A 1434A 1514A	15 + 15 + 15 + 15	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	1432B 1529A 1434A 1514A	15 + 15 + 15 + 15	0	
	External Visual	☒	ESCC Basic Spec 20500	1432B 1529A 1434A 1514A	15 + 15 + 15 + 15	0	
Endurance Subgroup	Operating Life	☒	ESCC 5000 Para. 8.19	1434A 1514A	15 + 15	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	1434A 1514A	15 + 15	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	1434A 1514A	15 + 15	0	
	External Visual Inspection	☒	ESCC Basic Spec 20500	1434A 1514A	15 + 15	0	

Assembly Capability Subgroup	Permanence of Marking	☐	ESCC Basic Spec 24800				Not applicable on Laser marking
	Terminal Strength	☒	ESCC 5000 Para. 8.18	1247A 1347A 1344A 1244B	5 + 5 + 5 + 5	0	
	Internal Visual	☒	ESCC Basic Spec 20400	1247A 1347A 1344A 1244B	5 + 5 + 5 + 5	0	
	Bond Strength	☒	MIL-STD-750 TM 2037	1247A 1347A 1344A 1244B	3 + 3 + 3	0	
	Die Shear	☒	MIL-STD-750 TM 2017	1247A 1347A 1344A 1244B	3 + 3 + 3 + 3	0	

Chart F4	Test	Tick when done	Conditions	Date Code Diffusion Lot	Tested Qty	N° of Rejects	Comments if not performed. Comments on Rejection
Additional Tests		☐					
		☐					
		☐					

NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC QUALIFICATION EXTENSION APPROVAL

ENTRIES

Form heading	shall indicate: - the title of the component as given in its detail specification or the name of the series, family; - the Executive Member; - the entering date; - the certificate number and its sequential suffix.
Box 1	shall provide details given in the table; in particular there shall be listed: - the variants or range of variants; - the range of components (the ESCC code is recommended to indicate the values or values range, the tolerance, the voltage, etc); the designation given in the detail specification as 'base on'; - under Test Vehicle enter either an ESCC code or the specific characteristic capable of identifying the component tested (e.g., voltage of coil for a relay); - under component similar enter a cross if relevant.
Box 2; 3 and 4	As per QPL entry; otherwise, an explanation of the changes must be supplied.
Box 5	Will show the ESCC Generic and Detail specifications, including issue number and revision letter, current at the time the tests reported were performed. If the specifications are different from those current on the date of the application, see Box 6.
Box 6	Will show the deviations from the Generic and Detail Specifications listed in Box 5, in particular deviations from testing. In case of deviations this must be listed in Box 15. In case the referenced specification in Box 5 have currently a different issue and/or revision indicate also whether the test data deviates or not from such current documents.
Box 7	Must reference the report(s) supplied in support of the application.
Box 8	Should provide the details of procurement to the full ESCC System, documentation of all of which should already have been delivered to the ESCC Executive under the terms of the relevant Generic Specification. An appropriate table has been drawn in this box.
Box 9	If the PID evolved after the Original Qualification or after the last Extension of Qualification, adequate details of such evolution shall be provided together with the reasons for the changes. Major changes shall be clearly marked.
Box 10	Identify the current PID issue status, date and actual date of verification. The date of verification of the current PID should be arranged as close as possible to the required date of extension.
Box 11	This box can be completed only after a physical visit to the plant to confirm that no unexplained changes occurred and that the practices, procedures, material, etc. used in manufacturing the components are as described in the PID. This survey shall be carried out in accordance with the requirements of ESCC Basic Specification No. 20200 and its findings shall be recorded.
Box 12	Provide details of, or reference to, any Destructive Physical Analysis (DPA) and Failure Analysis reports as well as any Nonconformance(s) (NCCS) occurred during the qualification validity period, stating if established corrective action have produced satisfactory results.
Box 13	Enter only the name of the Executive Member (i.e., CNES, DLR, ESTEC, etc.) and the signature of the responsible Executive Coordinator.
Box 14	To be used when there is a need to expand any of the boxes from 1 through 12. Identify box affected and reference the Box 14 in the relevant Box. Box 14 can be broken into 14a, 14b, etc. if several boxes have to be expanded.
Box 15	Fill in Table as requested.
Box 16	Any additional action deemed necessary by the Executive Member to bring the submitted data to a standard likely to be accepted by the ESCC Executive should be listed herein or the reason(s) to accept the noncompliance.
Box 17	All Executive Manager recommendations on the application itself, special conditions or restrictions, modifications of the QPL or QML entry, letters to the manufacturer, etc. shall be entered clearly in Box 19, signed by the representative for ESA, and dated.
Box 18	Fill in Table as requested.
Box 19	Confidential Details of PID changes including those of a confidential nature, shall be provided.
Box 20	State noncompliance with reference to specification(s) and paragraph(s). To simplify reference in Box 16 each nonconformance shall be sequentially numbered. If relevant state 'None'.
Box 21	Any additional action deemed necessary by the Executive Member to bring the submitted data to a standard likely to be accepted by the ESCC Executive should be listed herein or the reason(s) to accept the noncompliance.
Box 22	Additional Comments.