ESCC

APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: Schottky Barrier Power Diodes based on type STPS

Executive Member: CNES Date: 16/10/2018

Appl. No. 272H

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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
5106/016	05, 06, 07, 11	TO-254, SMD0.5, SMD1	STPS20100	33420006ZM TO254	
5106/017	01, 02	SMD0.5	STPS1045	33510003ZE SMD.5	
5106/018	02	SMD1	STPS6045	33652003ZU SMD.5	
5106/019	03, 05	TO254, SMD1	STPS40100	33633001ZZ SMD1	
5106/023	01, 02	SMD.5	STPS60A150 STPS80A150	33648006ZZ SMD.5	

2 Component Manufacturer

STMicroelectronics

3 Location of Manufacturing Plant(s)

3, rue de Suisse BP4199, 35041 Rennes Cedex

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Date of original qualification approval:

Date: 01/11/2002

Certificate Ref No. 272

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ESCC Specifications used for Maintenance of qualification testing:

Generic: 5000 Issue: 3

Detail(s): 5106/016 Issue: 8
5106/017 5
5106/018 5
5106/019 7
5106/023 1

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Deviations to LVT testing and Detail Specification used:

No ☒ Yes ☐ (supply details in Box 15)

Deviation from current Specifications:

No ☒ Yes ☐ (Supply details)

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Qualification Extension Report reference and date:

STPS1045 Lot ID33510003ZE_Chart F4 9/2/18
STPS60A45 Lot ID33652003ZU_Chart F4 (PINK hoven qualification) 12/7/18
STPS80150 Lot ID33633001ZZ_Chart F4 Sg1&3 12/7/18
STPS20100 Lot ID33420006ZM_Chart F4 21/2/17
Evaluation report STPS40170: RNS/SS/17-067-01 rp Iss.2 (equivalent to STPS80A150 but single die)
Qualification report STPS60A150 Lot ID33648006ZZ_Chart F4_sg2&3.

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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
See Appendix				

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PID changes since start of qualification

None ☐

Minor* ☒

Major* ☐ *Provide details in box:

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Current **PID** Verified by: CNES

Name of Excutive Representative

Ref No: 8097046 (generic) Rev 20 and 8122351 (specific Power Rectifier and Schottky Diodes) rev 13

Issue: Date: 14/10/2018

Rev Date:

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Current Manufacturing facilities surveyed by: CNES on 02/10/2018

(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: CR-Activités ST Octobre 2018

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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: 22/10/2018

JP. BUSSENOT

(Signature of the Executive Coordinator)

Continuation of Boxes above:

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Non compliance to ESCC requirements:

No.:	Specification	Paragraph	Non compliance

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

- Environmental/mechanical subgroup and assembly/capability subgroup :
  SMD1 package covered by tests on STPS80150
  SMD.5 package covered by tests on STPS1045
  TO254 package covered by tests on STPS20100

- Endurance subgroup :
  STPS40100 covered by tests on STPS6045
  STPS80A150 covered by tests on STPS60A150
  STPS40100 covered by tests on STPS20100
  STPS6045 covered by tests on STPS1045

- Process modification :
  Soft solder die attach modification covered by tests on STPS60A45

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Executive Manager Disposition

Application Approval: Yes ☑ No ☐

Action / Remarks:

Date:

Signature of ESA Head of the Product Assurance and Safety Department

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:

STPS1045 Lot ID33510003ZE_Full Chart F4 DC1731	STPS60A150 Lot ID33648006ZZ_Chart F4 sg2&3 DC1725
STPS20100 Lot ID33420006ZM_Full Chart F4 DC1627	

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	1731 1627	15 +15 + 15	0	
	Vibration	☒	MIL-STD-750 TM2056	1731 1627	15 +15 + 15	0	
	Constant acceleration	☒	MIL-STD-750 TM2006	1731 1627	15 +15 + 15	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	1731 1627	15 +15 + 15	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	1731 1627	15 +15 + 15	0	
	External Visual	☒	ESCC Basic Spec 20500	1731 1627	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	1731 1627	15 +15 + 15	0	
	Moisture Resistance	☒	MIL-STD-750 TM1021	1731 1627	15 +15 + 15	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	1731 1627	15 +15 + 15	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	1731 1627	15 +15 + 15	0	
	External Visual	☒	ESCC Basic Spec 20500	1731 1627	15 +15 + 15	0	
Endurance Subgroup	Operating Life	☒	ESCC 5000 Para. 8.19	1731 1627 1725	15 +15 + 15 + 15	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	1731 1627 1725	15 +15 + 15 + 15	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	1731 1627 1725	15 +15 + 15 + 15	0	
	External Visual Inspection	☒	ESCC Basic Spec 20500	1731 1627 1725	15 +15 + 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	1731 1627 1725	5 + 5 + 5 + 5	0	
	Internal Visual	☒	ESCC Basic Spec 20400	1731 1627 1725	5 + 5 + 5 + 5	0	
	Bond Strength	☒	MIL-STD-750 TM 2037	1731 1627 1725	3 + 3 + 3 + 3	0	
	Die Shear	☒	MIL-STD-750 TM 2017	1731 1627 1725	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.