ESCC

APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: Transistor Bipolar PNP low and high power

Executive Member: CNES   Date: 16/07/2018

Appl. No.
234M

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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
5202/001 5202/002	01, 02, 04 to 07 01, 02	TO-18, LCC3, LCC3+1 TO39	2N2907A 2N2905A	2N2907AHRG 2N2905AHRG	
5202/014	01, 02, 04 to 07	TO-18, LCC3, LCC3+1	2N5401		
5204/002	01, 02, 04 to 07	TO-39, TO-257, SMD.5	2N5153	2N5153HRT 2N5153SHRG	
5204/006 5207/005	06, 07 01,02,07,09,10,11	TO-257 TO-78, LCC6, FLAT8D	BUX78ESY 2N3810	2N3810KT 2N3810HRT SOC3810HRG	

Component Manufacturer 2

STMicroelectronics

Location of Manufacturing Plant(s) 3

3, rue de Suisse BP4199, 35041 Rennes Cedex

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Date of original qualification approval:

Date: 02/09/1996

Certificate Ref No. 234

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ESCC Specifications used for Maintenance of qualification testing:

Generic:	5000	Issue:	7
Detail(s):	5202/001	Issue:	8
	5202/002		4
	5202/014		7
	5204/002		7
	5204/006		4
	5207/005		6

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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:

RNS/AN/18-191-02/ce Rev 2 11th July 2018 (appended)

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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 to maintenance report				

PID changes since start of qualification 9

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 18 and 8124528 (specific Bipolar) rev 19

Issue: Date: 16/07/2018

Rev Date:

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Current Manufacturing facilities surveyed by: CNES on 27/03/2018

(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: CR-ST-27-03-2018

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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: 24/07/2018

JP. BUSSENOT

(Signature of the Executive Coordinator)

Continuation of Boxes above:

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ESCC	**APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL** Component title: Transistor Bipolar PNP low and high power Executive Member: CNES Date: 16/07/2016	Page 3 Appl. No. 234M

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

Executive Manager Disposition 17

Application Approval: Yes ☒ No ☐
Action / Remarks:

Date:

B. Schade, Head of Product Assurance
And Safety Department - ESA Representative

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

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:

Endurance: 2N2905AHRG (DC1718)	Full F4: 2N3810KT (DC1713), 2N2907AHRG (DC1709)
Env/Mec + Assy cap: SOC3810HRG (DC1652), 2N3810HRT (DC1629)	Env/Mec + Assy cap: 2N5153HRT (DC1709), 2N5153SHRG (DC1630)

Detail Specification reference: See box 5

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	All but 1718	15+15+15 +15+15+15=90	0	
	Vibration	☒	MIL-STD-750 TM2056	All but 1718	90	0	
	Constant acceleration	☒	MIL-STD-750 TM2006	All but 1718	90	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	All but 1718	90	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	All but 1718	90	0	
	External Visual	☒	ESCC Basic Spec 20500	All but 1718	90	0	
	Thermal shock	☐	MIL-STD-750 TM1056	Click here to enter text.	90		Only applicable to axial lead glass diodes
	Temperature Cycling	☒	MIL-STD-750 TM1051	All but 1718	90	0	
	Moisture Resistance	☒	MIL-STD-750 TM1021	All but 1718	90	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	All but 1718	90	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	All but 1718	90	0	
	External Visual	☒	ESCC Basic Spec 20500	All but 1718	90	0	
Endurance Subgroup	Operating Life	☒	ESCC 5000 Para. 8.19	1709 1713 1718	15+15+15 =45	0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	1709 1713 1718	45	0	
	Seal Fine leak Gross leak	☒	MIL-STD-750 TM1071	1709 1713 1718	45	0	
	External Visual Inspection	☒	ESCC Basic Spec 20500	1709 1713 1718	45	0	
Assembly Capability Subgroup	Permanence of Marking	☐	ESCC Basic Spec 24800				Not applicable on Laser marking
	Terminal Strength	☒	ESCC 5000 Para. 8.18	All but 1718	5+5+5+5+ 5+5=30	0	
	Internal Visual	☒	ESCC Basic Spec 20400	All but 1718	30	0	
	Bond Strength	☒	MIL-STD-750 TM 2037	All but 1718	3+3+3+3+ 3+3=18	0	
	Die Shear	☒	MIL-STD-750 TM 2017	All but 1718	18	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.