APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: TRANSISTORS, POWER MOSFET Type BUY **CS**; N-CHANNEL, BASED ON TYP BUY25CS

Executive Member: DLR Date: 08/10/2021

Appl. No. 319E

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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
5205/026 . 5205/027 5205/030	01R 02R 01R 01R 02R 03R		BUY25CS12J-01 BUY25CS04J-01 BUY25CS54A-01 BUY25CS12K-01 BUY25CS12K-11 BUY25CS45B-01	 . 2005A, 2031B 2107B . 2014A	X

2 Component Manufacturer

Infineon Technologies AG

3 Location of Manufacturing Plant(s)

Villach, Austria for Silicon
Neubiberg, Germany for packing and screening

4

Date of original qualification approval:
Date: 2012

Certificate Ref No. 319, initial: Aug. 2012

5

ESCC Specifications used for Maintenance of qualification testing:

Generic: 5000 Issue: 8/10

Detail(s):	Issue:
5205/027	2
5205/030	2
5205/031	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:

2013LR10, Iss. 1b, Aug. 2021
2013LR20, Iss. 1a, Aug. 2021
2013LR30, Iss. 1, Aug. 2021
2013LR40, Iss. 1, Aug. 2021
2013LR50, Iss. 1a, Aug. 2021
2013LR60, Iss. 1, Aug. 2021

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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

9

PID changes since start of qualification

None ☐

Minor* ☒

Major* ☐ *Provide details in box:

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Current **PID** Verified by: B. Gökgöz (DLR)

Name of Excutive Representative

Generic PID: A63500-GEPID-P000, Issue 2f, 13.10.2021
Detail PID: A63500-L5491-P000, Issue 9a, 13.10.2021

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Current Manufacturing facilities surveyed by: DLR (B. Gökgöz, T. Kaupisch) on 13/10/2021

(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: Infineon_MoQ_2021_MoM_Rev_1.5

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

Ref. No's and purposes: Available from 250V activities: CA0628 (SMD) & CA0654 (TO)).

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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 DLR as the responsible Executive Member for ESCC qualification status to be extended to the component(s) listed herein.

Date: 10/11/2021

B. Gökgöz

(Signature of the Executive Coordinator)

Continuation of Boxes above:

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15

Non compliance to ESCC requirements:

No.:	Specification	Paragraph	Non compliance

16

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

17

Executive Manager Disposition

Application Approval: Yes ☒ No ☐

Action / Remarks:

Date:

Britta Schade

Digitally signed by Britta Schade
Date: 2021.12.20 14:08:54 +01'00'

B. Schade: Head of ESA 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 [redacted] (for ESCC/QML parts)

Tests vehicle identification/description:

2013LR10, 2005A 2013LR20, 2031B	BUY25CS54A-01, AC SG, EndSG, EnvMechSG BUY25CS54A-01, Solderability
2013LR30, 2107B 2013LR40, 2107C 2013LR50, 2044E 2013LR60, 2014A	BUY25CS12K-01, AC SG, Solderability BUY15CS45B-01, EndSG BUY15CS23J-01, EnvMechSG BUY25CS45B-01, EnvMechSG

Detail Specification reference: 5205/027; 5205/030; 5205/031

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	2044E 2014A 2005A.	17 17 17.	0 0 0.	
	Vibration	☒	MIL-STD-750 TM2056	2044E 2014A 2005A.	17 17 17.	0 0 0.	
	Constant acceleration	☒	MIL-STD-750 TM2006	2044E 2014A 2005A.	17 17 17.	0 0 0.	
	Seal Fine leak Gross leak	☒	MIL-STD-883 TM1014	2044E 2014A 2005A.	17 17 17.	0 0 0.	See Appendix 'A' in ESCC Detail Specifications – Deviations from Chart F4
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	2044E 2014A 2005A.	17 17 17.	0 0 0.	
	External Visual	☒	ESCC Basic spec 20500	2044E 2014A 2005A.	17 17 17.	0 0 0.	
	Thermal shock	☐	MIL-STD-750 TM1056				Temperature Cycling performed
	Temperature Cycling	☒	MIL-STD-883 TM1010	2044E 2014A 2005A.	17 17 17.	0 0 0.	See Appendix 'A' in ESCC Detail Specifications – Deviations from Chart F4
	Moisture Resistance	☒	MIL-STD-750 TM1021	2044E 2014A 2005A.	17 17 17.	0 0 0.	
	Seal Fine leak Gross leak	☒	MIL-STD-883 TM1014	2044E 2014A 2005A.	17 17 17.	0 0 0.	See Appendix 'A' in ESCC Detail Specifications – Deviations from Chart F4
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	2044E 2014A 2005A.	17 17 17.	0 0 0.	
	External Visual	☒	ESCC Basic spec 20500	2044E 2014A 2005A.	17 17 17.	0 0 0.	
Endurance Subgroup	Operating Life	☒	ESCC 5000 Para. 8.19	2107C 2005A.	17 17.	0 0	
	Electrical Measurement	☒	Intermediate and End-Point Electrical Measurements	2107C 2005A.	17 17.	0 0	
	Seal Fine leak Gross leak	☒	MIL-STD-883 TM1014	2107C 2005A.	17 17.	0 0	See Appendix 'A' in ESCC Detail Specifications – Deviations from Chart F4
	External Visual Inspection	☒	ESCC Basic spec 20500	2107C 2005A.	17 17.	0 0	
Assembly Capability Subgroup	Permanence of Marking	☐	ESCC Basic Spec 24800				n.a. due to laser marking
	Terminal Strength	☒	ESCC 5000 Para. 8.18	2107B	6	0	
	Internal Visual	☒	ESCC Basic Spec 20400	2005A 2107B	6 6	0 0	
	Bond Strength	☒	MIL-STD-750 TM 2037	2005A 2107B	6 6	0 0	
	Die Shear	☒	MIL-STD-750 TM 2017	2005A 2107B	6 6	0 0	

Additional Tests	Solderability	☒	MIL-STD-750, TM 2026	2031B 2107B	6 6	0 0	
		☐					
		☐					

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.