APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Page 1

Component Title: TRANSISTOR, MICROWAVE, SMALL SIGNAL, SILICON, BIPOLAR BASED ON TYPES BFY181 THRU BFY183, BFY193, BFY193C AND BFY196

Appl. No. 230L

Executive Member: German Space Agency at DLR Date: 19/10/2023

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
5611/006	03 to 09		BFY181,BFY182, BFY183,BFY193, BFY196, BFY193C, BFY193F	BFY420(ES)	X

2 Component Manufacturer
Infineon Technologies AG

3 Location of Manufacturing Plant(s)
Villach, Austria and Regensburg, Germany for Silicon
Neubiberg, Germany for packing and screening

4 Date of original qualification approval:
Date: 1996

Certificate Ref No. 230, initial: Juni. 1996

5 ESCC Specifications used for Maintenance of qualification testing:
Generic: 5010 Issue: 3
Detail(s): 5611/008 Issue: 4

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:
2236LR50, Iss. 1, Aug. 2023

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
Confidentail				

9 **PID** changes since start of qualification
None ☐
Minor* ☒
Major* ☐
*Provide details in box:
See Annex 2 / Confidential

10 Current **PID** Verified by: Burak Gökgöz, German Space Agency at DLR
Name of Excutive Representative
Generic PID: A63500-GEPID-P000, Issue 2h, 20.09.2023
Detail PID: A63500-D359-P000, Issue 6, 13.10.2021

11 Current Manufacturing facilities surveyed by: Burak Gökgöz, German Space Agency at DLR on 19-20/09/2023
(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: INFINEON-AUD-DLR-09-2023

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12

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

Ref. No's and purposes:

13

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.

Burak Goekgoez

Digital signiert von Burak Goekgoez
DN: C=DE, S=Nordrhein-Westfalen, L=Koeln, O=Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (DLR), SN=Goekgoez, G=Burak, CN=Burak Goekgoez
Grund: Ich bin der Verfasser dieses Dokuments
Ort: Bonn
Datum: 2023.11.06 13:51:24 +01'00'
Foxit PDF Editor Version: 13.0.0

Date: 06/11/2023

Burak Gökgöz, German Space Agency at DLR
(Signature of the Executive Coordinator)

Continuation of Boxes above: 14

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:

B. Schade: Head of the Product Assurance and Safety Department

ANNEX 1: LIST OF TESTS DONE TO SUPPORT EXTENSION OF QUALIFICATION 18

Tests conducted in compliance with:

- ESCC 5010 generic specification; Chart F4A (for ESCC/QPL parts)

Tests vehicle identification/description:

2236LR50, 2239A	BFY420(ES), EnvMechSG, Endur.SG, AssCapSG, DecapSG

Detail Specification reference: 5611/008

Chart F4A	Test	Tick when done	Conditions	Date Code	Tested Qty	No. of Rejects	Comments if not performed. Comments on Rejection
Environmental/Mechanical Subgroups	Thermal Shock Test	☒	ESCC 5010 Para. 9.5.2	2239A	12	0	
	Shock Test	☐	MIL-STD-750 Test Method 2016				n.a. acc. Detail Spec
	Vibration Test	☐	MIL-STD-750 Test Method 2056				n.a. acc. Detail Spec
	Constant Acceleration	☐	MIL-STD-750 Test Method 2006				n.a. acc. Detail Spec
	Seal Test	☐	MIL-STD-750 Test Method 1071				n.a. acc. Detail Spec
	Moisture Resistance	☒	MIL-STD-750 Test Method 1021	2239A	12	0	
	Seal Test	☒	MIL-STD-750 Test Method 1071	2239A	12	0	
	Electrical Measurements at Room Temp.	☒	Table 2 of the Detail Specification	2239A	12	0	
	External Visual Inspection	☒	ESCC Basic Specification No. 20500	2239A	12	0	
Endurance Subgroup	Operating Life	☒	MIL-STD-750 Test Method 1026	2239A	20	0	
	Electrical Measurements during Endur. Test	☒	Table 6 of the Detail Specification	2239A	20	0	
	External Visual Inspection	☒	ESCC Basic Specification No. 20500	2239A	20	0	
Electrical Subgroup – Assembly Capability Tests	Solderability Test	☒	MIL-STD-750 Test Method 2026	2239A	6	0	
	Permanence of Marking	☐	ESCC Basic Specification No. 24800				n.a. due to laser marking
	Terminal Strength	☒	MIL-STD-750 Test Method 2036	2239A	6	0	
De-encapsulation Tests	Internal visual inspection	☒	ESCC Basic Specification No. 20400	2239A	6	0	
	Bond Strength	☒	MIL-STD-750 Test Method 2037	2239A	6	0	
	Die Shear	☒	MIL-STD-750 Test Method 2017	2239A	6	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.