ESCC	APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL Component Title: Resistors, Fixed, Chip, Thick Film, based on type CHPHR and CHPFR Executive Member: CNES Date: 28/08/2023	Page 1 Appl. No. 314F

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

ESCC COMPONENT NO.	VARIANTS	RANGE OF COMPONENTS	BASED ON	TEST VEHICLE / S PERIODIC TESTING	COMPONENT SIMILAR
4001/026	01 & 06 - - - 02 & 07 - 03 & 08 - -	All values 50V to 500V	CHPHR0603 - - - CHPHR0805 - CHPHR1206 - -	4001026011501F4 4001026011273F4 40010260161R9F4 4001026011022F4 4001026024750F4 4001026023R32G6 40010260322R0F4 4001026031002F4 4001026038252F4	
	04 & 09 05 & 10 - -		CHPHR2010 CHPHR2512 - -	4001026041000G4 40010260550R0G4 4001026051470F4 40010260520R0F4	
	11 & 16 12 & 17 13 & 18		CHPFR0603 CHPFR0805 CHPFR1206		See also box 14 for Failure Rate endurance test vehicles
	14 & 19 - 15 & 20		CHPFR2010 - CHPFR2512	4001026141R00F6 4001026143320F4	

2 Component Manufacturer

VISHAY SA
Division SFERNICE

3 Location of Manufacturing Plant(s)

199 Bld de la Madeleine
BP 1159
06003 NICE CEDEX 1 - France

4 Date of original qualification approval:

Date: 11/10/2011

Certificate Ref No.

314

5 ESCC Specifications used for Maintenance of qualification testing:

Generic: 4001 Issue: 5

Detail(s): 4001026 Issue: 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:

2023 Reconduction Qualification CHPHR signé.pdf
17/07/2023

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
TAS France ALTER TECHNOLOGY	-	None		Total ≈ 33 000
TTI, Inc World Peace Int'l				
ECOMAL Europe GmbH ECOMAL ISRAEL LTD				

9 **PID** changes since start of qualification

None ☒
Minor* ☐
Major* ☐ *Provide details in box: 19

10 Current **PID** Verified by: JP Bussenot, CNES
Name of Excutive Representative

Ref No: PID CHP HR FR
Issue: 8 Date: 27/07/2021
Rev Date: 23/07/2021

11 Current Manufacturing facilities surveyed by: L. Fontaine, CNES on 16/02/2023
(Name of Executive Representative) (Date)

Satisfactory: Yes ☒ No ☐ Explain

Report Reference: 2023.0003306-CR-Fontaine-Visite -Vishay-Fevrier-2023

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

Date: 28/08/2023

Gianandrea Quadri
G.Quadri, CNES
(Signature of the Executive Coordinator)

14

Continuation of Boxes above:

Report 22 12 101, 21/03/2022

Failure Rate Endurance Testing subgroup of Chart F4 (8 000 hours completed);

CHPFR0603, 22* – 475** – 12.1k** – 20k*- 8.25k** – 1M*
CHPFR0805, 68.1* – 19k** – 49.9k* - 360k**
CHPFR1206, 27* – 39** – 12.1k** - 30k* - 200k*
CHPFR2010, 8.25* - 27.4** - 2.61k** - 39k* - 5.11M*
CHPFR2512, 4.3* - 39** - 20k*

*30 parts for each lot.
**40 parts for each lot.

Failure Rate Endurance Testing subgroup of Chart F4 (6 000 hours performed);

CHPFR0805, 5,62k
CHPFR1206, 1.5M
CHPFR2010, 280k
CHPFR2512, 25.5k

40 parts for each lot.

Report 23 13 108, 28/03/2023

Failure Rate Endurance Testing subgroup of Chart F4 (8 000 hours completed);

CHPFR0603, 30.1 – 249k
CHPFR0805, 221 – 5.62k
CHPFR1206, 47 – 267k – 1.5M
CHPFR2010, 3.9 – 280k
CHPFR2512, 25.5k
40 parts for each lot.

Failure Rate Endurance Testing subgroup of Chart F4 (6 000 hours performed);

CHPFR0603, 10k
CHPFR1206, 15k
CHPFR2010, 35k – 450k
CHPFR2512, 47 – 3.7k – 370k – 620k

40 parts for each lot.

Failure Rate Endurance Testing subgroup of Chart F4 (4 000 hours performed);

CHPFR0603, 10.2
CHPFR0805, 5.62k
CHPFR1206, 3.32k – 100k
CHPFR2010, 499 – 43k – 215k
CHPFR2512, 75 – 20k

40 parts for each lot.

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 4001 generic specification; Chart F4 (for ESCC/QPL parts);
- or PID-TFD (for ESCC/QML parts)

Tests vehicle identification/description:

4001026011501F4 DC2041 4001026024750F4 DC2043 40010260322R0F4 DC2048	4001026011273F4 DC2124 4001026031002F4 DC2122 4001026041000G4 DC2122	4001026141R00F6 DC2129 40010260550R0G4 DC2139 4001026051470F4 DC2140
4001026023R32G6 DC2145 4001026038252F4 DC2141 4001026143320F4 DC2144	40010260161R9F4 DC2218 4001026011022F4 DC2218 40010260520R0F4 DC2222	

Detail Specification reference: 4001/026

Chart F4	Test	Tick when done	Conditions	Date Code	Tested Qty	N° of Rejects	Comments if not performed. Comments on Rejection
Environmental /Mechanical Subgroup	Mounting	☒	IEC 60115-1 clause 4.31	All DC	5x15	0	
	Rapid Change Of Temperature	☒	IEC 60068-2-14	All DC	5x15	0	
	Vibration	☐	IEC 60068-2-6				NA
	Climatic test Sequence	☒	ESCC 4001, Para 8.10	All DC	5x15	0	
	Seal Test	☐	IEC 60068-2-17				NA
	Mounting	☒	IEC 60115-1 clause 4.31	All DC	2x15	0	
	Robustness of Terminations	☒	IEC 60068-2-21	All DC	2x15	0	
	Climatic test Sequence	☒	ESCC 4001, Para 8.10	All DC	2x15	0	
	Seal Test	☐	IEC 60068-2-17				NA
	Resistance to Soldering Heat	☒	IEC 60068-2-20	All DC	2x15	0	
	Mounting	☒	IEC 60115-1 clause 4.31	All DC	2x15		
	Climatic test Sequence	☒	ESCC 4001, Para 8.10	All DC	2x15	0	
	Seal Test	☐	IEC 60068-2-17				NA
	Mounting	☐	IEC 60115-1 clause 4.31				NA
	Insulation Resistance	☒	ESCC 4001, Para 8.3.1.2	All DC	5x15	0	
	Voltage Proof	☒	ESCC 4001, Para 8.3.1.3	All DC	5x15	0	
Endurance Subgroup	Mounting	☐	IEC 60115-1 clause 4.31				
	Operating Life	☐	ESCC 4001, Para 8.13			-	Replaced with FR data in periodic testing (See below and box 14)
	Seal Test	☐	IEC 60068-2-17				NA
Assembly Capability Subgroup	Solderability	☒	IEC 60068-2-20	All DC	2x15	0	
	Permanence of marking	☐	ESCC 24800				NA
Failure Rate Subgroup	Operating Life 8 000 h	☒	ESCC 4001, Para 8.13			0	5,60 M components.hours
	Seal Test	☐	IEC 60068-2-17				NA
Additional Tests	Temperature Coefficient	☒	ESCC 4001, Para 8.3.3	All DC	5x15	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.