		APPLICATION FOR EXTENSION OF ESCC TECHNOLOGY FLOW APPROVAL			Page 1
		Component Title:	Thin Film Technology for Chip, Wraparound, Single and Network Resistors, Fixed		Appl. No. 287G
Executive Member:		CNES	Date: 18/01/2021		
Technology Flow submitted for Extension of Qualification Approval:					1
SUMMARY DESCRIPTION		TEST STRUCTURES		COMPONENTS PROPOSED FOR QUALIFICATION	
P : Single resistor 0402, 0603, 0805, 1206, 2010 chip PRA : 2 to 8 resistors of similar value, based on 0603 (PRA 100), 0805 (PRA135) or 1206 (PRA182) units CNW : 2 to 8 resistors with at least two different values with the same form factor as PRA Substrate : Alumina Resistive layer : Nickel Chromium Protection : Silicium nitride Termination : Nickel Barrier Processes : Thin Film deposition Finish : SnPbAg or Au		P0402, P0603, P0805, P1206 and P2010 with min., critical resistance and max. values, PRA100, PRA135, PRA182 with min., critical resistance and max. values.		By form factor : ESCC4001023 var. 15 and 13, 14(*) ESCC4001023 var. 01, 05 (*) and 09 ESCC4001023 var. 02, 06 (*) and 10 ESCC4001023 var. 03, 07 (*) and 11 ESCC4001023 var. 04, 08 (*) and 12 ESCC4001025 var. 01 to 07, 22 to 28 ESCC4001025 var. 08 to 14, 29 to 35 ESCC4001025 var. 15 to 21, 36 to 42 (*) Note that gold finish variants are not intended for de-golding and tinning	
Component Manufacturer		Location of Manufacturing Plant(s)		Date of original qualification approval:	
VISHAY SA Division Résistances de Très Haute Précision		Nice (France)		Date: 15/02/2009 Certificate Ref No. 287	
ESCC Specifications used for Maintenance testing:		Deviations to LVT testing and Detail Specification used:		Qualification Extension Report reference and date:	
Generic: 4001 Issue: 4 Detail(s): 4001/023 Issue: 11 4001/025 Issue: 7		No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> (supply details in Box 15) Deviation from current Specifications: No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (Supply details)		QML Quality Synthesis reports : QML 2019 Synthesis, 15/01/2020 QML 2020 Synthesis, 06/01/2021	
Summary of procurement or equivalent test results during current validity period in support of this application (those to ESCC listed first)					8
Customer	Component	LVT	Date code	Quantity Delivered	
TAS Belgium, Sodern, ALTER, TTI, RUAG, TAS It, TAS Fr ...	PHR1206 PHR0805 PHR0603 PHR0603	LVT1 LVT1 LVT1 LVT3	2025 (3), 2028 (2) 1925, 1926 (2) 2028, 2029 (2) 1928	2019: 119 157 2020: 76 935	
TTI, Cyphen Ltd, Charcroft ...	PRA / CNW	LVT3	2007	2019: 23 854 2020: 6 791	
ALTER, Vishay Dale, TTI, ECOMAL ...	PFRR 0805 PFRR 0603	-		2019: 8 595 2020: 8 450	
	PFRR 1206				
PID changes since last maintenance of qualification		Current PID Verified by:		Name of Executive Representative	
None <input type="checkbox"/> Minor* <input checked="" type="checkbox"/> Major* <input type="checkbox"/> *Provide details in box: 19		JP Bussenot, CNES Ref No: PID-TFD P PRA CNW Issue: 11 Date: 23/07/2020 Rev. 0 Date: 27/05/2020			
Current Manufacturing facilities surveyed by:		S. Hernandez, ESA & JP Bussenot, CNES on		07/02/2019	
		(Name of Executive Representative)		(Date)	
Satisfactory:		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Explain			
Report Reference:		CNES – DCT/AQ/CQ/2019-003325			



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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: **18/01/2021**

JP. BUSSENOT

(Signature of the Executive Coordinator)

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Continuation of Boxes above:

Box 6: Periodic Testing is defined in paragraph 6 of the Technology Flow PID (See page 3)



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Non compliance to ESCC requirements:

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No.:	Specification	Paragraph	Non compliance
1	4001	Chart F4	Chart F4 testing replaced with the implementation of periodic testing as described in PID paragraph 6.3

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

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None


Executive Manager Disposition

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Application Approval: Yes No

Action / Remarks:

Date:

 Digitally signed
by Britta Schade
Date: 2021.02.23
18:49:11 +01'00'

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



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

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Tests conducted in compliance with:

- ESCC 4001 generic specification; Chart F4 (for ESCC/QPL parts);
- or PID-TFD **P PRA CNW Issue 11** (for ESCC/QML parts)

Tests vehicle identification/description:

PHR0402 dc 1822 (19K6), 1939 (3K), 1921 (50R) PHR0603 dc 1829 (200K), 1914 (10R), 1907 (61R9), 2005 (165K), 2017 (66K5)	PHR1206 dc 1906 (75R), 1937 (6K49), 2007 (562K) PHR2010 dc 2009 (511K)
PHR0805 dc 1914 (15R), 2017 (7K5)	PRAHR dc 1903 (2K), 1917 (10K) CNWHR dc

Detail Specification reference: **4001/023 & /025**

Extracted from 2019 & 2020 QML Synthesis

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	<input checked="" type="checkbox"/>	IEC 60115-1 clause 4.31	1822 1829 1914 1906 1939 1937 1903 1917 1921 1907 2005 2007 2009 2017	10 10 2 x 5 5 5 5 5 5 5 5 5 5 5 2 x 5	0	
	Rapid Change Of Temperature	<input checked="" type="checkbox"/>	IEC 60068-2-14	1822 1829 1914 1906 1939 1937 1903 1917 1921 1907 2005 2007 2009 2017	10 10 2 x 5 5 5 5 5 5 5 5 5 5 5 2 x 5	0	
	Vibration	<input type="checkbox"/>	IEC 60068-2-6				NA
	Climatic test Sequence	<input checked="" type="checkbox"/>	ESCC 4001, Para 8.10	1822 1829 1914 1906 1939 1937 1921 1907 2005 2007 2009 2017	10 10 2 x 5 5 5 5 5 5 5 5 5 2 x 5	0	
	Seal Test	<input type="checkbox"/>	IEC 60068-2-17				NA
	Mounting	<input checked="" type="checkbox"/>	IEC 60115-1 clause 4.31	1822 1829 1914 1906 1939 1937 1921 1907 2005 2007 2009 2017	3 3 2 x 2 2 2 2 3 3 2 2 2 2 x 2	0	
	Robustness of Terminations	<input checked="" type="checkbox"/>	IEC 60068-2-21	1822 1829 1914 1906 1939 1937 1921 1907 2005 2007 2009 2017	3 3 2 x 2 2 2 2 3 3 2 2 2 2 x 2	0	Adhesion + Substrate bending

	Climatic test Sequence	<input checked="" type="checkbox"/>	ESCC 4001, Para 8.10	1822 1829 1914 1906 1939 1937 1921 1907 2005 2007 2009 2017	3 3 2 x 2 2 2 2 3 3 2 2 2 2 x 2	0	
	Seal Test	<input type="checkbox"/>	IEC 60068-2-17				NA
	Resistance to Soldering Heat	<input checked="" type="checkbox"/>	IEC 60068-2-20	1822 1829 1914 1906 1939 1937 1903 1917 1921 1907 2005 2007 2009 2017	3 3 2 x 2 2 2 2 2 2 3 3 2 2 2 2 x 2	0	
	Mounting	<input type="checkbox"/>	IEC 60115-1 clause 4.31				
	Climatic test Sequence	<input checked="" type="checkbox"/>	ESCC 4001, Para 8.10	1939 1937 2005 2007 2009 2017	2 2 2 2 2 2 x 2	0	
	Seal Test	<input type="checkbox"/>	IEC 60068-2-17				NA
	Mounting	<input type="checkbox"/>	IEC 60115-1 clause 4.31				
	Insulation Resistance	<input checked="" type="checkbox"/>	ESCC 4001, Para 8.3.1.2	1914 1906 1939 1937 1921 1907 2005 2007 2009 2017	2 x 5 5 5 5 5 5 5 5 5 2 x 5	0	
	Voltage Proof	<input checked="" type="checkbox"/>	ESCC 4001, Para 8.3.1.3	1914 1906 1939 1937 1921 1907 2005 2007 2009 2017	2 x 5 5 5 5 5 5 5 5 5 2 x 5	0	
	Endurance Subgroup	Mounting	<input checked="" type="checkbox"/>	IEC 60115-1 clause 4.31	1914 1906 1903 1917 1921 1907	2 x 5 5 10 10 10 10	0
Operating Life		<input checked="" type="checkbox"/>	ESCC 4001, Para 8.13	1914 1906 1903 1917 1921 1907	2 x 5 5 10 10 10 10	0	PHR Low Ohmic value PHR Low Ohmic value PRAHR 100I2B PRAHR 100I2B PHR Low Ohmic value PHR Low Ohmic value
Seal Test		<input type="checkbox"/>	IEC 60068-2-17				NA
Assembly Capability Subgroup	Solderability	<input checked="" type="checkbox"/>	IEC 60068-2-20	1822 1829 1914 1906 1939 1937 1903 1917 1921 1907 2005 2007 2009 2017	3 3 2 x 2 2 2 2 5 5 3 3 2 2 2 2 x 2	0	
	Permanence of marking	<input checked="" type="checkbox"/>	ESCC 24800	1903 1917	5 5	0	PRA / CNW
Failure Rate Endurance Subgroup	Operating Life	<input checked="" type="checkbox"/>	ESCC 4001, Para 8.13	Febr. '19 to January '20 - Febr. '20 to May '21	600 310 - 80 - to come - -	0 - -	2 000H 4 000H 6 000H 8 000H - 2000H 4000H 6000H 8000H

	Seal Test	<input type="checkbox"/>	IEC 60068-2-17				NA
Additional Tests	High & Low Temp (Temperature Coefficient)	<input checked="" type="checkbox"/>	ESCC 4001	1822 1829 1914 1906 1939 1937 1903 1917 1921 1907 2005 2007 2009 2017	5 5 2 x 5 5 5 5 5 5 5 5 5 5 5 2 x 5	0	
		<input type="checkbox"/>					
		<input type="checkbox"/>					

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287G**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.