ESCC

APPLICATION FOR EXTENSION OF ESCC TECHNOLOGY FLOW APPROVAL

Component Title:

Thin Film Technology for Chip, Wraparound, Single and Network Resistors, Fixed

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Appl. No.

	Executive (CNES	Date: 13/02/2017	287E	
Technology Flow submitted for Exte	nsion of Qualification Appr	roval:		1	
SUMMARY DESCRIPTION	TES:	T 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 (PRA13 units CNW: 2 to 8 resistors with at letwo different values with the sar form factor as PRA Substrate: Alumina Resistive layer: Nickel Chromic Protection: Silicium nitride Termination: Nickel Barrier Processes: Thin Film depositio Finish: SnPbAg or Au	with min., critical values, PRA100, PRA13 critical resistance ast ne	0805, P1206 and P2010 I resistance and max. 5, PRA182 with min., 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 intender for de-golding and tinning		
Component Manufacturer	2 Location of Ma	anufacturing Plant(s) 3	Date of original qualification approval:	4	
VISHAY SA	Nice (France)		Date: 15/02/2009		
Division Résistances de Très Haute Précision	,		Certificate Ref No. 287		
ESCC Specifications used for Maintenance testing:	5 Deviations to LVT Specification used		Qualification Extension Report reference and date:	7	
Generic: 4001 Issue:	4 No □ Yes		QML Quality Synthesis reports	s:	
Detail(s): 4001/023 Issue: 4001/025 Issue:	11 Deviation from cun 7 No ⊠ Yes	Box 15) rent Specifications: (Supply details)	QML 2015 Synthesis, 06/01/20 QML 2016 Synthesis, 03/01/20		
Summary of procurement or equival See box 22	ent test results during curre	ent validity period in support of th	is application (those to ESCC listed first)	8	
PID changes since start of qualificat	ion 9	Current PID Verified by:	CNES	10	
None			Name of Excutive Representative		
Minor* ⊠		Ref No: PID-TFD P PF			
Major* *Provide details	s in box:	Issue: 8	Date: 14/0	02/2017	
19		Rev. 0 02/02/2017 Date:			
Current Manufacturing facilities surv	reyed by: ESA and	CNES	on <u>01/02/2017</u>	11	
	(Name of	Executive Representative)	(Date)		
Satisfactory: Yes ⊠	No 🗆	Explain			
Report Reference: CR-2017-	02072	-			

	APPLICAT	ION FOR EXTENSION	ON OF ESCC QUALIFIC	CATIO	N APPROVAL	Page	2
ESCC	Component title:	Thin Film Techno Resistors, Fixed	ology for Chip, Wrapa	around,	Single and Network	Appl. N	lo.
	Executive Member:	CNES	D	ate:	13/02/2017	287E	
							12
Failure Analysis, DPA, NCCS ava	ilable: Yes	⊠ No □	(Supply data)				
Ref. No's and purposes: NCs 11501	5, 114018 and NCCS	2CSFE401 have be	en closed out. See de	etails bo	ox 22.		
The undersigned hereby certifies on behalf							13
that the appropriate documentation has be (except as stated in box 15;) - that the repo	en evaluated; - that ful orts and data are avail:	I compliance to all E able at the ESCC Ex	SCC requirements is evecutive and therefore a	vidence	on behalf of	> .	
CNES as the responsible Executive Mem	ber for ESCC qualifica	tion status to be exte	ended to the componen	nt(s) liste	ed herein.	More	
Date: 14/02/2017					JP. BUSSENO	Г	
1.02.2017				(Sigi	nature of the Executive C		_
Continuation of Boundary							14
Continuation of Boxes above: Box 6: Periodic Testing is defined in pa	ragraph 6 of the Tec	hnology Flow PID (See page 3)				14
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Executive Member: CNES Date: 13/02/2017

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NIA.	0		D '		
No.:	Specification	2000	Paragraph	Non compliance	
4	001	Chart F	4	Chart F4 testing replaced with the implementation of periodic testing described in PID paragraph 6.3	as
ditional tas	sks required to achieve full co	ompliance for ESCC qual	lification or rationale for ac	cceptability of	
ncomplian	ce:				L
ne					
ecutive ivia	anager Disposition				
plication A	Approval: Yes	No 🗆			_
tion / Rem	arks:				
	7				
	7				
	1.1				
te: 2 1	/2/12			Ten	
: Z1	/2/17			Signature ESA Representative	



APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title:

Executive Member:

Thin Film Technology for Chip, Wraparound, Single and Network

Resistors, Fixed

13/02/2017 Date:

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

Tests conducted in compliance with:

ESCC 4001 generic specification; Chart F4 (for ESCC/QPL parts); or PID-TFD P PRA CNW Issue 7 (for ESCC/QML parts)

Tests vehicle identification/description:

PHR1206 dc 1451 (2K67), 1420 (10R), 1505 (6K81), 1522 (53R), 1543 (90R9), 1606 (1M) PHR2010 dc 1439 (160K), 1539 (10R) PRAHR dc 1413, 1430, 1441, 1513, 1523, 1615 CNWHR dc 1410, 1442, 1601, 1610 PHR0402 dc 1438 (4K7) PHR0402 dc 1438 (4K7) PHR0603 dc 1420 (49R9), 1438 (12K1), 1505 (46K4), 1529 (75R), 1612 (90K9) PHR0805 dc 1452 (22K), 1444 (90R9), 1504 (49K9), 1504 (20R), 1608 (249K)

Detail Specification reference:

4001/023 & /025

Extracted from 2015 & 2016 QML Syn	thesis
	Tick

Chart F4	Test	Tick when done	Conditions	Date Code	Tested Qty	N° of Rejects	Comments if not performed. Comments on Rejection
	Mounting	⊠	IEC 60115-1 clause 4.31	1430 1441 1442 1451 1452 1504 1505 1522 1539 1529 1543 1612 1606 1513 1523 1615 1601 1610	555555557755555555	0	
	Rapid Change Of Temperature	×	IEC 60068-2-14	1451 1452 1504 1505 1522 1539 1529 1543 1513 1523 1615 1601	555555775555555	0	
Subgre	Vibration		IEC 60068-2-6				NA
Environmental Mechanical Subgroup	Climatic test Sequence	⊠	ESCC 4001, Para 8.10	1451 1452 1504 1505 1522 1539 1529 1543 1612 1606	10 10 10 10 10 10 10 10 10	0	
Ū	Seal Test		IEC 60068-2-17				NA NA
	Mounting	Ø	IEC 60115-1 clause 4.31	1451 1452 1505 1504 1504 1504 1522 1539 1529 1543 1612 1608 1606	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0	
	Robustness of Terminations	ă	IEC 60068-2-21	1451 1452 1505 1504 1504 1504 1522 1539 1529 1543 1612 1608 1606	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	0	Adhesion + Substrate bending
	Climatic test Sequence		ESCC 4001, Para 8.10				NA vs PID

	Seal Test		IEC 60068-2-17				NA
	Resistance to Soldering Heat	Ø	IEC 60068-2-20	1430 1441 1442 1451 1452 1505 1505 1505 1522 1539 1529 1543 1606 1513 1523 1615 1601 1610	55555555323355333	0	
	Mounting		IEC 60115-1 clause 4.31				
	Climatic test Sequence		ESCC 4001, Para 8.10				NA vs PID
	Seal Test		IEC 60068-2-17				NA
	Mounting		IEC 60115-1 clause 4.31				
	Insulation Resistance		ESCC 4001, Para 8.3.1.2				NA vs PID
	Voltage Proof		ESCC 4001, Para 8.3.1.3				NA vs PID
ıbgroup	Mounting	⊠	IEC 60115-1 clause 4.31	1420 1420 1444 1430 1441 1442 1504 1522 1539 1529 1543 1513 1653 1601 1601	10 10 10 5 5 5 10 10 10 10 5 5 5 5 5 5 5	0	
Endurance Subgroup	Operating Life	Ø	ESCC 4001, Para 8.13	1420 1420 1444 1430 1441 1442 1504 1522 1539 1529 1543 1513 1523 1615 1601	10 10 10 5 5 5 10 10 10 10 5 5 5 5 5 5 5	0	PHR Low Ohmic value PHR Low Ohmic value PHR Low Ohmic value PRAHR 135I4B PRAHR 100I4B CNWHR 1668 PHR Low Ohmic value PRAHR 100I4B PRAHR 135I4B PRAHR 185I4B PRAHR 185I4B CNWHR 1687 CNWHR 1930
	Seal Test		IEC 60068-2-17				NA
Assembly Capability Subgroup	Solderability	⊠	IEC 60068-2-20	1430 1441 1442 1451 1452 1505 1505 1505 1504 1522 1529 1543 1612 1608 1513 1523 1615 1601	555555555335555555	0	
Asse	Permanence of marking	⋈	ESCC 24800	1430 1441 1442 1513 1523 1615 1601	2 2 2 2 2 2 2 2 2 2	0	PRA / CNW
Failure Rate Endurance Subgroup	Operating Life	⊠	ESCC 4001, Para 8.13	April '15 to June '16	200 470 90 360	0	2 000H 4 000H 6 000H 8 000H
Failure	Seal Test		IEC 60068-2-17				NA

				1430 1441 1442 1451	555555555555555555555555555555555555555	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
				1452 1505	5	1 0	
				1504 1505 1504	5 5	0	
ests	High & Low Temp (Temperature Coefficient)	⊠	ESCC 4001	1522 1539	5 5	0	
nal Te	Coefficient)			1529 1543 1612	7 8 5	0	
Additional Tests				1608 1606	5	0	
				1513 1523 1615	5 5	0	
				1601 1610	5 5	0	
OF STREET				1			



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Date: 13/02/2017 Executive Member: CNES

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NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC QUALIFICATION EXTENSION APPROVAL

	TO THE COMM ELFON OF THE ATT ELECTION FOR EACH ON EACH ON EACH ON THE ATT ATT ATT ATT ATT ATT ATT ATT ATT AT
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.