
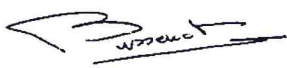



		APPLICATION FOR EXTENSION OF ESCC TECHNOLOGY FLOW QUALIFICATION APPROVAL Technology Flow : <b>Integrated Circuits, Silicon Monolithic, CMOS Gate/          Embedded Array based on type MH1RT</b> Name of Executive Member : <b>CNES</b> Date : <b>09/01/2017</b>			Page 1 Appl. No . 278E rev 1			
Technology Flow submitted for Qualification Approval							1	
SUMMARY DESCRIPTION		TEST STRUCTURES		COMPONENTS PROPOSED FOR QUALIFICATION				
<b>MH1RT ASICs</b> see REP 006 paragraph 5.1		See REP 006 paragraph 5.1		<b>MH1RT ASICs</b>				
Component Manufacturer <b>ATMEL</b>		2	Location of manufacturing plant <b>NANTES,          e2v GRENoble</b>		3	Date of original qualification approval <b>12th April 2007</b> Certificate ref. No. : 278	4	
ESCC Specifications used for maintenance Generic: <b>9000</b> Details: <b>9202/076 iss. 6</b> + ATMEL DCR (CCGA)		5	Deviations from testing level, Chart F4 and Detail Spec. Used : No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (in Box 15) deviation from current Spec. No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>		6	Qualification Extension report ref. and date: <b>See Annex 2</b> ATMEL CCGA Qual. Pack Rev.0, 21/11/2016 ARES Qualification Report Issue 1.4, 11/01/2017 ATMEL CCGA472_625 Test Summary rev4, January 2017 TRB meetings reports ref. and date: <b>Q1-Q2-Q3-2015</b>		7
Summary of procurement or equivalent test results during current validity period in support of this application (those to ESCC listed first).							8	
Project Name		Testing Level		LAT	Date code	Quantity Delivered		
		<b>ESCC 9000</b>		<b>Chart F4</b>	<b>1214 to 1244</b>			
PID changes since start of Qual. Or last extension of Qual. None <input type="checkbox"/> Minor <input type="checkbox"/> provide detail. Major <input checked="" type="checkbox"/> see Box 14		9	Current PID      Verified by <b>CNES - Florence MALOU</b> Name Executive responsible <b>Atmel MH1 RT PROCESS IDENTIFICATION DOCUMENT, Ref. PID 0026 rev.L - 21/11/2016</b> <b>E2V PID Assembly :DF 31S 100730 Issue P 25/04/2014</b> <b>HCM.SYSTREL PID 11 Rev. B, 08/08/2015</b>				10	
Current manufacturing facilities surveyed by <b>CNES</b> on <b>16/04/2015</b> (Name of Executive responsible)      (date)							11	
Satisfactory : Yes <input checked="" type="checkbox"/> see MoM CNES/DCT/AQ/EC-2015/08569 and CNES/DCT/AQ/EC-2016/11899 No <input type="checkbox"/> Explain <b>ATMEL Nantes</b>								

	<p align="center"><b>APPLICATION FOR EXTENSION OF ESCC TECHNOLOGY FLOW QUALIFICATION APPROVAL</b></p> <p>Technology Flow : <b>Integrated Circuits, Silicon Monolithic, CMOS Gate/ Embedded Array based on type MH1RT</b></p> <p>Name of Executive Member : CNES <span style="float: right;">Date : 09/01/2017</span></p>	<p align="center">Page 2 Appl. No . 278E rev 1</p>
<p>Failure Analysis, DPA, NCCS available: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Supply data) <span style="float: right;">12</span></p> <p>Ref. No's and purpes.</p>		
<p>The undersigned hereby certifies on behalf of the Qualifying Space Agency -- that the above information is correct; -- that the appropriate documentation has been evaluated; -- that full compliance to all ESCC requirements is evidenced except as stated in box 15; -- that the reports and data are available at the Executive and therefore applies on behalf of <u>CNES</u> as Executive member for ESCC qualification status to be extended to the component(s) listed herein. <span style="float: right;">13</span></p> <p>Date: 16/01/2017</p> <p align="right">   <u>JP. BUSSENOT</u>          (Signature of the Executive Representative)       </p>		
<p>Continuation of Boxes above: <span style="float: right;">14</span></p> <ul style="list-style-type: none"> <li>• <b>PID changes :</b>          Rev.K: The wafer fabrication was performed in Rousset LFOUNDRY (France). Since December 2013, LFOUNDRY in Rousset ceased to supply MH1RT chips. ATMEL MH1RT ASICs wafers are stored in Nantes based on Customers demand.          Rev.L: Replacement of MCGA with CCGA with European Columns       </li> <li>• <b>Reviewed documents for MOQ :</b> <ul style="list-style-type: none"> <li>- Atmel MH1 RT PROCESS IDENTIFICATION DOCUMENT, Ref. PID 0026 version K – 28/07/2015</li> <li>- E2v ASSY PROCESS SUBCONTRACTING GENERIC PID, Ref. DF 31S 100730 version P – 25/04/2014</li> <li>- Periodic qualification results : see Annex 2</li> </ul> </li> <li>• <b>Reviewed documents for CCGA Packages qualification :</b> <ul style="list-style-type: none"> <li>- ATMEL CCGA Qual. Pack Rev.0, 21/11/2016</li> <li>- ARES Qualification Report Issue 1.4, 11/01/2017</li> <li>- ATMEL CCGA472_625 Test Summary rev4, January 2017</li> </ul> </li> </ul>		

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Non compliance to ESCC requirements:			15
No.	Specification	Paragraph	Non compliance
Additional tasks required to achieve full compliance for ESCC qualification or rationale for acceptability of noncompliance:			16
<p>Executive Manager Disposition:</p> <p>Application Approval: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Action/Remarks: </p>          <p>Date: <u>21/2/17</u></p> <p>Executive Manager Signature </p>			17



APPLICATION FOR EXTENSION OF ESCC TECHNOLOGY FLOW  
QUALIFICATION APPROVAL

Technology Flow : **Integrated Circuits, Silicon Monolithic, CMOS Gate/  
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Name of Executive Member : CNES

Date : 09/01/2017

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

**GENERAL**

Whenever possible, all entries should be typed and in any case be suitable for legible reproduction by normal means.

**ENTRIES**

Form heading shall indicate; -- the title of the component as given in its detail specification or the name of the series or family; -- the entering date; -- the serial number and its suffix.

Box 1 shall provide details given in table; -- in there shall be listed: the variants or range of variants; -- the Range of components (the use of ESCC code is recommended to indicate the values or values range the Tolerance, the voltage etc.); the designation given in detail specification as 'based on; -- under Test Vehicle enter either a cross or the specific characteristic capable to identify 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 E/SCC Generic and Detail Specifications, incl. 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 / or Detail Specifications listed in Box 5, in particular deviations from testing level B and LAT 1. 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 in detail the Qualification Extension and TRB report(s). They shall be supplied in support of the application.

Box 8 Should give the summary described in Para's 5.2 and 6.1 of ESCC Basic Specification No. 23000. This summary will normally provide details of procurement against the full ESCC System, Documentation of all of which should already have been delivered to the Executive Member under the terms of the relevant Generic Specification (Para.). An appropriate table has been drawn in this box.

Box 9 If the PID was 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, its 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 non 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, the report on Destructive Physical Analysis (DPA), Failure Analysis and 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 (CNES, DLR, ESA, etc.) and the signature.

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 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 16 Any additional action necessary by the Executive to bring the submitted data to a standard likely to be accepted by the ESA Executive Manager should be listed herein or the reason(s) to accept the nonconformance.

Box 17 All Executive recommendations on the application itself, special conditions or restrictions, modifications of the QPL entry, letters to the manufacturer, etc. shall be entered clearly in Box 17, signed by the Executive Manager, and dated with the date of the ratification.





#### ANNEX 1: LIST OF TESTS DONE TO SUPPORT PERIODIC QUALIFICATION

14

Tests conducted in compliance with ESCC 9000 generic specification; Chart F4

Tests vehicle identification:

2P891B58US	CQFP package family
2S5782	LGA package family

Detail specification reference: 9202/076

#### MCGA & MQFP packages

Chart F4	Test	Tick when done	Conditions	DC Diffusion Lot	Tested Qty	N° of Rejects	Comments if not performed. Comments on Rejection
Subgroup 1	Mechanical shock	✓	MIL-STD-883 TM2002 B	DC1540 2P891B58 US  DC1510 2S5782	15	0	Coverage until 1740
	Vibration	✓	MIL-STD-883 TM2007 A		15	0	
	Constant acceleration	✓	MIL-STD-883 TM2001 D		15	0	
	Seal	✓	MIL-STD-883 TM1014 A (fine) & C (Gross)		15	0	
	Electrical Measurement	✓			15	0	
	External Visual	✓	ESCC Basic Spec. 20500		15	0	
	Thermal shock	✓	MIL-STD-883 TM1011 C		15	0	
	Temperature Cycling	✓	MIL-STD-883 TM1010 C		15	0	
	Moisture Resistance	✓	MIL-STD-883 TM1004		15	0	
	Seal	✓	MIL-STD-883 TM1014 A (fine) & C (Gross)		15	0	
	Electrical Measurement	✓			15	0	
	External Visual	✓	ESCC Basic Spec. 20500		15	0	
Subgroup 2	Operating Life	✓	MIL-STD-883 TM1005	Various ASICs	15	0	
	Electrical Measurement	✓			15	0	
	Seal		MIL-STD-883 TM1014 A				
	External/Internal Visual Inspection	✓	ESCC Basic Spec. 20500				
Subgroup 3	Lead integrity	✓	MIL-STD-883 TM2004	DC1540 2P891B58 US	3	0	Coverage until 1740
	Internal Visual	✓	ESCC Basic Spec. 20400		2	0	
	Bond Strength	✓	MIL-STD-883 TM2011		2	0	
	Die Shear or Substrate attach strength	✓	MIL-STD-883 TM2027		2	0	
Additional tests	Permanence of Marking	✓	ESCC Basic Spec. 24800		5	0	Coverage until 1740



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Date : 09/01/2017

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ANNEX 1bis: LIST OF TESTS DONE TO SUPPORT CCGA PACKAGES QUALIFICATION

Tests conducted in compliance with ESCC 9000 generic specification; Chart F4

Tests vehicle identification:


Detail specification reference:

CCGA packages – See application 312B rev1 for ATC18RHA (Qualification by similarity)

Chart F4	Test	Tick when done	Conditions	DC Diffusion Lot	Tested Qty	N° of Rejects	Comments if not performed. Comments on Rejection
Subgroup 1	Mechanical shock		MIL-STD-883 TM2002 B				
	Vibration		MIL-STD-883 TM2007 A				
	Constant acceleration		MIL-STD-883 TM2001 D				
	Seal		MIL-STD-883 TM1014 A (fine) & C (Gross)				
	Electrical Measurement						
	External Visual		ESCC Basic Spec. 20500				
	Thermal shock		MIL-STD-883 TM1011 C				
	Temperature Cycling		MIL-STD-883 TM1010 C				
	Moisture Resistance		MIL-STD-883 TM1004				
	Seal		MIL-STD-883 TM1014 A (fine) & C (Gross)				
	Electrical Measurement						
Subgroup 2	External Visual		ESCC Basic Spec. 20500				
	Operating Life		MIL-STD-883 TM1005				
	Electrical Measurement						
	Seal		MIL-STD-883 TM1014 A				
Subgroup 3	External/Internal Visual Inspection		ESCC Basic Spec. 20500				
	Lead integrity		MIL-STD-883 TM2004				
	Internal Visual		ESCC Basic Spec. 20400				
	Bond Strength		MIL-STD-883 TM2011				
Additional tests	Die Shear or Substrate attach strength		MIL-STD-883 TM2027				
	Permanence of Marking		ESCC Basic Spec. 24800				