

## PRODUCT / PROCESS CHANGE NOTIFICATION

### 1. PCN basic data

1.1 Company	 STMicroelectronics International N.V
1.2 PCN No.	ANALOG MEMS SENSORS/24/14722
1.3 Title of PCN	Qualification of ST Bouskoura as Back end plant for selected product (GPA Division)
1.4 Product Category	See product list
1.5 Issue date	2024-04-22

### 2. PCN Team

2.1 Contact supplier	
2.1.1 Name	ROBERTSON HEATHER
2.1.2 Phone	+1 8475853058
2.1.3 Email	heather.robertson@st.com
2.2 Change responsibility	
2.2.1 Product Manager	Marcello SAN BIAGIO
2.2.2 Marketing Manager	Salvatore DI VINCENZO
2.2.3 Quality Manager	Jean-Marc BUGNARD

### 3. Change

3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Transfer	Product transfer from one site to another site, even if test or process line is qualified	New back end plant : ST Bouskoura

### 4. Description of change

	Old	New
4.1 Description	Standard products : - ST Shenzhen - TSHT Automotive Grade products : - ST Shenzhen	Standard products : - TSHT - ST Bouskoura Automotive Grade products : - ST Bouskoura
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No impact	

### 5. Reason / motivation for change

5.1 Motivation	Increase Assembly and Test Volume Capacity
5.2 Customer Benefit	MANUFACTURING FLEXIBILITY

### 6. Marking of parts / traceability of change

6.1 Description	New Finished good codes
-----------------	-------------------------

### 7. Timing / schedule

7.1 Date of qualification results	2024-04-18
7.2 Intended start of delivery	2024-07-30
7.3 Qualification sample available?	Upon Request

### 8. Qualification / Validation

8.1 Description	14722 RER 6088-1879-W-2024_SO8 assembled in BSK_L4931_Auto_STD.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2024-04-22

### 9. Attachments (additional documentations)

10. Affected parts		
10.1 Current		10.2 New (if applicable)
10.1.1 Customer Part No	10.1.2 Supplier Part No	10.1.2 Supplier Part No
L4931ABD33-TR	L4931ABD33-TR	
L4931CD33-TR	L4931CD33-TR	
	L4931CD33-TRY	

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

Subject to any contractual arrangement in force with you or to any industry standard implemented by us, STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved

## Public Products List

Public Products are off the shelf products. They are not dedicated to specific customers, they are available through ST Sales team, or Distributors, and visible on ST.com

**PCN Title :** Qualification of ST Bouskoura as Back end plant for selected product (GPA Division)

**PCN Reference :** ANALOG MEMS SENSORS/24/14722

**Subject :** Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change.

L4931CD33-TR	L4931ABD33-TR	L4931CD33-TRY
--------------	---------------	---------------

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

Subject to any contractual arrangement in force with you or to any industry standard implemented by us, STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved

## Reliability Evaluation Report

L4931 SO 08 ST BOUSKOURA – MOROCCO  
Automotive/Industrial version

General Information		Location	
Product Line	LW3301	Wafer fab	AM6F-Singapore SG6
C/P	L4931CD33-TRY L4931CD33-TR L4931ABD33-TR	Assembly Plant	ST BOUSKOURA – MOROCCO
Product Division		Results	
Package	SO 08	Reliability Assessment	PASS
Silicon process technology	BIP		

## DOCUMENT INFORMATION

Version	Date	Pages	Comment
1.1	02 April 2024	4	

Note: This report is a summary of the reliability trials performed in good faith by STMicroelectronics in order to evaluate the potential reliability risks during the product life using a set of defined test methods.

This report does not imply for STMicroelectronics expressly or implicitly any contractual obligations other than as set forth in STMicroelectronics general terms and conditions of Sale. This report and its contents shall not be disclosed to a third party without previous written agreement from STMicroelectronics.

---

## TABLE OF CONTENTS

<b>1</b>	<b>APPLICABLE AND REFERENCE DOCUMENTS .....</b>	<b>3</b>
<b>2</b>	<b>GLOSSARY .....</b>	<b>3</b>
<b>3</b>	<b>RELIABILITY EVALUATION OVERVIEW.....</b>	<b>3</b>
3.1	OBJECTIVES .....	3
3.2	CONCLUSION .....	3
<b>4</b>	<b>TESTS PLAN.....</b>	<b>4</b>
4.1	TEST PLAN AND RESULTS SUMMARY .....	4

## **1 APPLICABLE AND REFERENCE DOCUMENTS**

Document reference	Short description
JESD47	Stress-Test-Driven Qualification of Integrated Circuits
AEC Q100	Failure Mechanism Based stress test Qualification for Integrated Circuits

## **2 GLOSSARY**

Item	Short description
T <sub>j</sub>	Temperature at junction of the device
T <sub>A</sub>	Temperature of ambient air
RH	Relative Humidity
V <sub>cc</sub> max	Max Operative Voltage

## **3 RELIABILITY EVALUATION OVERVIEW**

### **3.1 Objectives**

Reliability evaluation of the products with the attributes reported in the table below

Attributes	Value		
Product	L4931CD33-TRY	L4931CD33-TR	L4931ABD33-TR
Process Technology	BCD6	BCD6	BCD6
Diffusion Plant	AM6F-Singapore SG6	AM6F-Singapore SG6	AM6F-Singapore SG6
Package	SO 08	SO 08	SO 08
Assembly Plant	ST BOUSKOURA – MOROCCO	ST BOUSKOURA – MOROCCO	ST BOUSKOURA – MOROCCO
Market Segment	AUTOMOTIVE	INDUSTRIAL	INDUSTRIAL

### **3.2 Conclusion**

Qualification requirements have been fulfilled without exception. Reliability tests have shown that the devices behave correctly against environmental tests (no failure). The stability of electrical parameters during the accelerated tests demonstrates the ruggedness of the products and safe operation, which is consequently expected during their lifetime.

## 4 TESTS PLAN

ST refers to the AEC Q100 for Automotive products and JEDEC 47 for Industrial products when conducting reliability tests for the qualification of new products.

### 4.1 Test plan and results summary

STRESS	Reference	Test Conditions	AECQ Requirements			Results	Note
			Sample Size/Lot	Number of Lots	Duration or Level		
<b>ACCELERATED ENVIRONMENT STRESS TESTS</b>							
Preconditioning (PC)	JESD22 A113 J-STD-020	Preconditioning: (Test @ Rm) SMD only; Moisture Preconditioning for THB, UHAST, TC, Peak Reflow Temp = 260C			MSL 1		
Temperature-Humidity-Bias (THB)	JESD22 A101	THB, 85°C, 85% RH Vcc max Test @ Room/Hot Temperature	77	3	1000hrs	0/231	1,3
Unbiased HAST (uHAST)	JESD22 A118	130°C/85%RH Test @ Room Temperature	77	4	96hrs	0/308	1,2
Temperature Cycling (TC)	JESD22 A-104	TC, -65°C to +150°C Test @ Hot temperature 5 units Post-T/C WBP sampled	77	4	1000cycles	0/308	1,2
High Temperature Storage Life (HTSL)	JESD22 A103	HTSL, Ta=150°C, no bias Test @ Room/Hot Temperature	77	4	1000hrs	0/308	2
High Temperature Operating Life (HTOL)	JESD22 A108	HTOL, T <sub>0</sub> =150°C, Vcc Max Test @ Room/Cold/Hot Temperature	77	3	1000hrs	0/231	3

STRESS	Reference	Test Conditions	AECQ Requirements			Results	Note
			Sample Size/Lot	Number of Lots	Duration or Level		
<b>PACKAGE ASSEMBLY INTEGRITY TESTS</b>							
Wire Bond Shear (WBS)	AEC-Q100-001 AEC-Q003	WBS, Cpk >1.67	10	3	-	PASS Cpk>1.67	3
Wire Bond Pull (WBS)	Mil-STD-883, Method 2011 AEC-Q003	WBP at time 0 and after 1000cyc T/C, Cpk >1.67	10	3	-	PASS Cpk>1.67	3
Solderability (SD)	JSTD-002D	SD, Surface mount process simulation test	10	3	-	PASS	3
Physical Dimension (PD)	JESD22 B100, JESD22 B108 AEC-Q003	PD, Cpk > 1.67	10	3	-	PASS Cpk>1.67	3

Notes:

1. Preconditioning with soak per J-STD-020 at rated moisture sensitivity level prior to acceleration stress testing.
2. It has been performed on 3 different lots of L4931CD33-TRY and 1 lot of L4931CD33-TR
3. It has been performed on 3 different lots of L4931CD33-TRY