PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data	
1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ANALOG MEMS SENSORS/24/14761
1.3 Title of PCN	Bumping change to CR8 process
1.4 Product Category	See product list
1.5 Issue date	2024-05-29

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
2.1.2 Marketing Manager	Salvatore DI VINCENZO
2.1.3 Quality Manager	Jean-Marc BUGNARD

3. Change		
3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Materials	Any indirect material modifications for shipping products in dimensions, material, composition, orientation	ASEK Bumping

4. Description of change		
	Old	New
4.1 Description	Current PBO process: - PBO1 material: HD8820 - RDL material: Ti / Al / Ti (Sputter), etchant: Phosphoric acid base, HF base - UBM metal: Al/ NiV / Cu (Sputter), etchant: Nitric acid base, Phosphoric acid base	Purpose CR8 process: - PBO1 material: HD4000E - RDL material: Ti/Cu (Sputter) + Cu (Plate), etchant: (Cu Ti)H2O2 base - UBM metal: Ti/Cu (Sputter) + Cu (Plate), etchant: (Cu Ti)H2O2 base
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No impact	

5. Reason / motivation for change	
5.1 Motivation	Material supplier notice ASE that BASF R-104B etching surfactant will be terminated in Oct'24. There are no other suppliers of the same chemistry, so related products will be forced to transfer product type. We took the opportunity to change the whole Bumping process to CR8 qualified process.
5.2 Customer Benefit	SERVICE CONTINUITY

6. Marking of parts / traceability of change	
6.1 Description	New Finished good codes

7. Timing / schedule	
7.1 Date of qualification results	2024-07-31
7.2 Intended start of delivery	2024-08-31
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation			
8.1 Description	14761 RER_6088-1884-W-2024_STLED524 STBB3_CR8 Bumping Process ASE K7 TAIWAN.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2024-05-29

9. Attachments (additional documentations)
14761 Public product.pdf 14761 RER_6088-1884-W-2024_STLED524 STBB3_CR8 Bumping Process ASE K7 TAIWAN.pdf

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
	STBB3JCCR	
	STBB3JR	
	STLED524	

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PCN Title : Bumping change to CR8 process

PCN Reference : ANALOG MEMS SENSORS/24/14761

Subject : Public Products List

Dear Customer,

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

STBB3JR	STBB3JCCR	STLED524

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Reliability Evaluation Report

STLED524, STBB3
New Bumping Process CR8 in ASE K7 TAIWAN

General Information	
Product Line	UI47, UI62
P/N	STLED524, STBB3
Product Division	AMS
Package	CSP 0.4 26-100, CSP 0.4 17-20
Silicon Process Technology	BCD6S

Location	
Wafer Fab	CM5F-Catania CTM8
Bumping Plant	ASE K7 TAIWAN
DPS Plant	ST SHENZHEN
Results	
Reliability Assessment	PASS

DOCUMENT INFORMATION

Version	Date	Pages	Comment
1.0	5/30/2024	4	Intermediate Report

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.
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TABLE OF CONTENTS

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1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
JESD47	Stress-Test-Driven Qualification of Integrated Circuits

2 GLOSSARY

	Short description
Tj	Temperature at junction of the device
T_A	Temperature of ambient air
RH	Relative Humidity
Vcc max	Max Operative Voltage

3 RELIABILITY EVALUATION OVERVIEW

3.1 Objectives

The objective of this qualification is to qualify new process of Bumping CR8 in ASE K7 TAIWAN.
No change to the Package Outline Assembly (mechanical) and electrical characteristics (datasheet). No other change is made with respect to this PCN. Wafer diffusion as well as Testing & Finishing/ DPS remain unchanged both in terms of flow and location. The packages under qualification are the CSP 0.4 26-100 and CSP 0.4 17-20.

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 RESULTS SUMMARY

ST refers to the JEDEC standard JESD47 when conducting reliability tests for the qualification of new product.

4.1 Test plan and results summary

Table 1. Package qualification tests

Stress (Abbv.)	Ref.	Conditions	Requirements				Notes
			# Lot	SS	Duration	Pass Criteria (Fails / Tested)	
MSL Preconditioning Must be performed prior to: THB, HAST, TC, AC, & UHAST	JESD22 A113 J-STD-020	Preconditioning: (Test @ Rm) SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, & PTC; Peak Reflow Temp = 260C	MSL1				
High Temperature Storage Life (HTSL)	JESD22 A103	$T_A \geq 150°C$	6 Lots	462	1000hrs	0/462	
Temperature-HumidityBias (THB)	JESD22 A101	THB, 85°C, 85% RH Vcc max	6 Lots	462	500hrs 1000hrs	0/462 Running	1
Unbiased HAST (UHAST)	JESD22 A118	130 °C / 85% RH	6 Lots	462	96hrs	0/462	1
Temperature Cycling (TC)	JESD22 A104	G -40°C to +125°C	6 Lots	462	850cycles	0/462	1

Table 2. Assembly integrity Tests

Stress (Abbv.)	Ref.	Conditions	Requirements			Notes
			# Lot	SS	Pass Criteria (Fails / Tested)	
Solderability	J-STD-002	>95% Lead coverage	6	5 units / all terminations	0/30	
Solder Ball Shear	JESD22 B117	Characterization (all balls for 10 units)	6	5 units / All balls	0/30	

Notes:

1. Preconditioning with soak per J-STD-020 at rated moisture sensitivity level prior to acceleration stress testing.