PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data	
1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	AMS/21/12725
1.3 Title of PCN	Assembly in UTAC Thailand for selected products
1.4 Product Category	See product list
1.5 Issue date	2021-12-21

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	Giuseppe LISI

3. Change		
3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Methods	(Not Defined)	Assembly plant : - UTAC Thailand

4. Description of change		
	Old	New
4.1 Description	Assembly plant : - Amkor P3	Assembly plant : - UTAC Thailand
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No impact	

5. Reason / motivation for change	
5.1 Motivation	To increase assembly capacity
5.2 Customer Benefit	CAPACITY INCREASE

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

7. Timing / schedule	
7.1 Date of qualification results	2021-12-21
7.2 Intended start of delivery	2022-03-31
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation			
8.1 Description	12725 Qual report.zip		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2021-12-21

9. Attachments (additional documentations)
12725 Public product.pdf 12725 Qual report.zip

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
	LED7706TR	
	LED7707TR	

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Public Products List

Publict 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 : Assembly in UTAC Thailand for selected products

PCN Reference : AMS/21/12725

Subject : Public Products List

Dear Customer,

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

LED7707TR	LED7706TR	

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Reliability Evaluation Report

LED7707 – UK09
UTAC

General Information	
Product Line	UK0901
P/N	LED7707
Product Division	AMS
Package	VFQFPN24 5x5x1
Silicon Process Technology	BCD5S

Location	
Wafer Fab	Ang Mo Kio
Assembly Plant	UTAC
Results	
Reliability Assessment	PASS

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1	17/12/2021	5	Lucio Costa	Ivan Grasso	New release

TABLE OF CONTENTS

1 APPLICABLE AND REFERENCE DOCUMENTS

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

2 GLOSSARY

Item	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

This report is intended to provide reliability results for LED7707 in BCD5S process technology, a LED driver with boost regulator for LCD panels backlight product packaged in VFQFPN24 5x5x1 at UTAC.

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

Device qualification tests

Stress (Abbv.)	Ref.	Conditions	Requirements				Notes
			# Lot	SS	Duration	Results	
High Temperature Operating Life (HTOL)	JESD22 A108	Tj ≥ 125° C Vcc ≥ Vcc max	3 Lots	231	1000hrs	0/231	
High Temperature Storage Life (HTSL)	JESD22 A103	T_A ≥ 150°C	3 Lots	75	1000hrs	0/75	
Latch-Up (LU)	JESD78	Class I	1 Lot	3 units	100mA, 1.5XVdd	PASS	
Human Body Model ESD (HBM)	JS001	T_A = 25°C	1 Lot	3 units	2000V, Class 2	PASS	
Charged Device Model ESD (CDM)	JS002	T_A = 25°C	1 Lot	3 units	500V, Class C2A	PASS	

Package qualification tests

Stress (Abbv.)	Ref.	Conditions		Requirements			Notes
			# Lot	SS	Duration	Results	
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	MSL3				
Temperature-Humidity-Bias (THB)	JESD22 A101	THB, 85°C, 85% RH Vcc max	3 Lots	75	1000hrs	0/75	1
Autoclave (AC)	JESD22 A102	AC, 121°C, 100%RH	3 Lots	75	96hrs	0/75	1
Temperature Cycling (TC)	JESD22 A104	C -65°C to +150°C	3 Lots	75	500cycles	0/75	1

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

4.2 Tests Description

Test name	Description	Purpose
Device qualification tests		
High Temperature Operating Life (HTOL)	The device is stressed in static or dynamic configuration, approaching the operative max. absolute ratings in terms of junction temperature and bias condition.	To determine the effects of bias conditions and temperature on solid state devices over time. It simulates the devices' operating condition in an accelerated way. The typical failure modes are related to, silicon degradation, wire-bonds degradation, oxide faults.
High Temperature Storage Life (HTSL)	The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.	To investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.
Latch-Up (LU)	The device is submitted to a direct current forced/sunk into the input/output pins. Removing the direct current no change in the supply current must be observed.	To verify the presence of bulk parasitic effect inducing latch-up.
Human Body Model ESD (HBM)	The device is submitted to a high voltage peak on all his pins simulating ESD stress according to Human Body Model	To classify the device according to his susceptibility to damage or degradation by exposure to electrostatic discharge.
Charged Device Model ESD (CDM)	The device is submitted to a high voltage peak on all his pins simulating ESD stress according to Charge Device Model	To classify the device according to his susceptibility to damage or degradation by exposure to electrostatic discharge.
Package Oriented		
MSL Preconditioning must be performed prior to: THB, HAST, TC, AC, & UHAST	The device is submitted to a typical temperature profile used for surface mounting devices, after a controlled moisture absorption.	As stand-alone test: to investigate the moisture sensitivity level. As preconditioning before other reliability tests: to verify that the surface mounting stress does not impact on the subsequent reliability performance. The typical failure modes are "popcorn" effect and delamination.
Temperature-Humidity-Bias (THB)	The device is biased in static configuration minimizing its internal power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	To evaluate the package moisture resistance with electrical field applied, both electrolytic and galvanic corrosion are put in evidence.
Autoclave (AC)	The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.	To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
Temperature Cycling (TC)	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.

Reliability Evaluation Report

LED7706 – UK04
UTAC

General Information	
Product Line	UK0401
P/N	LED7706TR
Product Division	AMS
Package	VFQFPN24 4x4x1
Silicon Process Technology	BCD5S

Location	
Wafer Fab	Ang Mo Kio
Assembly Plant	UTAC
Results	
Reliability Assessment	PASS

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3 RELIABILITY EVALUATION OVERVIEW

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This report is intended to provide reliability results for LED7704 in BCD5S process technology, a LED driver with boost regulator for LCD panels backlight product packaged in VFQFPN24 4x4x1 at UTAC.

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