PRODUCT INFORMATION LETTER

PIL IPD-IPC/13/7922
Dated 11 Jun 2013

Use of NRS assembly line in ST Bouskoura for product

TSM103Wxxx (Ecopack 2 and Cu wire)

Sales Type/product family label	See attached list
Type of change	Equipment change
Reason for change	Production rationalization and flexibility
Description	We will start assembling our products TSM103Wxxx also on the NRS line in Bouskoura plant.
Forecasted date of implementation	15-Jun-2013
Forecasted date of samples for customer	15-Jul-2013
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	04-Jun-2013
Involved ST facilities	Bouskoura (Morocco)

DOCUMENT APPROVAL

Name	Function
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ATTACHMENT TO PIL IPD-IPC/13/7922

WHAT*:*

This PIL is linked to the following previous notifications :

PCN APM-IPC/09/4684 dated 06/23/2009

"IPC PRODUCTS IN SO8/14/16 LEAD NRS & STAND-ALONE ASSEMBLY LINE using Halogen-free materials in ST Bouskoura (Morocco)"

and

PCN APM-IPC/11/6665 dated 07/15/2011

"Implementation of Cu wire and Halogen Free compliant epoxy resin on SO8 package at Bouskoura assembly site (BCD1, BCD2s and Bipolar products)"

to inform you that with immediate effect the products TSM103Wxxx can be assembled also on the NRS line in our Bouskoura plant.

WHY*:*

In order to achieve the maximum production flexibility.

HOW*:*

The products TSM103Wxxx assembled on the NRS line will be identified internally and on the ST box labels by the following new Finished Goods :

Commercial Product	New Finished Goods
TSM103WID	TSM103WIHF-1/
TSM103WIDT	TSM103WITHF-1/
TSM103WAID	TSM103WAI-1HF/
TSM103WAIDT	TSM103WAITD-1HF/

Please find attached the Reliability Report.

WHEN*:*

Depending on the production needs in Bouskoura, we might start using the NRS line anytime in June, 2013.

Reliability Report

Qualification of 0303 product line in SO8L package on NSR assembly line in ST Bouskoura – Morocco

General Information	
Product Line	*0303AC6*
Product division	*I&PC – IPD Group*
Package	*SO8- Cu wire*
Silicon process technology	*Bipolar*

Locations	
Wafer fab location	*ANG MO KIO (Singapore)*
Assembly plant location	*BOUSKOURA (Morocco)*
Reliability assessment	*Pass*

DOCUMENT HISTORY

Version	Date	Pages	Author	Comment
1.0	30-May-13	3	S. Regini	Original document

Issued by

Samantha Regini

Approved by

Antonino Motta

TABLE OF CONTENTS

1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
AEC-Q100	: Stress test qualification for integrated circuits
8161393	: General Specification For Product Development

2 RELIABILITY EVALUATION OVERVIEW

2.1 Objectives

This report contains the reliability activities in order to evaluate NRS assembly line for 0303 device assembled in SO8 package in BOUSKOURA (Morocco) plant.
0303 product line is assembled on NSR assembly line using Cu wire bonding and halogen free materials already qualified on STANDALONE assembly line in Bouskoura. (ref. **RR002611CS2047**).
According to Reliability Qualification Plan, below is the list of the trials performed:

Package Oriented Tests

- Preconditioning
- Temperature Cycling
- Autoclave
- High Temperature Storage Life

2.2 Conclusion

Taking in account the results of the trials performed **the NRS assembly line can be qualified for the device 0303 diffused in ANG MO KIO and assembled in SO8 package in BOUSKOURA (Morocco) from reliability viewpoint.**

3 DEVICE CHARACTERISTICS

3.1 Traceability

Wafer fab information	
Wafer fab manufacturing location	*ANG MO KIO*
Wafer diameter	*6 inch*
Wafer thickness	*375um*
Silicon process technology	*BIPOLAR*
Die finishing back side	*RAW SILICON*
Die size	*1890x2120 um*
Bond pad metallization layers	*AlSiCu*
Passivation	*SiN/POLYIMIDE*
Metal levels	*1*

Assembly Information	
Assembly plant location	*BOUSKOURA (Morocco)*
Package description	*SO8*
Die pad size	*94x125 mm*
Molding compound	*SUMITOMO EME-G700K*
Wires bonding materials/diameters	*Cu D1.0*
Die attach material	*ABLEBOND 8601S-25*
Lead solder material	*NiThPdAgAu*

4 TESTS RESULTS SUMMARY

4.1 Test plan and results summary

Package Oriented Tests							
Test	**Method**	**Conditions**	**Failure/SS**			**Duration**	**Note**
			Lot 1	**Lot 2**	**Lot 3**		
PC	Pre-Conditioning: Moisture sensitivity level 1						
	SAM @ before and after preconditioning	**JL1: Bake 24hrs @ 125°C Soak 168hrs @ 85°C /85%RH 3X Reflow @ 260°C**	**0/154**				**No delamination before and after PC**
AC	Autoclave						
	PC before	**121°C 2atm**	**0/77**			**240h**	
TC	Temperature Cycling						
	PC before	**Temp. range: -65/+150°C**	**0/77**			**1000cy**	
HTSL	High Temperature Storage						
	No bias	**Tamb=150°C**	**0/77**			**1000h**	

5 TESTS DESCRIPTION & DETAILED RESULTS

5.1 Package oriented tests

5.1.1 Pre-Conditioning

The device is submitted to a typical temperature profile used for surface mounting, after a controlled moisture absorption.
The scope is to verify that the surface mounting stress does not impact on the subsequent reliability performance. The typical failure modes are "pop corn" effect and delamination.

5.1.2 High Temperature Storage

The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.
The scope is to investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding

5.1.3 Thermal Cycles

The purpose of this test is to evaluate the thermo mechanical behavior under moderate thermal gradient stress.
Test flow chart is the following:

- Initial testing @ Ta=25°C.
- Readout @ 500 cycles.
- Final Testing @ 1000 cycles @ Ta=25°C.

TEST CONDITIONS:

- Ta= -65°C to +150°C(air)
- 15 min. at temperature extremes
- 1 min. transfer time

5.1.4 Autoclave

The purpose of this test is to point out critical water entry path with consequent corrosion phenomena related to chemical contamination and package hermeticity.
Test flow chart is the following:

- Initial testing @ Ta=25°C.
- Final Testing (240hrs) @ Ta=25°C.

TEST CONDITIONS:

- P=2.0 atm
- Ta=121°C
- test time= 240 hrs

Public Products List

PIL Title : Use of NRS assembly line in ST Bouskoura for product TSM103Wxxx (Ecopack 2 and Cu wire)
PIL Reference : IPD-IPC/13/7922
PIL Created on : 04-JUN-2013

Subject : Public Products List

Dear Customer,

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

ST COMMERCIAL PRODUCT

TSM103WAID TSM103WAIDT TSM103WID
TSM103WIDT

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