PRODUCT/PROCESS CHANGE NOTIFICATION

PCN IPG-DIS/14/8736
Dated 16 Oct 2014

Qualification of a second electrical wafer sort source for SiC diodes

Table 1. Change Implementation Schedule

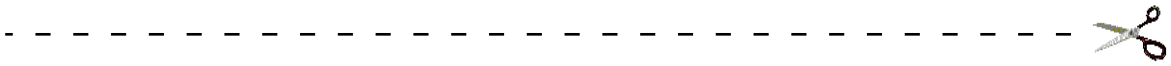
Forecasted implementation date for change	09-Oct-2014
Forecasted availability date of samples for customer	09-Oct-2014
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	09-Oct-2014
Estimated date of changed product first shipment	15-Jan-2015

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	SiC diodes
Type of change	Testing additional location
Reason for change	to increase our manufacturing capacity
Description of the change	Today ST inhouse plant located in Catania is qualified as EWS (Electrical Wafer Sorting) site for SiC Power schottky diode (STPSC). In Q4 2014, both ST Catania plant and ST Toa Payoh plant will be qualified as EWS site for all SiC Power schottky diode (STPSC)
Change Product Identification	internal codification and QA number
Manufacturing Location(s)	

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN IPG-DIS/14/8736**
Please sign and return to STMicroelectronics Sales Office	**Dated 16 Oct 2014**

☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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DOCUMENT APPROVAL

Name	Function
Paris, Eric	Marketing Manager
Duclos, Franck	Product Manager
Rebrasse, Jean-Paul	Q.A. Manager

STMicroelectronics
IPG - ASD & IPAD™ Division[1]
BU Rectifiers

(1) IPG: Industrial & Power Group - ASD: Application Specific Device – IPAD™: Integrated Passive and Active Devices

PCN
Product/Process Change Notification

Qualification of a second electrical wafer sort source for SiC diodes

Notification number:	IPG-DIS/14/8736	**Issue Date**	09/10/2014
Issued by	Aline AUGIS		

Product series affected by the change	STPSC1006D STPSC1006G-TR STPSC10H065B-TR STPSC10H065D STPSC10H065DI STPSC10H065DY STPSC10TH13TI STPSC1206D STPSC12H065CT STPSC12H065DY STPSC16H065CT STPSC2006CW STPSC20H065CT STPSC20H065CTY STPSC20H065CW STPSC20H065CWY STPSC40065CW STPSC406B-TR STPSC406D STPSC4H065B-TR STPSC4H065D STPSC4H065DI STPSC606D STPSC606G-TR STPSC6H065B-TR STPSC6H065D STPSC6H065DI STPSC6H065G-TR STPSC6H12B-TR1 STPSC6TH13TI STPSC806D STPSC806G-TR STPSC8H065B-TR STPSC8H065CT STPSC8H065D STPSC8H065DI STPSC8H065G-TR STPSC8TH13TI
Type of change :	Additional electrical wafer sort source

Description of the change

Today ST inhouse plant located in Catania is qualified as EWS (Electrical Wafer Sorting) site for SiC Power schottky diode (STPSC).
In Q4 2014, both ST Catania plant and ST Toa Payoh plant will be qualified as EWS site for all SiC Power schottky diode (STPSC)

Reason for change

This additional EWS site will increase our manufacturing capacity **for a better service on the considered** Power Rectifier **devices.**

Former versus changed product:	The changed products do not present modified electrical, dimensional or thermal parameters, leaving unchanged the current information published in the product datasheet The Moisture Sensitivity Level of the part (according to the IPC/JEDEC JSTD-020D standard) remains unchanged. The footprint recommended by ST remains the same. There is no change in the packing modes and the standard delivery quantities either. The products remain in full compliance with the ST ECOPACK®2 grade (“halogen-free”).

Disposition of former products

Non applicable

Marking and traceability

There is no change on the marking. The traceability is secured by an internal codification and the QA number.

Qualification complete date	Week 39-2014

Forecasted sample availability

Product family	Sub-family	Commercial part Number	Availability date
Rectifiers	**STPSC serie 600V**	STPSCx06xx	W48-2014
Rectifiers	**STPSC serie 650V**	STPSCxH065xx	W01-2015

Change implementation schedule

Sales types	Estimated production start	Estimated first shipments
STPSC series	**W44-2014**	**W03-2015**

Comments:	

Customer’s feedback

Please contact your local ST sales representative or quality contact for requests concerning this change notification.
Absence of acknowledgement of this PCN within 30 days of receipt will constitute acceptance of the change
Absence of additional response within 90 days of receipt of this PCN will constitute acceptance of the change

Qualification program and results	QRP14126 Attached

Qualification Report

EWS capacity extension in Singapore – Power Schottky Silicon Carbide diodes

General Information	
Product Line	*Rectifiers*
Product Description	*Silicon Carbide diodes*
Product Group	*IPG*
Product division	*ASD & IPAD*
Package	*Multiple*
Maturity level step	*Qualified*

Locations	
Wafer fab	*ST Catania (ITALY)*
EWS plat	*ST Singapore*
Assembly plant	*ST Shenzhen (CHINA)*
Assessment	*PASS*

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
Rev 1	10/09/2014	5	A. Dromel	JP Rebrasse	

TABLE OF CONTENTS

1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
JESD47-H	Stress-Test-Driven Qualification of Integrated Circuits
AEC Q101	Stress test qualification for automotive grade discrete semiconductors

2 GLOSSARY

SS	Sample Size
EWS	Electrical Wafer Sorting
TPY	Toa Payoh
AMK	Ang Mo Kio

3 EVALUATION OVERVIEW

3.1 Objectives

The objective of this report is to confirm that the new EWS test location in Toa Payoh has no impact on products and production flow.
The involved products are listed in the table below:

Product sub-Family	Product devices	
Silicon Carbide Power Schottky Rectifiers	STPSC1006D STPSC1006G-TR STPSC10H065B-TR STPSC10H065D STPSC10H065DI STPSC10H065DY STPSC10H065G-TR STPSC10TH13TI STPSC1206D STPSC12C065D-L STPSC12H065CT STPSC12H065DY STPSC16H065CT STPSC2006CW STPSC20H065CT STPSC20H065CTY STPSC20H065CW STPSC20H065CWY STPSC40065CW STPSC406B-TR	STPSC406D STPSC4H065B-TR STPSC4H065D STPSC4H065DI STPSC606D STPSC606G-TR STPSC6C065D-L STPSC6H065B-TR STPSC6H065D STPSC6H065DI STPSC6H065G-TR STPSC6H12B-TR1 STPSC6TH13TI STPSC806D STPSC806G-TR STPSC8H065B-TR STPSC8H065CT STPSC8H065D STPSC8H065DI STPSC8H065G-TR STPSC8TH13TI

3.2 Conclusion

The flow study and comparative tests have shown that the devices will be tested exactly with same conditions with no impact on final electrical results.

4 CHANGE DESCRIPTION

The EWS testing flow remains identical in the new site, involving same equipment except inking prober as indicated in the table below. There is consequently no impact on the electrical parameters.

Description	Current	New
Wafer Fab	Italy Catania	Italy Catania
EWS Area	Italy Catania	Singapore Toa Payoh
EWS process flow	Test – SBL– Inking – QA Gate	Test – SBL– Inking – QA Gate
Tester	SPEA Tester (C430MX) + TEL P8 Prober	SPEA Tester (C430MX) + TEL P8 Prober
Test programs	SPEA test pgms using SPEA test function library (Multi-site)	SPEA test pgms using SPEA test function library (Multi-site)
Inking Prober	TEL P8XL	EG2001
Assembly and FT	Same flow	Same flow

5 TESTS RESULTS SUMMARY

5.1 Test vehicle

Lot #	Die code	Lot number	Wafer numbers
Lot1	MDC071Y4	Y342892	Wafer 01
Lot2	MDC071Y4	Y404986	Wafers 01 to 11
Lot3	MDC071Y4	Y404984	Wafers 01 & 02

5.2 Test plan and results summary

.

Lot # Wafer #	Mean comparison	CPK	Yields at EWS test in Catania	Yields at EWS test in Toa Pa Yoh	Acceptance criteria: yield Δ < 1%
Lot1	All parameters mean difference <2%	All parameters Cpk >2	97.1%	96.5%	Pass
Lot3 wafer 01	All parameters mean difference <2%	All parameters Cpk >2	96.7%	96.4%	Pass
Lot3 wafer 02	All parameters mean difference <2%	All parameters Cpk >2	97.3%	96.6%	Pass

Lot #	EWS flow at Toa Pa Yoh	CPK	Yields at EWS test in Toa Pa Yoh	Result
Lot2	Validated	All parameters Cpk >2 (*)	95.9%	Pass

(*) Exception Vf@1mA cpk>1.3

All Cpk of comparative measurements for datasheet parameters have revealed to be superior to 2, which warrants the full correlation between the testing results

Comparative yields have also proved to be fully correlated. Pareto defect and wafer maps have been studied carefully and compared. It appears that no major difference has been raised. Final test remains unchanged.

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