PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data	
1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ADG/18/10788
1.3 Title of PCN	PCN - Capacity Extension for STH260N6F6 to HHGrace
1.4 Product Category	Power MOSFET
1.5 Issue date	2018-03-26

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	Riccardo NICOLOSO
2.1.2 Marketing Manager	Antonino PELLEGRINO
2.1.3 Quality Manager	Vincenzo MILITANO

3. Change		
3.1 Category	3.2 Type of change	3.3 Manufacturing Location
Transfer	Line transfer for a full process or process brick (process step, control plan, recipes) from one site to another site: Wafer fabrication	HHGrace

4. Description of change		
	Old	New
4.1 Description	STH260N6F6 silicon produced in Catania FE	STH260N6F6 silicon produced in HHGrace FE
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No Impact in terms of electrical, physical and functional aspects	

5. Reason / motivation for change	
5.1 Motivation	Capacity Extension and improvement in Flexibility to better manage the customer orders
5.2 Customer Benefit	CAPACITY INCREASE

6. Marking of parts / traceability of change	
6.1 Description	by Q.A. number

7. Timing / schedule	
7.1 Date of qualification results	2018-03-19
7.2 Intended start of delivery	2018-06-30
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation			
8.1 Description	10788 Rel08-18.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2018-03-26

9. Attachments (additional documentations)

10788 Public product.pdf
10788 PCN - Capacity Extension for STH260N6F6 to HHG.doc
10788 Rel08-18.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
	STH260N6F6-2	

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Automotive Discrete Group (ADG)
Power Transistor Division

Process Change Information

STH260N6F6-2 Capacity Extension in HHGrace Foundry

Dear Customer,

Following the continuous improvement of our service and in order to increase productivity, we are pleased to announce that the product STH260N6F6-2 whose silicon is currently manufactured in Catania will be also produced in our qualified foundry HHGrace.
The wafers, and the final assembled products, guarantee the same quality and electrical characteristics as per current production.

In the next pages, we are reporting the qualification plan to reach full maturity.

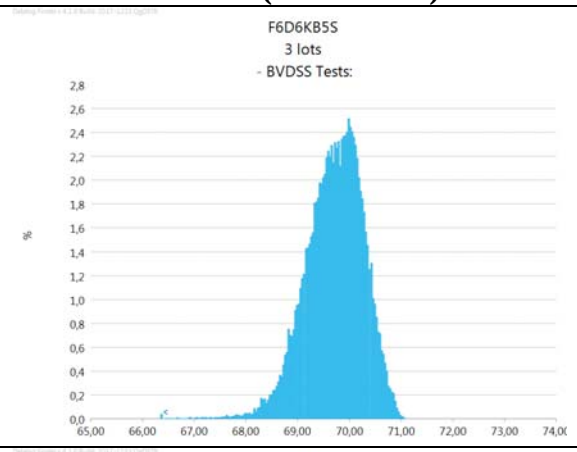
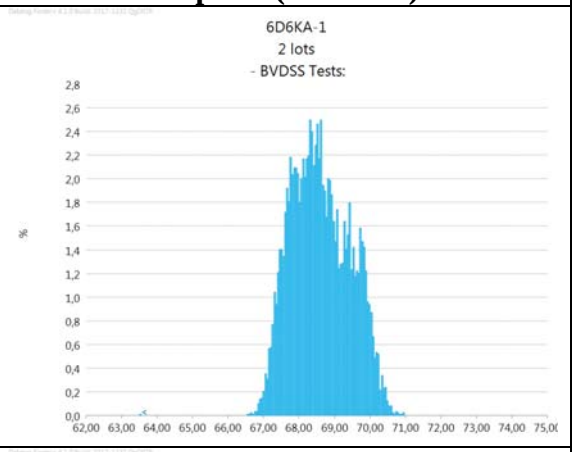
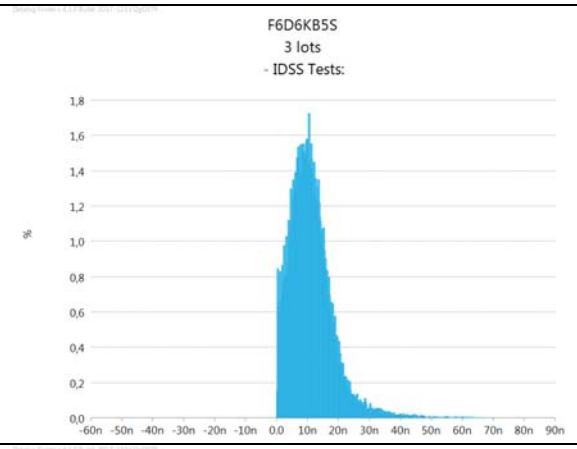
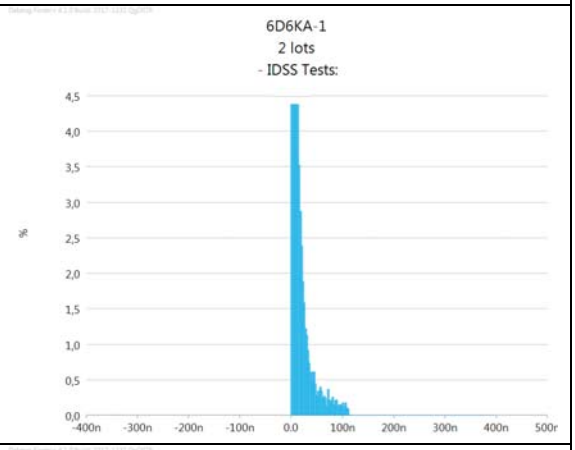
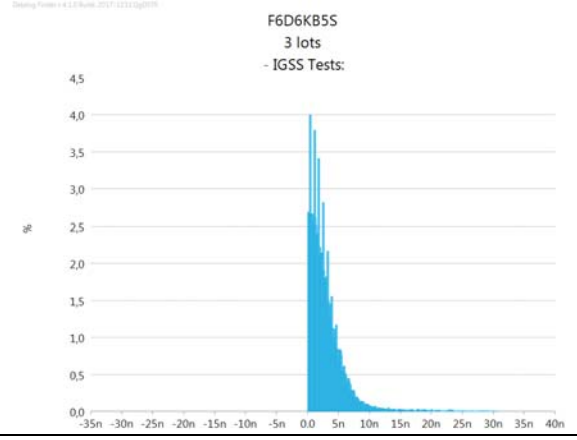
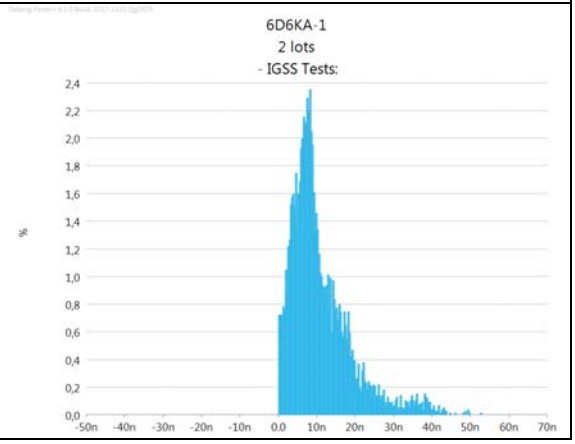
The change has been classified as **Class 1** according to the ZVEI and ST internal rules.

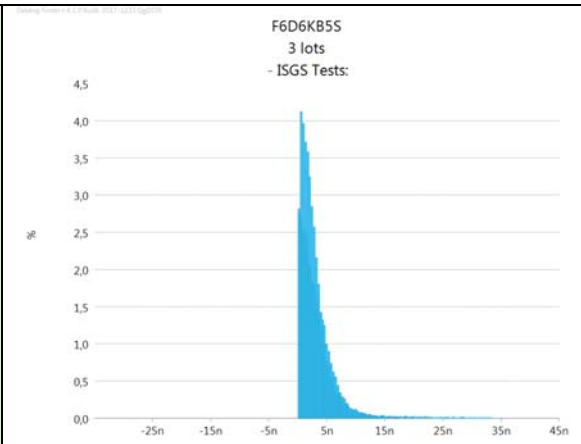
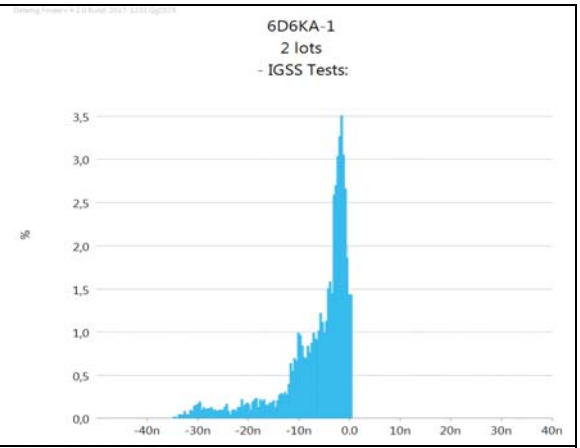
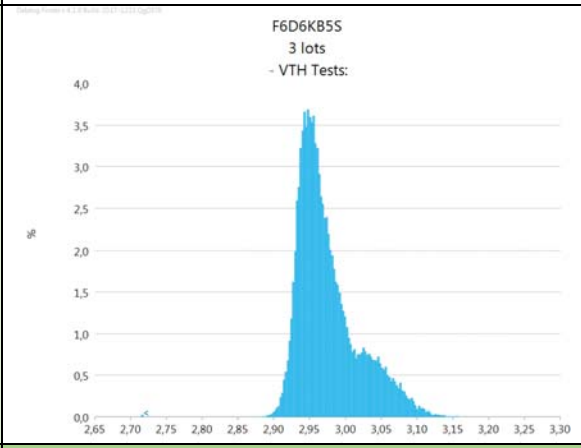
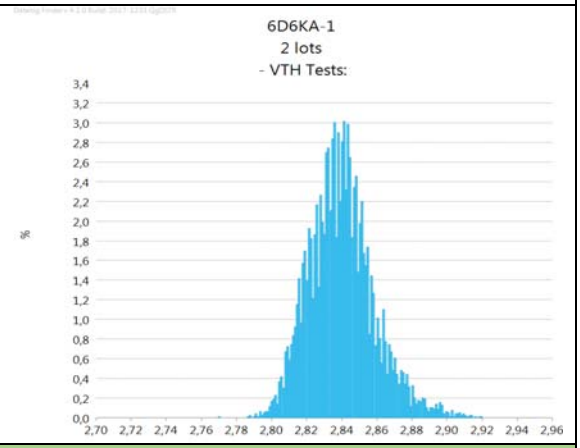
	Assessment of impact on Supply Chain regarding following aspects - contractual agreements - technical interface of processability/manufacturability of customer - form, fit, function, quality performance, reliability	**Remaining risks on Supply Chain?**	
ID	**Type of change**	**No**	**Yes**
SEM-PW-13	Move of all or part of wafer fab to a different location/site/subcontractor	**P**	**P**

The qualification of the change has been completed

Sincerely Yours!

<table>
<tr><th colspan="2">STH260N6F6-2 / 6 and STP260N6F6 Capacity Extension in HHGrace Foundry</th></tr>
<tr><td>ST Part number:</td><td>ST PN: STripFET™ F6 (60V)
STH260N6F6-2
Package: H2PAK</td></tr>
<tr><td>Reason and background of the change</td><td>To increase flexibility by improving capacity avoiding the risk for the customer to line down due to lack of silicon at FE level.</td></tr>
<tr><td>Detailed description of change(s), including affected type of changes</td><td>The Diffusion Process for the above reported products will be performed also in our subcontractor HHGrace. No change at
Wafer probing level → ST’s AMK EWS
Back End level → Shenzhen</td></tr>
<tr><td>Impact on form, fit, function, or reliability.</td><td>No Impact</td></tr>
<tr><td>Datasheet</td><td>No Impact</td></tr>
<tr><td>Benefit of the change</td><td>Capacity and flexibility increase.</td></tr>
<tr><td>Planned Implementation date for change</td><td>The qualification has been completed according to the following plan:
<table>
<tr><th>Test Vehicles</th><th>N. of Lots</th><th>Type of verification</th><th>Forecast</th></tr>
<tr><td>STH260N6F6-2</td><td>1</td><td rowspan="3">Full electrical characterization
Full reliability</td><td>Completed</td></tr>
<tr><td>STD80N4F6</td><td>1</td><td>Completed</td></tr>
<tr><td>STH320N4F6-2</td><td>1</td><td>Completed</td></tr>
</table></td></tr>
</table>

Full Electrical characterization and Comparative analysis	The Electrical Characterization, at wafer level, performed on 3 different lots has demonstrated all the electrical parameters are aligned with current production.	
Test Item	**Current (Catania FE)**	**Proposal (HHG FE)**
BVDSS @ 1mA (Spec. > 60V)		
Idss @ 60V (Spec < 1µA)		
IGSS @ 20V (Spec. < 100nA)		

IGSS @ -20V (Spec. < 100nA)		
Vth @ 250µA (Spec. 2,0V to 4,0V)		

	Current (Catania FE)		Proposal (HHG FE)	
Parameter	**Datasheet**	**CPK**	**Datasheet**	**CPK**
BVDSS @ 1mA	> 60V	5,2	> 60V	4,2
IDSS @ 60V	< 1µA	3,8	< 1µA	4.1
IGSS @ 20V	< 100nA	6,6	< 100nA	5.7
IGSS @ -20V	< 100nA	6,1	< 100nA	5.2
Vth @ 250µA	2.0V ÷ 4.0V	12,3	2.0V ÷ 4.0V	15,2

Lot Reject Rate (Catania FE vs HHG FE)

BIN Pareto Comparison (At Wafer Probing Level)

Catania FE

Bin	%
Good	96.8%
Cat	1.48%
BVdss	0.24%
Idgo	0.04%
Idss	0.47%
Igss	0.78%
Vth	0.03%
UIS	0.16%
PAT	N/A

HHG FE

Bin	%
Good	96.9%
Cat	0.4%
BVdss	0.7%
Idgo	0.1%
Idss	0.6%
Igss	0.0%
Vth	0.8%
UIS	0.0%
PAT	0.5%

Conclusion

All the checked parameters are inside the accepted tolerances.
Based on what above reported we can confirm the silicon produced in HHG foundry is perfectly aligned with the ones currently in production.

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 : PCN - Capacity Extension for STH260N6F6 to HHGrace

PCN Reference : ADG/18/10788

Subject : Public Products List

Dear Customer,

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

STH260N6F6-2		

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