PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data	
1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ADG/19/11690
1.3 Title of PCN	MDmesh M6 Technology 8” Wafer Front-end Capacity Extension - Ang Mo Kio (Singapore) - INDUSTRIAL
1.4 Product Category	Power MOSFET
1.5 Issue date	2019-07-29

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	Maurizio GIUDICE
2.1.2 Marketing Manager	Paolo PETRALI
2.1.3 Quality Manager	Vincenzo MILITANO

3. Change		
3.1 Category	3.2 Type of change	3.3 Manufacturing Location
General	Wafer diameter modification	Ang Mo Mio (Singapore)

4. Description of change		
	Old	New
4.1 Description	MDmesh M6 Technology manufactured in the 6” wafer line of Ang Mo Kio (Singapore)	MDmesh M6 Technology will be manufactured also in the 8” wafer line of Ang Mo Kio (Singapore)
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	no impacts	

5. Reason / motivation for change	
5.1 Motivation	Capacity Extension
5.2 Customer Benefit	CAPACITY INCREASE

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

7. Timing / schedule	
7.1 Date of qualification results	2019-07-18
7.2 Intended start of delivery	2019-10-23
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation			
8.1 Description	11690 Rel16-2019.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	Issue Date	2019-07-29

9. Attachments (additional documentations)

11690 Public product.pdf
11690 MDmesh M6 Technology Power MOSFET Transistors 8 AMK.pdf
11690 Rel16-2019.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
	STU3N65M6	

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Public Products List

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PCN Title : MDmesh M6 Technology 8” Wafer Front-end Capacity Extension - Ang Mo Kio (Singapore) - INDUSTRIAL
PCN Reference : ADG/19/11690

Subject : Public Products List

Dear Customer,

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

STU3N65M6	STD3N65M6	

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PCN ADG/19/11690

Catania, July 22 2019

Automotive Discrete Group (ADG)
Power Transistor Macro-Division
High Voltage Business Unit
Process Change Notification

MDmesh™ M6 Technology Power MOSFET Transistors 8" Wafer Front-end Capacity Extension Ang Mo Kio INDUSTRIAL

Dear Customer,

Following the continuous improvement of our service and in order to increase Front-end Capacity, this document is announcing the new 8" wafer line for MDmesh™ M6 Technology of Power MOSFET Transistors in ST's Ang Mo Kio (Singapore) FAB.

MDmesh™ M6 Technology manufactured in 8" wafer size of Ang Mo Kio (Singapore) FAB, guarantees the same quality and electrical characteristics as per current production.

The involved product series are listed in the table below:

Product Family	Technology	Part Number	Package
Power MOSFET Transistors	MDmesh™ M6	STD3N65M6 STU3N65M6	DPAK IPAK

Qualification program and results availability:

The reliability test report is provided in attachment to this document.

Samples availability:

Samples of the test vehicle devices will be available on request starting from week 30-2019.
Any other sample request will be processed and scheduled by Power Transistor Division upon request.

Change implementation schedule:

The production start and first shipments will be implemented after week 44 of 2019.

Marking and traceability:

Unless otherwise stated by customer specific requirement, traceability of 8" wafer size, manufactured in ST's Ang Mo Kio (Singapore) FAB, will be ensured by internal code (Finished Good) and Q.A. number.

Yours faithfully.

RELIABILITY EVALUATION FOR

BQFY01 silicon line in MDmesh™ M6 Technology
8" Wafer Front-end Capacity Extension - Ang Mo Kio (Singapore) - INDUSTRIAL
Process change

General Information		Traceability	
Commercial Product	: STD3N65M6 STU3N65M6	**Diffusion Plant**	: SG8" (Singapore)
Silicon Line	: BQFY	**Assembly Plant**	: ST Shenzhen (China)
Product Description	: Power MOSFET	**Reliability Lab**	: Catania (Italy)
Package	: DPAK, IPAK	**Reliability Assessment**	
Silicon Technology	: MDmesh™ M6	**Passed**	☒
Division	:Power Transistor Division		

Disclaimer: *this report is a summary of the qualification plan results performed in good faith by STMicroelectronics to evaluate the electronic devices conformance to its specific mission profile. This report and its contents shall not be disclosed to a third party, except in full, without previous written agreement by STMicroelectronics or under the approval of the author (see below)*

REVISION HISTORY

Version	Date	Author	Changes description
1.0	12 July 2019	A.SETTINIERI	FINAL REPORT

APPROVED BY:
Corrado CAPPELLO
ADG Q&R department - Catania
STMicroelectronics

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1. RELIABILITY EVALUATION OVERVIEW

1.1 Objective

Reliability evaluation for BQFY01 silicon line in MDmesh™ M6 Technology 8” Wafer Front-end Capacity Extension - Ang Mo Kio (Singapore) - INDUSTRIAL

1.2 Reliability Test Plan

Reliability tests performed on this device are in agreement with JESD47 and 0061692 internal spec Guidelines and are listed in the Test Plan.
For details on test conditions, generic data used and spec reference see test results summary at Par.3 .

#	Stress	Abrv	Reference	Test Flag	Comments
1	Pre and Post-Stress Electrical Test	TEST	User specification or supplier’s standard Specification	Y	
2	External Visual	EV	JESD22B-101	Y	
3	High Temperature Storage Life	HTSL	JESD22B-101	Y	
4	High Temperature Gate Bias	HTGB	JESD22A-108	Y	
5	High Temperature Reverse Bias	HTRB	JESD22A-108	Y	
6	Pre-conditioning	PC	JESD22A-113	Y	
7	Temperature Cycling	TC	JESD22A-104	Y	
8	Autoclave	AC	JESD22A-102	Y	
9	High Humidity High Temperature Reverse Bias	H3TRB	JESD22A-101	Y	
10	Intermittent Operational Life / Thermal Fatigue	IOL / TF	MIL-STD-750 Method 1037	Y	
11	ESD Characterization	ESD (HBM, CDM)	ESDA-JEDEC JES-001 and AINSI-ESD S5.3.1	Y	

1.3 Conclusion

All reliability tests have been completed with positive results. Neither functional nor parametric rejects were detected at final electrical testing.
Parameter drift analysis performed on samples submitted to die and package oriented test showed a good stability of the main electrical monitored parameters.
Package oriented tests have not put in evidence any criticality.
ESD is accordance with ST spec.

On the basis of the overall results obtained, we can give a positive judgment on the reliability evaluation for BQFY01 silicon line in MDmesh™ M6 Technology 8” Wafer Front-end Capacity Extension - Ang Mo Kio (Singapore) Fab, in agreement with JESD47 and 0061692 internal spec.

2. DEVICE/TEST VEHICLE CHARACTERISTICS

2.1 Generalities

Power MOSFET MDmesh™ M6

2.2 Traceability

Reference “Product Baseline” document if existing, else provide following chapters/information:

D.U.T.: STD3N65M6 PACKAGE: DPAK

Wafer fab information	
Wafer fab manufacturing location	SG8” (Singapore)
Wafer diameter (inches)	8”
Silicon process technology	MDmesh™ M6
Die finishing front side (passivation)	TEOS+ SiN
Die finishing back side	Ti/Ni/Ag
Die area (Stepping die size)	2170 x 1520 µm^2
Metal levels/Materials	1 / AlCu

Assembly Information	
Assembly plant location	ST Shenzhen (China)
Package code description	DPAK
Lead frame/Substrate	FRAME TO251 3L Mono Ve8 OpE 30u SelNi
Die attach material	PREFORM Pb/Ag/Sn
Wires bonding materials/diameters	Gate, Source: Cu 2mils
Molding compound	Halogen Free

D.U.T.: STU3N65M6 PACKAGE: IPAK

Wafer fab information	
Wafer fab manufacturing location	SG8” (Singapore)
Wafer diameter (inches)	8”
Silicon process technology	MDmesh™ M6
Die finishing front side (passivation)	TEOS+ SiN
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Lead frame/Substrate	FRAME TO251 3L Mono Ve8 OpE 30u SelNi
Die attach material	PREFORM Pb/Ag/Sn
Wires bonding materials/diameters	Gate, Source: Cu 2mils
Molding compound	Halogen Free

Reliability Testing Information	
Reliability laboratory location	Catania (Italy)
Electrical testing location	Catania (Italy)

3. TESTS RESULTS SUMMARY

3.1 Lot Information

Lot #	Commercial Product	Silicon Line	Package	Wafer Fab	Assembly plant	Note
1	STD3N65M6	BQFY	DPAK	SG8" (Singapore)	ST Shenzhen (China)	
2						
3	STU3N65M6		IPAK			

3.2 Test results summary

Test	Std ref.	Conditions	SS	Steps	Failure/SS		
					Lot 1	Lot 2	Lot 3
TEST	User specification	All qualification parts tested per the requirements of the appropriate device specification.			235	235	235
External visual	JESD22 B-101	All devices submitted for testing			235	235	235
Silicon oriented tests							
HTSL	JESD22B 101	TA = 150°C	135	1000 h	0/45	0/45	0/45
HTRB	JESD22 A-108	Tj = 150°C, BIAS = 520V	135	1000 h	0/45	0/45	0/45
HTGB	JESD22 A-108	Tj = 150°C, BIAS = 25V	135	1000 h	0/45	0/45	0/45
Package oriented Tests							
Pre - conditioning	JESD22A 113	Drying 24 H @ 125°C Store 168 H @ Ta=85°C Rh=85% Over Reflow @ Tpeak=260°C 3 times	All SMD devices to be subjected to H3TRB, TC, AC, IOL	Final	Pass	Pass	
TC	JESD22 A-104	TA=-55°C TO 150°C	75	1000 cy	0/25	0/25	0/25
AC	JESD22 A-102	TA=121°C ; PA=2ATM	75	96 h	0/25	0/25	0/25
H3TRB	JESD22 A-101	TA=85°C ; RH=85% BIAS= 100V	75	1000 h	0/25	0/25	0/25
IOL	MIL-STD-750 Method 1037	ΔTj ≥100°C	75	10 Kcy	0/25	0/25	0/25
ESD	ESDA–JEDEC JES–001 ANSI – ESD S5.3.1	CDM / HBM	12		0/3 0/3		0/3 0/3