PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data

1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ADG/23/13915
1.3 Title of PCN	VIPower Products (SO-8): Assembly and Final Test Transfer to Bouskoura (second wave)
1.4 Product Category	see list
1.5 Issue date	2023-01-27

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	Mario ASTUTI,Carmelo PISTRITTO,Stello Matteo BILLE'
2.1.2 Marketing Manager	Leonardo Agatino MICCOLI,Rosario RUGGERI
2.1.3 Quality Manager	Daniela FAZIO

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: Assembly site (SOP 2617)	ST Bouskoura - Morocco receiving Plant

4. Description of change

	Old	**New**
4.1 Description	Assembly and Final Test in Shenzhen	Assembly and Final Test in Bouskoura
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No Impact	

5. Reason / motivation for change

5.1 Motivation	Service Continuity
5.2 Customer Benefit	SERVICE CONTINUITY

6. Marking of parts / traceability of change

6.1 Description	Dedicated Finished Good Codes

7. Timing / schedule

7.1 Date of qualification results	2023-01-26
7.2 Intended start of delivery	2023-05-01
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation

8.1 Description	13915 RERLVIP22035_M03-M05-M07_SO8 BSK_Frame SSHD_1.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	**Issue Date**	2023-01-27

9. Attachments (additional documentations)

13915 Public product.pdf
13915 RERLVIP22035_M03-M05-M07_SO8 BSK_Frame SSHD_1.pdf
13915 Details.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
	VN750PSTR-E	
	VN750SMPTR-E	
	VN800PSTR-E	

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PRODUCT/PROCESS CHANGE NOTIFICATION

TITLE	**VIPower Products (SO-8): Assembly and Final Test Transfer to Bouskoura (second wave)**
IMPACTED PRODUCTS	VIPower products housed in SO-8 package. See enclosed list.
MANUFACT. STEP	Assembly and Final Testing
INVOLVED PLANT	Recipient: ST Shenzhen Plant (China) Destination: ST Bouskoura Plant (Morocco)
CHANGE REASON	ST Shenzhen SO8 package line closure June 30, 2023: Service and Capacity improvement for business continuity. Manufacturing process optimization.
CHANGE DESCRIPTION	Transfer of package assembly and Final testing from current Shenzhen (China) to Bouskoura (Morocco) Plant. Package Bill of Material is subject to upgrade as described in the following document.
TRACEABILITY	Dedicated Finished Good code (internal part number).
VALIDATION	According to ZVEI Delta Qualification Matrix corresponding to following selected items: ✚ SEM-PA-04 Change of lead frame finishing material / area (internal) ✚ SEM-PA-05 Change of lead and slug plating material /plating tickness (external) ✚ SEM-PA-18 Move all or parts of production to a different assembly site ✚ SEM-TF-01 Move of all or part of electrical wafer test and/or final test to a different test site See following document for details and attached qualification report.
CURRENT PRODUCTS	Replaced by new version featuring new Plant and upgraded package
REPORTS	Qualification performed on Test Vehicles enclosed to this communication

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VIPower® products in SO-8 package: Assembly and Final Test Transfer to Bouskoura (second wave)

Agenda

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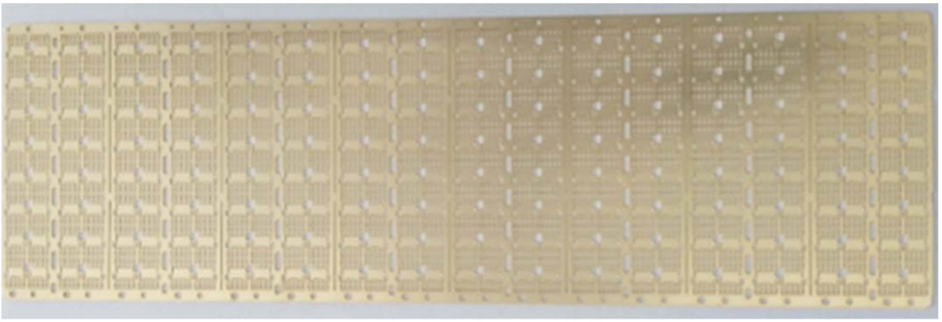
Change description

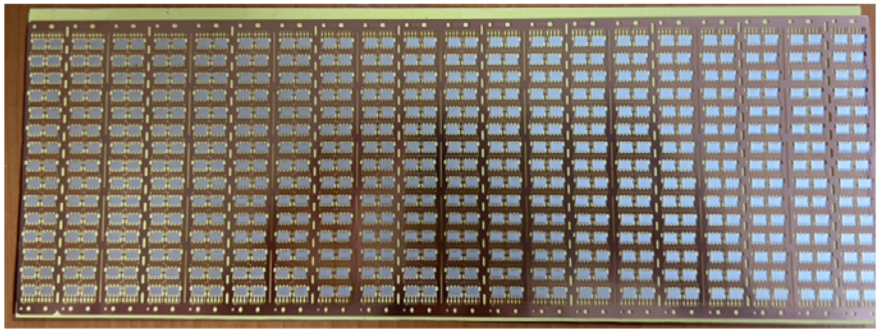
- Aim of this document is to describe the activity performed to qualify the VIPower® products assembled in SO-8 package with the **S**uper**S**uper**H**igh**D**ensity Lead Frame in Bouskoura ST plant.
- The new Lead Frame material **S**uper**S**uper**H**igh**D**ensity ensure the same quality and electrical characteristics the current products processed in Shenzhen ST plant with the **H**igh**D**ensity Lead Frame.
- All reliability tests have been completed with positive results.

SO8 Lead Frame Density comparison: **H**igh **D**ensity vs **S**uper **S**uper **H**igh **D**ensity

- **256** Units (8 rows, 32 columns) for each Leed Frame **H**igh **D**ensity in Shenzhen plant



- **600** Units (15 rows, 40 columns) for each Leed Frame **S**uper **S**uper **H**igh **D**ensity in Bouskoura ST plant.



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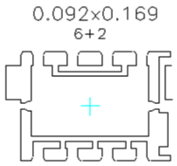
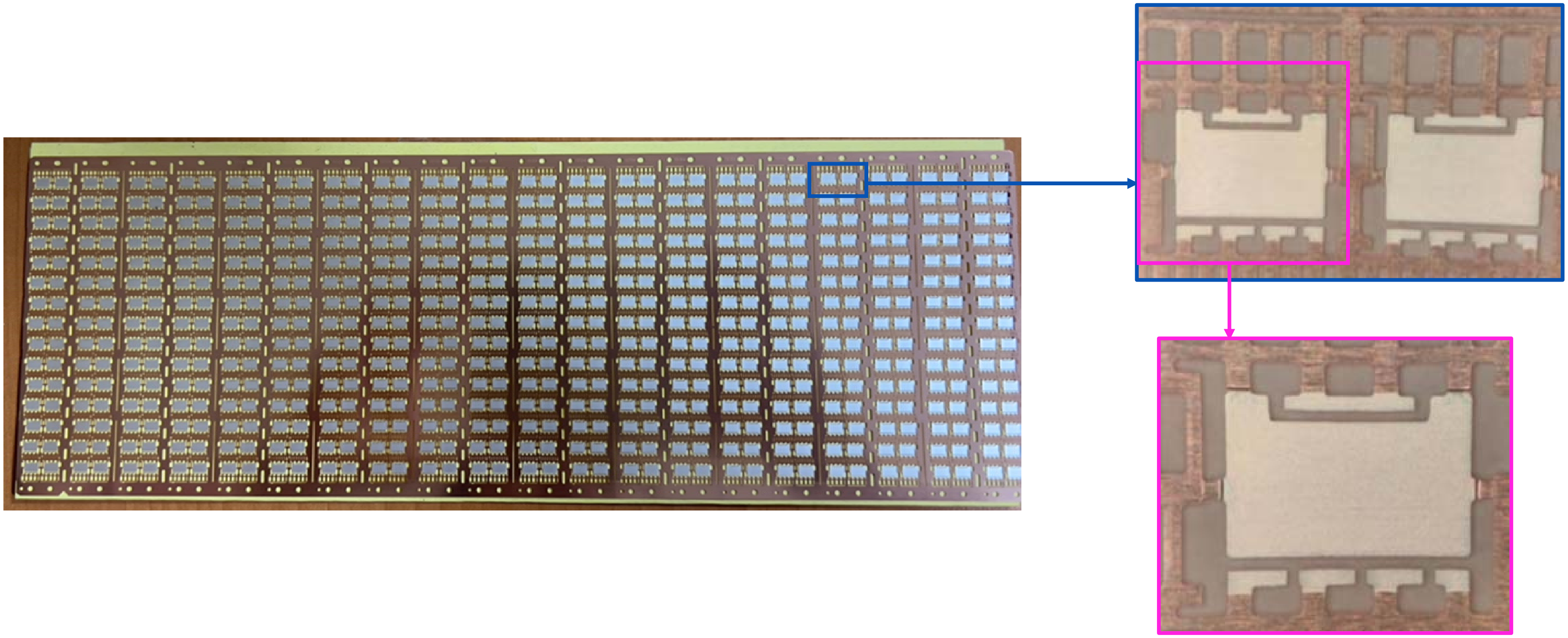
SO8 SSHD Lead Frame option

SO8 Lead Frame Option



Leadframe PN	FRAME SO 8L 92x169 6+2 SSHD 600uOpK SpAg
High **D**ensity in Shenzhen ST plant	OPT K
	PPF
Super **S**uper **H**igh **D**ensity in Bouskoura ST plant	OPT K
	Spag

FRAME SO 8L 92x169 6+2 SSHD 600uOpK SpAg



Bill Of Material Comparison

SO 08 STRIP SINGLE ISLAND package

Actual Bill of Material in SHENZHEN plant	
ITEM	**MATERIAL**
WIRE	WIRE Cu D2 BL40-55g EL15-25%
FRAME	SO 8L 169x92 Mtx HD OpK NiThPdAgAu
DIE ATTACH	GLUE LOCTITE ABLESTIK QMI95072A1
MOLD COMPOUND	RESIN SUMITOMO EME-G700KC

➡

Actual Bill of Material in BOUSKOURA plant	
ITEM	**MATERIAL**
WIRE	WIRE Cu D2 BL40-55g EL15-25%
FRAME	SO 8L 92x169 6+2 SSHD 600uOpK SpAg
DIE ATTACH	GLUE LOCTITE ABLESTIK QMI95072A1
MOLD COMPOUND	RESIN SUMITOMO EME-G700KC

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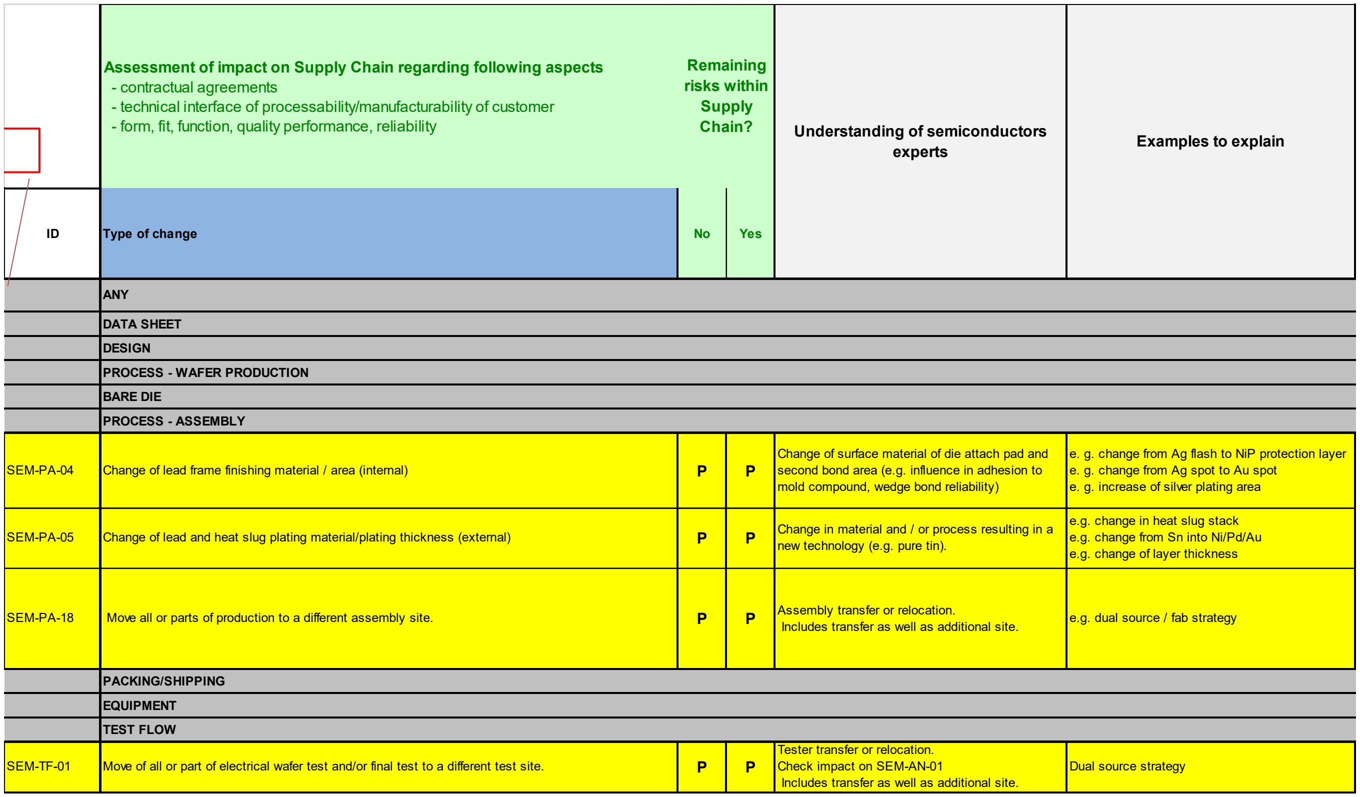
ZVEI Guidelines

- According to ZVEI recommendations, the notification is required.



	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 within Supply Chain?**		**Understanding of semiconductors experts**	**Examples to explain**
ID	**Type of change**	**No**	**Yes**		
	ANY				
	DATA SHEET				
	DESIGN				
	PROCESS - WAFER PRODUCTION				
	BARE DIE				
	PROCESS - ASSEMBLY				
SEM-PA-04	Change of lead frame finishing material / area (internal)	**P**	**P**	Change of surface material of die attach pad and second bond area (e.g. influence in adhesion to mold compound, wedge bond reliability)	e. g. change from Ag flash to NiP protection layer e. g. change from Ag spot to Au spot e. g. increase of silver plating area
SEM-PA-05	Change of lead and heat slug plating material/plating thickness (external)	**P**	**P**	Change in material and / or process resulting in a new technology (e.g. pure tin).	e.g. change in heat slug stack e.g. change from Sn into Ni/Pd/Au e.g. change of layer thickness
SEM-PA-18	Move all or parts of production to a different assembly site.	**P**	**P**	Assembly transfer or relocation. Includes transfer as well as additional site.	e.g. dual source / fab strategy
	PACKING/SHIPPING				
	EQUIPMENT				
	TEST FLOW				
SEM-TF-01	Move of all or part of electrical wafer test and/or final test to a different test site.	**P**	**P**	Tester transfer or relocation. Check impact on SEM-AN-01 Includes transfer as well as additional site.	Dual source strategy

VIPower® Product lines impacted

VIPower® Product lines in SO 08 STRIP SINGLE ISLAND package

Commercial Product :	VN800PSTR-E	(Silicon Line VNT903)
	VN800PSTR-61-E	(Silicon Line VNT903)
Commercial Product :	VN750SMPTR-E	(Silicon Line VNE801)
Commercial Product :	VN750PSTR-E	(Silicon Line VNE701)

Conclusions

- Detailed qualification activity has been performed in order to qualify the VIPower® products assembled in SO-8 package with the **S**uper**S**uper**H**igh**D**ensity Lead Frame in Bouskoura ST plant.
- All reliability tests have been completed with positive results;
- This report shows the positive results achieved processing the VIPower® products assembled in SO-8 package and the **S**uper**S**uper**H**igh**D**ensity Lead Frame, ensuring the same quality and electrical characteristics as the current production in Shenzhen ST plant.

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 : VIPower Products (SO-8): Assembly and Final Test Transfer to Bouskoura (second wave)
PCN Reference : ADG/23/13915

Subject : Public Products List

Dear Customer,

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

VN800PSTR-E	**VN750SMPTR-E**	**VN750PSTR-E**

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