PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data

1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ADG/21/12926
1.3 Title of PCN	PowerFLAT 5x6 (OD4D,OD4F,OL4F,OD8G,OD45): New Copper Clip Implementation
1.4 Product Category	see list
1.5 Issue date	2021-07-26

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	Mario ASTUTI
2.1.2 Marketing Manager	Anna RANIOLO,Michele SCUTO
2.1.3 Quality Manager	Vincenzo MILITANO

3. Change

3.1 Category	**3.2 Type of change**	**3.3 Manufacturing Location**
Materials	New direct material part number (same supplier, different supplier or new supplier), Lead frame base material	ST Shenzhen (China)

4. Description of change

	Old	**New**
4.1 Description	Current Copper Clip design Copper Clip thickness 0.127 mm	New Copper Clip design with increased surface Copper Clip thickness 0.254 mm
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	No Impact	

5. Reason / motivation for change

5.1 Motivation	To implement a new clip with increased surface and thickness
5.2 Customer Benefit	QUALITY IMPROVEMENT

6. Marking of parts / traceability of change

6.1 Description	Dedicated Finished Good Codes

7. Timing / schedule

7.1 Date of qualification results	2021-07-14
7.2 Intended start of delivery	2021-10-01
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation

8.1 Description	12926 Validation.pdf		
8.2 Qualification report and qualification results	Available (see attachment)	**Issue Date**	2021-07-26

9. Attachments (additional documentations)
12926 Public product.pdf 12926 Validation.pdf 12926 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
	STL190N4F7AG	
	STL210N4F7AG	
	STL210N4LF7AG	

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PRODUCT/PROCESS CHANGE NOTIFICATION

TITLE	**PowerFLAT 5x6 (OD4D,OD4F,OL4F,OD8G,OD45): New Copper Clip Implementation**
IMPACTED PRODUCTS	See attached list
MANUFACT. STEP	Assembly
INVOLVED PLANT	ST Shenzhen (China)
CHANGE REASON	Quality Improvement
CHANGE DESCRIPTION	To implement a new clip with increased surface and thickness (see 12926 validation.pdf for additional info)
TRACEABILITY	Dedicated Finished Good Codes
VALIDATION	According to ZVEI Delta Qualification Matrix here below changes selected: • SEM-PA-03 – Change in leadframe dimension
REPORTS	Validation results included In this communication 12926 Validation.pdf

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 : PowerFLAT 5x6 (OD4D,OD4F,OL4F,OD8G,OD45): New Copper Clip Implementation

PCN Reference : ADG/21/12926

Subject : Public Products List

Dear Customer,

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

STL125N8F7AG	STL210N4F7AG	STL190N4F7AG
STL210N4LF7AG		

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New clip design and High thickness on PowerFLAT 5x6

Agenda

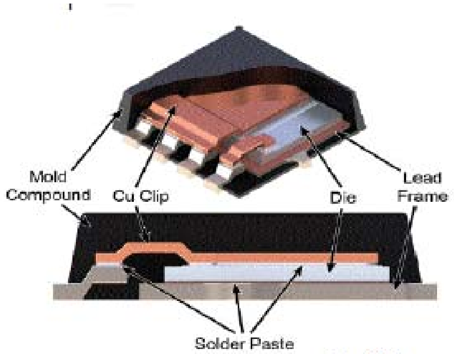
Change description

New clip with increased surface and thickness on PowerFLAT 5x6 package

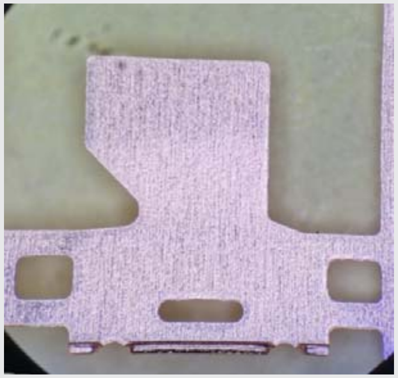
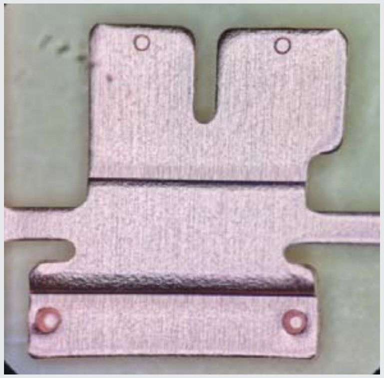
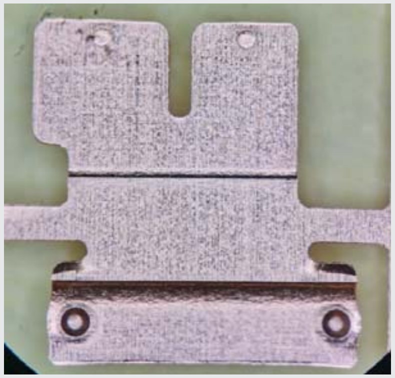
The change purpose is to qualify a new Clip with increased surface and High thickness for some specific products assembled in the P-Flat.

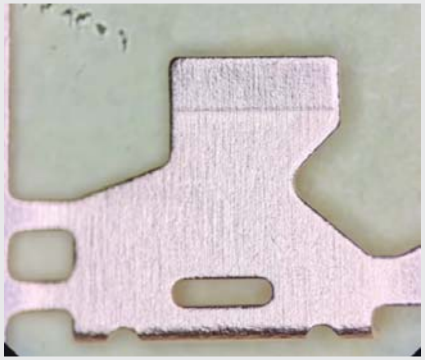
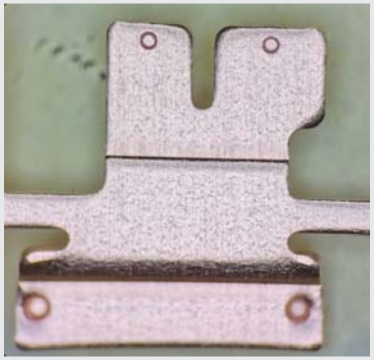
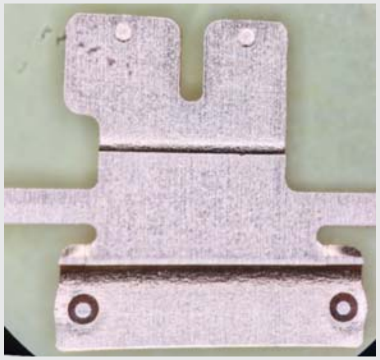
Current clip thickness: 0.127um
New clip thickness: 0.254um

- No other changes in the BOM
- Supplier clips production plant: Haesung (HDS) Korea
- ST assembly production plant : Shenzhen, China

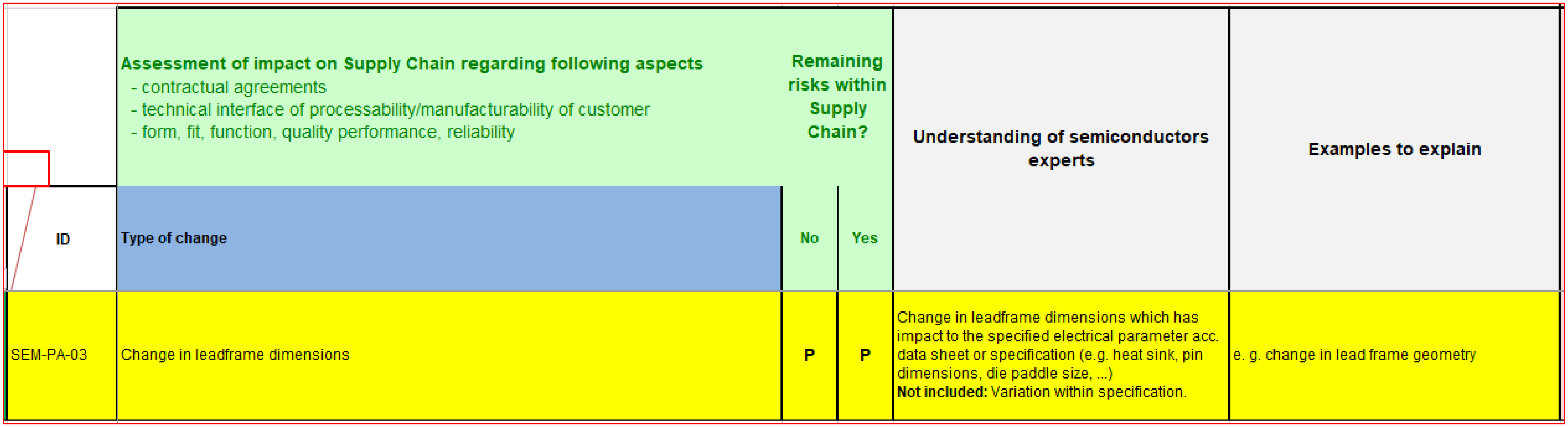


Cu Clip

CURRENT CLIP A	NEW CLIP A
Thickness: 0.127mm	Thickness: 0.254mm
 Front side  Back side	 Front side  Back side

CURRENT CLIP B		NEW CLIP B	
Thickness: 0.127mm		Thickness: 0.254mm	
			
Front side	Back side	Front side	Back side

New clip design and High thickness on PowerFLAT 5x6
ZVEI Guidelines



	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**		
SEM-PA-03	Change in leadframe dimensions	**P**	**P**	Change in leadframe dimensions which has impact to the specified electrical parameter acc. data sheet or specification (e.g. heat sink, pin dimensions, die paddle size, ...) **Not included:** Variation within specification.	e. g. change in lead frame geometry

Extract from ZVEI

Selected Test Vehicles

Lot #	Line	Assy lot	Raw line	Commercial Product
1	OD4D	GK91911H01	BXY5*OD4DQ82	STL190N4F7AG
2	OD4F	GK9200D601	BXY5*OD4FQ82	STL210N4F7AG
3	OD8F	GK9390EK01	BSER*OD8FT52	STL120N8F7

Impacted products:

Commercial product	line
STL190N4F7AG	OD4DA1
STL210N4F7AG	OD4FA1
STL210N4LF7AG	OL4FA1
STL125N8F7AG	OD8GA1
STL195N4F7AG	OD45A1

Qualification lots Reliability program

Test	**Reference**	**AEC-Q101 STM Test conditions**	**OD4D GK91911H01**	**OD4F GK9200D601**	**OD8F GK9390EK01**	**OD4D GK91911HRR Ref. lot**	**Results**
T.C.	JESD22A-104	-55ºC/+150ºC Duration = 1000TC	0/77	0/77	0/77	0/77	PASSED
E.S.	JESD22 A-102	AC (Ta=121ºC, Pa=2atm for 96 hours)	0/77	0/77	0/77	0/77	PASSED
HTS		1000h @ 150ºC	0/77	0/77	0/77	0/77	PASSED

Conclusions

- All reliability tests have been completed with positive results. Neither functional nor parametric rejects were detected at electrical testing.
- Package oriented tests have not put in evidence any criticality.
- Based on the overall results obtained, we can give a positive judgment on the reliability evaluation for New Clip design and high thickness on PowerFLAT 5x6 package for Power MOSFET LV products in agreement with AEC Q101 Rev. D1

Thank you

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