PRODUCT / PROCESS CHANGE NOTIFICATION

1. PCN basic data	
1.1 Company	STMicroelectronics International N.V
1.2 PCN No.	ADG/20/12093
1.3 Title of PCN	New powerflat 5x6 frame from etched NiNiP to etch bare copper
1.4 Product Category	STPS3045DJFY-TR
1.5 Issue date	2020-04-03

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	Richard RENARD
2.1.2 Marketing Manager	Philippe LEGER
2.1.3 Quality Manager	Jean-Paul REBRASSE

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 assy site in China (Shenzen)

4. Description of change		
	Old	New
4.1 Description	powerflat 5x6 frame etched NiNiP	powerflat 5x6 frame etch bare copper
4.2 Anticipated Impact on form,fit, function, quality, reliability or processability?	no	

5. Reason / motivation for change	
5.1 Motivation	Supplier stop producing etched post plated NiNiP
5.2 Customer Benefit	SERVICE CONTINUITY

6. Marking of parts / traceability of change	
6.1 Description	internal codification, label and QA number

7. Timing / schedule	
7.1 Date of qualification results	2020-04-02
7.2 Intended start of delivery	2020-09-28
7.3 Qualification sample available?	Upon Request

8. Qualification / Validation			
8.1 Description			
8.2 Qualification report and qualification results	In progress	Issue Date	

9. Attachments (additional documentations)
12093 Public product.pdf 12093 PCN-Powerflat5x6 auto update IB.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
	STPS3045DJFY-TR	

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STMicroelectronics
ADG[1] – Discrete and Filter Division
BU Rectifers

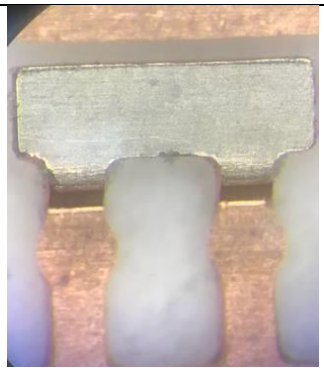
(1) ADG: Automotive and Discrete Group

PCN
Product/Process Change Notification

New powerflat 5x6 frame from etched NiNiP to etch bare copper

Notification number:	ADG-DIS/20/12093	**Issue Date**	02/04/2020
Issued by	Aline Augis		
Product series affected by the change		STPS3045DJFY-TR	
Type of change		Back end realization	

Description of the change

Item	Current	New
Supplier	SHM	SHM
Type	Post-Plated Ni/NiP	Bare copper
Manufacturing Type	Etched	Etched
Manufacturing Location	Japan	Japan
T-post		

Reason for change

Supplier stop producing etched post plated NiNiP

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 footprint recommended by ST remains the same.

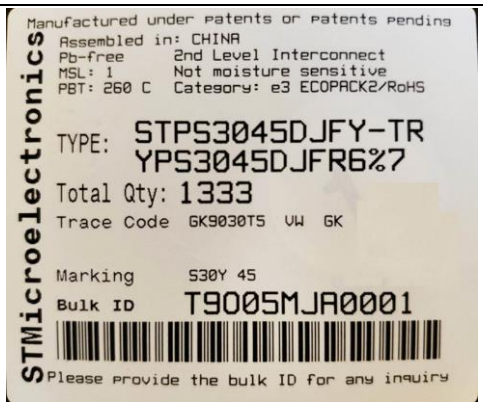
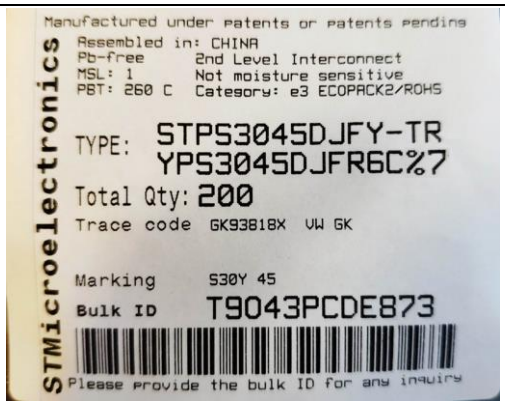
	There is no change in the packing modes and the standard delivery quantities either. The products remain in full compliance with the ST ECOPACK®2 grade (“halogen-free”).

Disposition of former products

Delivery of current product will be done until stock depletion.

Marking and traceability

Current Finish Good/Type: YPS3045DJFR6%7
New codification Finished Good/Type: YPS3045DJFR6C%7

Current Label	New Label
	

Qualification complete date	18/02/2020

Forecasted sample availability

Part	Quantity	Date
STPS3045DJFY-TR	**1000pcs**	**24/04/2020**

Change implementation schedule

Sales types	Estimated production start	Estimated first shipments
STPS3045DJFY-TR	**20/08/2020**	**28/09/2020**

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 180 days of receipt of this PCN will constitute acceptance of the change

Qualification program and results	20012QRP

Reliability Evaluation Report
Qualification of PowerFLAT™ 6x5 package Etch bare Copper frame at ST China (Shenzhen)

General Information	
Product Line	*Rectifiers*
Product Description	*Power Schottky*
Product perimeter	*STPS3045DJYF-TR*
Product Group	*ADG*
Product division	*Discrete & Filter*
Package	*PowerFLAT™ 5x6*
Maturity level step	*Qualified*

Locations	
Wafer fab	*ST SINGAPORE*
Assembly plant	*ST SHENZHEN - CHINA*
Reliability Lab	*ST TOURS - FRANCE*
Reliability assessment	Pass

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comments
1.0	10-Feb-2020	6	Isabelle BALLON	Julien MICHELON	Initial release

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1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
AEC-Q101 Rev.D1	Failure Mechanism Based Stress Test Qualification for Discrete Semiconductors in Automotive Applications
JESD 47	Stress-Test-Driven Qualification of Integrated Circuits
JESD 94	Application specific qualification using knowledge based test methodology
JESD 22	Reliability test methods for packaged devices
MIL-STD-750C	Test method for semiconductor devices

2 GLOSSARY

SS	Sample Size
TC	Temperature Cycling
WBI	Wire Bond Integrity
PC	Pre-conditioning (before test)

3 RELIABILITY EVALUATION OVERVIEW

The objective of this report is to qualify etch bare Copper frame for STPS3045DJFY-TR in PowerFLAT™ 5x6 package at ST Shenzhen (China).

Description of the change:

Item	Previous	New
Supplier	SHM	SHM
Type	Post-Plated Ni/NiP Copper (on T-post)	**Bare Copper**
Manufacturing type	Etched	Etched
Manufacturing location	Japan	Japan

The reliability test methodology used follows the JESD47-H: « Stress Test Driven Qualification Methodology » and AEC-Q101 rev D1.

The following reliability tests ensuing are:

- TC to ensure the mechanical robustness of the products.
- WBI to check the robustness to thermo-mechanical stress.

3.1 Conclusion

Qualification Plan requirements have been fulfilled without exception. Reliability tests have shown that the devices behave correctly against environmental tests (no failure). Moreover, the stability of electrical parameters during the accelerated tests demonstrates the robustness of the products and safe operation, which is consequently expected during their lifetime.

Based on these results, STPS3045DJFY-TR is compliant with AEC-Q101 Rev.D1.

4 DEVICE CHARACTERISTICS

4.1 Device description

Refer to product datasheet. No change

4.2 Construction Note

	STPS3045DJFY-TR
Wafer/Die fab. information	
Wafer fab manufacturing location	ST SINGAPORE
Technology / Process family	Power Schottky
Wafer Testing (EWS) information	
Electrical testing manufacturing location	ST SINGAPORE
Assembly information	
Assembly site	ST Shenzhen - CHINA
Package description	PowerFLAT™ 5x6
Molding compound	ECOPACK®2 compliant component
Lead finishing/bump solder material	Pure Tin
Final testing information	
Testing location	ST Shenzhen - CHINA

5 TESTS RESULTS SUMMARY

5.1 Test vehicles

Lot #	Commercial Product	Package	Comments
Lot 1	STPS3045DJFY-TR	PowerFLAT™ 5x6 (Stamped frame)	Qualification lots
Lot 2	STPS3045DJFY-TR		
Lot 3	STPS3045DJFY-TR		

Detailed results in below chapter will refer to these references.

5.2 Test plan and results summary

Test	Std ref.	Conditions	Steps / Duration	SS	Failure/SS		
					L1	L2	L3
Package Oriented Tests							
TC	JESD 22A-104	-55/+150°C 2cy/h	1Kcy	229	0/77	0/77	0/75 (*)
WBI	MIL-STD-750 Method 2037	HTS 175°C 500hrs + Decapsulation + Pull test	-	5	0/5		

(*) reduced qty at T0.

6 ANNEXES

6.1 Tests description

Test name	Description	Purpose
Package Oriented		
TC Temperature Cycling	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.
WBI Wire Bond integrity	The device is stored at high temperature (Tj max) during 500h. After 500 hours HTS, the resin is removed and a pull test is performed.	To evaluate the quality of the contact of the wire bonding (dissimilar metals) after high temperature storage. Migration of IMC is expected.

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 : New powerflat 5x6 frame from etched NiNiP to etch bare copper

PCN Reference : ADG/20/12093

Subject : Public Products List

Dear Customer,

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

STPS3045DJFY-TR		

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