PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APG-BAD/12/7242
Notification Date 05/04/2012

TO-220: Conversion from Tin dipping to Tin plating Leadframe

Table 1. Change Implementation Schedule

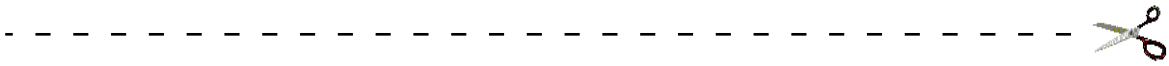
Forecasted implementation date for change	01-Oct-2012
Forecasted availabillity date of samples for customer	27-Apr-2012
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	27-Apr-2012
Estimated date of changed product first shipment	15-Oct-2012

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	See enclosed
Type of change	Package assembly process change
Reason for change	Process Razionalization
Description of the change	Due to process rationalization we are going to dismiss current Tin (Sn) dipping leadframe process and implement Tin (Sn) plating process on VIPower products housed in TO-220 package.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Datacode
Manufacturing Location(s)	1]St Shenzhen -China

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN APG-BAD/12/7242**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 05/04/2012**

☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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DOCUMENT APPROVAL

Name	Function
Liporace, Nicola	Division Marketing Manager
Nicoloso, Riccardo	Division Product Manager
Minerva, Francesco	Division Q.A. Manager

PRODUCT/PROCESS CHANGE NOTIFICATION®

TO-220: Conversion from Tin dipping to Tin plating leadframe

WHAT: Due to process rationalization we are going to dismiss current Tin (Sn) dipping leadframe process and implement Tin (Sn) plating process on VIPower products housed in TO-220 package.

WHY: Process rationalization.

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WHO: All Customers using VIPower products housed in TO-220 package.

WHEN:

- Samples availability on demand.
- Qualification report: Reliability report QP000512CT2235 enclosed.
- Start conversion: from October 2012 onward.

WHERE: ST Shenzhen Assembly Plant**.**

TO220 package

Tin dipping to Tin plating conversion

General Information	
Product Line	VN29
Commercial Product	VNP20N07-E
Silicon process technology	VIPower M0_2
Package	TO220

Locations	
Diffusion fab location	ST CT6 Catania (Italy)
Assembly plant location	ST Shenzhen (China)
Test plant location	ST Shenzhen (China)
Reliability lab location	ST Catania (Italy)

General Information	
Product Line	VN28
Commercial Product	VNP10N06-E
Silicon process technology	VIPower M0_2
Package	TO220

Locations	
Diffusion fab location	ST CT6 Catania (Italy)
Assembly plant location	ST Shenzhen (China)
Test plant location	ST Shenzhen (China)
Reliability lab location	ST Catania (Italy)

General Information	
Product Line	VN78
Commercial Product	VNP14NV04-E
Silicon process technology	VIPower M0_3
Package	TO220

Locations	
Diffusion fab location	ST CT6 Catania (Italy)
Assembly plant location	ST Shenzhen (China)
Test plant location	ST Shenzhen (China)
Reliability lab location	ST Catania (Italy)

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QA and Qualification Section Mng
APG Q&R Catania

- 1. Reliability evaluations overview

In order to qualify for the package TO220 a conversion from Tin dipping to Tin plating 3 products were chosen as test vehicles that are the VNP20N07-E and the VNP10N06-E designed in VIPower M02 technology, the VNP14NV04-E designed in VIPower M03 technology. These products are diffused in ST CT6 Catania (Italy) 6" diffusion fab and assembled in ST Shenzhen (China) in TO220 package.

The qualification will be based using one lot per each chosen vehicle and according to the **AEC_Q100 Rev.G** specification for the Accelerated Environment Stress (test Group A) the following tests will be performed for each lot: Preconditioning (PC), Temperature Humidity Bias (THB), Autoclave (AC), Thermal Cycling (TC), Power Temperature Cycling (PTC), High Temperature Storage (HTS). A Wire Bond Pull (WBP) and the Solderability (SD) analyses as Package Assembly Integrity (test Group C) will be also done.

AEC #	Test Name	STM Test Conditions	Sample Size/ Lots	Results Fails/SS/Lots	Comments
A1	**PC** Pre Cond	- Preconditioning according to level 3 Jedec JESD22-A113F - Reflow according to Jedec JSTD020D-1	Before THB, AC, TC, PTC. Reliability executed on units soldered on PCB		
A2	**THB** Temp Humidity Bias	Ta=85ºC, RH=85%, Vcc=5V, Vs=16V for 1000 hours	77/3		
A3	**AC** Autoclave performed by means **ENV. SEQ.** Enviromental Sequence	**TC** (Ta=-65ºC / +150ºC for 100 cycles) + **AC** (Ta=121ºC, Pa=2atm for 96 hours)	77/3		
A4	**TC** Temp. Cycling	Ta=-65ºC / +150ºC for 500 cycles	77/3		
A5	**PTC** Power Temp. Cycling	Per JA105. Ta=-40ºC / +125ºC for 1000 cycles. Test before and after at room and hot temperatures.	45/1		
A6	**HTSL** High Temp. Storage Life	Ta=150ºC for 1000 hours. TST before and after at room and hot temperatures.	45/3		
C2	**WBP** Wire Bond Pull	Per MIL-STD883, M2011 Condition C or D. 0 and Ppk >= 1.66 or Cpk >= 1.33	30 bonds from minimum 5 of units from 1 lot		
C3	**SD** Solderability		15/1		

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