



PRODUCT INFORMATION LETTER

PIL APM-DIS/09/5183
Notification Date 12/25/2009

APM - ASD & IPAD Division
Rectifiers in TO-220 packages:
Electroplated Lead Finishing in Longgang plant.

PIL APM-DIS/09/5183 - Notification Date 12/25/2009

Production process involved	Electroplating process.
Production process details	Urgent
Reason for change	Production rationalization
Description	This document aims at informing that our Rectifiers in TO-220 package manufactured in the Long Gang plant in China will have their lead plated with matte Tin instead of being hot Tin dipped.
Forecasted date of implementation	18-Jan-2010
Forecasted date of samples for customer	18-Dec-2009
Forecasted date for STMicroelectronics change Qualification Plan results availability	18-Dec-2009
Description of qualification program	See Attached Qualification Plan
Involved ST facilities	Longgang plant

DOCUMENT APPROVAL

Name	Function
Paris, Eric	Division Marketing Manager
Cazaubon, Guy	Division Q.A. Manager
Duclos, Franck	Process Owner



Reliability Report

*Conversion in lead finishing plating for Rectifiers
in TO-220 at ST LONGGANG*

General Information		Locations	
P/N	<i>Rectifiers assembled at ST LONGGANG (China)</i>	Wafer fab	<i>ST TOURS (France) ST AMK (Singapore)</i>
Product Group	<i>IMS</i>	Assembly plant	<i>ST LONGGANG (China)</i>
Product division	<i>APM</i>	Reliability Lab	<i>ST TOURS (France)</i>
Package	<i>TO-220AB / TO-220AC</i>	Reliability assessment	<i>PASS</i>
Maturity level step	<i>30</i>		

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
Rev A	11/17/09	6	Marc Verchiani	G Cazaubon	

Note: This report is a summary of the reliability trials performed in good faith by STMicroelectronics in order to evaluate the potential reliability risks during the product life using a set of defined test methods.
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1 APPLICABLE AND REFERENCE DOCUMENTS

Document reference	Short description
JESD47	Stress-Test-Driven Qualification of Integrated Circuits

2 GLOSSARY

SS	Sample Size
SD	Solderability

3 RELIABILITY EVALUATION OVERVIEW

3.1 Objectives

The objective of this report is to evaluate the plating lead finishing of TO-220 in the ST LONGGANG back-end assembly. At the moment, TO-220 lead are dipped which will be no more used. **This change is effective for all Rectifiers in TO-220 assembled at LONGGANG.**

According to JESD47-F, the recommended tests are solderability to check if the new process will not affect the customer's assembly. A whisker evaluation for all new lead finishing should be also engaged, but in regards of JESD201 "Environmental Acceptance Requirements for Tin Whisker Susceptibility of Tin and Tin Alloy Surface finishes" specification, similarity acceptance are used and based on 08236QRP "Qualification report New Solder Matt Tin Shenzhen".

3.2 Conclusion

Reliability qualification plan have been fulfilled without exception, indicating that the TO-220 plating conversion does not engage any reliability and quality issues.

Solderability of the new lead finishing has been successfully tested whereas Tin whiskers susceptibility is covered by the 08236QRP.



4 DEVICE CHARACTERISTICS

4.1 Construction note

	Rectifiers in TO-220 plating
Wafer/Die fab. information	
Wafer fab manufacturing location	STM Ang Mo Kio 5" and 6" (Singapore) / STM Tours
Bond Pad Metallization layer	Al
Die finishing back side	Ti/Ni/Au
Wafer Testing (EWS) information	
Electrical testing manufacturing location	STM Ang Mo Kio (Singapore) / STM Tours
Assembly information	
Assembly site	STM LONGGANG (China)
Package description	TO-220
Molding compound	Standard Epoxy Resin / ECOPACK®2 Green Mold Compound
Frame material	Ni Plated Copper
Die attach process	Soft solder
Die attach material	Preform Pb/Sn/Ag
Lead finishing process	Tin (Sn 100%)
Final testing information	
Testing location	STM LONGGANG (China)

5 TESTS RESULTS SUMMARY

5.1 Test vehicle

Lot #	Trace Code	Process/ Package	Product Line	Comments
1	W931	TO-220	STPS20H100CT\$%8	TO-220 plating

Detailed results in below chapter will refer to P/N and Lot #.

5.2 Test plan and results summary

Test	PC	Std ref.	Conditions	SS	Steps	Failure/SS	Note
						Lot 1	
SD	N	J-STD-002	Temperature 245 °C Time (on) 5 s Metal (solder) SnAgCu Wet Aging 8 Hrs	10	Visual inspection	0/10	
			Temperature 220 °C Metal (solder) SnPb Time (on) 5 s Wet Aging 8 Hrs	10	Visual inspection	0/10	

GENERIC DATA for WHISKERS (based on 08236QRP)



		Whiskers test results According to JESD201					
Pre-cond.	Stress test	MiniDip	TO220 CuZr	TO220 CuNiP	DPak Matrix	D2Pak	IPak
No Reflow	TC	Pass	Pass	Pass	Pass	Pass	Pass
	RT	Pass	Pass	Pass	Pass	Pass	Pass
	HT	Pass	Pass	Pass	Pass	Pass	Pass
Reflow SnPb 215°C peak	TC	Pass	Pass	Pass	Pass	Pass	Pass
	RT	Pass	Pass	Pass	Pass	Pass	Pass
	HT	Pass	Pass	Pass	Pass	Pass	Pass
Reflow Pb Free 245°C peak	TC	Pass	Pass	Pass	Pass	Pass	Pass
	RT	Pass	Pass	Pass	Pass	Pass	Pass
	HT	Pass	Pass	Pass	Pass	Pass	Pass

TC = Temperature Cycling
RT = Ambient temperature / humidity storage
HT = High humidity storage

SIMILARITY ACCEPTANCE BASED ON:

- Same base metal (alloy copper)
- Same Surface Finish Composition
- Same Assembly Process
- Same Plating Process



6 ANNEXES

6.1 Tests Description

Test name	Description	Purpose
SD Solderability	The device is aged in a wet and dry bath of solder. A preconditioning test is included in this test method, which degrades the termination finish to provide a guard band against marginal finish.	To test whether the packaging materials and processes used during the manufacturing operations process produce a component that can be successfully soldered to the next level assembly using tin lead eutectic solder.

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Commercial Product & Customer Part Number List

Customer Name : ABACUS/POLAR

PIL Title : APM - ASD & IPAD Division//Rectifiers in TO-220 packages//Electroplated Lead Finishing in Longgang plant.

PIL Reference : APM-DIS/09/5183

PIL Created on : 18-DEC-2009

Subject : Customer Part Number List

Dear Customer,

Please find below the list of Part Numbers you have ordered within the last two (2) years which are impacted by this change.

ST COMMERCIAL PRODUCT

STPS10L45CT
STPS1545D
STPS2045CT
STPS20H100CT
STPS3045CT
STPS30L60CT
STPS40170CT
STPS8H100D
STTH2003CT
STTH802D

CUSTOMER PART NUMBER

STPS10L45CT
STPS1545D
STPS2045CT
STPS20H100CT
STPS3045CT
STPS30L60CT
STPS40170CT
STPS8H100D
STTH2003CT

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Public Products List

PIL Title : APM - ASD & IPAD Division//Rectifiers in TO-220 packages//Electroplated Lead Finishing in Longgang plant.

PIL Reference : APM-DIS/09/5183

PIL Created on : 18-DEC-2009

Subject : Public Products List

Dear Customer,

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

ST COMMERCIAL PRODUCT

BYT08P-400	BYT16P-400	STPS10120CT
STPS10150CT	STPS10170CT	STPS1045D
STPS10H100CT	STPS10L25D	STPS10L40CT
STPS10L45CT	STPS10L60D	STPS1545CT
STPS1545D	STPS15L25D	STPS16150CT
STPS16170CT	STPS16L40CT	STPS20100CT
STPS20120CT	STPS20120D	STPS20150CT
STPS20170CT	STPS2030CT	STPS2045CT
STPS2060CT	STPS20H100CT	STPS20L120CT
STPS20L15D	STPS20L25CT	STPS20L45CT
STPS20L60CT	STPS20M100ST	STPS20S100CT
STPS20SM100ST	STPS2545CT	STPS30100ST
STPS30120CT	STPS30150CT	STPS30170CT
STPS3030CT	STPS3045CT	STPS30H100CT
STPS30H60CT	STPS30L120CT	STPS30L30CT
STPS30L40CT	STPS30L45CT	STPS30L60CT
STPS30M100ST	STPS30SM100ST	STPS40120CT
STPS40150CT	STPS40170CT	STPS4030CT
STPS40L15CT	STPS40L40CT	STPS40L45CT
STPS40M100CT	STPS40SM100CT	STPS40SM100CT-H
STPS41H100CT	STPS41L60CT	STPS50U100CT
STPS60150CT	STPS60170CT	STPS60H100CT
STPS61L45CT	STPS61L60CT	STPS745D
STPS8H100D	STPSC1006D	STPSC1206D
STPSC406D	STPSC606D	STPSC806D
STTH1002CT	STTH10LCD06CT	STTH10LCD06D
STTH10R04D	STTH1202D	STTH1210D
STTH1212D	STTH12R06D	STTH1502D
STTH1512D	STTH15L06D	STTH15R06D
STTH1602CT	STTH16L06CT	STTH16R04CT
STTH2002CT	STTH2002D	STTH2003CT
STTH20LCD06CT	STTH20R04D	STTH3002CT
STTH3010D	STTH3012D	STTH30R04D
STTH512D	STTH5L06D	STTH5R06D
STTH602CT	STTH802D	STTH803D



Public Products List

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PIL Reference : APM-DIS/09/5183

PIL Created on : 18-DEC-2009

Subject : Public Products List (Contd.)

ST COMMERCIAL PRODUCT

STTH810D
STTH8R03D
STTH8S06D

STTH812D
STTH8R04D

STTH8L06D
STTH8R06D

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Commercial Product & Customer Part Number List

Customer Name : AVNET NV/SA

PIL Title : APM - ASD & IPAD Division//Rectifiers in TO-220 packages//Electroplated Lead Finishing in Longgang plant.

PIL Reference : APM-DIS/09/5183

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BYT16P-400
STPS1045D
STPS10H100CT
STPS10L25D
STPS10L45CT
STPS10L60D
STPS1545CT
STPS1545D
STPS15L25D
STPS16L40CT
STPS20120CT
STPS20150CT
STPS2030CT
STPS2045CT
STPS20H100CT
STPS20L15D
STPS20L25CT
STPS20L45CT
STPS20L60CT
STPS30120CT
STPS30150CT
STPS3045CT
STPS30H100CT
STPS30L30CT
STPS30L40CT
STPS40150CT
STPS40L40CT
STPS40L45CT
STPS40SM100CT
STPS745D
STPS8H100D
STTH1002CT
STTH1210D
STTH1212D

CUSTOMER PART NUMBER

BYT16P-400
STPS1045D
STPS10H100CT
STPS10L25D
STPS10L45CT
STPS10L60D
STPS1545CT
STPS1545D
STPS15L25D
STPS16L40CT
STPS20120CT
STPS20150CT
STPS2030CT
STPS2045CT
STPS20H100CT
STPS20L15D
STPS20L25CT
STPS20L45CT
STPS20L60CT
STPS30120CT
STPS30150CT
STPS3045CT
STPS30H100CT
STPS30L30CT
STPS30L40CT
STPS40150CT
STPS40L40CT
STPS40L45CT

STPS745D
STPS8H100D
STTH1002CT



Commercial Product & Customer Part Number List

Customer Name : AVNET NV/SA

PIL Title : APM - ASD & IPAD Division//Rectifiers in TO-220 packages//Electroplated Lead Finishing in Longgang plant.

PIL Reference : APM-DIS/09/5183

PIL Created on : 18-DEC-2009

Subject : Customer Part Number List (Contd.)

ST COMMERCIAL PRODUCT

STTH12R06D
STTH1502D
STTH15R06D
STTH1602CT
STTH16L06CT
STTH2002CT
STTH2002D
STTH2003CT
STTH3010D
STTH3012D
STTH506D
STTH512D
STTH5L06D
STTH5R06D
STTH802D
STTH803D
STTH806D
STTH812D
STTH8L06D
STTH8R03D
STTH8R06D

CUSTOMER PART NUMBER

STTH12R06D

STTH15R06D
STTH1602CT
STTH16L06CT
STTH2002CT

STTH2003CT

STTH5L06D
STTH5R06D

STTH803D

STTH8L06D
STTH8R03D
STTH8R06D

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