PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APM-SLI/08/4164
Notification Date 11/13/2008

wires rationalization for shenzen minidip products (in addition to PCN APM-SLI/08/3866)

Table 1. Change Implementation Schedule

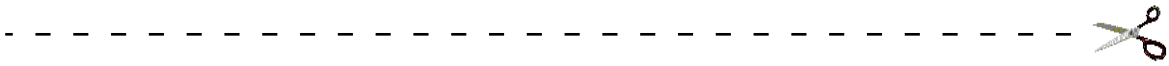
Forecasted implementation date for change	06-Nov-2008
Forecasted availabillity date of samples for customer	06-Nov-2008
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	06-Nov-2008
Estimated date of changed product first shipment	12-Feb-2009

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	All products of PNL71 in minidip package
Type of change	Package assembly material change
Reason for change	WIRE DIAMETER RATIONALIZATION FOR MINIDIP PACKAGE
Description of the change	Please note that this PCN is in addition to the PCN APM-SLI/08/3866 as some products have been added. In order to have a standard process including new technology with wires 0.8mils bonding pad, AMPS BU is qualifying a new gold wire with 0.8 mils diameter. This change is due to impact all minidip packages. Samples already available for LM393 & LM2903. For others, please contact planning.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	date codes
Manufacturing Location(s)	1]St Shenzhen -China 2]St Shenzhen -China

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN APM-SLI/08/4164**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 11/13/2008**

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

Remark

.....

.....

.....

.....

.....

.....

.....

.....

DOCUMENT APPROVAL

Name	Function
Gilot, Yves	Division Marketing Manager
Kaire, Jean-Claude	Division Product Manager
Paccard, Francoise	Division Q.A. Manager

QUALIFICATION REPORT

PCN reference: APM-SLI/08

Qualification Report n°: QA0-8WX1

Qualification Type: Wire0.8mils for SO narrow and DIP package

Process: SO Narrow and DIP

Date of issue: 29th April 2008

Reference documents:

- SOP 2.5.9 Process critical and key parameters
- 0076604 Process Qualification and release to production
- 0078588 Reliability requirements for product qualification
- 0046008 Process control plan for Front End
- 0060531 FMEA procedure
- 0061050 Back end qualification procedure
- 0091984 Construction analysis
- 0037709 Package construction analysis
- 7006451 Management of manufacturing source change
- 0033689 Process flow chart

Content

1. PROCESS MAIN SPECIFICATION CHANGE

1.1 Process main specification change

Assembly change (Wire size reduction)

Process step	Current process	Modified process
Wire bonding	1mils wire	0.8mils wire

1.2 Risk assessment

P,E,Q or R	Parameter	Check
Q	Ball shape and strength	Bond pull strength measurement
E	Parameter deviation	Datalog analysis
R	Reliability	Pressure pot, Thermal cycling, High temperature Bias and Temperature Humidity bias.

1.3 Possible effects of change on Parametric, Electrical, Quality or Reliability

P,E,Q or R	Parameter	Check
Q	Wire sweeping	Wire sweeping measurement
Q	Ball shape and strength	Bond pull strength measurement
E	Parameter deviation	Datalog analysis
R	Reliability	Pressure pot, Thermal cycling, High temperature Bias and Temperature Humidity bias.

2. QUALIFICATION PLAN

2.1 Test vehicle description

	TV1	TV2	TV3	TV4	TV5	Comments
Line	0431	039301	012401	0339	4871	
Plant	Muar	Shenzhen	Shenzhen	Bouskoura	Bouskoura	
Sales Type	TL431DT	LM393N	LM324N	LM339D	TS4871IDT	
FE process	Bipolar	Bipolar	Bipolar	Bipolar	HF4CMOS	
Package	SO8	DIP8	DIP14	SO14	SO8	
Die size (µm)	1220 X 990	950 X 870	1430 X 1360	1100 x 1090	2120 x 1470	
Die thickness (µm)	280	280	280	280	280	
Metallisation	AlSiCu	AlSiCu	AlSiCu	AlSiCu	AlSiCu	
Passivation	Nitride	Nitride	Nitride	Nitride	Nitride + pvapox	
Back side	Raw silicon	Raw silicon	Raw silicon	Raw silicon	Raw silicon	
Leadframe	94x125	100 X 100	80 X 80	94x125	94x125	
Lead finishing	NiPdAu	Sn	NiPdAu	NiPdAu	NiPdAu	
Glue	HITACHI 4900ST10	ABLEBOND 8390	QMI 168	HITACHI 4900ST10	HITACHI 4900ST10	
Molding compound	Nitto MP8000CH4-2A	SAMSUNG SI-7200DMA	KCC KTMC1030SL	Nitto MP8000CH4	Kyocera KE-200P	
Wire	0.8mils	0.8mils	0.8mils	0.8mils	0.8mils	
(Control lot) Wire	1.0mil	1.0mil	1.0mil	1.0mil	1.0mil	Control lot

DIP package

2.2 Process qualification requirements

	TV1	TV2	TV3	TV4	TV5	
Quantity of qualification lot	**1**		**1**	**1**	**1**	
Package type	**SO8**	**DIP8**	**DIP14**	**SO14**	**SO8**	
Assembly report	**X**	**X**	**X**			
Assy Lot average yield	**x**	**x**	**x**	**x**	**x**	
Test Lot average yield	**x**	**x**	**x**	**x**	**x**	
Parameters distribution	**x**	**x**	**x**	**x**	**x**	**datalog 500 units**
Test capability						N/A
Packing qualification						N/A

Note: in **bold** minimum data required before sending the PCN

2.3 Reliability qualification requirements.

Tests	Conditions	Step	TV1	TV2	TV3	TV4	TV5	Comments
			0431	0393	0124	0339	4871	
HTB	Tj=150C Vs=absolute max rating	168h 1000h	**78** **78**	**78** **78**	**78** **78**	**78** **78**	**78** **78**	
OLT	Tj=150C Vs=Max operating							
THB	Ta=85C RH=85% Vs=nominal	168h 1000h	**78** **78**	**78** **78**	**78** **78**	**78** **78**	**78** **78**	
TMC	Ta=-65/+150C	100cy 1000cy	**78** **78**	**78** **78**	**78** **78**	**78** **78**	**78** **78**	
PPT	Ta=121C P=2atm	168h 240h	**78** **78**	**78** **78**	**78** **78**	**78** **78**	**78** **78**	
Env seq	TMC + PPT	100 96h	**78** **78**					
Jedec Level	Jedec1=168H THB + 3 IR reflow soldering		**15**			**15**	**15**	
TMSK	Ta=-65/+150C	100shk 500shk	**78** **78**					

3. QUALIFICATION RESULTS

3.1 Process qualification requirements

	TV1	TV2	TV3	TV4	TV5	Comments
Flow Chart comparison	7532630	7924279	7893589	7494375		
Control Plan comparison	7532630	7924279	7893589	7494375		
FMEA study	1020117 1020116 7139419 7021133 7139419 7000247 7321597 1019768 1019768	7042421 7013213 7066894 7066552 7066719 7629510 7683965 7066718	7070452 7070454 7079813 7070493 7083039 7070567	7202148 7202244 7202246 7202248 7202042 7202135		
Construction analysis			25082			For DIP14 Solderability monitoring to follow as reject seen in wettability. For all lots bonding strength are within ST specification

3.2 Assembly and FT qualification results

	TV1	**TV2**	**TV3**	**TV4**	**TV5**	
Package type	**SO8**	**DIP8**	**DIP14**	**SO14**	**SO8**	
Assembly report	E907*0431BG6 (18/04/06)	07CE189	05CE377			**Conform**
Assy Lot average yield	**Conform to ST spec.**	**Conform to ST spec.**	**Conform to ST spec.**	**Conform to ST spec.**	**Conform to ST spec.**	
Test Lot average yield	**Conform to ST spec.**	**Conform to ST spec.**	**Conform to ST spec.**	**Conform to ST spec.**		

3.3 Reliability qualification results

Tests	Conditions	Step	TV1	TV2	TV3	TV4	TV5	Comments
			0431	0393	0124	0339	4871	
			SO8	DIP8	DIP14	SO14	SO8	
HTB	Tj=150C Vs=absolute max rating	168h 1000h	0/78	0/78 0/78	0/39 1/39*	0/78 0/78	0/78 0/78	
OLT	Tj=150C Vs=Max operating							
THB	Ta=85C RH=85% Vs=nominal	168h 1000h	0/78	0/78 0/78	0/39 0/39	0/78 0/78	0/78 0/78	
TMC	Ta=-65/+150C	100cy 1000cy	0/78 0/78	0/78 0/78	0/78 0/78	0/78 0/78	0/78 0/78	
PPT	Ta=121C P=2atm	168h 240h	0/78 0/78	0/78 0/78	0/78 0/78	0/78 0/78	0/78 0/78	
Env seq	TMC + PPT	100 96h				0/78 0/78	0/78 0/78	
Jedec Level	Jedec1=168H THB + 3 IR reflow soldering		0/15			0/15	0/15	
TMSK	Ta=-65/+150C	100shk 500shk	0/78 0/78					

Electrical parameter deviation in reliability conform to ST specification.

0.8 mils wire are qualified for SO and DIP package for AMPS (Analog, Mixed Product and Services, former standard linear IC's)

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries(‘‘ST’’) reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST’s terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST’S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND / OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS ‘‘AUTOMOTIVE GRADE’’ MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER’S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morroco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com