PRODUCT/PROCESS CHANGE NOTIFICATION

PCN MMS-MIC/12/7248
Notification Date 04/30/2012

Wire diameter decrease for all ST standard microcontroller products assembled in LQFP 7x7x1.4 and 10x10x1.4 in Stats ChipPac assembly plant

Table 1. Change Implementation Schedule

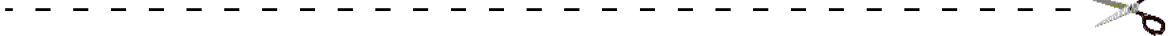
Forecasted implementation date for change	30-Jul-2012
Forecasted availabillity date of samples for customer	02-Jul-2012
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	30-May-2012
Estimated date of changed product first shipment	30-Jul-2012

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	Please refer to the list pages 7 to 8
Type of change	Package assembly material change
Reason for change	Standardization of Bill of Materials
Description of the change	The diameter of bonding wire used in Stats ChipPAC Shanghai assembly plant will be decreased from 1mil to 0.8mil on all ST standard microcontroller products assembled in LQFP 7x7x1.4 and LQFP 10x10x1.4 packages.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Internal traceability
Manufacturing Location(s)	

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN MMS-MIC/12/7248**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 04/30/2012**
☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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DOCUMENT APPROVAL

Name	Function
Colonna, Daniel	Division Marketing Manager
Buffa, Michel	Division Product Manager
Narche, Pascal	Division Q.A. Manager

PRODUCT/PROCESS
CHANGE NOTIFICATION

Wire diameter decrease for all ST standard microcontroller products assembled in LQFP 7x7x1.4 and LQFP 10x10x1.4 in Stats ChipPac assembly plant

MMS - Microcontrollers Division (MCD)

Dear Customer,

In order to sustain the strong demand for our LQFP 7x7x1.4 and LQFP 10x10x1.4 products and to continue to provide best-in-class service to our customers, ST standard microcontroller Division (MCD) is deploying a standardization program.

What is the change?

Bonding wire standardization.

The diameter of bonding wire used in Stats ChipPAC Shanghai assembly plant will be decreased from 1mil to 0.8mil on all MCD products assembled in LQFP 7x7x1.4 and LQFP 10x10x1.4 packages.

Why ?

Our strategy is to standardize the Bill Of Materials of our LQFP 7x7x1.4 and LQFP 10x10x1.4 products. This wire decrease is already qualified and implemented on other LQFP packages for MCD.

When ?

The production on the new wire diameter will start Week 31 2012.

How will the change be qualified?

This change will be qualified using the standard STMicroelectronics Corporate Procedures for Quality and Reliability, in full compliancy with the JESD-47 international standard.

What is the impact of the change?

- Form: no change

- Fit: no change

- Function: no change

How can the change be seen?

Traceability of the change is ensured by ST internal tools.

We remain available to discuss any concern that you may have regarding this Product Change Notification.

With our sincere regards.

Michel Buffa
Microcontroller Division General Manager

List of Commercial Products impacted :

STM32F050C6T6	ST7FMC2S4T3	STM32F100R8T6B
STM32L152CCT6	ST7FMC2S4T6	STM32F100R8T6BTR
STM32L472RET6	STM8S105S4T6C	STM32F100R8T7B
STM8L151K6T6W08	STM8S105S4T6CTR	STM32F100RBT6B
STM32F100C8T6W08	STM8S105S6T3C	STM32F100RBT6BTR
STM32F101C8GAL	STM8S105S6T6C	STM32F100RCT6
STM32F303CCT6	STM8S207S6T3C	STM32F100RCT6B
STM32F373CCT6	STM8S207S6T3CTR	STM32F100RCT6BTR
STM8L052C6T6	STM8S207S6T6C	STM32F100RCT6TR
STM32F051R8T7	STM8S207S6T6CTR	STM32F100RDT6B
STM32F061R8T6	STM8S207S8T3C	STM32F100RET6B
STM32F205RBT6W08	STM8S207S8T3CTR	STM32F100RET6BTR
STM32F205RET6TR	STM8S207S8T6C	STM32F101R4T6A
STM32F303RCT6	STM8S207S8T6CTR	STM32F101R6T6A
STM32F373RCT6	STM8S207SBT6C	STM32F101R8T6
STM32F383RCT6	STM8S208S6T3C	STM32F101R8T6TR
STM32L162RCT6A	STM8S208S6T6C	STM32F101RBT6
STM8L052R8T6	ST72F345C4T6	STM32F101RBT6TR
STM32F050C4T6A	ST72F345C4T6CLI	STM32F101RCT6
STM32F050C6T6A	ST72F345C4T6TR	STM32F101RCT6TR
STM32F051C4T6	ST72F63BH2T1	STM32F101RDT6
STM32F051C6T6	ST72F63BH4T1	STM32F101RDWOW
STM32F051C8T6	ST72F63BH6T1	STM32F101RDWOWTR
STM8L151FIAB	STM32F100C4T6B	STM32F101RET6
STM8L151K4T6	STM32F100C4T6BTR	STM32F101RFT6
STM8L151K6T3	STM32F100C4T7B	STM32F101RGT6
STM8L151K6T6	STM32F100C6T6B	STM32F102R4T6A
STM8L152K4T6	STM32F100C6T6BTR	STM32F102R6T6A
STM8L152K6T3	STM32F100C6T7B	STM32F102R8T6
STM8L152K6T6	STM32F100C8T6B	STM32F102RBT6
STM32F103S6T6A	STM32F100C8T6BTR	STM32F102RCT6
STM8L151C2T6	STM32F100C8T7B	STM32F103R6T6A
STM8L151C3T3	STM32F100C8T7BTR	STM32F103R6T7A
STM8L151C3T6	STM32F100CBT6B	STM32F103R8T6
STM8L151C4T3	STM32F100CBT7B	STM32F103R8T6TR
STM8L151C4T6	STM32F101C4T6A	STM32F103R8T7
STM8L151C4T6/MCP	STM32F101C6T6A	STM32F103RBT6
STM8L151C4T6TR	STM32F101C6T6ATR	STM32F103RBT6TR
STM8L151C6T3	STM32F101C8T6	STM32F103RBT7
STM8L151C6T6	STM32F101C8T6TR	STM32F103RBT7TR
STM8L152C4T6	STM32F101CBT6	STM32F103RCT6
STM8L152C4T6TR	STM32F101CBT6TR	STM32F103RCT6TR
STM8L152C6T6	STM32F102C4T6A	STM32F103RCT7
STM8L152C6T6TR	STM32F102C4T6ATR	STM32F103RCUVWTR
STM32F051R4T6	STM32F102C6T6A	STM32F103RDT6
STM32F051R4T6TR	STM32F102C6T6ATR	STM32F103RDT6TR
STM32F051R6T6	STM32F102C8T6	STM32F103RET6
STM32F051R8T6	STM32F102C8T6TR	STM32F103RET6TR
STM32F051R8T6TR	STM32F102CBT6	STM32F103RET7
STM32F100R6T6BTR	STM32F102CBT6TR	STM32F103RFT6
STM32F101RDT6TR	STM32F103C4T6A	STM32F103RFT6TR
STM32F405RGT6	STM32F103C6T6A	STM32F103RGT6
STM32F405RGT6V	STM32F103C6T6ATR	STM32F103RGT7

STM32F405RGT6W
STM32F415RGT6
STM32L151RCT6A
STM32L151RDT6
STM32L152RCT6A
STM32L152RDT6
STM32L162RDT6
ST72F321BK6T6
ST72F321BK6T6TR
ST72F324BK2T3
ST72F324BK2T6
ST72F324BK2T6TR
ST72F324BK4T3TR
ST72F324BK4T6
ST72F324BK4T6TR
ST72F324BK6T3
ST72F324BK6T6TR
ST72F324K6T6
ST72F325K4T6
ST72F325K4T6TR
ST72F325K6T6TR
ST72F32AK1T6
ST72F32AK1T6TR
ST72P325T5/OARTR
ST7FLI49MK1T6
ST7FLI49MK1T6TR
ST7FMC1K2T3
ST7FMC1K2T6
ST7FMC1K4T3
ST7FMC1K4T6
ST7FMC1K4T6TR
ST7FOXK1T6
ST7PMC1K2/OCJTR
STM8L101K3T3
STM8L101K3T6
STM8S105K4T6C
STM8S105K6T6C
STM8S105K6T6CTR
STM8S207K6T3C
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STM8S207K8T6CTR
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ST72F324BJ4T6
ST72F324BJ4T6TR
ST72F324BJ6T6
ST72F324BJ6T6TR
ST72F325J7T6TR
ST72F32AJ2T6
STM32F103C6T7A
STM32F103C6T7ATR
STM32F103C8T6
STM32F103C8T6TR
STM32F103C8T7
STM32F103CBT6
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STM32F103CBT7
STM32F103CBT7TR
STM32FEBKC6T6A
STM32L151C6T6
STM32L151C8T6
STM32L151C8T6TR
STM32L151CBT6
STM32L151CBT6TR
STM32L152C6T6
STM32L152C8T6
STM32L152CBT6
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STM32P102C8MAPTR
STM32P103C8MBCTR
STM32P103CBMAZTR
STM32P103MAYATR
STM8L151C8T3
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STM8L151C8T6
STM8L151C8T6TR
STM8L151C8T7
STM8L152C8T6
STM8S105C4ANATR
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STM8S207C8T6TR
STM8S207CBT3
STM8S207CBT6
STM8S207CBT6TR
STM8S208C6T3
STM8S208C8T6
STM8S208CBT6
ST72F325AR9T6
STM32F100R4T6B
STM32F100R4T6BTR
STM32F100R6T6B
STM32F105R8T6
STM32F105RBT6
STM32F105RBT6TR
STM32F105RCT6
STM32F105RCT6TR
STM32F105RCT6V
STM32F105RCT6W
STM32F105RCT7
STM32F107RBGHI
STM32F107RBT6
STM32F107RCT6
STM32F107RCT6TR
STM32F107RCT7
STM32F205RBT6
STM32F205RBT7
STM32F205RCT6
STM32F205RET6
STM32F205RFT6
STM32F205RGT6
STM32F205RGT6TR
STM32F205RGT6V
STM32F205RGT6W
STM32F205RGT7
STM32F215RET6
STM32F215RGT6
STM32F215RGT6TR
STM32L151R6T6
STM32L151R6T6TR
STM32L151R8T6
STM32L151RBT6
STM32L151RBT6TR
STM32L152R6T6
STM32L152R8T6
STM32L152R8T6TR
STM32L152RBT6
STM32P103RFMBB
STM8L151R6T6
STM8L151R8T6
STM8L151R8T6TR
STM8L152R6T6
STM8L152R8T3
STM8L152R8T6
STM8L162R8T6
STM8LP151T6MCATR
STM8S207R6T6
STM8S207R8T3
STM8S207R8T3TR
STM8S207R8T6
STM8S207R8T6TR
STM8S207RBT6
STM8S207RBT6TR
STM8S208R8T6
STM8S208RBT6

MCDRER1129 0.8mil gold wire SCC QUALIFICATION PLAN

Qualification of : **0.8mil gold wire SCC- LQFP7*7-10*10**

Qualification Reference :	**MCD RER1129**
Issued on :	**Dec 17, 2011**
Assembly Plant :	**Stats Chippac China- SCC Shanghai**
Assembly Line :	**QFP**
Package / Process :	**LQFP 7*7- LQFP 10*10**

Test Vehicles :

Device	RL Code	Package	Number of Lots
STM32	BW5W*411W08Y	LQFP10*10 64L	1
	VW5B*410W081	LQFP7*7 48L	1
STM8	BW5V*764W08Z	LQFP7*7 32L	1

Package Reliability Trials :

Reliability Trial		Test Conditions	Pass Criteria	Unit per Lot
Preconditioning JL3+ AC	JL3+ Pressure Pot	121°C, 100% RH, 2 Atm	96h	77
Preconditioning JL3+ HTSL	JL3+ High Temperature Storage	150°C, Unbiased	1000h	77
Preconditioning JL3+ TC	JL3+ Thermal Cycling Cond C	-65°C, +150°C	500Cy	77
Preconditioning JL3+ THS	JL3+ Temperature Humidity Storage	85°C, 85% RH, No bias	1000h	77

Package oriented tests/ Trials description

1. **Preconditioning**

According to ST spec 0098044.
Preconditioning test sequence simulates storage and soldering of SMD (surface mount devices) before submitting them to the reliability tests. It aims to validate the moisture sensitivity level of the package, and prepare it to the stress of additional reliability tests, thus enabling a good modelization of the life of the packaged product.
Out-of-bag floor life storage and soldering are modeled by the following test sequence:

- Bake to completely remove moisture from the package;
- Moisture soak according to the package moisture level;
- IR reflow.

The aim is to check that the chip and plastic package withstand the stress due to report on card. Depending on their technology, packages may absorb moisture during their transportation and/or storage, moisture that is released during the soldering operation. At this step, the moisture absorbed is vaporized due to high temperature of solder report process. This phenomenon can create plastic swelling, "pop corn" effect, and cracks which eventually results in wire breakage, passivation cracks, and delamination.

2. **Autoclave (AC)**

The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.

Purpose: to investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
To point out critical water entry paths with consequent electrochemical and galvanic corrosion.

3. Temperature Cycling (TC)

The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere (thermal gradient typical 10 C/min).

Purpose: 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, moulding compound delamination, wire-bonds failure, die-attach layer degradation.

4. Temperature Humidity Storage (THS)

The Temperature Humidity Storage is stored at controlled conditions of high temperature and relative humidity.

The Temperature Humidity Storage follows the same method than Unbiased HAST at lower temperature.

Purpose: to evaluate the reliability of non-hermetic packaged solid-state devices in humid environments. It is a highly accelerated test which employs temperature and humidity under non-condensing conditions to accelerate the penetration of moisture through the external protective material (encapsulant or seal) or along the interface between the external protective material and the metallic conductors which pass through it.
Bias is not applied in this test to ensure the failure mechanisms potentially overshadowed by bias can be uncovered (e.g. galvanic corrosion). This test is used to identify failure mechanisms internal to the package.

- Test conditions: 85°C / 85% RH.
- No power supply

5. High Temperature Storage Life (HTSL)

The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.

Purpose: to investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.

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