

Product / Process Change Notice

PCN No.: Q000-PCN-PA201510-03

Date: 2015-10-16.

<p>Change Title: <u>Add Cu (Copper) wire as assembly bond wire material for I151xxFYI products</u></p> <p>Change Classification: <input checked="" type="checkbox"/> Major <input type="checkbox"/> Minor</p> <p>Change item: <input type="checkbox"/> Design <input type="checkbox"/> Raw Material <input type="checkbox"/> Wafer FAB <input checked="" type="checkbox"/> Package Assembly <input type="checkbox"/> Testing <input type="checkbox"/> Others: _____.</p>			
<p>Affected Product(s) :</p> <p>The affected products are I15102FYI, I15104FYI, I15108FYI and I15116FYI.</p>			
<p>Description of Change(s) :</p> <p>Add Cu(Copper) as a qualified assembly bond-wire material for LQFP package products.</p>			
<p>Reason for Change(s) :</p> <p>The products with Copper bond wire process have become the mainstream in the current assembly house. Meanwhile, the Copper wire material is also proven to have the better electrical performance and physical related characteristics. Nuvoton had successfully completed the qualification of Copper bond wire at the LQFP packages and the Copper bond wire ICs are qualified by the customers as well. The Copper bond wire process can assure to satisfy the customer's demand for short and long term.</p>			
<p>Impact of Change(s) : (positive & negative)</p> <p>Form: No change.</p> <p>Fit: No change.</p> <p>Function: No change.</p> <p>Reliability: No concern (Passed Nuvoton package qualification.)</p>			
<p>Qualification Plan/ Results :</p> <ol style="list-style-type: none"> 1. We followed Nuvoton standard procedure to proceed with the LQFP packages qualification. 2. The package passed Nuvoton package qualification criteria; please refer to appendix A for the detailed qualification report. 			
<p>Implementation Plan :</p> <p><input type="checkbox"/> Date Code: _____ onward <input type="checkbox"/> Lot No.: _____ onward <input checked="" type="checkbox"/> Implemented date: <u>Jan. 14, 2016 (scheduled)</u></p>			
Originator:	H.Y. Lai / Q100	Approval:(QA Director)	K.L. Lin/ Q000
Contact for Questions & Concerns	<p>Name: <u>HYLai</u> TEL: <u>886-3-5770066 (ext. 1226)</u> FAX: <u>886-3-5792673.</u></p> <p>Address: <u>No.4, Creation Rd. III Science-Based Industrial Park Hsinchu, Taiwan, R.O.C..</u></p> <p>E-mail: <u>hylai0@nuvoton.com.</u></p>		

Customer Comments:

Note: Please sign this notice, and return to **Nuvoton** contact within **30** days. If no response is received within **30** days, this Change Request will be assumed to meet your approval.

<input type="checkbox"/> Approval	<input type="checkbox"/> Disapproval	<input type="checkbox"/> Conditional Approval: _____.
Date: _____	Dept. name: _____	Person in charge: _____.

Follow-up and Tracing:

A. copies to

FAB: Integration _____ _____ _____ _____.

Test / Product: _____ _____ _____ _____.

Design/ Marketing: _____ _____ _____ _____.

Production control/ Others: _____ _____ _____ _____.

B. Changes:

1. Document / Test program:

Document No/ test program	Document name/ test program name	version		responsibor	Completed date	Remark
		before	after			
NA	NA	NA	NA	NA	NA	NA

Verified by: _____.

PACKAGE QUALIFICATION REPORT

Subcontractor:ASE(Chung-Li)

Package:LQFP Series

Package Material: GREEN

Wire Bonding Material :Cu wire

RA ENGINEER :許心怡

RA MANAGER :蔡明耀

SUMMARY

The **LQFP Series** product was passed the qualification tests.

A summary of the test result was as follows:

	S.S.
Pa. Pre-condition Test	: 405EA
Pa. Pressure Cooker Test	: 135EA
Pa. Temperature Cycle Test	: 135EA
Pa. Highly Temp. Storage Life Test	: 135EA

I. ENVIRONMENTAL TEST

A. Introduction

1. Pre-condition Test
2. Pressure Cooker Test (PCT)
3. Temperature Cycle Test (TCT)
4. High Temp. Storage Life Test(HTSL)

B. Test Results

1. Pre-condition Test
2. Pressure Cooker Test (PCT)
3. Temperature Cycle Test (TCT)
4. Highly Temp. Storage Life Test(HTSL)

II. ENVIRONMENTAL TESTS OF PROCEDURE

A. Introduction

1. Pre-condition Test

1.1 SCOPE

Pre-condition Test is to measure the resistance of SMD (Surface Mount Devices) to the storage environment at the customer site and to thermal stress created by IR reflow or Vapor Phase Reflow.

1.2 TEST CONDITION

Step 1 : TCT(-65°C/150°C, 5 cycles)

Step 2 : Bake(125°C, 24 hours)

Step 3 : Soak(30°C/60%RH, 192 hours)

Step 4 : IR reflow (260 °C), 3 Passes.

1.3 SAT COFIRMATION: To confirm delamination, cracking, popcorn .

Criteria: IPC/JEDEC J-STD-020C

2. Pressure Cooker Test (PCT)

2.1 SCOPE

PCT is to evaluate the device resistance to moisture penetration.

2.2 TEST CONDITION

Ta = 121°C, RH = 100%, Td = 168 Hrs. 2 ATM ,(JESD22-A102-A)

3. Temperature Cycle Test (TCT)

3.1 SCOPE

TCT is to evaluate the resistance of device to environmental temperature change.

3.2 TEST CONDITION

-65°C / 15min, transfer time 1min, +150 °C/15min, 1000 cycles.

MIL-STD-883E, Method 1010, Condition "C".

4. Highly Temp. Storage Life Test (HTSL)

4.1 SCOPE

The purpose of this test is to determine the effect on solid state electronic devices of storage at elevated temperature without electrical stress applied.

4.2 Test condition:

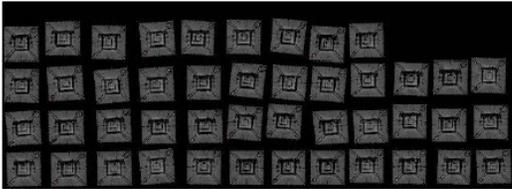
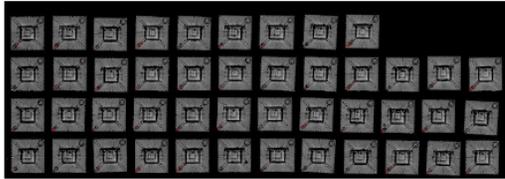
Temperature: 150°C , Time: 500/1000hrs

B. Test Results

1.1 Pre-condition Test

Run	Lot No	SAT before Precondition	SAT After Precondition	Result	Remark
#1	2918B001-Z1	405	405	PASS	
#2	2918B001-Y1	405	405	PASS	
#3	2918B001-X1	405	405	PASS	

1.2 SAT confirmation:

SAT before Precondition	SAT after Precondition
	

2. Pressure Cooker Test (PCT)

Run	Lot No	168 Hrs(S.S.)	Result	Remark
#1	2918B001-Z1	45	PASS	
#2	2918B001-Y1	45	PASS	
#3	2918B001-X1	45	PASS	

3. Temperature Cycle Test (TCT)

Run	Lot No	1000 Cycles(S.S.)	Result	Remark
#1	2918B001-Z1	45	PASS	
#2	2918B001-Y1	45	PASS	
#3	2918B001-X1	45	PASS	

4. Highly Temp. Storage Life Test (HTSL)

Run	Lot No	1000 Hrs(S.S.)	Result	Remark
#1	2918B001-Z1	45	PASS	
#2	2918B001-Y1	45	PASS	
#3	2918B001-X1	45	PASS	

Waive Pre-cond. Of HTSL Test

Run	Lot No	1000 Hrs(S.S.)	Result	Remark
#1	2918B001-Z1	45	PASS	
#2	2918B001-Y1	45	PASS	
#3	2918B001-X1	45	PASS	