

Product / Process Change Notice

PCN No.: Q000-PCN-PA201411-03

Date: 2014-11-19.

<p>Change Title: <u>Add ASECL as new assembly site for QFP and LQFP series package 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 list, please refer to table 1 for more information.</p>			
<p>Description of Change(s) :</p> <p>Add new assembly site for QFP and LQFP series package products at ASECL (ASE Group ChungLi site, Taiwan). ASECL had been an available and qualified vendor for Nuvoton in assembly process already.</p> <p>New Supplier :</p> <p>ASE Group ChungLi site, Taiwan (hereinafter "ASECL"), (550, Chung-Hwa Road Section 1, Chung-Li, 320, Taiwan, R.O.C.)</p>			
<p>Reason for Change(s) :</p> <p>To increase manufacturing capacity and flexibility and to have multiple manufacturing routes for backup in case of disruption, Nuvoton is adding new assembly source for QFP and LQFP series package products at ASECL.</p>			
<p>Impact of Change(s) : (positive & negative)</p> <p>Form: No change on top effective marking except assembly vendor marking code. The assembly vendor marking code of ASECL shall be "A"</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> <p>QFP and LQFP series packages were qualified as per Nuvoton's standard qualification procedures, please refer to appendix A & B for the qualification report.</p>			
<p>Implementation Plan :</p> <p><input type="checkbox"/> Date Code: _____ onward <input type="checkbox"/> Lot No.: _____ onward <input checked="" type="checkbox"/> Implemented date: <u>Feb. 17, 2015 (scheduled)</u></p>			
Originator:	HYLai / Q100	Approval:(QA Director)	C.C. Chen/ 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: _____.

Table 1. Affected product lists:

Part No. (LQFP Package)	Part No. (QFP Package)	Part No.(QFP Package)
NCT6776D	W83627DHG-P	W83627UHG
NCT5577D	W83627DHG-PT	W83627EHG
NCT5104D	NCT6776F	W83627DHG
NCT6106D	NCT6772F	W83627HG-AW
NCT6102D	W83877TG	W83977G-A
NCT5532D	W83977EG-AW	W83977AG-A
NCT6627UD		

PACKAGE QUALIFICATION REPORT

Company : ASE Group Chung-Li

Package : QFP Series

Package Material : Green

Wire Bonding Material : Cu

RA ENGINEER : 許欣怡

RA MANAGER : Tsai Ming-yao

SUMMARY

The **QFP Series** product was passed the qualification tests.
A summary of the test result was as follows:

Pa. Pre-condition Test	: 405
Pa. Pressure Cooker Test	: 135
Pa. Temperature Cycle Test	: 135
Pa. HighlyTemp. Storage Life Test	: 135

Results of the life tests and environmental tests as well as the methods used on **QFP Series** product are described in details in the report.

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)

I . 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-020

1.4 IR REFLOW PROFILE (FOR IPC/JEDEC J-STD-020)

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, 500 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:1000hrs

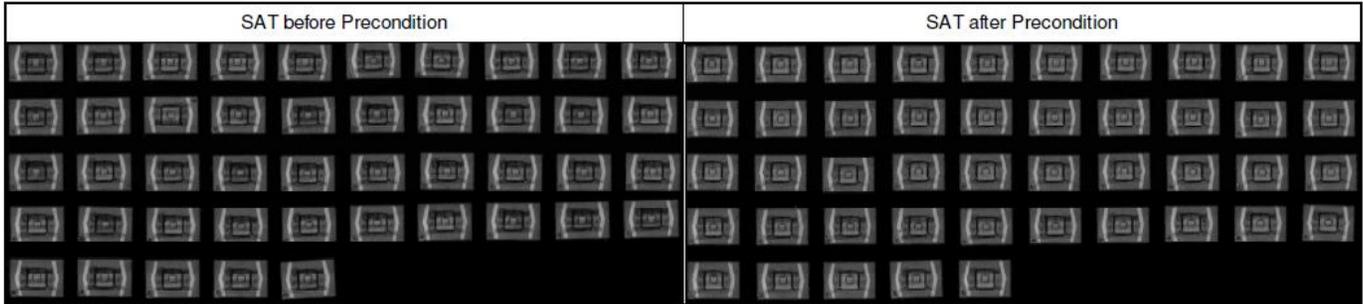
B. Test Results

1.1 Pre-condition Test

Run	Lot No	SAT before Precondition	SAT after Precondition	Result	Remark
#1	28180970-ZZ	405	405	PASS	
#2	28180970-ZX	405	405	PASS	
#3	28180970-ZY	405	405	PASS	

*Criteria: Acc/Rej = 0/1.

1.2 SAT confirmation



2. Pressure Cooker Test (PCT)

Run	Lot No	168 Hrs	Remark
#1	28180970-ZZ	0/45	
#2	28180970-ZX	0/45	
#3	28180970-ZY	0/45	

*Criteria: Acc/Rej = 0/1.

3. Temperature Cycle Test (TCT)

Run	Lot No	500 Cycles	Remark
#1	28180970-ZZ	0/45	
#2	28180970-ZX	0/45	
#3	28180970-ZY	0/45	

*Criteria: Acc/Rej = 0/1.

4. Highly Temp. Storage Life Test (HTSL)

Run	Lot No	1000 Hrs	Remark
#1	28180970-ZZ	0/45	
#2	28180970-ZX	0/45	
#3	28180970-ZY	0/45	

*Criteria: Acc/Rej = 0/1.

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

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B. Test Results

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II. ENVIRONMENTAL TESTS OF PROCEDURE

A. Introduction

1. Pre-condition Test

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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.

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Step 2 : Bake(125°C, 24 hours)

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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.

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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:

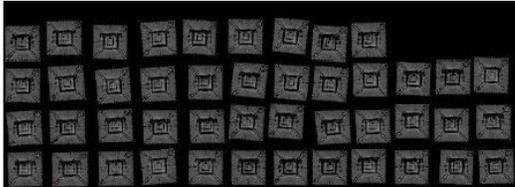
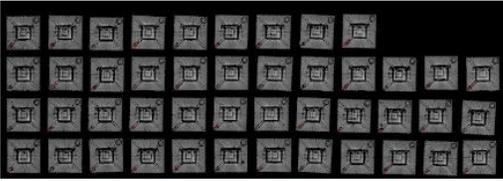
Temperature:150°C ,Time: 500/1000hrs

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	