Process Change Notification Form

<table>
<tr><td>PCN Number:</td><td>PCN_0240</td></tr>
<tr><td>Date of Notification:</td><td>October 6, 2008</td></tr>
<tr><td>Cirrus Logic P/N(s):</td><td>CS493105-CLZ, CS493105-CLZR, CS493122-CLZ, CS493122-CLZR, CS493253-CLZ, CS493253-CLZR, CS493263-CLZ, CS493263-CLZR, CS493263-DLZ, CS493263-DLZR, CS493264-CLZ, CS493264-CLZR, CS493295-CLZ, CS493295-CLZR</td></tr>
<tr><td>Date PCN Effective:</td><td>January 6, 2009</td></tr>
<tr><td>Reason for Change:</td><td>☐ Design /New Rev. ☐ Fab Site ☒ Fab Process ☐ Additional Fab Source
☒ Assembly Site ☐ Assembly Process ☐ Additional Assembly Source
☐ Other (specify)</td></tr>
<tr><td>Description of Change:</td><td>☐ Fix errata ☐ Yield enhancement ☐ Fix known bug ☐ Performance Improvement
☒ Other
1) Convert to the Fab standard process, from Titanium-Salicide to Cobalt-Salicide
2) Addition of ANST assembly site
3) MSL = 2, peak reflow = 245°C
4) ASE to ANST – Bill of Materials Comparison – See attachment
<table>
<tr><th></th><th>ASE – Kaohsiung
(Current)</th><th>ANST
(New)</th></tr>
<tr><td>Leadframe</td><td>Copper
300x300 mil die pad</td><td>Copper
230x230 mil die pad</td></tr>
<tr><td>Die Attach</td><td>Sumitomo 1076DS</td><td>Ablestik 8290</td></tr>
<tr><td>Mold Compound</td><td>Sumitomo G700A</td><td>Sumitomo G700</td></tr>
<tr><td>Bond Wire</td><td>Gold - 1.3 mil diameter</td><td>Gold - 1.0 mil diameter</td></tr>
<tr><td>Plating</td><td>100% matte tin</td><td>100% matte tin</td></tr>
<tr><td>Marking</td><td>Ink</td><td>Laser</td></tr>
</table></td></tr>
<tr><td>Cirrus Logic P/N Change:</td><td>☐ Yes, New Part Number:
☒ No</td></tr>
<tr><td>Pack Mark Change:</td><td>☒ Yes ☐ No - If Yes, briefly explain:
From: EFTAHXAAYYWW
To: EFAAHXAAYYWW</td></tr>
<tr><td>Lot Effective Date:</td><td>11/15/2008
[Contact the area sales representative for availability of samples if applicable]</td></tr>
<tr><td>Quality & Reliability impact:</td><td>1) Fab - Qualification report attached.
2) Assembly - Qualification report attached.
See Pages Below
Qualification Data: ☒ Required ☐ Not Required</td></tr>
<tr><td>Datasheet Change Required?</td><td>☐ Yes ☒ No
If Yes, briefly explain:</td></tr>
<tr><td>Software Change Required?</td><td>☐ Yes ☒ No
If Yes, briefly explain:</td></tr>
</table>

UMC GROUP
United To Excel

UNITED MICROELECTRONICS CORPORATION

0.25um Logic 1P5M New Process Product Reliability Test Result

1.HTOL Results

Test Item	Qual lot	Lot No.	Sample Size	LTPD%	Failure No./Read Point			Reference
					168 Hrs	500 Hrs	1000 Hrs	
Operating Life Test(HTOL)	1	M3591	77	5%	0	0	0	UMC RA No.: 870427-016
	2	M3F85	77	5%	0	0	0	UMC RA No.: 870505-001
	3	M4180	77	5%	0	0	0	UMC RA No.: 870518-023

***Long-term failure rate was 50 fit @Ta=55℃ with confidence level =60% (using Ea=0.7eV)**

2.THB Results

Test Item	Qual lot	Lot No.	Sample Size	LTPD%	Failure No./Read Point			Reference
					168 Hrs	500 Hrs	1000 Hrs	
Temperature Humidity with Bias Test (THB)	1	M3591	77	5%	0	0	0	UMC RA No.: 870427-023
	2	M3F85	77	5%	0	0	0	UMC RA No.: 870507-006
	3	M4180	77	5%	0	0	0	UMC RA No.: 870519-009

3.HAST Results

Test Item	Qual lot	Lot No.	Sample Size	LTPD%	Failure No./Read Point		Reference
					24Hrs	96Hrs	
Highly Accelerated Stree Test (HAST)	1	M3591	77	5%	0	0	UMC RA No.: 870630-034
	2	M3F85	77	5%	0	0	UMC RA No.: 870701-009
	3	M4180	77	5%	0	0	UMC RA No.: 870707-015

4.TCT Results

Test Item	Qual Lot	Lot No.	Sample Size	LTPD%	Test Result/Failure No.	Reference
Temperature Cycling Test(TCT)	1	M3591	38	10%	Passed 500 Cycles/0	UMC RA No.: 870601-008
	2	M3F85	38	10%	Passed 500 Cycles/0	UMC RA No.: 870601-011
	3	M4180	38	10%	Passed 500 Cycles/0	UMC RA No.: 870601-009

5.TST Results

Test Item	Qual Lot	Lot No.	Sample Size	LTPD%	Test Result/Failure No.	Reference
Thermal Shock Test(TST)	1	M3591	38	10%	Passed 200 Cycles/0	UMC RA No.: 870622-002
	2	M3F85	38	10%	Passed 200 Cycles/0	UMC RA No.: 870623-008
	3	M4180	38	10%	Passed 200 Cycles/0	UMC RA No.: 870427-016

6.HTSL Results

Test Item	Qual lot	Lot No.	Sample Size	LTPD%	Failure No./Read Point			Reference
					168 Hrs	500 Hrs	1000 Hrs	
Highly Temperature Storage Life Test (HTSL)	1	M3591	77	5%	0	0	0	UMC RA No.: 870505-009
	2	M3F85	77	5%	0	0	0	UMC RA No.: 870512-038
	3	M4180	77	5%	0	0	0	UMC RA No.: 870520-001

7.PCT Results

Test Item	Qual Lot	Lot No.	Sample Size	LTPD%	Test Result/Failure No.	Reference
Pressure Cooker Test(PCT)	1	M3591	38	10%	Passed 2atms/216hours/0	UMC RA No.: 870622-001
	2	M3F85	38	10%	Passed 2atms/216hours/0	UMC RA No.: 870623-007
	3	M4180	38	10%	Passed 2atms/216hours/0	UMC RA No.: 870601-021

5.ESD Results

Test Item	Qual Lot	Lot No.	Sample Size	Test Result	Reference
HBM	1	M5J78	5	All combination≧2.0KV	UMC RA NO : 870625-005
	2	M5K79	5	All combination≧2.0KV	UMC RA NO : 870709-009
	3	M7Z71	5	All combination≧2.0KV	UMC RA NO : 871015-017
MM	1	M5J78	5	All combination≧200V	UMC RA NO : 870626-012
	2	M5K79	5	All combination≧200V	UMC RA NO : 870709-011
	3	M7Z71	5	All combination≧200V	UMC RA NO : 871015-019

6.Latch-up Results

Test Item	Qual Lot	Lot No.	Sample Size	Test Result	Reference
IT method	1	M5J78	5	All combination ≧200mA	UMC RA NO : 870625-006
	2	M5K79	5	All combination ≧200mA	UMC RA NO : 870709-010
	3	M7Z71	5	All combination ≧200mA	UMC RA NO : 871015-018
VT method	1	M5J78	5	All combination ≧2V	UMC RA NO : 870625-006
	2	M5K79	5	All combination ≧2V	UMC RA NO : 870709-010
	3	M7Z71	5	All combination ≧2V	UMC RA NO : 871015-018

RELIABILITY QUALIFICATION REPORT

Reliability Report: QRR070903

Subject/Purpose:

This is to qualify the ANST assembly site for the 28PLCC and 44PLCC family of packages for both SnPb and Pb-Free.

APPROVALS:

Rod Boutwell
Reliability Engineering

Results:

Qualification successful.

STATUS:

Complete - Pass

Stress	Conditions	Method	Duration	Lot	Results (Fail/Sample)
Preconditioning MSL-2 QJ1429	24HR 125 °C Bake 168HR 85/60 °C/%RH Soak 3 pass 260 °C Convection reflow	JESD22-A113	Precondition	1	0/231
TMCL-C QJ1429	-65 °C +150 °C air to air	JESD22-A104	500 Cycles	1	0/77
Tomography QJ1429		J-STD-035	500 TCC	1	0/11
Autoclave/PPOT QJ1429	121 °C 15 psig 100% R.H.	JESD22-A102	96 Hours	1	0/77
Solderability QJ1429	93 °C steam aging 8 Hours 245 °C solder bath 5 Seconds	JESD22-B102	Solderability	1	0/15
HTSL (high-temp storage life) QJ1429	150 °C	JESD22-A103	500 Hours 1000 Hours	1 1	0/77 0/77
Preconditioning MSL-2 QJ1440	24HR 125 °C Bake 168HR 85/60 °C/%RH Soak 3 pass 260 °C Convection	JESD22-A113	Precondition	1	0/231
THB QJ1440	85 °C 85 %RH	JESD22-A101	500 Hours 1000 Hours	1 1	0/77 0/77
TMCL-C QJ1440	-65 °C +150 °C air to air	JESD22-A104	500 Cycles	1	0/77

Background Information:

Part #: ANST PLCC **Rev:** **Fab:** **Lead Finish:** SnPb and Pb-free
Package: PLCC **Assembly:** ANST (China)

Reliability Report: QRR070903

Stress	Conditions	Method	Duration	Lot	Results (Fail/sample)
Tomography QJ1440		J-STD-035	500 TCC	1	0/11
Autoclave/PPOT QJ1440	121 °C 15 psig 100% R.H.	JESD22-A102	96 Hours	1	0/77
Preconditioning MSL-2 QJ1462 QJ1463 QJ1464	24HR 125 °C Bake 168HR 85/60 °C/%RH Soak 3 pass 245 °C Convection reflow	JESD22-A113	Precondition	1	0/231
			Precondition	2	0/231
			Precondition	3	0/231
TMCL-C QJ1462 QJ1463 QJ1464	-65 °C +150 °C air to air	JESD22-A104	500 Cycles	1	0/77
			500 Cycles	2	0/77
			500 Cycles	3	0/77
Tomography QJ1462		J-STD-035	500 TCC	1	0/5
QJ1463			500 TCC	2	0/5
QJ1464			500 TCC	3	0/5
Autoclave/PPOT QJ1462 QJ1463 QJ1464	121 °C 15 psig 100% R.H.	JESD22-A102	96 Hours	1	0/77
			96 Hours	2	0/77
			96 Hours	3	0/77
Unbiased HAST QJ1462	130 °C 85 %RH	JESD22-A118	96 Hours	1	0/77

Background Information:

Part #: ANST PLCC **Rev:** **Fab:** **Lead Finish:** SnPb and Pb-free
Package: PLCC **Assembly:** ANST (China)

Reliability Report: QRR070903

Stress	Conditions	Method	Duration	Lot	Results (Fail/sample)
Solderability QJ1462	93 °C steam aging 8 Hours 245 °C solder bath 5 Seconds	JESD22-B102	Solderability	1	0/15
Unbiased HAST QJ1463	130 °C 85 %RH	JESD22-A118	96 Hours	1	0/77
Unbiased HAST QJ1464	130 °C 85 %RH	JESD22-A118	96 Hours	1	0/77
HTSL (high-temp storage life) QJ1462	150 °C	JESD22-A103	500 Hours 1000 Hours	1 1	0/77 0/77

Background Information:

Part #: ANST PLCC **Rev:** **Fab:** **Lead Finish:** SnPb and Pb-free

Package: PLCC **Assembly:** ANST (China)

Cirrus Logic PCN administrator: Cirrus Logic - Customer Quality

Digitally signed by Cirrus Logic - Customer Quality
DN: cn=Cirrus Logic - Customer Quality, c=US, ou=Cirrus Logic Austin, email=customer_quality@cirrus.com
Reason: All signatures on file
Date: 2008.10.08 09:52:46 -05'00'

Acknowledgement of Receipt of Notice:

Does customer waive PCN Effective Date? ☐ **YES** ☐ **NO**

Company Name: _____

Name (please print)**:** _____ **Title:** _____

Signature: _____ **Date:** _____

Customer Representative is to obtain the customer acknowledgement/signature and return this notification to Cirrus Logic Corp. Quality, attn: PCN administrator at fax number (512) 851-4656

NOTE: Lack of acknowledgement within 30 days of the date of notice, constitutes acceptance of change.
(Reference JEDEC Industry Standard: JESD-46)