Date Created: 2/4/2004
Date Issued: 3/2/2004
PCN # 20040503

DESIGN/PROCESS CHANGE NOTIFICATION -- FINAL

Notification of this change was initially distributed via Forecast Change Notice #20031701, issued 5/20/2003. This PCN covers the SC70 packaged products identified in the FCN. Additional PCNs are being issued for the other products listed in the FCN.

This is to inform you that a design and/or process change will be made to the following product(s). This notification is for your information and concurrence.

If you require data or samples to qualify this change, please contact **Fairchild Semiconductor within 30 days of receipt of this notification.**

If you have any questions concerning this change, please contact:

Name: Ray, Kenneth
E-Mail: Kenneth.Ray@notes.fairchildsemi.com
Phone: 1-207-775-8210

PCN Originator

Name: Ray, Kenneth
E-mail: Kenneth.Ray@notes.fairchildsemi.com
Phone: 1-207-775-8210

REL Engineer

Name: Travis, Rob
E-mail: Rob.Travis@notes.fairchildsemi.com
Phone: 1-207-761-3259

PCN Type: Alternate Fab Location

Effectivity
Expected 1st Device Shipment Date: 4/2/2004
Earliest Year/Work Week of Changed Product: 0414
(Note: Package marking may differ from this format)

Product ID (Description):
This notification affects the TinyLogic, 5-lead and 6-lead, SC70 packaged, ULP and ULP-A products assembled at Fairchild's assembly subcontractor Amkor Technology. Please see the attached product list for specific products.

Description of Change:
Fairchild is announcing the qualification of its South Portland, Maine, FS35 Fab Process to produce 0.35 um products. Prior to this qualification, Fairchild's 035 um products were fabricated at TSMC, Taiwan.

Fairchild's 0.35 um fabrication process is equivalent to the TSMC's 0.35 um process. Material produced in South Portland is interchangeable with material produced at TSMC. Fairchild product will now be fabricated at both sites. There will be no package top mark or other distinguishing feature denoting which fabrication facility the material came from.

Effect of Change:
All package dimensions, product performance, and production test specifications will remain unchanged. Material fabricated in the South Portland facility meets the same quality and reliability standards as TSMC fabricated material.

Qualification:
Full Rel Qualification data on the Fairchild FS35 fab process has been completed. All reliability stresses outlined in the reliability qualification plan were successfully met.

Qual/REL Plan Numbers

Additional Qualification Data

RELIABILITY TEST REPORT

F20030060A

Title:

To Qualify the FS35 Fab Process in the 5 lead SC70 package assembled at Amkor.

Abstract:

To Qualify the FS35 Fab Process in the 5 lead SC70 package assembled at Amkor.

Reference File Numbers	Distribution List	
Q20030060A	Rob Travis Dennis Twomey Rolf Dries	Jean Gordon Richard Foster Ken Ray

Description

Lot	Device Name	Fab	Fab Lot Number	Assembly	Assembly Lot Number	Description
Q20030060AA	NC7SV125P5X	ME	M010217445	Amkor	C010739343 D/C:H0330AB	FS35C / SC70
Q20030060AB	NC7SV125P5X	ME	M010217445	Amkor	C010739349 D/C: H0330AB	FS35C / SC70

Approvals

Test Report Author: Robert Travis	Date: 1/20/03
Qualification Plan Author: Robert Travis	Date: 1/20/03
Reliability Manager: Dennis Twomey	Date: 1/20/03

Tests Performed:

Environmental:

Test: MSL(1), PKG(Small), PeakTemp(235c), Cycles(3) (Precondition)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AAPC1AA	NC7SV125P5X	JESD22-A113		
Q20030060ABPC1AA	NC7SV125P5X	JESD22-A113		
Test: (Autoclave)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AAACLVA	NC7SV125P5X	JESD22-A102	121C, 100%RH	96 hrs
Q20030060ABACLVA	NC7SV125P5X	JESD22-A102	121C, 100%RH	96 hrs
Test: (High Temperature Storage Life)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**

Q20030060AAHTSLA	NC7SV125P5X	JESD22-A103	150C	168, 1000 hrs
Q20030060ABHTSLA	NC7SV125P5X	JESD22-A103	150C	168, 1000 hrs
Test: (Highly Accelerated Stress Test)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AAHAST1A	NC7SV125P5X	JESD22-A110	130C, 85%RH	96 hrs
Q20030060ABHAST1A	NC7SV125P5X	JESD22-A110	130C, 85%RH	96 hrs
Test: (Static Op Life)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AASOPL1A	NC7SV125P5X	JESD22-A108	150C	168, 1000 hrs
Q20030060ABSOPL1A	NC7SV125P5X	JESD22-A108	150C	168, 1000 hrs
Test: (Temperature Cycle)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AATMCL1A	NC7SV125P5X	JESD22-A104	-65C, 150C	500 CYCLES
Q20030060ABTMCL1A	NC7SV125P5X	JESD22-A104	-65C, 150C	500 CYCLES
Test: (Gate Leakage)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AAGATEA	NC7SV125P5X	AEC-Q100-006	155C, +/-400V	
Q20030060ABGATEA	NC7SV125P5X	AEC-Q100-006	155C, +/-400V	

Mechanical Tests:

Test: (Bond Pull)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AABPULLA	NC7SV125P5X	JESD22-C100		
Q20030060ABBPULLA	NC7SV125P5X	JESD22-C100		
Test: (Bond Shear)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AABSHRA	NC7SV125P5X	AEC-Q100-001		
Q20030060ABBSHRA	NC7SV125P5X	AEC-Q100-001		
Test: (Die Shear)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AADSHRA	NC7SV125P5X	MIL-STD-883-2019		
Q20030060ABDSHRA	NC7SV125P5X	MIL-STD-883-2019		
Test: As Received; Die Surface, Die Attach, LeadFrame Front, Leadframe Back (C Scanning Acoustical Microscope)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AACSAM1A	NC7SV125P5X			
Q20030060ABCSAM1A	NC7SV125P5X			
Test:Post Precondition; Die surface, Die Attach, Leadframe Front, Leadframe Back (C Scanning Acoustical Microscope)				
Lot	**Device**	**Industry Standard**	**Test Conditions**	**Read Points**
Q20030060AACSAM2A	NC7SV125P5X			
Q20030060ABCSAM2A	NC7SV125P5X			

Environmental Results:

Test: MSL (1), PKG(Small), PeakTemp (235c), Cycles(3) (Precondition)				
Lot	**Device**	**Precon Results**		**Failure Code**
Q20030060AAPC1AA	NC7SV125P5X	0/340		-
Q20030060ABPC1AA	NC7SV125P5X	0/340		-

Test: (Autoclave)				
Lot	**Device**	**96-HOURS Results**		**Failure Code**
Q20030060AAACLVA	NC7SV125P5X	0 / 77		-
				-
Q20030060ABACLVA	NC7SV125P5X	0 / 77		-
				-

Test: (High Temperature Storage Life)				
Lot	**Device**	**168-HOURS Results**	**1000-HOURS Results**	**Failure Code**
Q20030060AAHTSLA	NC7SV125P5X	0 / 77		-
			0 / 77	-
Q20030060ABHTSLA	NC7SV125P5X	0 / 77		-
			0 / 77	-

Test: (Highly Accelerated Stress Test)				
Lot	**Device**	**96-HOURS Results**		**Failure Code**
Q20030060AAHAST1A	NC7SV125P5X	0 / 45		-
				-
Q20030060ABHAST1A	NC7SV125P5X	0 / 45		-
				-

Test: (Static Op Life)				
Lot	**Device**	**168-HOURS Results**	**1000-HOURS Results**	**Failure Code**
Q20030060AASOPL1A	NC7SV125P5X	0 / 77		-
			0 / 77	-
Q20030060ABSOPL1A	NC7SV125P5X	0 / 77		-
			0 / 77	-

Test: (Temperature Cycle)				
Lot	**Device**	**500-CYCLES Results**		**Failure Code**
Q20030060AATMCL1A	NC7SV125P5X	0 / 77		-
				-
Q20030060ABTMCL1A	NC7SV125P5X	0 / 77		-

Test: (Gate Leakage) (+ 400 Volts)			
Lot	**Device**		**Failure Code**
Q20030060AAGATEA	NC7SV125P5X	0 / 3	-
Q20030060ABGATEA	NC7SV125P5X	0 / 3	-

Test: (Gate Leakage) (- 400 Volts)			
Lot	**Device**		**Failure Code**
Q20030060AAGATEA	NC7SV125P5X	0 / 3	-
Q20030060ABGATEA	NC7SV125P5X	0 / 3	-

Mechanical Results:

Test: (Bond Pull)			
Lot	**Device**		**Failure Code**
Q20030060AABPULLA	NC7SV125P5X	0 / 45	-
Q20030060ABBPULLA	NC7SV125P5X	0 / 45	-

Test: (Bond Shear)			
Lot	**Device**		**Failure Code**
Q20030060AABSHRA	NC7SV125P5X	0 / 45	-
Q20030060ABBSHRA	NC7SV125P5X	0 / 45	-

Test: (Die Shear)

Lot	Device		Failure Code
Q20030060AADSHRA	NC7SV125P5X	0 / 5	-
Q20030060ABDSHRA	NC7SV125P5X	0 / 5	-
Test: As Received; Die Surface, Die Attach, Lead-Frame Front, Lead-frame Back (C Scanning Acoustical Microscope)			
Lot	**Device**		**Failure Code**
Q20030060AACSAM1A	NC7SV125P5X	0 / 10	-
Q20030060ABCSAM1A	NC7SV125P5X	0 / 10	-
Test: Post Precondition; Die surface, Die Attach, Lead-frame Front, Lead-frame Back (C Scanning Acoustical Microscope)			
Lot	**Device**		**Failure Code**
Q20030060AACSAM2A	NC7SV125P5X	0 / 10	-
Q20030060ABCSAM2A	NC7SV125P5X	0 / 10	-
In accordance with JEDEC Standard J-STD-20B the impact of de-lamination was evaluated with passing results based on the performance of the other stress tests outlined in this reliability report, as a result this part is determined to be MSL-1 @ 235°C			

Conclusion

All reliability stresses outlined in the reliability qualification plan Q20030060 were successfully met, and unconditionally qualify for production the FS35C core CMOS process for assembly in the Amkor assembled SC-70 package.

Affected FSIDs

NC7SP00P5X	NC7SP02P5X	NC7SP04P5X
NC7SP05P5X	NC7SP08P5X	NC7SP125P5X
NC7SP126P5X	NC7SP14P5X	NC7SP157P6X
NC7SP158P6X	NC7SP17P5X	NC7SP19P6X
NC7SP32P5X	NC7SP34P5X	NC7SP38P5X
NC7SP57P6X	NC7SP58P6X	NC7SP86P5X
NC7SPU04P5X	NC7SV00P5X	NC7SV02P5X
NC7SV04P5X	NC7SV05P5X	NC7SV08P5X
NC7SV11P6X	NC7SV125P5X	NC7SV126P5X
NC7SV14P5X	NC7SV157P6X	NC7SV158P6X
NC7SV17P5X	NC7SV19P6X	NC7SV32P5X
NC7SV34P5X	NC7SV38P5X	NC7SV57P6X
NC7SV58P6X	NC7SV86P5X	NC7SVU04P5X
NC7WP14P6X	NC7WV04P6X	NC7WV07P6X
NC7WV14P6X	NC7WV16P6X	NC7WV17P6X