

Date Created : 2008/10/30  
Date Issued On : 2008/11/07  
PCN# : Q2081904-C

DESIGN/PROCESS CHANGE NOTIFICATION -- FINAL

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.**

Updated process quality documentation, such as FMEAs and Control Plans, are available for viewing upon request.

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

Technical Contact:

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Implementation of change:

Expected 1st Device Shipment Date: 2008/12/07

Earliest Year/Work Week of Changed Product: 0849

Change Type Description: Bond Wire Material Composition

Description of Change (From): Bonding wire material is 50um Gold (Au).

Description of Change (To): Bonding wire material is 50um Copper (Cu).

Reason for Change : Cebu's SuperSOT-6lds is in production mode for Cu Wire since CY2005. These are additional devices for SuperSOT-6lds and for another package - SuperSOT-3lds that are ready for conversion to Copper. The reason for converting to copper wire is to increase process robustness: (1) higher wire pull and ball shear readings which means stronger interconnect; (2) Slower Intermetallic Growth (due to lower diffusion rate of Cu to Al) resulting to no Kirkendall voids and longer part life span; (3) Better electrical performance in terms of lower resistivity and better conductivity

Qual/REL Plan Numbers : Q20070335;Q20080485

Qualification :

All reliability tests defined in Qual Plan Nos. Q20070335 (for SuperSOT-6lds) and Q20080485 (for SuperSOT-3lds) have been completed without failures. Therefore Fairchild Semiconductor is qualified to convert the devices listed in Affected FSID from Au to Cu wire.

**Results/Discussion for Qual Plan Number - Q20070335**

Test: (Autoclave)   Conditions: 100%RH, 121C   Standard: JESD22-A102
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Lot	Device	Setpoint	Result	Failure Code
Q20070335AAACLV	FDC640P	96-HOURS	0/77	
Q20070335ABACLV		96-HOURS	0/77	
Q20070335BAACLV	FDC655AN	96-HOURS	0/77	
Q20070335BBACLV		96-HOURS	0/77	
Q20070335CAACLV	FDC654P	96-HOURS	0/77	
Q20070335CBACLV		96-HOURS	0/77	
<b>Test: (High Temperature Reverse Bias)   Conditions: 150C, -16V   Standard: JESD22-A108</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335AAHTRB	FDC640P	168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	
Q20070335ABHTRB		168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	
<b>Test: (High Temperature Reverse Bias)   Conditions: 150C, -24V   Standard: JESD22-A108</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335CAHTRB	FDC654P	500-HOURS	0/77	
		1000-HOURS	0/77	
Q20070335CBHTRB		500-HOURS	0/77	
		1000-HOURS	0/77	
<b>Test: (High Temperature Reverse Bias)   Conditions: 150C, 24V   Standard: JESD22-A108</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335BAHTRB	FDC655AN	168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	
Q20070335BBHTRB		168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	
<b>Test: (Highly Accelerated Stress Test)   Conditions: 85%RH, 130C, -16V   Standard: JESD22-A110</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335AAHAST1	FDC640P	96-HOURS	0/77	
Q20070335ABHAST1		96-HOURS	0/77	
<b>Test: (Highly Accelerated Stress Test)   Conditions: 85%RH, 130C, -24V   Standard: JESD22-A110</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335CAHAST1	FDC654P	96-HOURS	0/77	
Q20070335CBHAST1		96-HOURS	0/77	
<b>Test: (Highly Accelerated Stress Test)   Conditions: 85%RH, 130C, 24V   Standard: JESD22-A110</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335BAHAST1	FDC655AN	96-HOURS	0/77	
Q20070335BBHAST1		96-HOURS	0/77	
<b>Test: (Power Cycle)   Conditions: Delta 100C, 2 Min cycle   Standard: MIL-STD-750-1036</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335AAPRCL	FDC640P	5000-CYCLES	0/77	
		10000-CYCLES	0/77	
Q20070335ABPRCL		5000-CYCLES	0/77	
		10000-CYCLES	0/77	
Q20070335BAPRCL	FDC655AN	5000-CYCLES	0/77	
		10000-CYCLES	0/77	
Q20070335BBPRCL		5000-CYCLES	0/77	
		10000-CYCLES	0/77	
Q20070335CAPRCL	FDC654P	5000-CYCLES	0/77	
		10000-CYCLES	0/77	
Q20070335CBPRCL		5000-CYCLES	0/77	
		10000-CYCLES	0/77	
<b>Test: (Precondition)   Conditions:   Standard: JESD22-A113</b>				
Lot	Device	Setpoint	Result	Failure Code
Q20070335AAPCNL1A	FDC640P		0/231	
Q20070335ABPCNL1A			0/231	
Q20070335BAPCNL1A	FDC655AN		0/231	
Q20070335BBPCNL1A			0/231	
Q20070335CAPCNL1A	FDC654P		0/231	
Q20070335CBPCNL1A			0/231	

Test: (Temperature Cycle)   Conditions: -65C, 150C   Standard: JESD22-A104				
Lot	Device	Setpoint	Result	Failure Code
Q20070335AATMCL1	FDC640P	100-CYCLES	0/77	
		500-CYCLES	0/77	
Q20070335ABTMCL1		100-CYCLES	0/77	
		500-CYCLES	0/77	
Q20070335BATMCL1	FDC655AN	100-CYCLES	0/77	
		500-CYCLES	0/77	
Q20070335BBTMCL1		100-CYCLES	0/77	
		500-CYCLES	0/77	
Q20070335CATMCL1	FDC654P	100-CYCLES	0/77	
		500-CYCLES	0/77	
Q20070335CBTMCL1		100-CYCLES	0/77	
		500-CYCLES	0/77	

### Results/Discussion for Qual Plan Number - Q20080485

Test: (High Temperature Reverse Bias)   Conditions: 150C, -16V   Standard: JESD22-A108				
Lot	Device	Setpoint	Result	Failure Code
Q20080485AAHTRB	FDN302P	168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	
Q20080485CAHTRB	NDS332P	168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	

Test: (High Temperature Reverse Bias)   Conditions: 150C, 24V   Standard: JESD22-A108				
Lot	Device	Setpoint	Result	Failure Code
Q20080485BAHTRB	FDN337N	168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	
Q20080485DAHTRB	FDN359BN	168-HOURS	0/77	
		500-HOURS	0/77	
		1000-HOURS	0/77	

Test: (Highly Accelerated Stress Test)   Conditions: 85%RH, 130C, -16V   Standard: JESD22-A110				
Lot	Device	Setpoint	Result	Failure Code
Q20080485AAHAST1	FDN302P	96-HOURS	0/77	
Q20080485CAHAST1	NDS332P	96-HOURS	0/77	

Test: (Highly Accelerated Stress Test)   Conditions: 85%RH, 130C, 24V   Standard: JESD22-A110				
Lot	Device	Setpoint	Result	Failure Code
Q20080485BAHAST1	FDN337N	96-HOURS	0/77	
Q20080485DAHAST1	FDN359BN	96-HOURS	0/77	

Test: (Power Cycle)   Conditions: Delta 100C, 2 Min cycle   Standard: MIL-STD-750-1036				
Lot	Device	Setpoint	Result	Failure Code
Q20080485AAPRCL	FDN302P	5000-CYCLES	0/77	
		10000-CYCLES	0/77	
Q20080485BAPRCL	FDN337N	5000-CYCLES	0/77	
		10000-CYCLES	0/77	
Q20080485CAPRCL	NDS332P	5000-CYCLES	0/77	
		10000-CYCLES	0/77	

Test: (Power Cycle)   Conditions: Delta 100CC, 2 Min cycle   Standard: MIL-STD-750-1036				
Lot	Device	Setpoint	Result	Failure Code
Q20080485DAPRCL	FDN359BN	5000-CYCLES	0/77	
		10000-CYCLES	0/77	

Test: (Precondition)   Conditions:   Standard: JESD22-A113				
Lot	Device	Setpoint	Result	Failure Code
Q20080485AAPCNL1A	FDN302P		0/154	
Q20080485BAPCNL1A	FDN337N		0/154	
Q20080485CAPCNL1A	NDS332P		0/154	
Q20080485DAPCNL1A	FDN359BN		0/154	

Test: (Temperature Cycle)   Conditions: -65C, 150C   Standard: JESD22-A104				
Lot	Device	Setpoint	Result	Failure Code
Q20080485AATMCL1	FDN302P	100-CYCLES	0/77	
		500-CYCLES	0/77	

Q20080485BATMCL1	FDN337N	100-CYCLES	0/77	
		500-CYCLES	0/77	
Q20080485CATMCL1	NDS332P	100-CYCLES	0/77	
		500-CYCLES	0/77	
Q20080485DATMCL1	FDN359BN	100-CYCLES	0/77	
		500-CYCLES	0/77	

Product Id Description : This change will affect products assembled in SuperSOT-6lds and SuperSOT-3lds packages built in Cebu, Philippines. The products affected by change are detailed in Affected FSIDs section. There will be two implementation dates for these two packages. Regional Planners and PCN Account Managers will be advised accordingly on the implementation plans. In addition, a special flow code will be used for devices using gold wire which is "\_F095" and the standard device will use copper wire.

**Affected FSIDs :**

FDC606P_NBCE003A	FDC637AN_NB5E023A	FDC640P_NBAD004A
FDC642P_SB4N006	FDC654P_NBGT007	FDC658P_NB4E009A
FDC658P_NB4E011	FDC658P_NB4E012	FDN302P
FDN304PZ	FDN304P	FDN306P
FDN339AN	FDN3400	FDN340P
FDN340P_G	FDN342P	FDN359AN
FDN359BN	FDN360P	FDN360P_G
FDN360P_NBGT003B	FDN371N	FDN372S
FDN5618P	FDN5618P_SB4N007	FDN5630
FDN5630_NB5N008A		