



FINAL PRODUCT/PROCESS CHANGE NOTIFICATION
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21 Jan 2010

SUBJECT: ON Semiconductor Final Product/Process Change Notification #16366

TITLE: Fab9 to Fab10 Transfer

PROPOSED FIRST SHIP DATE: 21 Apr 2010

AFFECTED CHANGE CATEGORY(S): Wafer Fab

AFFECTED PRODUCT DIVISION(S): A9E, A9F, A9M, A9N, A9O, A9R, and A9S

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:

Contact your local ON Semiconductor Sales Office or Richard Tan <Richard.Tan@onsemi.com>

SAMPLES:

Contact your local ON Semiconductor Sales Office or Christine Walker <Christine.Walker@onsemi.com>

ADDITIONAL RELIABILITY DATA: Available

Contact your local ON Semiconductor Sales Office <Richard.Tan@onsemi.com>

NOTIFICATION TYPE:

Final Product/Process Change Notification (FPCN)

Final change notification sent to customers. FPCNs are issued at least 90 days prior to implementation of the change.

ON Semiconductor will consider this change approved unless specific conditions of acceptance are provided in writing within 30 days of receipt of this notice. To do so, contact your local ON Semiconductor Sales Office.

DESCRIPTION AND PURPOSE:

Consolidation of the 5-inch wafer fabrication facility (Fab 9) into the 8-inch facility (Fab 10). Both fabs are located in Pocatello, Idaho.

Qualification Report for selected A9 product families for Fab9 to Fab10 transfer.



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RELIABILITY DATA SUMMARY:

AEC#	STRESS	REF. STD	STRESS CONDITION	TEST TEMP	TEST SW	TEST WINDOW	# OF LOTS	SAMPLE SIZE	SPARES /LOT	LOT ID/ REL ID	RESULTS ⁽¹⁾	Remarks
TEST GROUP A - ACCELERATED ENVIRONMENT STRESS TESTS												
A1	PC	J-STD-020 & JESD22-A113	Moisture Soak (MSL = 3) Reflow Peak Temp = (225C)	R	3	96	3	236	9	TQ091802/1	0/157	
										TQ091803/1	0/157	
										TQ091804/1	0/155	
A0	SAT	J-STD-020	Acoustic Microscopy	NA	NA	NA	3	5	0	B7274.1	COMPLETED	
										B72741.1		
										B72578.1		
A2	HAST	JESD22-A110	130°C /85% RH for 96 hours	R, H	3	96	3	77	3	B78203.1	0/80	20004 doesn't have HAST board. Use C5 20429 HAST data. C5 has the same fab backend metal process.
										B77639.1	0/80	
										B66419.2	0/80	
A3	UHAST (AC)	JESD22-A102	130°C /85% RH for 96 hours (121°C /100% RH for 96 hours)	R	3	48	3	77	3	TQ091802/3	0/79	
										TQ091803/3	0/79	
										TQ091804/3	0/78	
A4	TC	JESD22-A104	-65°C to 150°C for 500 cycles	H	3	96	3	77	3	TQ091802/4	0/78	
										TQ091803/4	0/78	
										TQ091804/4	0/77	
A6	HTSL	JESD22-A103	Ta= 150°C for 180 hours, biased	R,H	3	96	3	77	3	TQ091802/5/1	0/80	
										TQ091803/5/1	0/79	
										TQ091804/5/1	0/79	
			Ta= 150°C for 500 hours, biased	R,H	3	96	3	77	3	TQ091802/5/2	0/80	
										TQ091803/5/2	0/79	
										TQ091804/5/2	0/79	
			Ta= 150°C for 1000 hours, biased	R,H	3	96	3	77	3	TQ091802/5/3	0/80	
										TQ091803/5/3	0/79	
										TQ091804/5/3	0/79	

Note 1: Invalid failures yielded off.

AEC#	STRESS	REF. STD	STRESS CONDITION	TEST TEMP	TEST SW	TEST WINDOW	# OF LOTS	SAMPLE SIZE	SPARES /LOT	LOT ID/ REL ID	RESULTS ⁽¹⁾	Remarks
TEST GROUP B - ACCELERATED LIFETIME SIMULATION TESTS												
B1	HTOL	JESD22-A108	Ta= 150°C for 160 hours, biased	R,H,C	3	96	3	77	3	TQ091802/6/1	0/76	
										TQ091803/6/1	0/72	
										TQ091804/6/1	0/79	
			Ta= 150°C for 500 hours, biased	R,H,C	3	96	3	77	3	TQ091802/6/2	0/71	
										TQ091803/6/2	0/63	
B2	ELFR	JESD22-A108 / AEC-Q100-008	Ta= 150°C for 40 hours, biased	R,H	3	48	3	800	3	TQ091804/6/2	0/73	A9Q ELFR data. Invalid failures yielded off.
										B70721.1	0/792	
										B70947.1	0/798	
										B70948.1	0/798	
TEST GROUP C - PACKAGE ASSEMBLY INTEGRITY TESTS												
C1	WBS	AEC-Q100-001	30 bonds from 5 parts min; No ball lifting (Cpk > 1.33)	NA	NA	NA	1	5		B72741.1	0/10	passed with readings greater than 4.0g and cpk greater than 1.33
C2	WBP	Mil-STD-883 Method 2011	Performed after TC, 30 bonds from 5 parts	NA	NA	NA	1	5		B72741.1	0/10	passed with readings greater than 21.1g and cpk greater than 1.33
C3	ST	JESD22-B102		NA	NA	NA	1	15		B72741.1	0/10	passed with coverage >95%
TEST GROUP E - ELECTRICAL VERIFICATION TESTS												
E2a	HBM	JESD22-A114	2kV, 3 per voltage	R,H	3		1	15		B72741.1	COMPLETED	passed 1000V (Fab9 500V)
E2b	MM	JESD22-A115	200V, 3 per voltage	R,H	3		1	15		B72741.1	COMPLETED	passed 100V (Fab9 100V)
E3	CDM	ESD-STM 5-3-1-1999	750v corner pin 500v all other pins	R,H	3		1	15		B72741.1	COMPLETED	passed 250V (Fab9 250V)
E4	LU	JESD78	100ma @ 25°C	R,H	3		1	6		B72741.1	COMPLETED	passed
E5	ED	AEC-Q100-009	Electrical Distribution Retain datalog	R,H,C	3		3	30		B72374 B72741 B72578	COMPLETED	passed

Note 1: Invalid failures yielded off.


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DIE FABRICATION RELIABILITY TESTS									
Test #	Test	Reference	Test Conditions	Electrical Test Requirements	Sample Size per lot	Accept Criteria	# of Lots	Total Parts Required	Results
D1	Electromigration (EM)	-	Reference Conditions: Tjref =120°C Use current as defined in Design: M1: 0.6mA/μmW M2: 1.32mA/μmW Contact: 1.2mA/minimum contact Via: 0.75mA/ minimum via	-	-	Cumulative failures after 10 years < 0.01% at reference conditions	-	-	Metals, contacts and vias pass.
D2	Time Dependent Dielectric Breakdown (TDDB)	-	Reference Conditions: Tjref =120°C Vgmax	-	-	Cumulative failures after 10 years < 0.01%	-	-	Pass
D3.1	Hot Carrier Injection (HCI) of CMOS devices	-	Peak conditions to be evaluated	-	-	Create DC Safe Operating Area for 10% degradation	-	-	Pass
D3.2	Hot Carrier Injection (HCI) of DMOS devices	-	Investigate worst case degradation conditions	-	-	Create DC Safe Operating Area for 10% degradation	-	-	Pass
D5	Stress Migration (SM)	-	Bake 175 C, 225 C, 275 C for 500hr	-	-	Less than 10% shift in Resistance	-	-	Pass

ELECTRICAL CHARACTERISTIC SUMMARY:

Will meet all electrical requirements.

CHANGED PART IDENTIFICATION:

A new customer part number from Fab 10 defined. See list of the new part numbers in the Affected Device List.


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AFFECTED DEVICE LIST

ON (AMIS) Part Numbers Affected	Customer Part Numbers Affected	Fab 10 Process	New Device Number (Fab 10)
05990-002-XTP	CU029340	A9O	20551-001
06541-003-XTP	4998130797	A9O	20553-001
06782-003-XTD	6000309	A9R	20561-001
08768-004-XTP	08768-004	A9N	20539-001
11002-002-XTP	F01U034703	A9N	20577-003
11002-004-XTP	11002-004	A9N	20577-001
11102-003-XTD 11102-003-XTP	11102-003	A9N	20548-002
11102-004-XTP	11102-004	A9N	20548-001
11106-001-XTD	A8794723RKP1	A9N	20525-001
11119-002-XTP	ICKT-00177TR	A9N	20550-001
11273-011-XTD	DEI 1016B	A9R	20560-002
11273-012-XTD	DEI1016A	A9R	20560-001
11273-014-XSW	DEI1016	A9R	20560-003
11273-015-XTD 11273-015-XTP	DEI1016B-G	A9R	20560-004
11418-001-XWF	MX987	A9M	20524-001
11453-001-XWF	806535-001	A9N	20540-001
11667-001-XWF	05420A01UNN7A	A9S	11667-003
11716-001-XTD	275051939	A9N	20549-001
11804-002-XTP	104515913	A9O	20552-002
11823-002-XDI	84987-001	A9N	20543-001
11994-003-XDW	251210-224 DD251210 REV P	A9N	20538-001
12067-004-XWF	05411A01UNN7A	A9S	20562-001
13882-004-XDI	1075037-004 REV M	A9N	20537-001
13882-005-XSW	1075037-005 REV M	A9N	20537-002



ON (AMIS) Part Numbers Affected	Customer Part Numbers Affected	Fab 10 Process	New Device Number (Fab 10)
13991-001-XDW	251220-221 DD251220 REV E	A9N	20536-002
13991-003-XDW	251220-021 DD251220 REV E	A9N	20536-001
14118-001- XWF	5220DA01UNN7A	A9S	20564-001
14118-003-XWF	05211A01XNS7	A9S	20564-002
14205-001-XDI	1821-8785	A9N	20451-002
14260-002-XDW	251219-023 DD251219 REV I	A9N	20542-001
15086-001-XWF	05111A01XNS7	A9S	20566-001
19315-001-XWF	05129A01XNS7	A9S	20568-001
19338-001-XWF	24003A01XNS7	A9S	20567-001
20004-001-XTD	20004-001	A9M	20004-002