

Generic Copy

Issue Date: 17-Nov-2012

TITLE: Qualification of T1 FET die, used in NCP34x & NCP37x devices, at UMC Wafer Fab

PROPOSED FIRST SHIP DATE: 17-Feb-2013

AFFECTED CHANGE CATEGORY(S): Silicon Fabrication Site

FOR ANY QUESTIONS CONCERNING THIS NOTIFICATION:

Contact your local ON Semiconductor Sales Office or Todd.Manes@onsemi.com

SAMPLES: Contact your local ON Semiconductor Sales Office or Shilpa.Rao@onsemi.com

ADDITIONAL RELIABILITY DATA: Available

Contact your local ON Semiconductor Sales Office or Edmond.Gallard@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 <quality@onsemi.com>.

DESCRIPTION AND PURPOSE:

ON Semiconductor is pleased to announce the qualification for the FET die, utilized in the NCP34x and NCP37x family of devices, in United Microelectronics Corp (UMC) Wafer Fab.

The FET for the NCP34x and NCP37x is currently qualified at ON Semiconductor's Aizu wafer fab facility located in Aizu, Japan and is now qualified at UMC's wafer fabrication facility located in Taiwan. Upon expiration (or approval) of this Final PCN, devices may be supplied by either wafer fab.

UMC is an ISOTS16949:2009 certified company. The UMC Wafer Fab had already been qualified and utilized by ON Semicondutor for their products on High Cell Density (HD3e) and Trench (T2) MOSFET technology silicon platforms. More recently ON Semi has qualified UMC's Trench (T1) MOSFET platform from which the FET for the NCP34x & NCP37x is sourced. No circuit design changes have been made. Device performance is the same for Aizu and UMC-sourced devices.

The NCP34x & NCP37x devices will continue to be assembled and tested in existing, qualified locations. No changes to packaging will occur as a result of this fab qualification.

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RELIABILITY DATA SUMMARY:

Reliability Test Results:

The UMC-sourced NCP34x & NCP37x devices have been qualified based on the following Reliability results:

Test	Name	Test Conditions	End Point Reg's	Test Results	(rej/ss)	(rej/ss)	(rej/ss)	(rej/ss)	(rej/ss)	(rej/ss)	(rej/ss)
			racq 5	Read	NTGS5120P	NTGS5120P	NTGS5120P	2N7002N	2N7002N\	2N7002N\	2N7002N
				Point	UMC	UMC	UMC	UMC	UMC	UMC	Aizu
	High Temp	$TA = 150^{\circ} C \text{ for } 1008$									
HTRB	Reverse Bi as	hours, $Vdss = 80\%$ of	c = 0, Room	Initial	0/84	0/94	0/84	0/04	0/84	0/04	0/84
		max speci fi ed		504 Hrs		0/84		0/84		0/84	
				1008 Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
		TA = 150°C for 1008		1008 Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
HTGB	High Temp	hours, Vgss=100% of	c = 0, Room	Initial							
mob	Gate Bias	max speci fi ed	c = 0, 100m	Initia	0/84	0/84	0/84	0/84	0/84	0/84	0/84
		1		504 Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
				1008 Hrs	0/84	0/84	0/84	0/82	0/84	0/84	0/84
				1500 Hrs	0,01	0/01	0,01	0/82	0/84	0/84	0/84
				2000 Hrs				0/82	0/84	0/84	0/84
				2500 Hrs				0/82	0/84	0/84	0/84
				3000 Hrs				0/82	0/84	0/84	0/84
	MSL 1			50001115				0,02	0,0.	0/01	0, 0 .
PC	Preconditionin	IR @ 260 °C	c = 0, Room								
	g				0/84	0/84	0/84	0/84	0/84	0/84	0/84
IOL-	Intermittent	Ta=+25°C, delta		Post PC							
PC	OL-PC	Tj=100°C		Electrical				0.00	0.10.4	0.10.4	
		On/off = 2 min		7500 II	0/84	0/84 0/84	0/84	0/84	0/84	0/84	0/84
				7500 Hrs 15000	0/84	0/84	0/84	0/84	0/84	0/84	0/84
				Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
	Temperature Cycling - PC	-55°C to +150°C	c=0, Room	Post PC							
TC-PC				Electrical	0/84	0/84	0/84	0/84	0/84	0/84	0/84
				500 Cy c	0/84	0/84	0/84	0/84	0/84	0/84	0/84
				1000 Cyc	0/84	0/84	0/84	0/84	0/84	0/84	0/84
AC-PC	Autoclave-PC	121°C/100%	c = 0, Room	D DC	0/84	0/84	0/84	0/04	0/04	0/04	0/04
				Post PC Electrical							
		RH/15psig		96 Hrs	0/84 0/84	0/84 0/84	0/84 0/84	0/84	0/84 0/84	0/84 0/84	0/84 0/84
	Highly			90 HIS	0/84	0/ 84	0/84	0/84	0/84	0/ 64	0/64
HAST - PC	Accelerated Stress Test + Preconditionin	Temp= +130°C, RH=85% for 96 hrs. Vdss=80% of	c = 0, Room	Post PC Electrical							
	g	max speci fi ed			0/84	0/84	0/84	0/84	0/84	0/84	0/84
				96 Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
RSH	Resistance to	Tdwell=10 sec @	N/A								
10311	Solder Heat	260°C			0/15	0/15	0/15	0/15	0/15	0/15	0/15
BPS	Bond Pull Strength	Condition C	Min Cpk 1.33		0/30	0/30	0/30	0/30	0/30	0/30	0/30
BS	Bond Shear		Min Cpk 1.33		0/10	0/10	0/10	0/10	0/10	0/10	0/10
	Characterizatio n	Per 48A			0/30	0/30	0/30	0/30	0/30	0/30	0/30

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Test	Name	Test Conditions	End Point	Test Results						
Test	Name	Test conditions	Reg's	rest results	(rej/ss)	(rej/ss)	(rej/ss)	(rej/ss)	(rej/ss)	(rej/ss)
			233, 2	Read Point	NTHS4166N	NTHS4166N	NTHS4166N	NTLJD4116N	NTLJD4116N	NTLJD4116N
					UMC	UMC	Aizu	UMC	UMC	UMC
HTRB	High Temp	TA = 150°C for 1008 hours, Vdss = 80% of	c = 0, Room	Initial						
нікв		max speci fied	c = 0, Room	initiai	0/84	0/84	0/84			
		пан эрестиес		504 Hrs	0/84	0/84	0/84			
				1008 Hrs	0/84	0/84	0/84			
		$TA = 150^{\circ} C \text{ for } 1008$			0/01	0/01	0,01			
HTGB	High Temp Gate Bias	hours, Vgss=100% of	c = 0, Room	Initial0/80						
	Gate Bias	max speci fi ed			0/84	0/84	0/84	0/84	0/84	0/84
				504 Hrs	0/84	0/84	0/84	0/84	0/84	0/84
				1008 Hrs	0/84	0/84	0/84	0/84	0/84	0/84
	MSL 1	TO 0 000								
PC	1 reconditionin	IR @ 260 °C	c = 0, Room		0/04	0/04	0/04			
	g	Ta=+25°C, delta			0/84	0/84	0/84			
IOL-	Intermittent	T _i =100°C	c = 0, Room	Post PC						
PC	OL-PC	On/off = 2 min	c = o, Room	Electrical	0/84	0/84	0/84			
				7500 Hrs	0/84	0/84	0/84			
				15000 Hrs	0/84	0/84	0/84			
TC-PC	Temperature	-55°C to +150°C	c = 0. Room	Post PC	0/84	0/84	0/84			
1010	Cycling - PC		c = 0, 100 m	Electrical						
				500 Cy c	0/84	0/84	0/84			
				1000 Cyc	0/84	0/84	0/84			
				1000 0 je						
A G D G	A . 1 D.C	1219C/1000/ DII/15maia	0 P	Post PC	0/84	0/84	0/84			
AC-PC	Autoclave-PC	121°C/100% RH/15psig	c = 0, Room	Electrical						
				96 Hrs	0/84	0/84	0/84			
	Highly	Temp = $+130^{\circ}$ C,			0/84	0/84	0/84			
HAST	Accelerated	RH=85 % for 96 hrs.		Post PC						
- PC	Stress Test + Preconditionin	Vdss=80% of max	c = 0, Room	Electrical						
	g	speci fied								
	ь			96 Hrs	0/84	0/84	0/84			
RSH	Resistance to Solder Heat	Tdwell=10 sec @ 260°C	N/A		0/15	0/15	0/15			
BPS	Bond Pull Strength	Condition C	Min Cpk 1.33		0/30	0/30	0/30			
BS	Bond Shear		Min Cpk 1.33		0/10	0/10	0/10			
20	Charact erizatio	D 40.4	1.211 Cpit 1.55							
	n	Per 48A			0/30	0/30	0/30			

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ELECTRICAL CHARACTERISTIC SUMMARY:

Electrical characterization test data has been obtained on UMC sourced NCP34x & NCP37x material. No significant changes in part performance as compared to the existing Aizu-sourced product were observed. Cpk's of all critical parameters are greater than 1.67. Data may be provided upon request.

CHANGED PART IDENTIFICATION:

Devices with date codes of 2013 work week 7 or later may be sourced from either wafer UMC or Aizu fab.

List of affected General Parts:

NCP347MTAETBG

NCP347MTAFTBG

NCP347MTAHTBG

NCP348AEMTTBG

NCP348MTTBG

NCP349MNAETBG

NCP349MNBGTBG

NCP349MNBKTBG

NCP349MNTBG

NCP370MUAITXG

NCP372MUAITXG

NCP373MU04TXG

NCP373MU13TXG

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