ON Semiconductor

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION #16939

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 Req's	Test Results	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)
				Read Point	NTGS5120P UMC	NTGS5120P UMC	NTGS5120P UMC	2N7002N UMC	2N7002N\ UMC	2N7002N\ UMC	2N7002N Aizu
HTRB	High Temp Reverse Bias	TA = 150°C for 1008 hours, Vdss = 80% of max specified	c = 0, Room	Initial	0/84	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	0/84
				1008 Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
HTGB	High Temp Gate Bias	TA = 150°C for 1008 hours, Vgss=100% of max specified	c = 0, Room	Initial	0/84	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	0/84
				1008 Hrs	0/84	0/84	0/84	0/82	0/84	0/84	0/84
				1500 Hrs				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
PC	MSL 1 Preconditioning	IR @ 260 °C	c = 0, Room		0/84	0/84	0/84	0/84	0/84	0/84	0/84
IOL-PC	Intermittent OL-PC	Ta=+25°C, delta Tj=100°C On/off = 2 min	c = 0, Room	Post PC Electrical	0/84	0/84	0/84	0/84	0/84	0/84	0/84
				7500 Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
				15000 Hrs	0/84	0/84	0/84	0/84	0/84	0/84	0/84
TC-PC	Temperature Cycling - PC	-55°C to +150°C	c = 0, Room	Post PC Electrical	0/84	0/84	0/84	0/84	0/84	0/84	0/84
				500 Cyc	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% RH/15psig	c = 0, Room	Post PC Electrical	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
HAST - PC	Highly Accelerated Stress Test + Preconditioning	Temp = +130°C, RH=85% for 96 hrs. Vdss=80% of max specified	c = 0, Room	Post PC Electrical	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 Solder Heat	Tdwell=10 sec @ 260°C	N/A		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
	Characterization	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 Req's	Test Results	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)	(rej/ ss)
				Read Point	NTHS4166N UMC	NTHS4166N UMC	NTHS4166N Aizu	NTLJD4116N UMC	NTLJD4116N UMC	NTLJD4116N UMC
HTRB	High Temp Reverse Bias	TA = 150°C for 1008 hours, Vdss = 80% of max specified	c = 0, Room	Initial	0/84	0/84	0/84			
				504 Hrs	0/84	0/84	0/84			
				1008 Hrs	0/84	0/84	0/84			
HTGB	High Temp Gate Bias	TA = 150°C for 1008 hours, Vgss=100% of max specified	c = 0, Room	Initial0/80	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
PC	MSL 1 Preconditionin g	IR @ 260 °C	c = 0, Room		0/84	0/84	0/84			
IOL-PC	Intermittent OL-PC	Ta=+25°C, delta Tj=100°C On/off = 2 min	c = 0, Room	Post PC 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 Cycling - PC	-55°C to +150°C	c = 0, Room	Post PC Electrical	0/84	0/84	0/84			
				500 Cyc	0/84	0/84	0/84			
				1000 Cyc	0/84	0/84	0/84			
AC-PC	Autoclave-PC	121°C/100% RH/15psig	c = 0, Room	Post PC Electrical	0/84	0/84	0/84			
				96 Hrs	0/84	0/84	0/84			
HAST - PC	Highly Accelerated Stress Test + Preconditionin g	Temp = +130°C, RH=85% for 96 hrs. Vdss=80% of max specified	c = 0, Room	Post PC Electrical	0/84	0/84	0/84			
				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			
	Characterizatio 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