ON Semiconductor

FINAL PRODUCT/PROCESS CHANGE NOTIFICATION #16940

Generic Copy

Issue Date: 05-Dec-2012

TITLE: Qualification of T1 FET die, used in NCP374MU075TXG, at UMC Wafer Fab

PROPOSED FIRST SHIP DATE: 05-Mar-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 NCP374MU075TXG, in United Microelectronics Corp (UMC) Wafer Fab.

The FET for the NCP374 is currently qualified at ON Semiconductor's Aizu wafer fab facility located in Aizu, Japan. Due to the announced closure of the Aizu wafer fab, ON Semiconductor has now qualified UMC's wafer fabrication facility located in Taiwan. Upon expiration (or approval) of this Final PCN, the FET for the NCP374 may be sourced from either fab.

UMC is an ISOTS16949:2009 certified company. The UMC Wafer Fab has already been qualified and utilized by ON Semiconductor 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 NCP374 is sourced. No circuit design changes have been made. Device performance is the same for Aizu and UMC-sourced devices.

The NCP374 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 NCP374 has 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 Preconditionin g	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 + 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	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
	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 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 Preconditioning	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 + 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			
				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			
	Characterization	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 NCP374 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 9 or later may be sourced from either wafer UMC or Aizu fab.

List of affected General Parts:

NCP374MU075TXG