

ADV Issue Date: 04/08/2016

CUSTOMER ADVISORY ADV1607

Replacement of EPCQ512SI16N with EPCQ512ASI16N (Change to 12" wafer, Rev B)

Change Description

Altera announces the migration of EPCQ512SI16N from **8" wafer, Rev A** to **12" wafer, Rev B** to support product longevity and supply continuity.

Rev B silicon also supports ASx4 configuration mode, and remains form, fit, and function compatible with the Rev A version.

With this change, the ordering part number (OPN) EPCQ512SI16N will be replaced with a new OPN EPCQ512ASI16N ("A" added to the existing OPN).

Table 1

	Change From	Change To
Wafer diameter, revision, technology	8" Wafer, Rev A, 45nm	12" Wafer, Rev B, 45nm
Ordering Part Number	EPCQ512SI16N	EPCQ512 <u>A</u> SI16N

This is also advance notification of the upcoming Product Discontinuance Notice (PDN) that will be applied to the existing OPN EPCQ512SI16N.

Recommended Action

Customers are requested to:

- 1) Acknowledge receipt of this notification.
- 2) Provide feedback at the earliest convenience for any required data or samples to evaluate the new OPN EPCQ512ASI16N.

Please refer to the “Product Transition” dates for the key milestones.

Reason for Change

This change is intended to support product longevity and supply continuity. Production will be discontinued for this product in the 8” wafer line and will transition to the 12” wafer line.

Products Affected:

1. EPCQ512SI16N

Product Transition:

Table 2

Milestone	Date
New OPN EPCQ512ASI16N samples available to order	04/30/2016
EPCQ512SI16N Last Time Buy	Refer to the LTB/LTS dates in the Product Discontinuance Notice (PDN) that will be issued separately

Qualification Data:

The change qualification successfully passed both component level and wafer level reliability tests. See Table 3 and Table 4 for results.

Table 3

	Test Procedure / Conditions	Test Method Reference	Duration or Level	Results	
				# Lots	Failed / Tested
Die Level Reliability Level Tests	HIGH TEMPERATURE OPERATING LIFE <i>Stress Conditions: 125°C, 4.0V Vcc</i>	JESD22-A108	1000 hours	3	0/231
	EARLY LIFE FAILURE RATE <i>Stress Conditions: 125°C, 4.0V Vcc</i>	AEC Q100-008	168 hours	3	0 / 4980
	NVM CYCLING ENDURANCE + HIGH TEMPERATURE DATA RETENTION P/E 100k @ 85°C + HTDR 10/100 hrs @ 125°C	JEDEC JESD47 I	100k Cycling @ 85°C + 10hrs @ 125°C + 100hrs @ 125°C	3	0 / 120 0 / 120 0 / 120
	NVM CYCLING ENDURANCE + LOW TEMPERATURE DATA RETENTION P/E 100k @ 25°C + OLT 500 hrs @ 25°C	JEDEC JESD47 I	100k Cycling @ 25°C + 500hrs @ 25°C	3	0 / 120 0 / 120
	NVM UNCYCLED HIGH TEMPERATURE DATA RETENTION 125°C, no bias	JEDEC JESD47 I	1000 hours	3	0 / 231 0 / 231 0 / 231
Die Level Characterization Tests	ELECTROSTATIC DISCHARGE Human Body Model Charged Device Model	JEDEC JS-001 ANSI / ESD SP 5.3.2	HBM : > 2,000V CDM : > 500V	3	0 / 3 0 / 3
	LATCH-UP (85°C) ITrigger Overvoltage VSUPPLY	JEDEC JESD78	ITrigger: >100mA Overvoltage: >5.4V	3	0 / 6 0 / 6
Wafer Level Tests	TIME DEPENDENT DIELECTRIC BREAKDOWN (TDDB)	JESD35A, JESD35-2, JESD92	>10 years	3	Pass
	ELECTROMIGRATION (EM)	JESD63, JESD61A, JESD202A, JESD87	>10 years	3	Pass
	CHANNEL HOT CARRIER (CHC)	JESD28,	>10 years	3	Pass
	NEGATIVE BIAS TEMPERATURE INSTABILITY (NBTI)	JESD90	>10 years	3	Pass

Table 4

	Test Procedure / Conditions	Test Method Reference	Duration or Level	Results	
				# Lots	Failed / Tested
Package Level Reliability Level Tests	PRECONDITIONING MSL3, 3x reflow 260°C temperature	JEDEC JESD22-A113	with soak without soak	3	0 / 462 0 / 231
	HIGHLY ACCELERATED STRESS TEST - bias 130°C, 85% RH, 3.6V on alternating leads/balls	JEDEC JESD22-A110	96 hours	3	0 / 231
	THERMAL CYCLING -65°C to +150°C	JEDEC JESD22-A104	500 cycles	3	0 / 231
	HIGH TEMPERATURE STORAGE LIFE 150°C, no bias	JEDEC JESD22-A103	1000 hours	3	0 / 231
Package Level Characterization Tests	MOISTURE SENSITIVITY LEVEL Peak Reflow Temp = 260°C	JEDEC J-STD-020	Level 3	3	Pass
	BOND INTEGRITY Wire Bond Shear minimum gmf Wire Bond Pull Strength minimum gmf	JEDEC JESD22-B116 Internal specs per wire size and type		3 3	30.0 gmf 7.3 gmf
	SOLDERABILITY 240°C peak reflow temperature, FR4 substrate, R0LO SnAgCu solder paste	JESD22-B102		3	0 / 15

Note: Vehicle package is 16-pin SOP2, 300mils body width (SO16W)

Contact

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Revision History

Date	Rev	Description
04/08/2016	1.0.0	Initial Release

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