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Product Change Notification

Change Notification #:	**118299 - 00**
Change Title:	**Select Intel® MAX® 10 Series Products, PCN 118299-00, Manufacturing Site, Product Marking, Product Material, WLCSP RDL/Bump Site Transfer and Package Appearance Change**
Date of Publication:	**June 3, 2021**

Key Characteristics of the Change:

Manufacturing Site, Product Marking, Product Material

Forecasted Key Milestones:

Table 5: Key Dates

Milestone	*Date*
Last date to acknowledge receipt of this notification[1]	July 12, 2021
Earliest change implementation	November 1, 2021

Note 1: J-STD-046, section 3.2.3.1b, stipulates that lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change.

Description of Change to the Customer:

This is the same change described in PCN2124 issued on May 28, 2021.

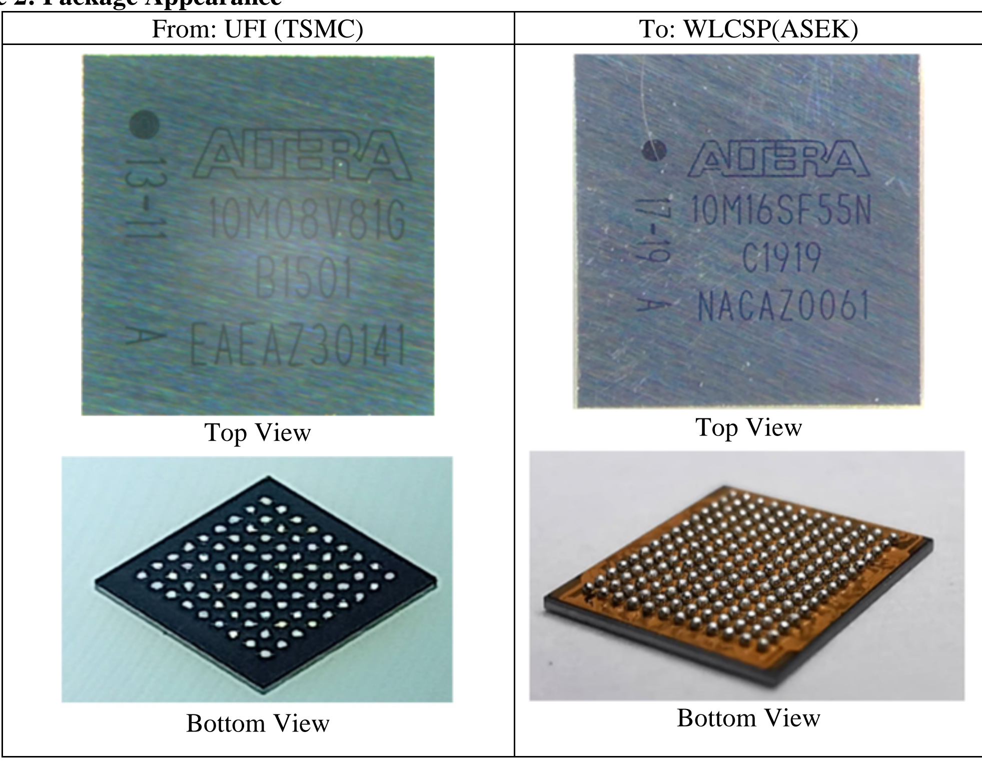
Intel is announcing a change to the RDL/Bump site and package appearance on selected Intel MAX® 10 products in Wafer Level Chip Scale Package (WLCSP). The change will not impact fit, function, quality and reliability, and the post-change products will meet existing electrical and mechanical specifications.

Table 1: Change Details

	Change From	**Change To**
RDL and Bump Site/Location	**Site:** Taiwan Semiconductor Manufacturing Company (TSMC) **Location:** No. 6, Li-Hsin Rd. 6th HsinChu Science Park HsinChu, Taiwan	**Site:** Advanced Semiconductor Engineering, Inc (ASEK) **Location:** 26, Chin 3rd Rd., Nanzih Dist, Kaohsiung, 811, Taiwan

Package Construction& Appearance	WLCSP- UFI (UBM-free Interconnect) solution Black mold compound with exposed top side of solder balls	Standard WLCSP Design pattern on the active area and entire solder balls are visible.
Package Outline Drawing (POD)	Only A1 & A2 dimensions have changed, overall A (height) is the same. See table 3 below.	

Table 2: Package Appearance



From: UFI (TSMC)	To: WLCSP(ASEK)
Top View	Top View
Bottom View	Bottom View

Table 3: Package Outline Drawing (POD)

	Existing POD (Change From)	POD after Change (Change To)	Comments/ Notes
A(Nom)	0.46 mm	0.46mm	No change
A1 (Nom)	0.13 mm	0.20 mm	
A2 (Nom)	0.33 mm	0.26 mm	
D	10M08 = 4.496 mm BSC 10M02 = 3.396 mm BSC	10M08 = 4.496 mm BSC 10M02 = 3.396 mm BSC	No Change
E	10M08 = 4.377 mm BSC 10M02 = 3.466 mm BSC	10M08 = 4.377 mm BSC 10M02 = 3.466 mm BSC	No Change

A2 A

A1

Reason for Change:
Supply continuity since existing site has discontinued UFI (UBM-free Interconnect) packaging.

Qualification Data:
Qualification testing was performed to further evaluate the quality and reliability performance of ASEK for the products specific to this PCN.

Table 6A: Component Level Reliability Test Data

- **All tests passed with zero failures**

Test	Time point	Conditions	Sample Size	Lots# H3417	Lots# H3418	Lots# H3419
Unbiased Highly Accelerated Stress Test (uHAST)	192hrs	130°C / 85%RH	135	0/45	0/45	0/45
Highly Accelerated Stress Test (HAST)	192hrs	130°C / 85%RH with bias	135	0/45	0/45	0/45
Temperature Cycle Test (TCB)	1200 Cycles	-55°C /125°C	135	0/45	0/45	0/45
High Temp Storage (Bake)	1500hrs	150°C	135	0/45	0/45	0/45

Note 1: Preconditioning performed according to J-STD-020, MSL 1 @ 260C reflow
Note 2: Qualification testing and sample size based on standard J-STD-020 requirements

Table 6B: Board Level Reliability Test Data

Test	Condition	Sample Size (Units)	Results
Temp Cycle (reference to IPC-9701)	TCT -40/125°C (1100cycles)	35	Pass
Drop test (reference to JESD22-B111)	Condition B (1500G,0.5ms) 30 drops	30	Pass
Bend test (reference to JESD22-B113)	200K cycles	30	Pass

Customer Impact of Change and Recommended Action:

There is no impact to fit, function, quality, and reliability of the product. The products will meet existing electrical and mechanical specifications.

Customers are requested to:

1. Acknowledge receipt of this notification.
2. Review and inform us, at the earliest convenience, of any questions or concerns regarding this change.

Upon implementation, Intel will ship either pre-change or post-change materials.

Products Affected / Intel Ordering Codes:

Marketing Name	Stepping	Product Code	S-Spec	MM#
Intel® MAX® 10 10M02 FPGA 10M02DCV36C7G	A1	10M02DC0608	S R4KQ	965479
Intel® MAX® 10 10M08 FPGA 10M08DCV81C7G	A1	10M08DC0716	S R4NT	965587
Intel® MAX® 10 10M08 FPGA 10M08DCV81C8G	A1	10M08DC2882	S R6H6	967757
Intel® MAX® 10 10M08 FPGA 10M08DFV81I7G	A1	10M08DF2883	S R6H7	967758
Intel® MAX® 10 10M08 FPGA 10M08DFV81C8G	A1	10M08DF3199	S R6SR	968099
Intel® MAX® 10 10M02 FPGA 10M02DCV36I7G	A1	10M02DC3922	S R7DB	968811
Intel® MAX® 10 10M02 FPGA 10M02DCV36C8G	A1	10M02DC8864	S RBJV	973658
Intel® MAX® 10 10M08 FPGA 10M08DCV81I7G	A1	10M08DC8872	S RBK2	973666
Intel® MAX® 10 10M08 FPGA 10M08DFV81C7G	A1	10M08DF8873	S RBK3	973667

PCN Revision History:

Date of Revision:	Revision Number:	Reason:
June 3, 2021	00	Originally Published PCN

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Should you have any issues with the timeline or content of this change, please contact the Intel Representative(s) for your geographic location listed below. No response from customers will be deemed as acceptance of the change and the change will be implemented pursuant to the key milestones set forth in this attached PCN.

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