Revision 1.1.0
PCN Issue Date: 08/09/2019
Rev 1.1.0 Date: 03/13/2020

PROCESS CHANGE NOTIFICATION

PCN1912

Alternate Assembly Site for Selected Cyclone® III and Cyclone® IV Devices

This is not a new PCN issuance. This is an update to PCN1912; please see the revision history table for information specific to this update

Change Description:

Intel Programmable Solutions Group ("Intel PSG", formerly Altera) is announcing the addition of the Advanced Semiconductor Engineering Inc., Malaysia (ASEM) as an alternate assembly site of selected Cyclone III and Cyclone IV devices.

ASEM is a long-time qualified, high-volume assembly site for Cyclone 10 LP devices, which have the same package type as Cyclone III and Cyclone IV E.

Table 1: Added Assembly Site

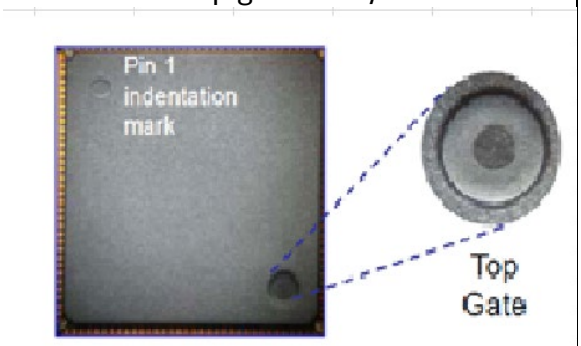
	Current Site	Added Alternate Site
Assembly Site	Amkor Technology Philippines (ATP)	Advanced Semiconductor Engineering Inc., Malaysia (ASEM)
Country of Origin	Philippines	Malaysia

Table 2: Change to Bill of Materials (BOM)

	Change From (ATP)	Change To (ASEM)
Mold Compound	EME-G700 series	EME-G631 series
Wire Bond	Copper Wire	PCC (Palladium Coated Copper) Wire
Lead frame	Copper base material C18045 (Cu, Cr, Sn Zn)	Copper base material C7025 (Cu, Ni Plating, Si, Mg, Ag)

Note: The rest of the BOM remains the same

Table 3: Change to Package Appearance

Change from (ATP)	Change to (ASEM)
With top gate mark/circle 	No top gate mark or circle 

Products Affected:

Table 4

Product Family	Package – Pin Count
Cyclone III	EQFP - 144
Cyclone IV	EQFP - 144

The list of affected OPNs can be downloaded in Excel form:
https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pcn1912-opn-list.xlsx

Recommended Action

Customers are requested to:

1. Acknowledge receipt of this notification.

2. Review and inform us, at the earliest convenience, any questions or concerns regarding this change.

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

Upon implementation, Intel will ship materials from either ATP or ASEM.

Product Transition Dates:

Customers are requested to take note of the key dates shown in the table below.

Table 5

Milestone	***Date***
Last date to acknowledge receipt of this notification[1]	September 20, 2019
Estimated earliest shipment date of changed products[2]	January 1, 2020

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.

Note 2: Effective the earliest ship date listed above, Intel PSG may begin the shipment of changed products.

Intel reserves the right to continue shipment of pre-change product after the change implementation date, and customers will receive shipments of either pre-change or post-change product.

Reason for Change:

The qualification of an additional production assembly site for the affected devices supports supply chain risk mitigation.

Impact and Benefit of Change:

There are no changes to device performance, functionality or thermal characteristics. The product datasheet remains the same.

Additional qualification has been performed to further evaluate the quality and reliability performance of ASEM for the products specific to this PCN (See Qualification Data Section, Table 6).

Method to Identify Change Product:

The changed product can be identified by the following:

- COO (Country of Origin) is Malaysia on the top mark and label for ASEM parts as indicated on Table 1.
- Package appearance difference where ASEM site does not have a top gate mark/circle as shown in Table 3 above.

Qualification Data:

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

Table 6: Reliability Test Data

- **All tests passed with zero failures**

Test	Time point	Conditions	Vehicle Device	# of Lots	SS/Lot	Results (Fail/Total SS)
Temperature Cycle Test (TCB)	2000 Cycles	-55°C /125°C	EP3C25 E144	4	30-74	0/250
			EP3C16 E144	1	83	0/83
Temperature Humidity Bias (THB)	2000hrs	85°C/85% RH	EP3C25 E144	3	64-68	0/200
Unbiased Highly Accelerated Stress Test (uHAST)	192hrs	130°C / 85%RH	EP3C25 E144	3	80	0/240
			EP3C16 E144	1	80	0/80
High Temp Storage (Bake)	2000hrs	150°C	EP3C25 E144	5	75-80	0/387

Note 1: Preconditioning performed according to J-STD-020, MSL3 @ 260C reflow
Note 2: Rel#: 17080010, 18060017, 18060025, 17080009, 17080012, 18060018, 18060025, 19020001,
Note 3: Qualification testing and sample size based on standard J-STD-020 requirements

Contact

For more information, please contact Sales in your region, or submit a Service Request at the My Intel support page.

Customer Notifications Subscription

Customers that have subscribed to Intel PSG's customer notification mailing list will receive the PCN document automatically via email.

If you would like to receive customer notifications by email, please subscribe to our customer notification mailing list at:
https://www.intel.com/content/www/us/en/programmable/my-intel/mal-emailsub/technical-updates.html

Intel PSG references J-STD-046 guidelines for PCN.
In accordance with J-STD-046, this change is deemed acceptable to the customer if no acknowledgement is received within 30 days from date of notification.

Revision History

Date	Rev	Description
08/09/2019	1.0.0	Initial Release
03/13/2020	1.1.0	Updated Table 2: Change to Bill of Materials (BOM) to add changes to Wire Bond and Lead Frame. Corrected 'Assembly and Test Site' in Table 1 to 'Assembly Site'.