



PROCESS CHANGE NOTIFICATION

PCN2314

Alternate Assembly Site for Selected Cyclone® IV & Cyclone® V Devices

Change Description:

Intel® is announcing the addition of Advanced Semiconductor Engineering Inc., Taiwan (ASEK) as an alternate assembly site for selected Cyclone IV and Cyclone V devices.


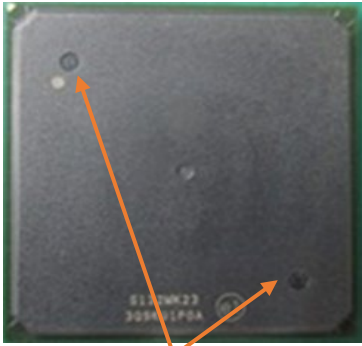
ASEK is a long-time qualified, high-volume assembly site for Cyclone IV and Cyclone V devices.

Table 1: Change Details

	Change From	Change To
Assembly Site	Site: Amkor Technology Korea (ATK) Location: 100, Amkor-ro, Buk-gu, Gwangju, 61006 Korea	Site: Advanced Semiconductor Engineering, Inc (ASEK) Location: 26, Chin 3rd Rd, Nanzih Dist, Kaohsiung, 811, Taiwan
Wire Bond Material	PCC wire	Au Flash PCC wire
Die Attach Material	ABLESTIK 2300	ABLESTIK 2100A
Substrate Supplier	Kinsus	ASEMtl
Country of Origin (COO)	Korea	Taiwan

Note: The rest of the Bill of Material (BOM) remains the same

Table 2: Package Appearance

From: ATK	To: ASEK
<p style="text-align: center;">Top View</p> 	<p style="text-align: center;">Top View</p>  <p style="text-align: center;">Two ejector pin marks (See option 2 of POD)</p>

Note: No appearance changes to the bottom view.

Products Affected:

Table 3

Product Family
Cyclone V SE
Cyclone V E
Cyclone V SX
Cyclone IV E

The list of affected part numbers (OPNs) can be downloaded in Excel form:

<https://cdrdv2.intel.com/v1/dl/getContent/780980>

Recommended Action

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.

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

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

Product Transition Dates:

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

Table 4: Key Dates

<i>Milestone</i>	<i>Date</i>
Last date to acknowledge receipt of this notification ¹	July 20, 2023
Earliest change implementation	Dec 1, 2023

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.

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

Qualification has been performed to evaluate the quality and reliability performance of ASEK for the products specific to this PCN (See Qualification Data Section, Table 5A & 5B).

Method to Identify Change Product:

The changed product can be identified by the following:

- COO (Country of Origin) is Taiwan on the top mark and label for ASEK parts.

- Package appearance difference where ASEK site have two ejector pin marks as shown in Table 2 above.

Qualification Data:

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

Table 5A: Reliability Test Data

- All tests passed with zero failures
- Vehicle devices 5CSTD6Y28UC672TN & 5CSTD6Y28UI484TN are of the same technology and package Bill of Materials (BOM).

Test	Time point	Conditions	Vehicle Device	Results (Fail/Total SS)
Temperature Cycle Test (TCB)	1000 Cycles	-55°C /125°C	5CSTD6Y28UC672TN	0/231
	2000 Cycles		5CSTD6Y28UI484TN	0/212
Temperature Humidity Bias (THB)	1000hrs	85°C/85% RH	5CSTD6Y28UC672TN	0/279
	2000hrs		5CSTD6Y28UI484TN	0/104
Unbiased Highly Accelerated Stress Test (uHAST)	96hrs	130°C / 85%RH	5CSTD6Y28UC672TN	0/231
	192hrs		5CSTD6Y28UI484TN	0/231
High Temp Storage (HTS)	1000hrs	150°C	5CSTD6Y28UC672TN	0/231
	2000hrs		5CSTD6Y28UI484TN	0/224

Note 1: Preconditioning performed according to J-STD-020, MSL3 @ 260C reflow

Note 2: TCB, uHAST and HTS Rel# ASE2101-031, ASE2101-032

Note 3: THB Rel# 19050013, 19050017, 19050018, 19100022, 19100023, 19100024

Note 4: Qualification testing and sample size based on standard J-STD-020 requirements

Table 5B: Reliability Test Data

- Below is the Reliability result for Cyclone IV E device.
- All tests passed with zero failures

Test	Time point	Conditions	Vehicle Device	Results (Fail/Total SS)
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Temperature Cycle Test (TCB)	1000 Cycles	-55°C /125°C	EP3C40T60FC484N	0/231
	2000 Cycles		EP3C120T60FC780N	0/212
Temperature Humidity Bias (THB)	1000hrs	85°C/85% RH	EP3C40T60FC484N	0/231
	2000hrs		EP3C120T60FC780N	0/224
Unbiased Highly Accelerated Stress Test (uHAST)	96hrs	130°C / 85%RH	EP3C40T60FC484N	0/231
	192hrs		EP3C120T60FC780N	0/77
High Temp Storage (HTS)	1000hrs	150°C	EP3C40T60FC484N	0/231
	2000hrs		EP3C120T60FC780N	0/225

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Intel 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
6/7/2023	1.0.0	Initial Release

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OPN	MMID	Product Family
5CEFA2U19A7N	968342	CYCLONE V E
5CEFA4U19A7N	965946	CYCLONE V E
5CEFA4U19A7NAD	978997	CYCLONE V E
5CEBA2U19C7N	968885	CYCLONE V E
5CEBA2U19C8N	968183	CYCLONE V E
5CEBA4U19C7N	973735	CYCLONE V E
5CEBA4U19C8N	973736	CYCLONE V E
5CEFA2U19C6N	970594	CYCLONE V E
5CEFA2U19C7N	968343	CYCLONE V E
5CEFA2U19C8N	965945	CYCLONE V E
5CEFA2U19I7N	968193	CYCLONE V E
5CEFA2U19I7NAA	965868	CYCLONE V E
5CEFA4U19C6N	965947	CYCLONE V E
5CEFA4U19C7N	965948	CYCLONE V E
5CEFA4U19C8N	967862	CYCLONE V E
5CEFA4U19I7	965680	CYCLONE V E
5CEFA4U19I7N	967863	CYCLONE V E
5CEFA4U19I7NAA	970466	CYCLONE V E
5CEFA4U19I7NSC	968194	CYCLONE V E
5CSEBA5U19C6N	965719	CYCLONE V SE
5CSEBA5U19C7N	968242	CYCLONE V SE
5CSEBA5U19C7SN	969108	CYCLONE V SE
5CSEBA5U19C8N	973776	CYCLONE V SE
5CSEBA5U19C8SN	968977	CYCLONE V SE
5CSEBA5U19I7LN	999LG8	CYCLONE V SE
5CSEBA5U19I7N	968377	CYCLONE V SE
5CSEBA5U19I7NBZ	973777	CYCLONE V SE
5CSEBA5U19I7SN	968243	CYCLONE V SE
5CSEBA6U19C6N	968980	CYCLONE V SE
5CSEBA6U19C7N	966124	CYCLONE V SE
5CSEBA6U19C7NAC	965370	CYCLONE V SE
5CSEBA6U19C7SN	973779	CYCLONE V SE
5CSEBA6U19C8N	969113	CYCLONE V SE
5CSEBA6U19C8SN	973780	CYCLONE V SE
5CSEBA6U19I7N	969112	CYCLONE V SE
5CSEBA6U19I7NGA	999F1L	CYCLONE V SE
5CSEBA6U19I7NTS	966127	CYCLONE V SE
5CSEBA6U19I7SN	970636	CYCLONE V SE
5CSEBA5U23C6N	973778	CYCLONE V SE
5CSEBA5U23C7N	965990	CYCLONE V SE
5CSEBA5U23C7SN	968378	CYCLONE V SE
5CSEBA5U23C8N	969111	CYCLONE V SE
5CSEBA5U23C8SN	968979	CYCLONE V SE
5CSEBA5U23I7	968379	CYCLONE V SE
5CSEBA5U23I7LN	984770	CYCLONE V SE
5CSEBA5U23I7N	969110	CYCLONE V SE

5CSEBA5U23I7NCZ	968244	CYCLONE V SE
5CSEBA5U23I7SN	965991	CYCLONE V SE
5CSEBA6U23C6N	969115	CYCLONE V SE
5CSEBA6U23C7N	969114	CYCLONE V SE
5CSEBA6U23C7SN	973781	CYCLONE V SE
5CSEBA6U23C8N	969116	CYCLONE V SE
5CSEBA6U23C8SN	965721	CYCLONE V SE
5CSEBA6U23I7N	973782	CYCLONE V SE
5CSEBA6U23I7NCZ	966130	CYCLONE V SE
5CSEBA6U23I7NTS	968380	CYCLONE V SE
5CSEBA6U23I7SN	970638	CYCLONE V SE
5CSEMA5U23C6N	968383	CYCLONE V SE
5CSEMA5U23C7N	969099	CYCLONE V SE
5CSEMA5U23C7NBZ	969120	CYCLONE V SE
5CSEMA5U23C8N	969119	CYCLONE V SE
5CSEMA5U23C8NBZ	969173	CYCLONE V SE
5CSEMA5U23I7N	968249	CYCLONE V SE
5CSEMA5U23I7NCZ	965726	CYCLONE V SE
5CSEMA5U23I7NSE	973509	CYCLONE V SE
5CSEMA6U23C6N	969122	CYCLONE V SE
5CSEMA6U23C7N	968250	CYCLONE V SE
5CSEMA6U23C8N	968386	CYCLONE V SE
5CSEMA6U23I7N	968387	CYCLONE V SE
5CSEMA6U23I7NCZ	968939	CYCLONE V SE
5CSEMA6U23I7NSE	968965	CYCLONE V SE
5CSXFC5C6U23C6N	969327	CYCLONE V SX
5CSXFC5C6U23C7N	965729	CYCLONE V SX
5CSXFC5C6U23C7NBZ	969330	CYCLONE V SX
5CSXFC5C6U23C8N	969334	CYCLONE V SX
5CSXFC5C6U23I7N	968393	CYCLONE V SX
5CSXFC5C6U23I7NSC	968941	CYCLONE V SX
5CSXFC5C6U23I7NSE	967947	CYCLONE V SX
5CSXFC6C6U23C6N	966139	CYCLONE V SX
5CSXFC6C6U23C7N	973786	CYCLONE V SX
5CSXFC6C6U23C7NCZ	968254	CYCLONE V SX
5CSXFC6C6U23C8N	968395	CYCLONE V SX
5CSXFC6C6U23I7N	970642	CYCLONE V SX
5CSXFC6C6U23I7NSC	973787	CYCLONE V SX
5CSXFC6C6U23I7NSE	965882	CYCLONE V SX
5CSXFC6C6U23I7NTS	970643	CYCLONE V SX
5CSXFC6U23I7NAA	967948	CYCLONE V SX
5CSEBA2U23C6N	968365	CYCLONE V SE
5CSEBA2U23C7N	970629	CYCLONE V SE
5CSEBA2U23C7SN	965985	CYCLONE V SE
5CSEBA2U23C8N	968973	CYCLONE V SE
5CSEBA2U23C8NBZ	968366	CYCLONE V SE
5CSEBA2U23C8SN	968367	CYCLONE V SE

5CSEBA2U23I7	965986	CYCLONE V SE
5CSEBA2U23I7N	968974	CYCLONE V SE
5CSEBA2U23I7NCZ	969105	CYCLONE V SE
5CSEBA2U23I7SN	970630	CYCLONE V SE
5CSEBA4U23C6N	968241	CYCLONE V SE
5CSEBA4U23C7N	970632	CYCLONE V SE
5CSEBA4U23C7SN	970633	CYCLONE V SE
5CSEBA4U23C8N	969107	CYCLONE V SE
5CSEBA4U23C8SN	970634	CYCLONE V SE
5CSEBA4U23I7	973775	CYCLONE V SE
5CSEBA4U23I7N	965717	CYCLONE V SE
5CSEBA4U23I7NAA	968924	CYCLONE V SE
5CSEBA4U23I7NBZ	968975	CYCLONE V SE
5CSEBA4U23I7NCZ	965718	CYCLONE V SE
5CSEBA4U23I7SN	968370	CYCLONE V SE
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5CSEMA2U23C7N	968992	CYCLONE V SE
5CSEMA2U23C8N	966131	CYCLONE V SE
5CSEMA2U23I7N	965722	CYCLONE V SE
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5CSEMA4U23C8N	968381	CYCLONE V SE
5CSEMA4U23I7N	968993	CYCLONE V SE
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5CSXFC2C6U23C7N	969121	CYCLONE V SX
5CSXFC2C6U23C8N	969328	CYCLONE V SX
5CSXFC2C6U23I7N	969326	CYCLONE V SX
5CSXFC4C6U23C6N	973785	CYCLONE V SX
5CSXFC4C6U23C7N	968390	CYCLONE V SX
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5CSXFC4C6U23I7LN	978998	CYCLONE V SX
5CSXFC4C6U23I7N	969123	CYCLONE V SX
5CSXFC4C6U23I7NAA	970468	CYCLONE V SX
5CSXFC4C6U23I7NCZ	970641	CYCLONE V SX
EP4CE30F23C6	972519	CYCLONE IV E
EP4CE30F23C6N	971892	CYCLONE IV E
EP4CE30F23C7	972520	CYCLONE IV E
EP4CE30F23C7N	972521	CYCLONE IV E
EP4CE30F23C7NGA	967034	CYCLONE IV E
EP4CE30F23C8	973190	CYCLONE IV E
EP4CE30F23C8L	967306	CYCLONE IV E
EP4CE30F23C8LN	971893	CYCLONE IV E
EP4CE30F23C8N	973191	CYCLONE IV E
EP4CE30F23C9L	973192	CYCLONE IV E
EP4CE30F23C9LN	973193	CYCLONE IV E
EP4CE30F23I7	971894	CYCLONE IV E

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EP4CE30F23I8L	974418	CYCLONE IV E
EP4CE30F23I8LN	967308	CYCLONE IV E
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EP4CE40F23C6N	971897	CYCLONE IV E
EP4CE40F23C7	972523	CYCLONE IV E
EP4CE40F23C7N	973197	CYCLONE IV E
EP4CE40F23C8	970217	CYCLONE IV E
EP4CE40F23C8L	970218	CYCLONE IV E
EP4CE40F23C8LN	972524	CYCLONE IV E
EP4CE40F23C8N	970219	CYCLONE IV E
EP4CE40F23C9L	971898	CYCLONE IV E
EP4CE40F23C9LN	967038	CYCLONE IV E
EP4CE40F23I7	973198	CYCLONE IV E
EP4CE40F23I7N	973199	CYCLONE IV E
EP4CE40F23I7NGA	969971	CYCLONE IV E
EP4CE40F23I8L	967039	CYCLONE IV E
EP4CE40F23I8LN	967310	CYCLONE IV E
EP4CE55F23C6	971903	CYCLONE IV E
EP4CE55F23C6N	972525	CYCLONE IV E
EP4CE55F23C7	974423	CYCLONE IV E
EP4CE55F23C7N	971904	CYCLONE IV E
EP4CE55F23C8	970220	CYCLONE IV E
EP4CE55F23C8L	973202	CYCLONE IV E
EP4CE55F23C8LN	973203	CYCLONE IV E
EP4CE55F23C8LNGA	970221	CYCLONE IV E
EP4CE55F23C8N	974424	CYCLONE IV E
EP4CE55F23C9L	970222	CYCLONE IV E
EP4CE55F23C9LN	974425	CYCLONE IV E
EP4CE55F23I7	971167	CYCLONE IV E
EP4CE55F23I7N	971905	CYCLONE IV E
EP4CE55F23I8L	972526	CYCLONE IV E
EP4CE55F23I8LN	971168	CYCLONE IV E
EP4CEF23C8NAB	966902	CYCLONE IV E
5CSEBA5U19A7N	965989	CYCLONE V SE
5CSEBA6U19A7N	965720	CYCLONE V SE
5CSEBA5U23A7N	970635	CYCLONE V SE
5CSEBA5U23A7NAC	965875	CYCLONE V SE
5CSEBA6U23A7N	970637	CYCLONE V SE
5CSEMA5U23A7N	966134	CYCLONE V SE
5CSEMA6U23A7N	970640	CYCLONE V SE
5CSXFC5C6U23A7N	965728	CYCLONE V SX
5CSXFC5C6U23A7NAB	965881	CYCLONE V SX
5CSXFC6C6U23A7N	969558	CYCLONE V SX
5CSXFC6C6U23A7NCZ	968392	CYCLONE V SX
5CSEBA2U23A7N	970628	CYCLONE V SE
5CSEBA4U23A7N	968369	CYCLONE V SE

5CSEBA4U23A7NCZ	965988	CYCLONE V SE
5CSEMA2U23A7N	969118	CYCLONE V SE
5CSEMA4U23A7N	968245	CYCLONE V SE
5CSXFC2C6U23A7N	968389	CYCLONE V SX
5CSXFC4C6U23A7N	965727	CYCLONE V SX
EP4CE30F23A7N	967305	CYCLONE IV E
EP4CE40F23A7N	970216	CYCLONE IV E
EP4CE40F23A7NGA	967037	CYCLONE IV E
EP4CE55F23A7N	967313	CYCLONE IV E