



Revision 1.2.0
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CUSTOMER ADVISORY

ADV2001

Pre-alert on End-of-Life (EOL) of Flip Chip Products with Leaded Solder Balls 2nd level interconnect

This is not a new ADV issuance. This is an update to ADV2001 with key changes to Table 1 for Arria[®] GX, Stratix[®] II, Stratix II GX status. Please see the [revision history table](#) for more information on the updates.

Description:

Intel[®] pre-notified customers of the End-of-Life involving Field Programmable Gate Array (FPGA) Flip Chip products with leaded solder balls as 2nd level interconnect. These products currently use eutectic Tin-Lead bumps for 1st level interconnect.

Intel received notification from the foundry supplier that eutectic leaded bumped die supply will be discontinued. There is foreseen shift in demand towards leadfree bumping with the EU Restriction of Hazardous Substances (RoHS) Directive Exemption 15 scope change in February 29, 2020 and subsequent expiry in July 21, 2021.

Table 1 below outlines the replacement availability and Table 2 notes important information about the replacement leadfree products. Replacement parts are with "G" suffix on the part number (OPN) indicating leadfree bumps and leadfree solder balls.

Table 1: Replacement Availability Status

	Available immediately	Not converting, no "G" replacement
Product Family	<ul style="list-style-type: none"> • Arria II • Arria V • Arria V SoC • Stratix III • Stratix IV • Stratix V 	<ul style="list-style-type: none"> • Arria GX • Stratix II • Stratix II GX (See Table 3 for related discontinuance notifications.)
Samples & Production Timeline	Part numbers with "G" suffix indicating leadfree bumps and leadfree solder balls.	Not applicable.

Table 2: Important Information About the Replacement Leadfree Products

Ordering Code	<p>New Ordering Part Numbers (OPNs) with the "G" suffix will be assigned to converted products.</p> <p>Existing OPNs with leaded solder bumps and leaded solder balls were retired and Product Discontinuation Notices (PDN) were issued to customers. See Table 3 for PDN list.</p>
Quality and Reliability Qualification Status	Package reliability qualification testing has been successfully completed for all product families that are converting.
Assembly Site	The assembly sites are the same: ASE Taiwan and Amkor Korea.
Bill of Materials	<p>The 63/37 Sn-Pb leaded bumps and leaded solder balls will be replaced with leadfree SnAg1.8 bumps and leadfree Sn3Ag0.5Cu solder balls.</p> <p>The leadfree solder bumps necessitated changes to other materials within the BOM (Bill of Materials) to meet manufacturability and package reliability requirements.</p>
Package Form and Fit	<p>There will be modifications to the package form and fit for Stratix III & Arria II GX (lidless package).</p> <p>Certain packages on other converted families may also have updated tolerances though no actual modification to the packages.</p>

	<p>Please update your Package Outline Drawings (POD) by looking up the part number and downloading “RoHS6 G Suffix” POD version from this search tool:</p> <p>https://www.intel.com/content/www/us/en/programmable/support/literature/lit-index/lit-pkg/package-search.html?type=search</p>
Function and Electrical Specification	The change does not impact the function and electrical specifications of the affected products.
Reflow and Soldering Information	<p>SMT conditions are different for leadfree solder balls vs leaded solder balls. Refer to Apps Notes AN-353 for SMT Board Assembly Process Recommendations:</p> <p>https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/an/an353.pdf</p>

Table 3: Product Discontinuance Notification (PDNs) issued to OPNs with leaded 1st level interconnect (bumps).

PDN#	Scope	PDN Link
PDN2041	All Arria GX, Stratix II, Stratix II GX	https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2041.pdf
PDN2018	Selected Arria GX part numbers	https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2018.pdf
PDN2009	Part numbers with leaded solder balls as 2nd level interconnect and eutectic Tin-Lead bumps for 1st level interconnect for: Arria II, Arria V, Stratix III, Stratix IV, Stratix V.	https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2009.pdf
PDN2007	Part numbers (“N”) with leaded 1 st level interconnect (bumps) for: Arria II GZ, Arria V (FPGA & SoC), Stratix III, Stratix IV, Stratix V.	https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2007.pdf
PDN1926	Part numbers (“N”) with leaded 1st level interconnect (bumps) for Arria II, Arria V (<365 KLEs), Stratix III (≤70 KLEs), Stratix IV (≤110 KLEs).	https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn1926.pdf

Important Note: Table 3 is for reference only and this ADV2001 rev 1.2.0 update is not to be considered as the official product discontinuance notification. Each of the above PDNs were already issued separately.

Recommended Action:

It is recommended for customers to switch to the fully lead-free converted products (with the “G” suffix). Please see the link provided in the “Products Affected” section listing the new OPNs of the converted parts.

Products Affected:

Part numbers with leaded solder balls belonging to the following product families		
<ul style="list-style-type: none">• Arria GX• Arria II• Arria V• Arria V SoC	<ul style="list-style-type: none">• Stratix II• Stratix II GX• Stratix III• Stratix IV	<ul style="list-style-type: none">• Stratix V E• Stratix V GS• Stratix V GX

The link below contains the list of affected OPNs with the corresponding conversion status and new OPN (where applicable).

<https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/adv2001-opn-list.xlsx>

Reason for Change:

Intel received notification from the foundry supplier that eutectic leaded bumped die supply will be discontinued. There is foreseen shift in demand towards leadfree bumping with the EU Restriction of Hazardous Substances (RoHS) Directive Exemption 15 scope change in February 29, 2020 and subsequent expiry in July 21, 2021.

Contact

For more information, please contact your Sales representative or submit a Service Request at the [My Intel](#) support page.

Revision History

Date	Rev	Description
01/10/2020	1.0.0	Initial Release
03/27/2020	1.1.0	<ul style="list-style-type: none">Revised affected part listConverted parts with “G” suffix can be ordered now except Stratix® II, Stratix® II GX & Arria® GXSamples of part Stratix® II, Stratix® II GX & Arria® GX not yet available. Sample availability date to be advised.
02/12/2021	1.2.0	<ul style="list-style-type: none">Updated Table 1 with Arria GX, Stratix II, Stratix II GX no longer converting and with no “G” replacement.Updated Table 2 Package Form information and added the Package Outline Drawing (POD) download/search tool link. Updated the Qualification status row.Added Table 3 as reference for list of issued product discontinuance (PDNs) on the phase out of parts with leaded 1st level interconnect (bumps).

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