



Revision 1.3.0

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# CUSTOMER ADVISORY

## ADV1828

### Readiness Plan: EU RoHS Exemption 15 Scope Change

This is not a new ADV issuance. This is an update to ADV1828; please see the [revision history](#) table for information specific to this update

#### Change Description:

Intel® is notifying customers of the readiness plan addressing the EU Restriction of Hazardous Substances (RoHS) Directive Exemption 15 scope change.

Exemption 15 scope for electronic products originally covered:

Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages

Upon revision, the scope of Exemption 15a will only cover:

Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies:

- a semiconductor technology node of 90 nm or larger;
- a single die of 300 mm<sup>2</sup> or larger in any semiconductor technology node;
- stacked die packages with die of 300 mm<sup>2</sup> or larger, or silicon interposers of 300 mm<sup>2</sup> or larger.

Changes will affect Field Programmable Grid Array (FPGA) Flip Chip products that currently use leaded solder bumps on the 1<sup>st</sup> level interconnect.

- Selected products will be converted to the leadfree SnAg1.8 solder bumps, replacing the 63/37 Sn-Pb bumps.

- There will also be a selected set of products that will not transition to leadfree solder bumps and were discontinued.

See Table 1 for the conversion plan and Table 2 for important information about the converted products.

**Table 1: Leadfree Solder Bumps Conversion Plan**

<b>Conversion Timeline</b>	<b>Converting in 2019 <i>Immediately impacted with latest Ex15 scope change</i></b>	<b>Converting in 2020 <i>Applicable Ex15a extension to year 2021</i></b>	<b>Not Converting</b> <sup>(see note 2)</sup>
<b>Product Family</b>	<ul style="list-style-type: none"> <li>• Arria® II GX</li> <li>• Arria® V (small die)</li> <li>• Stratix® III (small die)</li> <li>• Stratix® IV (small die)</li> </ul>	<ul style="list-style-type: none"> <li>• Arria® II GZ</li> <li>• Arria® V (large die)</li> <li>• Stratix® III (large die)</li> <li>• Stratix® IV (large die)</li> <li>• Stratix® V</li> </ul>	<ul style="list-style-type: none"> <li>• Stratix® II &amp; Stratix® II GX</li> <li>• Arria® GX</li> <li>• HardCopy II, HardCopy III, HardCopy IV, HardCopy Si Pro</li> </ul>
<b>Samples and Production Timeline</b>	In production	Converted samples can be ordered now	Not Applicable

Note:

1. Small die is < 300mm<sup>2</sup>; Large die is ≥ 300mm<sup>2</sup>
2. Refer to Table 3 discontinuance notice list. PDN2041 issued for Stratix II, Stratix II GX, and Arria GX

**Table 2: Important Information About the Converted Products**

<b>Ordering Code</b>	<p>New Ordering Part Numbers (OPNs) with the “G” suffix will be assigned to converted products.</p> <p>Existing OPNs with leaded solder bumps were retired and Product Discontinuation Notices (PDN) were issued to customers. See Table 3 for PDN list.</p>
<b>Quality and Reliability Qualification Status</b>	Package reliability qualification testing has been successfully completed for all product families that are converting.
<b>Assembly Site</b>	The assembly sites are the same: ASE Taiwan and Amkor Korea.

<b>Bill of Materials</b>	<p>The 63/37 Sn-Pb leaded bumps will be replaced with leadfree SnAg1.8 bumps.</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>
<b>Package Form and Fit</b>	<p>There will be modifications to the package form and fit for Stratix III &amp; 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:  <a href="https://www.intel.com/content/www/us/en/programmable/support/literature/lit-index/lit-pkg/package-search.html?type=search">https://www.intel.com/content/www/us/en/programmable/support/literature/lit-index/lit-pkg/package-search.html?type=search</a></p>
<b>Function and Electrical Specification</b>	<p>The change does not impact the function and electrical specifications of the affected products.</p>

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

<b>PDN#</b>	<b>Scope</b>	<b>PDN Link</b>
PDN2041	All Arria GX, Stratix II, Stratix II GX	<a href="https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2041.pdf">https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2041.pdf</a>
PDN2018	Selected Arria GX part numbers	<a href="https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2018.pdf">https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2018.pdf</a>
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.	<a href="https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2009.pdf">https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2009.pdf</a>
PDN2007	Part numbers (“N”) with leaded 1 <sup>st</sup> level interconnect (bumps) for: Arria II GZ, Arria V (FPGA & SoC), Stratix III, Stratix IV, Stratix V.	<a href="https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2007.pdf">https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn2007.pdf</a>
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).	<a href="https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn1926.pdf">https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/pdn1926.pdf</a>

## 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 where the new OPNs of the converted parts are listed.

## Products Affected:

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/adv1828-opn-list.xlsx>

## Reason for Change:

This change is in preparation for the RoHS Directive Exemption 15 scope change. This change also aligns with Intel’s long-standing commitment to preserving the environment, health, and safety.

## 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
01/18/2019	1.0.0	Initial Release
09/06/2019	1.1.0	<ul style="list-style-type: none"><li>Update Exemption Status from EX15a to Expired for the following OPNs: HC4E25FF780NAA, HC4E25FF780NAB, HC4E25FF780NAC, HC4E25FF780NAE, HC4E35FF1152NAL, HC4E35FF1152NAM, HC4E35FF1152NAW, HC4E35FF1152NAX, HC4E35FF1517NAR, HC4E35LF1152NAH, HC4E35LF1152NAQ, HC4E35LF1152NAS, HC4E35LF1152NAV, HC4E35LF1152NAY</li><li>Remove the following OPNs:</li></ul>

		HC210WF484NAB, HC210WF484NAD, HC210WF484NAJ
03/27/2020	1.2.0	<ul style="list-style-type: none"> <li>• Updated status of affected part list</li> <li>• Updated Table 1: Arria® GX, Stratix® II &amp; Stratix® II GX samples availability to be advised.</li> <li>• Updated Table 2: Package reliability qualification testing completed except for Arria® GX, Stratix® II &amp; Stratix® II GX</li> </ul>
01/15/2021	1.3.0	<ul style="list-style-type: none"> <li>• Updated Table 1 with “Not Converting” product families.</li> <li>• Updated Table 2 Package Form information and added the Package Outline Drawing (POD) download/search tool link. Updated the Qualification status row.</li> <li>• Added Table 3 for list of issued product discontinuance (PDNs) on the phase out of parts with leaded 1<sup>st</sup> level interconnect (bumps).</li> </ul>

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