



# CUSTOMER ADVISORY

## ADV1831

### Datasheet Update for Cyclone® V Devices

---

#### Change Description:

Intel Programmable Solutions Group (“Intel PSG”, formerly Altera) is notifying customers of a documentation update for Cyclone V devices. The minimum Data Hold time ( $t_{DH}$ ) timing specification for Active Serial (AS) configuration scheme has been updated.

**Table 1: Minimum  $t_{DH}$  Specification**

Speed Grade	Change From	Change To		
		Commercial Grade (0C)	Industrial Grade (-40C)	Automotive Grade (-40C)
-6	2.5ns	2.3ns	N/A	N/A
-7	2.9ns	2.7ns	2.9ns	2.9ns
-8	2.9ns	2.7ns	2.9ns	N/A

The  $t_{DH}$  spec is stipulated in Table 60 of the datasheet. Please review the revision history for all other updates to the datasheet. The Cyclone V device datasheet can be found here:

<https://www.intel.com/content/www/us/en/programmable/documentation/mcn1422497163812.html>

#### Recommended Action:

Customers should review their board design against the updated Cyclone V minimum  $t_{DH}$  spec, otherwise configuration may fail.

Customers can calculate the hold time required for Active Serial configuration scheme, as mentioned in the 'Evaluating Data Setup and Hold Timing Slack' section of AN822 to evaluate the hold time slack on the board. AN822 can be found here:

<https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/an/an822.pdf>

Additionally, Intel PSG will be introducing new packages, designated by new available OPNs (Ordering Part Numbers) with the “QS” suffix to support a reduced  $t_{DH}$  requirement. The current OPNs will still be available to support customers using parallel and partial reconfiguration modes or designs that meet the updated  $t_{DH}$  specification.

**Table 2**

Product Family	New Packages
Cyclone V	U324, U484, F484, F672, F896, F1152
Cyclone V SoC	U484, U672, F896

For more information regarding the new package introduction, contact your local sales representative.

### **Products Affected:**

All Cyclone V and Cyclone V SoC Devices

**The list of affected OPNs can be downloaded in Excel form:**

<https://www.intel.com/content/dam/www/programmable/us/en/pdfs/literature/pcn/adv1831-opn-list.xlsx>

### **Reason for Change:**

The minimum  $t_{DH}$  spec has been expanded to cover Commercial, Industrial, and Automotive grade devices. There is no change to the Cyclone V product silicon and materials.

## Change Implementation

**Table 3**

<b><i>Milestone</i></b>	<b><i>Date</i></b>
Availability of Cyclone V Datasheet Update	Now
Engineering Samples Available for Order	Q2 2019

## Contact

For more information, please contact your local Field Applications Engineer (FAE) 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 ADV 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>

## Revision History

Date	Rev	Description
1/25/2019	1.0.0	Initial Release

---

©2019 Intel Corporation. All rights reserved. Intel, the Intel logo, Altera, Arria, Cyclone, Enpirion, Max, Nios, Quartus and Stratix words and logos are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Other marks and brands may be claimed as the property of others. Intel reserves the right to make changes to any products and services at any time without notice. Intel assumes no responsibility or liability arising out of the application or use of any information, product, or service described herein except as expressly agreed to in writing by Intel. Intel customers are advised to obtain the latest version of device specifications before relying on any published information and before placing orders for products or services.