

# Virtex-II Wafer Fabrication Update (Revision of PCN2002-06)

PCN2002-06 (v1.1) July 15, 2005

Product/Process Change Notice

#### **Overview**

This notification is a revision to the previously issued PCN2002-06 and the previously issued PCN2002-06A. The original PCN was issued to notify customers of a change in the diameter of wafers used to manufacture the XC2V4000, XC2V6000, and XC2V1000 members (C-grade & I-grade) of the Virtex<sup>TM</sup>-II product family (Virtex-II Family - the Platform FPGA).

**Note**: PCN2002-06A is obsolete and has been removed from the Xilinx website. PCN2002-06 (v1.1) contains information that was previously included in PCN2002-06A.

## **Description**

The XC2V4000, XC2V6000, and XC2V1000 are manufactured using a  $0.15\mu$  1.5/3.3V 8-layer metal process on 12-inch wafers at UMC, Taiwan. The Virtex-II family was previously manufactured using a  $0.15\mu$  1.5/3.3V 8-layer metal process on 8-inch wafers at UMC, Taiwan. The following table summarizes the status of the different Virtex-II family members.

Xilinx Device	Change Description
XC2V40	No change. Remains on 8-inch wafers.
XC2V80	No change. Remains on 8-inch wafers.
XC2V250	No change. Remains on 8-inch wafers.
XC2V500	No change. Remains on 8-inch wafers.
XC2V1000	Transitioned from 8-inch wafers to 12-inch wafers at UMC, Taiwan in September
	2002.
XC2V1500	No change. Manufactured on 12-inch wafers.
XC2V2000	No change. Manufactured on 12-inch wafers.
XC2V3000	No change. Manufactured on 12-inch wafers.
XC2V4000	Transitioned from 8-inch wafers to 12-inch wafers at UMC, Taiwan in May 2002
XC2V6000	Transitioned from 8-inch wafers to 12-inch wafers at UMC, Taiwan in May 2002
XC2V8000	No change. Manufactured on 12-inch wafers.

This change was initiated to accommodate the high-volume demand, enhance the product capabilities, and enable Xilinx to support this product more effectively.

The devices from the 12-inch wafer fab are pin, timing, function, supply voltage, and programming file compatible with the 8-inch wafer Virtex-II devices, but incorporate the following incremental improvements:

- Devices manufactured on 12-inch wafers support the enhanced multiplier performance. Details of the multiplier performance are included in the Virtex-II Data Sheet.
- Devices manufactured on 12-inch wafers support a reduced bitstream length (12-inch wafer devices do not require the +10% bitstream programming file that is required for 8-inch wafers). Note that devices manufactured on 12-inch wafers accept and correctly configure with either the standard bitstream programming file or the +10% bitstream programming file.

All other key features remain unchanged.

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# **Key Dates and Ordering Information**

After the availability of 12-inch wafer production units in 2002, customers can expect to receive XC2V4000, XC2V6000and XC2V1000 devices manufactured on either the 8-inch or 12-inch wafers when ordering the standard part number. Xilinx will continue to cross-ship either the 8-inch or 12-inch wafer material as standard product until the 8-inch material is depleted.

Qualification units of the XC2V4000 and XC2V6000 devices manufactured on the 12-inch wafers were available in June 2002, and qualification units of the XC2V1000 device manufactured on the 12-inch wafers were available in September 2002. The special ordering number "SCD0765" must be used when placing orders for the 12-inch wafer units. To use SCD0765, append "0765" to the end of the standard ordering part number (e.g., XC2V4000-4FF1152C**0765**). SCD0765 can be used as an ordering code until further notice from Xilinx via either a PCN or a PDN.

The four-digit SCD number (0765) is top-marked on the device (see the example in the Traceability section). The following table summarizes SCD usage.

SCD#	SCD	EXAMPLE OF	DATE SCD	DATE SCD	
	DESCRIPTION	ORDERING PART #	AVAILABLE	DISCONTINUED	
SCD0765	12-inch wafers	XC2V4000-	June 2002	Either a new PCN is	
		4FF1152C0765		issued or a PDN is issued	
SCD0769	8-inch wafers	XC2V4000-	June 2002	December 31, 2002	
		4FF1152C0769			

#### **Qualification Data**

Mask qualification data is available in the <u>Device Reliability Report</u>. The information in the following table is the process qualification data for the 0.15μm 1.5/3.3V 8-layer metal process on 12-inch wafers at UMC, Taiwan.

Lot #	Part	Package	Test	Qty	Hours/Cy	Fails	Status
X0194LT	XC2V1000	FG256	HTOL	74	48	0	continue
			@125°C		168	0	continue
					256	0	continue
					500	0	continue
					1000	0	complete
X0239LT	XC2V1000	FG256	HTOL	66	48	0	continue
			@125°C		168	0	continue
					256	0	continue
					500	0	continue
					1000	0	complete
X0306LT	XC2V1000	FG256	HTOL	68	48	0	continue
			@125°C		168	0	continue
					256	0	continue
					500	0	continue
					1000	0	complete

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X0029TC	XC2V1000	FG256	Temp Cycle	76	200	0	continue
			@-55°C/+125°C		500	0	continue
			Condition C		1000	0	complete
X0035BK	XC2V1000	FG256	High Temp Storage	76	168	0	continue
			@150°C		500	0	continue
					1000	0	complete
X0028MS	XC2V1000	FG256	85°C / 85%RH	76	168	0	continue
					500	0	continue
					1000	0	complete
X0034MS	XC2V1000	FG256	85°C / 85%RH	76	168	0	continue
					500	0	continue
					1000	0	complete

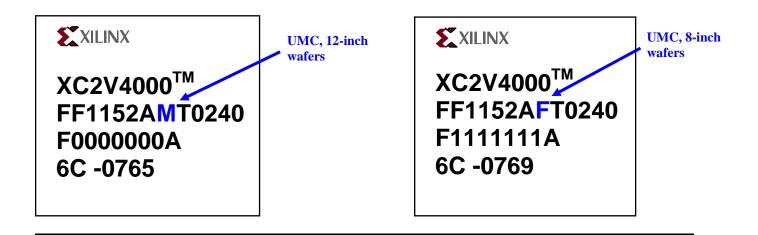
# **Traceability**

The devices manufactured on the 8-inch or 12-inch wafers can be distinguished both visually and electrically.

The devices manufactured on the 8-inch wafers or 12-inch wafers are visually identified by a three-letter code on the second line of the package top-mark in between the package/pin code and the date code. The second letter in this three-letter code is an "M" for devices manufactured on the 12-inch wafers. The second letter is an "F" for devices manufactured on the 8-inch wafers (see the example in the figure below.)

To enhance the Xilinx traceability system, a new wafer fabrication code "G" was added in October 2002 to identify all material manufactured at the UMC 12-inch wafer fabrication facility. The second letter of the three-letter code is a "G" for any device built at the UMC 12-inch wafer fabrication facility.

The following examples illustrate the package top-mark.



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The devices are distinguished electrically by the JTAG IDCODE. The IDCODE is a unique identifier hard-coded into a device. This code can be read back through the Test Access Port. The following table shows the IDCODE for three devices.

Device	Description	IDCODE (binary)	IDCODE (hex)
XC2V1000	8-inch wafers	0010	2
	12-inch wafers	0011	3
XC2V4000	8-inch wafers	0000	0
	12-inch wafers	0001	1
XC2V6000	8-inch wafers	0011	3
	12-inch wafers	0100	4

## Recommendation

No response is required. This notification is an update and clarification to a previously issued PCN. For additional information or questions, please contact <u>Xilinx Technical Support</u>.

### **Important Notice:**

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# **Revision History**

The following table shows the revision history for this document.

Date	Version	Revision
5/15/02	1.0	Initial release under PCN2002-06.
7/15/05	1.1	Revised original PCN to correct cross-ship date and indicate continued availability of ordering code SCD0765.
		Incorporated information from PCN2002-06A in order to obsolete PCN2002-06A.
		Removed references to 8-inch wafer ordering code SCD0769 (this SCD is now obsolete).
		Clarified the bitstream programming file length paragraph.
		Added traceability information: fab code designator G for UMC 12" wafer fab and Tables with JTAG ID code information.
		Modified Response and Contact Section.

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