



Customer Advisory: Flip-Chip Package Substrate Solder Issue

CA2003-10 (v1.3) January 19, 2004

Introduction

The purpose of this advisory is to communicate that some Xilinx FPGAs in flip-chip packaging were manufactured using solder material that might cause random upset of device configuration bits.

Background

Xilinx recently determined that one package substrate vendor was not in compliance with low-alpha solder requirements on package substrate pads. As a result, the solder bump interconnections of some of these devices were contaminated by small amounts of high-alpha solder. The increased rate of alpha particle emission from the bumps can cause a configuration bit to be “flipped” to its opposite state (“flipped bits”), causing soft errors. Based on recent data, we anticipate flipped bits at the rate of once every 230 to 2500 hours of continuous operation. Please refer to the white paper: “*Flip-Chip Package Substrate Solder Issue*” for information regarding how these bit flip rates might affect your system design.

Products Affected

Device	Package	Mark Lot Number / Date Codes Affected
XC2VP2	FF672	All 2003 date codes
XC2VP4	FF672	1282210
XC2VP7	FF672	1351706, 1364108, 1364110, 1364119, 1373604, 1373611, 1272102, 1277615, 1282498, 1284492
XC2VP30	FF896	All 2003 date codes
XC2VP30	FF1152	All 2003 date codes
XC2VP40	FF1148	1256606, 1274052, 1274897, 1276372, 1288104
XC2VP50	FF1148	1277306, 1276010, 1281713, 1284386
XC2VP70	FF1704	All 2003 date codes
XC2VP100	FF1704	No Production Mark lots.
XC2VP100	FF1696	No Production Mark lots.

Please note that all affected material was shipped in 2003.

Products Affected (Continued)

Device	Package	Mark Lot Number / Date Codes Affected
XC2V6000	BF957	1235804, 1254600, 1254612, 1254961, 1256015, 1256301, 1257218, 1271656, 1274595, 2130745, 2130746, 2130747, 2130749, 2132587, 2143528, 2151037
XC2V6000	FF1152	1227257, 1227259, 1228337, 1228661, 1229259, 1229505, 1230402, 1230403, 1230404, 1230410, 1230413, 1230414, 1231131, 1231505, 1231508, 1232113, 1232295, 1232311, 1232559, 1233091, 1233771, 1233772, 1234298, 1234675, 1235206, 1235219, 1235338, 1235339, 1235564, 1235618, 1235619, 1235698, 1235785, 1235786, 1235790, 1235792, 1235795, 1235797, 1235799, 1235836, 1235998, 1235999, 1236144, 1236145, 1236149, 1236153, 1236154, 1236155, 1236176, 1236420, 1236421, 1236521, 1236523, 1236545, 1236668, 1236678, 1236735, 1237139, 1238558, 1238560, 1238862, 1238946, 1238947, 1239171, 1239369, 1239500, 1239912, 1240211, 1240476, 1240510, 1244143, 1244148, 1246782, 1246784, 1246795, 1247756, 1252549, 1252550, 1252551, 1252552, 1252553, 1252558, 1254594, 1254610, 1255617, 1256206, 1258641, 1258722, 1258724, 1258726, 1258732, 1258736, 1258739, 1258740, 1258741, 1258858, 1266998, 1272443, 1276094, 1279448, 1284573, 2112041, 2121686, 2121687, 2121688, 2121689, 2121690, 2121692, 2122054, 2132580, 2132583, 2132620, 2132621, 2132629, 2133016, 2133055, 2133827, 2139093, 2139877, 2142689, 2143462, 2143463, 2143464, 2143465, 2143466, 2143467, 2143468, 2143469, 2143470, 2143471, 2143472, 2143473, 2147695, 2149480, 2151038, 2151039, 2151041, 2151619, 2151620, 2152372, 2152373, 2152374, 2156370
XC2V6000	FF1517	1259158

Please note that all affected material was shipped in 2003.

To assist you in identifying whether you received affected product, refer to Attachment 1 for an example of the device topside marking.

Product Status

All device/package combinations listed in above table, assembled starting January 1st 2004 (date code 0401 and later), are not affected.

Applications that have non-continuous device operation, such as prototyping, might be less sensitive to configuration bit changes. Smaller devices are less likely to experience bit changes than larger devices.

Please contact your Xilinx Sales Representative or local Xilinx Distributor for specific device/package availability.

Recommendations

Xilinx recommends that the affected material be returned, as necessary. Please contact your local Xilinx Sales Representative for more information.

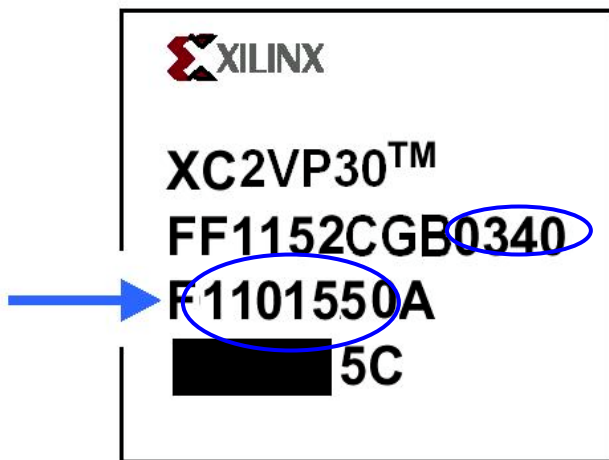
Revision History

The following table shows the revision history for this document.

Date	Version	Revision
1/08/04	1.0	Initial release.
1/09/04	1.1	Added clarification on design MTBF.
1/14/04	1.2	Remove MTBF. instead reference to white paper on bit flip rates affecting system design
1/19/04	1.3	In the Products Affected section, change from lot number "1285256" to "All 2003 date codes" for XC2VP2.

ATTACHMENT 1: Example of Device Top Side Marking

Example of a Package Topmark



Line1: Xilinx Logo

Line 2: Device Code and Trademark

Line 3: Package Code, 3-letter code (Circuit Rev, Wafer Fab Location, Geometry), and **Date Code (YYWW)** YY=year and WW=Work Week

Line 4: Mark Lot Number (**Refer to this portion of the top-side mark**)

Example as shown Lot # 1101550