



# EP20K400E Embedded Programmable Logic Device

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Errata Sheet

## Introduction

Altera has identified a defect that affects four logic elements (LEs) in some EP20K400E devices. This defect causes one of the two outputs on each of the four different LEs (out of the 16,640 LEs in the device) to be non-functional. The mask defect is isolated to the following LEs: LC10\_2\_M4, LC10\_3\_M4, LC10\_2\_L4, and LC10\_3\_L4.

This defect prevents these LEs from driving out to the local interconnect on the left side of the logic array block (LAB). When these LEs drive an output pin or another LE in the same LAB using local line 10, you may see functional failures and/or outputs stuck at ground. These LEs operate normally in all other aspects, including proper implementation of logic in their look-up tables (LUTs).

While the likelihood of any given design using the specified outputs of these LEs is low, the following solution is now available.

## Solution

Altera created a utility to determine whether your design uses the LEs affected by this defect. The utility and additional details on this issue are discussed in Altera's solutions database available at [http://www.altera.com/support/solutions/rd10222001\\_8234.html](http://www.altera.com/support/solutions/rd10222001_8234.html).

If this utility highlights that your design is susceptible to this issue, then implement the following solution. This solution supports all EP20K400E devices, regardless of whether the devices are already on boards, and will work for fixed revisions of silicon. A software patch is available today using the Altera® Quartus® II software version 1.1 service pack 2; this patch ensures that designs do not use the problematic output of the affected LEs. You should recompile designs using this update and program or reconfigure devices with the updated programming file.

If a system passes initial manufacturing tests, the problem will not show up later in a product life; if the device is working fine today, the device should work fine in the future. However, this problem does not affect every EP20K400E device, so Altera recommends that you run this utility on all EP20K400E designs to determine susceptibility of your design to this defect. The problem was isolated to the EP20K400E device; Altera's product engineering team verified that no other mask sets showed similar flaws and also implemented a new test program to screen all products for this type of mask defect.

Altera is also evaluating options to correct this flaw on future EP20K400E shipments.



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