



DELIVERABLE
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Deliverable D3
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Optimal ECC for Cross talk-Induced Peak Voltage Reduction and Encoding/Decoding Circuitry for the Optimal ECC



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Abstract:

This document is deliverable D3 of Work package 2 of the FT-EA project. The aim of the project is to research the application of Fault Tolerance techniques to combat electrical problems in Very Deep Sub-Micron semi-conductor designs.

The deliverable is presented in the form of a journal publication. Part of this work has already led to an accepted publication for 'The IEEE International Symposium on Defect and Fault Tolerance in VLSI Systems', Cambridge (Ma, USA), November 3-5, 2003.

The cross talk induced peak voltages are strongly related to the cross talk induced delay. Larger peak voltages imply larger coupling between the lines, which also implies a larger cross talk induced delay. The deliverable describes how the effective coupling can be reduced by exploiting the properties of the ECC. This results in a lower induced delay and lower induced peak voltages.

Keywords: Fault Tolerance, Power consumption, VDSM, Error correcting code, Dual Rail, Hamming, cross talk



Table of contents

Summary	4
Deliverable D3: Optimal ECC for Crosstalk Impact Minimization	5
Addendum to Deliverable D3: Error Correcting Codes for Crosstalk Effect Minimization	6



Summary

This document contains is the first deliverable of Work package 2 (Deliverable D3) of the FT-EA project, sponsored by the European Commission under IST-2001-38930. The aim of the project is to research the application of Fault Tolerance techniques to combat electrical problems in Very Deep Sub-Micron semi-conductor designs.

The deliverable is presented in the form of an almost finished journal publication. Part of this work has already led to an accepted publication for 'The IEEE International Symposium in Defect and Fault Tolerance In VLSI Systems', Cambridge (Ma, USA), November 3-5, 2003. The cross talk induced peak voltages are strongly related to the cross talk induced delay. Larger peak voltages imply larger coupling between the lines, which also implies a larger cross talk induced delay. The deliverable describes how the effective coupling can be reduced by exploiting the properties of the ECC. This results in a lower induced delay and lower induced peak voltages.



Deliverable D3: Optimal ECC for Crosstalk Impact Minimization



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Addendum to Deliverable D3: Error Correcting Codes for Crosstalk Effect Minimization



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