

A Survey of Sigma-Delta Analog to Digital converters

by

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A Thesis Submitted to the Graduate
Faculty of Rensselaer Polytechnic Institute
in Partial Fulfillment of the
Requirements for the degree of
MASTER OF SCIENCE

Approved:

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Rensselaer Polytechnic Institute
Troy, New York

August, 2007

ABSTRACT

The goal of this work was to research the technology involved in the feasibility of a silicon germanium sigma-delta analog to digital converter made in fully differential current mode logic. The work starts with the theory behind SiGe HBT technology and why it is beneficial to designers over traditional Si HBT's and other class III-V mixed semiconductors like GaAs. Next we move to the theory of CML and its benefits to designers which would be ideal for the design of a fully differential circuit. Then a broad overview of analog to digital converters is necessary going over basic architectures of various ADC's with their advantages and disadvantages when compared to each other. We then move into detailed information about the sigma-delta ADC and how the principles of oversampling and noise shaping work. Lastly an overview of some of the best current research in the area of sigma-delta ADC's taking place today.