

AN IMPROVED METHOD OF TRANSMISSION LINE MODEL AND ANALYSIS FOR HIGH DENSITY AND HIGH SPEED INTERCONNECTS

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Abstract

An improved and novel method of analyzing waveforms of a transmission line is presented. A transmission line consisting of high density and high speed interconnects or connectors can be treated as a multiply segmented line. The proposed method extracts electrical parameters of a connector using time-domain measurement. An effective software was developed along with our measuring system including a test fixture in the laboratory to conduct the time domain reflection measurement. The theoretical background of the proposed segmented transmission line modeling is presented. The parameter extraction and characterizations of connectors are discussed. The performance of the proposed

segmented transmission line model is verified by simulation of the model on SPICE and experimental measurement. The results show that the proposed model can simulate the electrical characteristics, including crosstalk and impedance, of high density and high speed connectors with satisfactory accuracy. Based on the proposed modeling and CAD simulators, the design and analysis of complicated high density and high speed interconnects can be executed accurately and effectively. In comparison with other previous models, the proposed modeling technique can significantly improve the accuracy of simulation quite.

