

A Sensitivity - Analysis on Design Parameters and Tolerances of Signal Integrity of High Speed Data Transfer Connectors.

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Abstract:

A computer simulation method is used to calculate the data of signal integrity defining the important transfer parameters of connectors in high speed applications according to new ISO/IEC 11 801 proposals for 600 MHz and 1200 MHz transfer categories.

This paper describes the calculated transfer parameters of impedance, crosstalk and reflection factor as a function of mechanical tolerances and various insulating material influences. The various connector parameters are discussed for optimizing data transfer rates in relation to the spacing and width of contacts, the length of single-wire shielding and wire twisting in the termination area.

The length of the contact parts and the wire position for termination have influences on the return loss, insertion loss and crosstalk. The major effect on signal integrity is caused by the discontinuity of the connector termination area.

The calculated results of the high- speed parameters will be shown in various graphics and curves over the connector design, in order to define the connector signal operating range.