Abstract:
The constant rise in data rates driven by the semiconductor technology developing high speed memory devices and processor units is resulting in steadily increasing demands on the signal integrity of connectors.

This article deals specifically with the influence of the 3-dimensional conductor overlapping in the actual contact area using a hermaphrodite contact design. With regard to the characteristic impedance profile the assembling differences between the overmolding technology of contact parts and the insert loading and assembling process will be discussed.

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 the new IEC 61076-3-105 [2] CD project which specifies 4 pair balanced, individually shielded, fixed and free connectors with characteristic impedance of 100 Ohms covering a frequency range from DC to 1500 MHz.

In this context, various simulation models are presented and compared with each other. In conclusion there is a comparison of calculations with TDR measurements (Time Domain Reflectometry).

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.

Index terms: 3-D connector design, High speed data rates, Signal integrity, Impedance profile, Computer simulation; TDR measurement