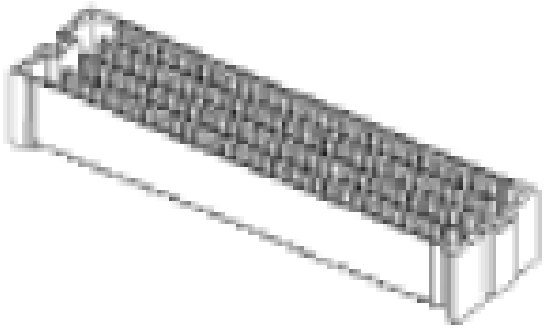
Electrical Performance Report
85 ohm Reference Impedance

SEAM-30-03.5-S-10-2

Mates with

SEAF-30-06.5-S-10-2



Description:
Open Pin Field Array, 1.27mm x 1.27mm Pitch
10mm Stack Height

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Report Revision: 3/4/2009

Series: SEAM/SEAF Array Series
Description: 1.27mm x 1.27mm grid interconnect system, 10mm Stack Height

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Series: SEAM/SEAF Array Series
Description: 1.27mm x 1.27mm grid interconnect system, 10mm Stack Height

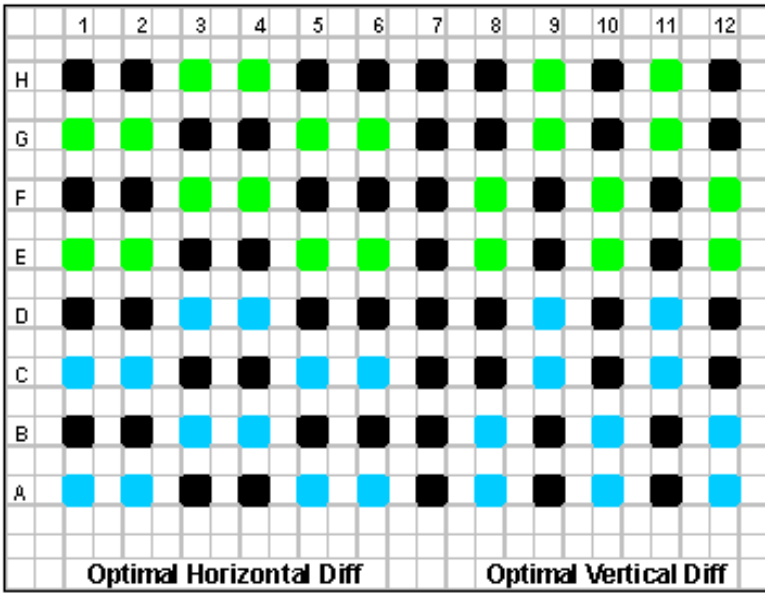
Connector Overview

SEAM/SEAF is a 1.27mm x 1.27mm pitch interconnects system for elevated high-speed board-to-board applications. The open pin field design allows for dual signaling and is suitable for Rapid I/O Data Rates. The SEAM/SEAF Series is available in 5, 6, 8, and 10 row open pin field arrays. Pins per row selections are 20, 30, 40, or 50. For the SEAM/SEAF series, 7mm, 10mm, 12mm, and 16mm stack heights are characterized. This report reflects only the hi-speed electrical characteristics specific to a mated 10mm stack height SEAM/SEAF test system.

Purpose

This report presents the results of the 10mm SEAM/SEAF connector response acquired in a 100 ohm differential measurement system transformed to an 85 ohm measurement system. The purpose is to show how Samtec products will operate in an 85 ohm system.

Two different pinout configurations are evaluated in this report; what we refer to as “Optimal Horizontal” and “Optimal Vertical” (example from a 8 row SEAM/SEAF connector shown below):



The transformation process is described in Samtec Technical Note “Transformation of Samtec Connector Test Data for 85 ohm Differential Impedance Applications”

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Differential Return Loss

Figure 1 shows the differential return loss for the 10mm SEAM/SEAF connector with a 100 ohm reference impedance and with an 85 ohm reference impedance. Notice that this connector has a better match in a 100 ohm system up to approximately 6 GHz.

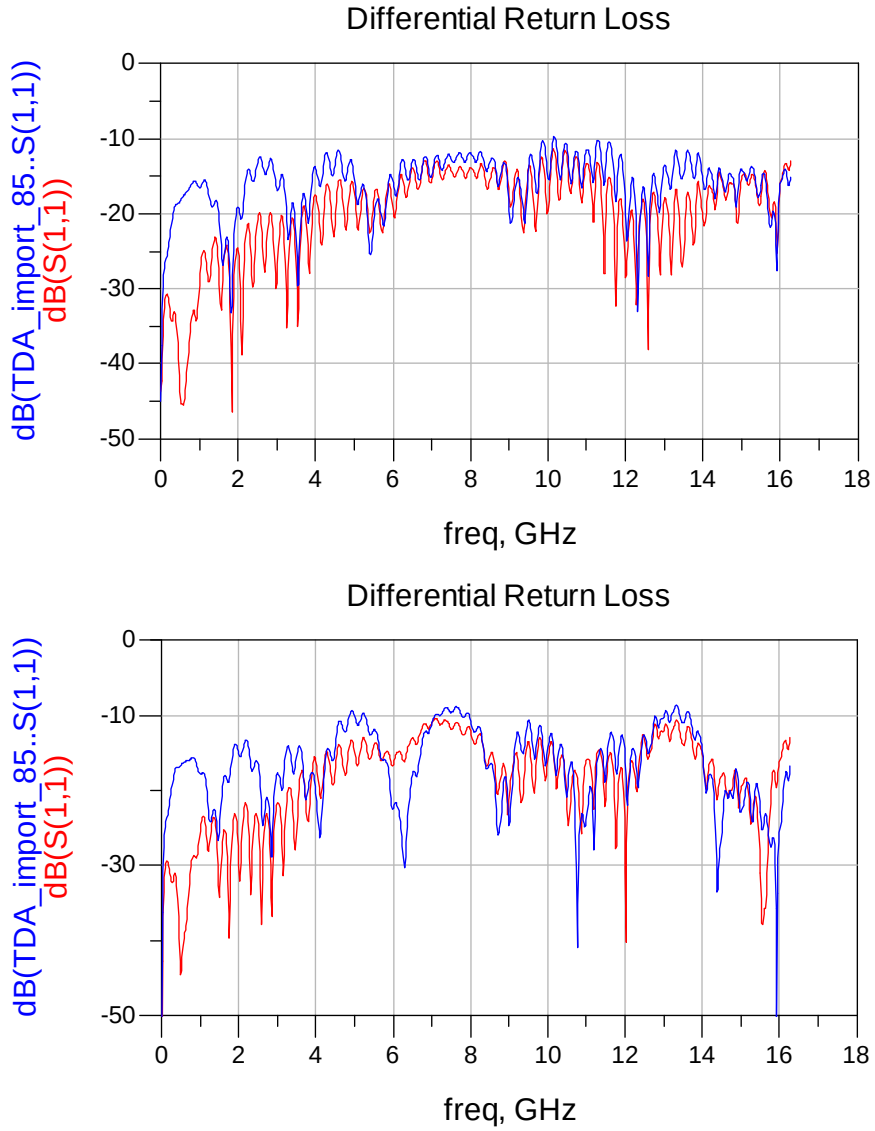

Figure 1. Differential Return Loss of Samtec 10mm SEAM/SEAF
Red – 100 ohm Reference Impedance, Blue – 85 ohm reference Impedance
(Optimal Horizontal Routing – Top, Optimal Vertical Routing - Bottom)

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Differential Insertion Loss

Figure 2 shows the differential insertion loss of the 10mm SEAM/SEAF connector with a 100 ohm reference impedance and with an 85 ohm reference impedance. Notice that the difference in transmission performance is fairly minor.

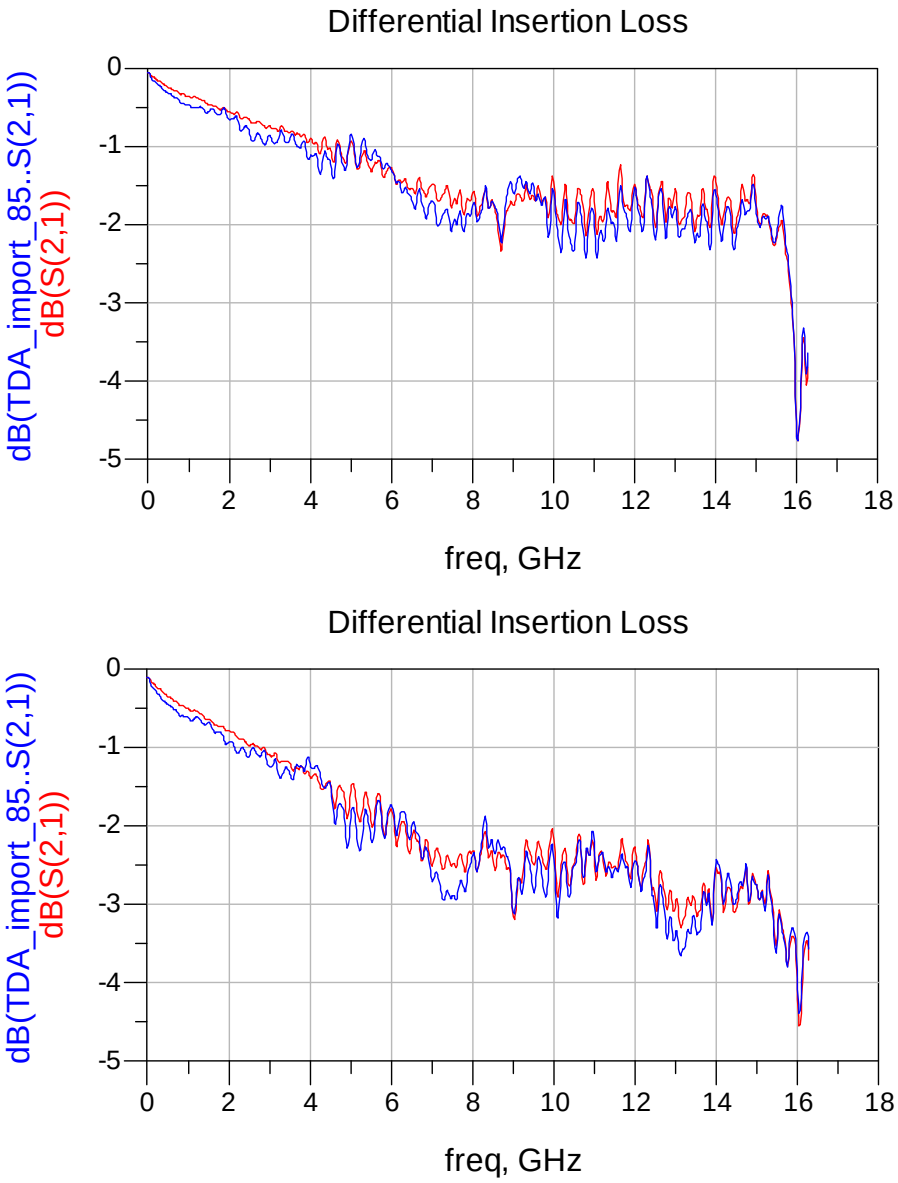

Figure 2. Differential Insertion Loss of Samtec 10mm SEAM/SEAF
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Differential Impedance Profile

Figure 3 shows the differential impedance profile of the 10mm SEAM/SEAF connector with a 100 ohm reference impedance and with an 85 ohm reference impedance. The short length of 100 ohm test traces are visible after the 85 ohm transformation (blue trace) at about 0.1 nSec. It is important to note that the connector impedance response (between 0.4 nSec and 0.6 nSec) is not affected by the choice of the reference impedance. This is the reason that a SPICE model of the connector can be used in systems with a non-standard reference impedance such as 85 ohm differential.

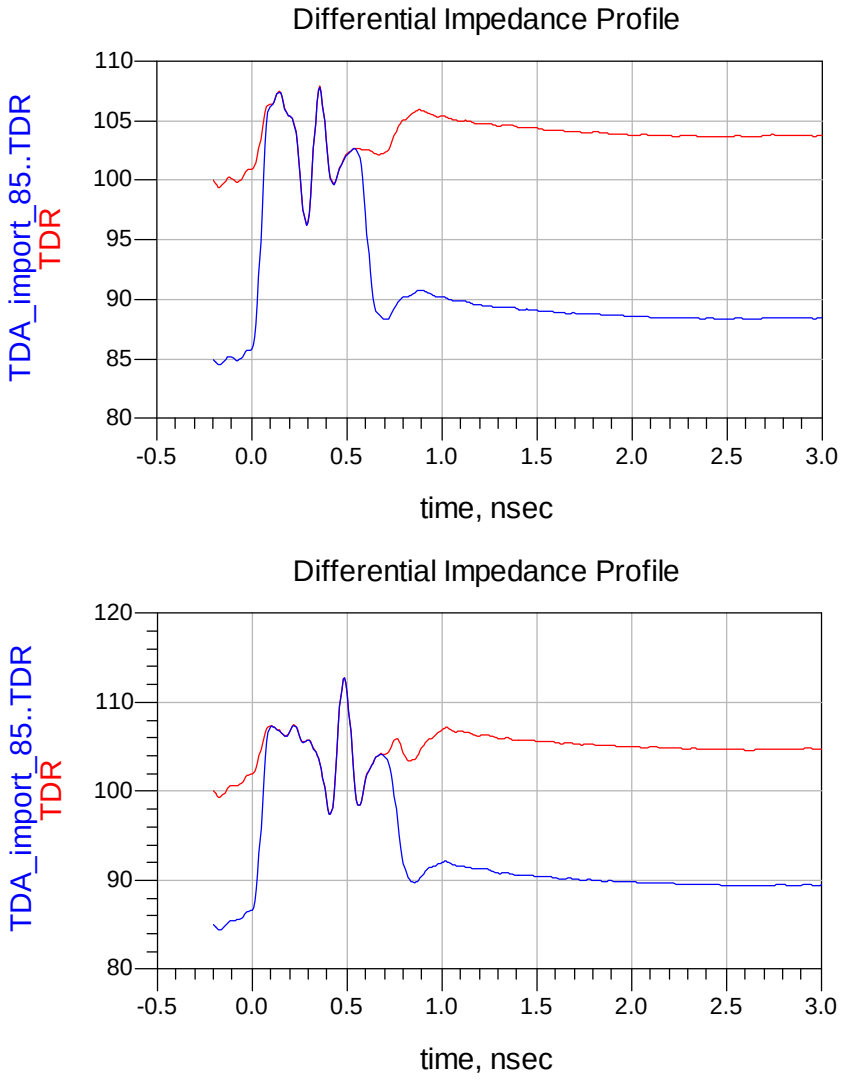

Figure 3. Differential Impedance Profile of 10mm SEAM/SEAF
Red – 100 ohm Reference Impedance, Blue – 85 ohm reference Impedance
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