October 30, 1998

John Lohmeyer
Chairman, T10
4420 ArrowsWest Drive
Colorado Springs, CO 80907-3444

Subject: Passive Lumped Capacitance Compensation on SCSI Signal Lines

Dear Mr. Lohmeyer:

Here are more slides in continuation of what I prepared last year to explain how the passive electrical compensation on the SCSI bus signal lines works for the Fast-20 SCSI bus. I stated there that the simulations were run for Fast-20 SCSI environment but the results and methodology could be generally used on high speed buses for both the single ended and differential applications.

This is exactly what we did here. We increased the speed on the single ended bus and watched how far we could go with the speed (simulation done by Larry Smith). We then switched to the differential bus, the LVD (Low Voltage Differential) bus and simulated behavior at higher speeds, above the 40 M-Transfers baseline, i.e at 80, 160, and 320 M-Transfers (simulations done by Istvan Novak).

These slides should show the feasibility and improved signal quality of signals on the SCSI bus with the passive compensation.

Sincerely,

Vit F. Novak
Sun Microsystems
All nodes at 20 MTransfers. 4 groups of 3 drives.

Wave	Symbol
D0:A0:v(desk)
D0:A0:v(1)
D0:A0:v(2)
D0:A0:v(3)
D0:A0:v(4)
D0:A0:v(out)

Node 1

output

Wave	Symbol
D0:A0:v(out)
D0:A1:v(out)
D0:A2:v(out)
D0:A3:v(out)
D0:A4:v(out)
Several nodes. 12 groups of 1.

**Wave** | **Symbol**
---|---
D0:A0:v(out) | x
D0:A0:v(1) | o
D0:A0:v(4) | 
D0:A0:v(8) | 
D0:A0:v(12) | 
D0:A0:v(out) | *

Voltages (lin)

0 | 20n | 40n | 60n | 80n | 100n | 120n | 140n
---|---|---|---|---|---|---|---

**lst node**

**Wave** | **Symbol**
---|---
D0:A0:v(1) | x
D0:A1:v(1) | o
D0:A2:v(1) | 
D0:A3:v(1) | 
D0:A4:v(1) | 

Voltages (lin)

0 | 20n | 40n | 60n | 80n | 100n | 120n | 140n
---|---|---|---|---|---|---|---

**output**

**Wave** | **Symbol**
---|---
D0:A0:v(out) | x
D0:A1:v(out) | o
D0:A2:v(out) | 
D0:A3:v(out) | 
D0:A4:v(out) | 

Voltages (lin)

0 | 20n | 40n | 60n | 80n | 100n | 120n | 140n
---|---|---|---|---|---|---|---
several nodes with no compensation. 20 MTransfers.

<table>
<thead>
<tr>
<th>Wave</th>
<th>Symbol</th>
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</thead>
<tbody>
<tr>
<td>D0:A0.v(desk)</td>
<td>x(x)</td>
</tr>
<tr>
<td>D0:A0.v(1)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A0.v(2)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A0.v(3)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A0.v(4)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A0.v(out)</td>
<td>o(o)</td>
</tr>
</tbody>
</table>

1st node with several transfer rates.

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<thead>
<tr>
<th>Wave</th>
<th>Symbol</th>
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<tbody>
<tr>
<td>D0:A0.v(1)</td>
<td>x(x)</td>
</tr>
<tr>
<td>D0:A1.v(1)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A2.v(1)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A3.v(1)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A4.v(1)</td>
<td>o(o)</td>
</tr>
</tbody>
</table>

output with several transfer rates.

<table>
<thead>
<tr>
<th>Wave</th>
<th>Symbol</th>
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<tbody>
<tr>
<td>D0:A0.v(out)</td>
<td>x(x)</td>
</tr>
<tr>
<td>D0:A1.v(out)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D1:A0.v(8)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A3.v(out)</td>
<td>o(o)</td>
</tr>
<tr>
<td>D0:A4.v(out)</td>
<td>o(o)</td>
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</tbody>
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