

Single Line RLC Models of Meritec Right Angle PCI Connectors

Equipment and Software:

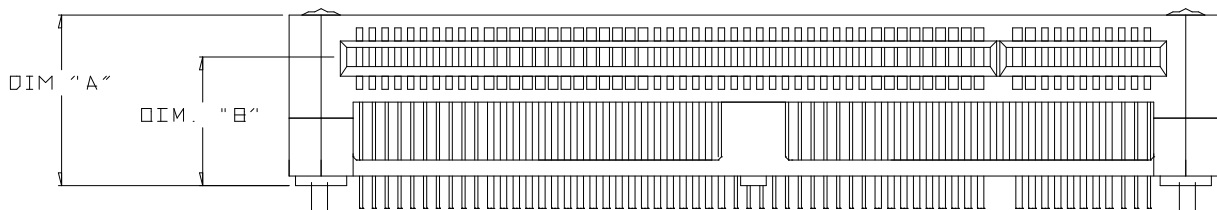
Tektronix CSA-803 Digital Sampling Oscilloscope with SD24 TDR/Sampling Head
 TDA IConnect Interconnect Modeling Software Version 1.5.0
 Hewlett Packard 6177C constant current DC supply
 Hewlett Packard 3456A Digital Voltmeter
 Hewlett Packard 3468B Digital Voltmeter
 Various precision coax adapters and interconnecting cables

Results:

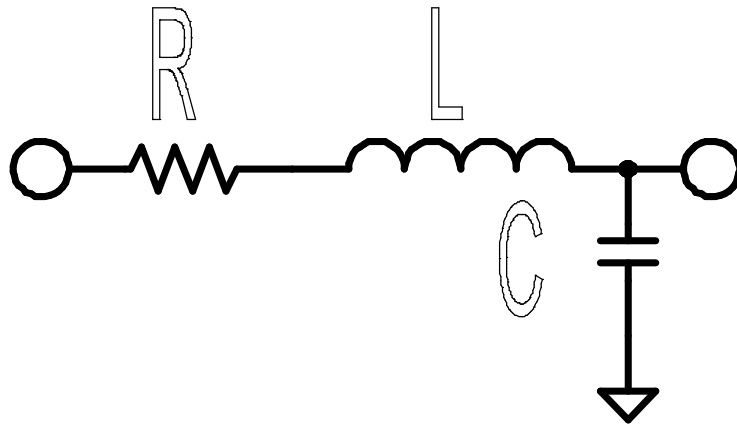
Tests were run by measuring TDR response between an **adjacent pair** of pins on **one** side of the card slot. The lumped inductances and lumped capacitances in the model were computed by the TDA software based on the reflected TDR waveform and were verified using Berkeley SPICE 3. The propagation delay was calculated by the formula: $T_{pd} = \sqrt{L \cdot C}$. The resistance was measured by shorting the contact pair with a copper-clad PC board, passing a fixed current of 100 ma and measuring the voltage drop.

| Overall Height Dim "A" | Board Stand-off Height Dim "B" | Pair | Lumped Inductance L (nH) | Lumped Capacitance C (pF) | Propagation Delay T_{pd} (psec) | Resistance R (m Ω) |
|---------------------------|--------------------------------------|-------|--------------------------------|---------------------------------|---|-------------------------------|
| 0.4 | 0.230 | A1-A2 | 12 | 0.9 | 104 | 28 |
| 0.4 | 0.230 | B1-B2 | 18 | 1.0 | 134 | 38 |
| 0.49 | 0.320 | A1-A2 | 13.8 | 1.0 | 117 | 29 |
| 0.49 | 0.320 | B1-B2 | 20.3 | 1.2 | 156 | 41 |
| 0.66 | 0.492 | A1-A2 | 18.6 | 1.0 | 136 | 35 |
| 0.66 | 0.492 | B1-B2 | 23.4 | 1.3 | 174 | 45 |
| 0.83 | 0.657 | A1-A2 | 22.8 | 1.2 | 165 | 41 |
| 0.83 | 0.657 | B1-B2 | 26.3 | 1.4 | 192 | 52 |

Note: these RLC values are lumped parameters for a pair of contacts and are appropriate for rise times slower than 10 times the propagation delays. For faster edge rates, divide the RLC model into subsections where each subsection is about 1/10th of the rise time.



View showing dimension locations



Connector Model

Tested by: John Sawdy

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