PI3USB3200 S-Parameter Model Verification

1. **Introduction:**

In order to verify our S parameter model, we need to do some simulations with the measured or simulated model. First is the Frequency characteristic simulation which we can get the insertion loss and return loss, the second is the TDR simulation and lastly we can get the eye-diagram of the transient simulation with the correlated data rate.

1. **Verification:**
2. Frequency Characteristic:

8-Port S Parameter

port1

port2

Port5

Port6

Port3

Port4

Port7

Port8

Channel A

Channel B

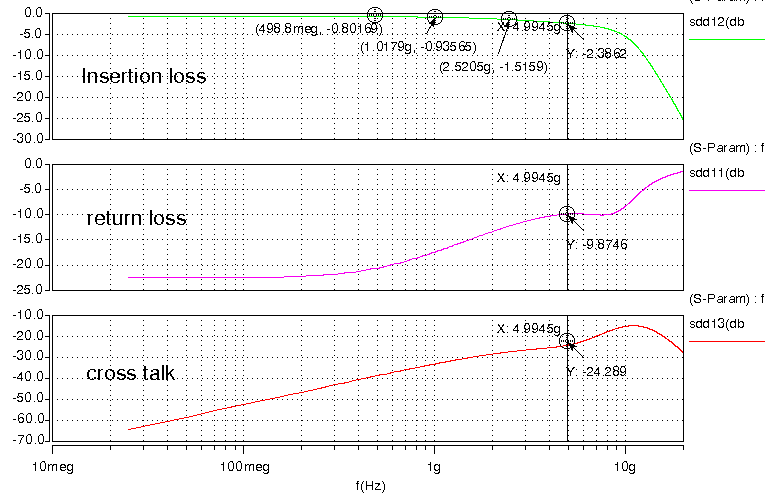
|  |  |  |
| --- | --- | --- |
| Differential channel | Input | Output |
| Channel A | Port1, port2 | Port5, port6 |
| Channel B | Port3, port4 | Port7, port8 |

Differential insertion loss = SDD12

Differential return loss = SDD11

Differential cross talk = SDD13

**Simulation waveform:**

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1. TDR simulation:

Z=50ohm, Tdelay=1n

Channel A

8-Port S Parameter

50ohm

50ohm

0.2pF

0.2pF

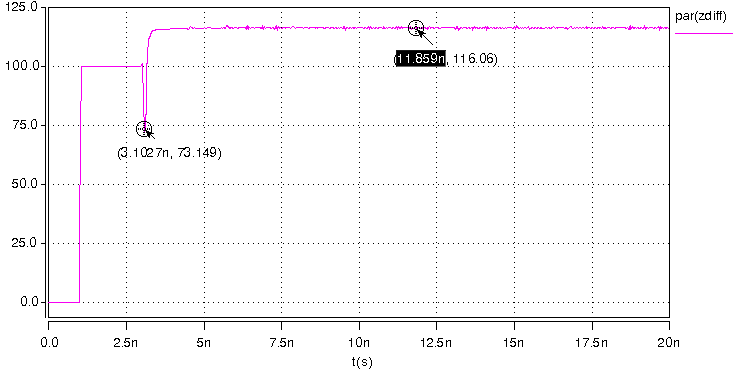
0

1

Trise=70ps

Channel B

**Simulation waveform:**

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1. Transient simulation:

8-Port S Parameter

50ohm

50ohm

50ohm

50ohm

PRBS7

trace\_in

3inch trace

switch\_in

output

Channel B

Channel A

**Simulation waveform:**

Data Rate = 10Gbps

