PI3USB31532 USB 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:

4-Port S Parameter

port1

port2

port3

port4

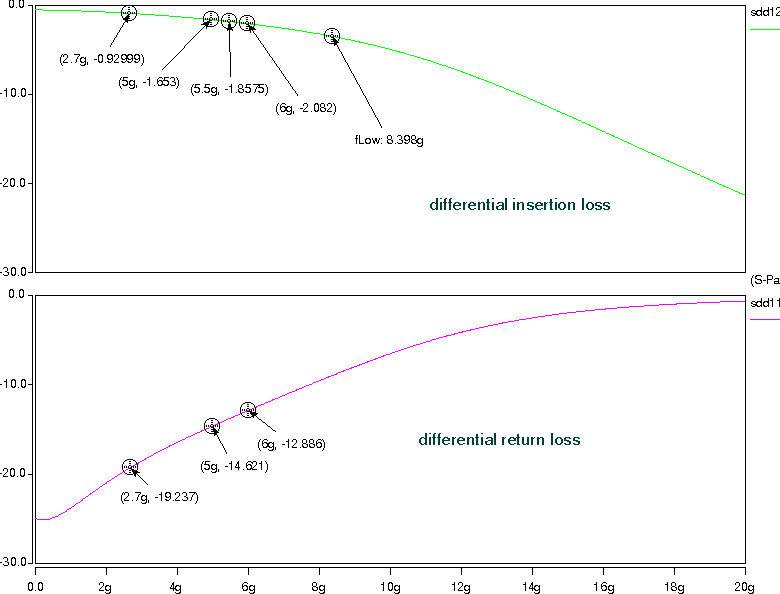
Differential port2

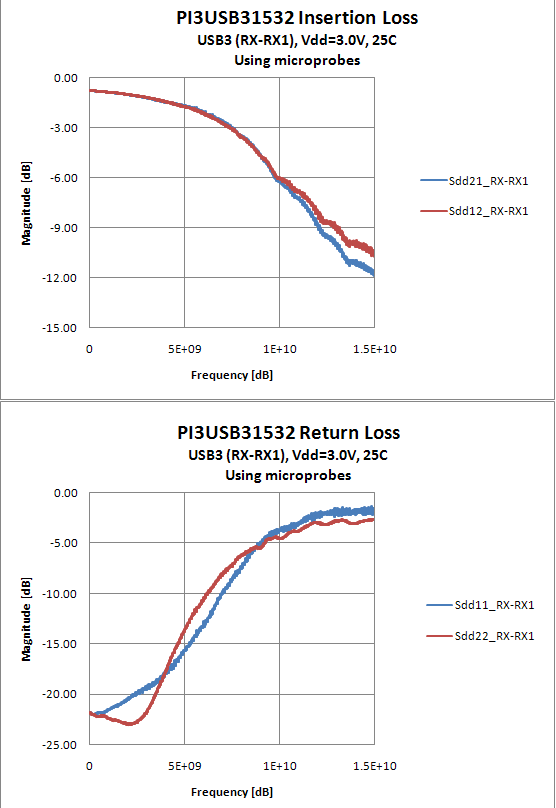
Differential port1

Differential Insertion loss = SDD21

Differential return loss = SDD11

**Simulation waveform:**





1. TDR simulation:

Z=50ohm, Tdelay=1n

4-Port S Parameter

50ohm

50ohm

0.2pF

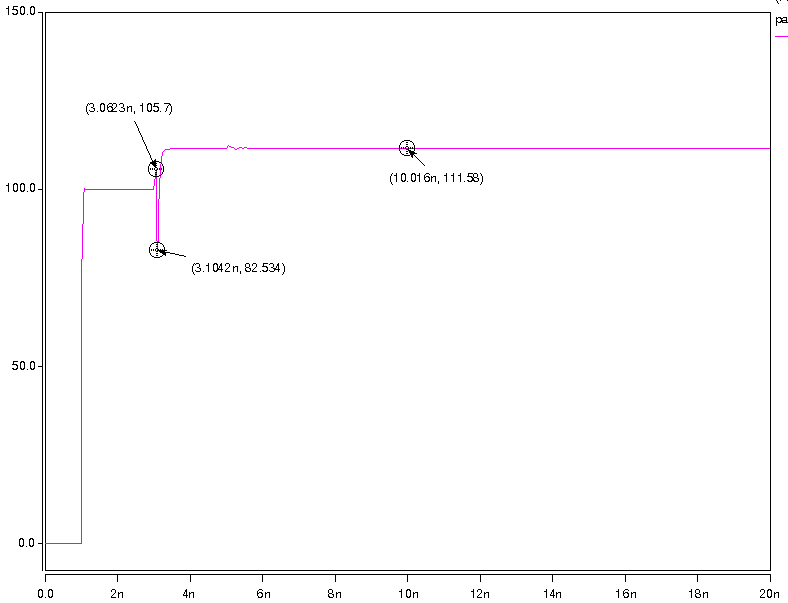
0.2pF

0

1

Trise=66ps

**Simulation waveform:**

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1. Transient simulation:

4-Port S Parameter

50ohm

50ohm

50ohm

50ohm

PRBS7

trace\_in

1inch trace

switch\_in

output

**Simulation waveform:**

Data Rate = 10Gbps

