

To: T10 Membership
From: Paul D. Aloisi
Subject: SPI-2 Issues For the September working Group and Plenary Vote
Date: Monday, August 25, 1997

Issue 1:

The 0.5 pF balance capacitance for LVD SCSI (Table 29 SPI-2R13) and HVD SCSI (Table 36 SPI-2R13) are extremely hard meet for a proto type and impossible to meet in production. Measuring the parts 2-3 Controller, Terminator (Maybe) and connector with the etch board to 0.5 pF is an impossible task. The components have different capacitance reading which are effected by the ground plane and the proximity to cables or metal objects to the module will change the capacitance, as much as several pFs and the difference between lines can be much greater than 0.5 pF.

Terminator parts vary 0.5 pF depending on how they are mounted. BGA controllers have reported 0.6 pF differences in pin capacitance. The connector has different capacitance from the difference between the sides of the connectors.

A controller that has two connectors, terminator and the controller is harder to balance than a device with a single connector.

At least 1 pF would give a designer the possibility of hitting balance, but would be hard to guarantee over manufacturing tolerances. The proximity of cables and metal will change the capacitance more than the allowed balance. 2 pF would be possible, with all the components considered.

Table 29 and 36 |C1-C2| (pF) should be increased to 1 pF minimum, 2 pF would be better.

Issue 2:

Terminator current differences between SCSI-2 and SPI/Fast-20 don't allow the use of SCSI-2 terminators for SPI and Fast-20 applications. The SCSI-2 specification is 22.4 mA at 0.5 Volts, the SPI/Fast-20 is 24 mA measured at 0.2 Volts. The SCSI-2 terminator measured at 0.2 Volts can be as high as 25.4 mA.

SPI-2R13 Section 7.1.1 b

Each terminator shall source current to the signal line whenever its terminal voltage is below 2.5 V D.C. and this current shall not exceed 24 mA for any line voltage above 0.2 V D.C. even when all other signal lines are driven at 4.0 V D.C.

Change to:

Each terminator shall source current to the signal line whenever its terminal voltage is below 2.5 V D.C. and this current shall not exceed 22.4 mA for any line voltage above 0.5 V D.C. and 25.4 mA for any line voltage between 0.5 and 0.2 V D.C. even when all other signal lines are driven at 4.0 V D.C.

The purposed SE termination I/V were not agreed to, these changes must go in standard at a minimum. The I/V curve could be added later if agreement can be reached.

Thank you,

Paul Aloisi
Unitrode