

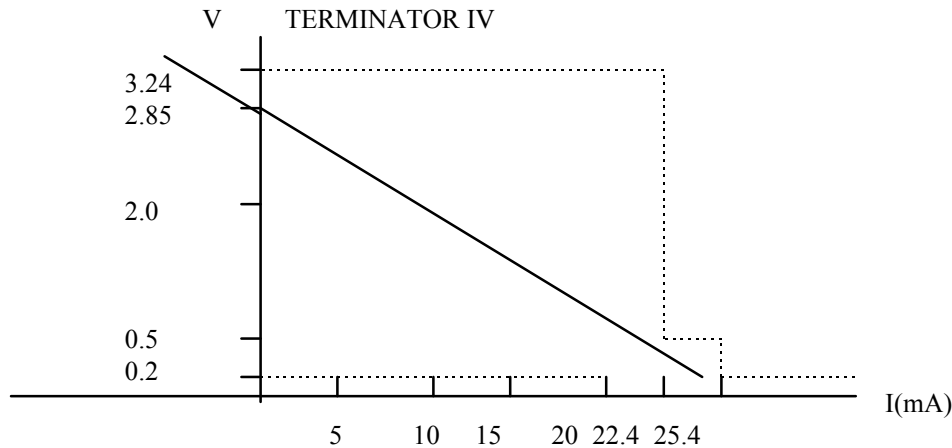
To: X3T10 Membership  
From: Dean Wallace  
Subject: SCSI Single Ended Termination  
Date: 11/4/96

X3T10/96-245

The SCSI-2 alt-2 terminator and the SPI alt-2 terminator can be incompatible. The SCSI-2 alt-2 terminator (the 220/330 was still allowed) was allowed to source 22.4mA (@0.5V) and the current at the driver could not exceed 48mA (@0.5V). The SPI document allows a maximum terminator current of 24mA (@0.2V). Therefore the SCSI-2 terminator is not compatible with the SCSI-3 SPI terminator. The 2.85V, 110 ohm alt-2 terminator exceeds 24mA (@0.2V). For the alt-2 terminator using 22.4mA max at 0.5V and the SCSI-2 minimum impedance of 100 ohms the maximum allowed current at 0.2V is 25.4mA.

The proposal for the termination IV characteristic is:

- The terminator maximum dc current at 0.2V is 25.4mA. The terminator maximum dc current at 0.5V is 22.4mA.
- A minimum dc current of 20mA at 0.2V is also specified. (This isn't changing anything since the maximum alt-2 impedance of 132 ohms is approximately this value).
- The terminator should not source current whenever the terminal voltage is greater than 3.24V.
- The terminator shall source current to the line when the terminal voltage is below 2.5V dc.
- The terminator open circuit voltage should be at least 2.5V.



The IV chart shows the allowed operation area for the single ended terminator. Anything outside the dotted lines is not allowed. The region below 0.2V was left open for undershoot clamps and the sink current region (left of center axis) is open because minimum and maximum sink currents are not specified. I think the above wording along with the chart specifies the terminator without having to specify an output impedance. The solid line in the middle of the chart is the ideal alt-2 terminator (for reference). If an impedance range of 100 ohms to 132 ohms is specified then we need to explain what the alt-2 terminator is. Also specifying a minimum current of 20mA at 0.2V (with a minimum  $V_{term}$  of 4.25V gives 17.8mA) removes the 220/330 terminator without having to specifically call it out. Finally reducing the terminator (enabled) output capacitance from 25pF to 12.5pF should be done. Probably of more importance would be a maximum disabled output capacitance.

Dean Wallace  
Linfinity Microelectronics