# SCSI Single-ended Termination for SPI-2   X3T10/96-245R1

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). For the SCSI-2 alt-2 terminator using 22.4mA maximum at 0.5V and the minimum alt-2 terminator output impedance of 100 ohms yields a maximum output current of 25.4mA (@0.2V). 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 proposal is for a modification of the SPI output current below 0.5V to accommodate 25.4mA at 0.2V. The goal is to make SCSI-2 and SPI alt-2 terminators compatible without changing anything else. The graph for the IV curve is:
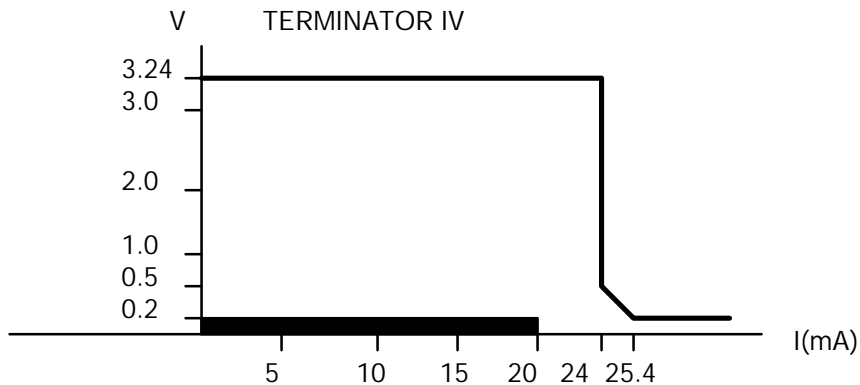
The graph shows the allowed area of operation for the single ended terminator. The solid black line shows the maximum allowed termination current. The key points are;

- The maximum current at 0.2V is **25.4mA.**
- The maximum current at any voltage greater than or equal to 0.5V is **24mA** (which is the current SPI limit).
- The region below 0.2V is left open for undershoot clamps and the maximum current is not specified.
- The solid box below the 20mA region (@0.2V) can be included for the specific reason of disallowing the 220/330 terminator as is done in SPI.
- 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.
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The region to the left of the center axis is left open for termination sink current. This change to the IV curve would make the SCSI-2 alt-2 terminator and the SPI terminator compatible without affecting or adding to any of the other existing terminator specifications.

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