SPI-3 Issues

Single Ended Termination Current

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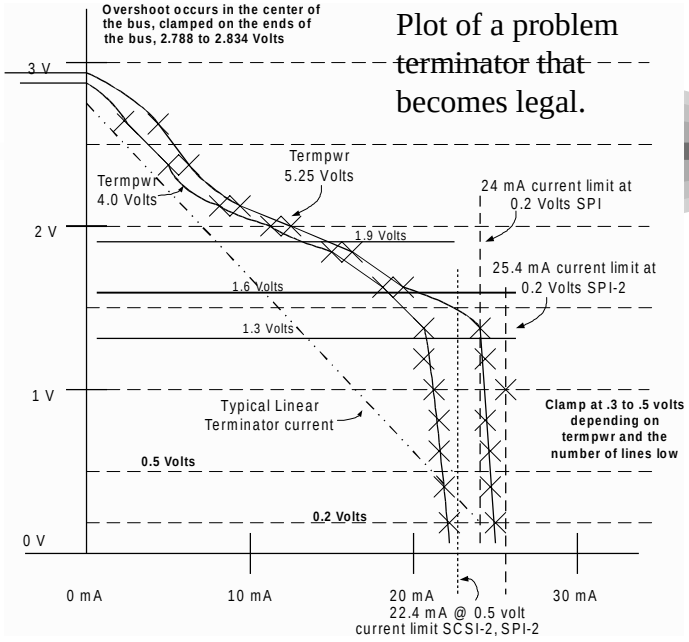
- Terminator current differences between SCSI-2 and SPI/Fast-20 don't allow the use of SCSI-2 terminators for SPI and Fast-20 applications. The SCSI-2 specification is 22.4 mA at 0.5 Volts, the SPI/Fast-20 is 24 mA measured at 0.2 Volts. The SCSI-2 terminator measured at 0.2 Volts can be as high as 25.4 mA.
- The Maximum 22.4 mA at 0.5 Volts is from the Fast-5 specification in table 25 which allows the receiver current 0.4 mA at 0.5 Volts per device, 8 devices is 3.2 mA. Table 24, the driver is only required to sink 48 mA at 0.5 Volts only allowing 44.8 mA for both terminators.

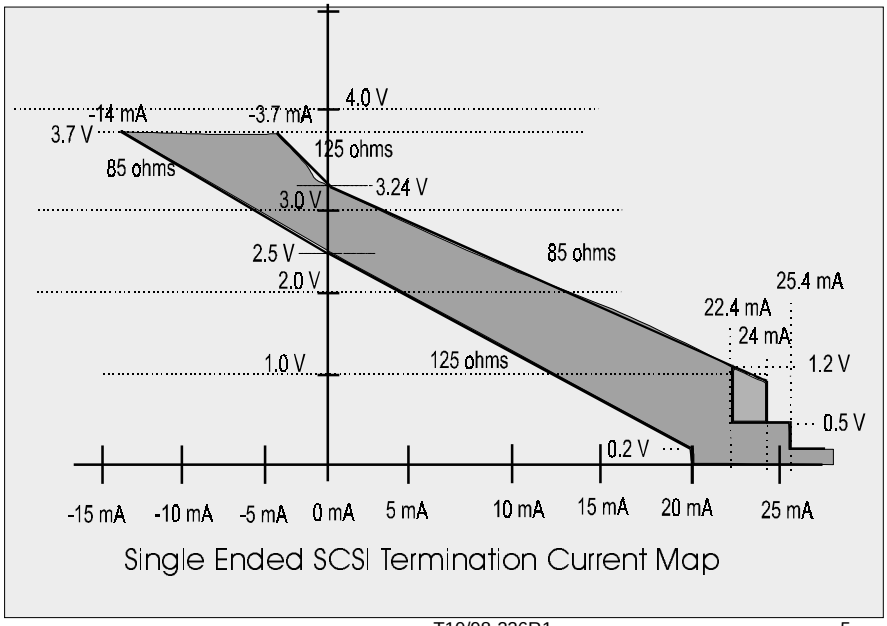
Single Ended Termination Current

- SPI-2 Agreement 97-236r1 Plenary vote Sept 97:
- 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.
- Table 24 & 25 sets the limits for the terminator.
- 24 mA at 0.5 Volts exceeds the driver current with the allowed receiver currents.



Plot of a problem ~~terminator that~~ becomes legal.

From 97-236R1



Bus Reflection Issues

- Terminators with Low impedance
  - Signals driven from the center of the bus transition to the impedance of the cable.
  - Reflection from the terminator before the next step drops the signal to the terminator impedance.
  - This can cause a signal reflection causing double clocking - Error in REQ - ACK count.