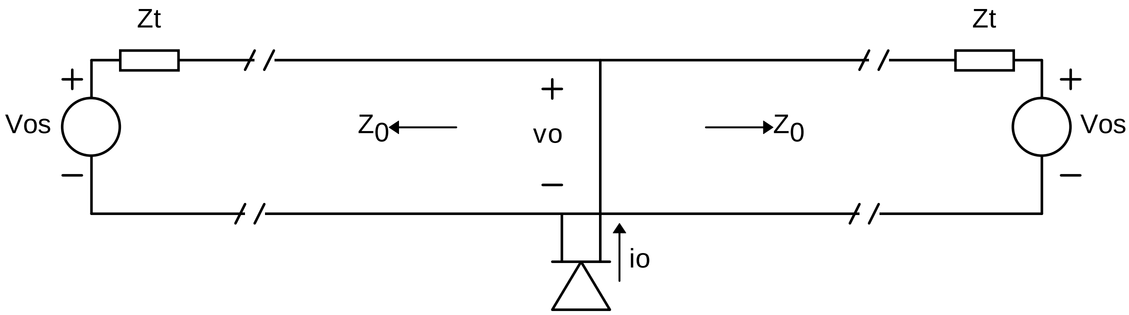

Simplified ac model of the LVD-SCSI bus.

Equation 1. Magnitude of initial voltage at driver output for an *asymmetrical* LVD-SCSI bus.

$$vo(t=0+) = io(t=0+)\frac{Z_0}{2} + Vo(t=0-)$$

$$vo(t=0+) = io(t=0+)\frac{Z_0}{2} + Io(t=0-)\frac{Zt}{2} + Vos$$

A *symmetrical* bus would simply make the Vos term zero giving,

Equation 2. Magnitude of initial voltage at driver output for a *symmetrical* LVD-SCSI bus.

$$vo(t=0+) = iosym(t=0+)\frac{Z_0}{2} + Io(t=0-)\frac{Zt}{2}$$

For **any** necessary $v_{o(t=0+)}$ voltage level, the difference between the driver output current to an *asymmetrical* bus and a *symmetrical* bus would be Equation 2 subtracted from Equation 1.

Equation 3. Difference between the driver output current for an *asymmetrical* versus *symmetrical* LVD-SCSI bus.

$$vo(t=0+) = io(t=0+)\frac{Z_0}{2} + Io(t=0-)\frac{Zt}{2} + Vos$$

$$-(Vo(t=0+) = iosym(t=0+)\frac{Z_0}{2} + Io(t=0-)\frac{Zt}{2})$$

$$0 = \frac{Z_0}{2}\left(io(t=0+) - iosym(t=0+)\right) + Vos$$

$$\left(io(t=0+) - iosym(t=0+)\right) = \frac{-2Vos}{Z_0}$$

From the requirements for Fast-40, 100 mV $\leq V_{os} \leq$ 125 mV and 110Ω $\leq Z_0 \leq$ 135Ω and during negation (i_o is positive),

$$-2.27\text{mA} \leq \left(io(t=0+) - iosym(t=0+)\right) \leq -1.48\text{mA} .$$

During assertion (i_o is negative),

$$1.48\text{mA} \leq \left(io(t=0+) - iosym(t=0+)\right) \leq 2.27\text{mA} .$$

When negating an *assymmetrical* LVD-SCSI bus, a driver supplies at least 1.48 mA to 2.27 mA **less** current than would be required for a *symmetrical* bus. When asserting, the driver can deliver 1.48 mA to 2.27 mA **more** than would be required for a *symmetrical* bus. With equal probability of the bus being negated or asserted, a driver designed to drive an *asymmetrical* bus would require 0 mA $\pm$ 0.395 mA average output current compared to that of a *symmetrical* design.