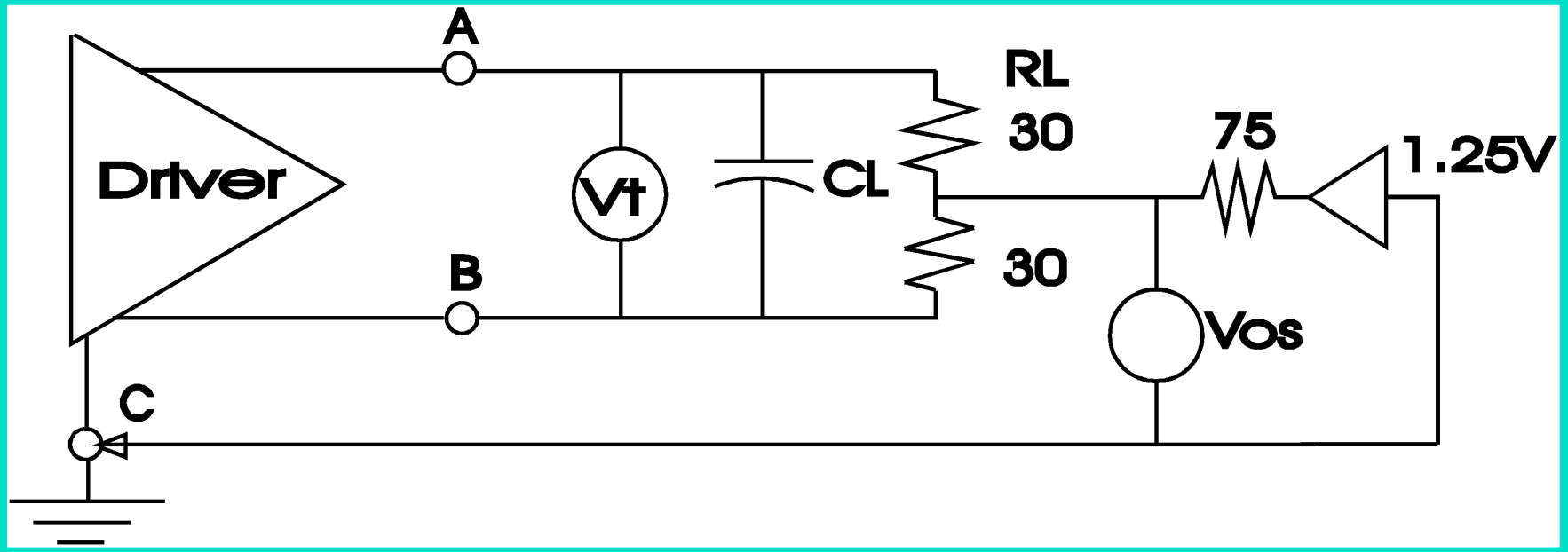
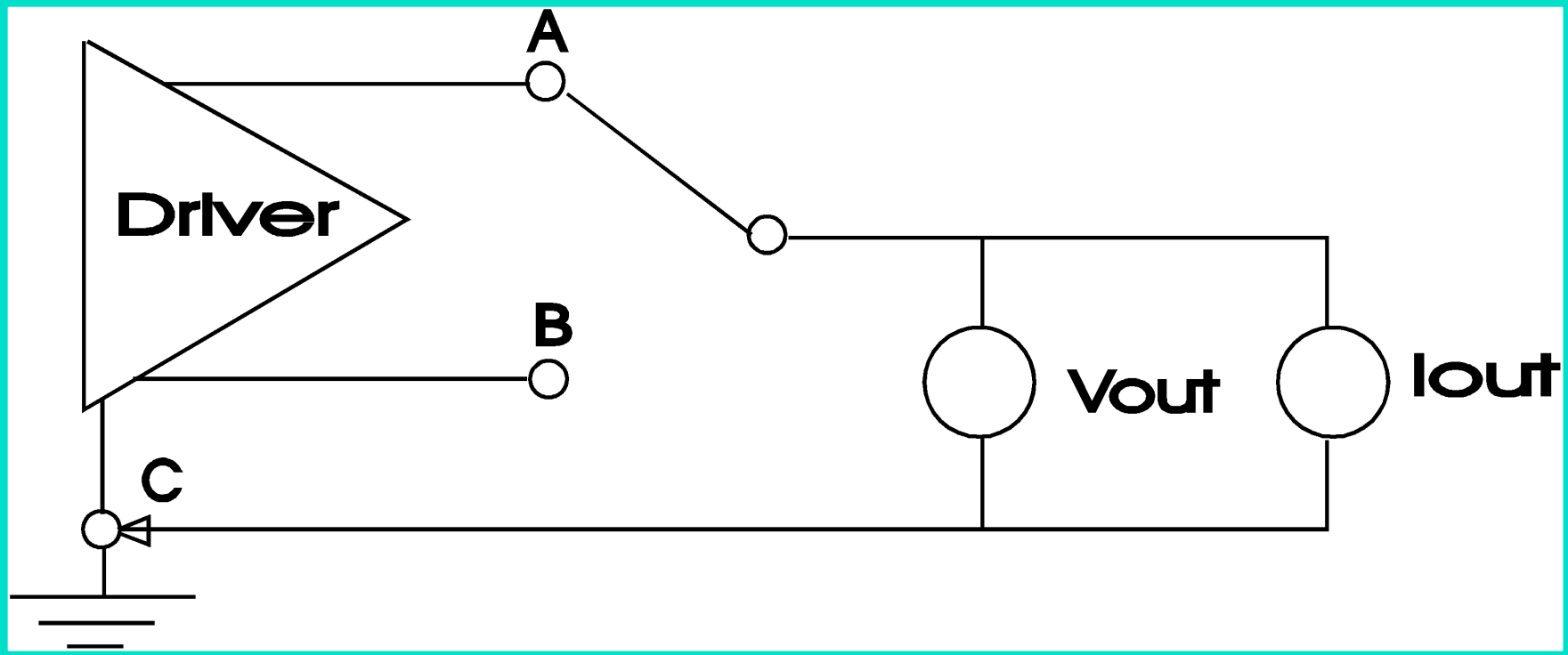
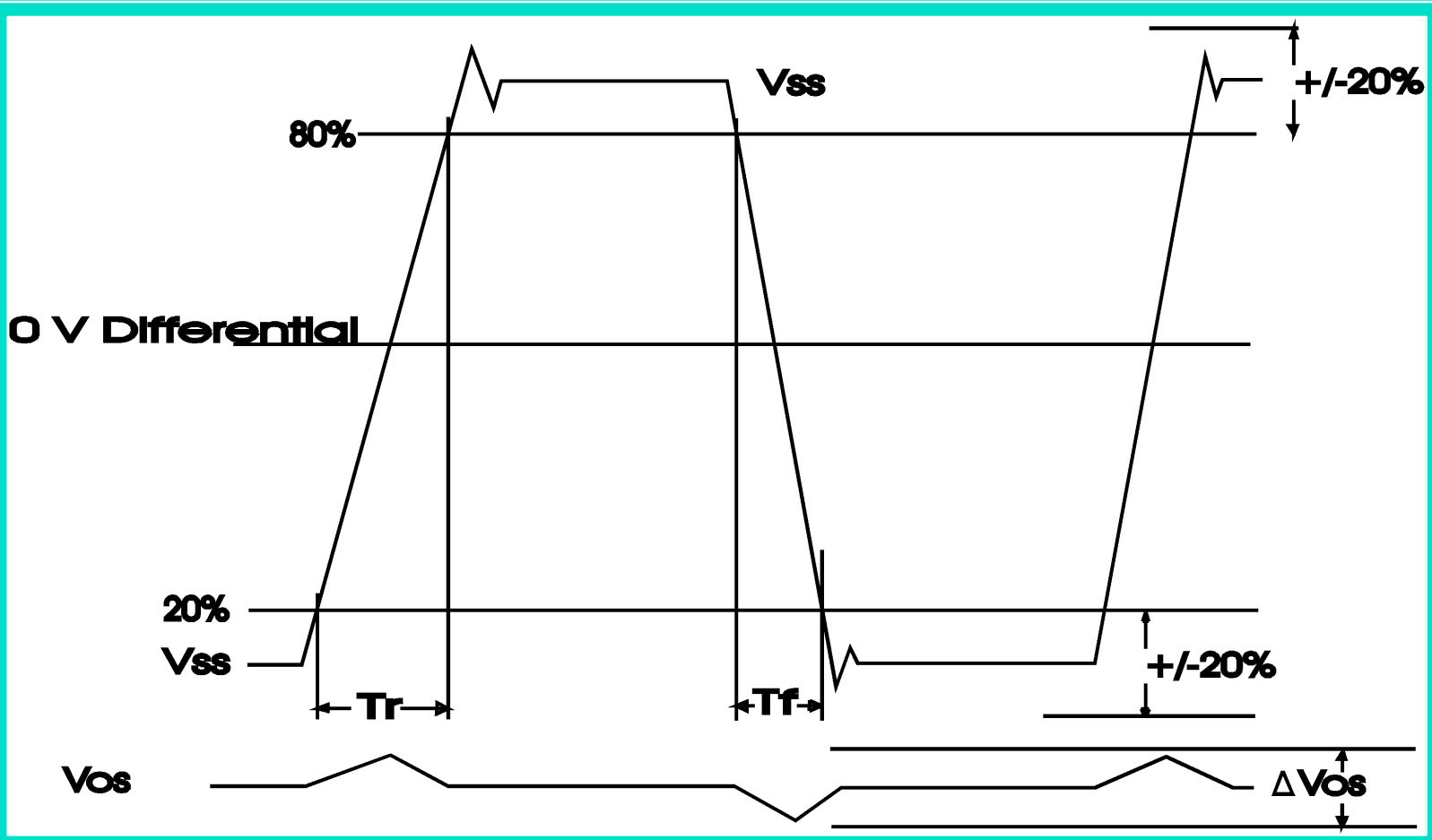
SPI-2 LVDS Driver Tests



SPI-2 LVDS Driver Z

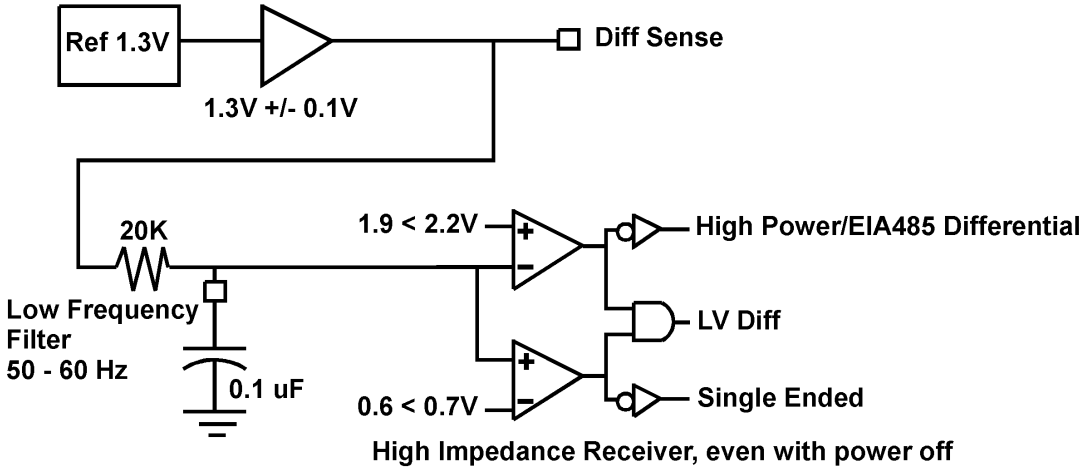


SPI-2 LVDS Waveform

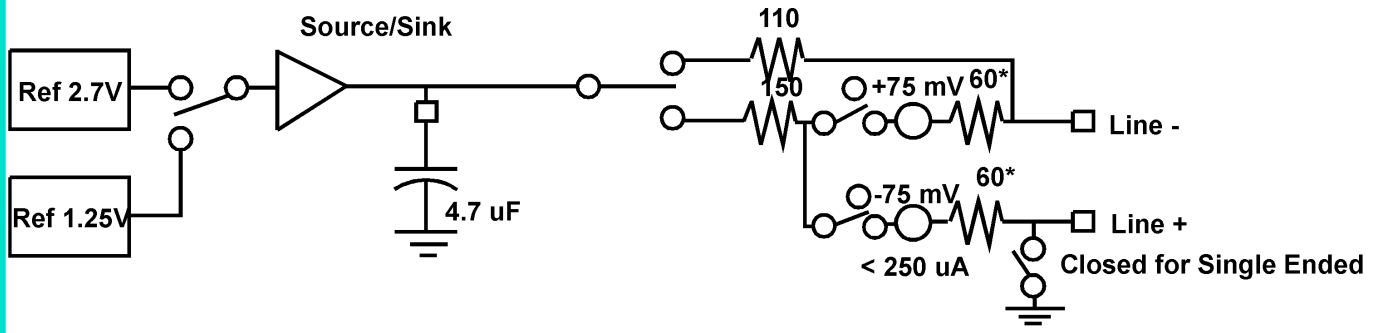


SPI-2 LVDS Termination

Sourced from TERMPWR, Enabled Terminators only
Source 5 < 15 mA
Sink < 200 uA (Noise Load)
Open Circuit on power off
or Open Circuit for a Disabled Terminator

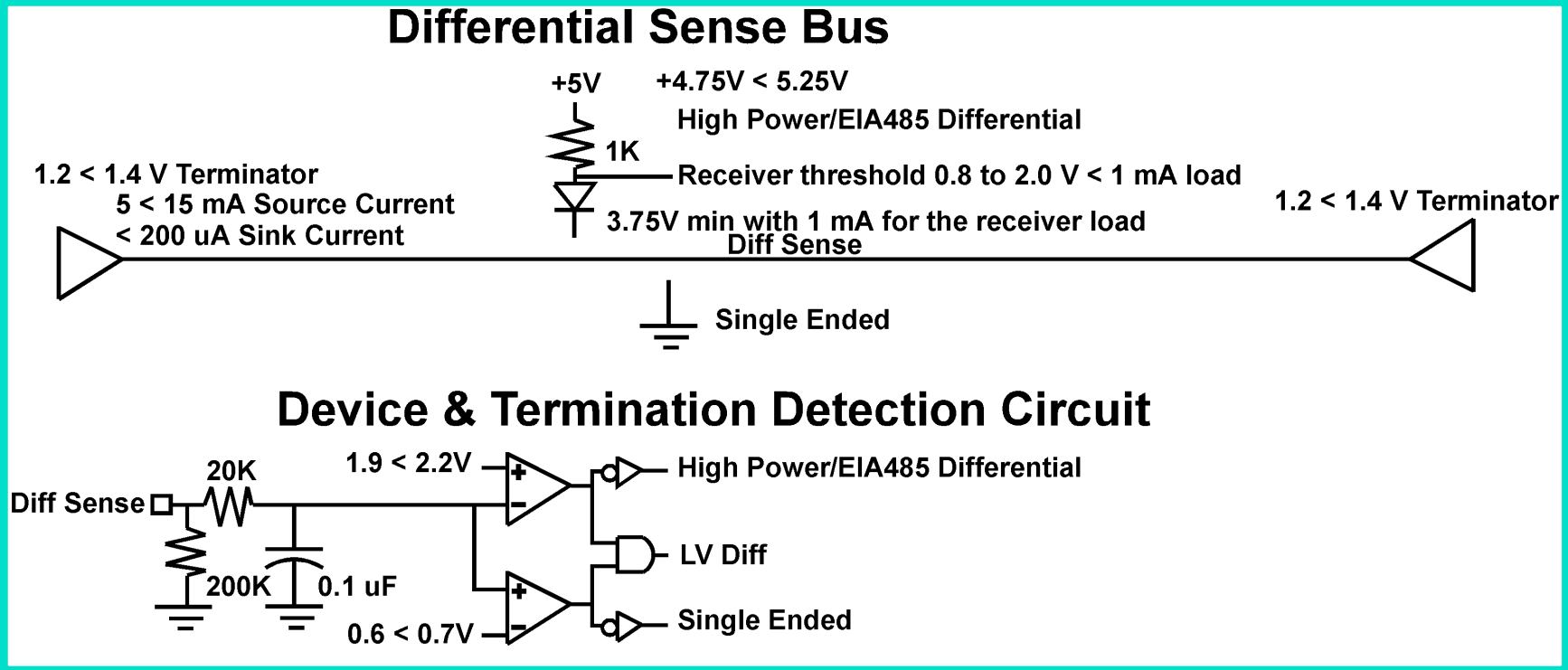


High Impedance Receiver, even with power off



* May Reflect the AC Impedance
Switches are up for Single Ended
Switches are down for Low Voltage Differential

SPI-2 LVDS Diff Sense



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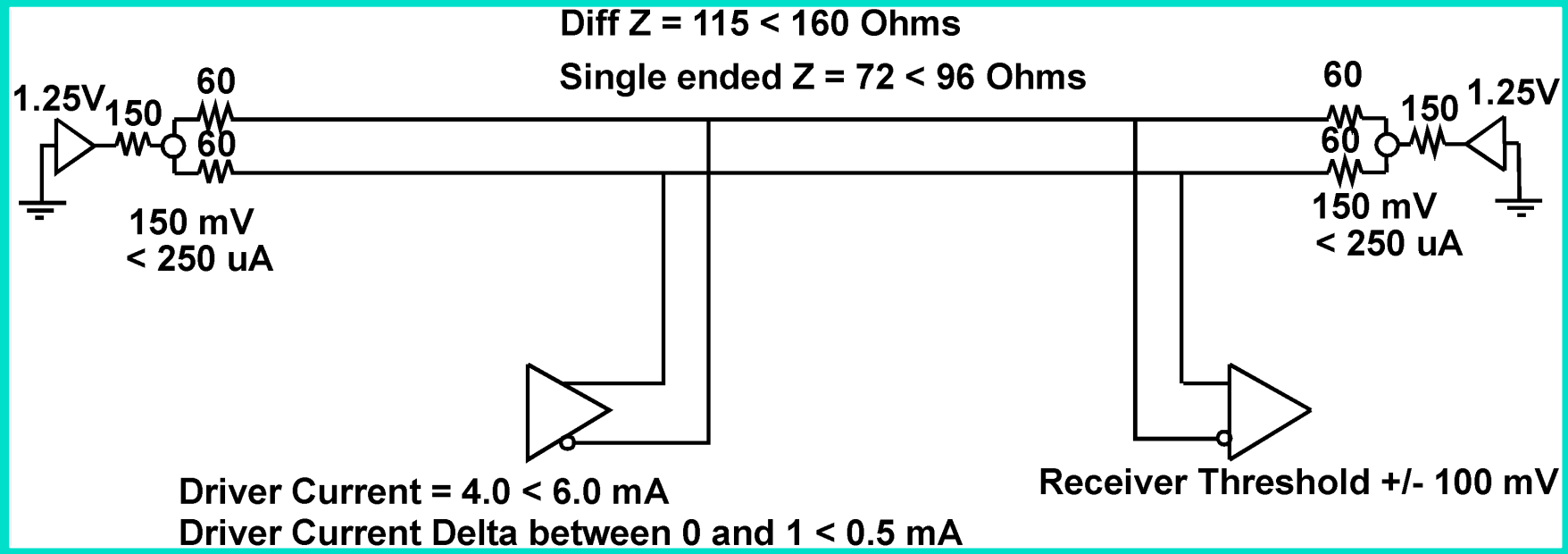
abc

SPI-2 LVDS Bus



June 21, 1995 Merrimack MTG

- Reviewed the document sections of SPI that will be effected by LVDF SPI.
- Studied the Diff Sense issues and set new values
- Reviewed common mode issues with each interface
- Reviewed the cost objectives of LVDS
- Defined the pinning for the based on Single ended, regenerated table done in Harrisburg, but not documented.
- Note: FAST-40 single ended would still be a longer distance than ATA. This should be a viable standard.
- FAST-40 and FAST-80 will require very low delta stub and capacitance for data, parity, ack and req signals. The additive effect of 7 or 15 devices will exceed the skew budget.
- Worked timing issues for FAST-40 and FAST-80, external drivers and receivers can not be used, there is no margin in the skew budget.

Agreements

- A single chip may work for both single ended (Async, 5, 10,20) or LVDS (FAST-40,80)
- No SE FAST-40
- No SE Signals in FAST-40
- Timing OK
- Diff sense is define with an autosense feature.
- low, (SE) all ground drivers shall be on.
- Pin outs OK
- Target of 15 pF maximum
- Current mode Driver, no Driver output impedance spec.
- Terminator bias with current limited, 100 mV at 250 microAmps maximum.
- No specified receiver hysteresis.

LVDS Power Calculations

- Transceiver power calculations for a 27 line device at 3.3 Volts + 10%.
- Maximum 21 Active Drivers on a 27 line device.
- 27 Active Receivers
- Driver control current 1 mA * 3.6 Volts, 3.6 mW * 21 Lines = 75.6 mW
- Driver power 4 mA * (3.6-.24) Volts, 13.6 mW * 21 Lines = 285.6 mW
- Receiver Power 2.5 mA * 3.6 Volts, 9 mW * 27 Lines = 243 mW
- Total Transceiver current 604.2 mW

LVDS - 6 mA Power

- Transceiver power calculations for a 27 line device at 3.3 Volts + 10%.
- Maximum 21 Active Drivers on a 27 line device.
- 6 Active Receivers
- Driver control current 1 mA * 3.6 Volts, 3.6 mW * 21 Lines = 75.6 mW
- Driver power 6 mA * (3.6-.36) Volts, 19.44 mW * 21 Lines = 408.24 mW
- Receiver Power 2.5 mA * 3.6 Volts, 9 mW * 6 Lines = 54 mW
- Total Transceiver current 537.84 mW