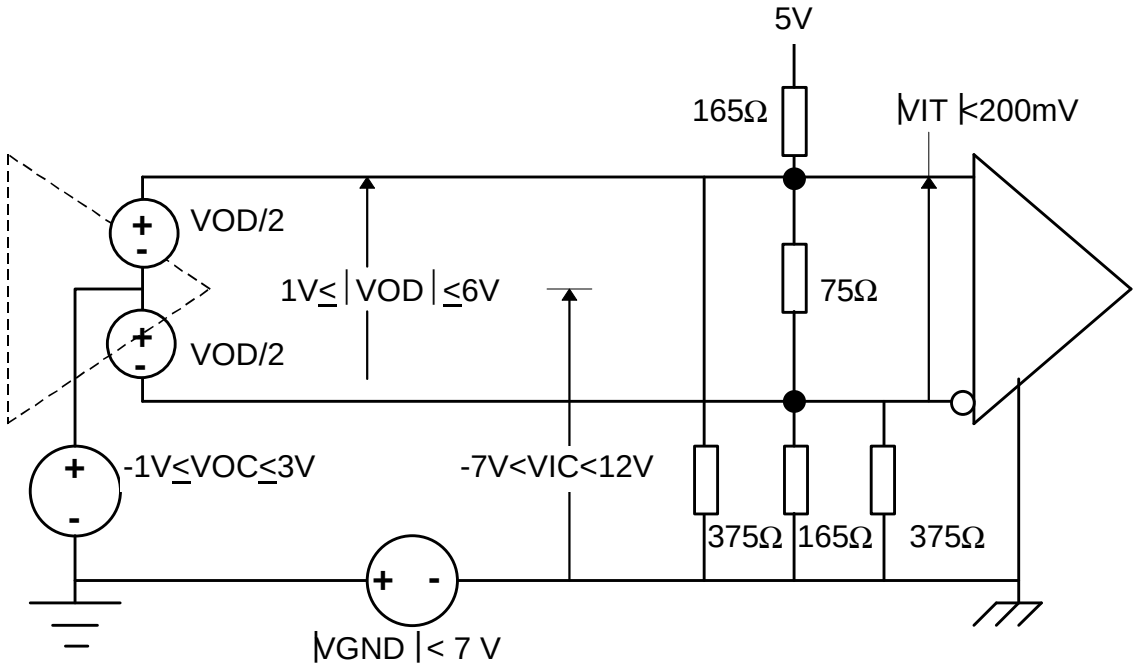
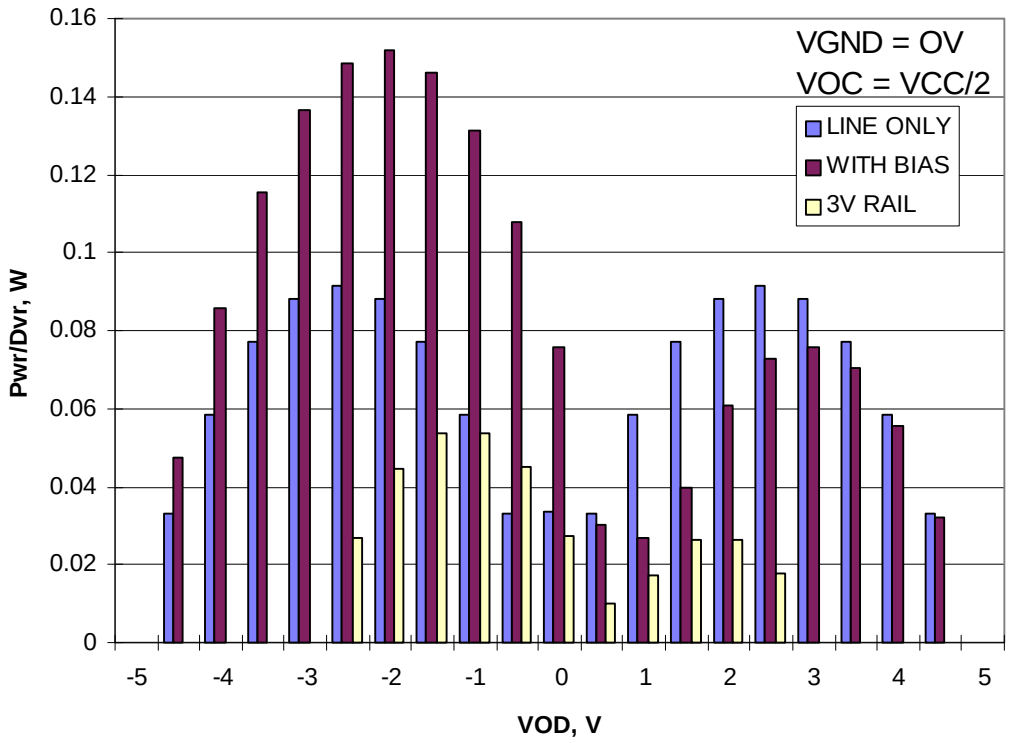
Differential SCSI



Differential Driver Power vs VOD

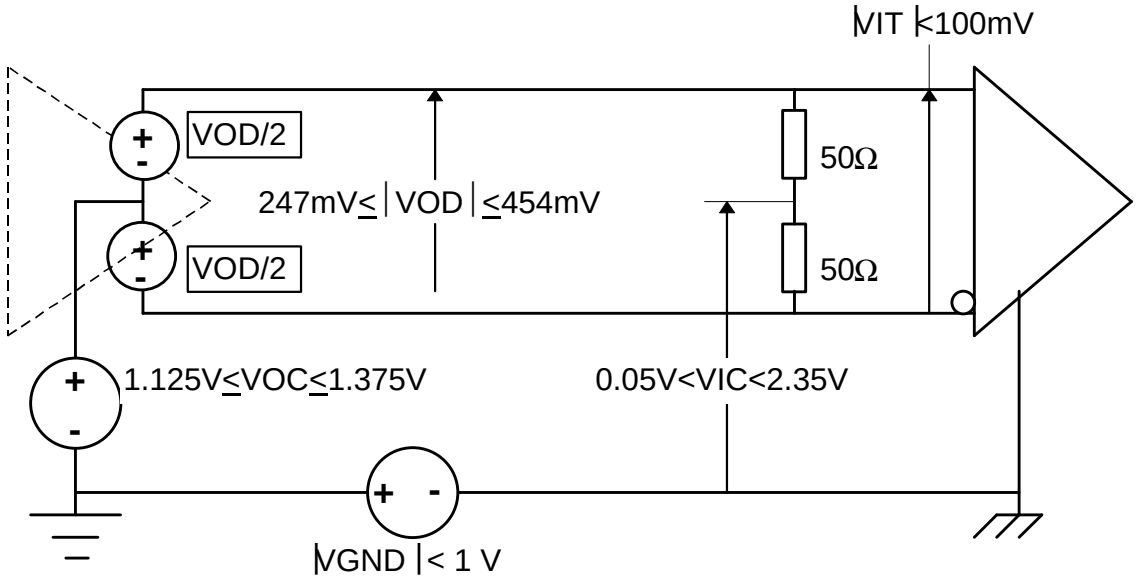


- Bias does not affect average power in driver appreciably
- Integration requires about 50 mW avg per driver
- Lower VCC and/or VOD are the only path(s) to power dissipation reduction and integration

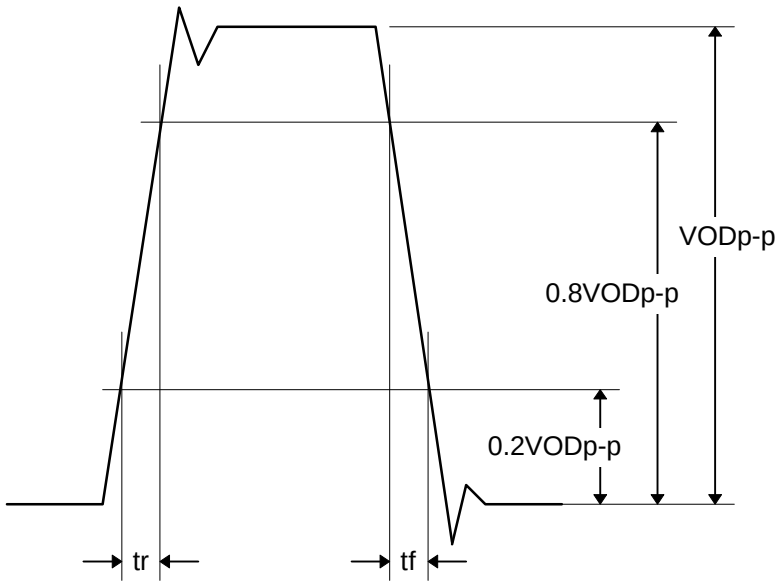
What is LVDS?

- LVDS stands for Low-Voltage Differential Signaling and is fundamentally RS-422 with reduced output signal levels, receiver sensitivities, and ground potential differences. It has been and is being standardized in IEEE and EIA/TIA.

LVDS


|VIT |<100mV
VOD/2
VOD/2
247mV≤|VOD|≤454mV
50Ω
50Ω
1.125V≤VOC≤1.375V
0.05V<VIC<2.35V
|VGND |< 1 V

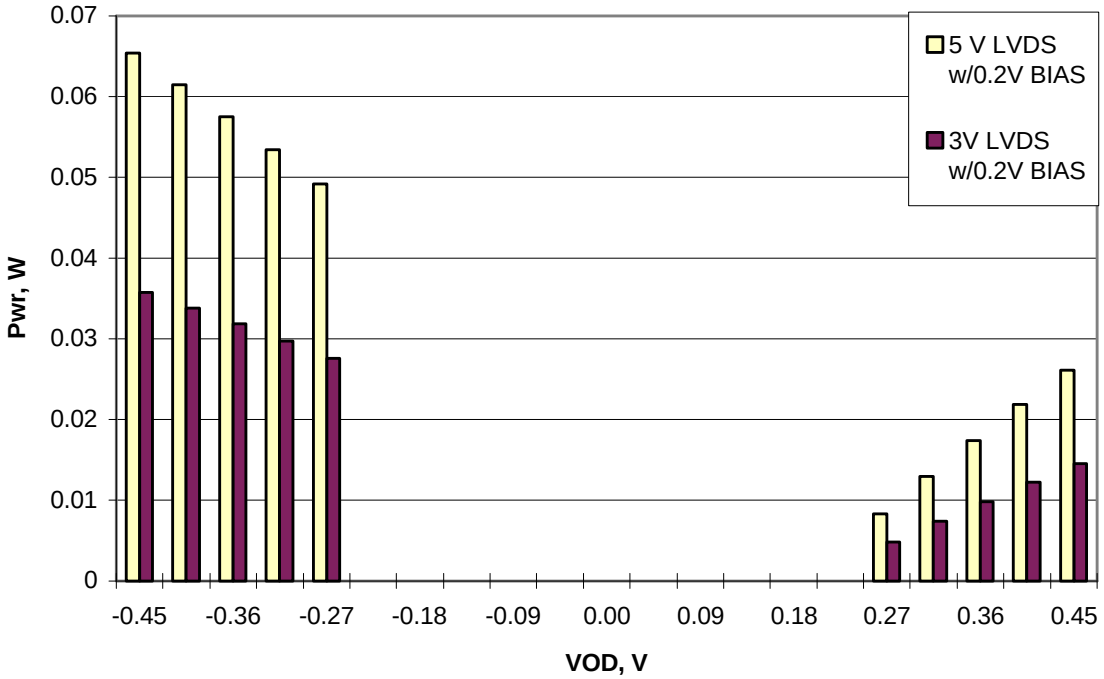
LVDS



260 ps ≤ tr or tf ≤ 1.5 ns

- >1Gbps (theoretical)
- 100 Mbps to 10 m over UTP in Laboratory
- Transmission line from the die on out
- Compatible with 3 V- or 5 V-logic semiconductor processes allowing integration and reduction in skew.

Problems solved



Problems created

- Point-to-point vs bus structure
  - A multi-drop bus structure would require doubling the driver output currents (lowering the load impedance) of LVDS
  - High-impedance driver output requirements
  - Stubs and bus loading and noise margins
  - Idle-line failsafe

Problems created

- Backward Compatibility
  - Not even close to the +/-7V ground potential difference capability of RS-485
  - RS-485 signal can be attenuated to interface to LVDS receiver
  - LVDS signal should be detectable by most RS-485 receivers but not assured
  - Idle-line failsafe is not compatible