What is LVDS?

TI Precision Labs – LVDS interface

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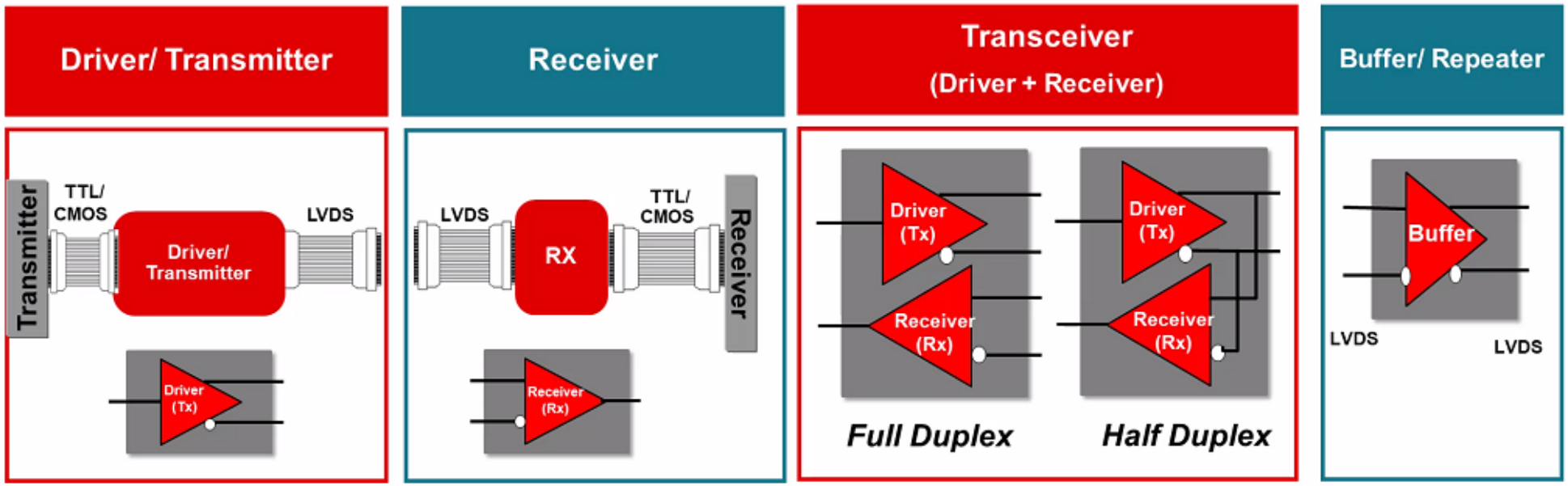
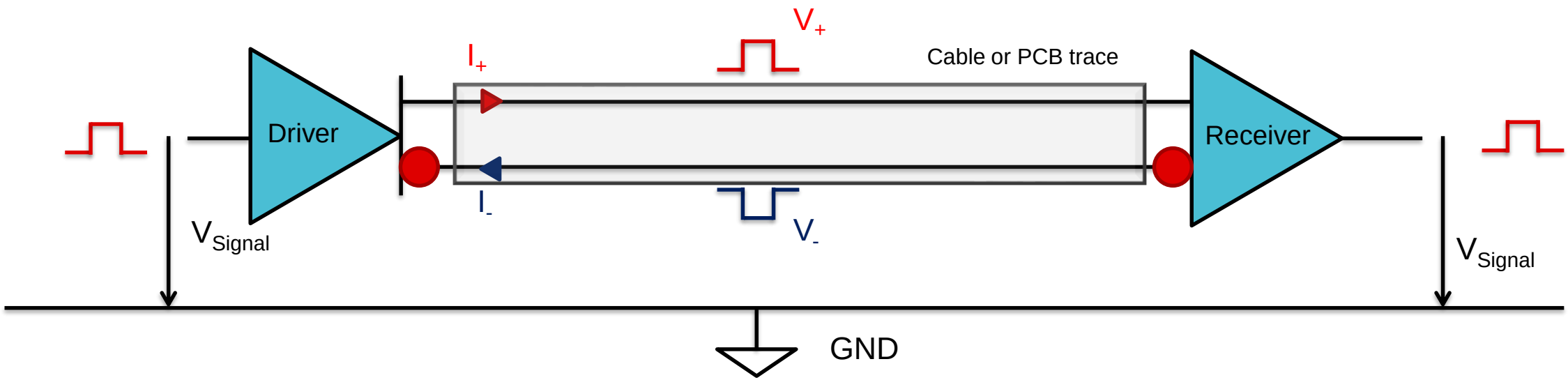
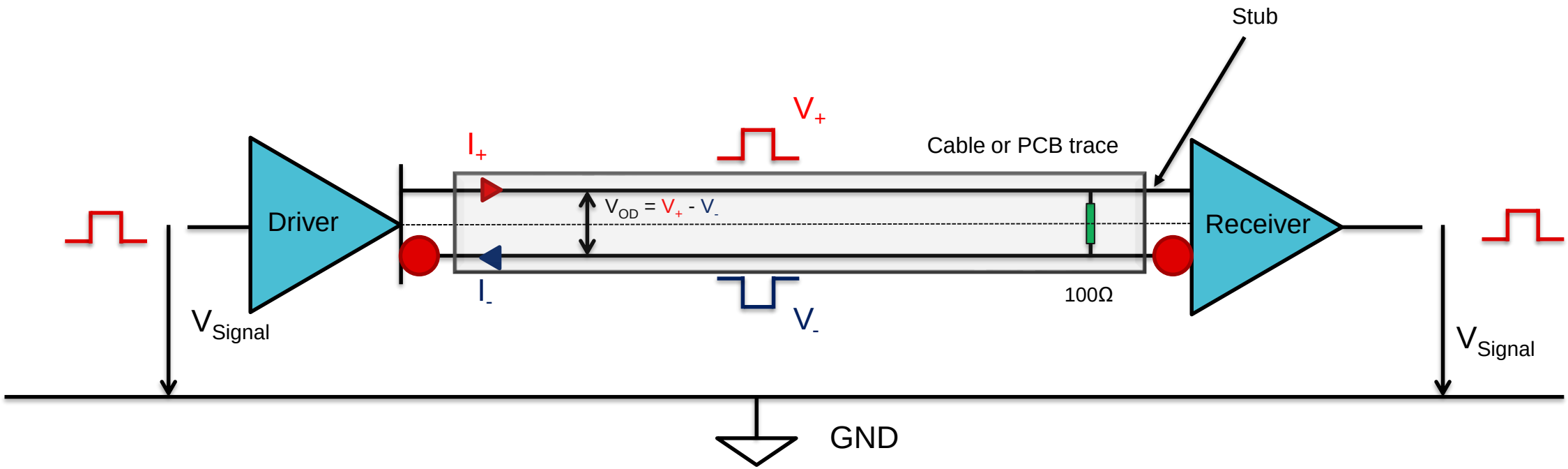
LVDS applications



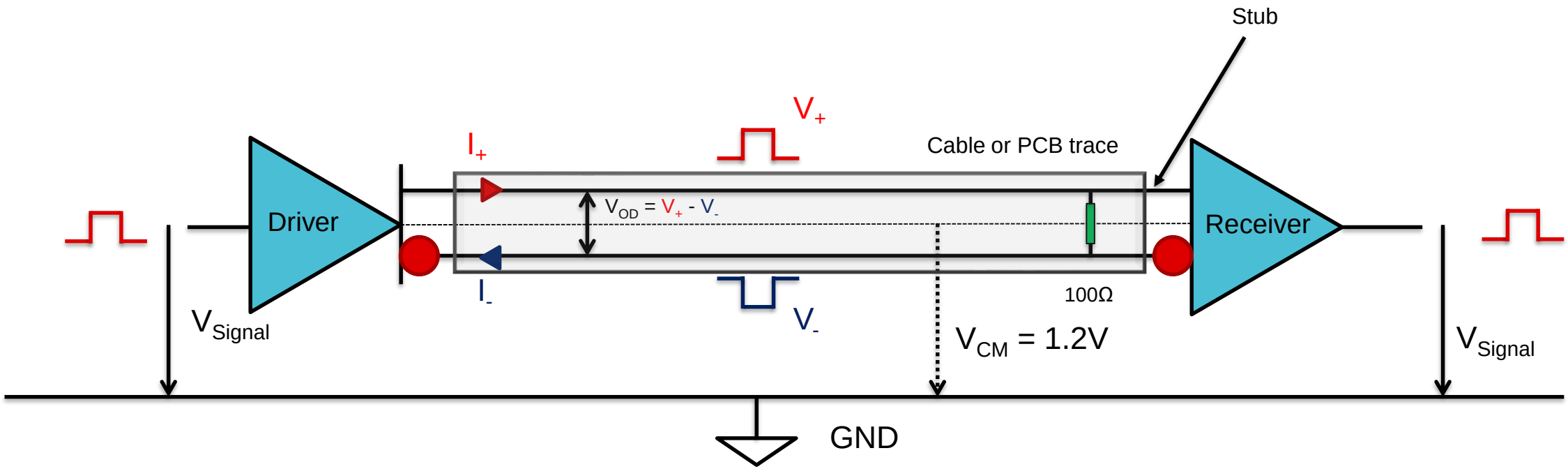
LVDS architecture



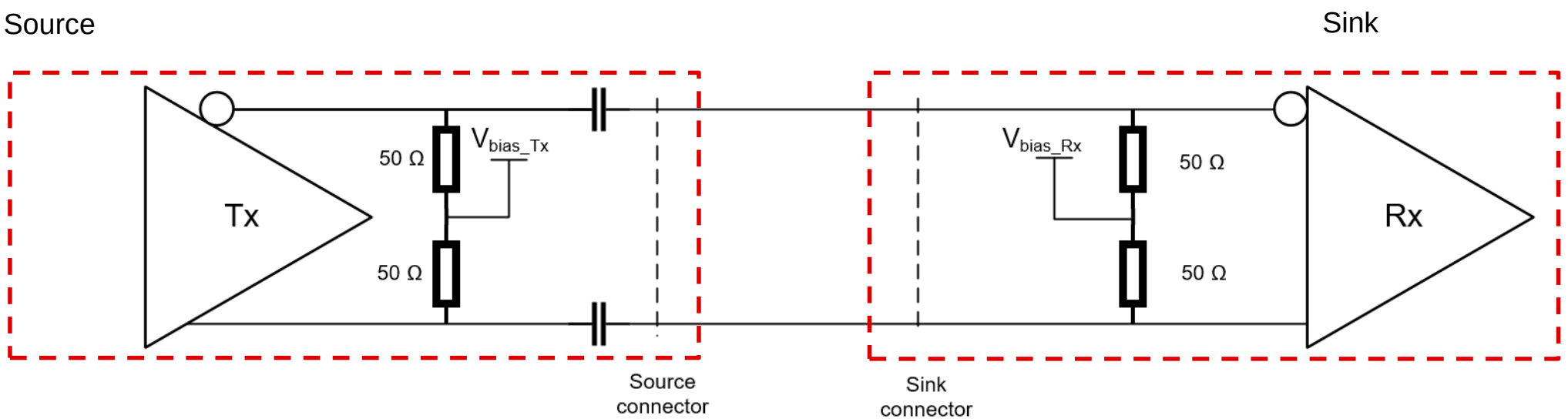
LVDS architecture



LVDS architecture

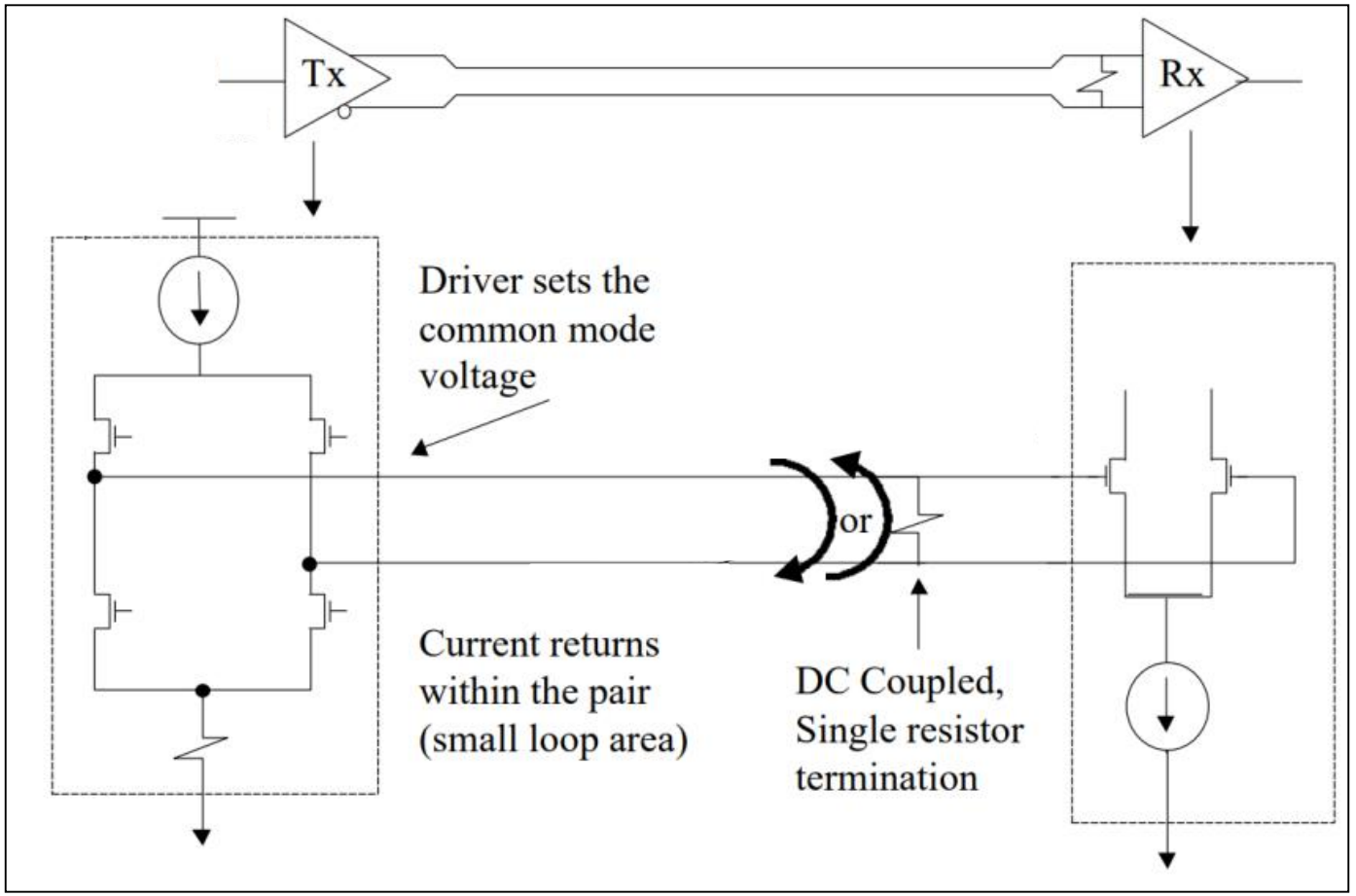


DP main link signaling characteristic

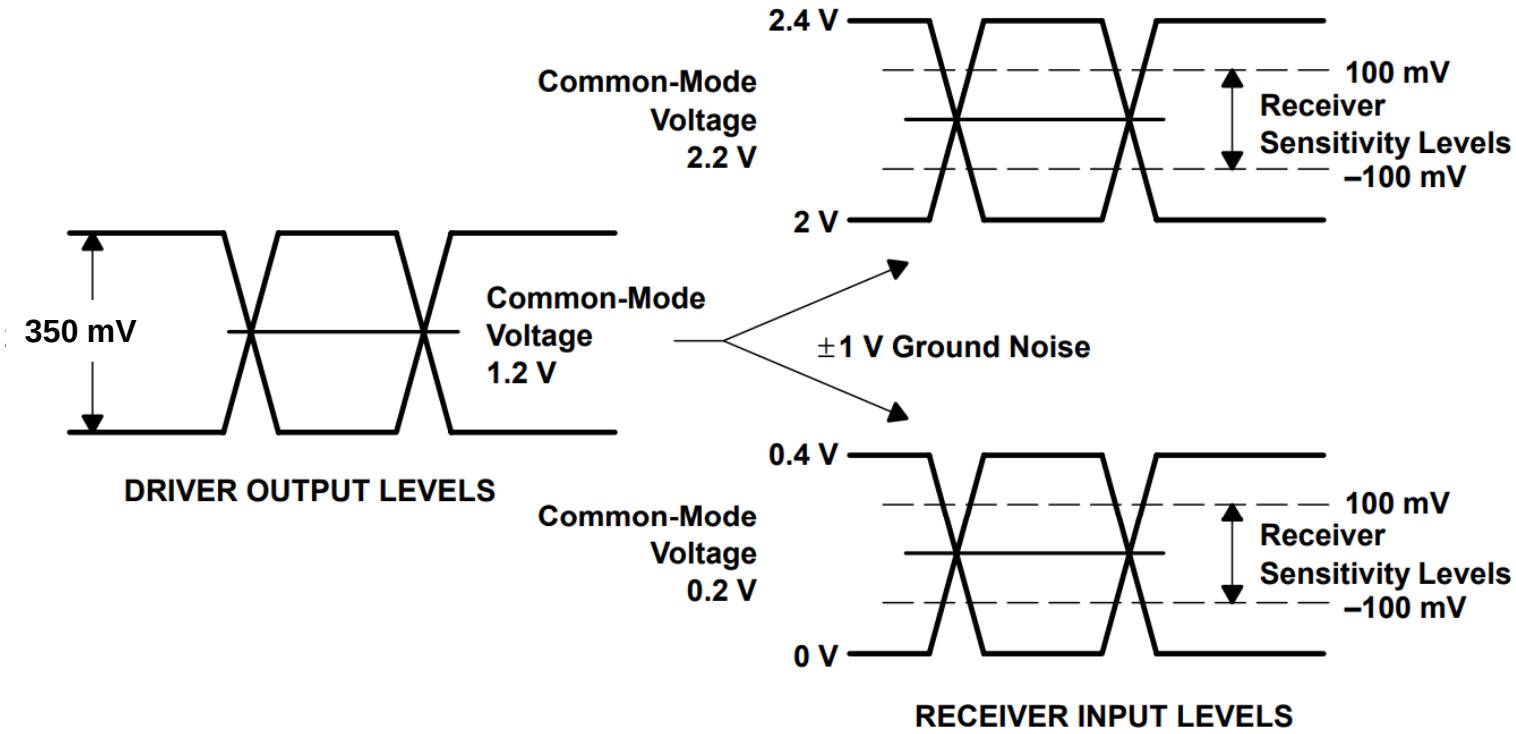


LVDS signal interface

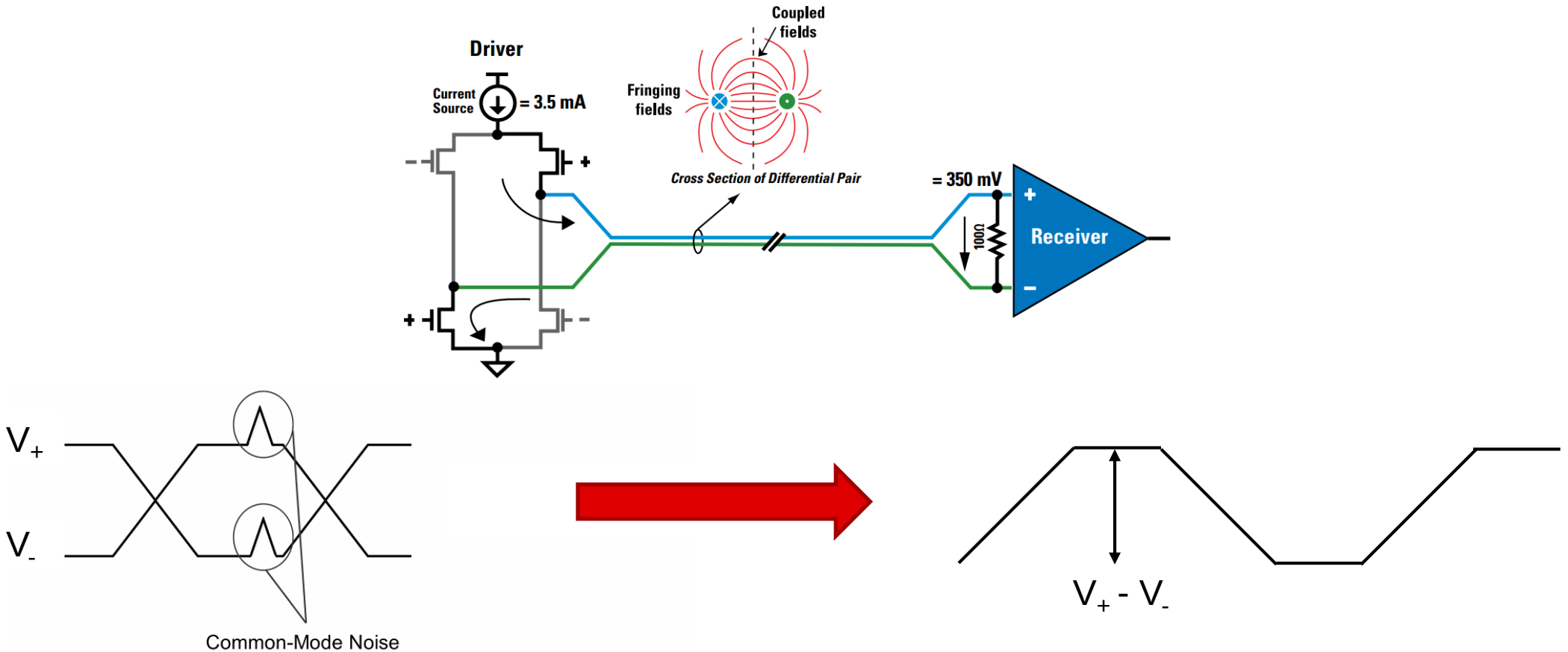
Push-pull current mode driver



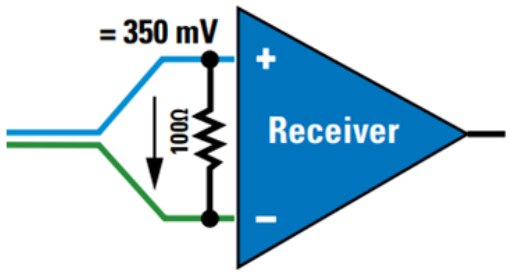
LVDS signal interface



LVDS electromagnetic interference (EMI) immunity



Power consumption and dissipation



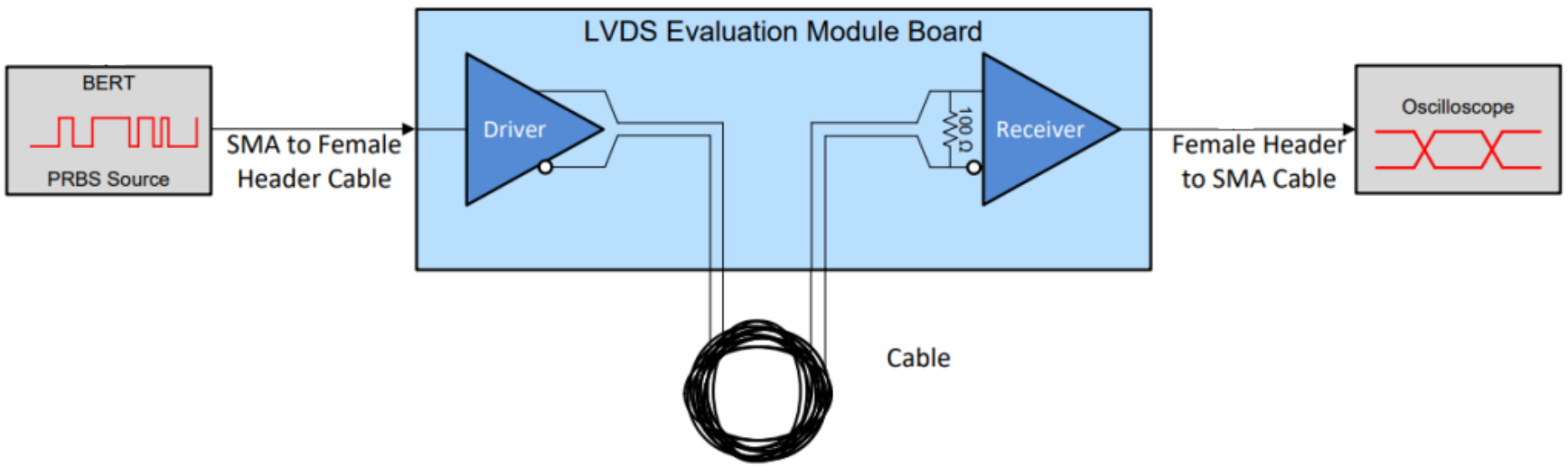
- $P_d = \frac{V_{diff}^2}{R} = \frac{(350mV)^2}{100\Omega} = 1.225mW$
- $P_i = V_{DD} \times I_{DD} = 3.3V \times 7mA = 23.1mW$
- $P_o = V_{DD} \times I_{OD} = 3.3V \times 3.5mA = 11.55mW$
- $P_c = P_o - P_d = 10.325mW$
- $\boldsymbol{P_T = P_c + P_i = 33.425mW}$

Recommended Operating Conditions

	Min	Typ	Max	Units
Supply Voltage (V_{DD})	3.0	3.3	3.6	V
Temperature (T_A)	-40	+25	+85	°C

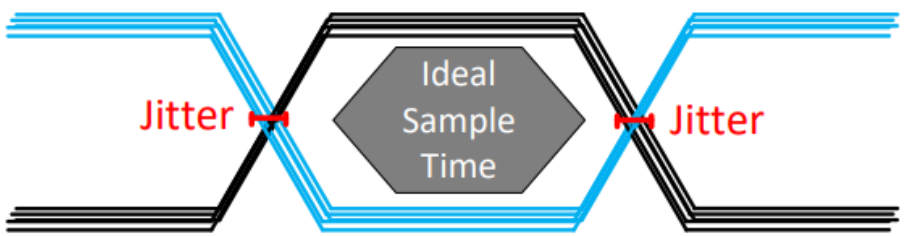
I_{DD}	Power Supply Current	No Load	$V_{IN} = V_{DD}$ or GND	V_{DD}		5	8	mA
		R_L = 100Ω				7	10	mA

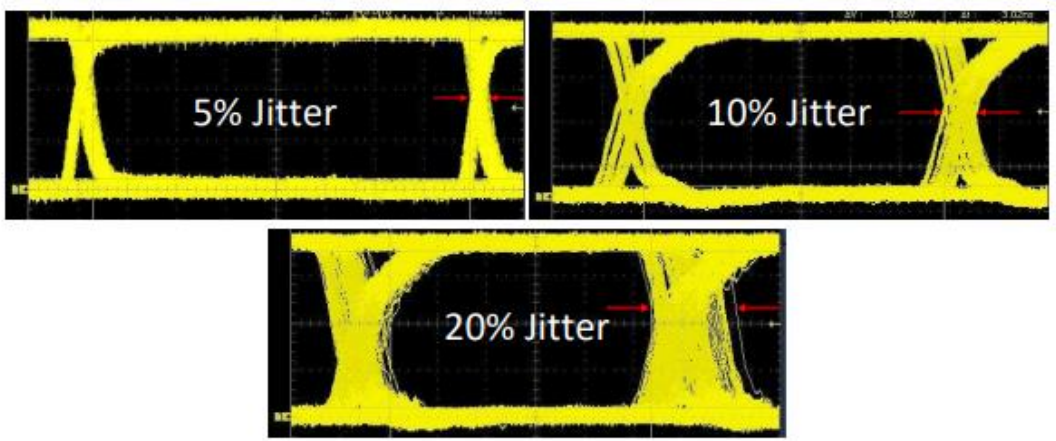
How far and how fast can LVDS signals travel?



Determining max data rate and distance

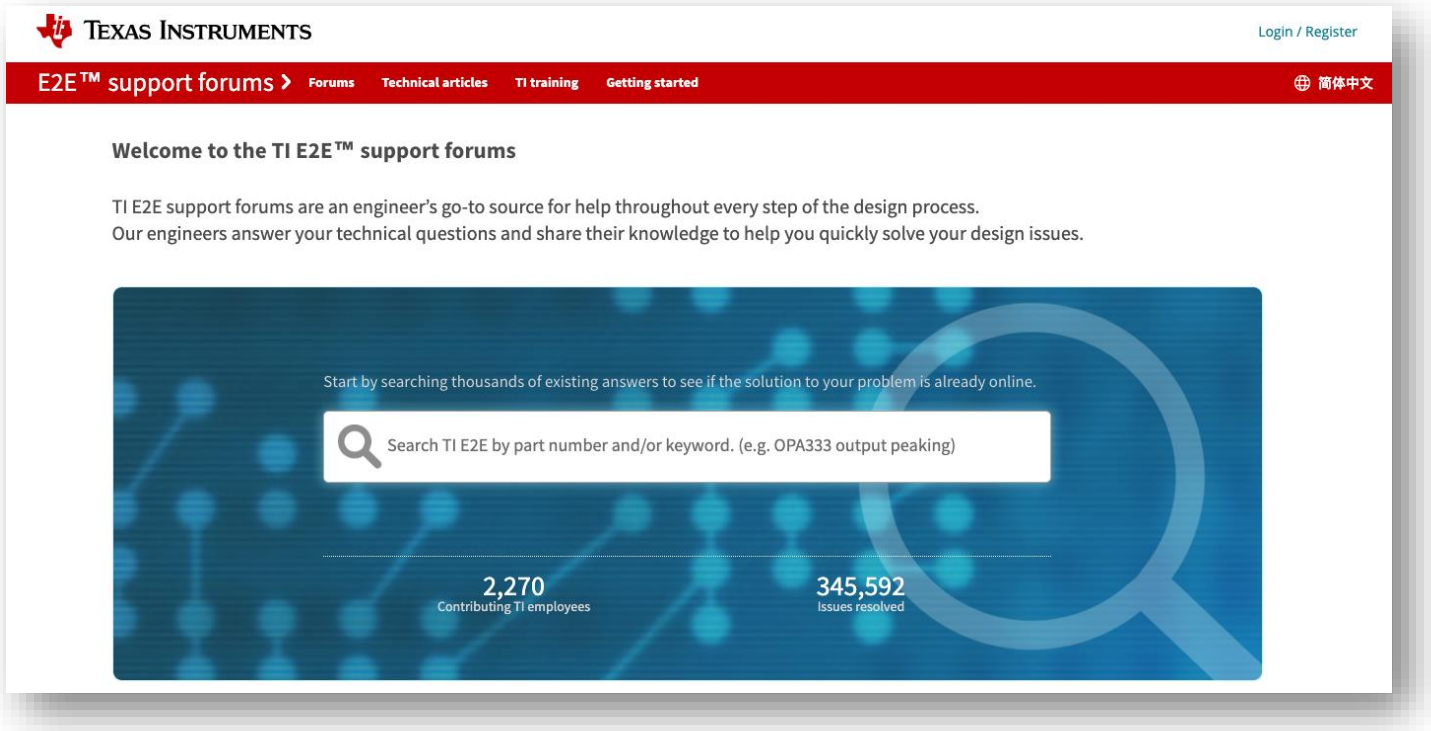
- Take eye pattern measurements at the load to evaluate jitter tolerance





Thank you

- TI Precision Labs - What is DisplayPort (DP)?
- TI Precision Labs - What is an Eye Diagram?



Short quiz

True or false: LVDS is a physical layer specification only

Short quiz

True or false: LVDS is a physical layer specification only

True. LVDS is purely electrical with no protocol for transferring data, which makes it useful in many applications

Short quiz

True or false: The termination resistor must always be 100Ω

Short quiz

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False. The termination resistor must match the characteristic impedance of the transmission line, which is typically 100-ohms but can be less due to losses.

Short quiz

True or false: LVDS receivers must be able to receive ±350mV signals from an LVDS driver

Short quiz

True or false: LVDS receivers must be able to receive ±350mV signals from an LVDS driver

False. LVDS receivers must be able to receive ±100mV signals from an LVDS driver. An LVDS driver must be able to output ±350mV signals.

Short quiz

True or false: LVDS has good noise immunity

Short quiz

True or false: LVDS has good noise immunity

True. The differential nature of LVDS makes it ideal for low EMI applications