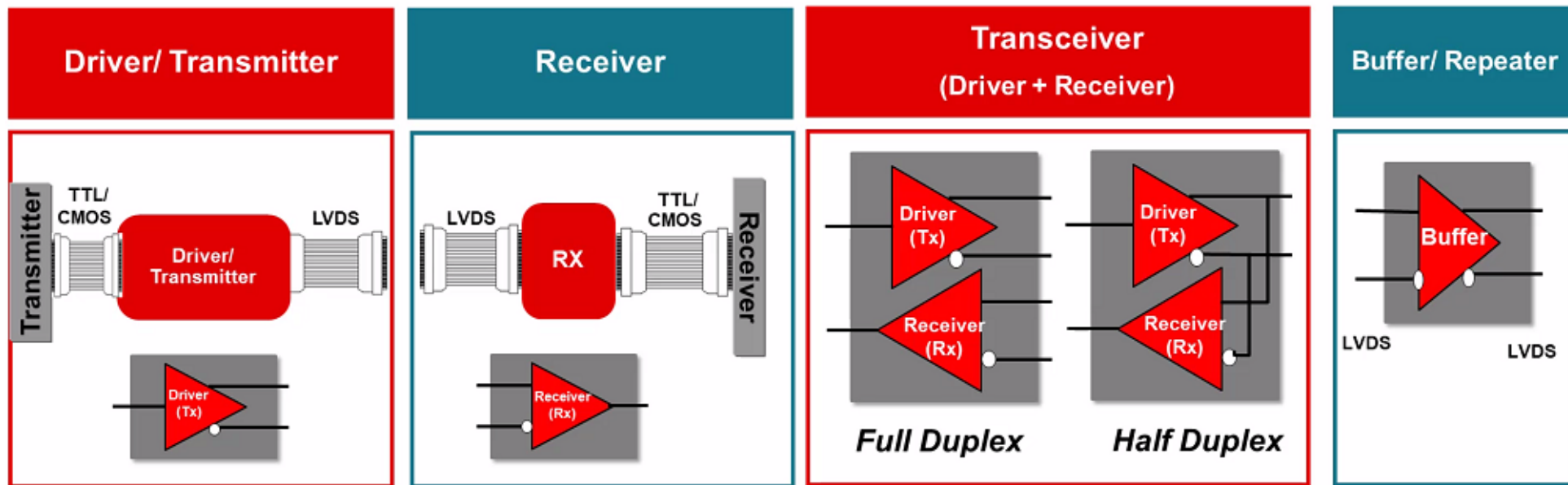


What is LVDS?

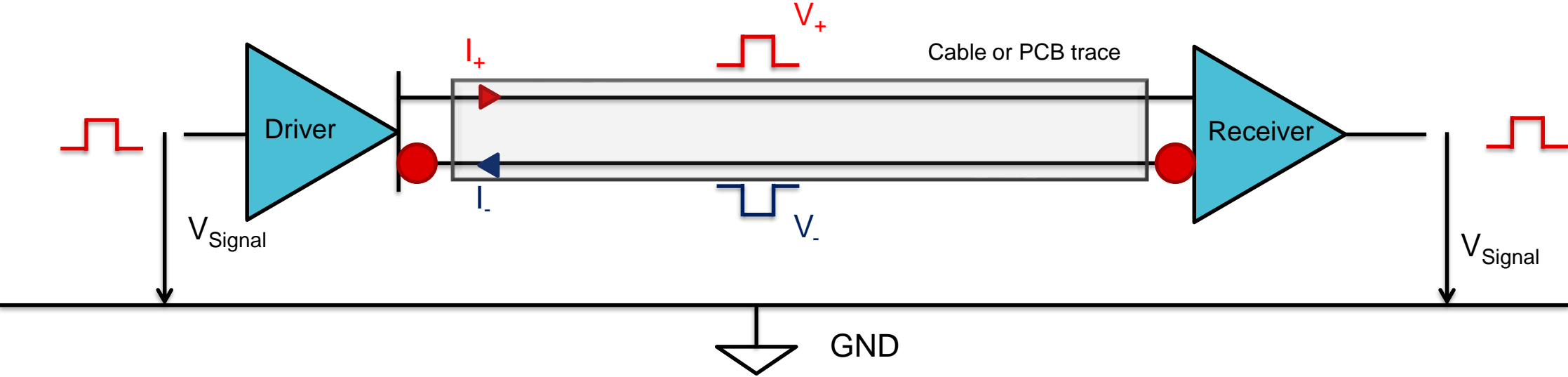
TI Precision Labs – LVDS interface

Prepared by Ikechukwu Anyiam
Presented by Nicholas Malone

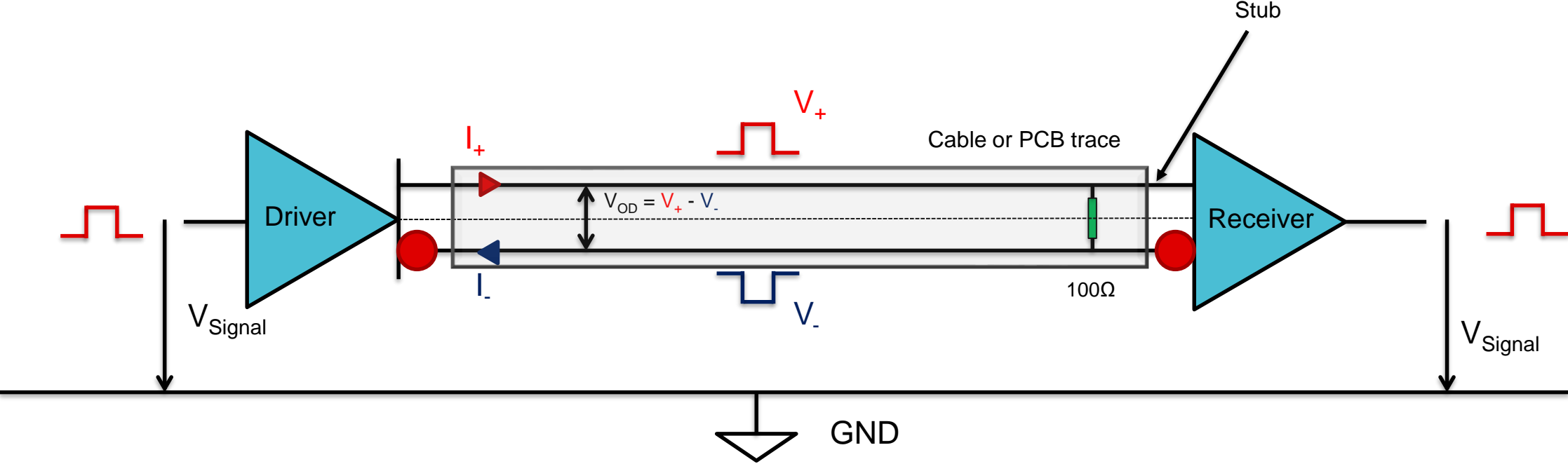
LVDS applications



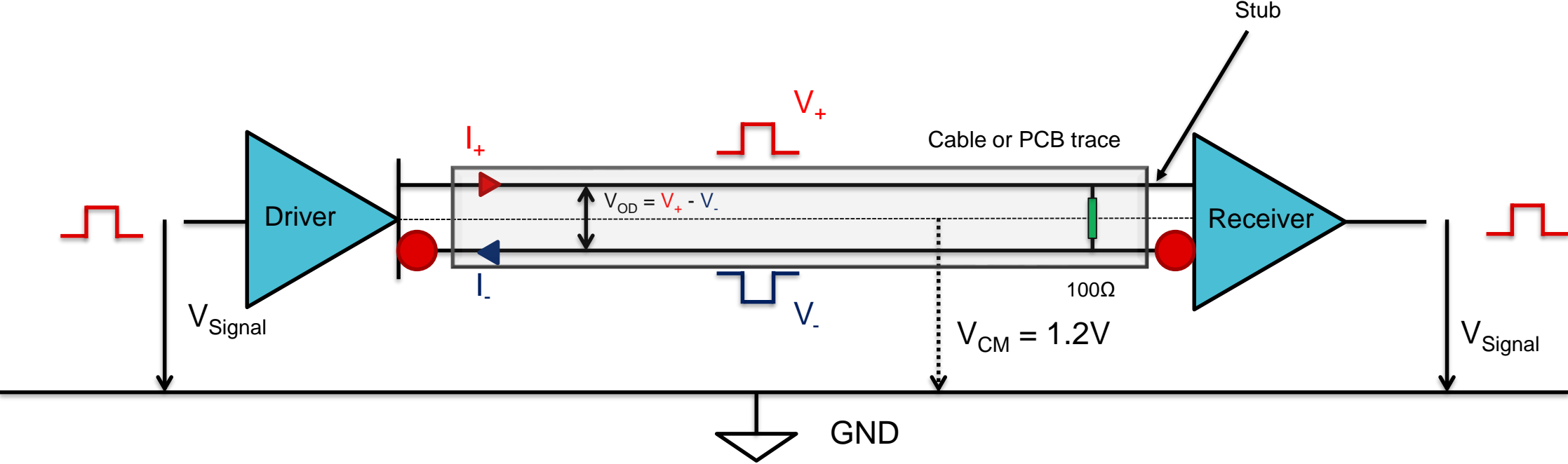
LVDS architecture



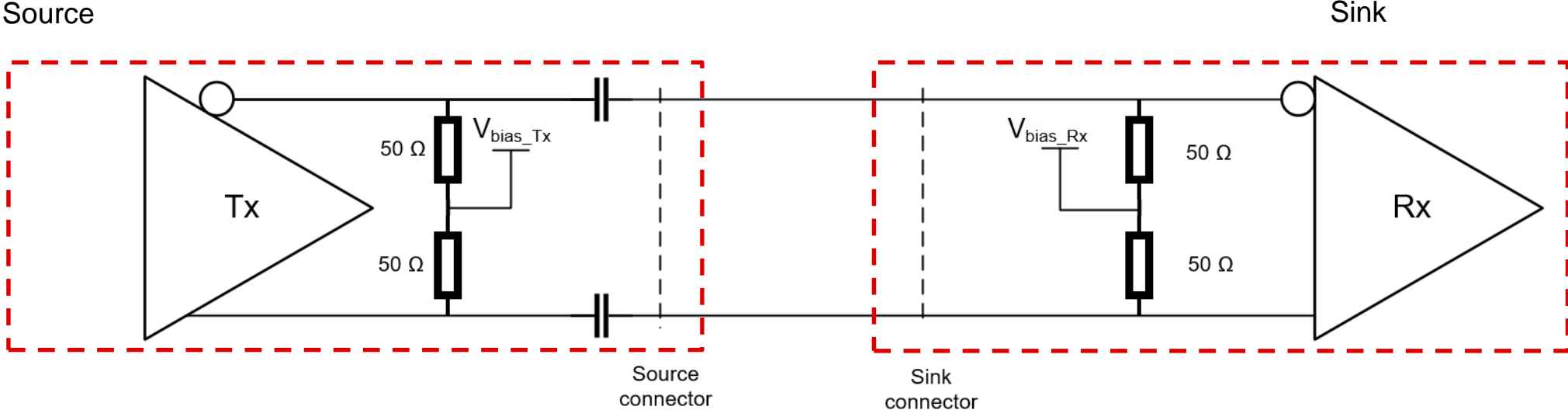
LVDS architecture



LVDS architecture

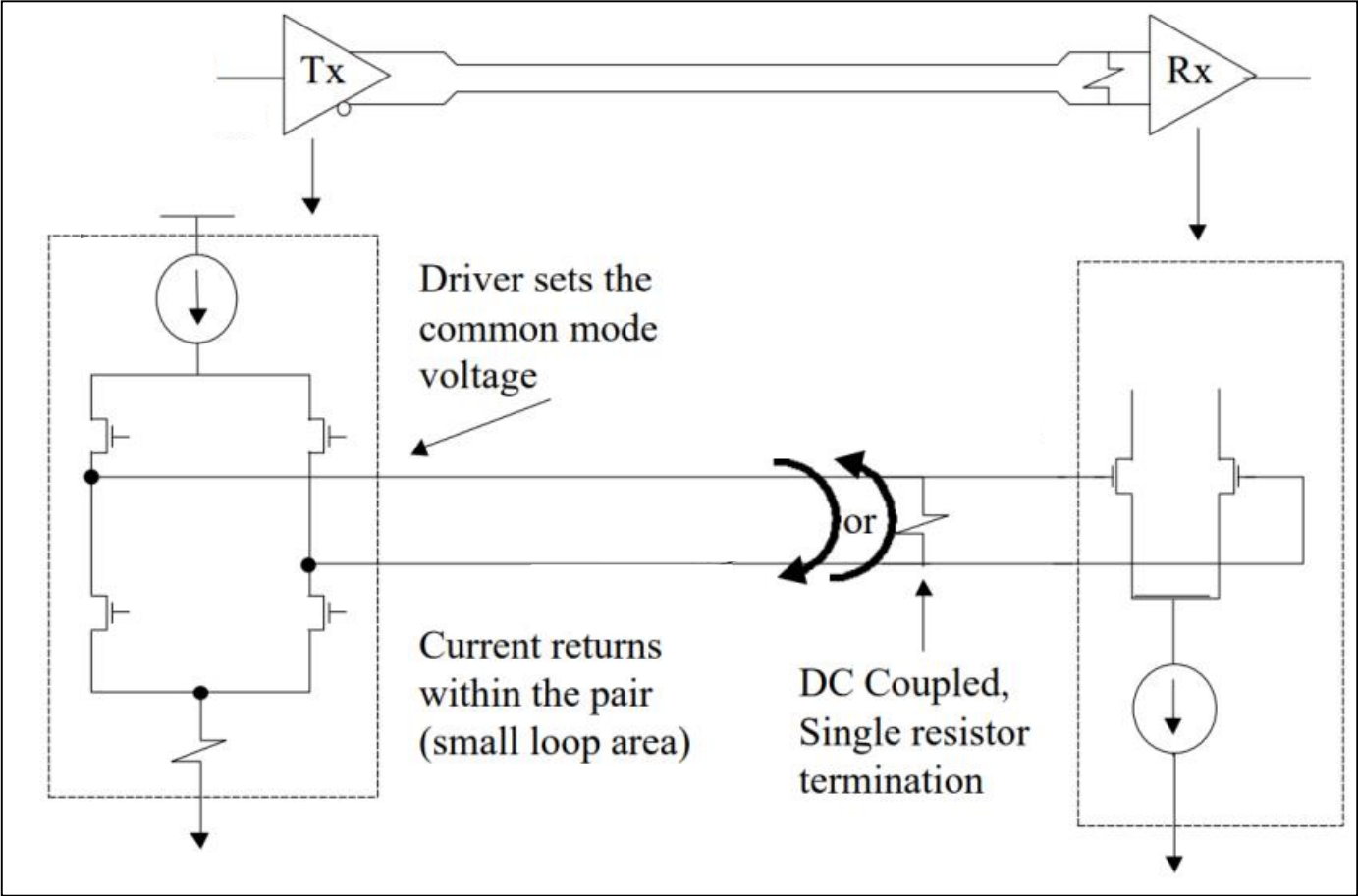


DP main link signaling characteristic

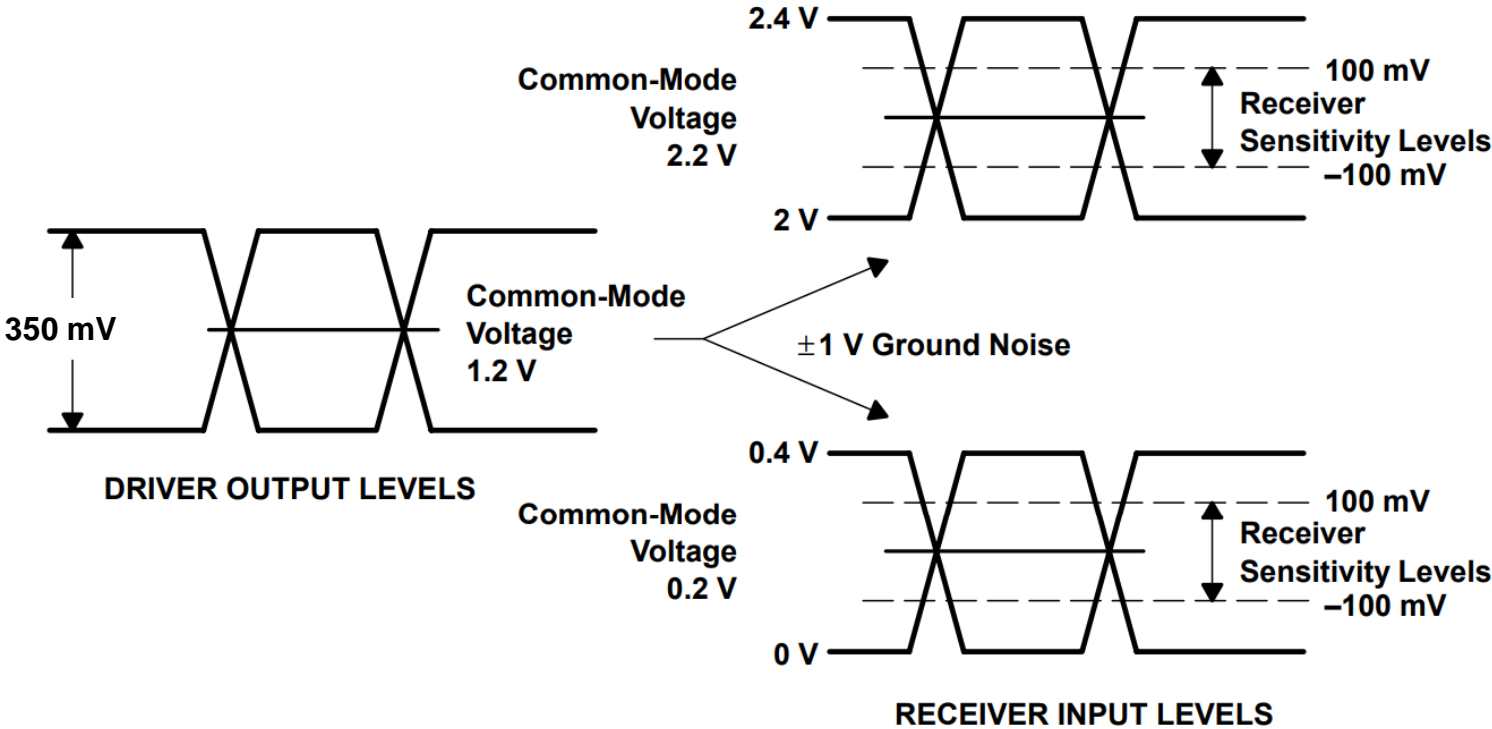


LVDS signal interface

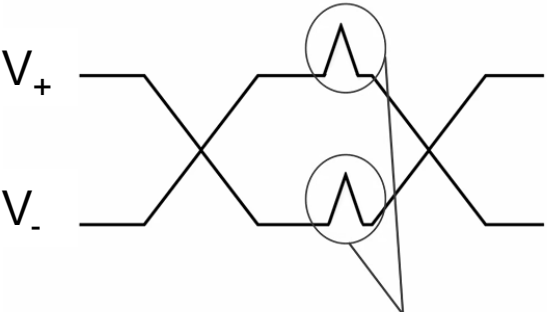
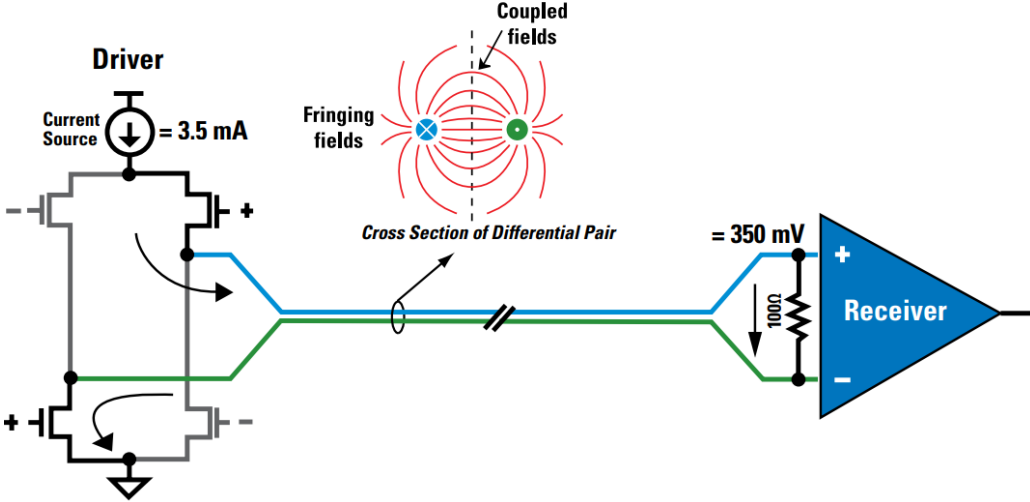
Push-pull current mode driver



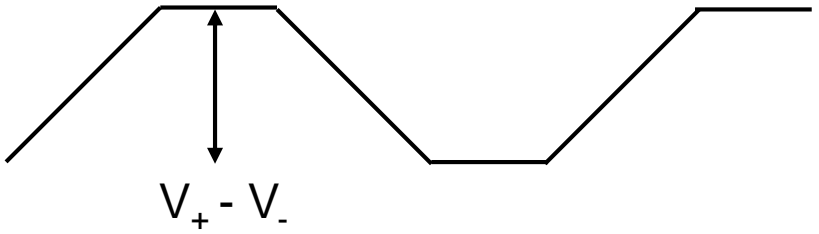
LVDS signal interface



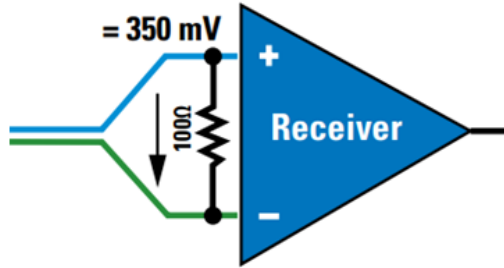
LVDS electromagnetic interference (EMI) immunity



Common-Mode Noise



Power consumption and dissipation



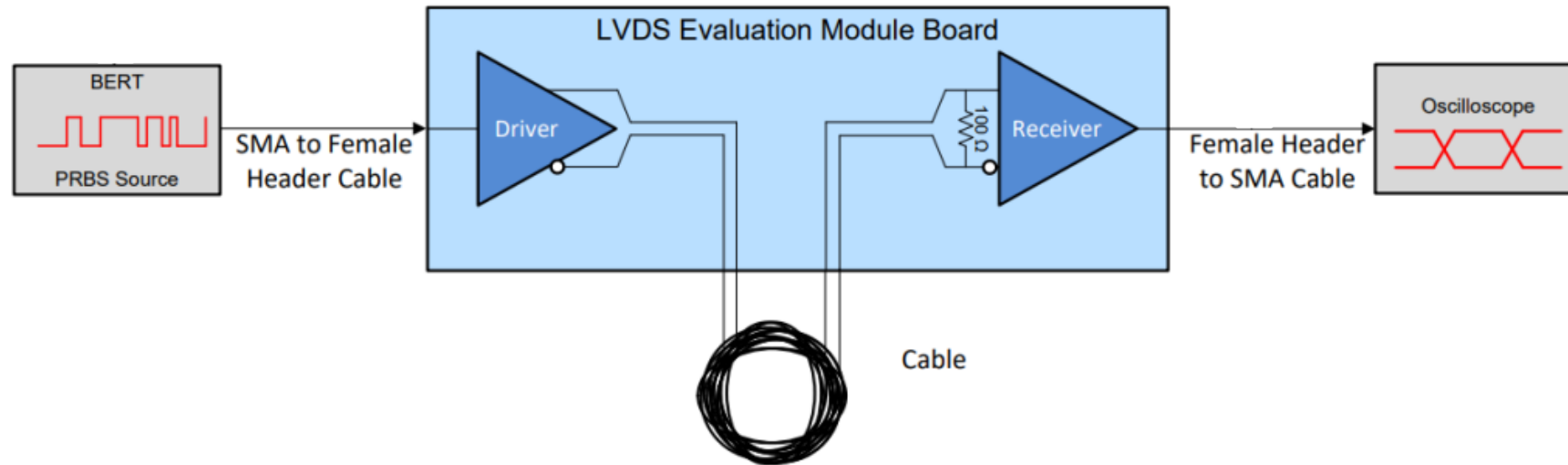
- $P_d = \frac{V_{diff}^2}{R} = \frac{(350mV)^2}{100\Omega} = 1.225mW$
- $P_i = V_{DD} \times I_{DD} = 3.3V \times 7mA = 23.1mW$
- $P_o = V_{DD} \times I_{OD} = 3.3V \times 3.5mA = 11.55mW$
- $P_c = P_o - P_d = 10.325mW$
- **$P_T = P_c + P_i = 33.425mW$**

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

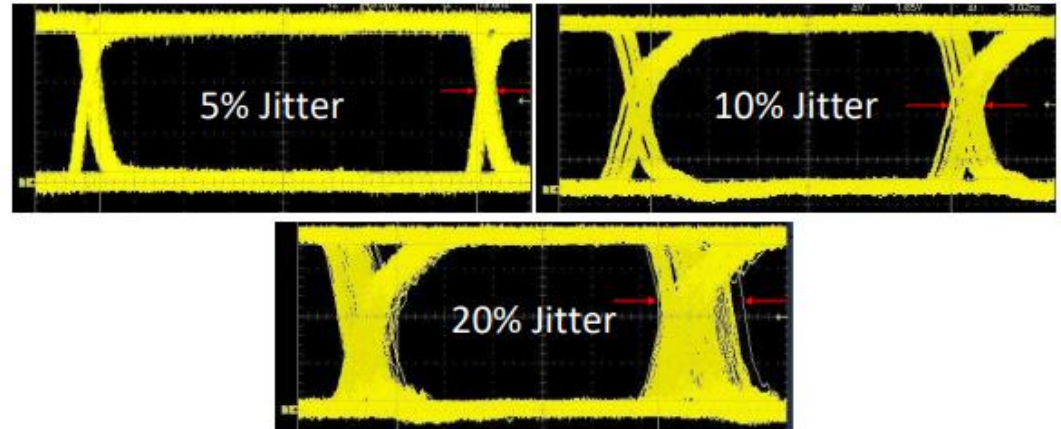
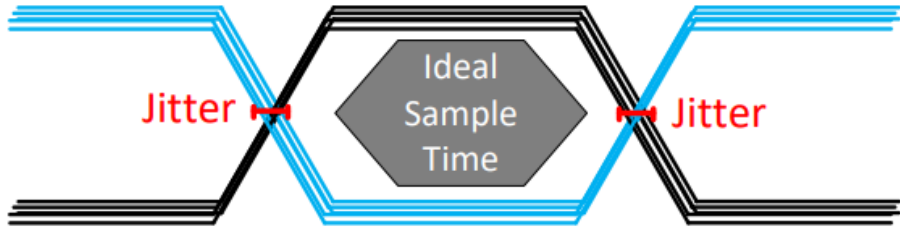
I_{DD}	Power Supply Current	No Load	$V_{IN} = V_{DD}$ or GND	V_{DD}		5	8	mA
		$R_L = 100\Omega$						

How far and how fast can LVDS signals travel?



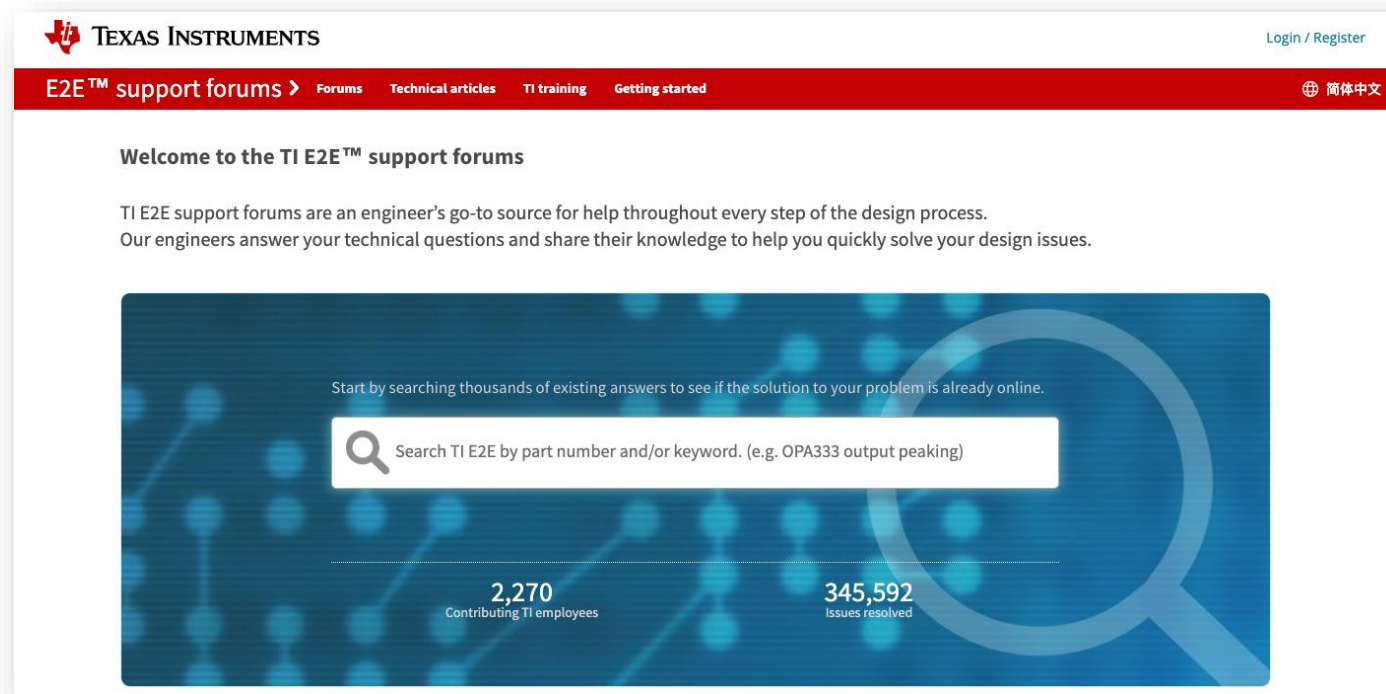
Determining max data rate and distance

- 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?](#)



The screenshot shows the TI E2E support forums homepage. At the top left is the Texas Instruments logo and name. To the right are links for 'Login / Register'. Below this is a red navigation bar with 'E2E™ support forums >' and sub-links for 'Forums', 'Technical articles', 'TI training', and 'Getting started'. A globe icon and '简体中文' are on the far right. The main content area has a heading 'Welcome to the TI E2E™ support forums' followed by a paragraph: 'TI E2E support forums are an engineer's go-to source for help throughout every step of the design process. Our engineers answer your technical questions and share their knowledge to help you quickly solve your design issues.' Below this is a large blue banner with a search bar. The search bar contains the text 'Search TI E2E by part number and/or keyword. (e.g. OPA333 output peaking)'. Below the search bar, two statistics are displayed: '2,270 Contributing TI employees' and '345,592 Issues resolved'. The background of the banner features a network diagram and a large magnifying glass icon.



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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

FALSE

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

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 $\pm 350\text{mV}$ signals from an LVDS driver

Short quiz

FALSE

True or false: LVDS receivers must be able to receive $\pm 350\text{mV}$ signals from an LVDS driver

False. LVDS receivers must be able to receive $\pm 100\text{mV}$ signals from an LVDS driver. An LVDS driver must be able to output $\pm 350\text{mV}$ 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