SANTA CLARA UNIVERSITY	ELEN 115 Spring 2023	Shoba Krishnan

Laboratory #4: Diode Basics

PRE-LAB

(1) **i-v** curve of a pn junction diode
   (a) Write the equation that relates the current and voltage for a silicon diode.
   (b) Draw a rough sketch of the i-v curve of the diode in its forward region.

(2) Switching diodes
   For the diode **1N4148**
   (a) Read its data sheet. (online or the pdf posted on Camino)
   (b) Find the maximum ratings for its
      i. Forward turn-on voltage
      ii. Forward current
      iii. Reverse DC blocking voltage
      iv. Power dissipation

(3) LEDs: For the LED NSPW500BS
   (a) Read its data sheet.
   (b) From the graph determine what is the forward on-voltage for the LED.

(4) Diode clamping circuits
   Figure 2 shows how diodes are used to clamp voltage overshoots at the input of a chip.
   (a) For ideal diodes, what is the range the voltage at point X will be clamped to.
   (b) Clearly show how you arrive at your answer
   (c) When does each diode function as a clamp?

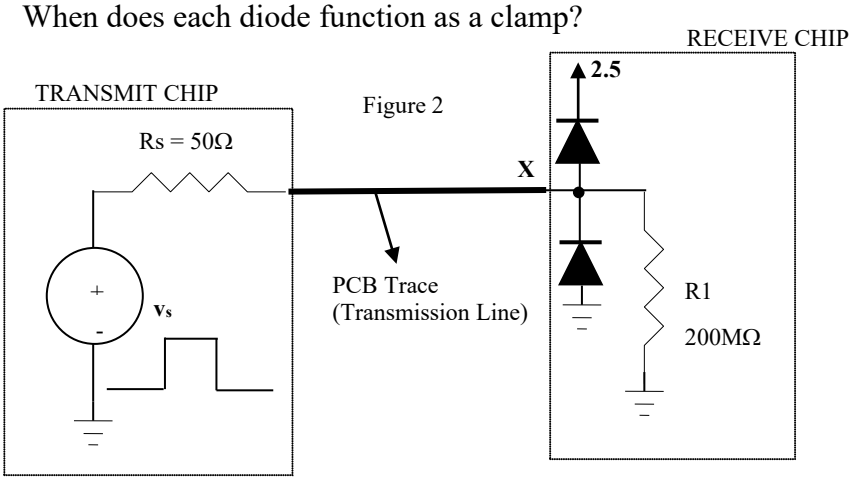

Figure 2