

ECE 320: Handout #24

CMOS Logic

Design a CMOS gate to implement the following logic

$$Y = X < 13$$

Y		CD			
		00	01	11	10
AB	00	1	1	1	1
	01	1	1	1	1
	11	1	0	0	0
	10	1	1	1	1

Solution

It's actually easier to circle the zeros

	CD			
	00	01	11	10
00	1	1	1	1
01	1	1	1	1
11	1	0	0	0
10	1	1	1	1

$$\bar{Y} = ABC + ABD$$

That sets the logic for the low side. For the high side, use DeMorgan's theorem

$$Y = (\bar{A} + \bar{B} + \bar{C})(\bar{A} + \bar{B} + \bar{D})$$

Using CMOS logic



