- Power consumption at 2.5V is 100mW, what would be the estimated power consumption at 5V?

power $\propto V^2$

$$\frac{P_2}{P_1} = \frac{V_2^2}{V_1^2} = \left(\frac{V_2}{V_1}\right)^2 = \left(\frac{5}{2.5}\right)^2 = 2^2 = 4 \quad \left(\times 100mW = \underline{\underline{400mW}}\right)$$

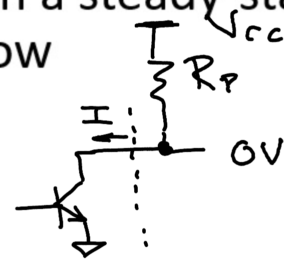
- Power consumption at 32 kHz is 0.1mW, what would be estimated power consumption at 32 MHz?

power $\propto f$

$$\frac{P_2}{P_1} = \frac{f_2}{f_1} = \frac{32 \times 10^6}{32 \times 10^3} = 1000$$

$$P_2 = P_1 \cdot 1000 = 0.1mW \cdot 1000 = \underline{\underline{100mW}}$$

- The pull-up resistor results in a steady-state current when the OC bus is pulled low
- What is this current?




$$I = \frac{V}{R} = \frac{V_{cc}}{R_p}$$

e.g. $V_{cc} = 5V$

$R_p = 1k\Omega$

$$I = \frac{5}{1000} = 5mA$$

- If there is a capacitance between the bus and ground, it will take time to charge. What is the time constant?

$$\tau = RC = R_p \cdot C$$

e.g. $R_p = 1k\Omega$

$C = 20pF$

$$RC = 1 \times 10^3 \times 20 \times 10^{-12} s = 20 \times 10^{-9} = \underline{\underline{20ns}}$$