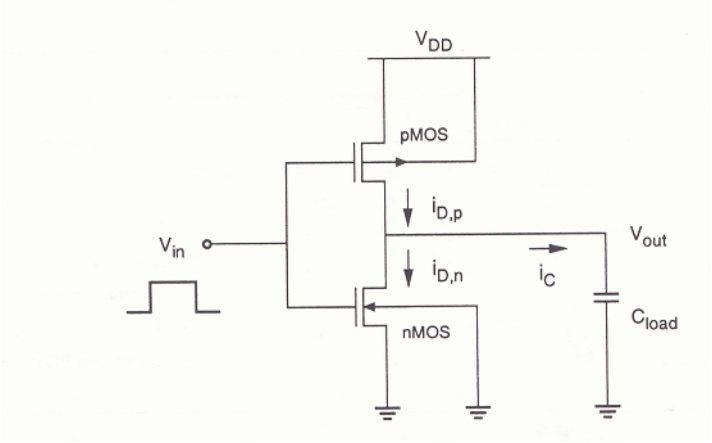
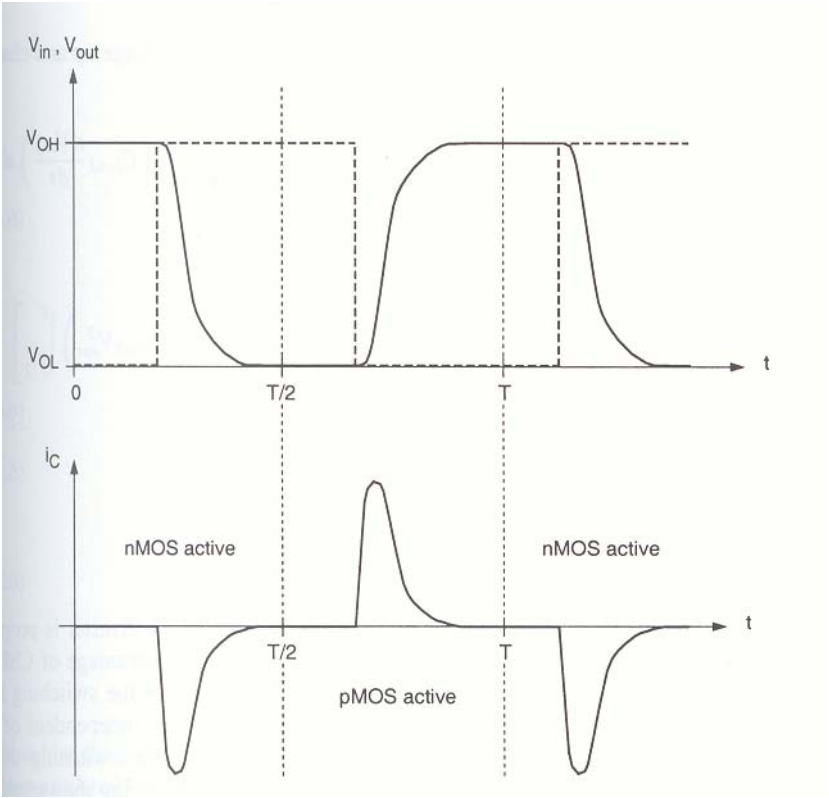
Dynamic Power





$$P_{avg} = \frac{1}{T}\int_0^T v(t) \cdot i(t)\, dt$$

$$P_{avg} = \frac{1}{T}\left[\int_0^{T/2} V_{out}\left(-C_{load}\frac{dV_{out}}{dt}\right)dt + \int_{T/2}^{T}(V_{DD} - V_{out})\left(C_{load}\frac{dV_{out}}{dt}\right)dt\right]$$

$$P_{avg} = \frac{1}{T}\left[\left(-C_{load}\frac{V_{out}^2}{2}\right)\Big|_0^{T/2} + \left(V_{DD}\cdot V_{out}\cdot C_{load} - \frac{1}{2}C_{load}V_{out}^2\right)\Big|_{T/2}^{T}\right]$$

$$P_{avg} = \frac{1}{T}C_{load}V_{DD}^2$$

$$P_{avg} = C_{load}\cdot V_{DD}^2\cdot f$$