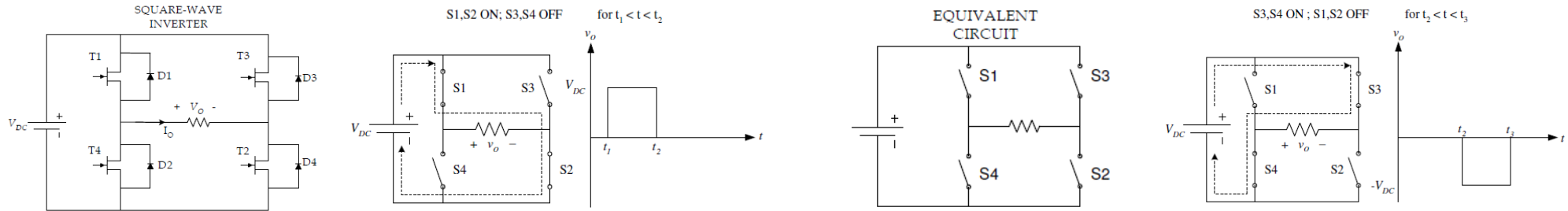
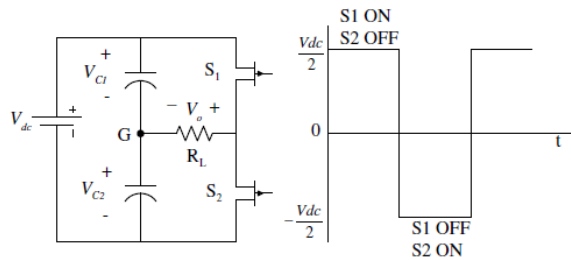


DC-AC converter (inverter) is an electrical device that converts DC input voltage into desired AC output voltage.

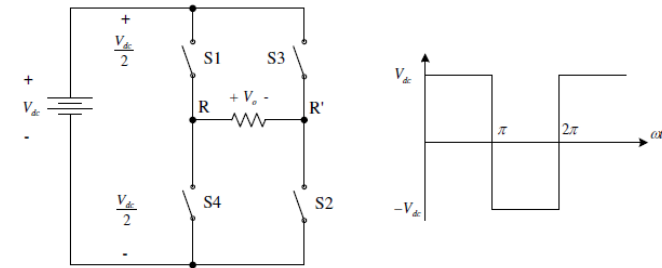
Square-wave Inverter



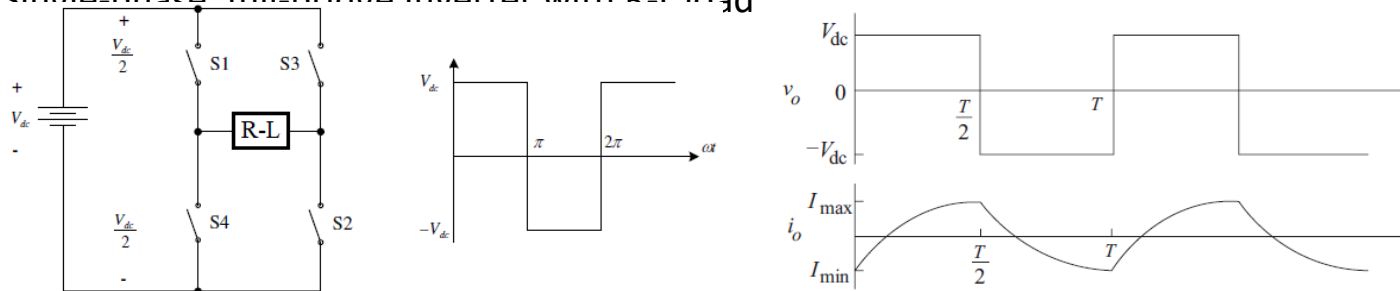
Single-phase, half-bridge Inverter



Single-phase, full-bridge



Single-phase full-bridge Inverter with R-L load



$$i_o(t) = \begin{cases} \frac{V_{dc}}{R} + \left(I_{min} - \frac{V_{dc}}{R}\right)e^{-t/\tau} & \text{for } 0 < t < \frac{T}{2} \\ -\frac{V_{dc}}{R} + \left(I_{max} + \frac{V_{dc}}{R}\right)e^{-(t-T/2)/\tau} & \text{for } \frac{T}{2} < t < T \end{cases}$$

$$I_{max} = -I_{min} = \frac{V_{dc}}{R} \left[\frac{1 - e^{-T/2\tau}}{1 + e^{-T/2\tau}} \right]$$

$$I_{rms} = \sqrt{\frac{1}{T} \int_0^T i^2(t) dt} = \sqrt{\frac{2}{T} \int_0^{T/2} \left[\frac{V_{dc}}{R} + \left(I_{min} - \frac{V_{dc}}{R}\right)e^{-t/\tau} \right]^2 dt}$$