

Switching Behavior

During primary switching transition

$$i_p(\phi) < \phi$$

$$v_p: -V_g \rightarrow V_g \text{ (increasing)}$$

→ possible to obtain ZVS (on all 8 devices)

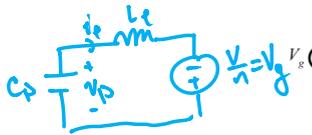
Output Current Vs. Inductance

- To maintain low RMS currents and good switch utilization, small inductance is preferred



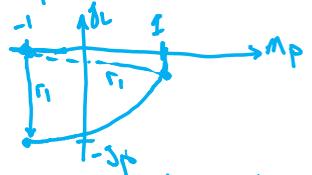
Dual Active Bridge Converter

SS of primary



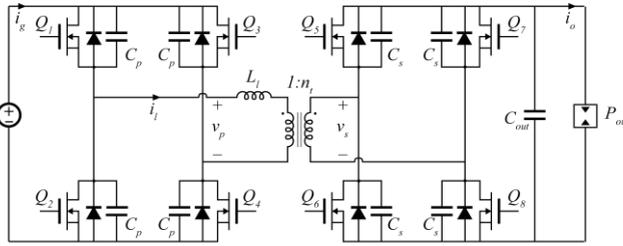
$$v_p(0) = -V_g \int \frac{dv_p(t)}{dt} dt$$

$$i_p(0) = -I_p$$



zvs condition: $r_1 \geq 2 \rightarrow S_p \geq 2$

$V_{base} = V_g$



Need large inductor for zvs at low currents

Issues:

- zvs lost at light load
- XF saturation may occur if v_p or v_s are not purely AC
- Performs poorly at $\frac{V}{V_g} \neq n$