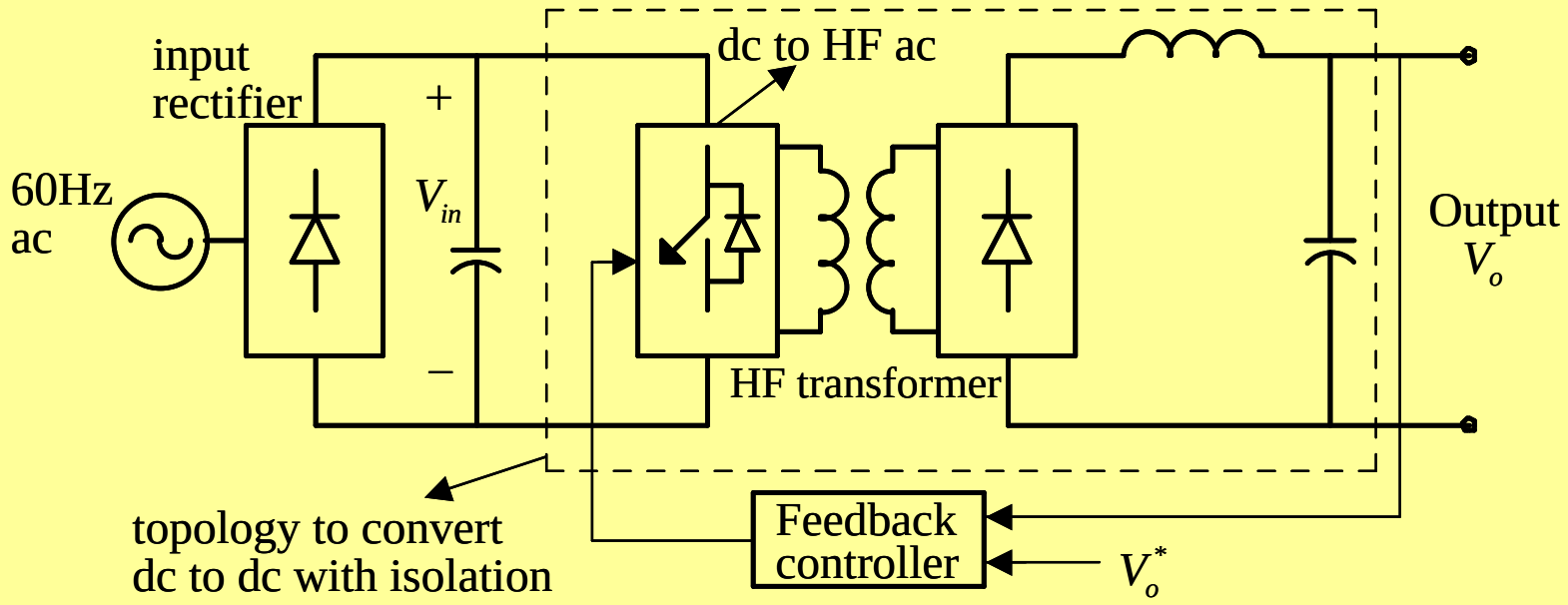
Isolated Switch-Mode DC Power Supplies

- Flyback Converters
- Forward Converters

SWITCH-MODE DC POWER SUPPLIES

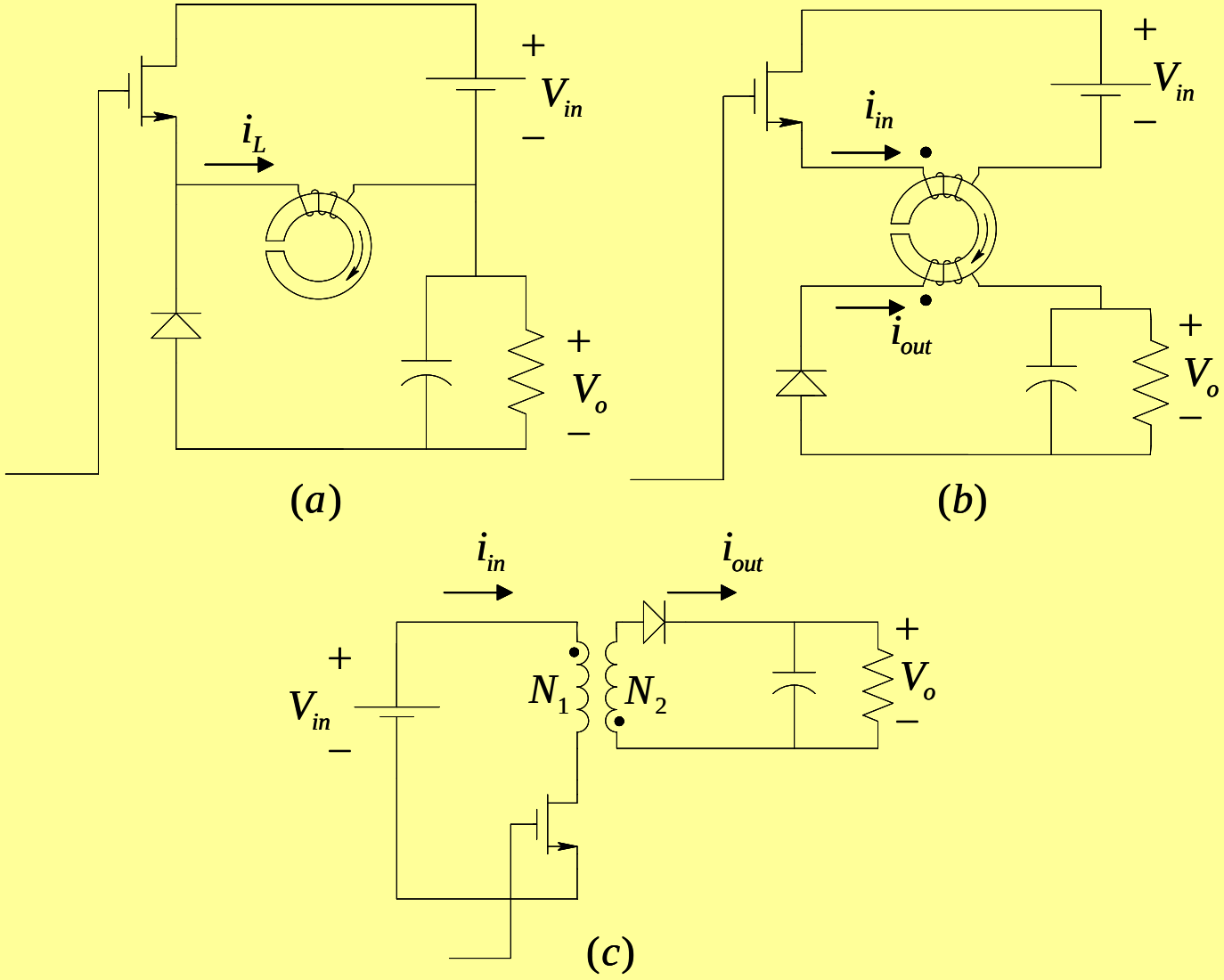


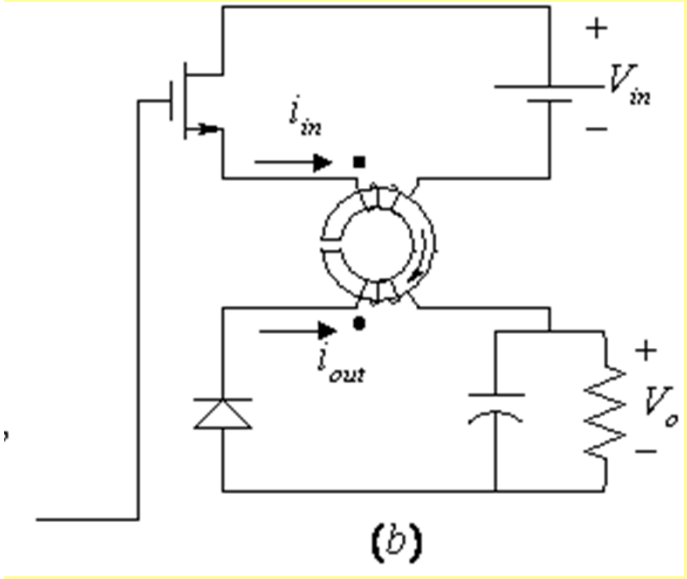
NEED FOR ELECTRICAL ISOLATION

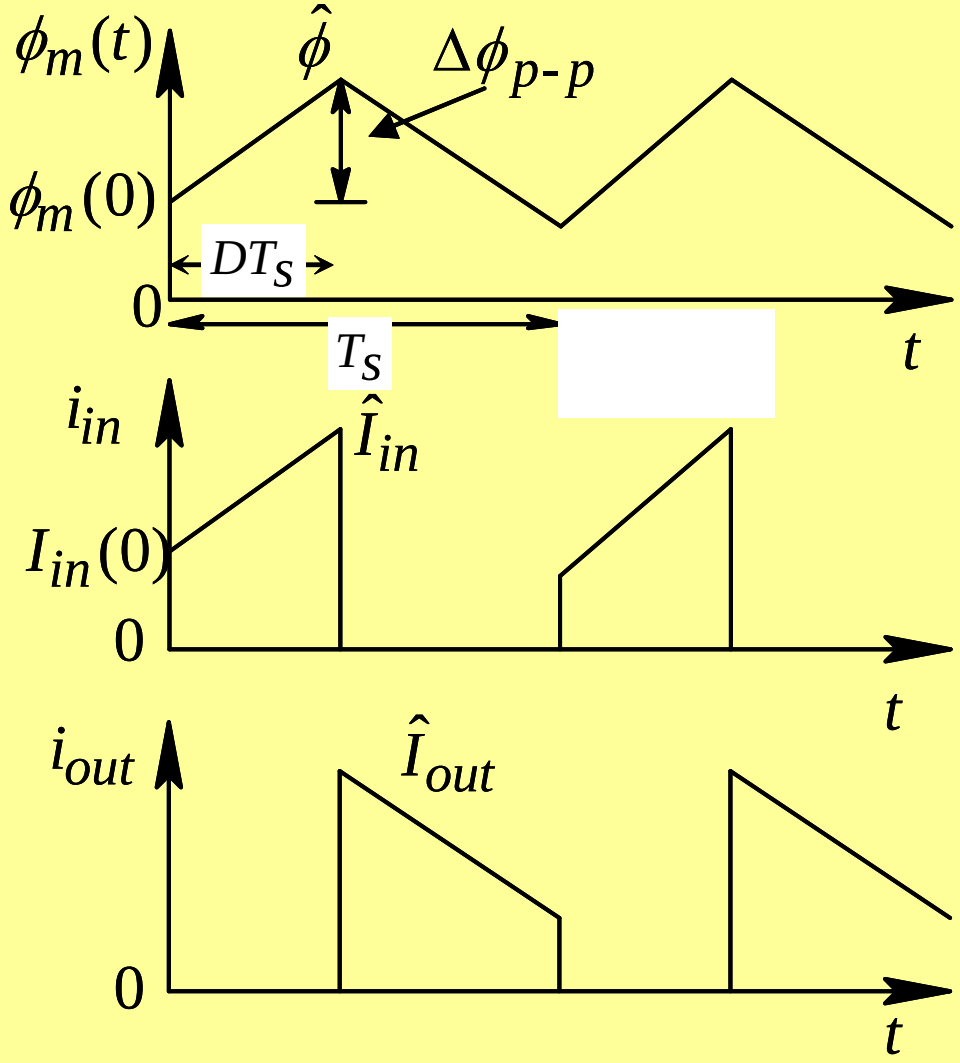
CLASSIFICATION

- Flyback converters derived from Buck-Boost dc-dc converters
- Forward converter derived from Buck dc-dc converters
- Full-Bridge and Half-Bridge converters derived from Buck dc-dc converters

FLYBACK CONVERTERS



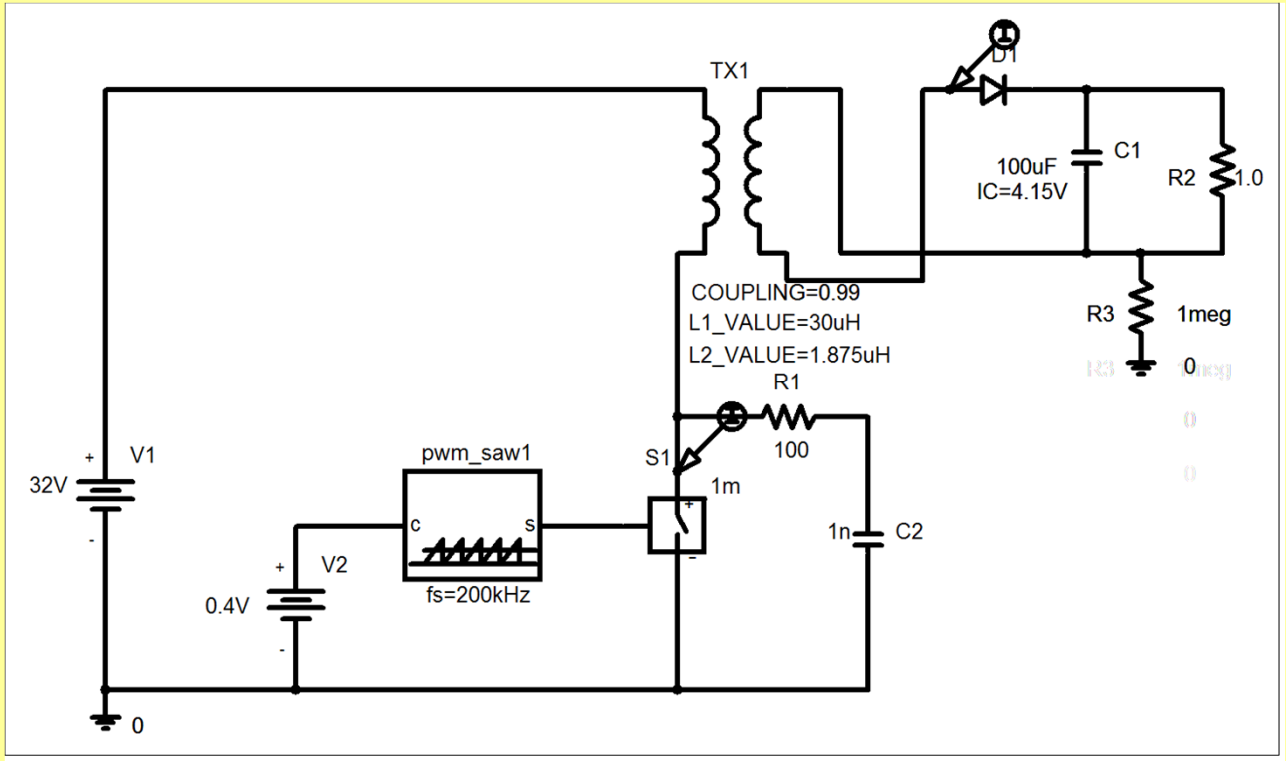




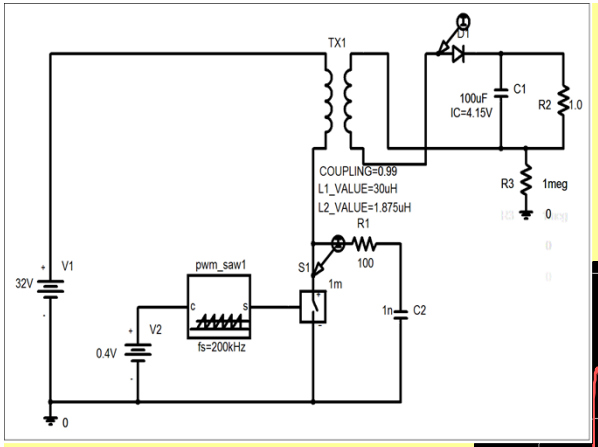
$$\Delta\phi_{p-p} = \frac{V_{in}}{N_1} DT_s = \frac{V_o}{N_2}(1-D)T_s$$

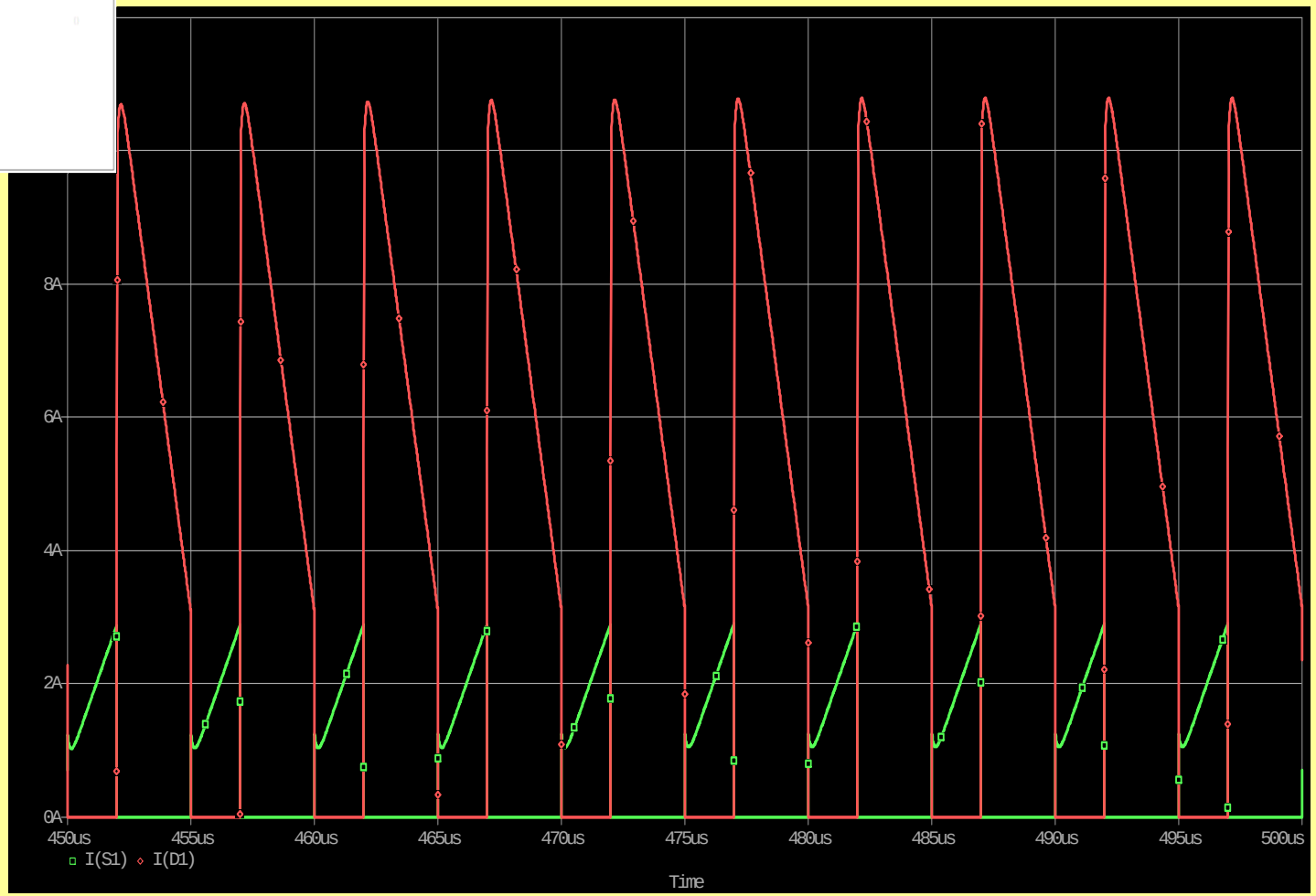
$$\frac{V_o}{V_{in}} = \left(\frac{N_2}{N_1}\right)\frac{D}{1-D}$$

PSpice Modeling:

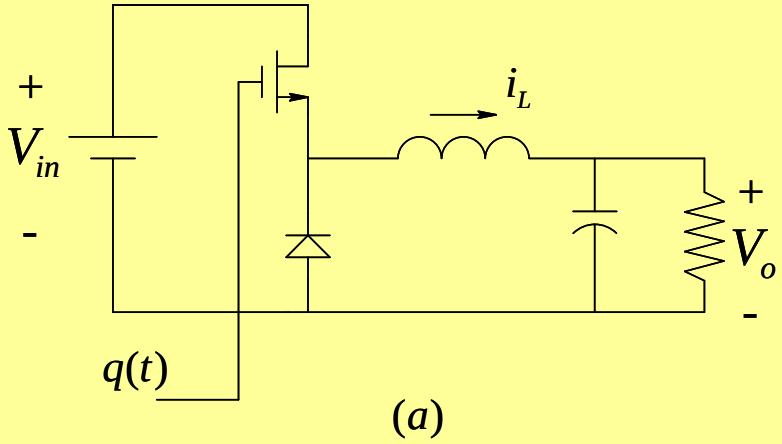


Simulation Results

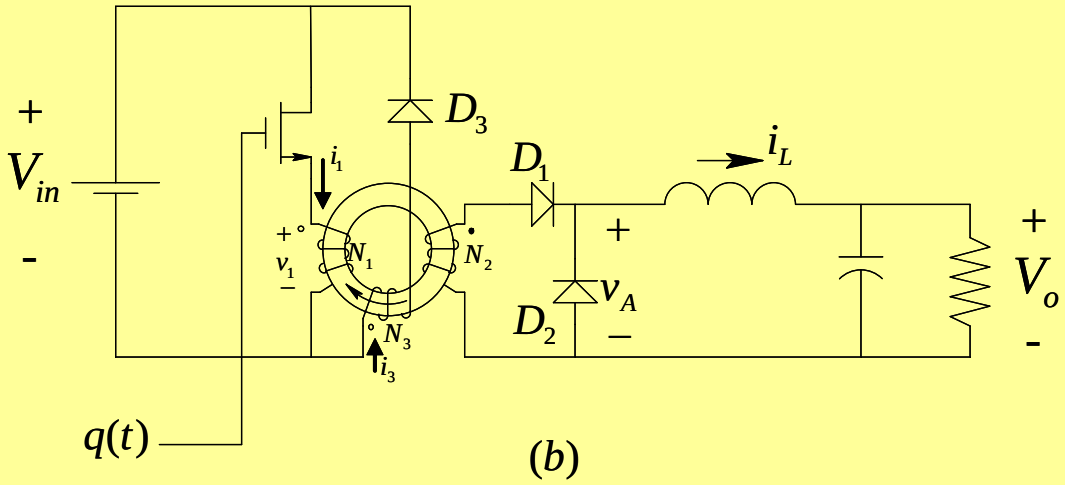




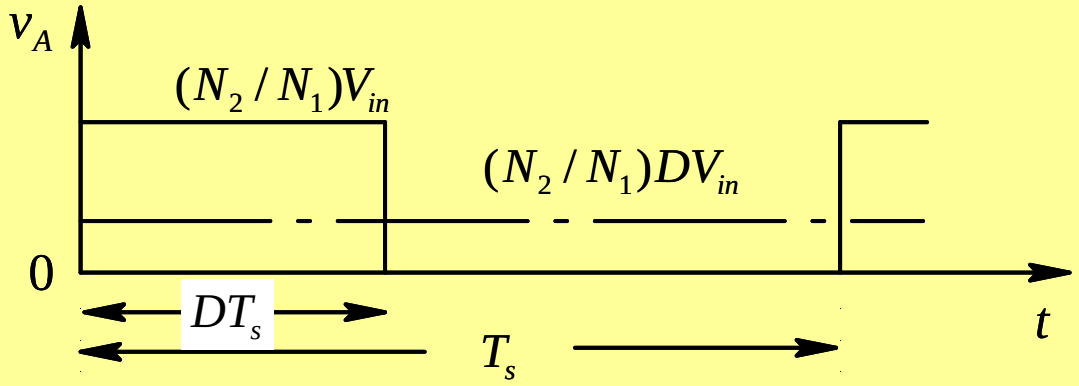
FORWARD CONVERTERS



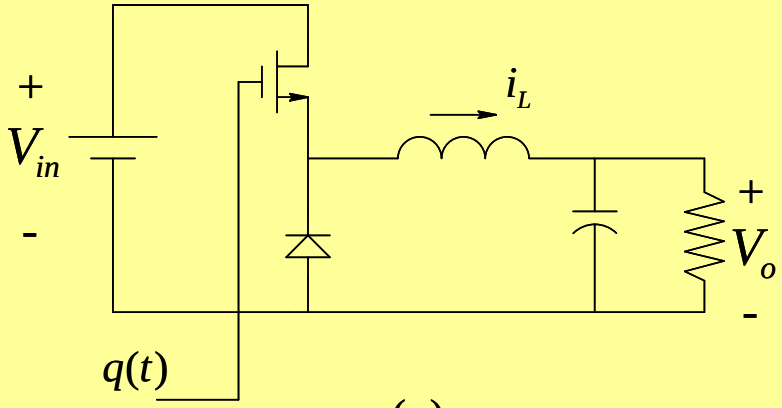
(a)



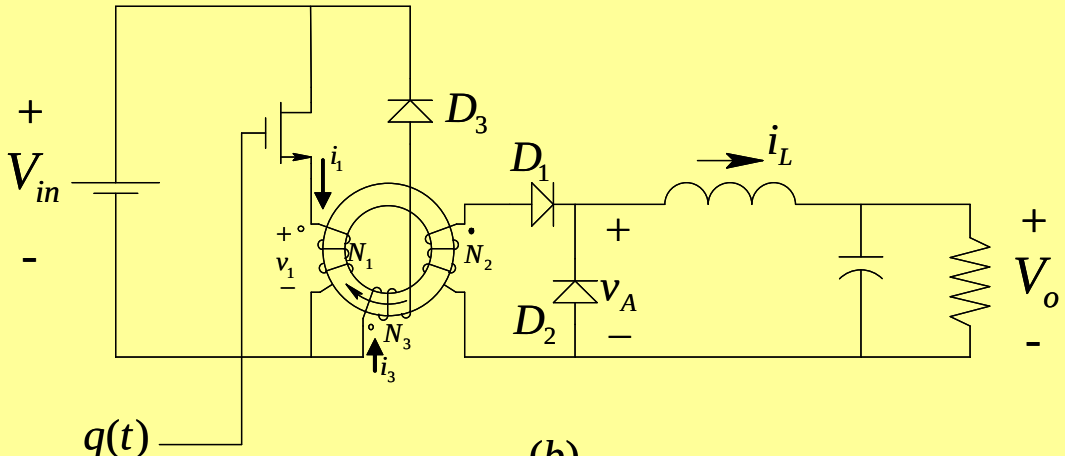
(b)



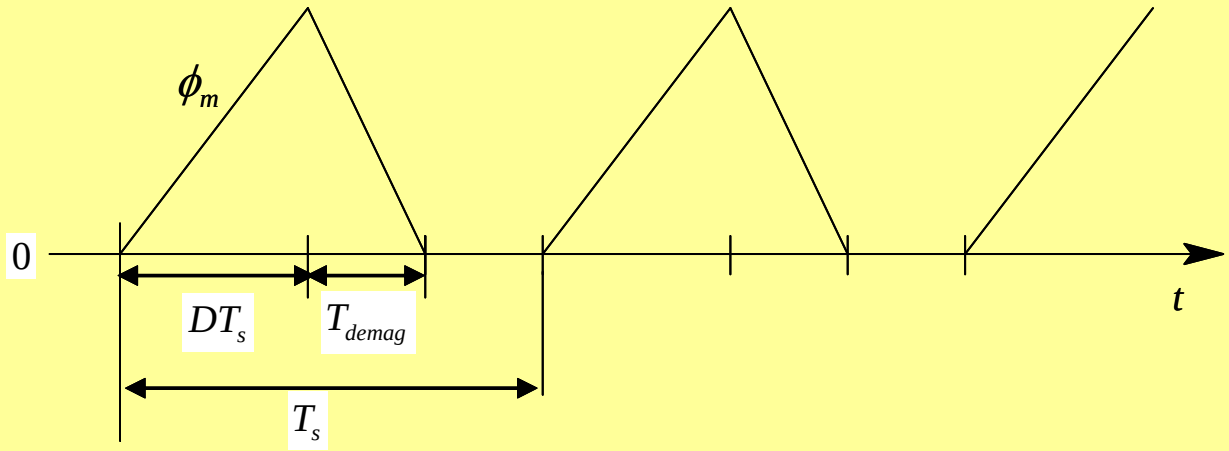
$$V_o = \left(\frac{N_2}{N_1}\right) DV_{in}$$

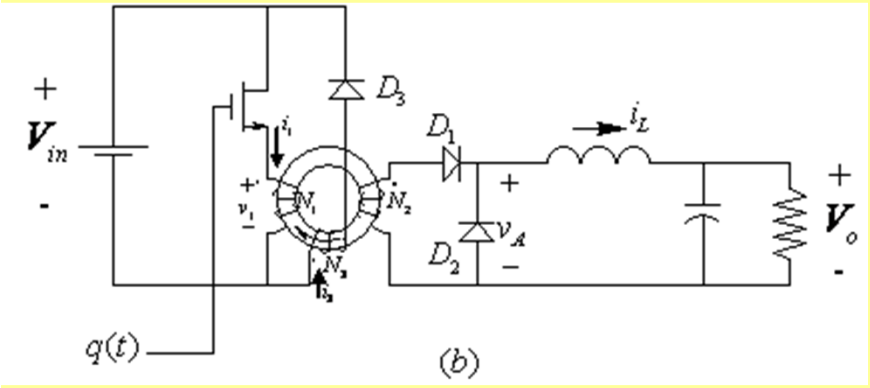


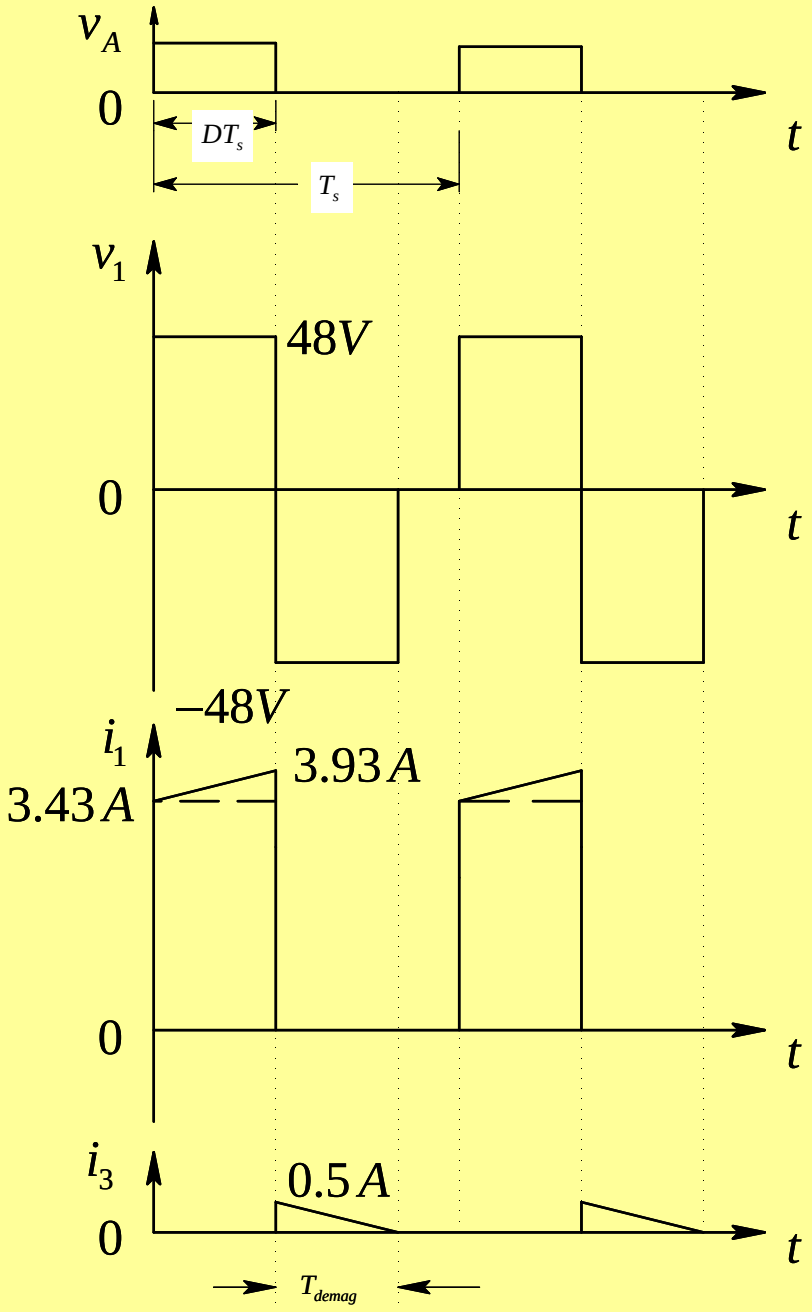
(a)



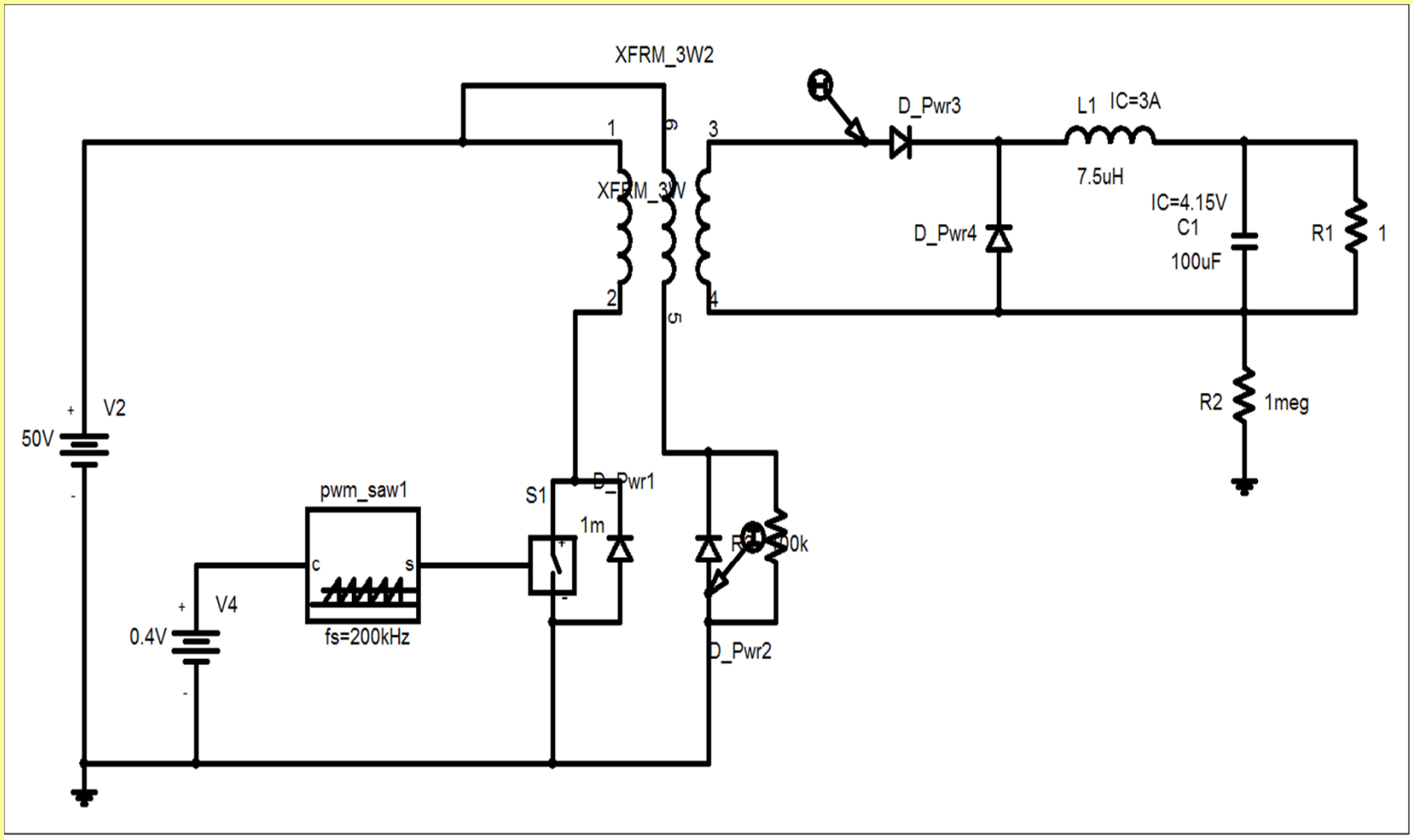
(b)



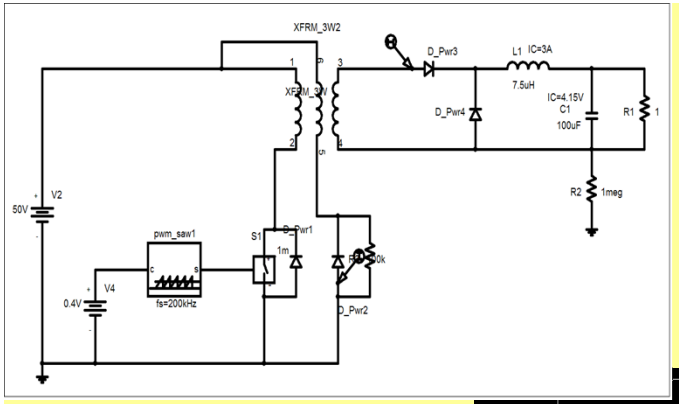


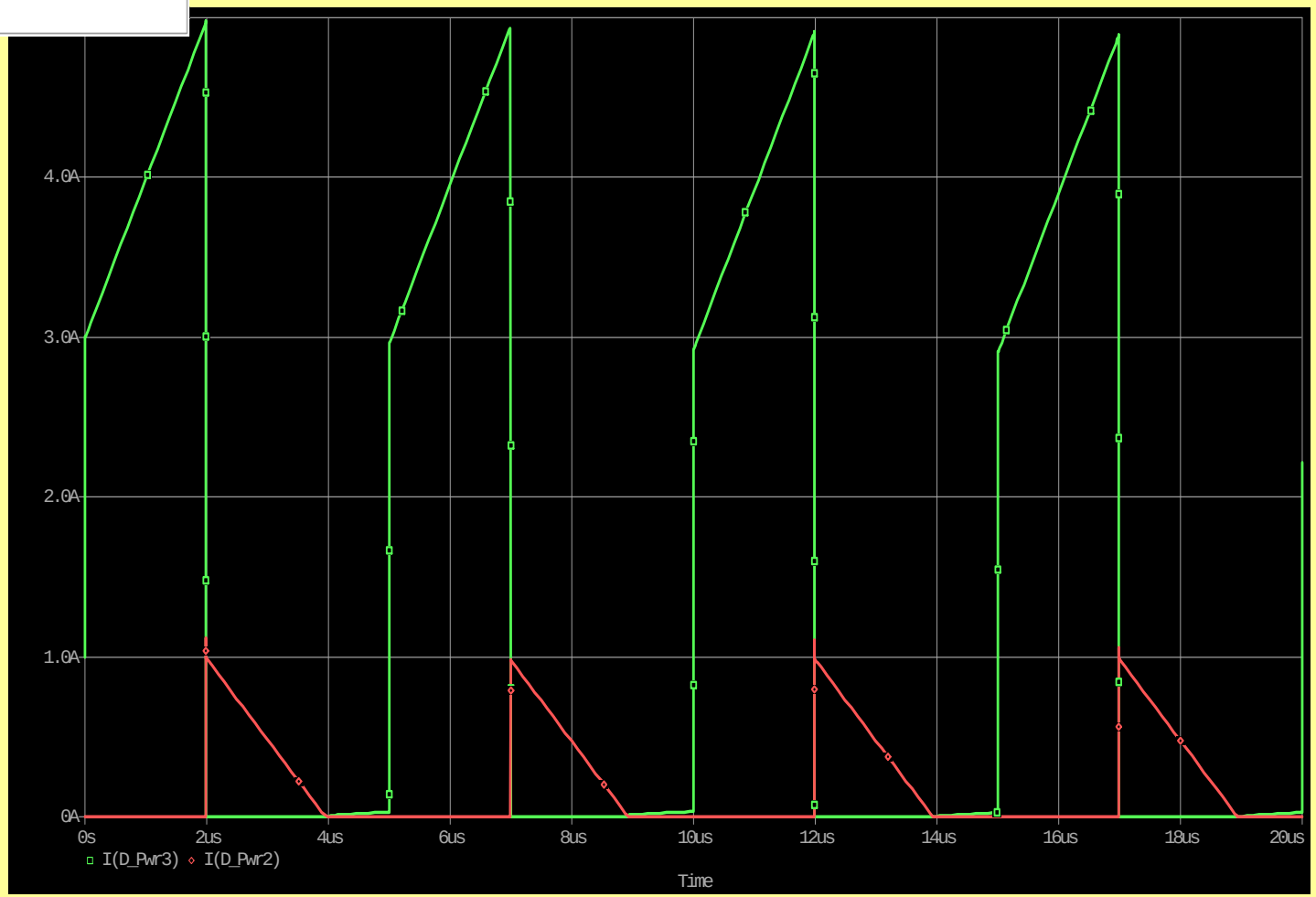


PSpice Modeling:

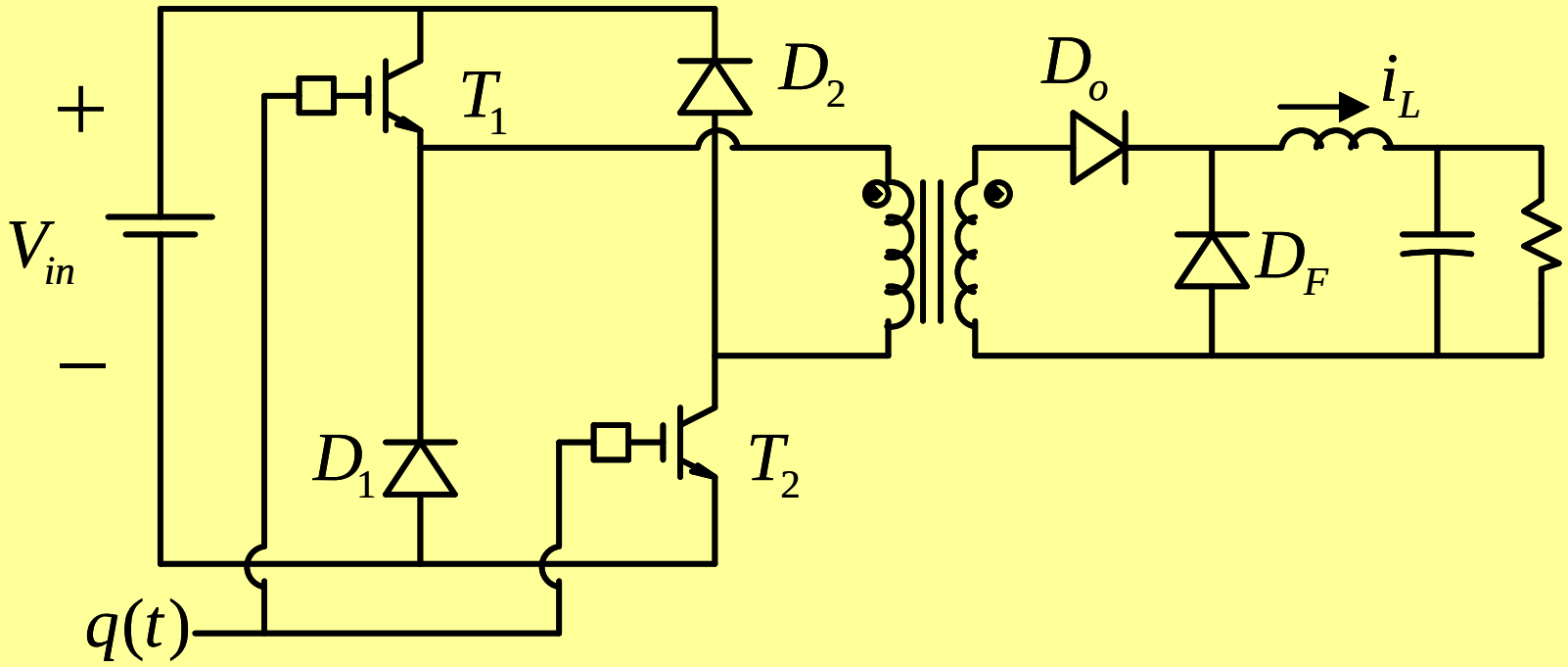


Simulation Results





Two-Switch Forward Converters



Summary

Switch-Mode DC Power Supplies

- Flyback Converters
- Forward Converters