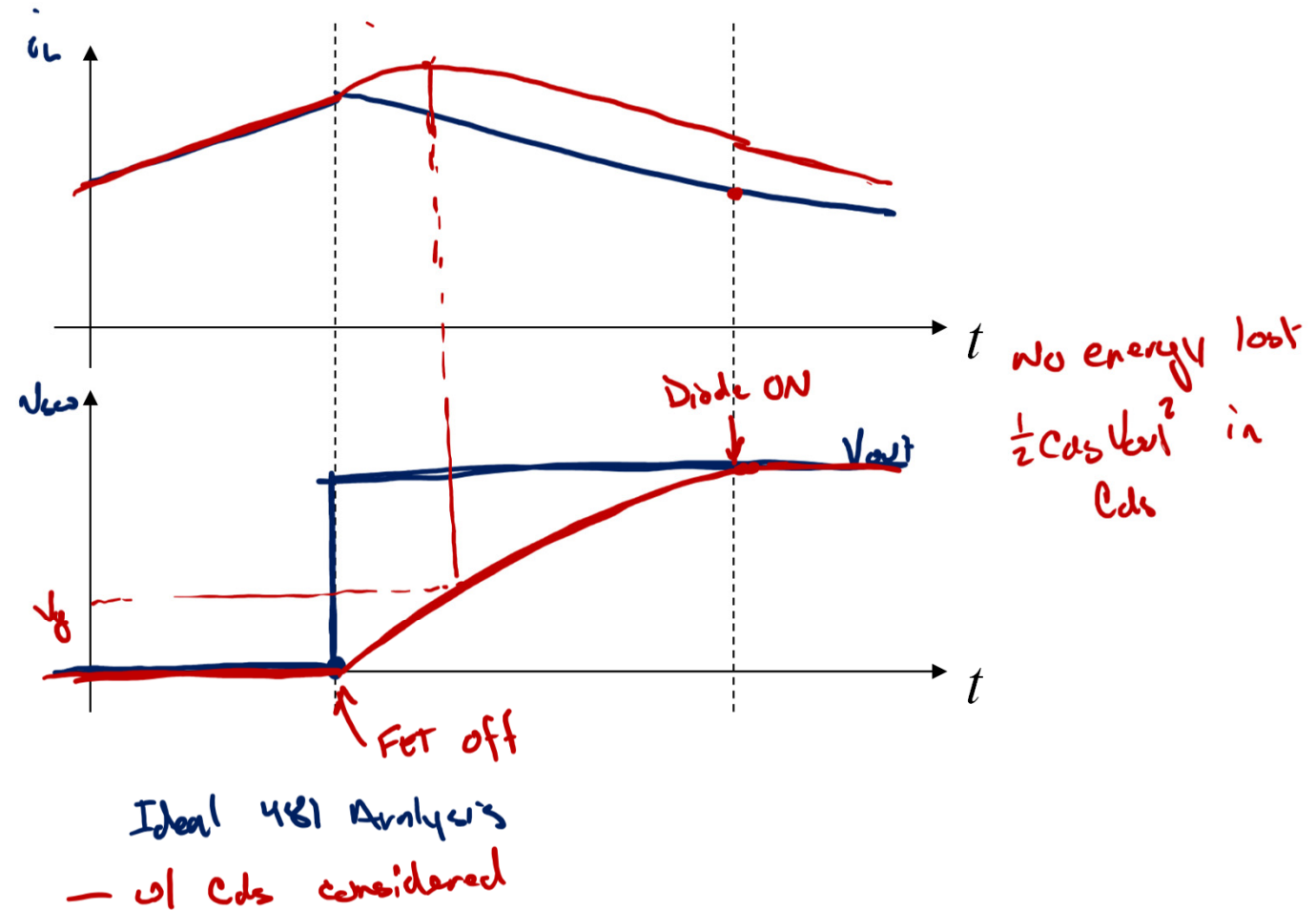
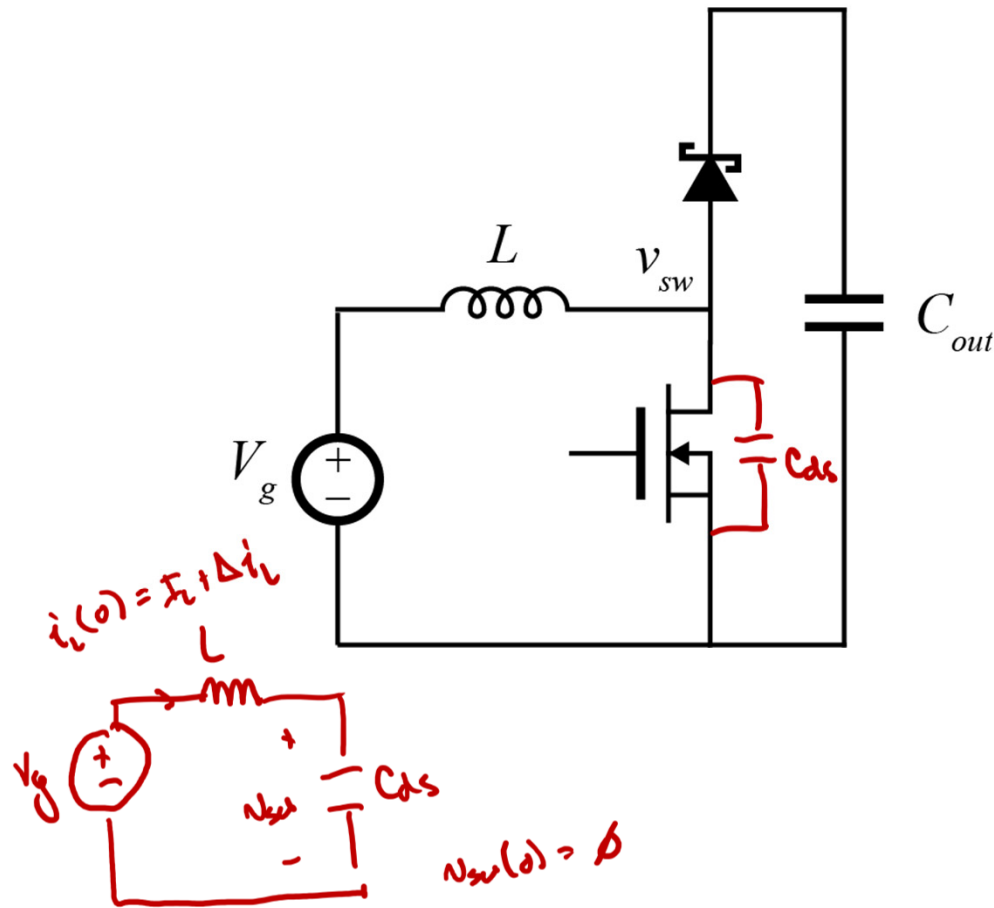
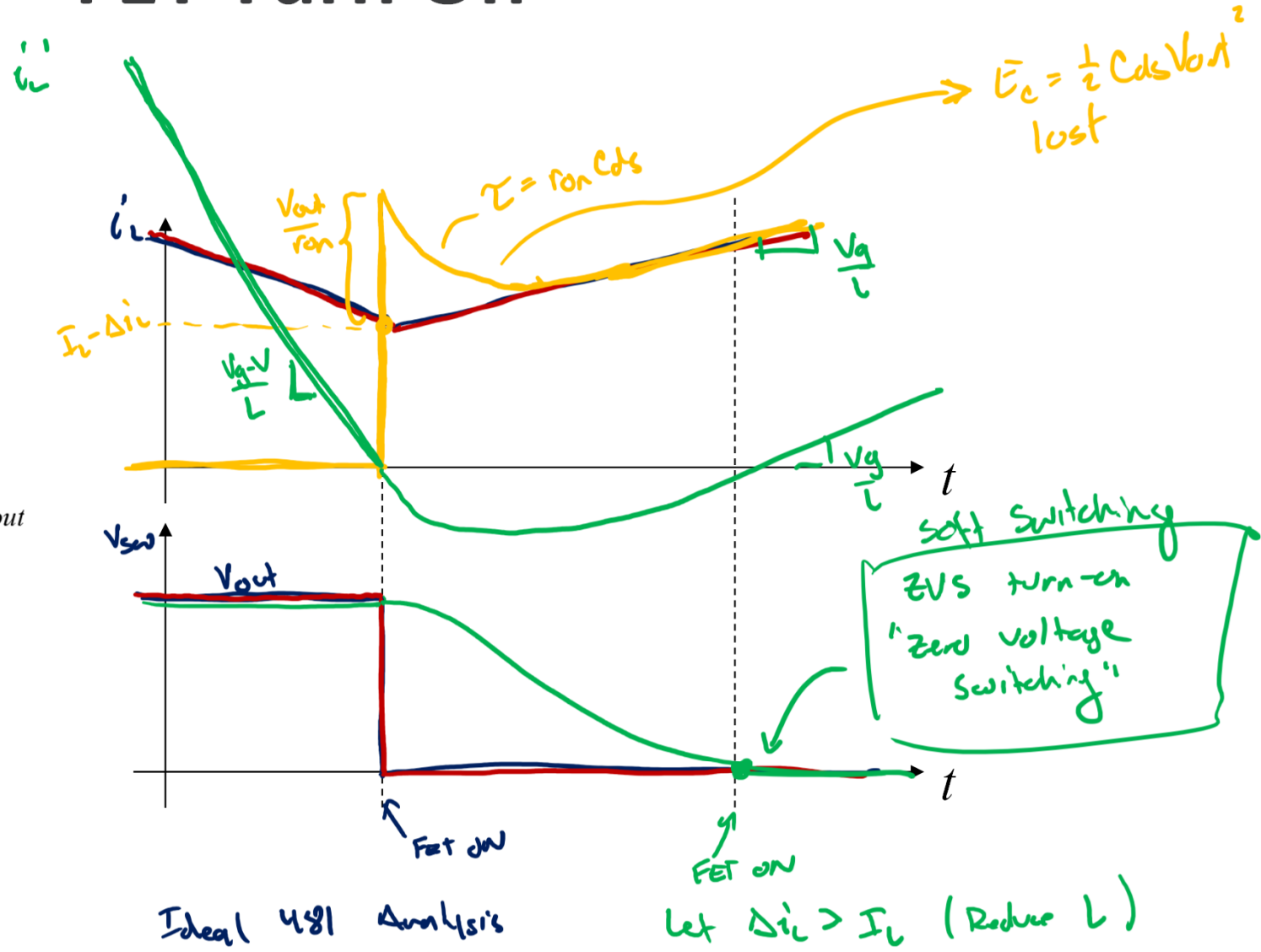
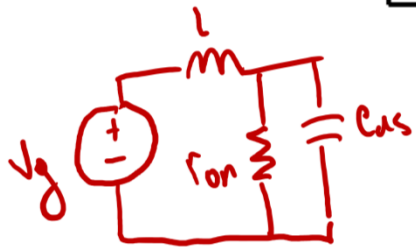
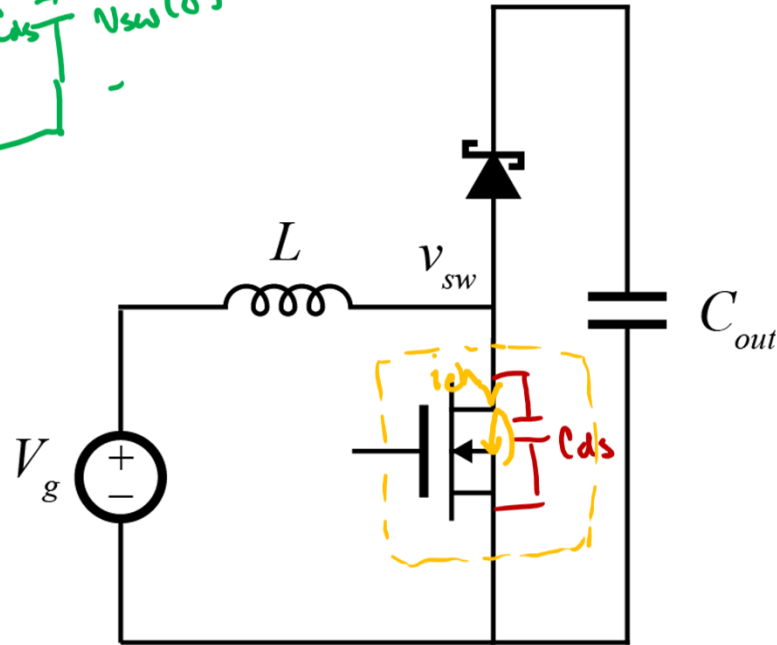
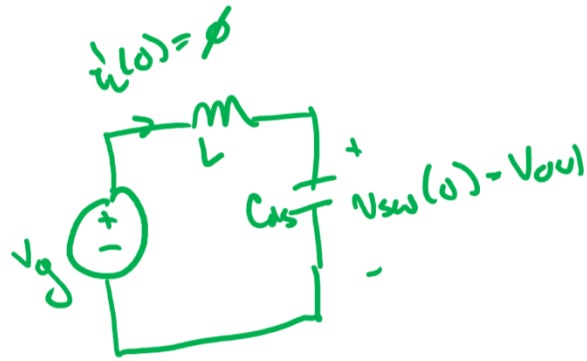


Device Capacitances – FET Turn Off

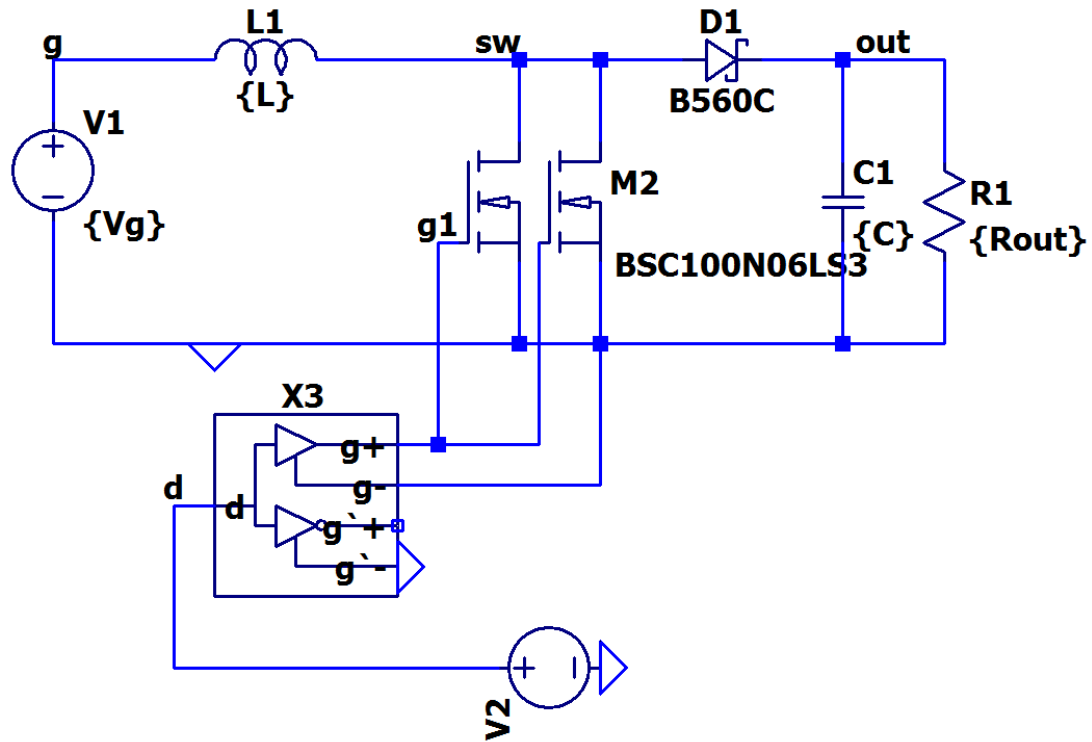


Device Capacitances – FET Turn On



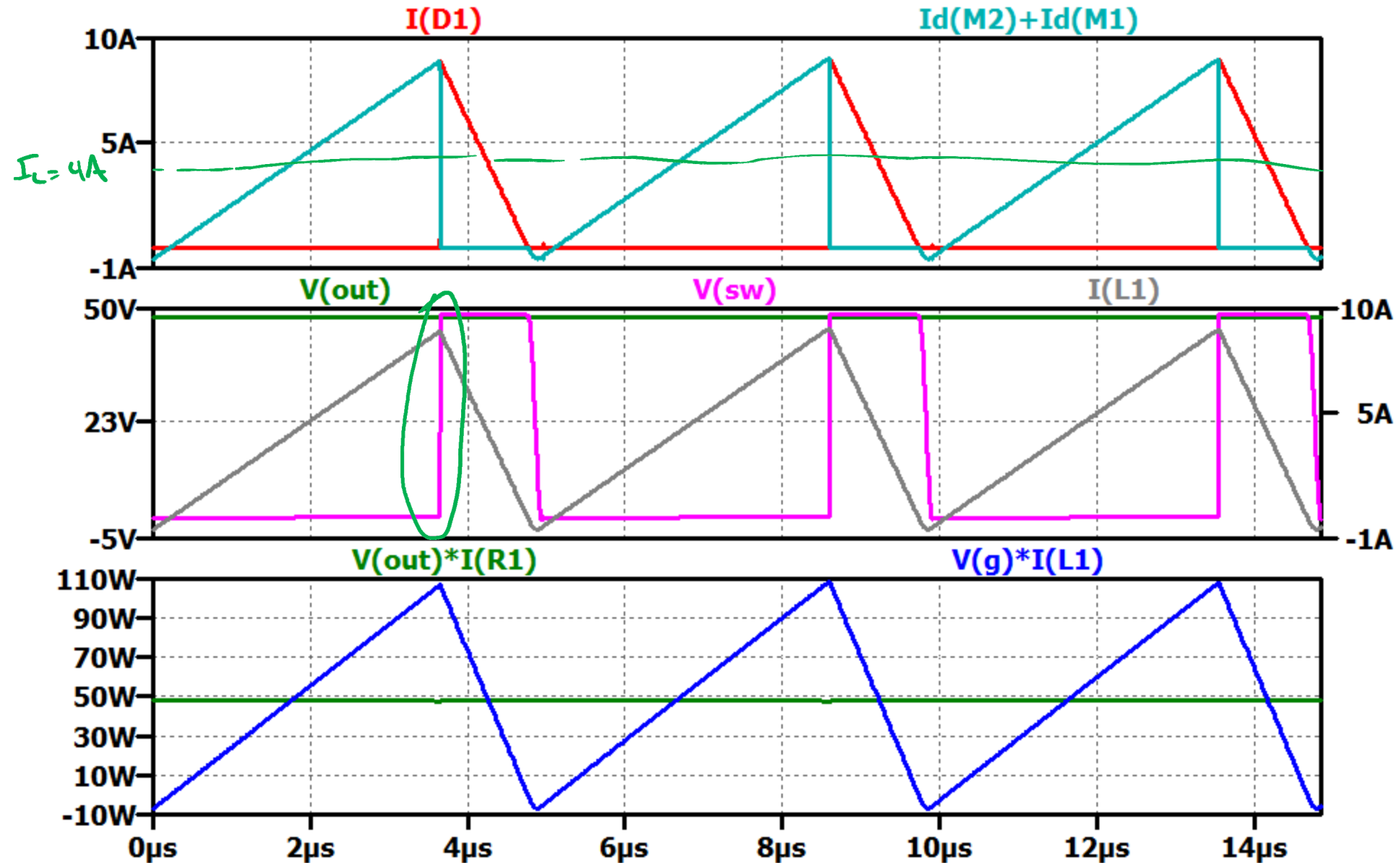
Ideal 481 Analysis
w/ C_{ds} included

DCM: Soft Switching

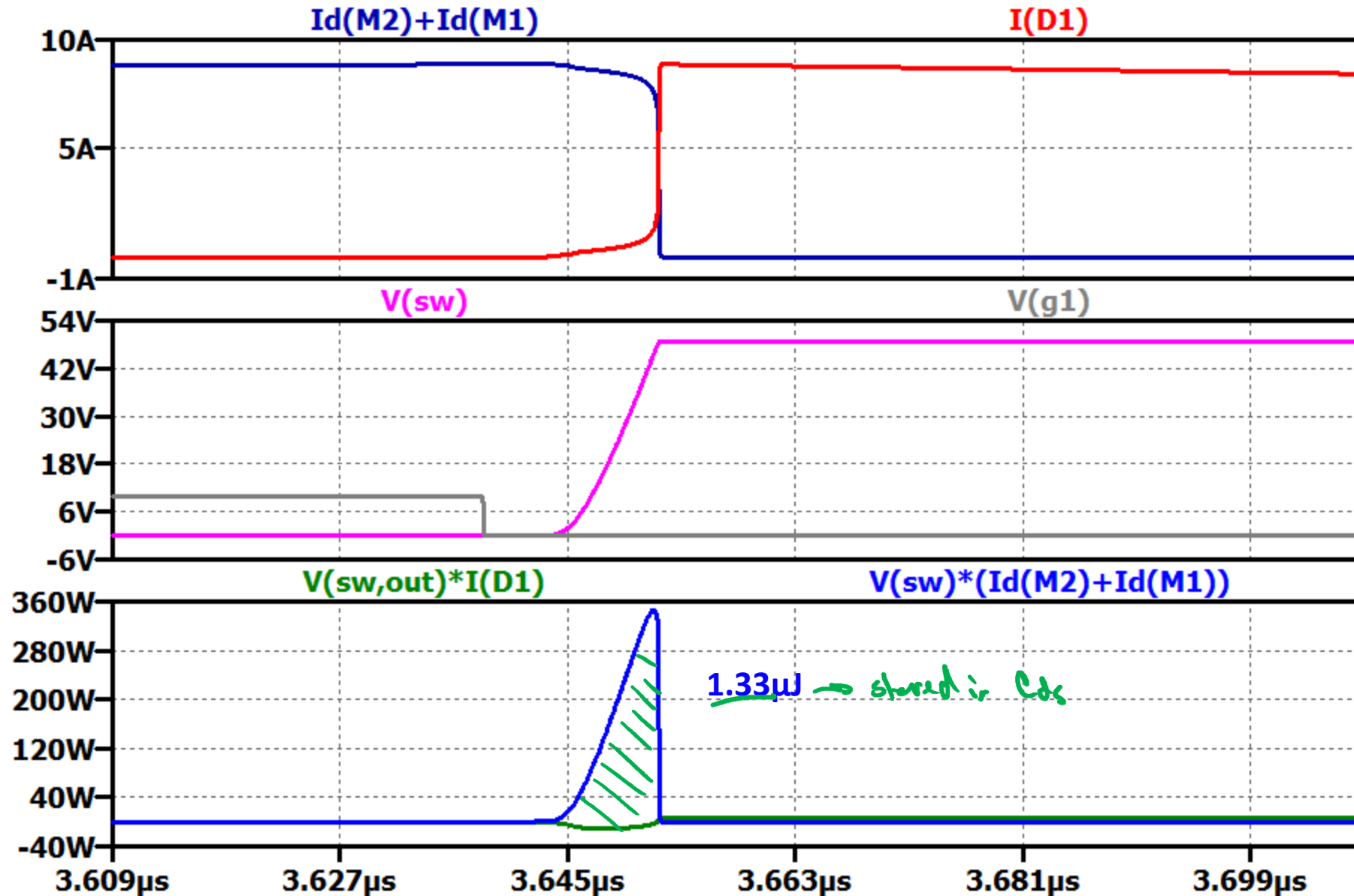


L	C_{out}	f_s	Diode	η (Sim)
22uH	22uF	202k	Si (FR)	93.9%
22uH	22uF	202k	Si Schottky	95.8%
4.6uH	22uF	202k	Si Schottky	98.2%

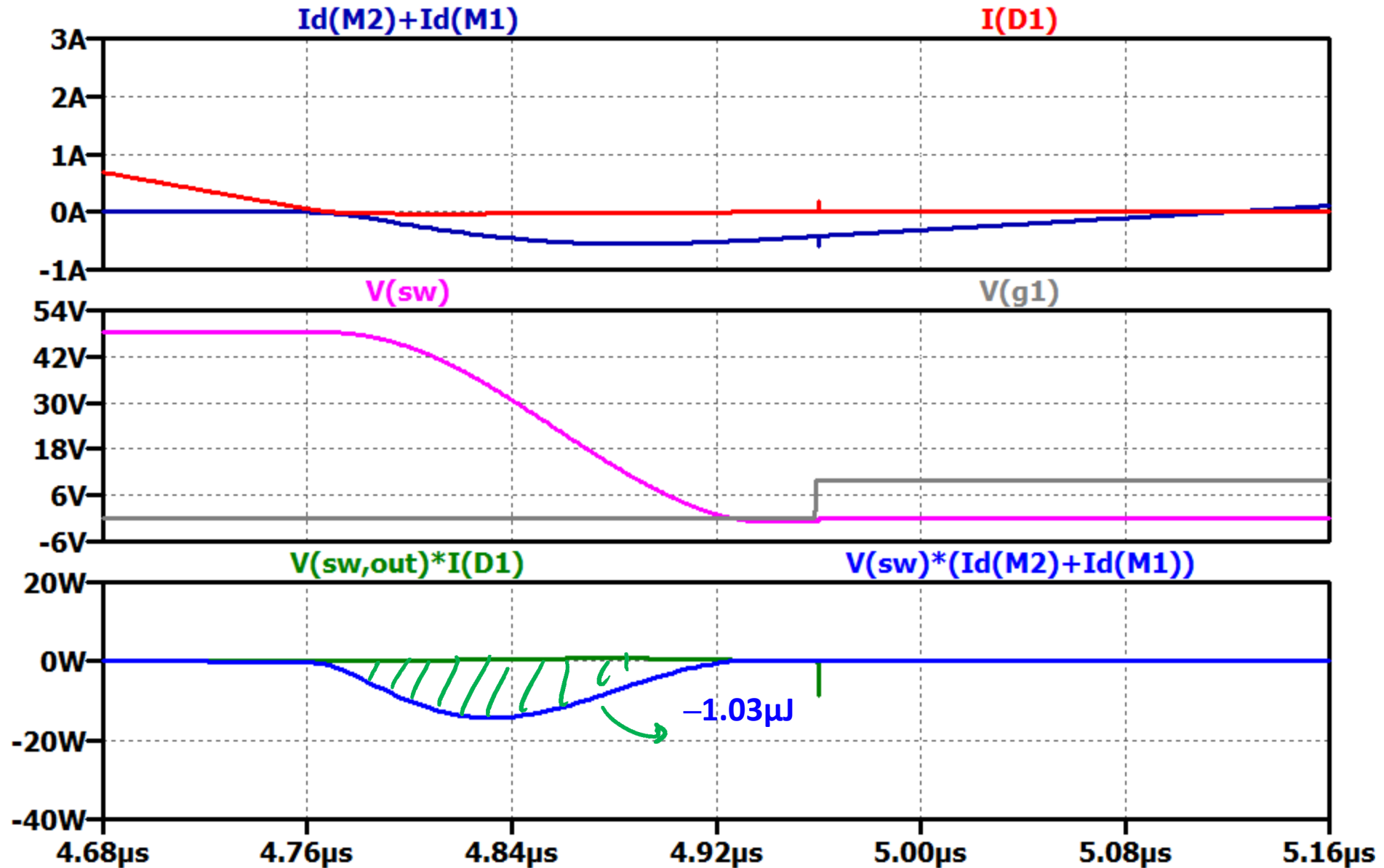
DCM Simulation



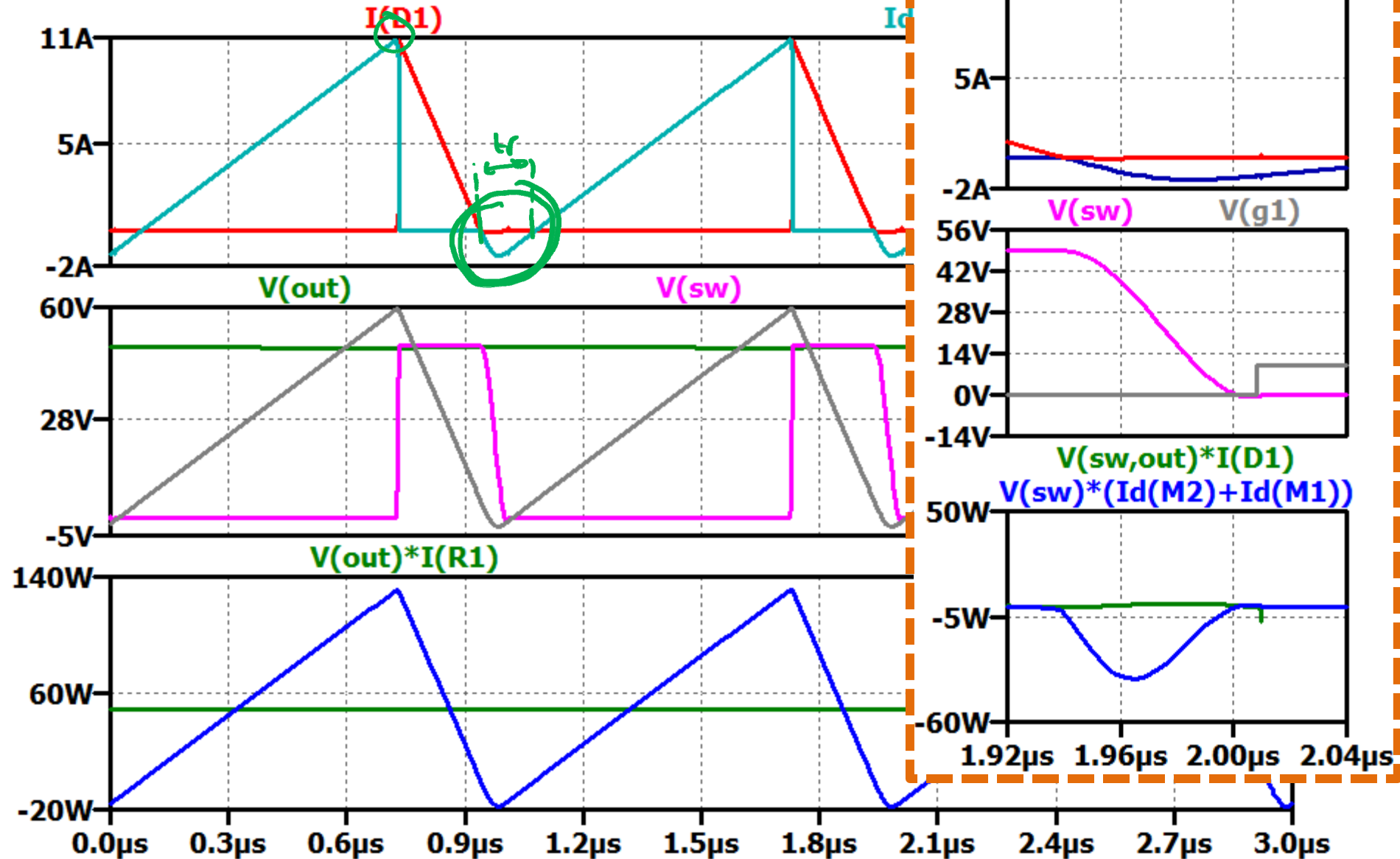
MOSFET Turn-Off



MOSFET Turn-On



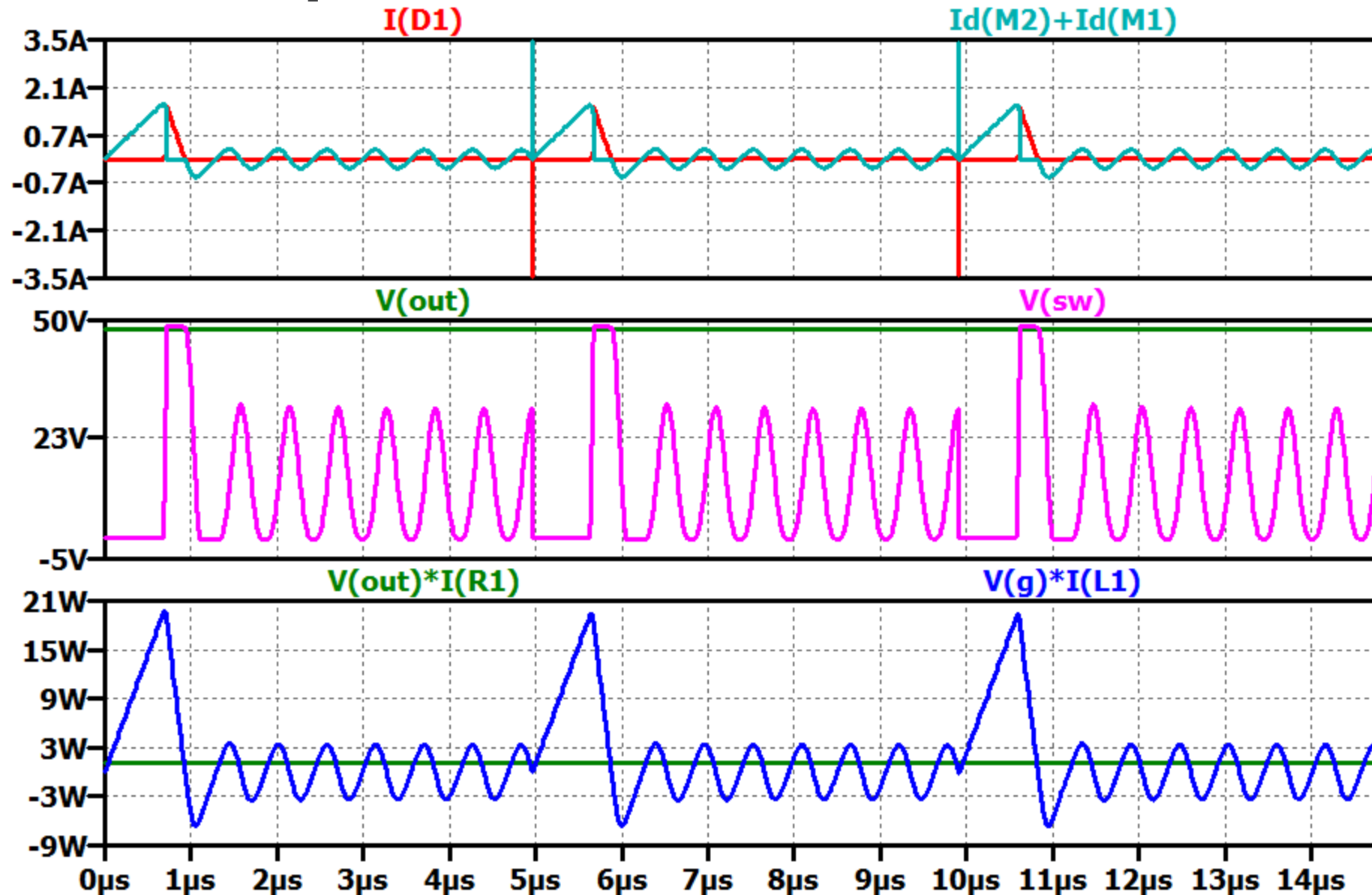
1 MHz Operation



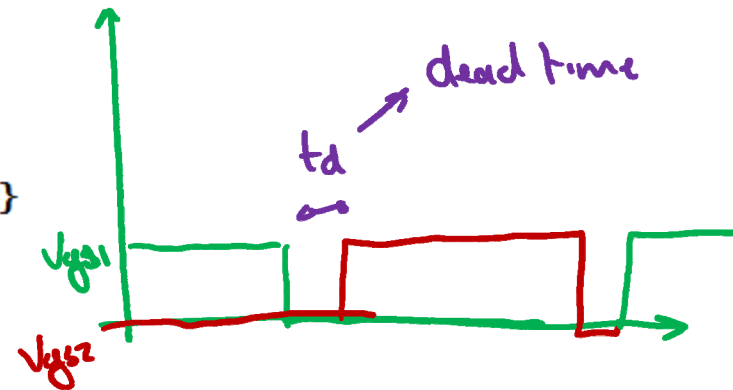
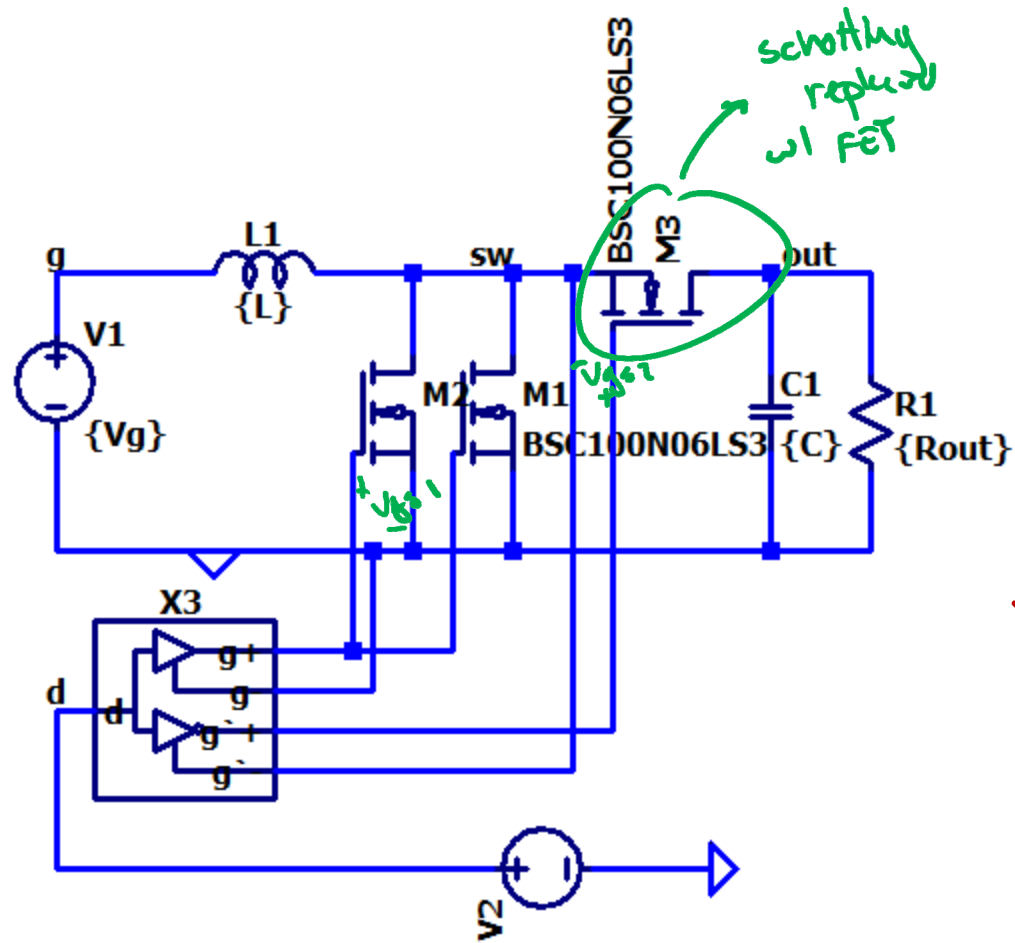
Low Power Operation

$$P_{out} = 1W$$

$$\eta = 68\%$$



Synchronous Operation

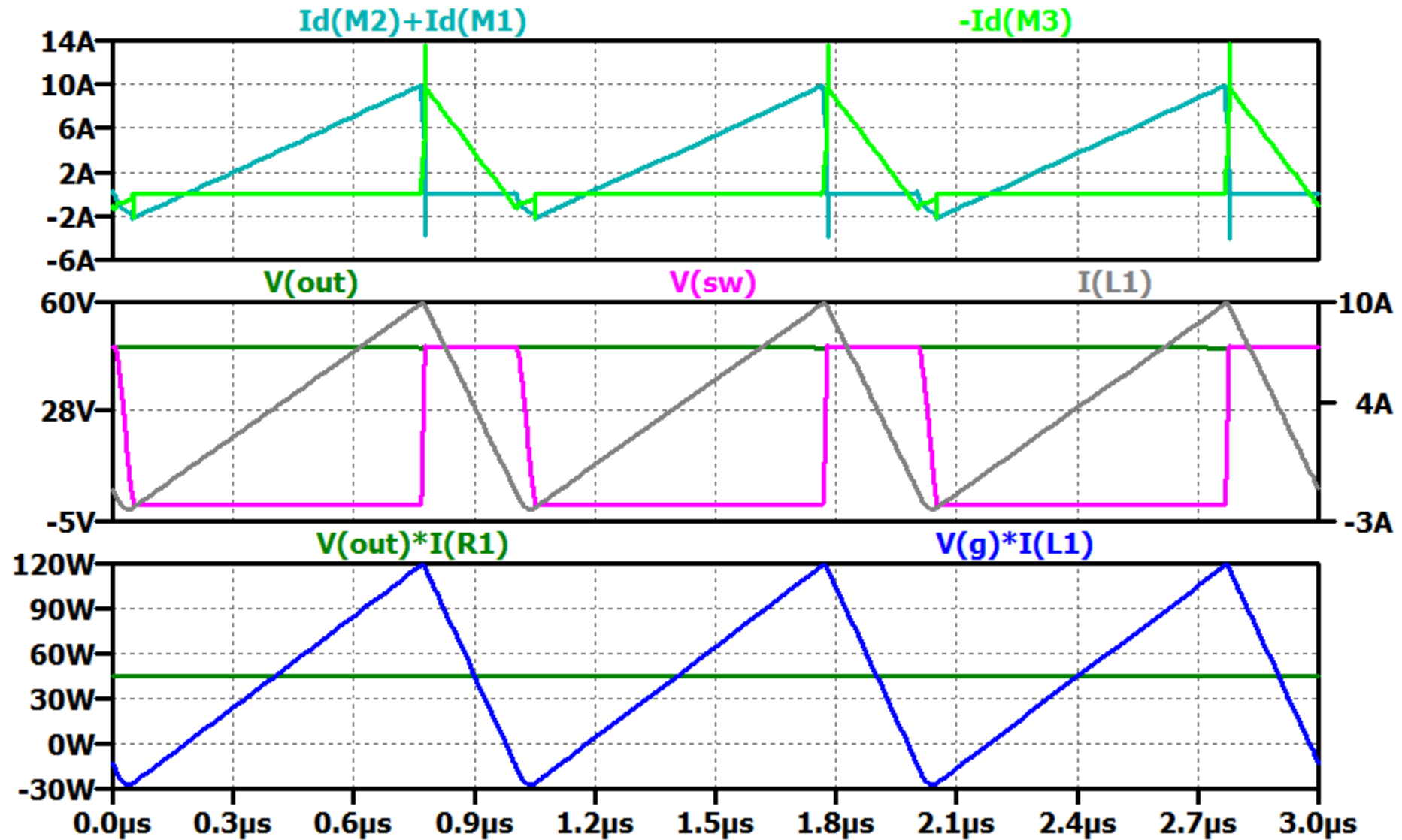


- + Replace $V_E \approx T_L$ conduction loss w/ $r_{on} I_L^2$
- + Allows controlled turn-off current
- Need second gate drive & appropriate timing

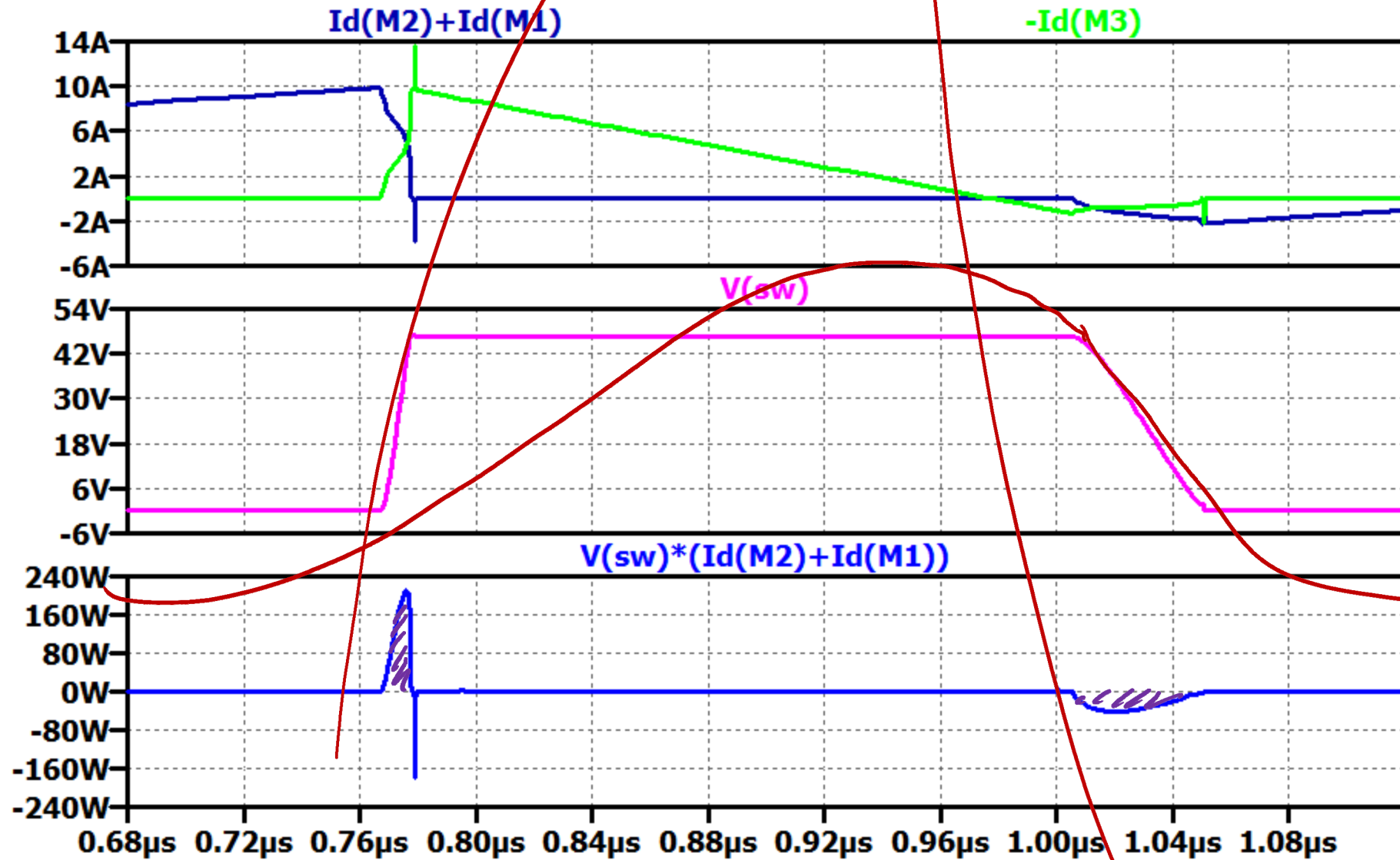
Synchronous Simulation

$$P_{out} = 48W$$

$$\eta = 99.6\%$$



Switching Transitions



Low Power Operation

$P_{out} = 1W$ $\eta = 91\%$

