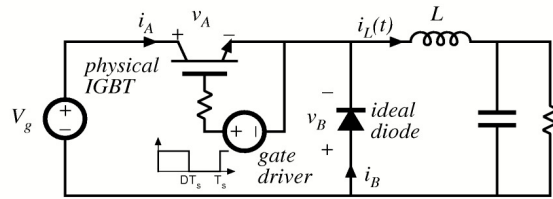


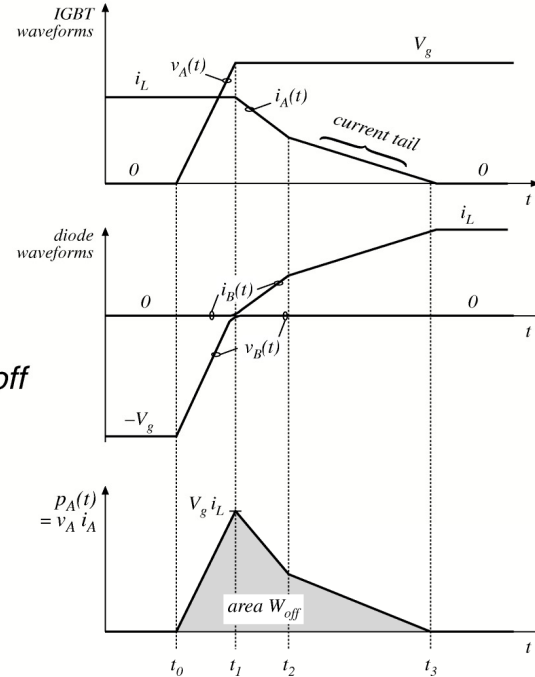
IGBT Current Tailing



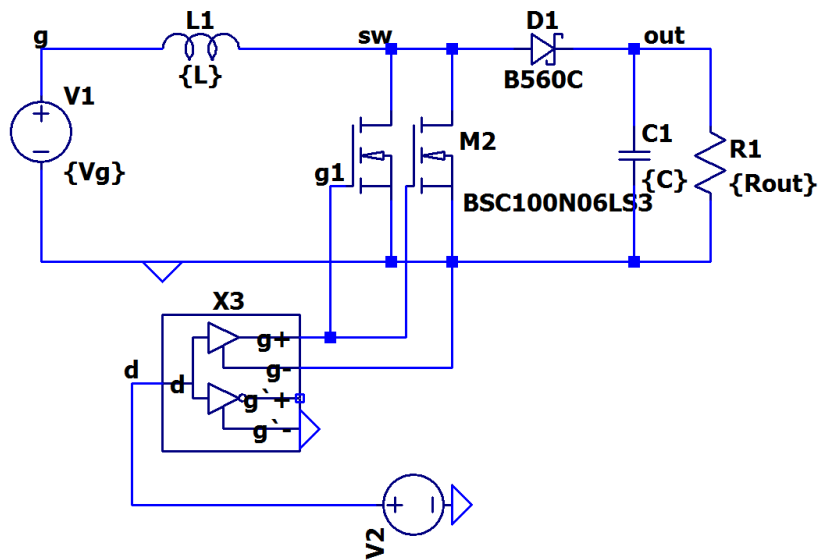
Example: buck converter with IGBT

transistor turn-off
transition

$$P_{sw} = \frac{1}{T_s} \int_{\text{switching transitions}} p_A(t) dt = (W_{on} + W_{off}) f_s$$

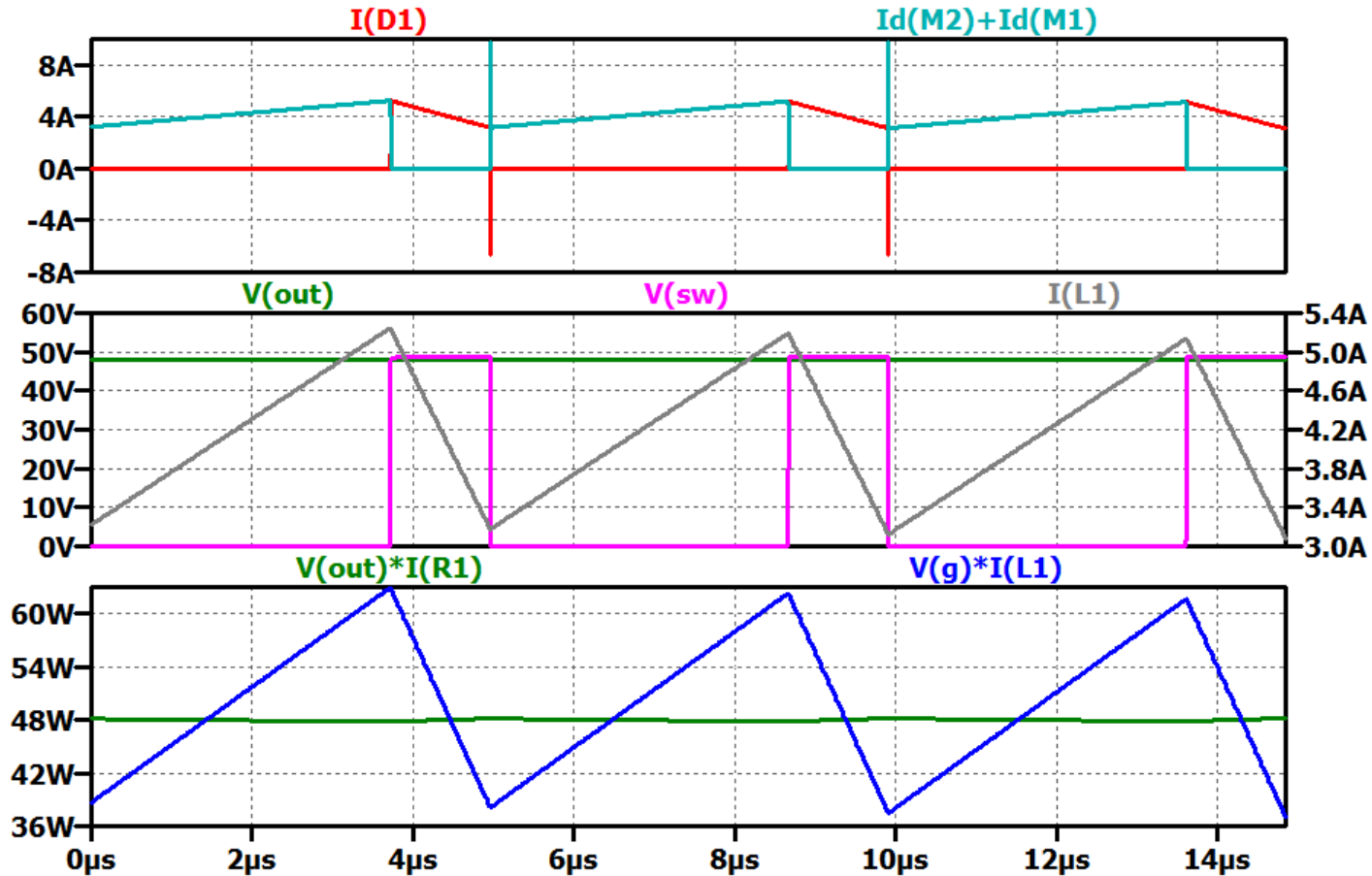


Schottky Diode

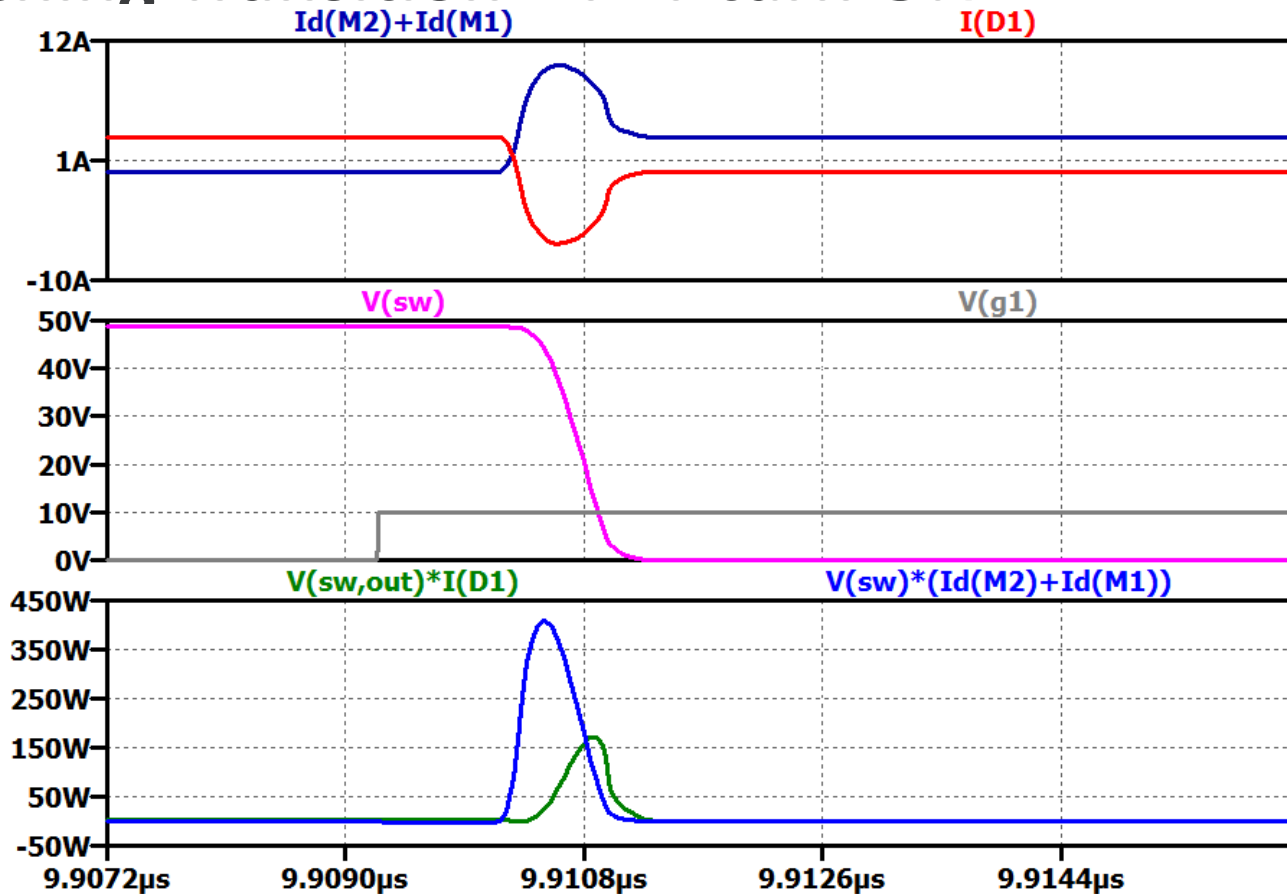


L	C_{out}	f_s	Diode	η (Sim)
22uH	22uF	202k	Si (FR)	93.9%
22uH	22uF	202k	Si Schottky	95.8%

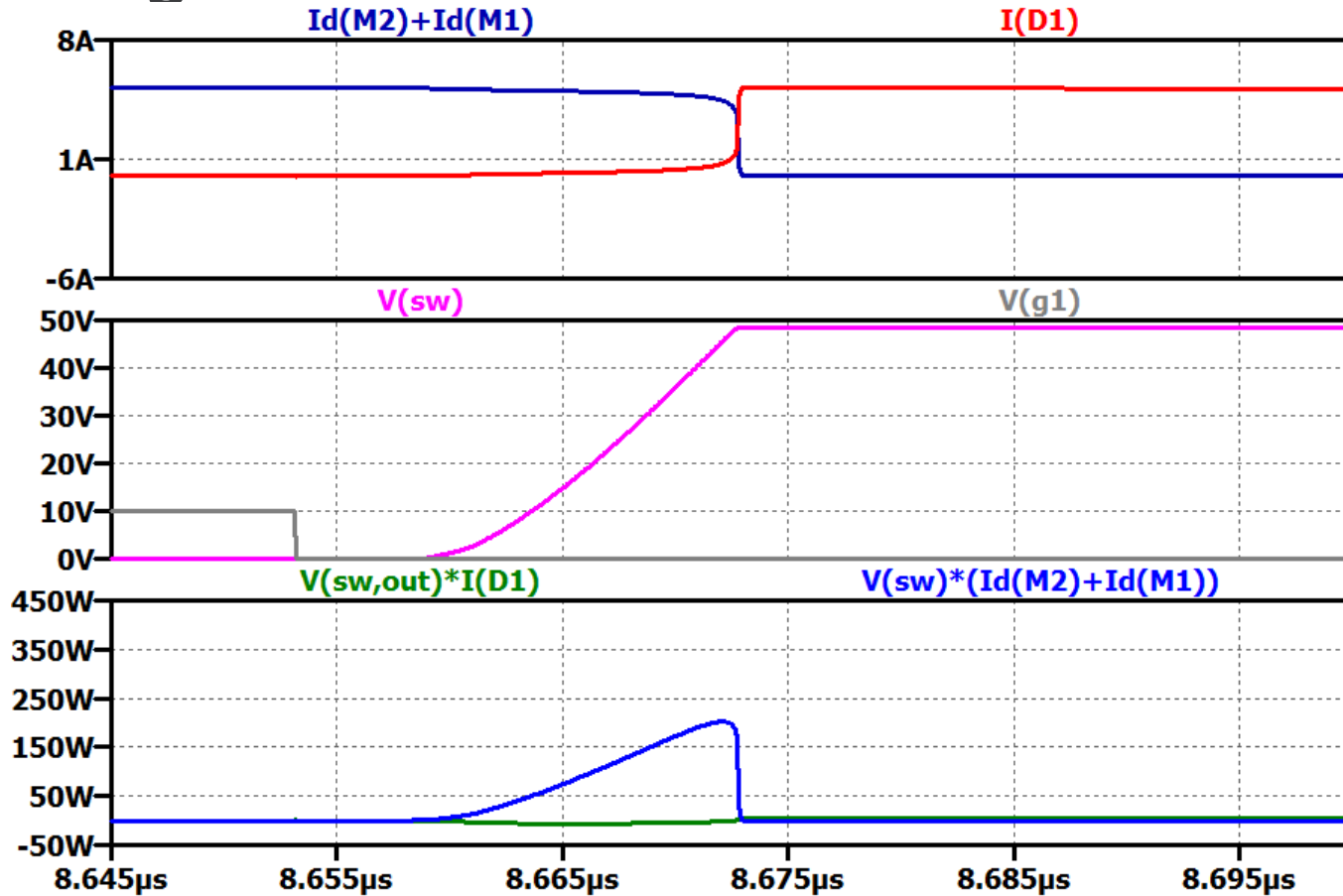
Simulation Waveforms



Switching Transition – FET turn ON



Switching Transition – FET turn OFF

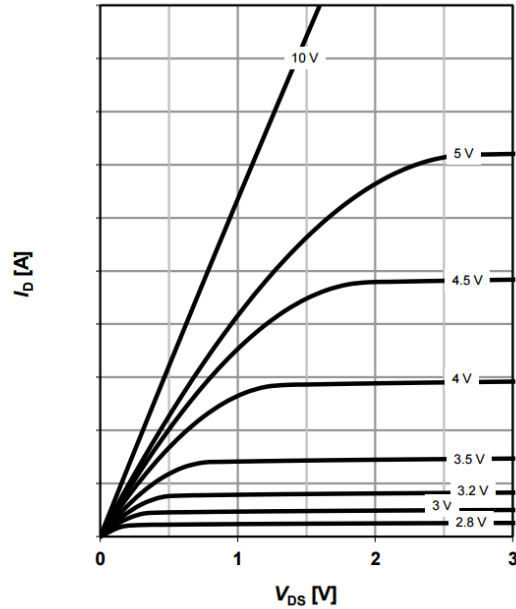


MOSFET Switching Behaviors

5 Typ. output characteristics

$$I_D = f(V_{DS}); T_j = 25^\circ\text{C}$$

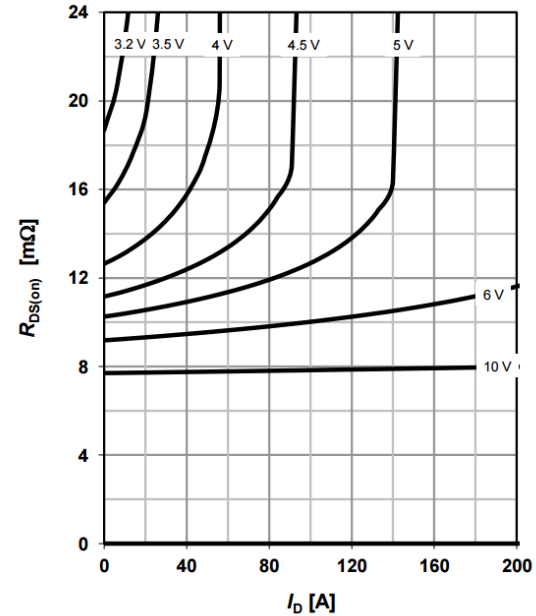
parameter: V_{GS}



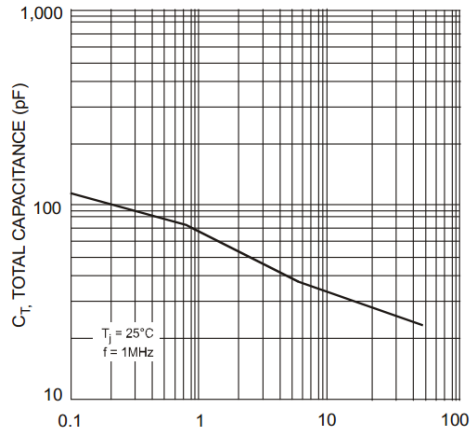
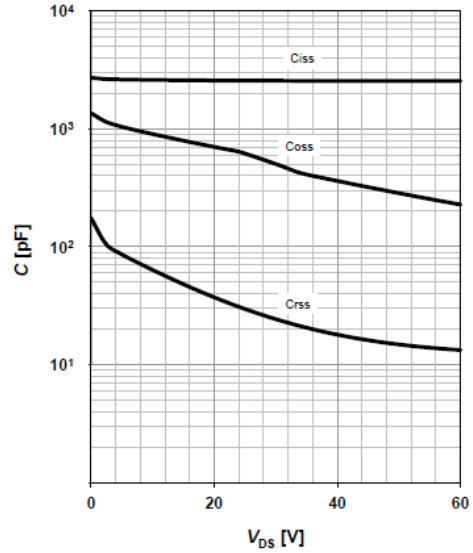
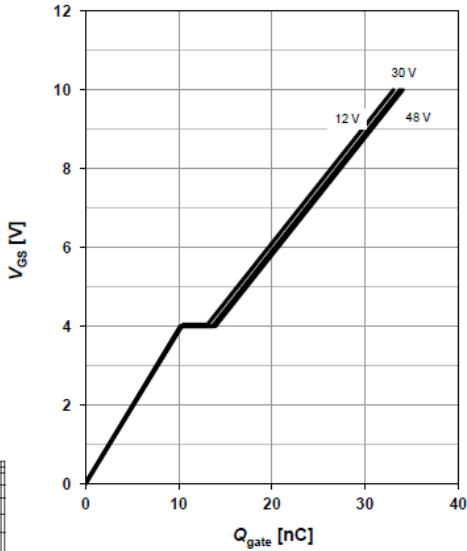
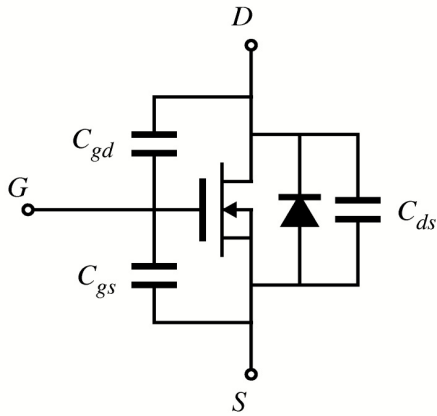
6 Typ. drain-source on resistance

$$R_{DS(on)} = f(I_D); T_j = 25^\circ\text{C}$$

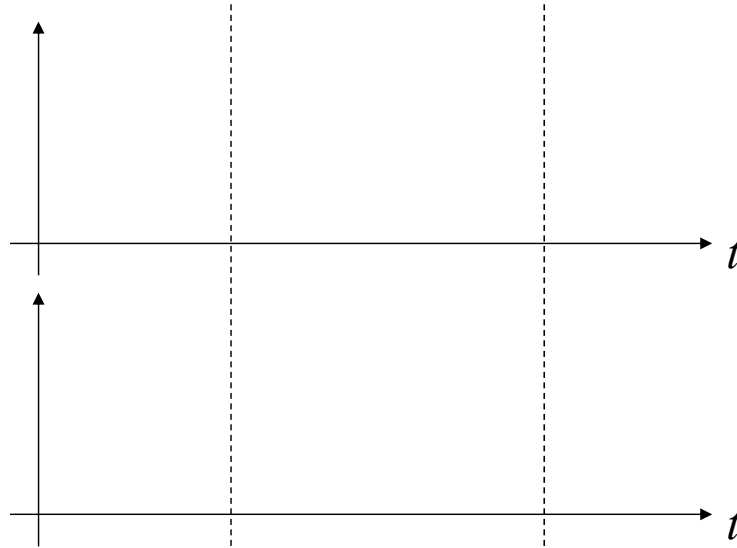
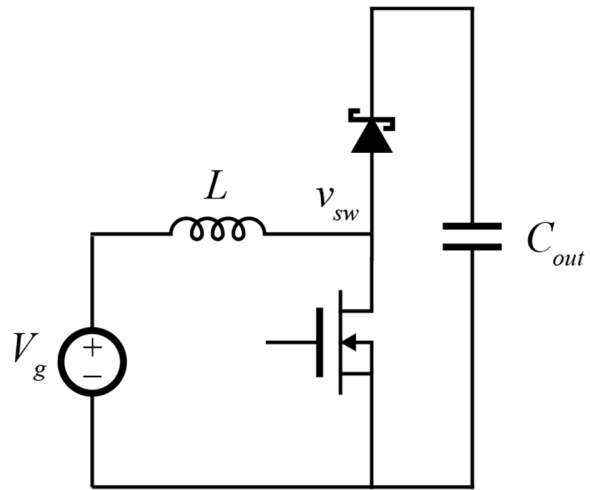
parameter: V_{GS}



MOSFET Stored Charge



Device Capacitances



Device Capacitances

