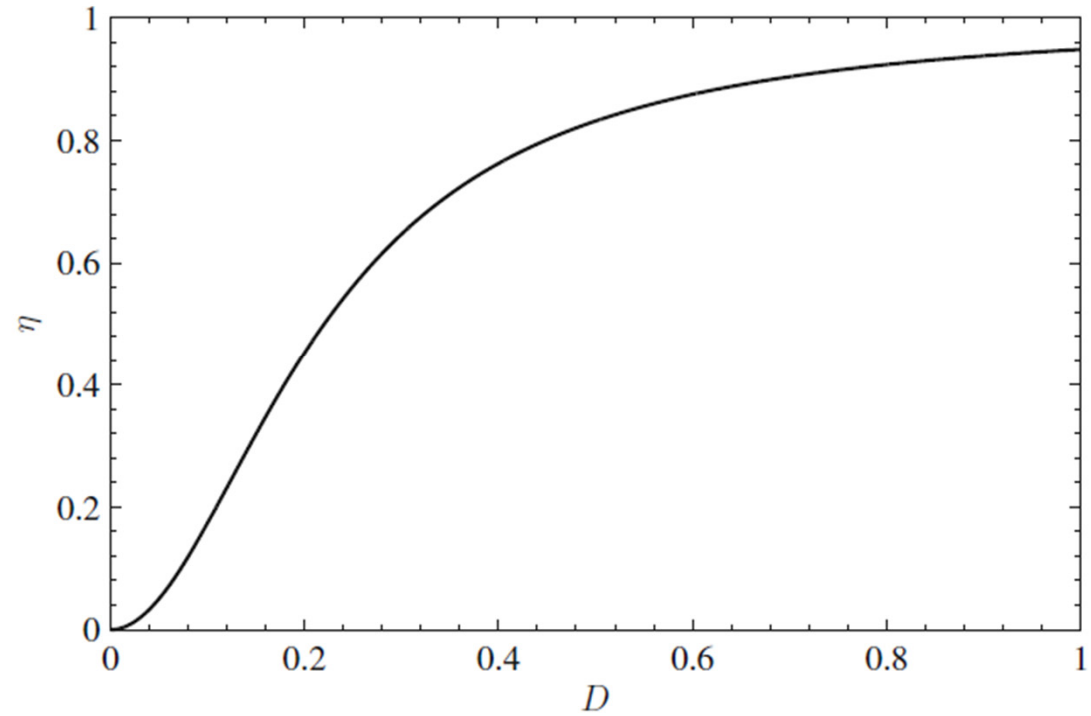


Predicted Efficiency vs Duty Cycle



Types of Power Diodes

Standard recovery

Reverse recovery time not specified, intended for 50/60Hz

Fast recovery and ultra-fast recovery

Reverse recovery time and recovered charge specified

Intended for converter applications

Schottky diode

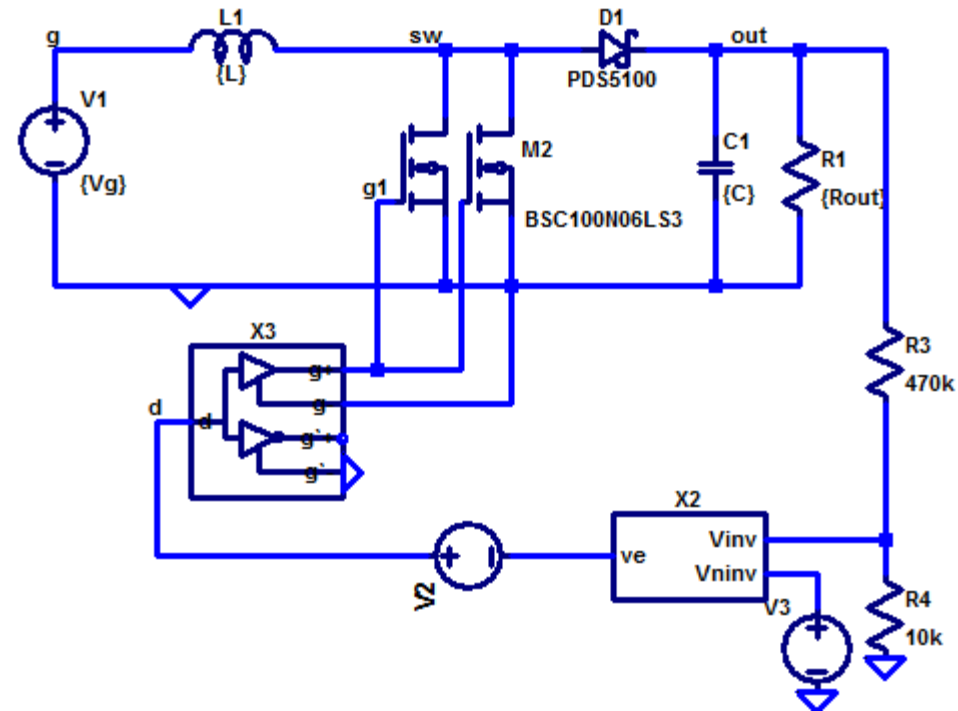
A majority carrier device

Essentially no recovered charge

Model with equilibrium i - v characteristic, in parallel with depletion region capacitance

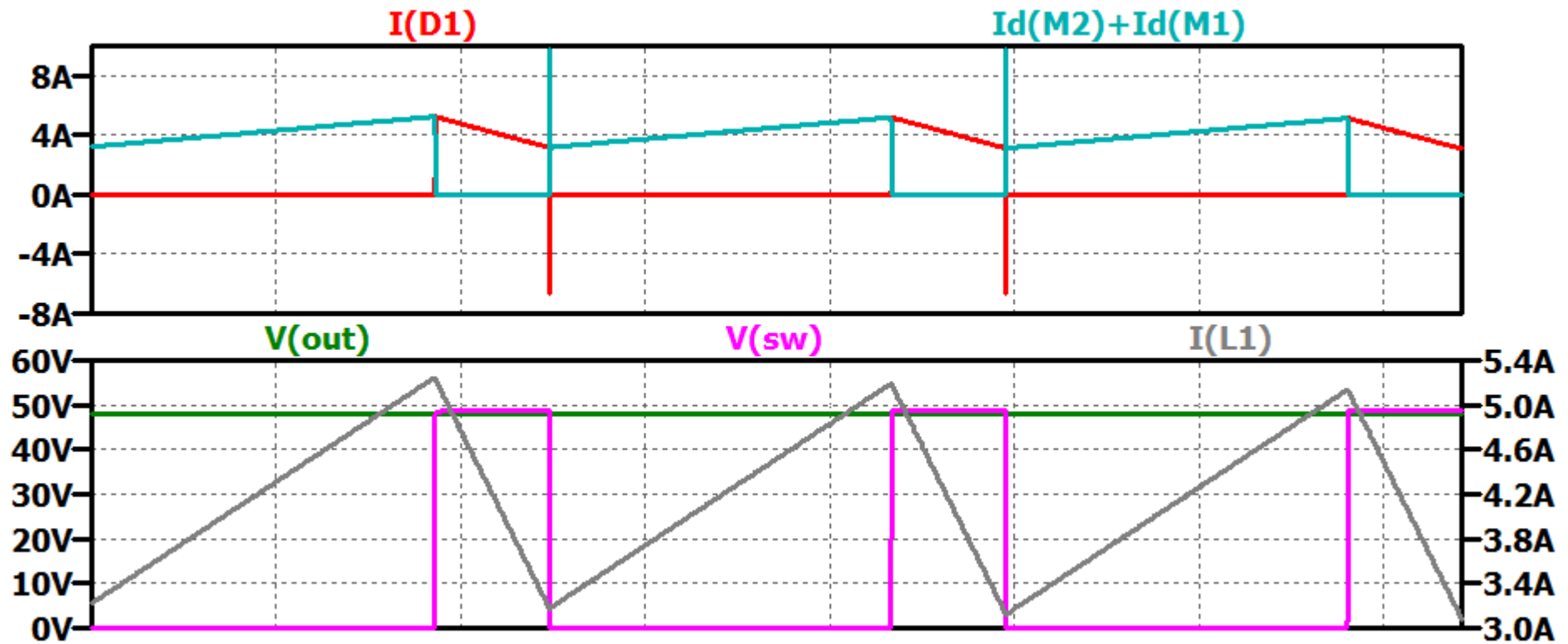
Restricted to low voltage (few devices can block 100V or more)

Schottky Diode

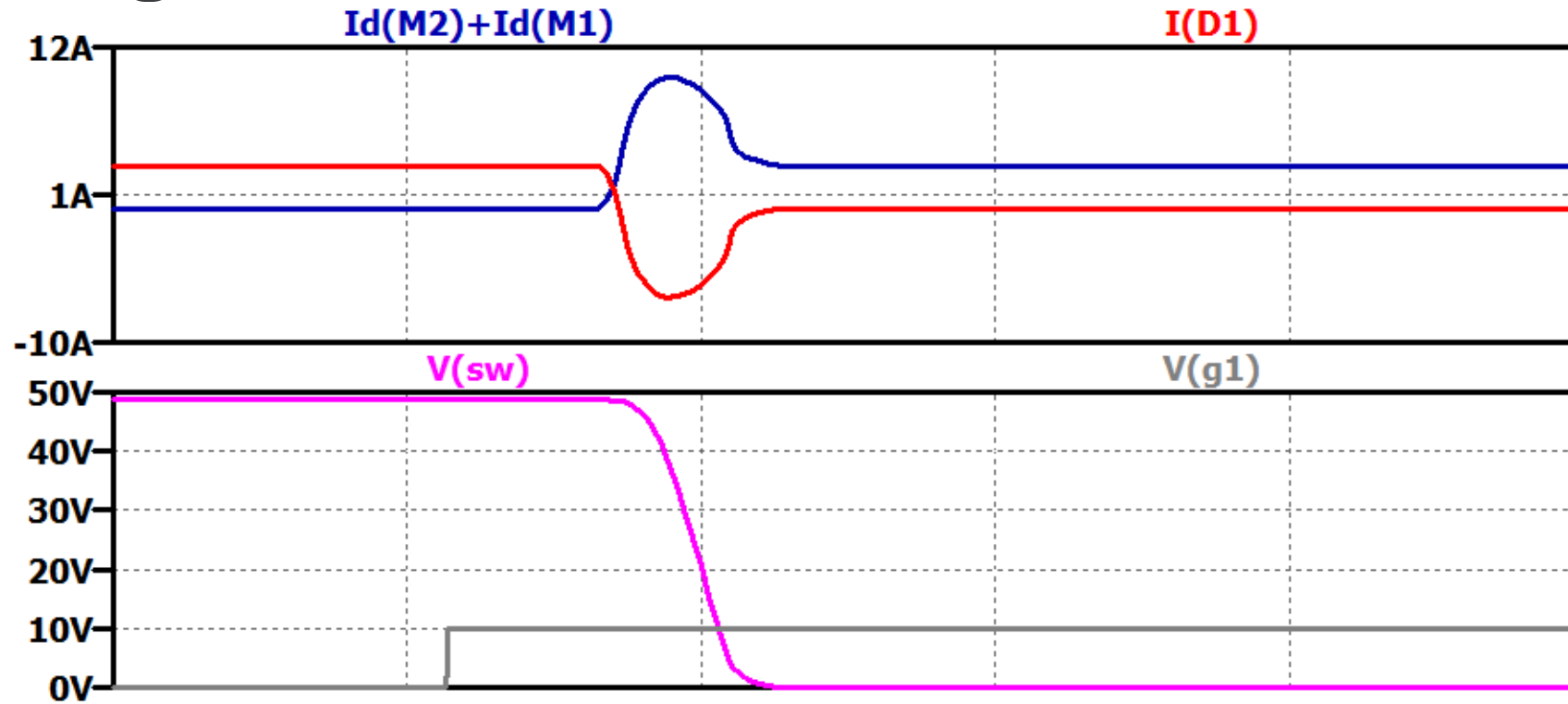


L	C_{out}	f_s	Diode	η (Sim)
22uH	22uF	200k	Si (FR)	93.9%
22uH	22uF	200k	Si Schottky	96.9%

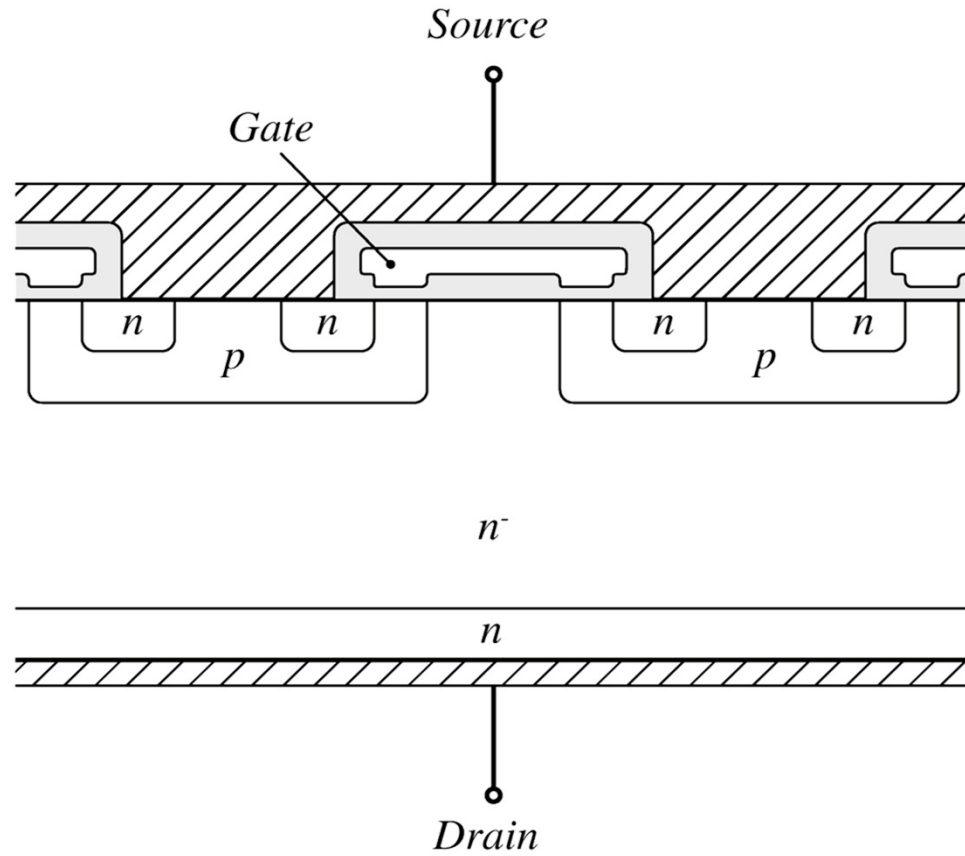
Simulation Waveforms



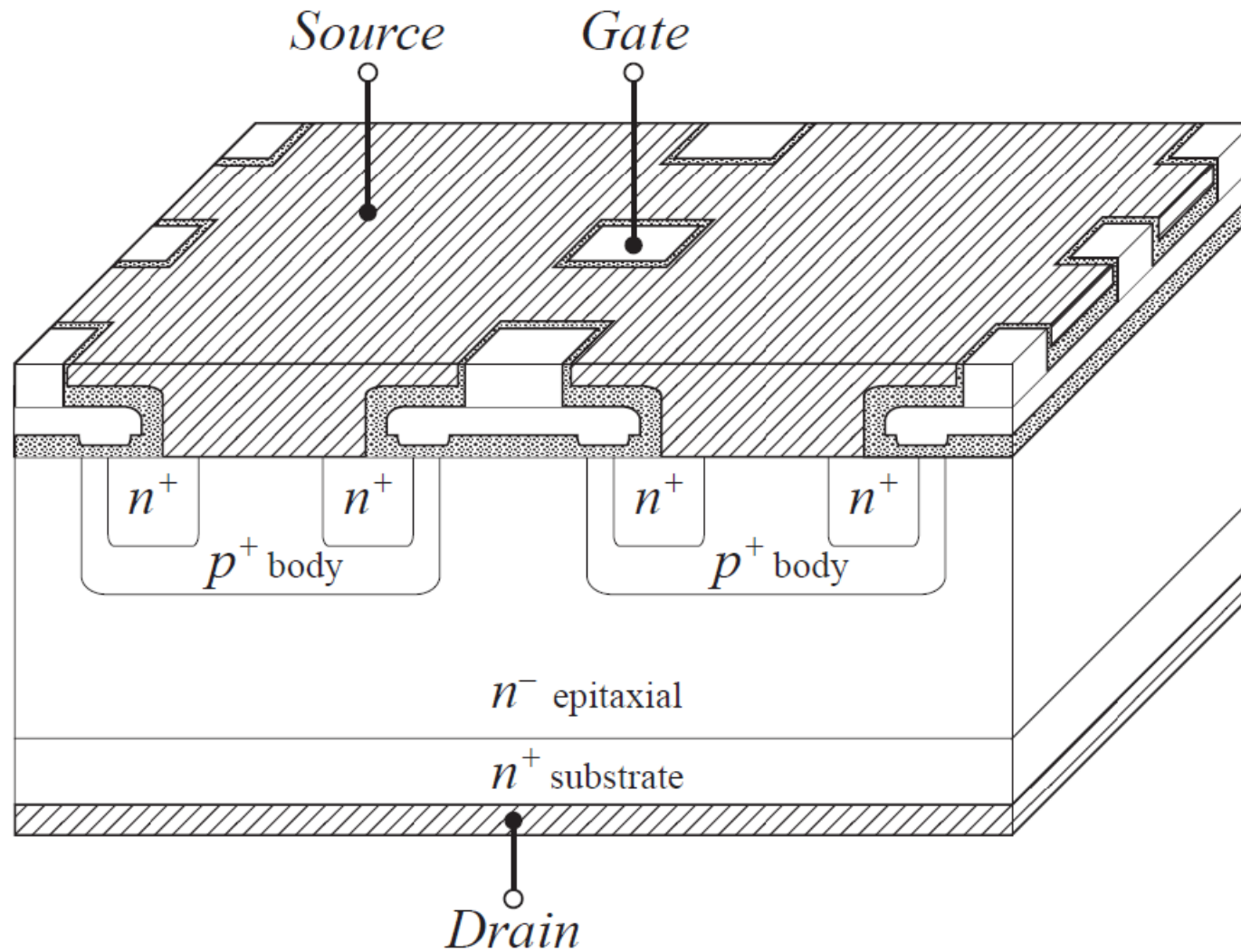
Switching Transition



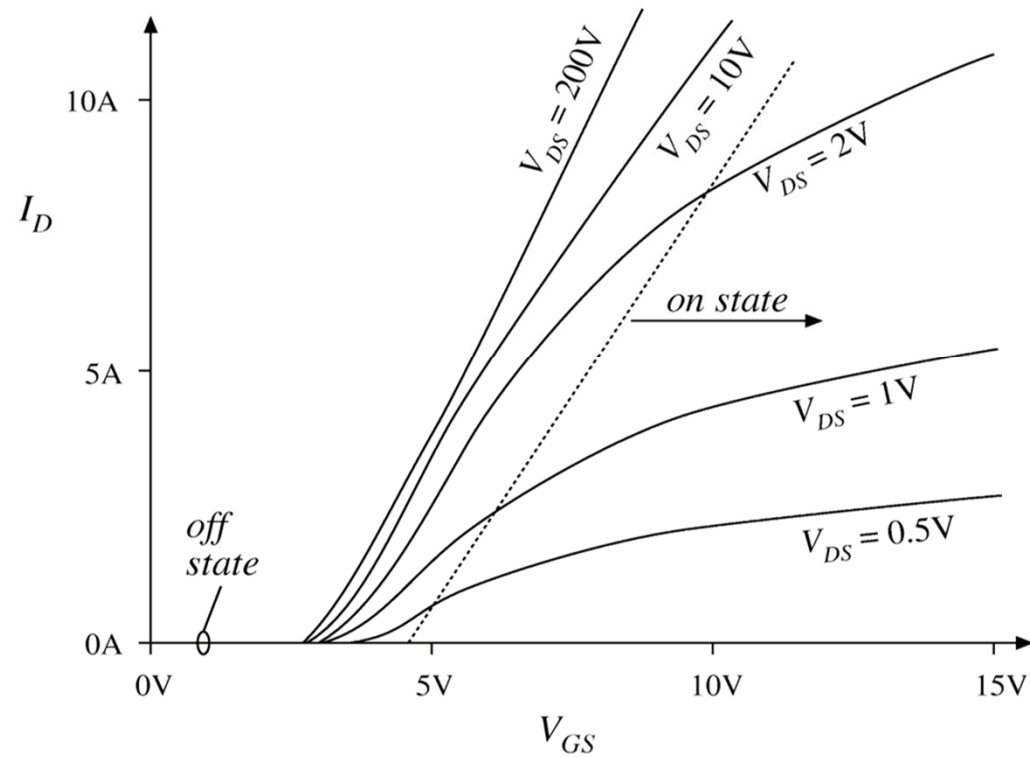
Power MOSFET



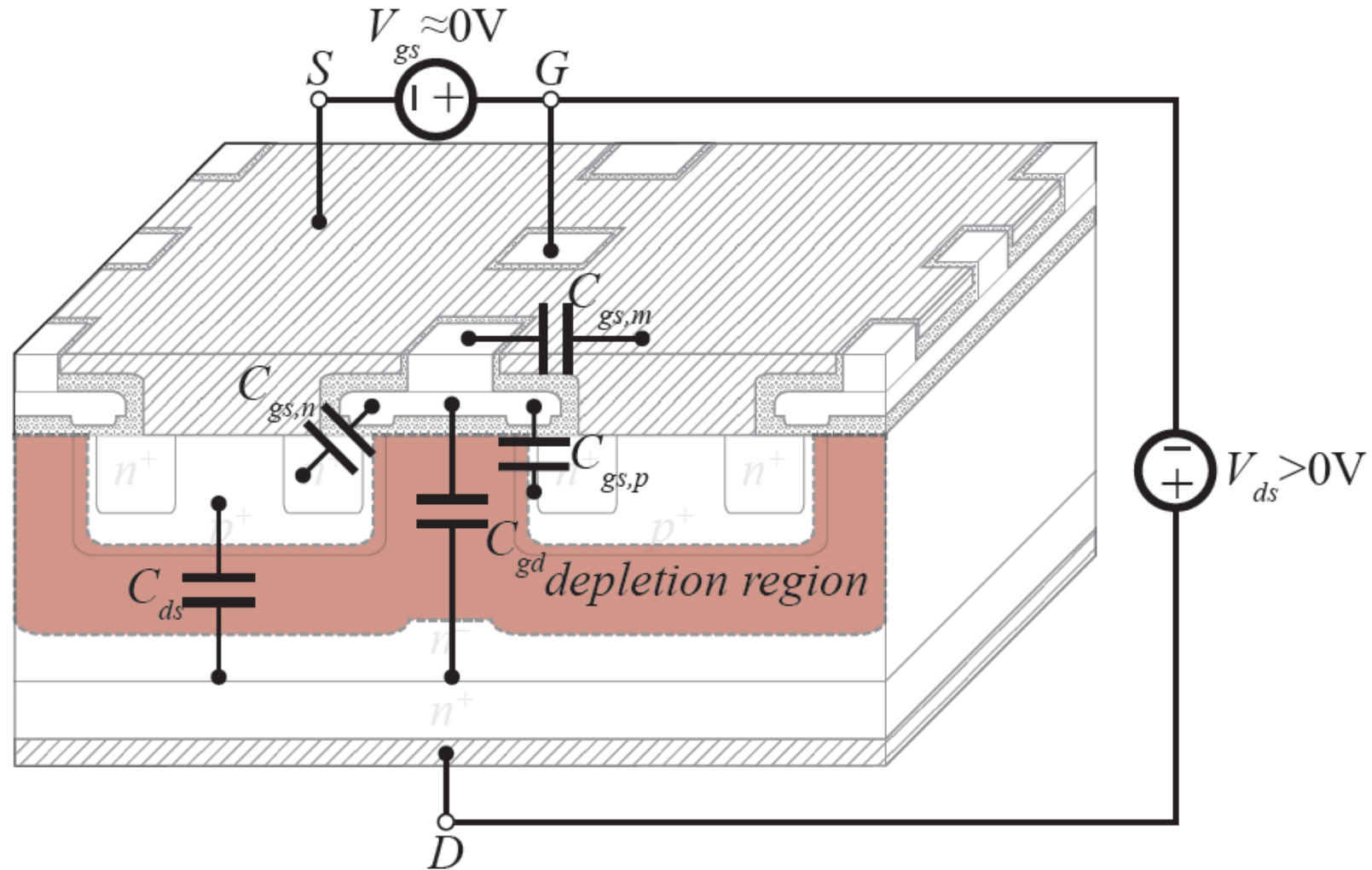
MOSFET Cross Section



MOSFET Static Characteristics



MOSFET Depletion capacitance



MOSFET Equivalent Circuit

