ECE 5/472 Power Electronics

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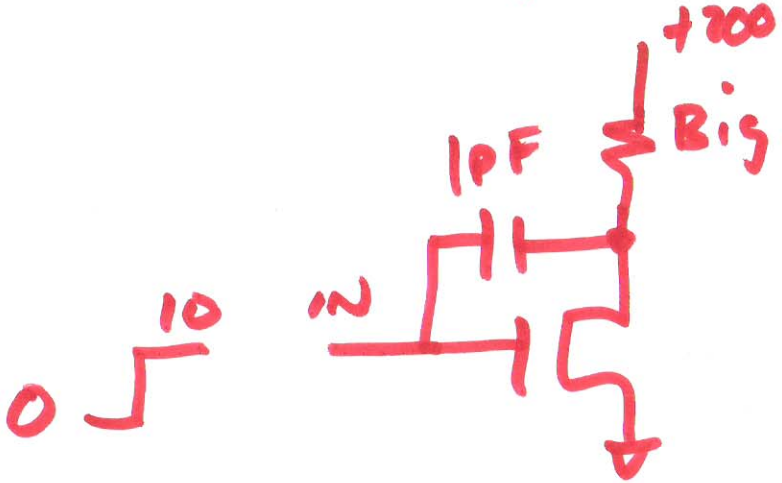
Lecture 27 Dec. 8, 2011

* operation & schematics of basic charge pumps

* understand power MOSFET capacitances especially Miller Capacitance

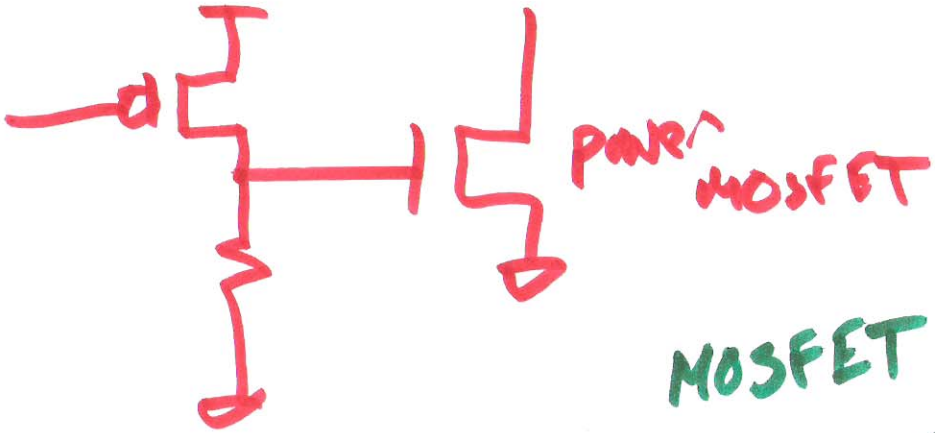


How much charge does the input supply? $CV=Q$

What is the input capacitance?

Driving Power MOSFETs

see lecture



MOSFET Capacitances

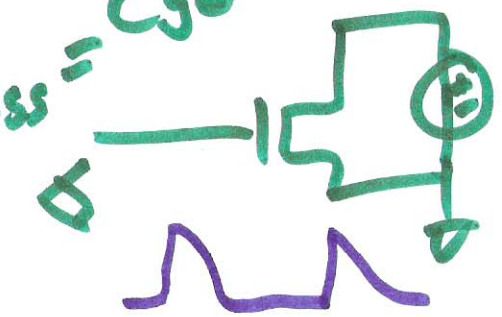
C_{iss}

C_{rss}

C_{oss}

How meas.

$C_{iss} = C_{gd} + C_{gs}$



Ac short.

Model an SCR using BJTs discuss its operation

Use in a light dimmer

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Triac operation

its use in an application

Thyristor { SCR
TRIAC (anti-parallel SCRs)

study your H.W.s, Tests, And

your project (!)

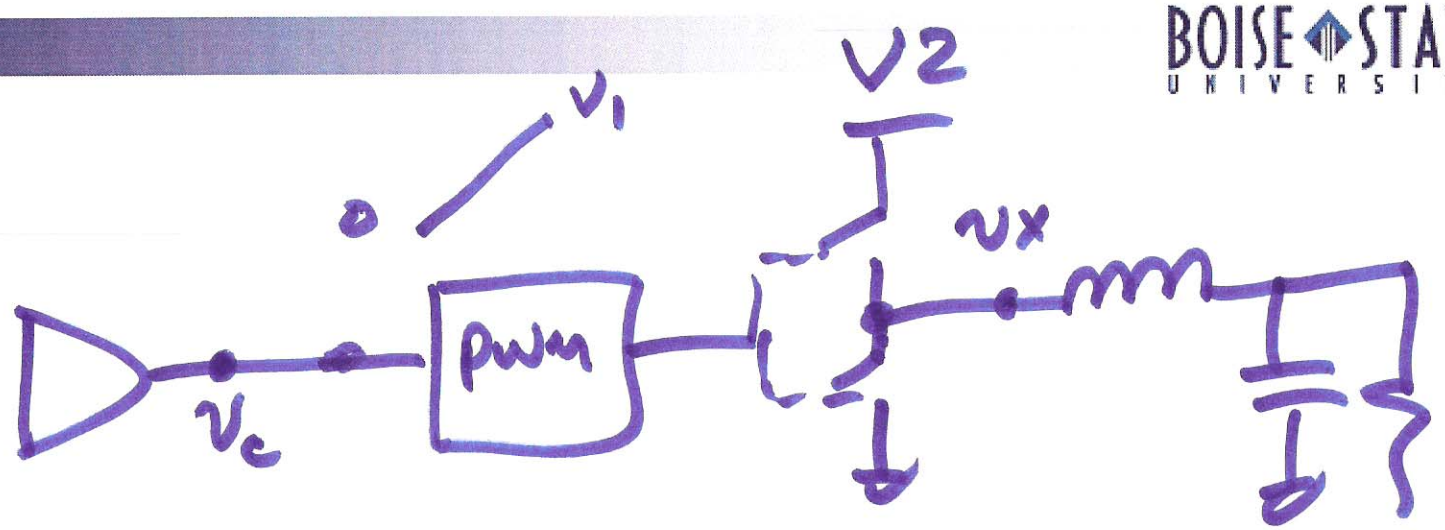
ZVS, ZCS, Buck, Boost,

discontinuous current operation,

ripple in the inductor (max, min) etc.)

output voltage ripple.

$V_o = DV_s$ → derive operation of converter



Modeling transformers with SPICE

$$\frac{v_x}{v_c} = ?$$

Reverse Recovery time?
storage time?

study the ch. 6 & ch. 2 examples

4) SEPIC operation