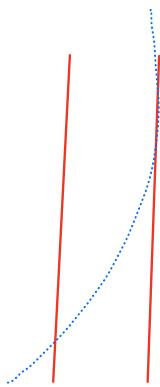


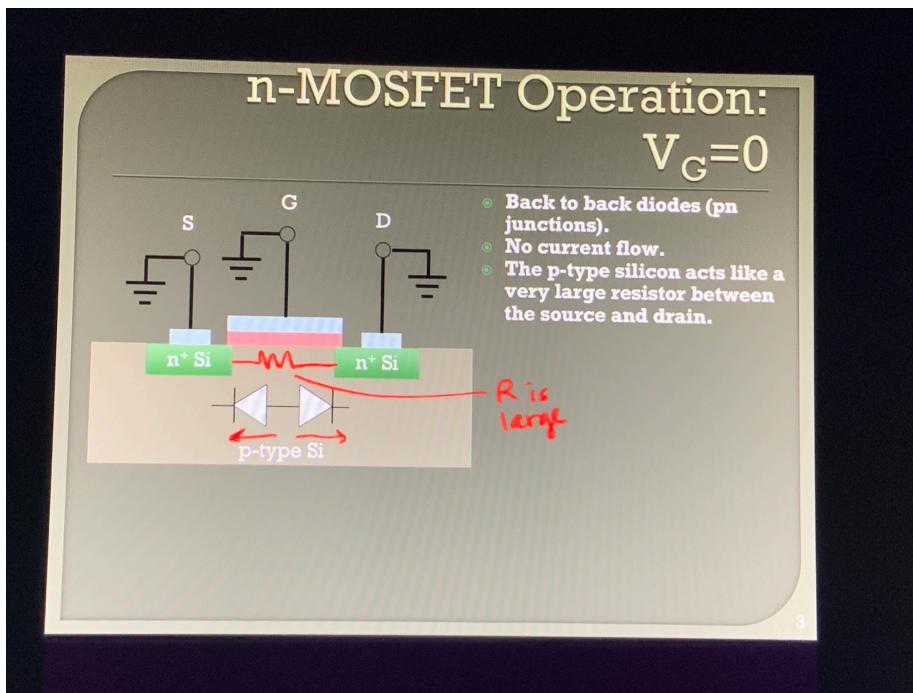
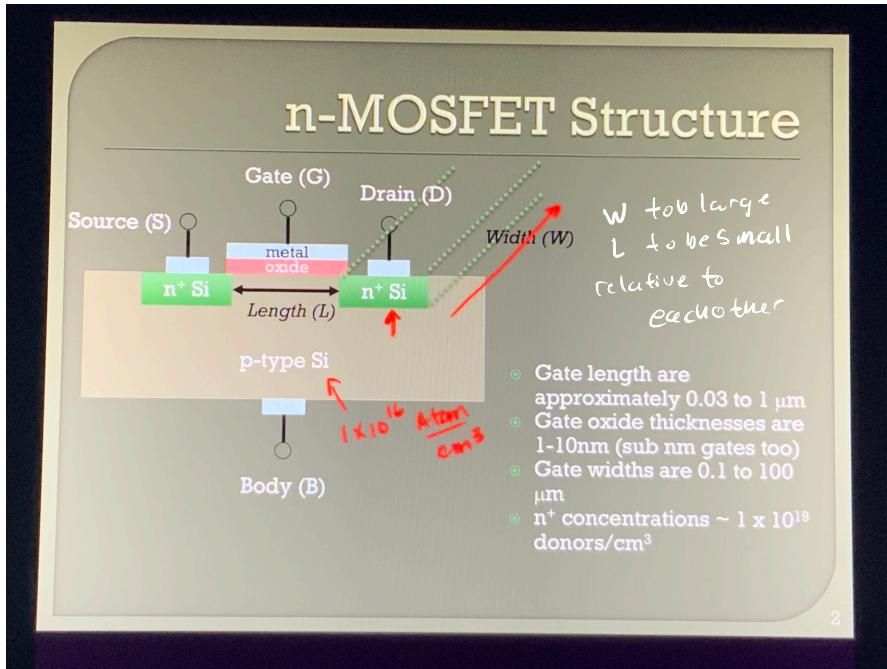
This area of operation is  
called Saturation



(linear)

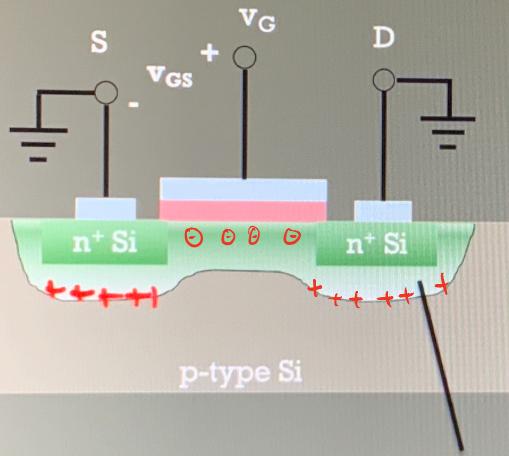
(curve)

(flat-line)



## n-MOSFET Operation:

$$V_G > 0$$



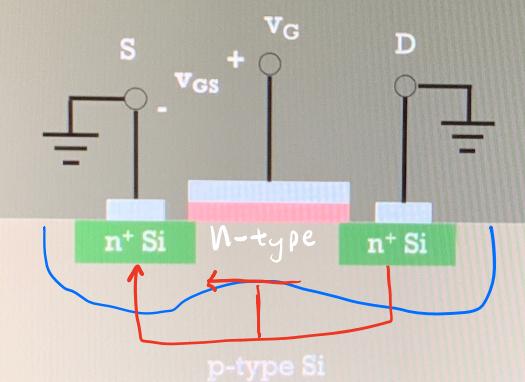
Depletion Region  
Consists of minority charge carriers

## n-MOSFET Operation:

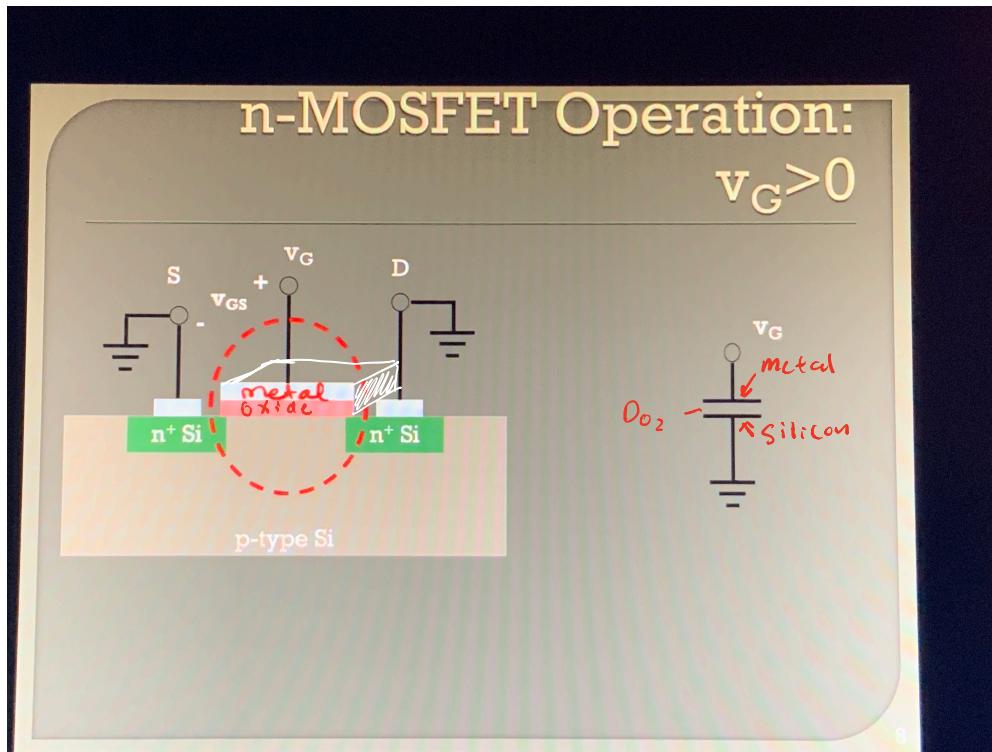
$$V_G > 0$$

$$V_{GS} > V_t \quad V_t \neq V_T$$

- The voltage  $V_{GS}$  must be greater than a threshold voltage ( $V_t$ ) for current flow to occur.
- $V_t$  is typically .3 to 1V



n - channel induced  
that connects the  
drain and source  
which sets up  
current flow



$$\epsilon_{ox} = \epsilon_r \epsilon_0$$

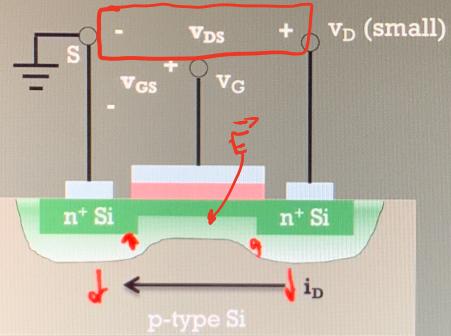
Relative Permittivity  
of the material

Thickness of Oxide  
(small, nm)

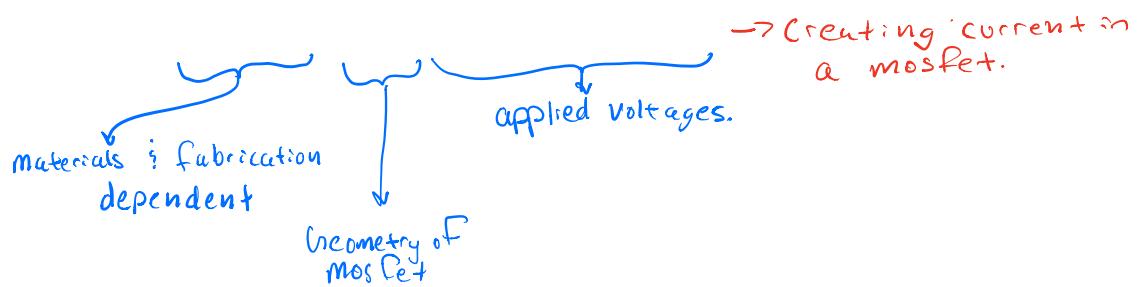
Permittivity of  
free space

as voltage size increases, the  
deeper the channel becomes.

n-MOSFET :  $v_G > 0$ ,  $v_D > 0$   
(small)



↳ Mobility of electrons, dependent  
on the Fabrication process  
and highly on temperature.



$\hookrightarrow A/v^2 \Rightarrow$  Process transconductance parameter

$\Rightarrow$  MOSFET parameter.

