P3360/AEP3630

Lecture 22

MOSFET circuits

-

1)

-

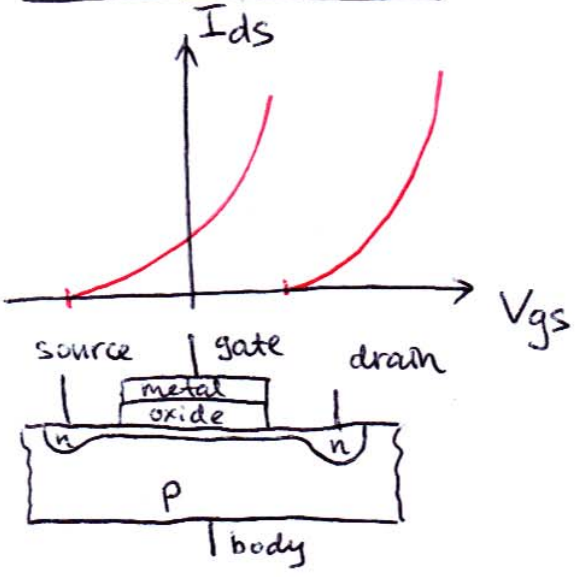
-

2)

-

-

FET variants



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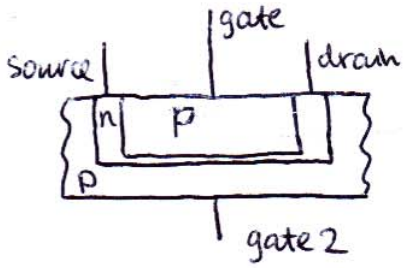
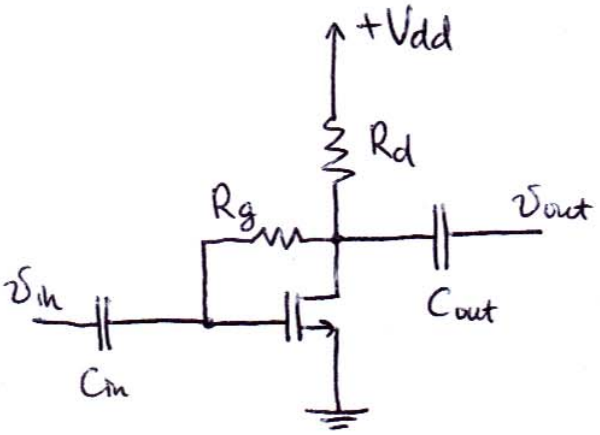


MOSFET pros & cons (vs BJT's)

+ + −

+ −

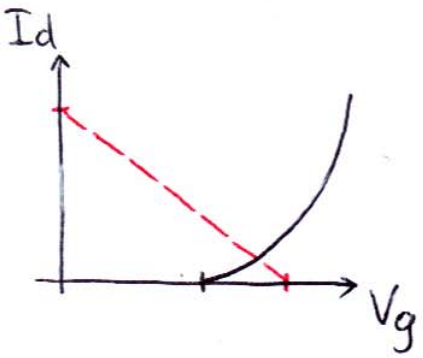
MOSFET analysis example



Suggestions

- This biasing is called

① Find Q-pt.



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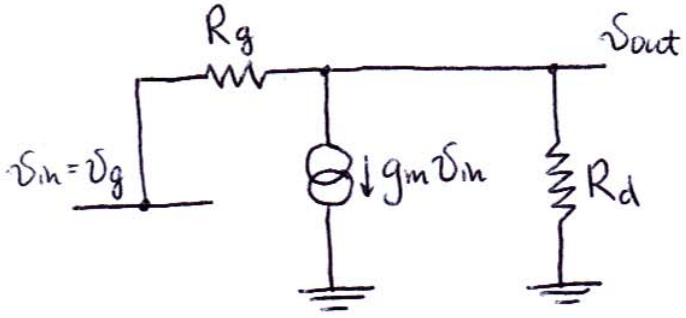
Approximately

② small-signal equivalent



KVL & KCL :

input impedance : $R_{in} = \frac{v_{in}}{i_{in}}$

output impedance : $R_{out} = \frac{v_{out}}{i_{out,sc}}$

choosing caps :

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Lecture 23

Analog signals

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—

Digital signals

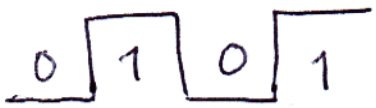
—

—

—

—

—

	analog	digital
original signal (vs. time)		
signal + noise		
recovered ?		
arbitrary shapes?		

Digital representation of info

①

②

a)

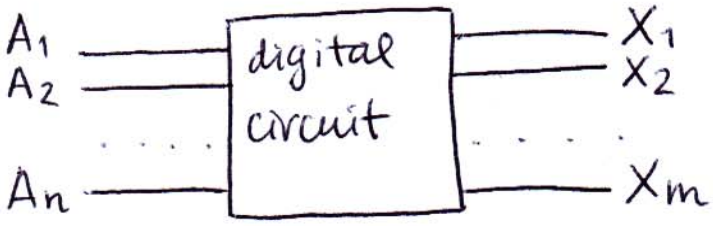
–

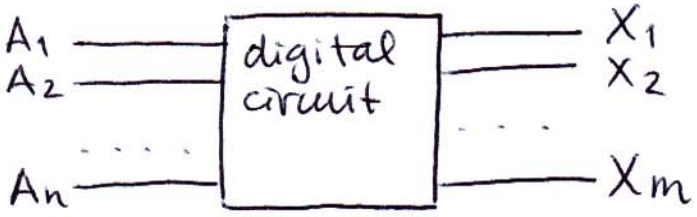
–

b)

decimal	binary	Gray code
0		
1		
2		
3		
4		
5		
6		
7		

Types of digital circuits





Truth table

P3360/AEP3630

Lecture 24

Boolean operations & gates

All digital operations can be reduced to

Gates =

–

–

–

NOT

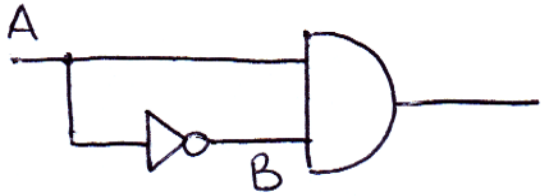
AND

Multiple inputs AND

OR

Multiple inputs OR

Application of time dependent signal



$X = A \cdot B = A \cdot \bar{A} = 0$

- any complicated fcn

-

-

Universal gates

-

-

-

NAND

NOR

De Morgan Theorem

Alternatively

—

Rules of Boolean algebra