

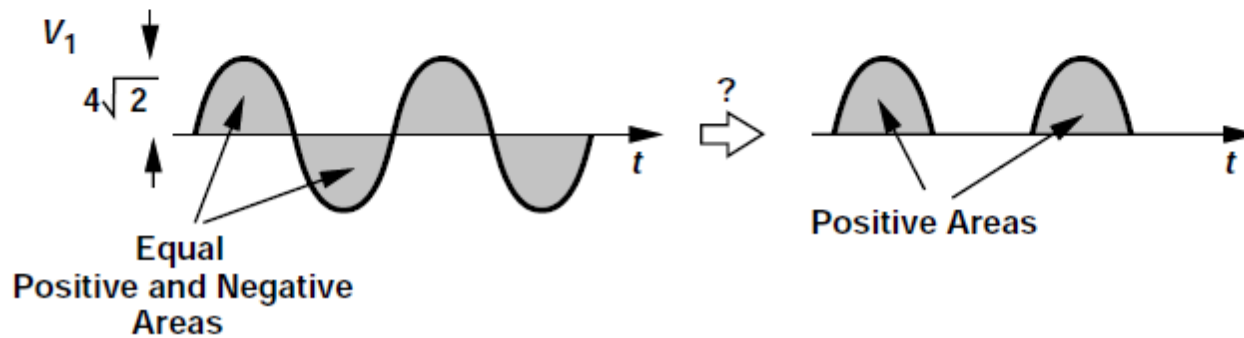
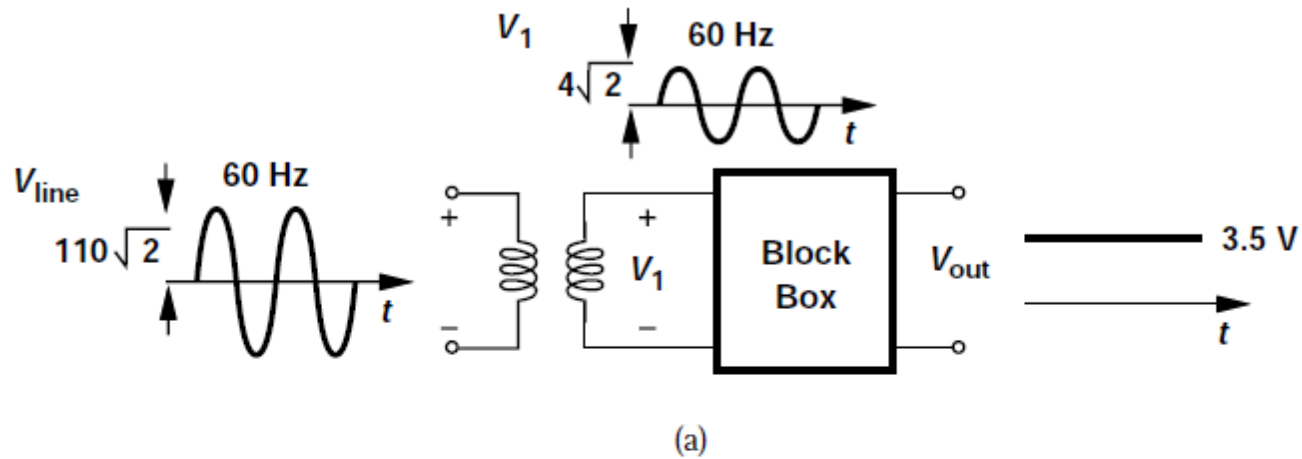
**TE 046**  
**DISPOSITIVOS ELETRÔNICOS**

**Oscar C. Gouveia Filho**  
**Departamento de Engenharia Elétrica**  
**UFPR**

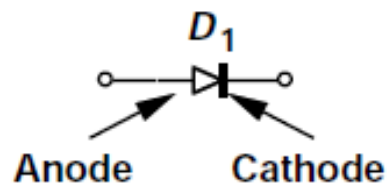
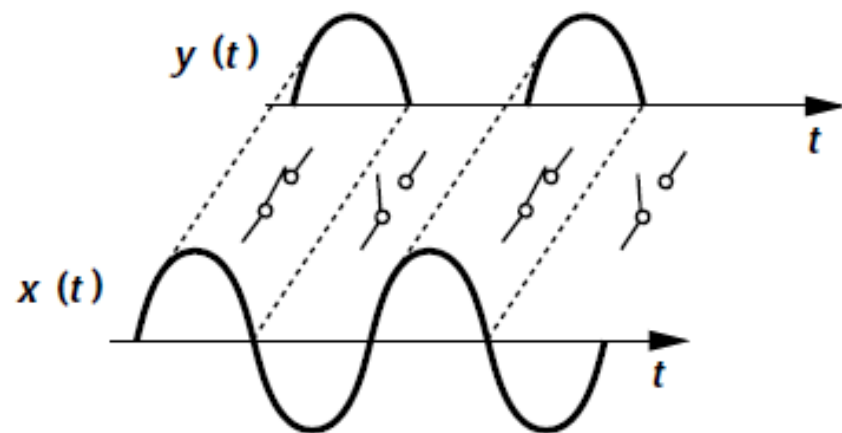
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# 4. DIODOS – MODELOS E CIRCUITOS

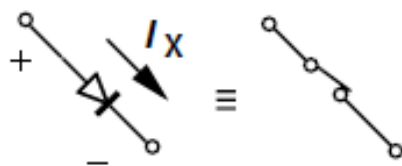
## 4.1 DIODO IDEAL



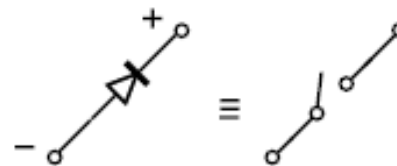
## Operação conceitual do diodo ideal



Forward Bias



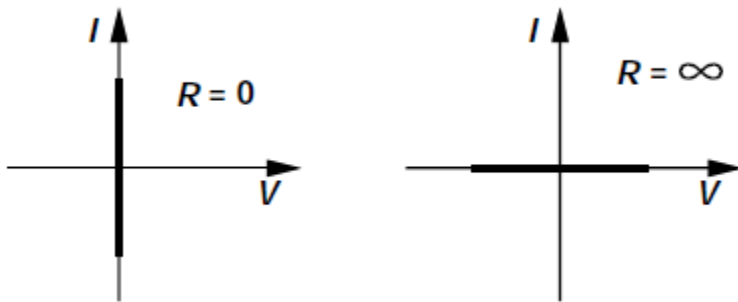
Reverse Bias



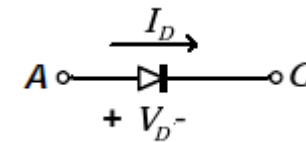
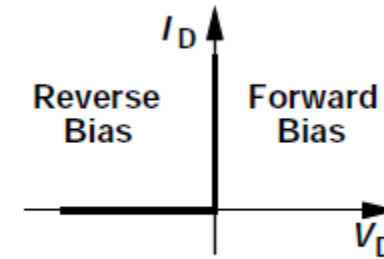
## 4.1.1 Característica I/V do diodo ideal

$$R = 0 \Rightarrow I = \frac{V}{R} = \infty$$

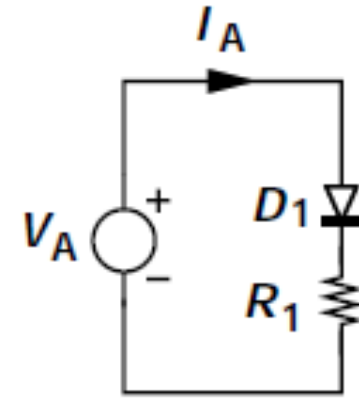
$$R = \infty \Rightarrow I = \frac{V}{R} = 0.$$



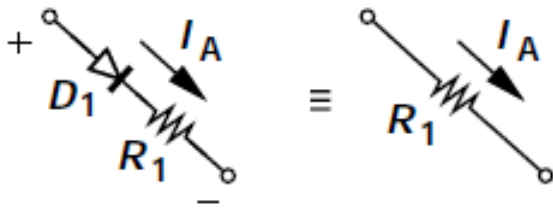
### Diodo Ideal



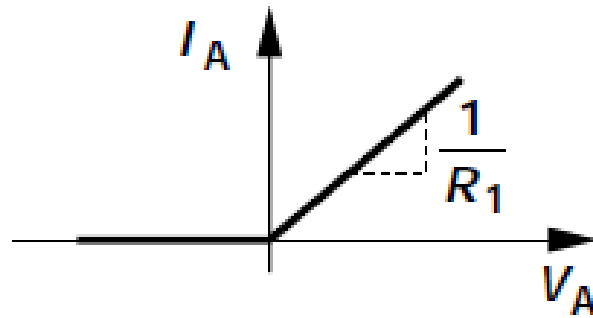
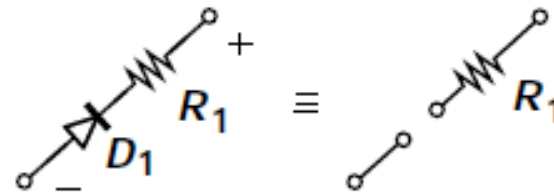
EXEMPLO: Desenhe a característica I/V para o circuito com diodo ideal.



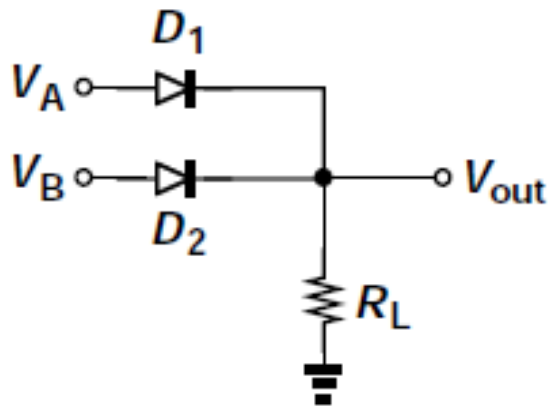
$$V_A > 0$$



$$V_A < 0$$

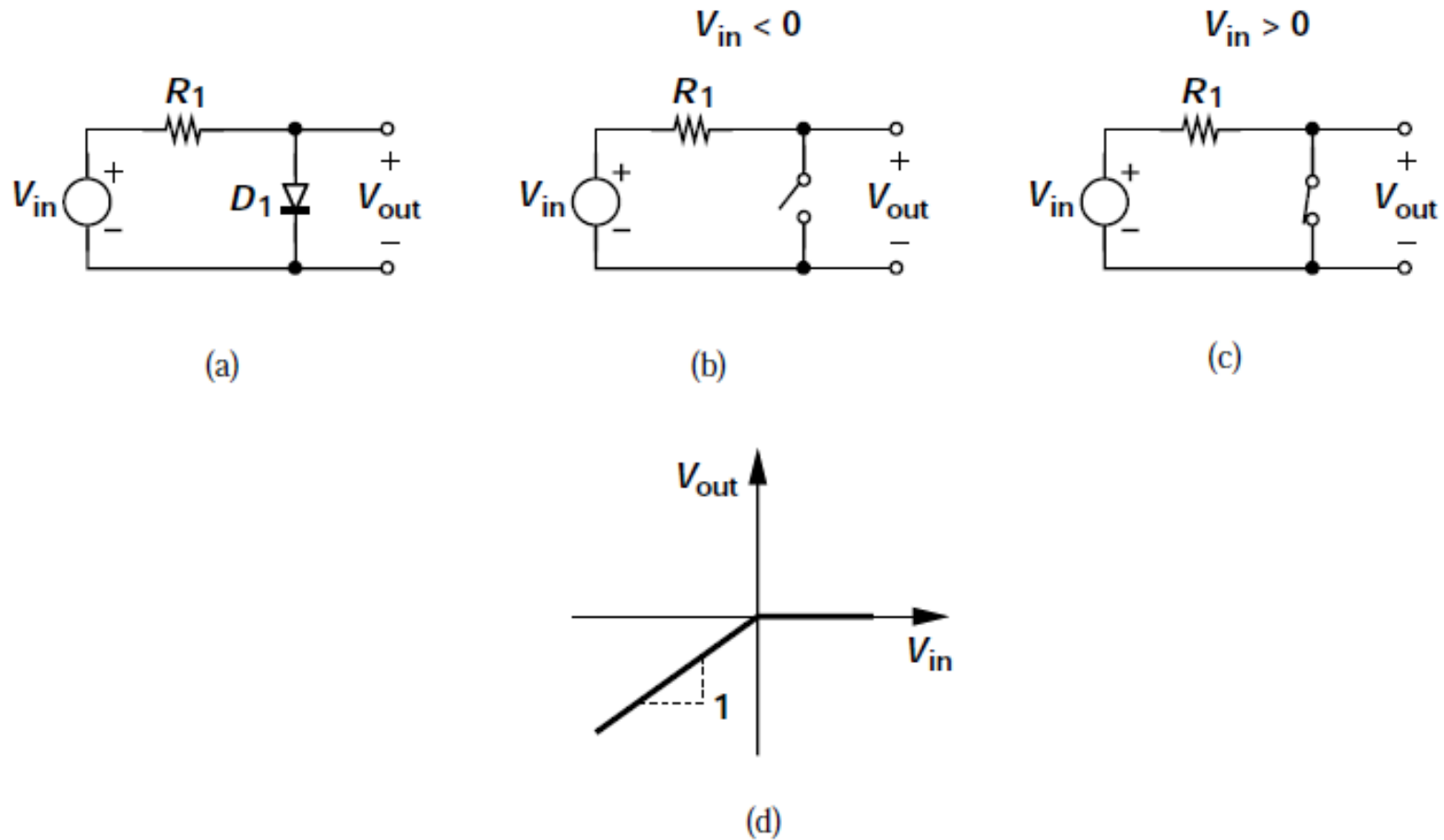


EXEMPLO: No circuito da figura cada entrada pode assumir valores de 1,5 V ou 0 V. Determine a tensão de saída para as combinações possíveis das entradas.

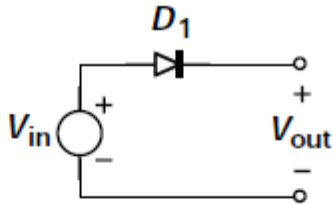


$V_A$	$V_B$	Condição dos diodos	$V_{out}$
0 V	0 V	Ambos OFF	0 V
1,5 V	0 V	$D_1$ ON e $D_2$ OFF	1,5 V
0	1,5 V	$D_2$ ON e $D_1$ OFF	1,5 V
1,5 V	1,5 V	Ambos ON	1,5 V

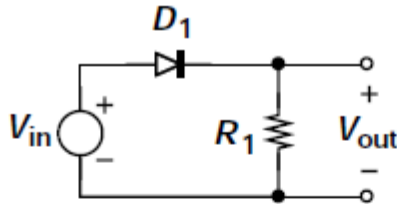
## 4.1.2 Característica entrada/saída ou característica de transferência



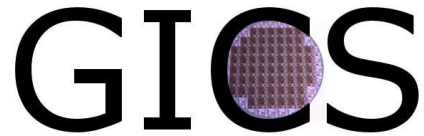
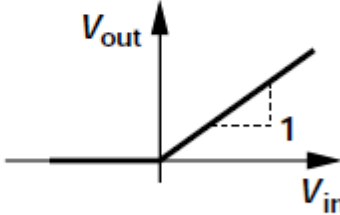
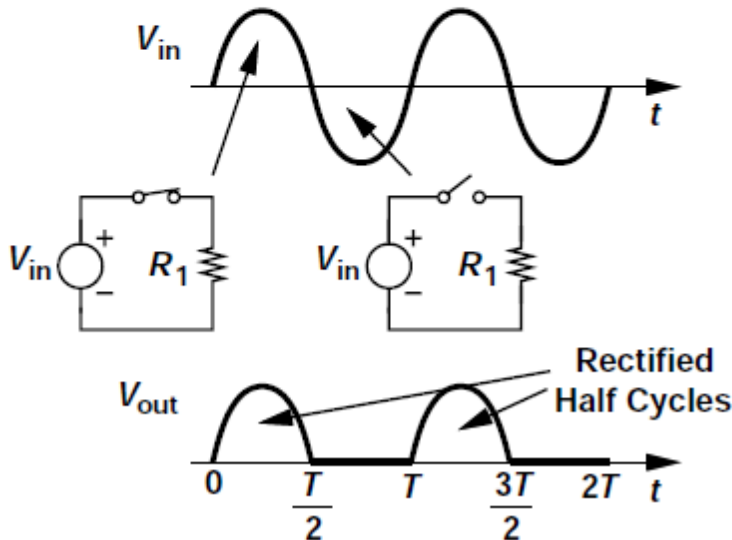
# Diodo ideal operando como retificador



(a)

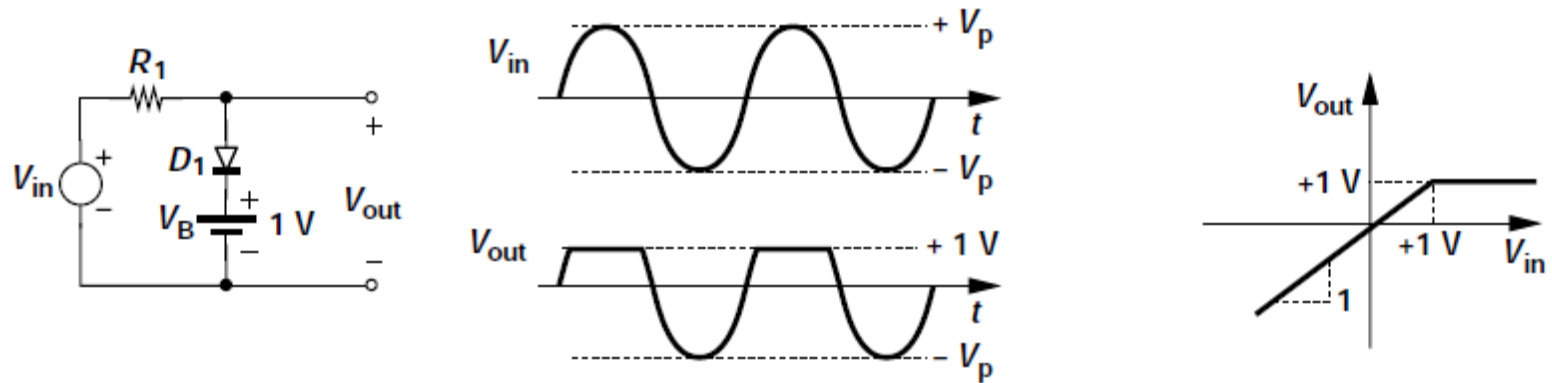
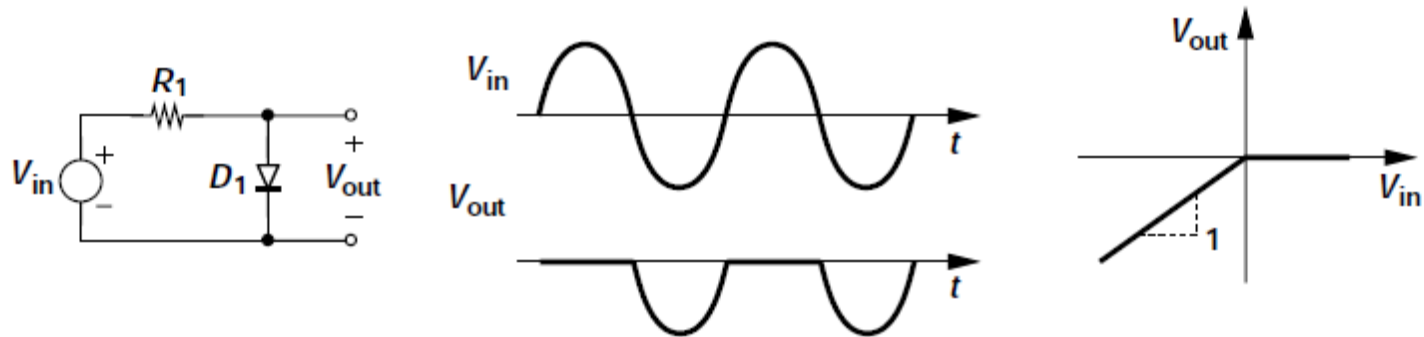
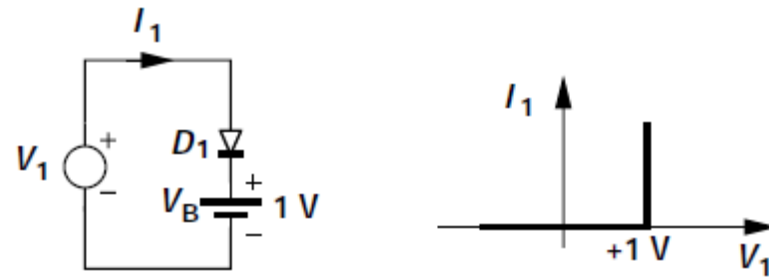


(b)

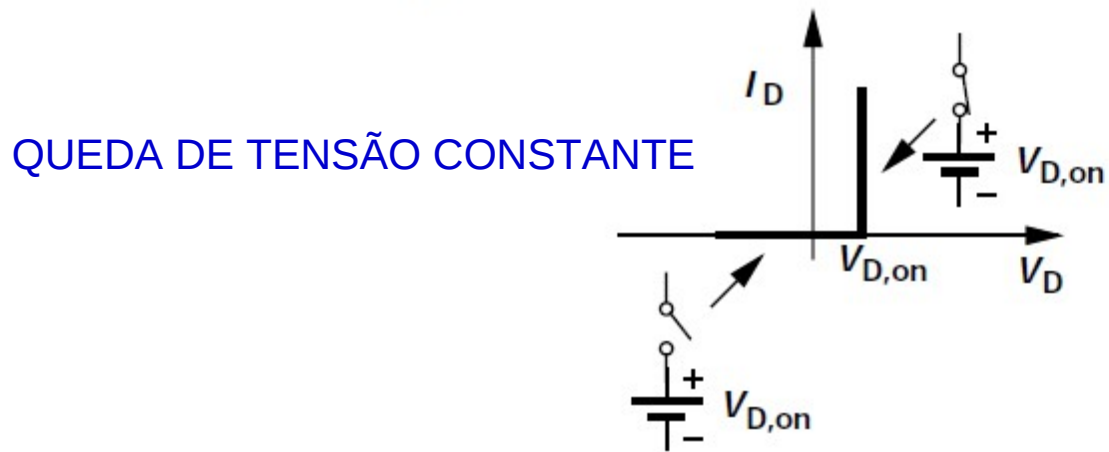
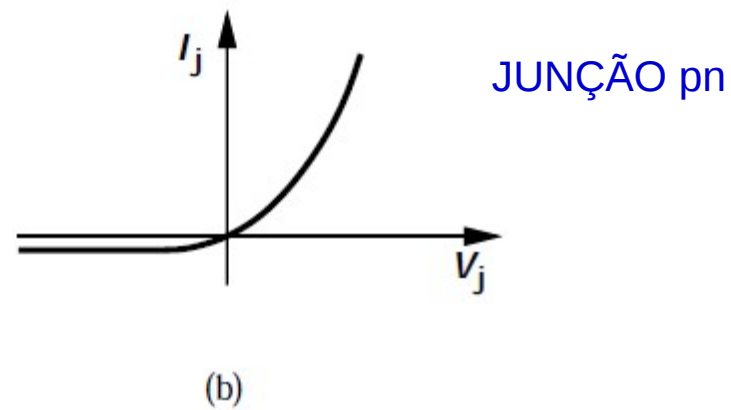
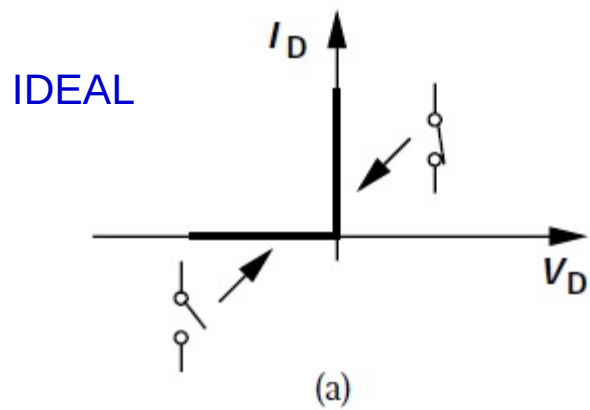




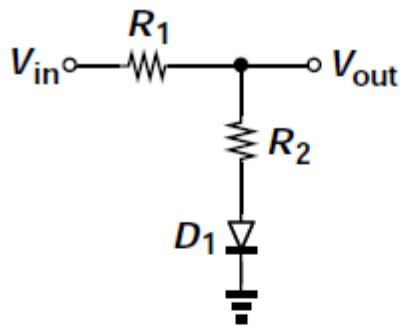
# Exemplo



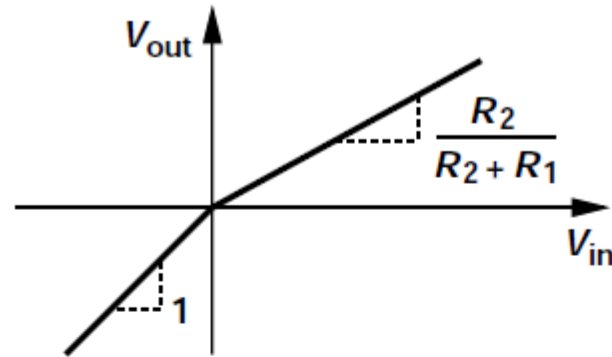
## 4.2 DIODO DE JUNÇÃO



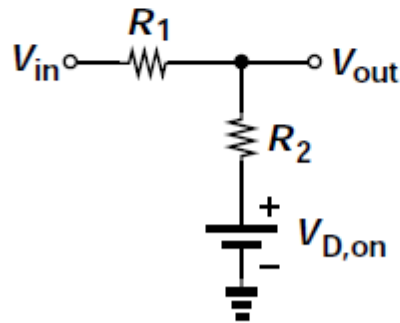
Exemplo: Trace a característica de transferência do circuito da figura usando o modelo ideal e o modelo de queda de tensão constante.



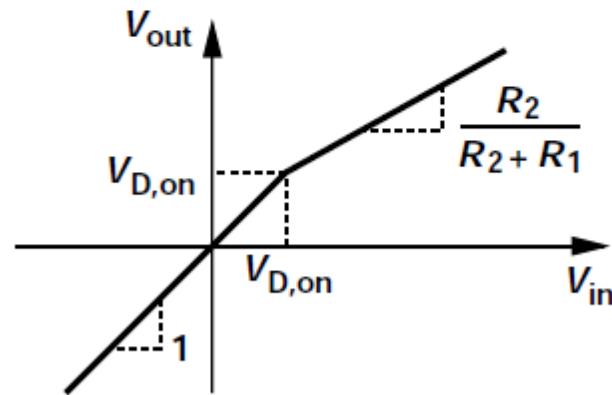
(a)



(b)



(c)



(d)

Exemplo: No circuito da figura os diodos têm áreas de seção transversal diferentes e são iguais em suas outras características. Determine a corrente em cada diodo.

