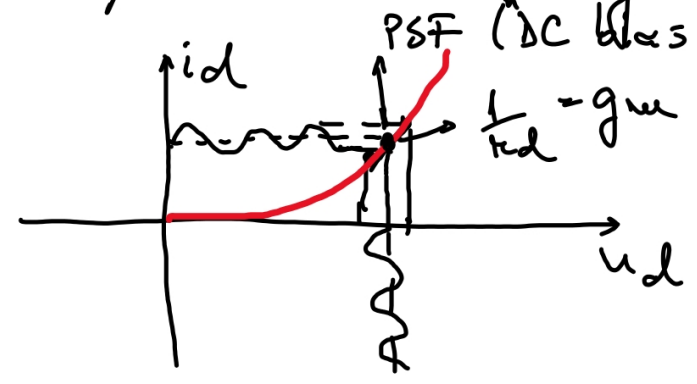


# Laborator nr. 2 FMI:

$$r_{ed} = \frac{1}{g_m}$$

rezistență dinamică ("dynamic resistance") → AC

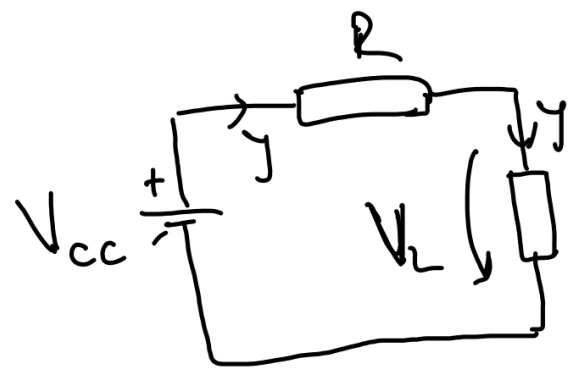


PSF ('DC bias point') → 'static operating point'

$$r_{ed} = \frac{d u_d}{d i_d} = \frac{\Delta u_d}{\Delta i_d}$$

Q ('quiescent operating point')

## Punctul static de funcționare:



$R_L = ???$

(stim caracteristica  $\rightarrow I_L(V_L)$   
'volt-ampereică a dispozitivului')

$$I_L = f(V_L) = ?$$

$R_L$  - impedanța (rezistență) dispozitivului.

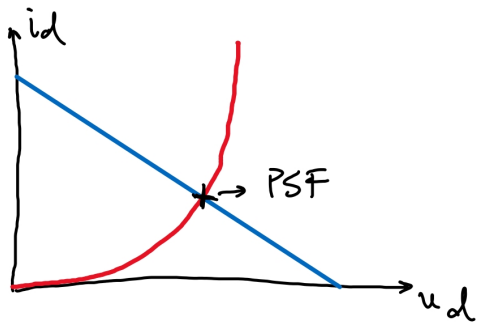
(diodă, transistor, MOSFET etc.)

$$V_{cc} = I \cdot R + V_L \Rightarrow V_L = V_{cc} - I_L R$$

$$-I_L = \frac{V_L}{R} - \frac{V_{cc}}{R}$$

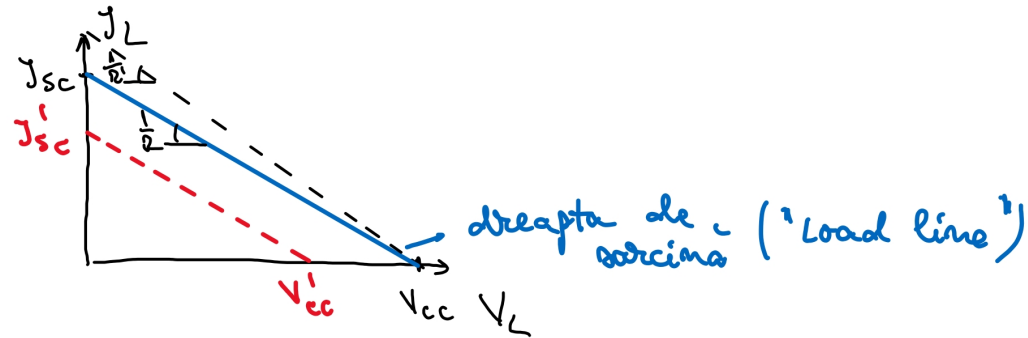
condiții 2 cazuri extreme:

- curentul de scurtcircuit ( $I_{sc}$ )  $\rightarrow R_L = 0$ ;  $I_{sc} = \frac{V_{cc}}{R}$
- tensiunea de mers în gol  $\rightarrow R_L = \infty$ ;  $V_{gol} = V_{cc}$



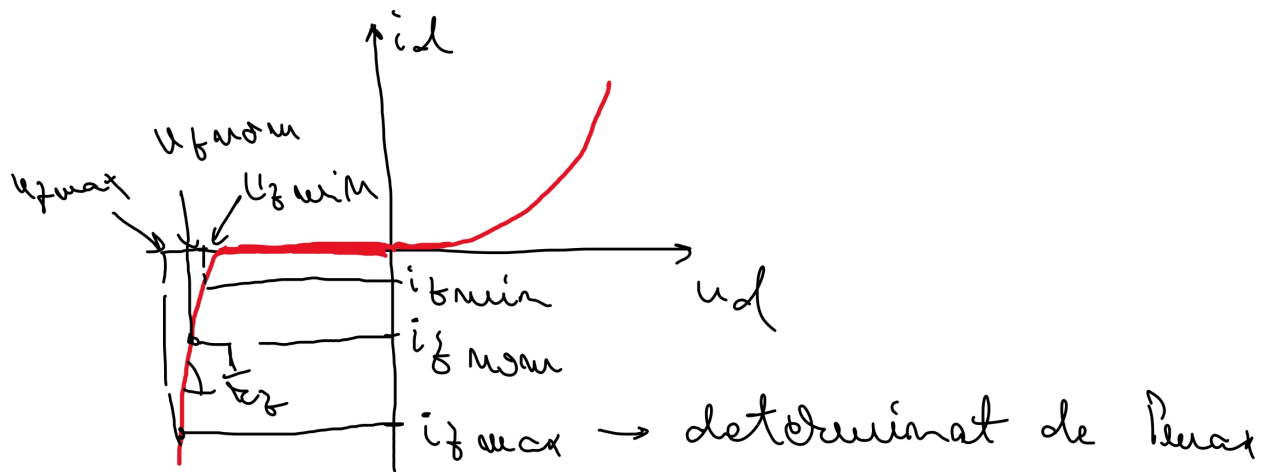
$$\Rightarrow I_L = \underbrace{\frac{V_{cc}}{R}}_{I_{sc}} - \frac{V_L}{R}$$

$$I_L = I_{sc} - \frac{1}{R} \cdot V_L \rightarrow \text{dreaptă}$$



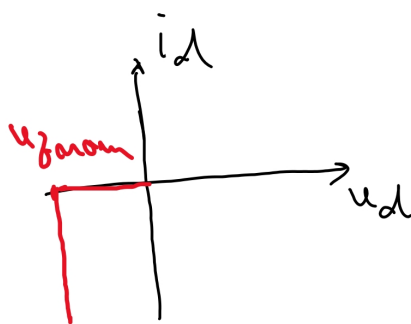
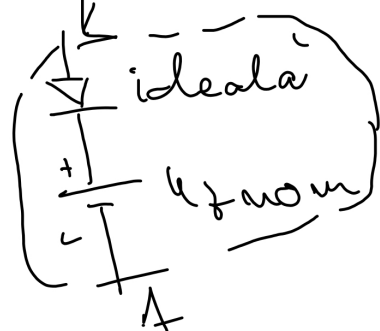
# Dioda stabilizatoare (Zener) :

- menține la bornele sale o tensiune constantă ( $U_Z$ )
- funcționează în polarizare inversă

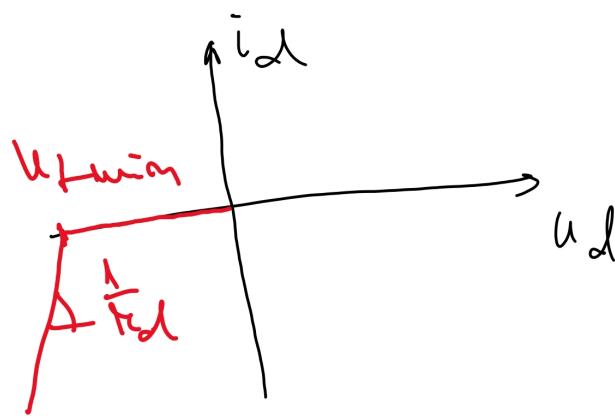
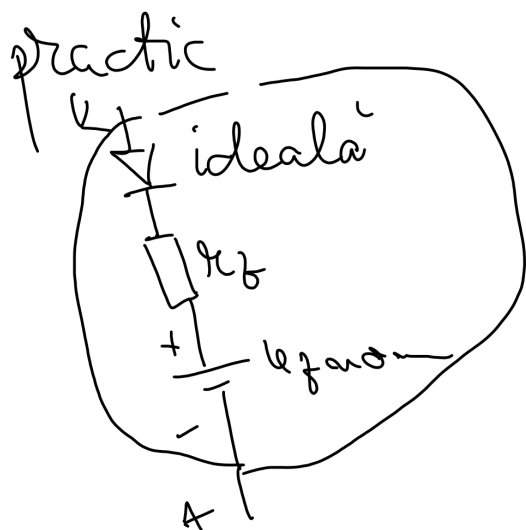


## Modele ale diodei Zener:

1.) Modelul idealizat

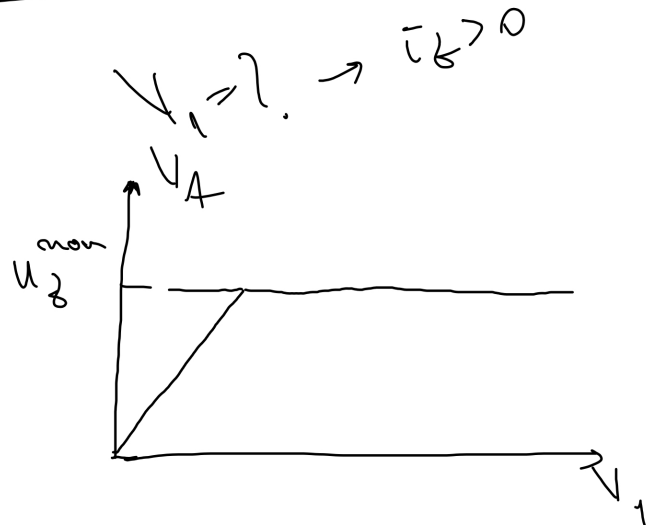
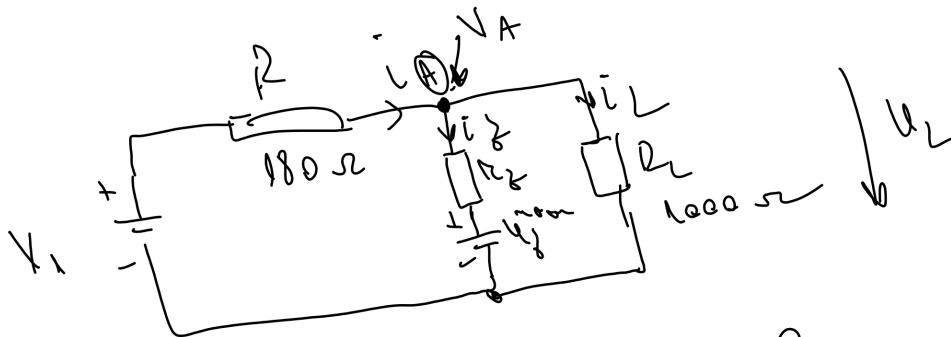


2.) Modelul practic



PT 8 4.7B

dim caract. u- $\bar{i}$   $\Rightarrow$   $u_z^{\text{max}} = 4.925 \text{ V}$



$$R_Z = \frac{1}{0.206} = \underline{4.85 \Omega}$$

$$P_{\text{max}} = 1 \text{ W} = i_{Z \text{ max}}^2 R_Z$$

$$1 \text{ W} = i_{Z \text{ max}}^2 \cdot 4.85 \Omega$$

$$i_{Z \text{ max}} = \sqrt{\frac{1 \text{ W}}{4.85 \Omega}} = 0.206 \text{ A} = 206 \text{ mA}$$