

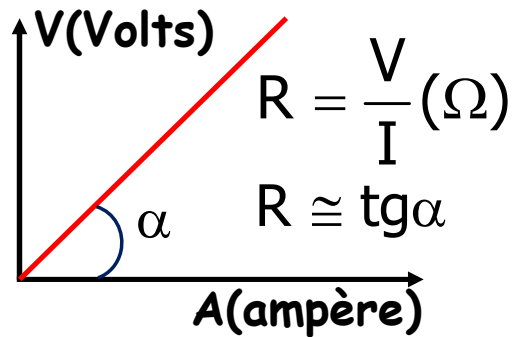
CAP. 10 - ELETRÔNICA APLICADA



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Aula - Apresentação

1 - Dispositivos eletro_eletrônicos

1.1 Resistor



1.2 Capacitor

$$i(t) = C \frac{dV_{in}(t)}{dt} \quad v(t) = \frac{1}{C} \int i(t) dt$$

$$Z = \frac{1}{Cs} = \frac{1}{j\omega C} = -jX_C$$

$$X_C = \frac{1}{2\pi fC}$$

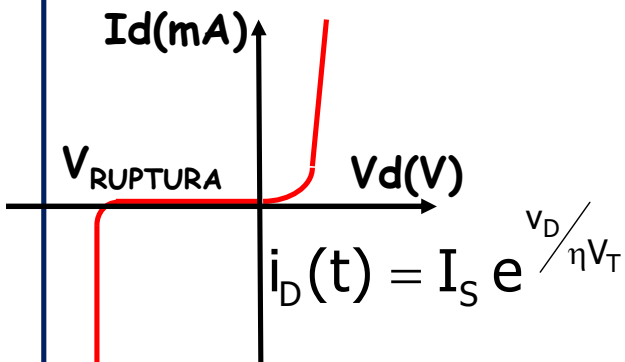
1.3 Indutor

$$V(t) = L \frac{di(t)}{dt} \quad i(t) = \frac{1}{L} \int V(t) dt$$

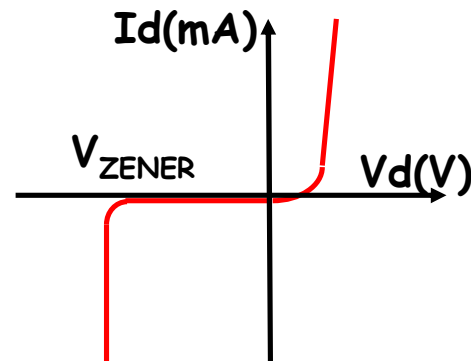
$$Z = sL = j\omega L = jX_L$$

$$X_L = 2\pi fL$$

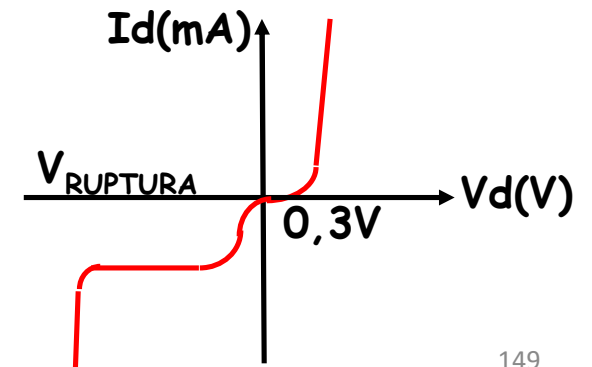
1.4 Diodo junção



1.5 Diodo Zener



1.6 Diodo Barreira Schottky



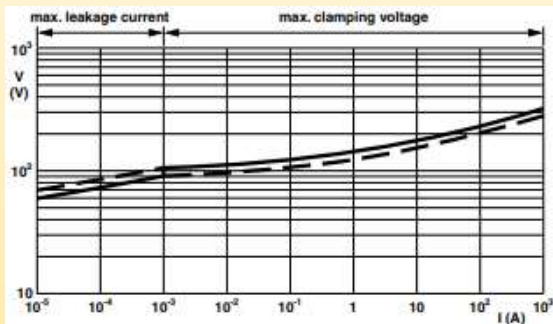
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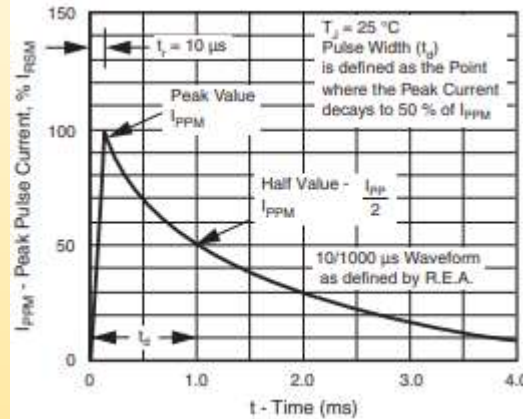
1 - Dispositivos eletro_eletrônicos

1.7 Varistor

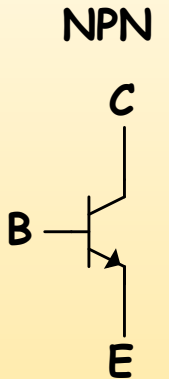
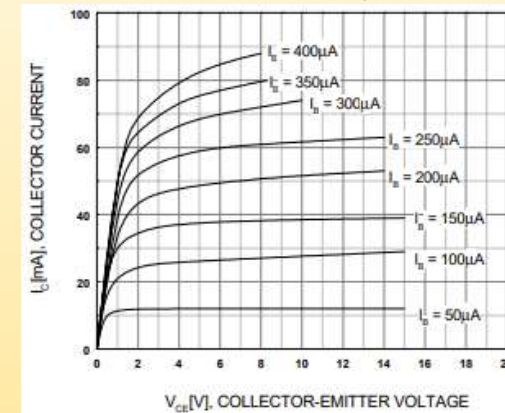


$V_{VAR} = 100V$ e $Max = 165V - 10A$

1.8 Transzorb (diodo supressor)



1.9 Transistor bipolar



1.9 Transistor bipolar

$$I_E = I_C + I_B = (\beta + 1)I_B = I_C / \alpha$$

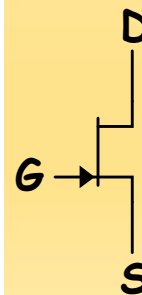
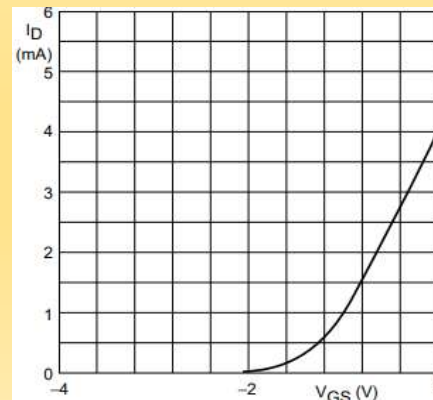
$$V_{CE} = V_{CB} + V_{BE}$$

$$P_{CMax} = V_{CE} I_C \quad I_C = \alpha I_E$$

$$\alpha = \frac{\beta}{1 + \beta} \quad I_C = \beta I_B$$

1.10 JFET -

Canal N



1.10 JFET - Relações

$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_P}\right)^2$$

$$g_m = \frac{2I_{DSS}}{|V_P|} \left(1 - \frac{V_{GS}}{V_P}\right)$$

$$P_D = V_{DS} I_D \quad V_{DS} = V_{DG} + V_{GS}$$

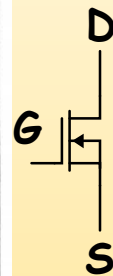
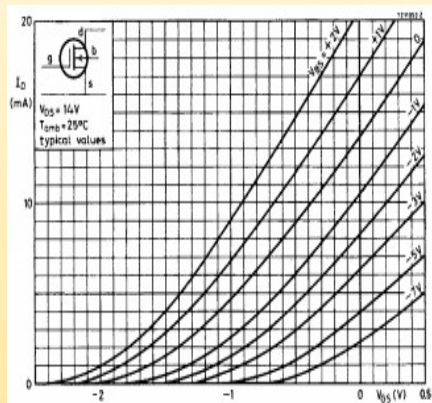
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1.11 MOSFET - Depleção



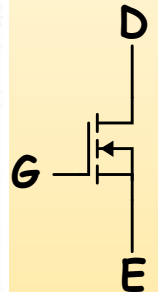
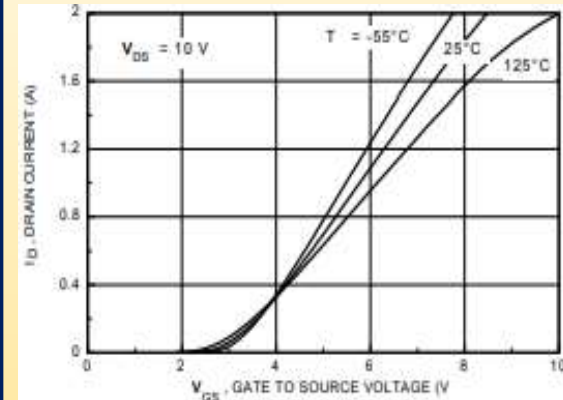
1.11 MOSFET - Relações

$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_P}\right)^2$$

$$g_m = \frac{2I_{DSS}}{|V_P|} = g_{m0} \left(1 - \frac{V_{GS}}{V_P}\right)$$

$$P_D = V_{DS} I_D \quad V_{DS} = V_{DG} + V_{GS}$$

1.12 MOSFET - Intensificação



1.12 MOSFET - Relações

$$V_{Dsat} = V_{GS} - V_T$$

$$I_D = K(V_{GS} - V_T)^2$$

$$k = \frac{I_{DON}}{(V_{GSON} - V_T)^2}$$

1.13 Amplificador Operacional

$$V_0 = A_D V_D + A_C V_C$$

$$V_C = (e_1 + e_2)/2$$

$$V_D = (e_2 - e_1)$$

$$CMRR = \frac{A_D}{A_C} = 20 \log \frac{A_D}{A_C}$$

1.13 - Relações

$$\omega = \frac{SR}{KE_{MAX}} \quad SR = \frac{\Delta V_0}{\Delta t} \text{ V}/\mu\text{s}$$

$$A_0 f_C = f_T \quad Z_0 = \frac{r_0}{(1 + \beta A)}$$

$$f_C = \beta f_T$$

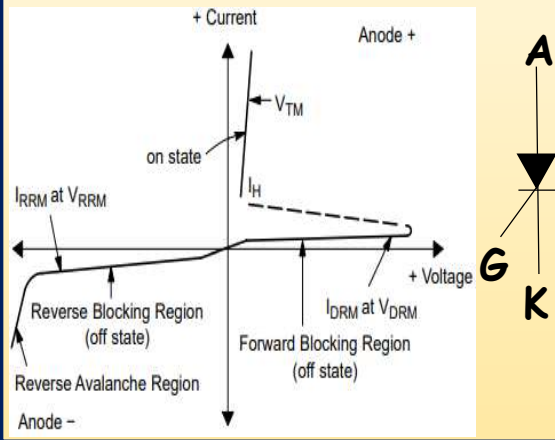
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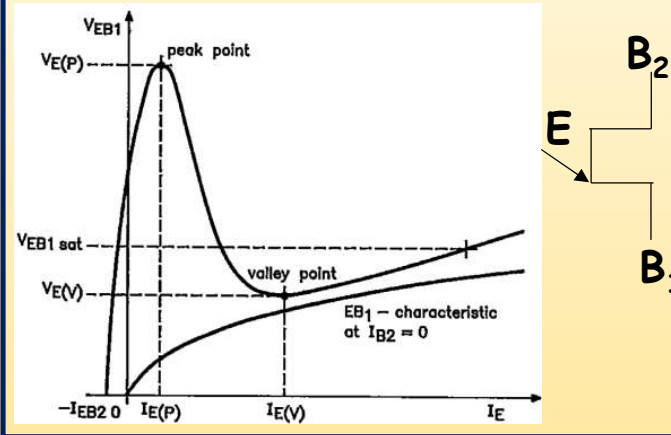
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1 - Dispositivos eletro_eletrônicos

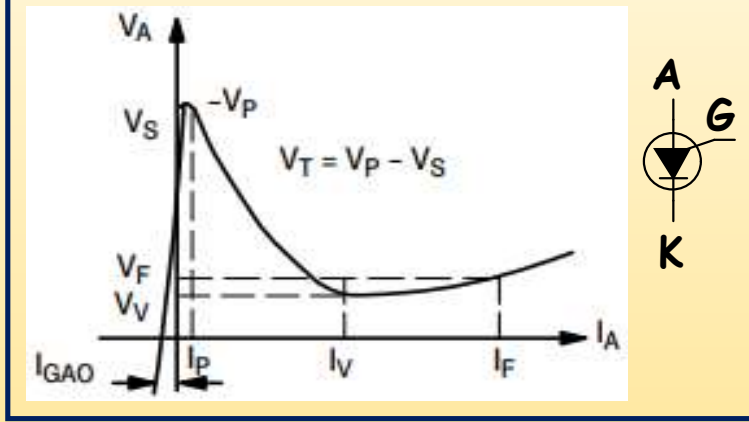
1.14 SCR



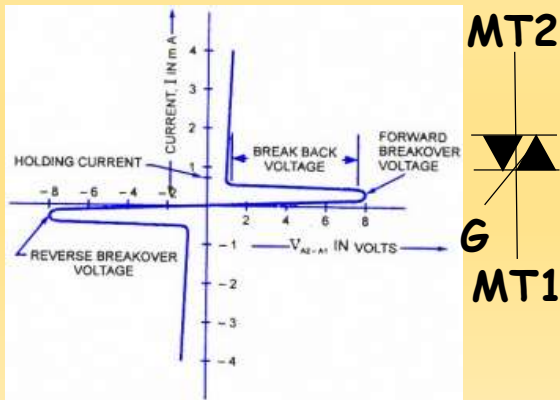
1.15 Transistor Unijunção UJT



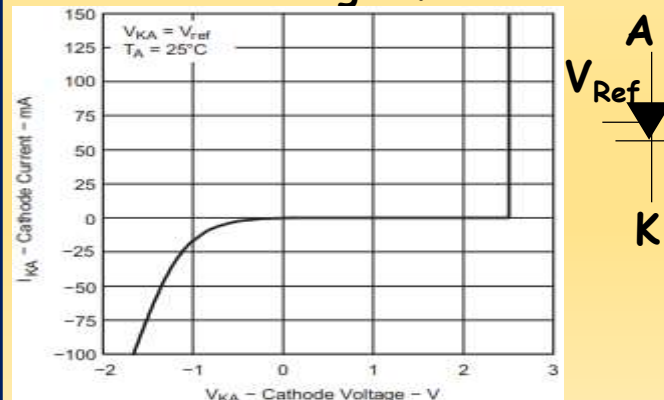
1.16 Transistor PUT



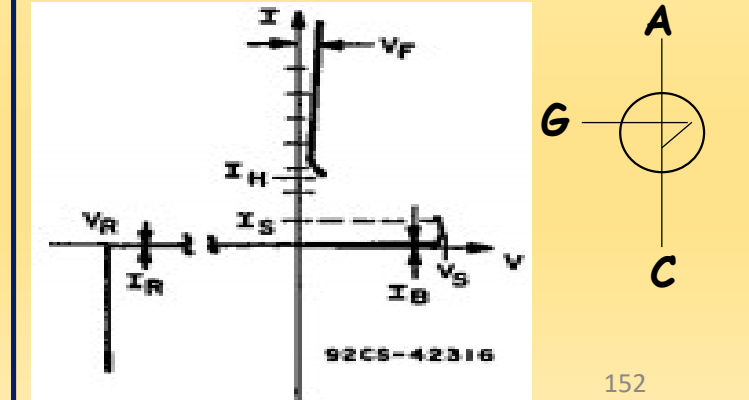
1.17 TRIAC



1.18 Zener Programado



1.19 Chave Unilateral



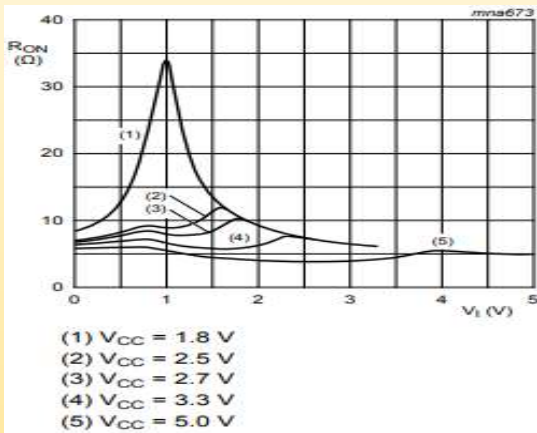
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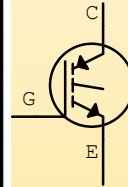
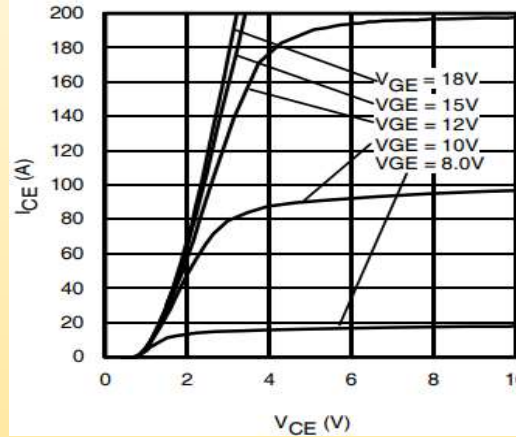
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1 - Dispositivos eletro_eletrônicos

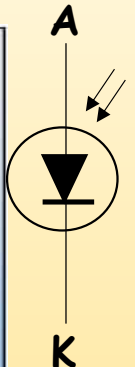
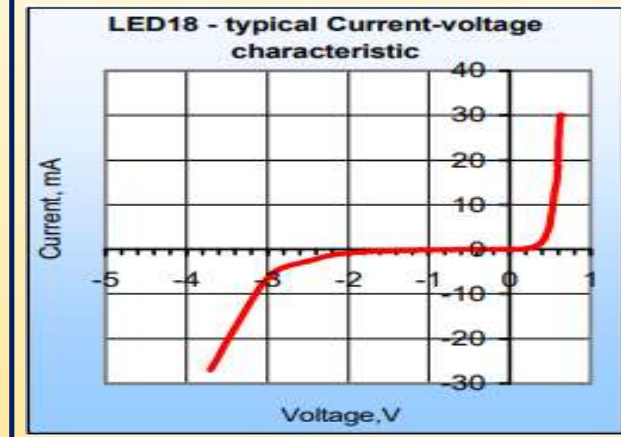
1.20 Chave bilateral



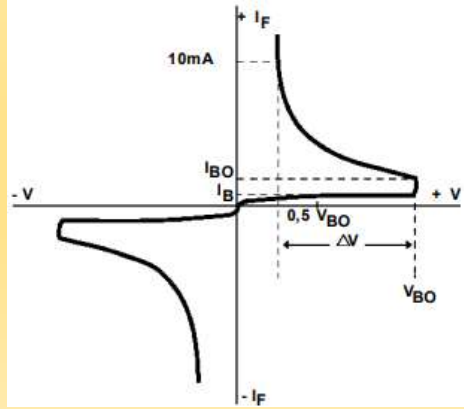
1.21 Transistor IGBT



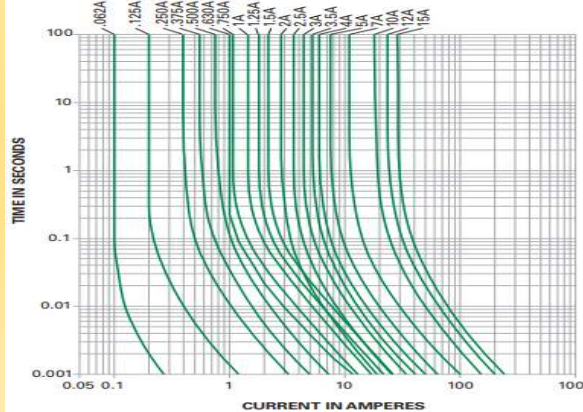
1.22 LED



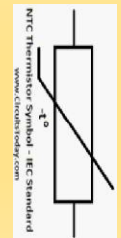
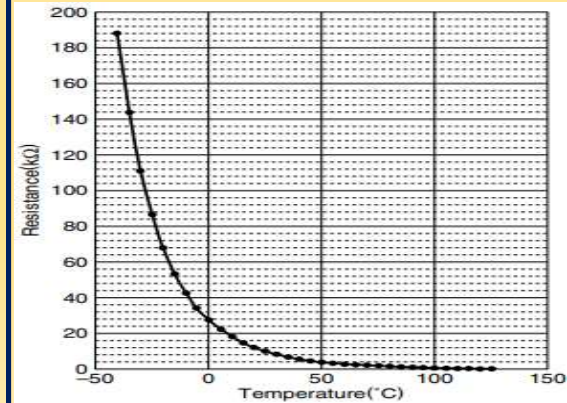
1.23 DIAC



1.24 Fusistor pico - fusível



1.25 NTC -



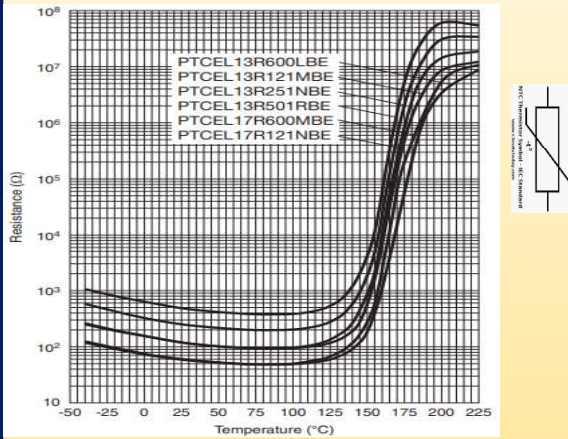
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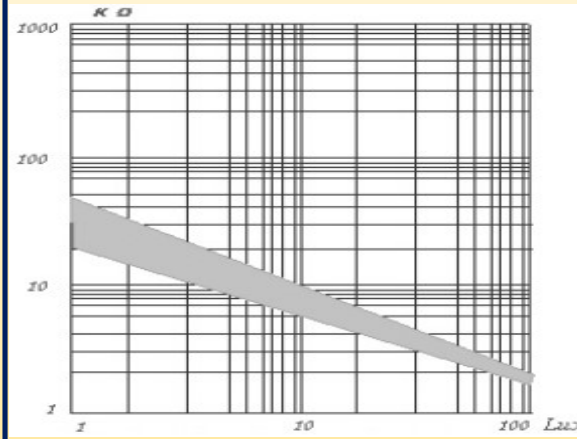
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1 - Dispositivos eletro_eletrônicos

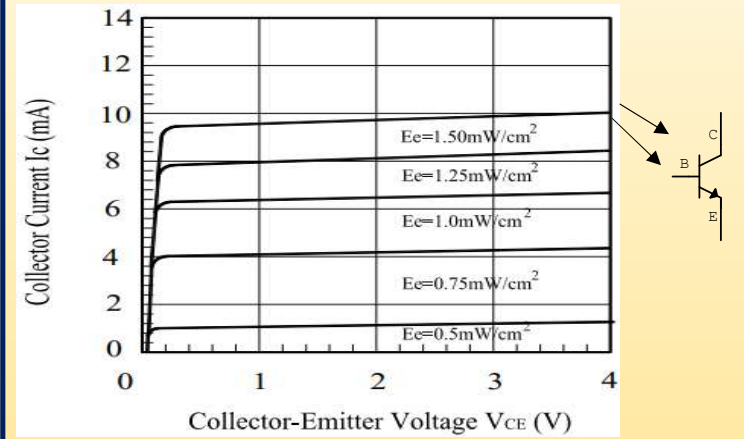
1.26 PTC



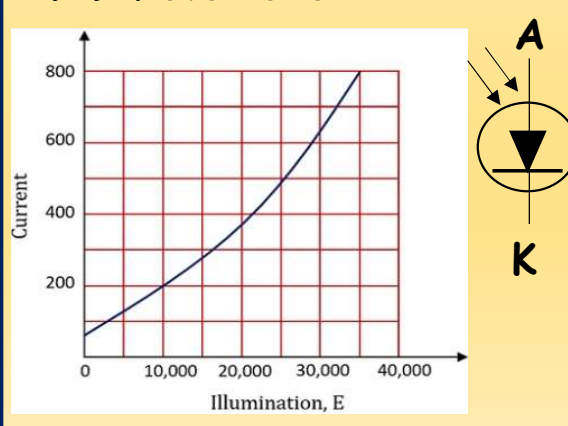
1.27 LDR



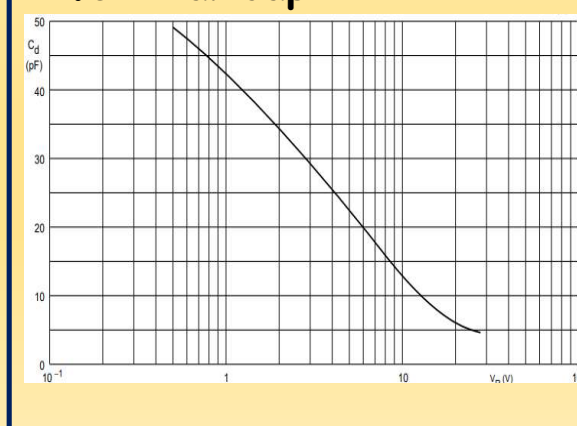
1.28 Foto-transistor



1.29 Fotodiodo



1.30 Varicap



1.31 Efeito Hall

