Preparatório 3 - Eletrônica

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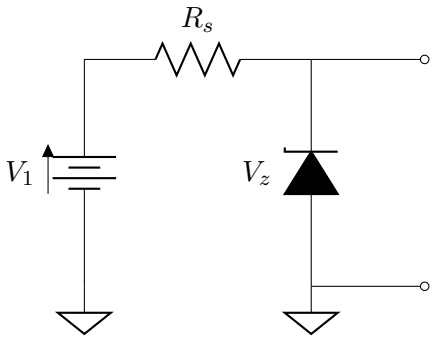
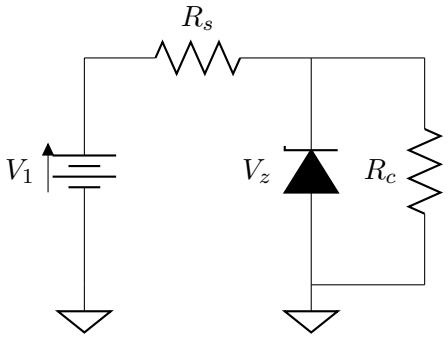
4.1-



4.2-

Materiais Dados:
Diodo Zener BZX79C9V1-V_z=9 V,P=0.5W
Resistor 220Ω-2W
Potenciômetro decada
Fonte DC
Voltímetro



$R_s = 220\Omega$
$I_c = \frac{9}{R_c}$

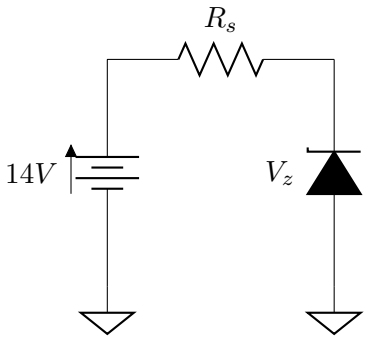
$V_{R_s} = V_f - 9$
$I_s = \frac{Vf-9}{220} = I_t$
$P_{R_s} = 2W$;P=RI^2;2=220.I_s^2

9,0909.10^{-3}=$\frac{(V_f-9)^2}{220^2}$
440=$V_f^2 - 18V_f + 81$
$V_f^2 - 18V_f - 359 = 0$
$\Delta = 1760$
$9 \pm \frac{\sqrt{\Delta}}{2}$
$V_{f1} = 29.976V$ e $V_{f2} = -11.976V$

$V_{f_{max}}$=29.976 V
$I_{z_{max}} = \frac{0.5}{9} = 55.55mA$
$I_z = I_t - I_c$

$55.55mA = \frac{29.976-9}{220}$-$\frac{9}{R_c}$
$R_c = 226.156\Omega$; Resistor comercial próximo=220Ω
Range :De 1Ω a 220Ω

4.3-



Onde V_z=9 V.
I_z=5 mA.

$V_{fonte} - V_z = R_s.I_z$
14-9=R_s.5mA
R_s=1000Ω

4.4-

P_z=500mV
V_f=20V

20-9=1000.I_z
I_z=11mA
P=9.11mA=99mW
Sim,é suficiente.