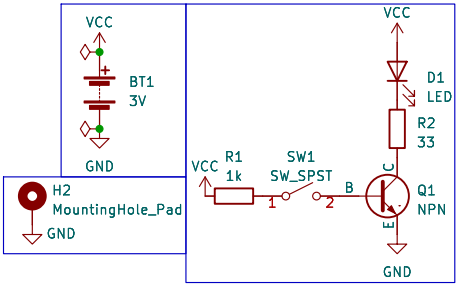
Perhitungan

Baterai:
V = VCC = 3V
LED:
If (red Diode, SMD) = 20 mA
Vf (red Diode, SMD) = 2.1V
2N222A:
VCE,sat = 0.3V
VBE,sat = 0.9V
hFE,sat = 10

Ic = If
maka :
RC = (VCC−Vf−VCE,sat)/(Ic)
= (3−2.1−0.3)/(20mA) = 30 Ohm = 33 Ohm (std.)
RB = (VCC−VBE,sat)/(Ib)
= (3−0.9)/(2mA) = 1050 Ohm = 1k (std.)



References

[1] https://www.lcsc.com/datasheet/lcsc_datasheet_2403071527_CBI-2N2222AU_C21714170.pdf
[2] https://www.lcsc.com/datasheet/lcsc_datasheet_1811011911_ARKLED-Wuxi-ARK-Tech-Elec-D-R080508L3-KS2_C130114.pdf

Designed by :
Bostang Palaguna
Institut Teknologi Bandung

Sheet: /
File: ElectronicBadge.kicad_sch

Title: Transistor as Switch (Badge)

Size: User	Date: 2024-04-07	**Rev: 1**
KiCad E.D.A. eeschema (7.99.0-200-gad838e3d73)		Id: 1/1