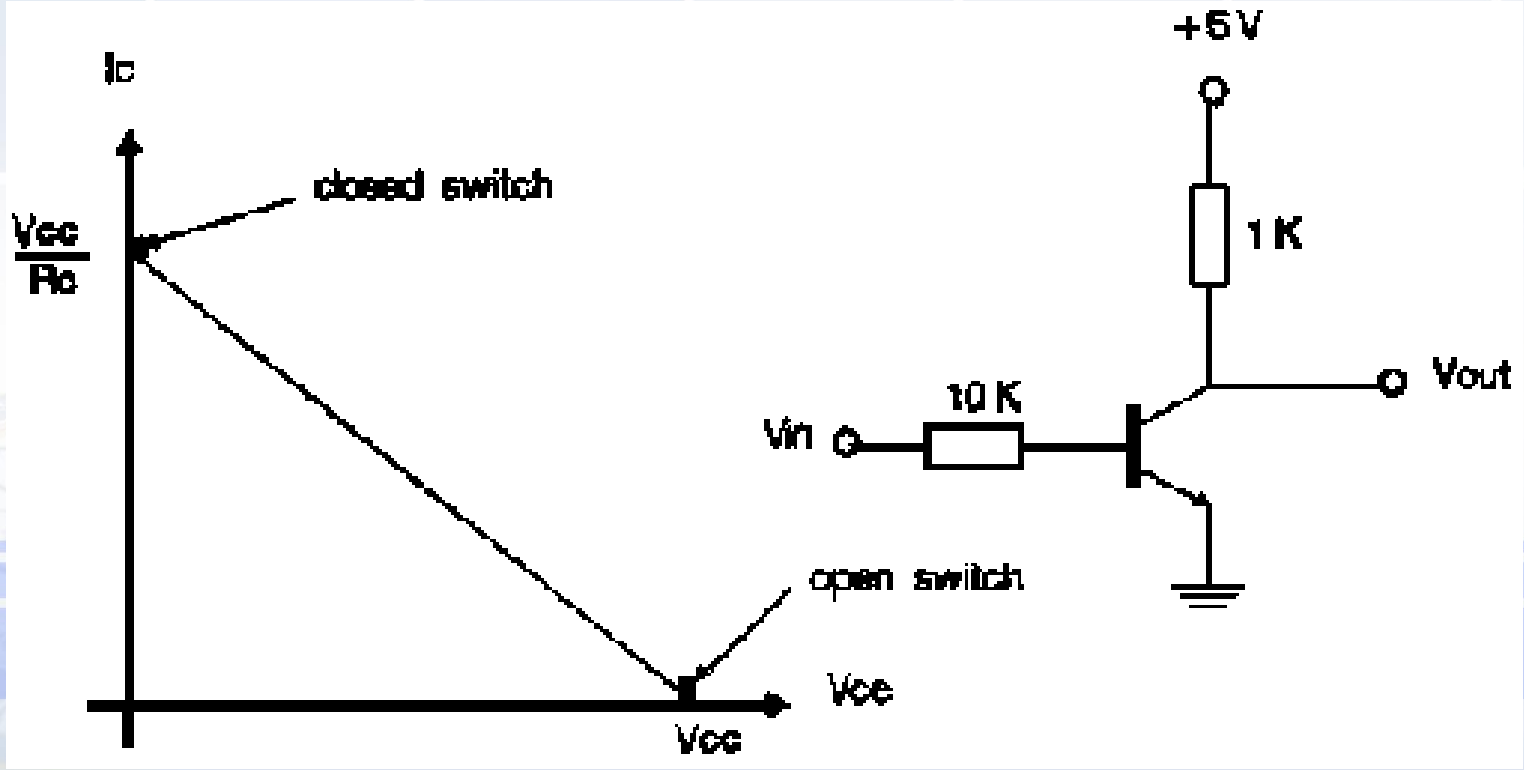
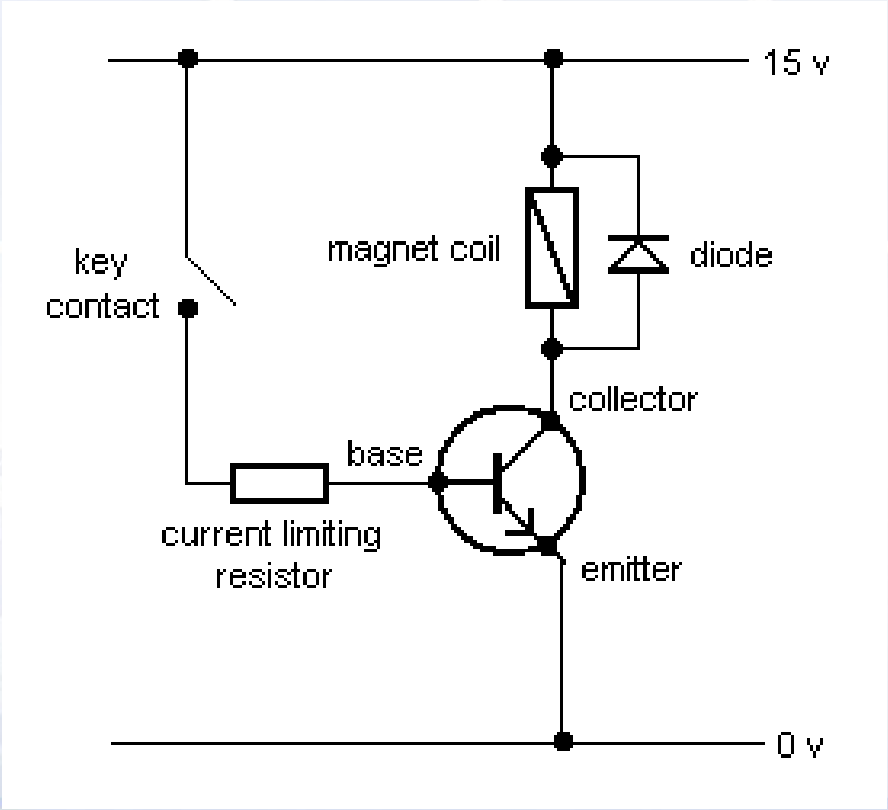
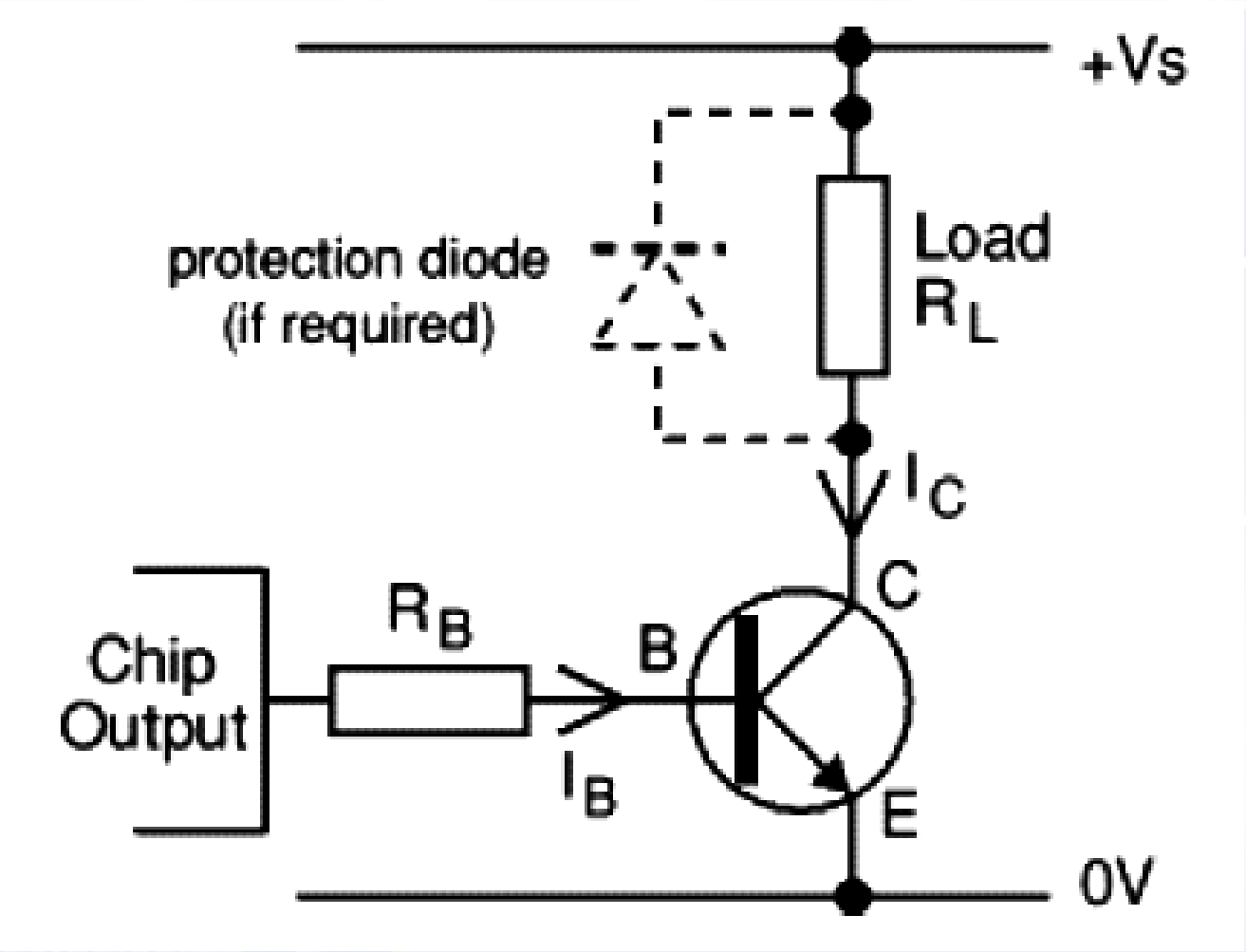
Transistor Saklar

Menerapkan bias basis.
Daerah saturasi dan cut off.



Aplikasi transistor saklar. Hard saturasi, $V_{BB}=V_{CC}$, 10:1 V_{BB} dari sumber lain.




+Vs
protection diode
(if required)
Load
R_L
I_C
C
R_B
B
Chip
Output
I_B
E
0V

Tahapan perancangan :

1. Tentukan resistansi beban kolektor.
2. Hitung arus kolektor.
3. Tentukan transistor.
4. Hitung I_B mengacu H_{FE} transistor.
6. Tentukan R_B.

Contoh :

Rangkaian digunakan untuk menggerakan Relay, tegangan relay 12 V

Reistansi 1 kΩ (diukur)

I_C = 12/ 1 kΩ = 12 mA

Dipilih transistor dengan

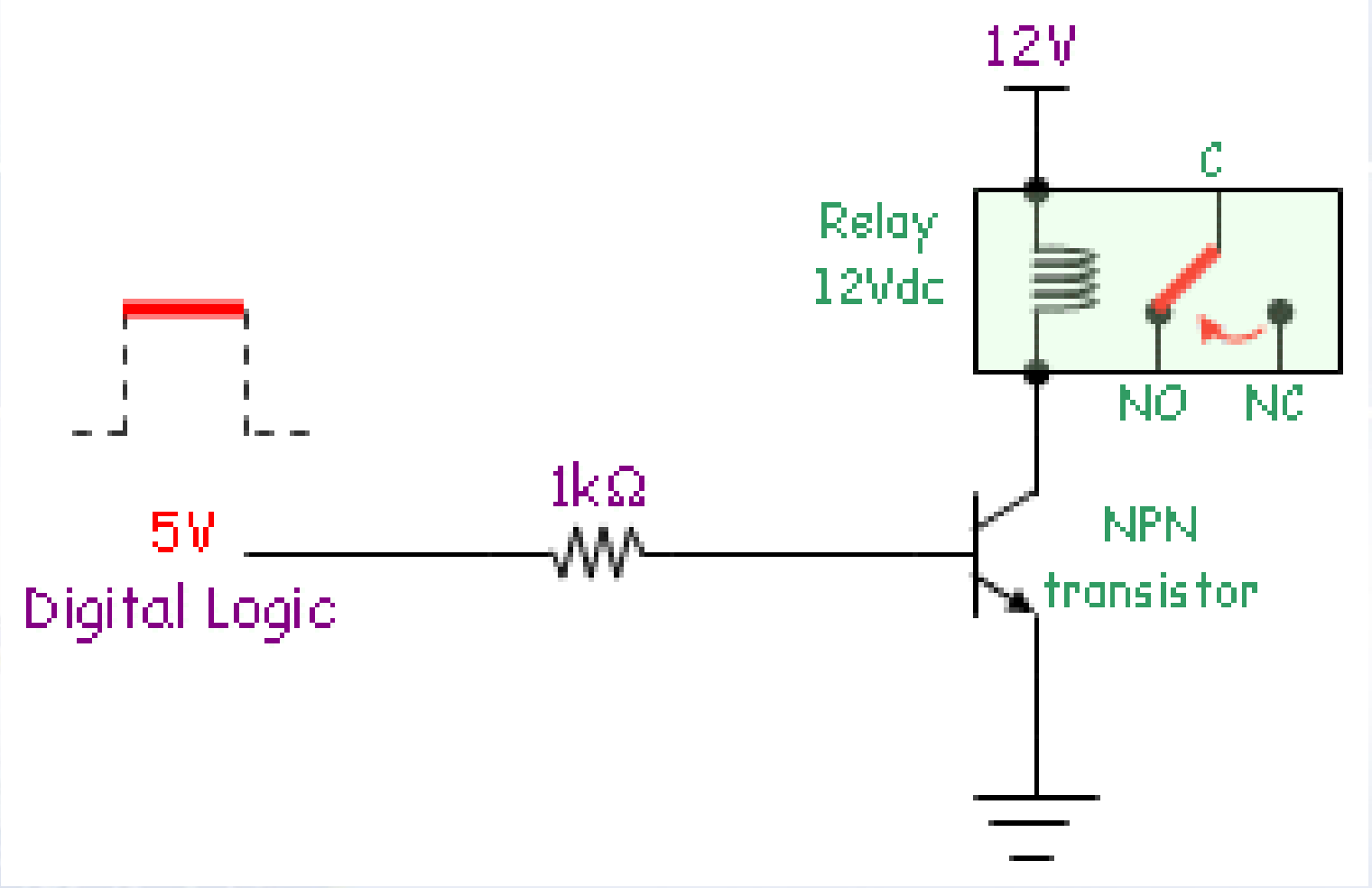
I_C = 100 mA , H_{FE} = 50

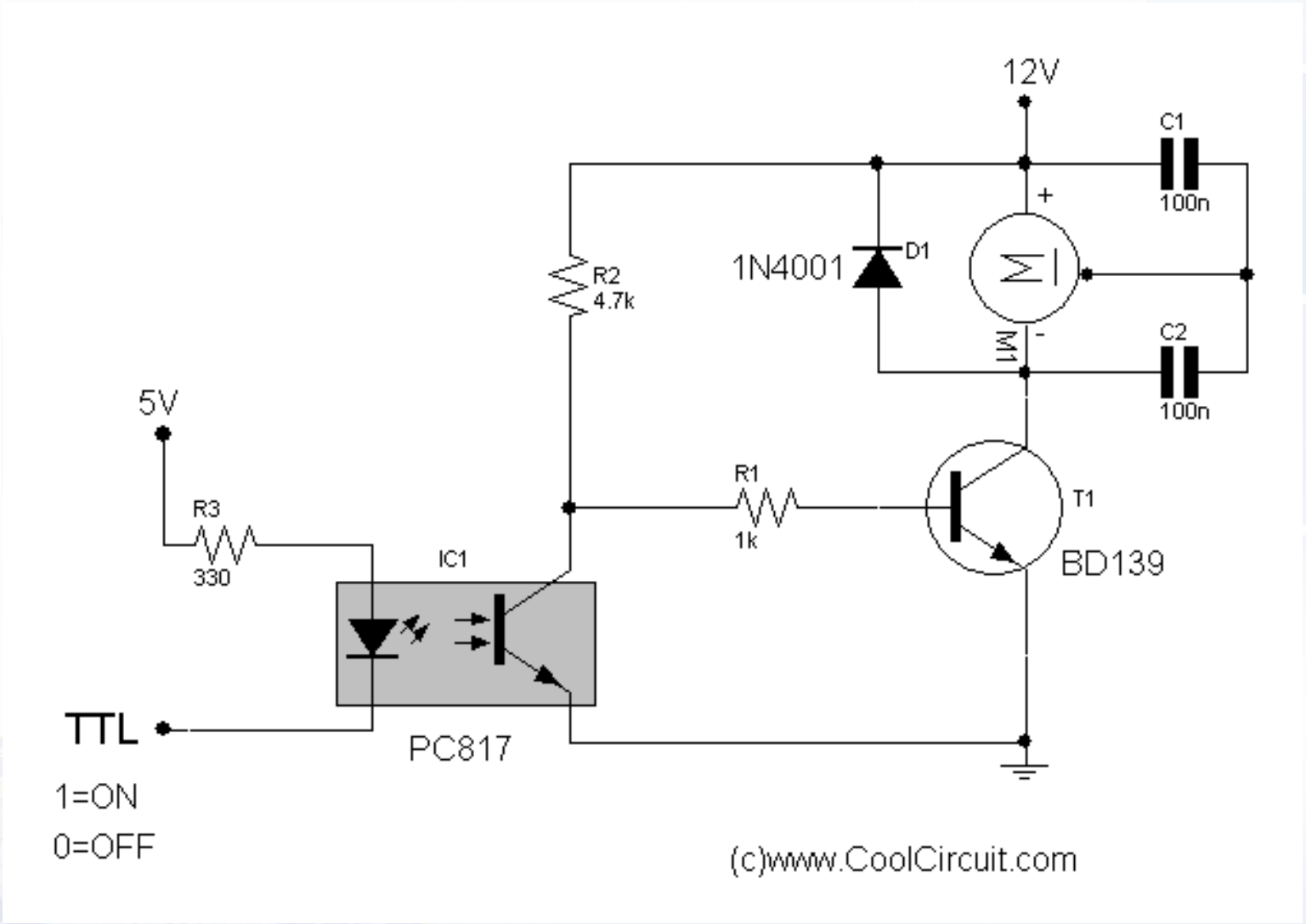
$I_B = 100\ mA/50 = 2\ mA$

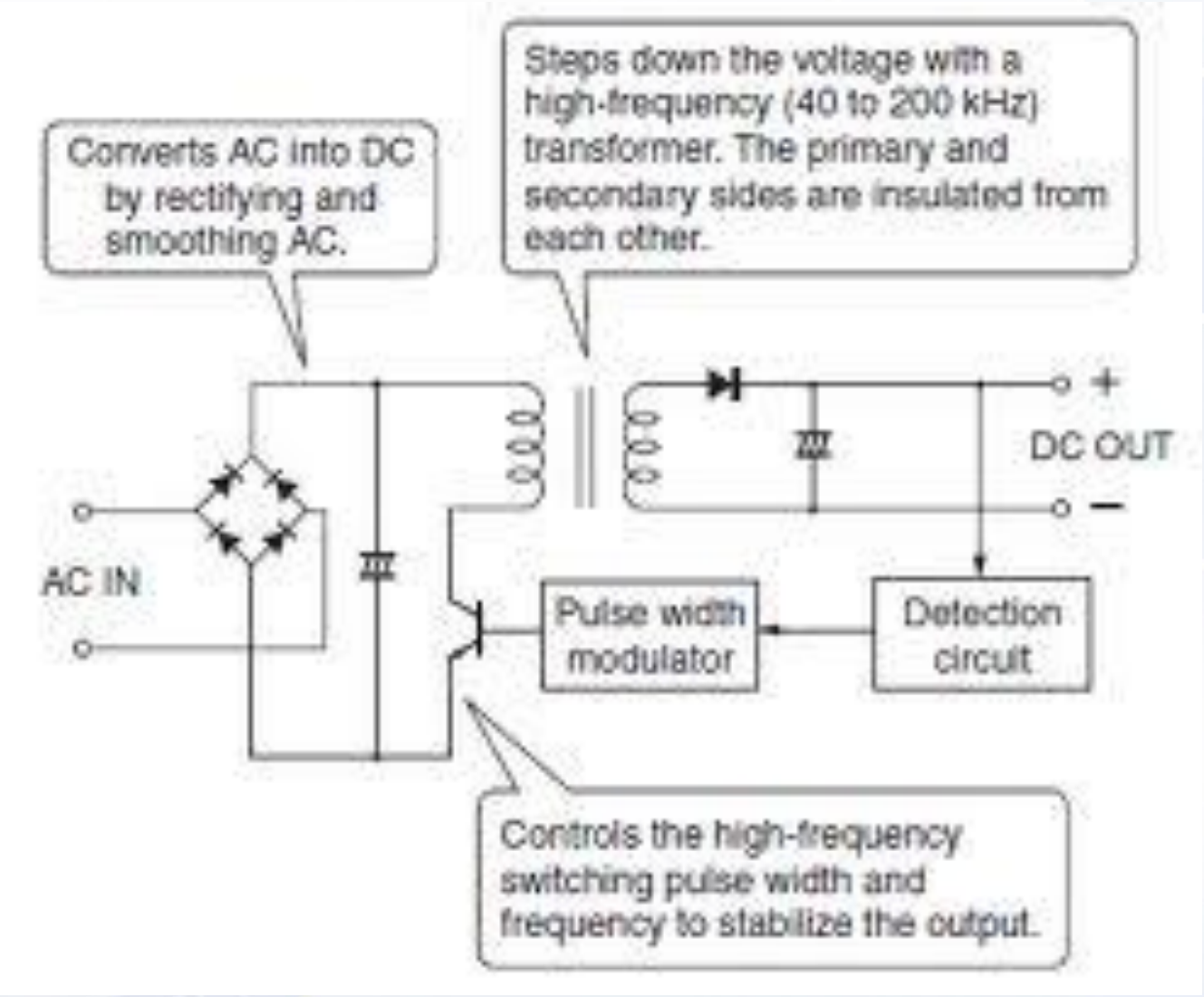
V_{BB} berasal dari sistem digital dengan output 5 V

$R_B = 5/2mA = 2{,}7\ k\Omega$

Contoh aplikasi




12V
C1
100n
+
1N4001
D1
R2
4.7k
M1
-
C2
100n
5V
R3
330
R1
1k
T1
BD139
IC1
TTL
PC817
1=ON
0=OFF
(c)www.CoolCircuit.com


Converts AC into DC by rectifying and smoothing AC.
Steps down the voltage with a high-frequency (40 to 200 kHz) transformer. The primary and secondary sides are insulated from each other.
+
DC OUT
−
AC IN
Pulse width modulator
Detection circuit
Controls the high-frequency switching pulse width and frequency to stabilize the output.

end