Constraints:

Input = 3V, 10A
Charging current : 5A
Supercapacitor : 100F, 2.7 V

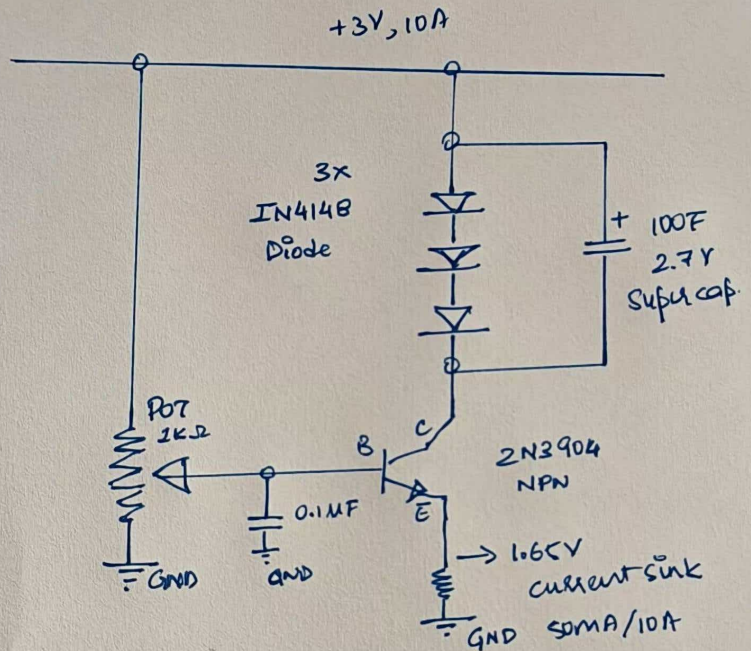
Calculations:

Energy stored :

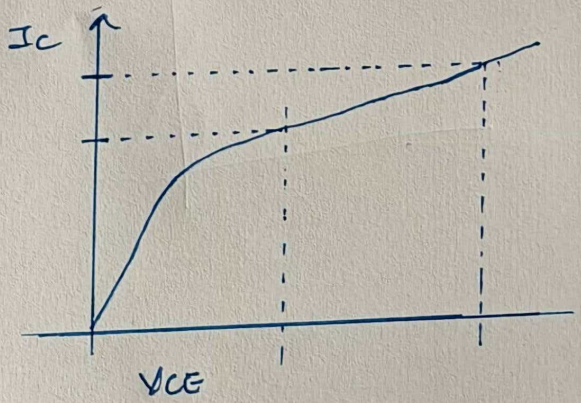
$$E = \left(\frac{1}{2}\right)(100) \times (2.7)$$

$$\boxed{E = 365\ J}$$

→ CIRCUIT DIAGRAM: (Supercapacitor charging circuit)



→ Expected Waveform:



$$I = C\left(\frac{dv}{dt}\right) \quad \begin{bmatrix} I = 50\,mA \\ C = 100F \\ dv = 2.45 \end{bmatrix}$$

$$\rightarrow dt = \frac{C \times dv}{(0.05)}$$

$$= 4900\ sec$$

$$= 82\ min$$