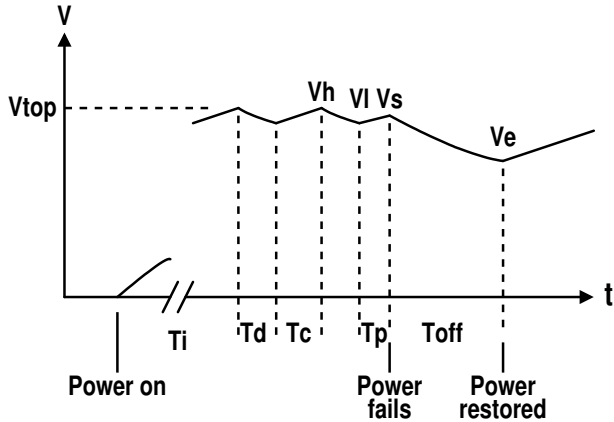


R1, R2 protect C1 from GPIO upsets  
 C1, R2 control RC timing  
 R3 pulls CHARGE low when off  
 C2 filter, ADC buffer (optional)

Phase	ADC	CHARGE
Charge	H	H
Discharge	Z	Z
Sample	ADC	Z



$V_{top}$  = end of charge, 90% of  $V_{cc}$  (?)  
 $V_{min}$  =  $V_I$  goal, 90% of  $V_{top}$  (?)  
 $V_h$  = measured high voltage  
 $V_I$  = measured low voltage  
 $V_s$  = measured/estimated start voltage  
 $V_s = f(V_h, T_p, T)$   
 $V_e$  = measured end voltage

$T_i$  = initial charge time  
 determined by reaching  $V_{top}$   
 $T_d$  = discharge time,  $f(V_{top}, V_{min}, T)$   
 $T_c$  = charge time,  $f(V_{top}, V_I, T)$   
 $T_p$  = partial charge/discharge time  
 $T_{off}$  = calculated off time,  $f(V_s, V_e, T)$   
 $T$  = timing coefficient,  $f(V_{top}, T_i)$   
 (needs continuous recalibration)

Design proposed by Joerg Reisenweber