



**Ben-Gurion University of the Negev**  
**Faculty of Engineering Science**  
**Dept. of Electrical and Computer Engineering**

**Fourth Year Engineering Project:**  
**Bright LED Driver**

<b>Project number:</b>	<b>s-2006-173 / p-2006-107</b>
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<b>Supervisors:</b>	<b>Prof. Shmuel Ben-Yaakov</b>
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## **Abstract**

Bright LEDs are becoming popular as light sources due to their high light intensity, long life span, and the high efficiency that they exhibit. Due to this, LEDs are more likely to replace other known lights.

The objective of the system to be used as a portable emergency flash-light, which will correspond to international standards.

The mission of this project was to develop and build a system that construct from 2 circuits:

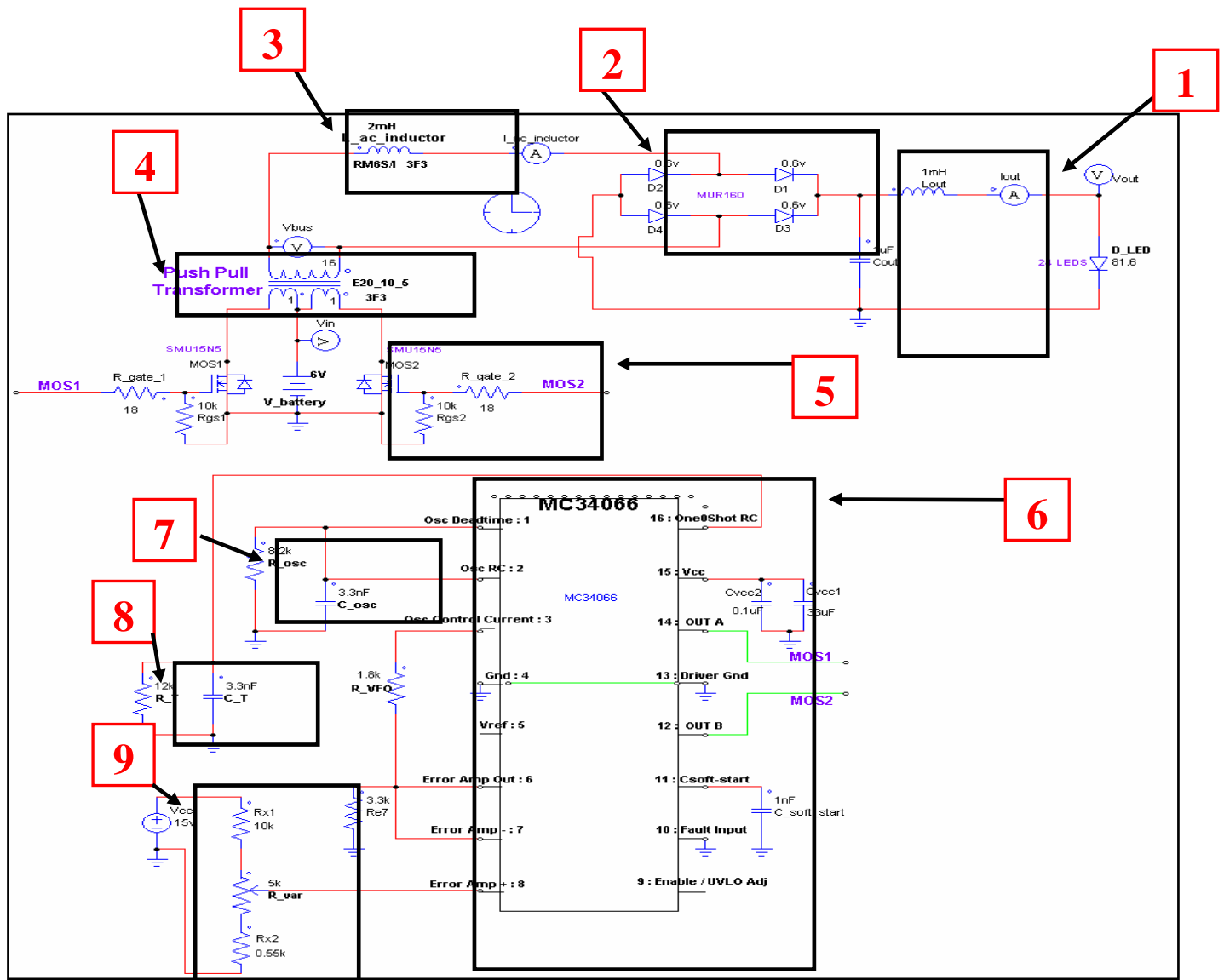
1. LED Driver, with high efficiency.
2. Switch mode Fly-back Topology charger & supplier.

We constructed a Driver that provides effective switching for the switch mode circuit that attach to the LEDs, and we achieved 85% efficiency.

The topology that we used was "AC INDUCTOR", as the LED Driver.

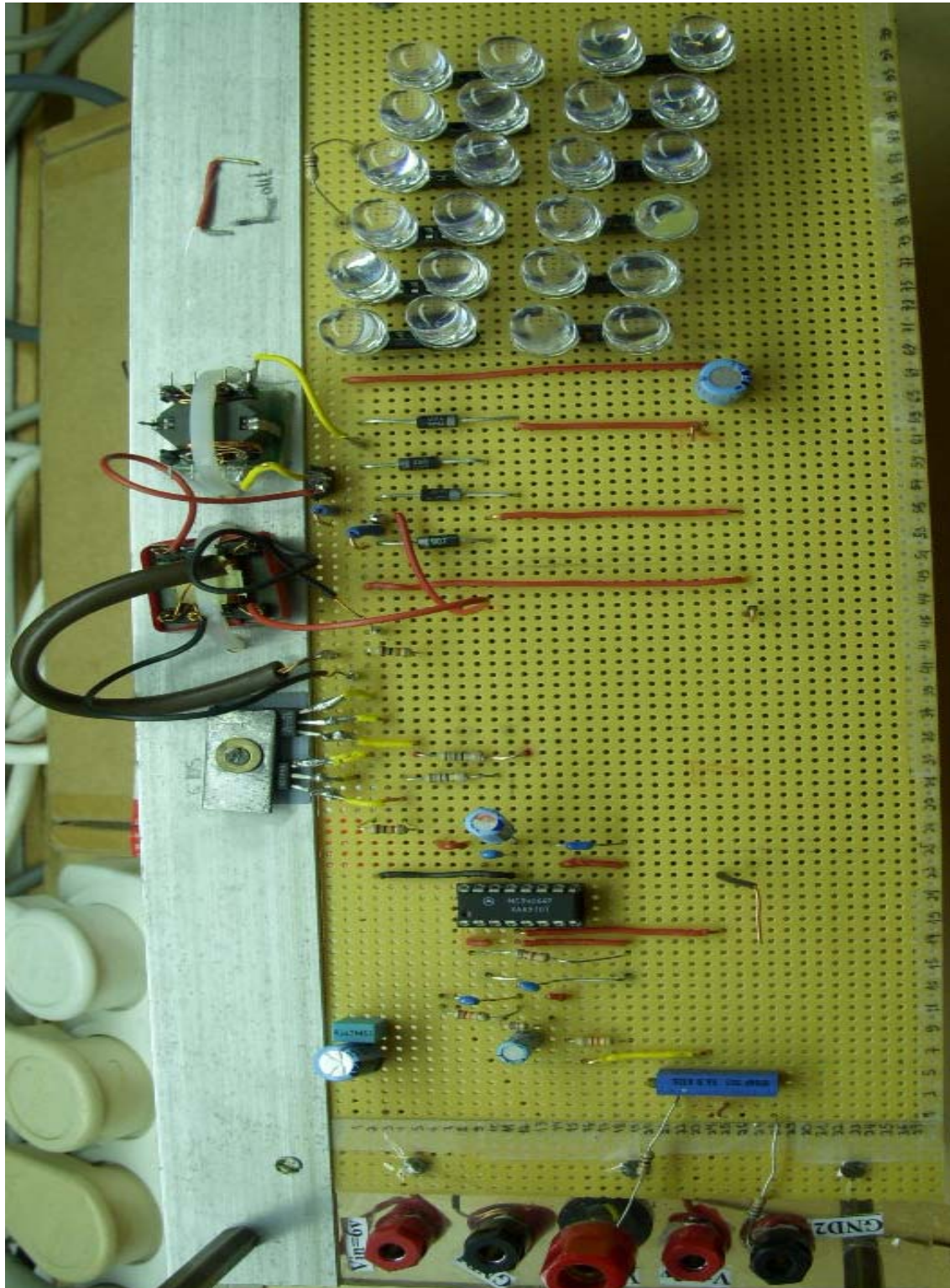
We constructed a battery charger based on Switch mode Fly-back Topology, which should serve the input voltage for AC Inductor Circuit (the LED Driver).

## AC Inductor Schematic:



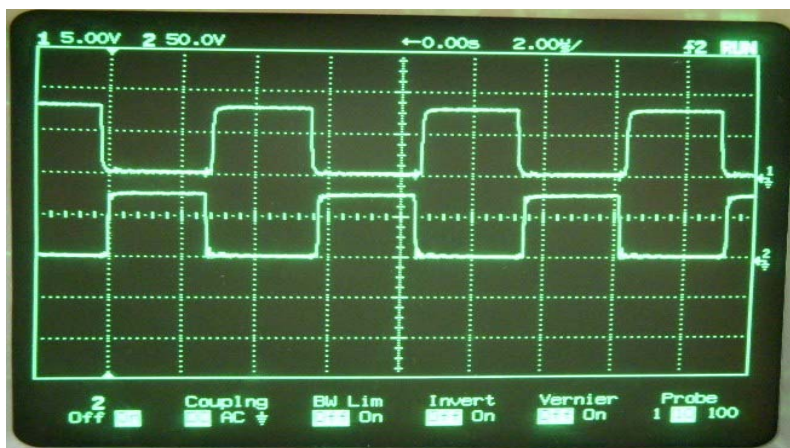
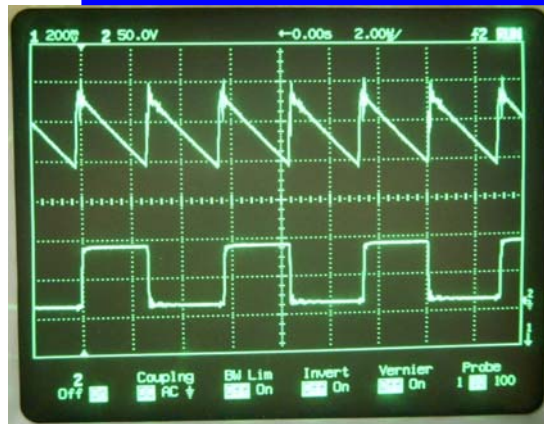
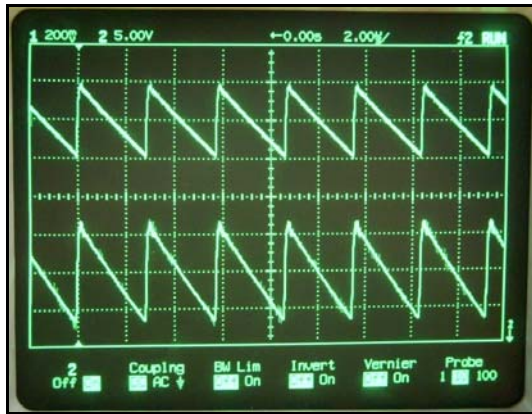
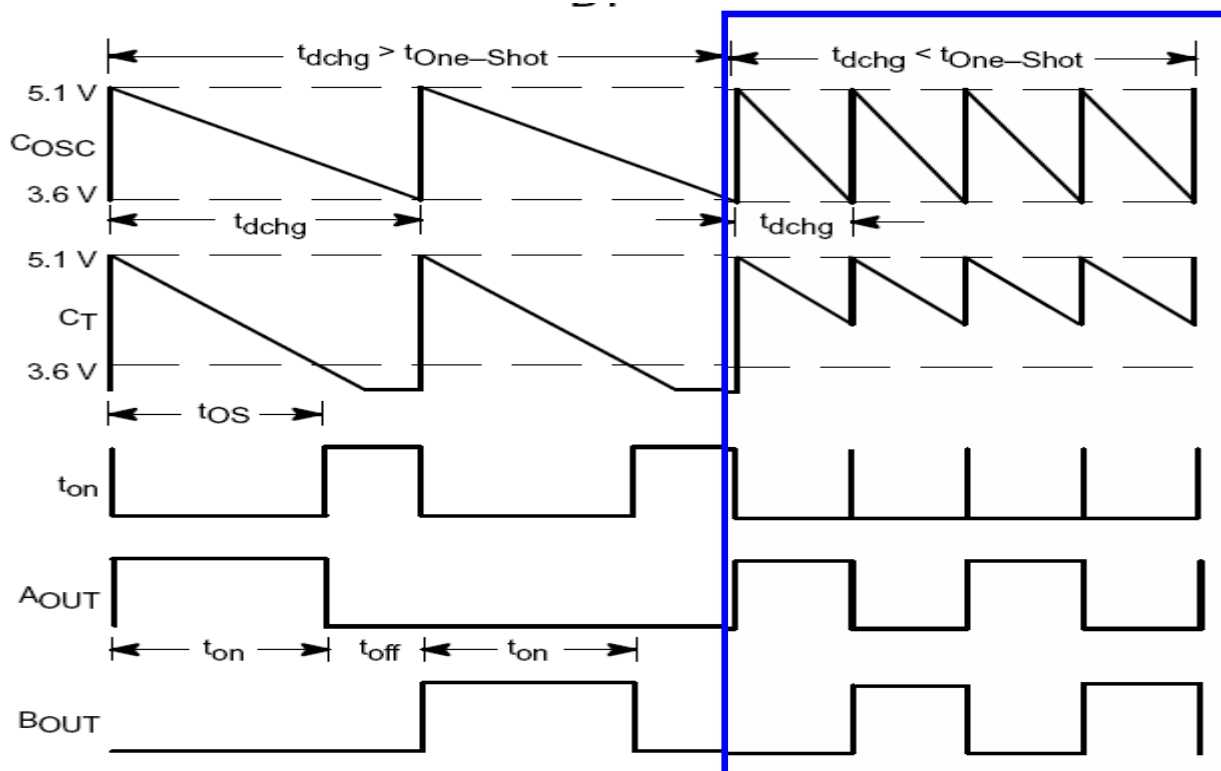
- .Output Filter .1
- .Diode Bridge Rectifier .2
- .AC Inductor .3
- .PUSH-PULL Transformer .4
- .MOSFET .5
- .Mosfet Driver – MC34066 .6
- .adjusting the boundary of freq. Switching – ,  $R_{osc}$  ,  $C_{osc}$  .7
- .adjusting the waveforms at the gate Mosfets – ,  $R_T$  ,  $C_T$  .8
- . adjusting the Switching freq. –  $R_{VAR}$  .9

## AC Inductor Circuit:

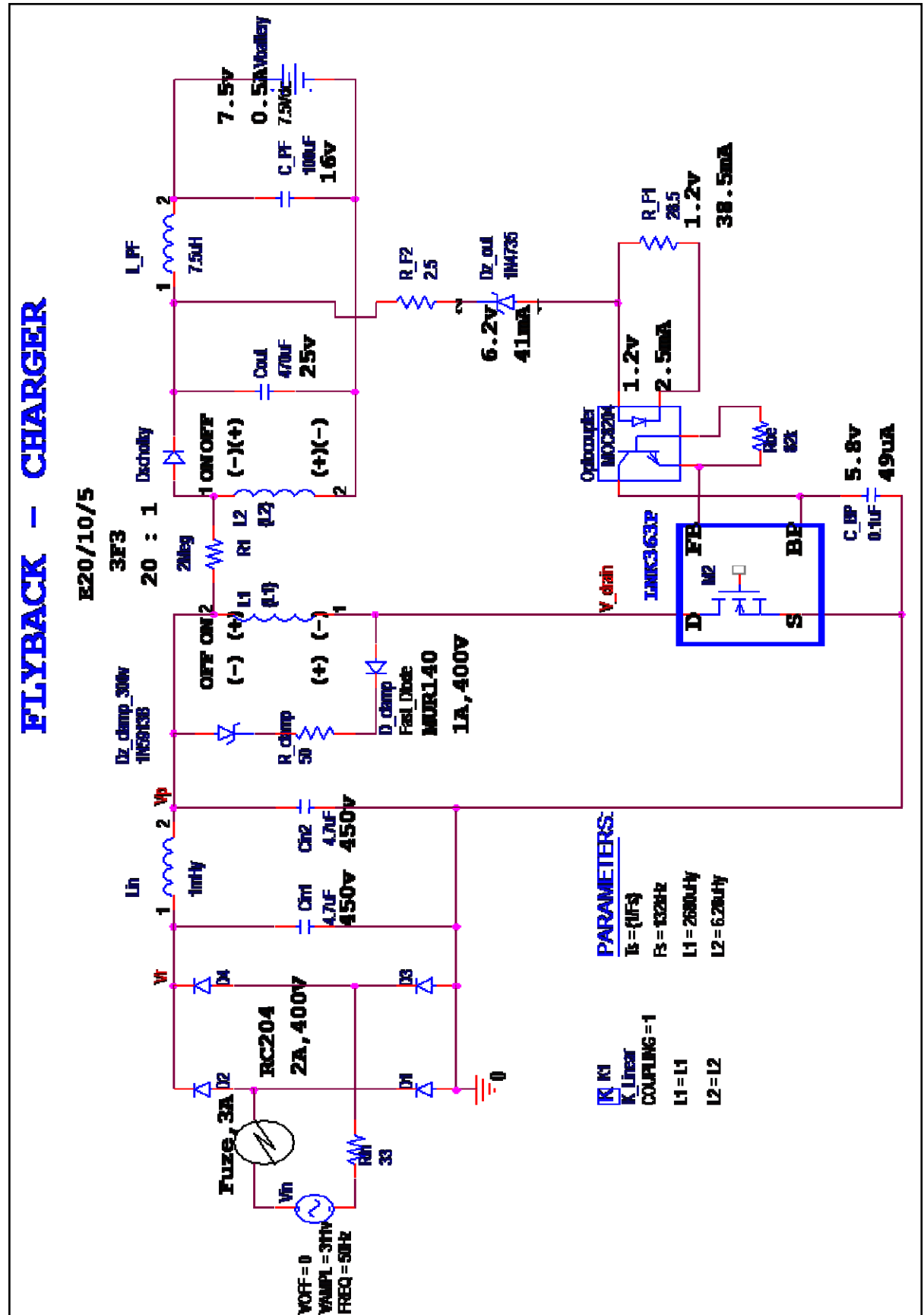


## Comparison Waveforms Theoretical to Practical:

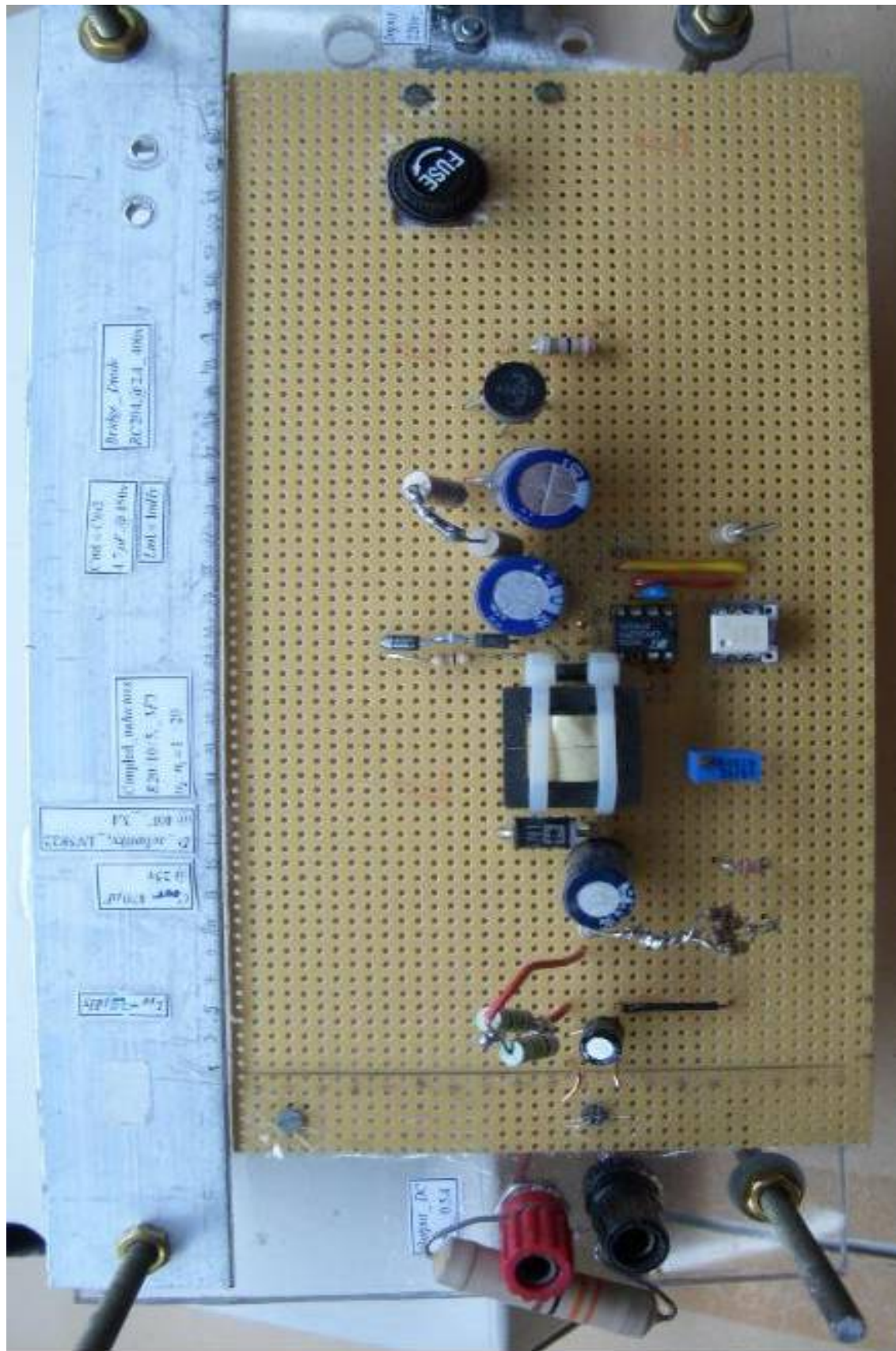
(According to MC34066 Datasheet).



# Fly-back Charger Schematic:

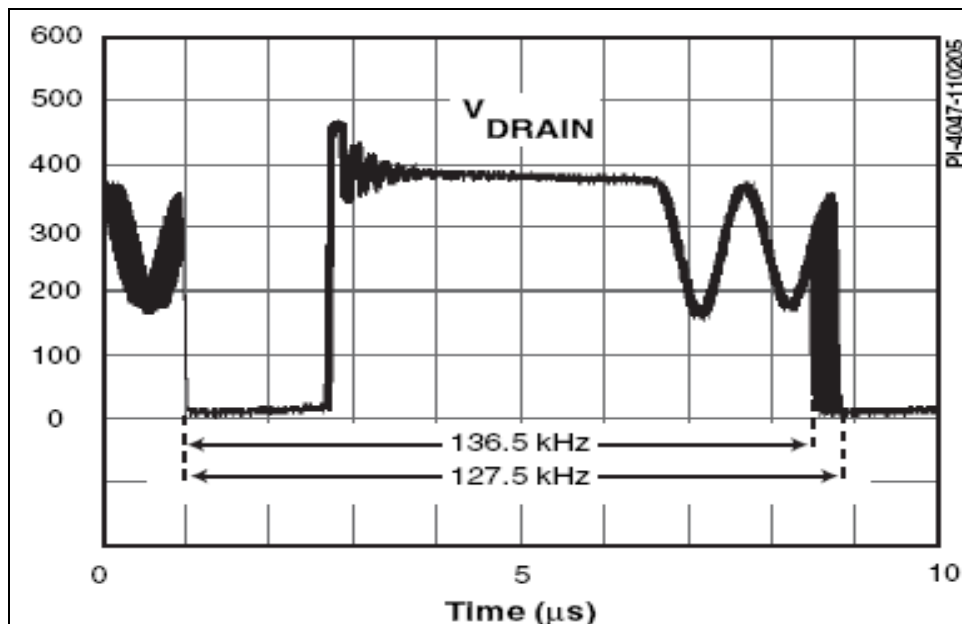
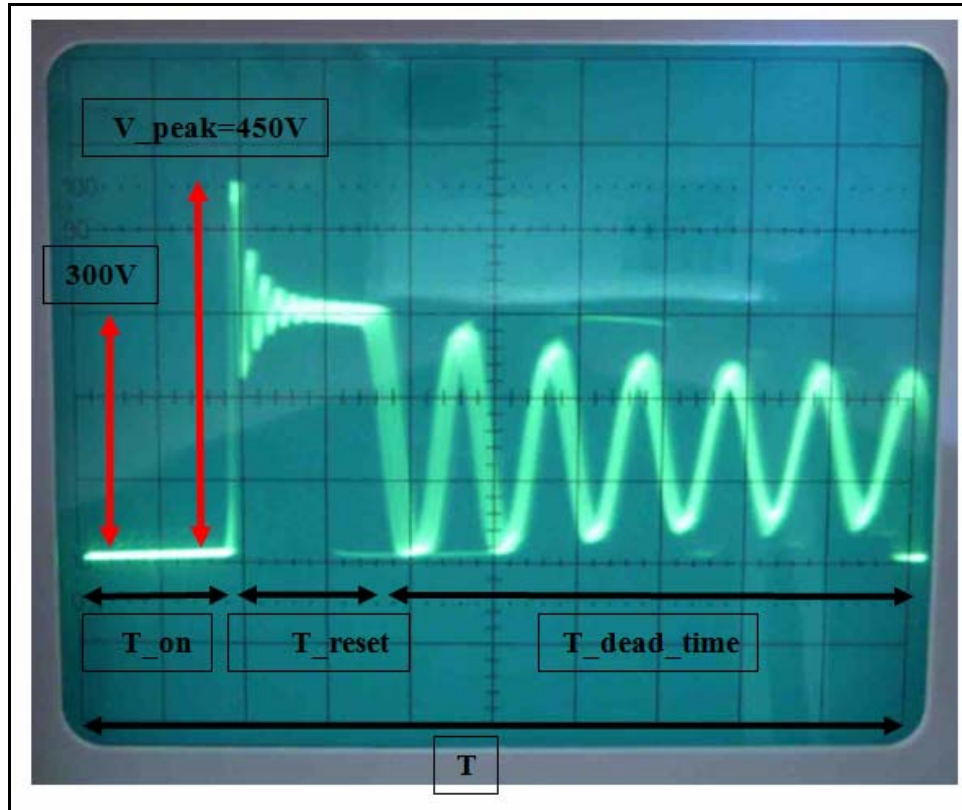


## Fly-back Charger Circuit:



## Comparison Waveforms Theoretical to Practical :

(According to LNK363 Datasheet).





**The System at work:**

