

PROJECT: Piezoelectric Igniter for HID Lamps

s-2008-088 / p-2008-082

Student	Ishay Apple ID 053077541	
----------------	-------------------------------------	---

Supervisor: Prof. Sam Ben-Yaakov

Year: 2008

Abstract

High Intensity Discharge lamps (HID) have excellent illumination, efficiency, price and life span qualities. Today the usage of HID lamps is common in many places such as stadiums and sport arenas, large parks cars headlights and many more.

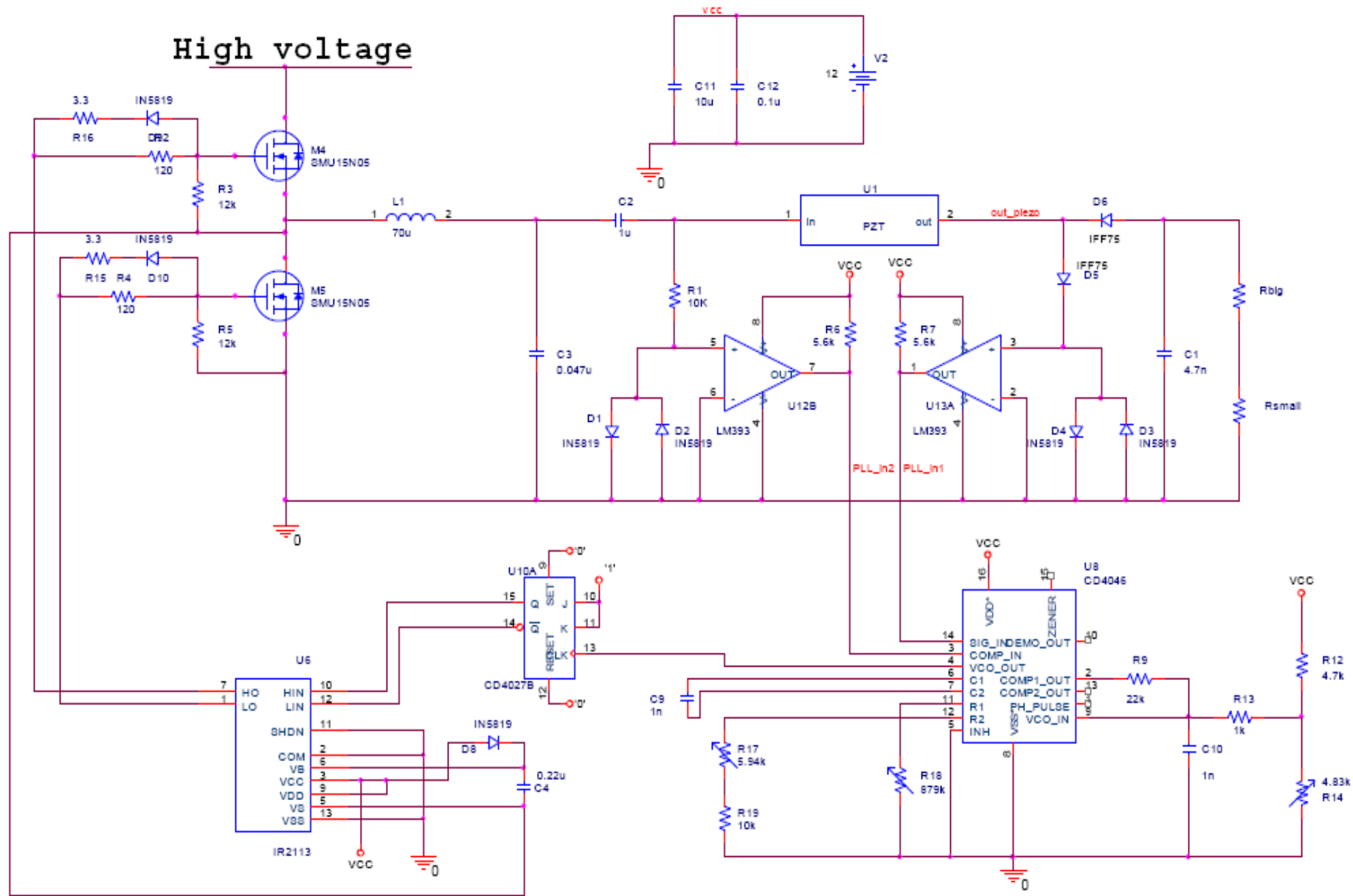
The structure of a HID lamp is of an electric arch passing between two electrodes housed inside a transparent quartz tube that can be filled with various gas compounds. A discharge of an electric current through the arch causes the temperature of the gas compound to rise until it turn into plasma and emit light to the environment.

For the purpose of igniting the lamp, when the temperature and pressure of the gas compound inside the quartz tube are low, voltage pulses of several kilovolts are needed. However, if the lamp needs to be hot-striked i.e. ignited when the temperature and pressure are high, just after it was turned off for example , the voltage pulses needed reach a level of tens of kilovolts.

In order of using the advantages of the HID lamp upon the fluorescent and incandescent lamps commonly used today, the igniter of the lamp needs to supply high voltage pulses, be compact and of course be economical.

Generally an igniter of a HID lamp is composed of a single or several transformers which purpose is to raise the voltage level from its relatively low level in the primary side to the high level needed to ignite the lamp in the secondary side. The designed igniter needs to supply those voltage pulses while maintaining the qualities mentioned above.

The aim of this project is to develop an igniter for a HID lamp based on a piezoelectric transformer.



תמונת המעגל שנבנה

