LED Filament Driver
Andreas Hofmann FAE lighting
Feb. 2016
Schematic of LED Filament Lamp Driver

**Requirements:**

<table>
<thead>
<tr>
<th>Load</th>
<th>LED filament: 10..12mA/280..290V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
<td>230V; no PFC</td>
</tr>
</tbody>
</table>

**Benefits:**

- Linear LED driver IC BCR421U guarantees current accuracy
- Enhancement mode mosfet BSS127 in cascode topology to handle high voltage
- Optionally BSS225 for higher current and higher temp range
- Surge immunity up to 600V (BSS127)+40V (BCR421U)+280V(LEDs)=920V
- Extreme low BoM:
  - no magnetics
  - only 1 R, 1 C externally
  - low cost semiconductors
  - small packages, SOT-23 and SC74

Compatible to phase cut dimming, when adding Damper and Bleeder
Measured Circuit voltages and LED current

Orange: V-gate/source
Yellow: converter voltage
Red: V-gate/gnd
Green: V-source/gnd
Blue: LED current

1uF at bridge rectifier sufficient for constant LED current, little 100Hz ripple
Part of your life. Part of tomorrow.