DTxxxx
Design tip

# STEVAL-ILL066V1 PCB layout guidance

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| Main components | |
|---|---|
| STEAVL-ILL066V1 | 100w PSR-ZVS streetlight demo board |
| STLUX385A | State Machine Event Driven digital controller |

## Purpose and benefits

STEVAL-ILL066V1 is a complete and configurable solution for high efficient single string high brightness LED driver. For different application, customers need to modify the eval board. A general layout guidance is provided by this design tip and is used when a new PCB is requested.

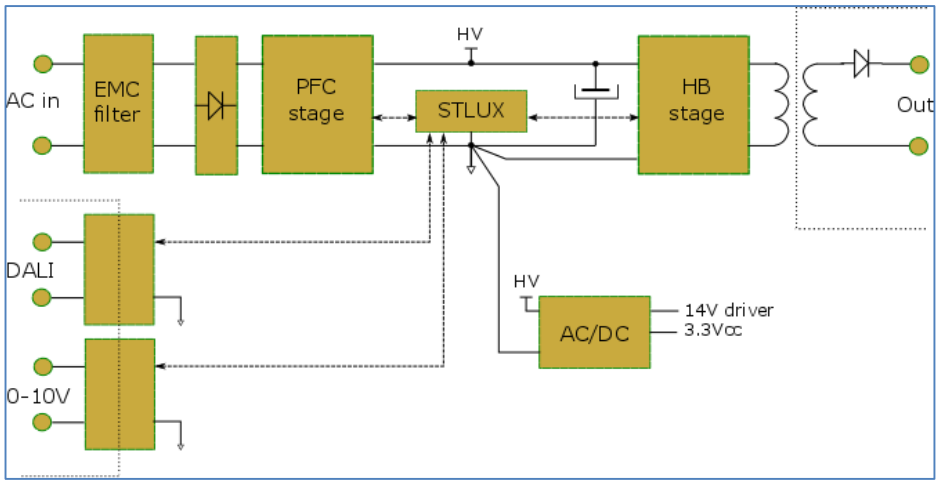
For detailed schematic, please refer to AN4461.

## Description

The first suggestion is to identify the power signal respect the low energy signal (or high impedance signal). Make this two-signal type separately from one to another using the maximum distance available.

The suggested GND connection is schematized on the *Figure 1.*

**Figure 1. PCB block diagram connection**



Identify the high voltage current loop (the PFC Drain MOSFET or the Half Bridge middle point on this topology) and create a good isolation around this signal without any interference of the STLUX analog signal. Use a wire track width compatible with the current on the track. The high current loop is identify on *Figure 2* and *Figure 3*. On the same figure is also evidenced the high ΔV/ΔT signal (the MOSFET gate pin signal). On this signals, the suggestion, is to put the driver near the MOSFET gate to minimize the signal distortion.

**Figure 2. PFC current loop**

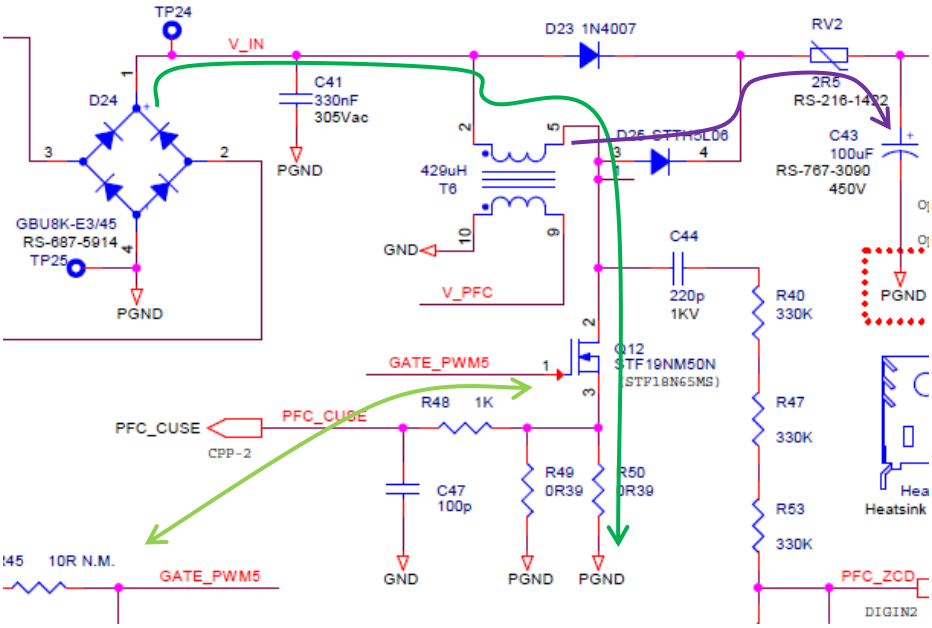
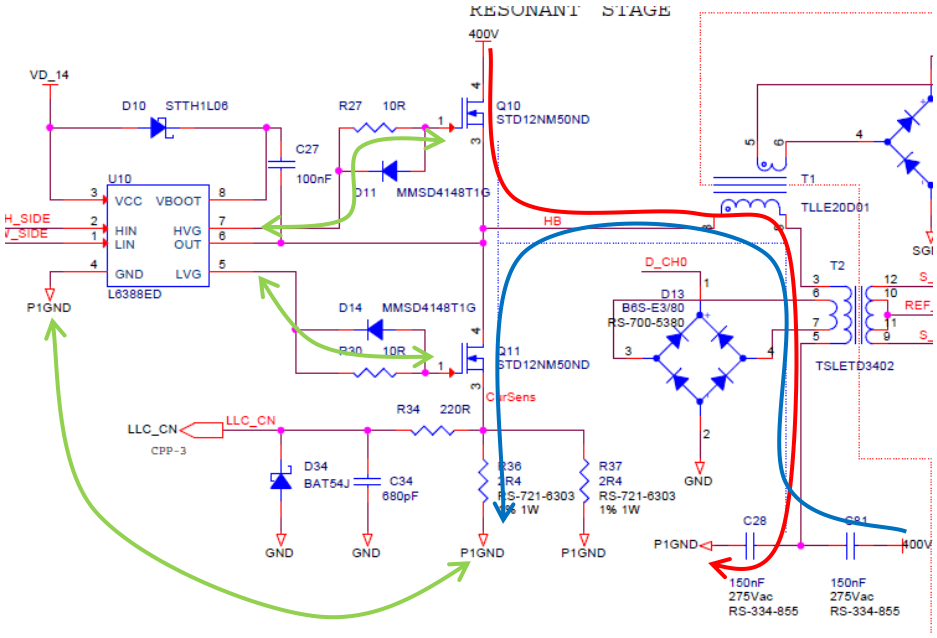


Figure 3. Half Bridge current loop




Do not put the high impedance signal under the power inductor.

A particular note for the analog signal acquired by the STLUX (any signal connected to the ADC and Comparators). Protect this wire from the influence of the high current signal. The comparator input signal is a 50nS detection signal, any spike is potentially detected by the STLUX.

The CN_CNT, LLC_CN, PFC_CUSE and PFC_ZCD signal is the more critical signal on the board. Protect and isolate the wiring track on the PCB from all others signal.

Put the U18 (THD optimizer circuit) near the PFC sensing resistor to minimize any ground variation.

Do not use flood on the power area and, vice versa, use flood on the STLUX area.

Put the AC/DC converter into a dedicated area and use the maximum distance respect the STLUX area. This minimize the influence of the AC/DC spike on the SLTUX analog signal.

## Support material

| Related design support material |
|---|
| EVAL board STEAVL-ILL066V1 |
| |
| **Documentation** |
| Datasheet STLUX385A |
| Application note, AN4461 |
| |

## Revision history

| Date | Version | Changes |
|---|---|---|
| 27-Oct-2015 | 1 | Initial release |

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