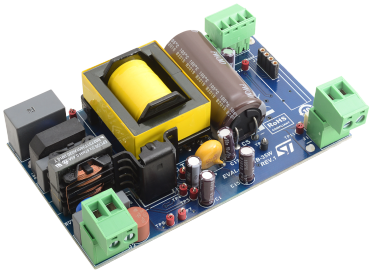
EVAL-SSR01B-35W

Data brief

Dimmable single string LED Driver for 35W indoor lighting applications using HVLED001B



Features

- Input voltage: 90 ÷ 265 Vrms, f: 45 - 66 Hz
- Output current: 700 mA (VLED = 24 V to 48 V)
- Dimming: 100% to 10%
- Dimming interfaces: PWM input
- High power factor, low THD
- Efficiency @ 230 Vac, full load: > 89%
- Open load voltage limiting (< 60 V)
- Fast VOUT discharge
- RoHS compliant

Description

The EVAL-SSR01B-35W is intended to drive one LED string with a maximum output current of 700 mA.

The LED current can be adjusted by a PWM signal and the EN/DIS is managed on the board injecting an analog signal of 3.3 V. Both dimming and EN/DIS signals can also be provided by an external microcontroller thanks to a dedicated circuitry available on the PCB. The current dimming range is supported between 100% and 10% of maximum load.

On the secondary side, the board includes a connector to inject the PWM signal (Dimming) and the 3.3 V analog voltage (EN/DIS).

Product status link
EVAL-SSR01B-35W

A very high power factor, low THD (THD optimizer circuit) and low BOM cost are features of this demonstration board. Input voltage variations, excessive input voltage (overvoltage like surges or bursts) and very low input voltages are managed by the HVLED001B protections, improving the reliability of the application.

The output capacitor is automatically discharged at turn-off to prevent any harm from contact with the output connector.

Output open circuit and overload protections (output short-circuit), with auto restart behavior, are implemented.

1 Board connection

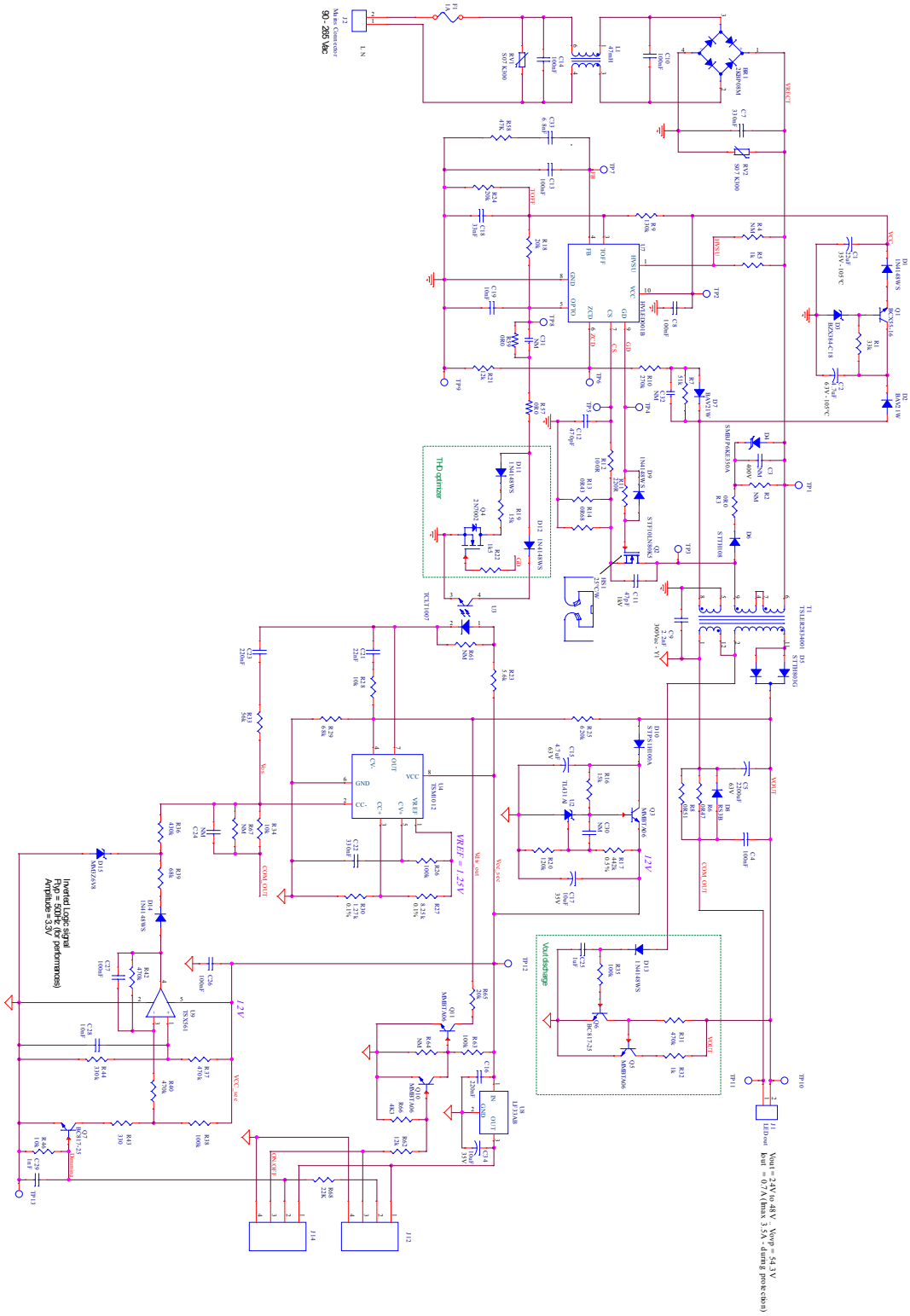
Table 1. Connector map

Ref	Pin #	Name	Type	Description
J1	1	LED cathode	OUT power	Connect to the cathode of the LED string
	2	LED anode	OUT power	Connect to the anode of the LED string
J2	1	AC mains	IN power	First connection to AC mains – Warning high voltage
	2	AC mains	IN power	Second connection to AC mains – Warning high voltage
J12	1	3.3V	OUT power	Regulated 3.3V with 50mA capability - suitable to supply external board.
	2	PWM input	IN signal	A PWM signal applied to this terminal sets an output current proportional to the signal's duty cycle. The recommended PWM signal amplitude is 3.3V. The recommended PWM signal frequency is 500Hz.
	3	ON/OFF	IN signal	Set this pin to 3.3V to turn off the LED string. Set to 0V or leave open during normal operation
	4	GND	GND	Secondary side signal reference voltage
J14	1	3.3V	OUT power	Regulated 3.3V with 50mA capability - suitable to supply external board.
	2	PWM input	IN signal	A PWM signal applied to this terminal sets an output current proportional to the signal's duty cycle. The recommended PWM signal amplitude is 3.3V. The recommended PWM signal frequency is 500Hz.
	3	ON/OFF	IN signal	Set this pin to 3.3V to turn off the LED string. Set to 0V or leave open during normal operation
	4	GND	GND	Secondary side signal reference voltage

Note: J12 and J14 have the same pinout and functionalities. J12 is a screw connector intended to be connected to external signals using wires while J14 is a pin strip intended to be used with a daughterboard.

2 Schematic diagram

Figure 1. **EVAL-SSR01B-35W schematic**



3 Board performance

Table 2. Efficiency measurements (Vout = 48 V)

Load	Vin = 115 Vac	Vin = 230 Vac
100%	88.1%	90.0%
75%	88.8%	90.1%
50%	88.6%	88.5%
25%	84.8%	82.3%
4 points avg.	87.6%	87.7%
10%	77.9%	75.9%

Table 3. Standby consumption (ON/OFF = high)

	Vin = 115 Vac	Vin = 230 Vac
Pin [W]	0.115	0.235

Revision history

Table 4. **Document revision history**

Date	Version	Changes
20-Apr-2021	1	Initial release.

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