

Reference Design – 5

STR-A6159 universal-input LED driver



Sanken power devices from
Allegro MicroSystems, Inc.,

1. Description

This document describes a reference design for a universal-input, LED driver design with STR-A6159.

2. Features and specifications:

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| <ul style="list-style-type: none">• AC input: 85 to 264 V ac• Output: 20 mA constant current for LED module• LED module: 40 high-brightness LEDs in series• Efficiency: 74% | <ul style="list-style-type: none">• Operation: PRC (pulse ratio control), 8 μs fixed off-time• EMI noise: CISPR Class-B (conductive)• Protection functions: LED open, short circuit (entire LED module)• Dimming done by applying PWM signal to FB pin |
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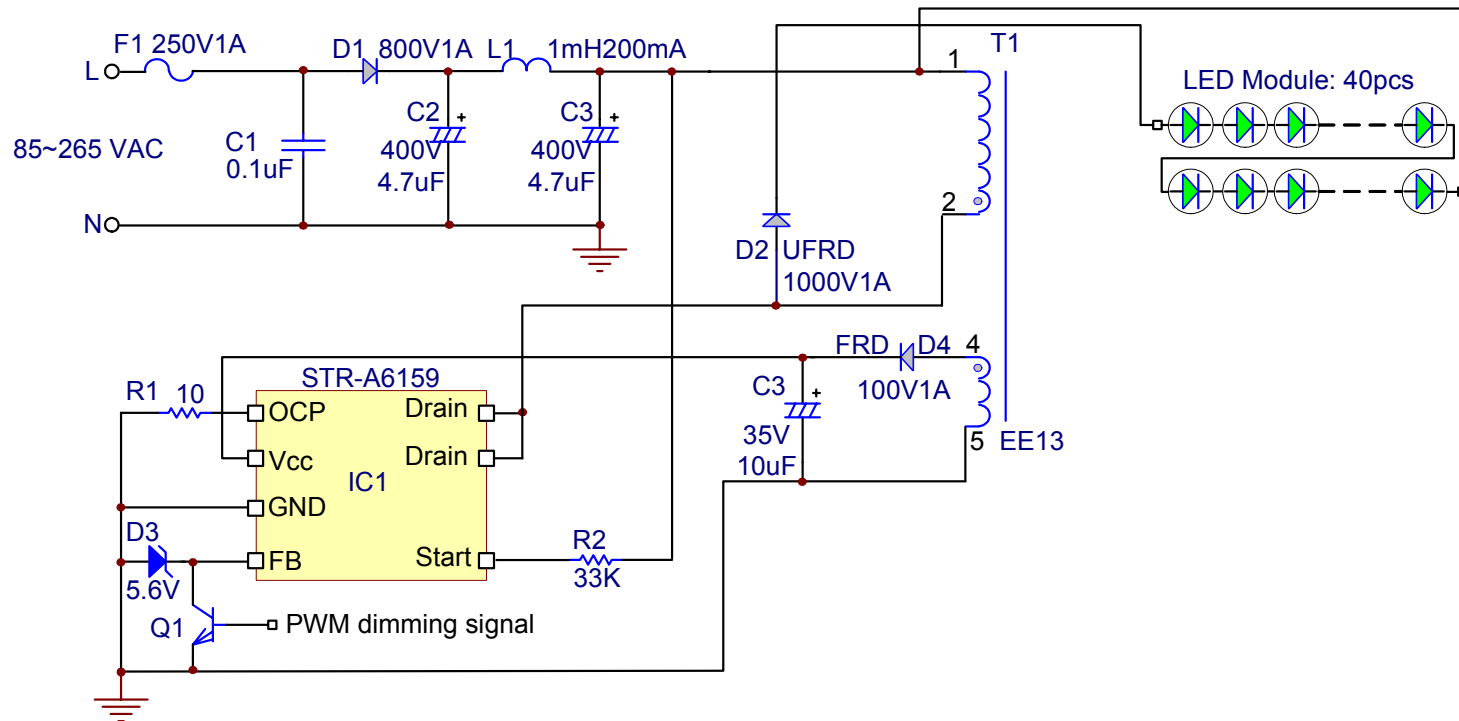


Figure 1 — Schematic

2. Transformer design

- Parameters

Primary inductance: 4 mH, Al-value: 100 nH/N²

- Schematic / structure

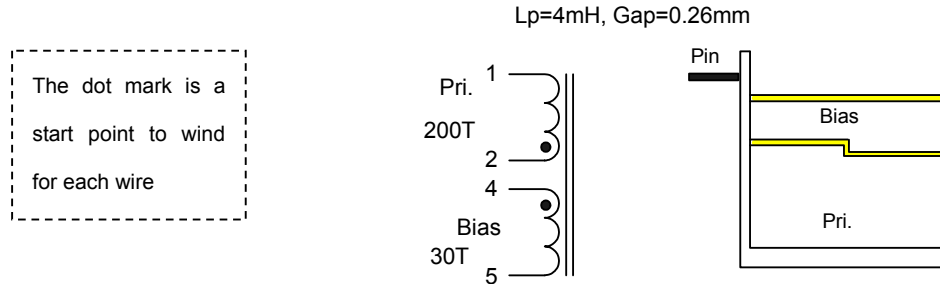


Figure 2 — Transformer schematic / structure

- Material information

Material	Description
Core	TDK PC40 EE13 or equivalent / Al-value: 100nH/N ²
Bobbin	TDK BE13-1110CPS or equivalent
Primary wire	AWG32 Double-coated magnetic wire
Bias wire	AWG32 Double-coated magnetic wire

- Wiring information

Symbol	No. of wires	No. of layers	No. of turns	Methodology
Bias	1	1	30	Close windings over 1 layer
Pri.	1	6.5	200	Close windings over 6½ layers