
Evaluation Board (AL9910EV8)

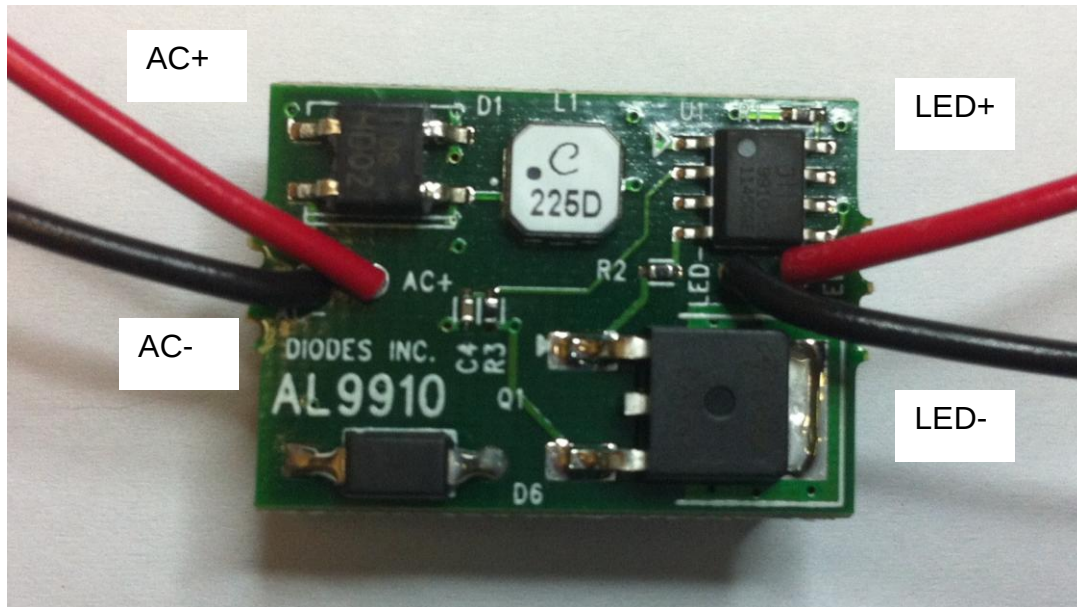
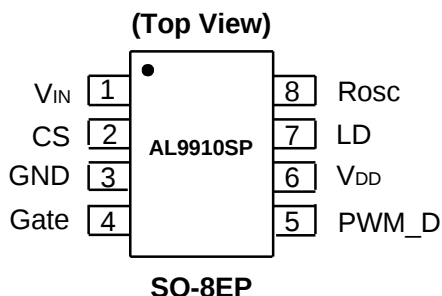


Figure 1: Top-View Evaluation Board

Features

- Non Dimmable
- Selectable 2W-11W output power
- Active PFC with power factor >0.9
- No electrolytic capacitor
- High temperature operation
- Long operating life
- Typical Applications: Retrofit E27, PAR38, PAR30, A19 LED Light Bulbs

AL9910 Pin Assignment



AL9910 Pin Description

Pin Name	Pin Number	Descriptions
V _{IN}	1	Input voltage
CS	2	Senses LED string current
GND	3	Device ground
Gate	4	Drives the gate of the external MOSFET
PWM_D	5	Low Frequency PWM Dimming pin, also Enable input. Internal 100kΩ pull-down to GND
V _{DD}	6	Internally regulated supply voltage. 7.5V nominal for AL9910. Can supply up to 1 mA for external circuitry. A sufficient storage capacitor is used to provide storage when the rectified AC input is near the zero crossings
LD	7	Linear Dimming by changing the current limit threshold at current sense comparator
R _{OSC}	8	Oscillator control. A resistor connected between this pin and ground sets the PWM frequency.

Specifications

Parameter	Units	Value
AC Input Voltage	V, AC	90 - 230
Output Power	W	2 – 11
Power Factor	NA	>0.9
ROHS Compliance	NA	Yes

I/O Terminals

Test conditions:Input Voltage: 230V_{AC}, 60HzLED Output Voltage: 33V_{DC}LED Output Current: 300mA

Number of LEDs: 11 LEDs

Connection Instructions:

AC+ Input: Red – Hot

AC- Input: Black - Neutral

DC LED+ Output: LED+ (Red)

DC LED- Output: LED- (Black)

Board Dimension (components included):

WxLxH (in mm) = 18mm x 25mm x 12mm

Quick Start Guide

- 1) Connect +230V_{AC} AC power supply between AC+ and AC- headers.
- 2) Connect external 24V_{DC} LEDs to the output headers between LED+ and LED-.
- 3) Turn on the AC power supply.

PCB Board Layout

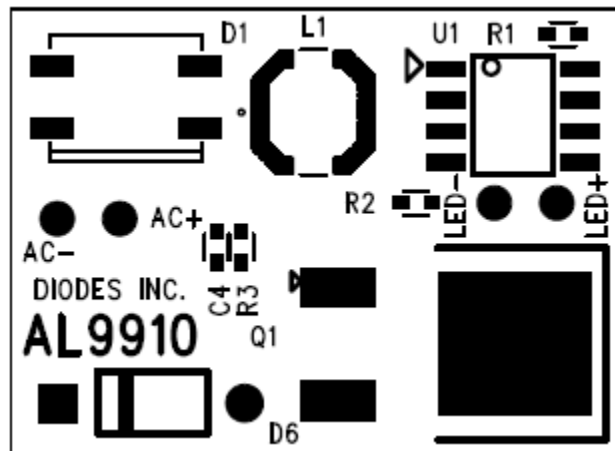


Figure 2: Top-View PCB Layout

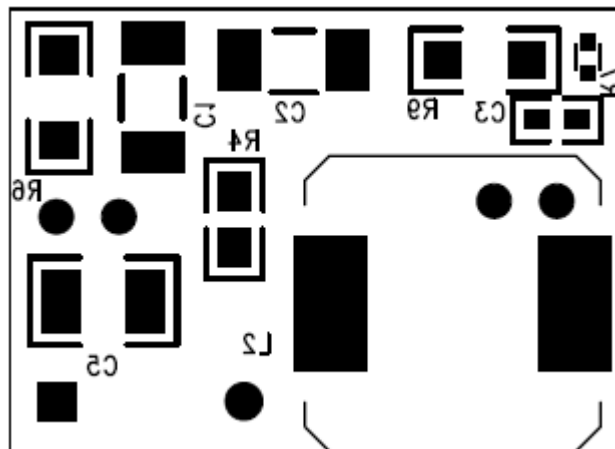


Figure 3: Bottom-View PCB Layout

Evaluation Board Snapshot

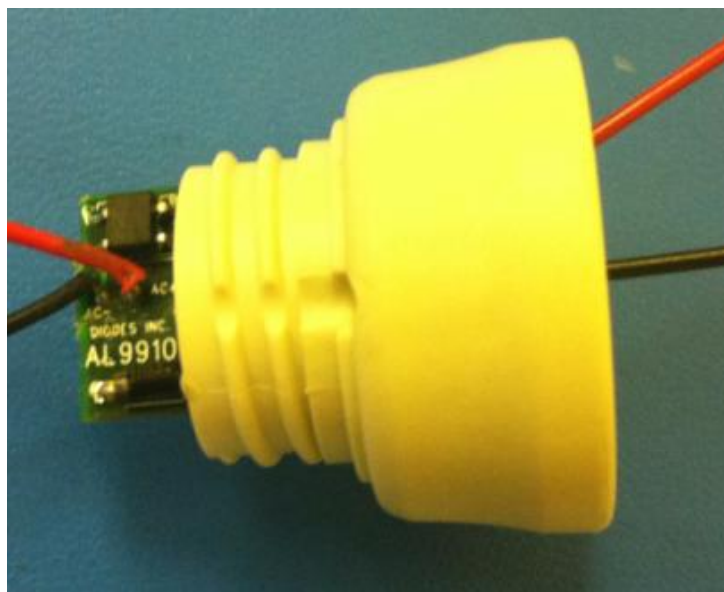


Figure 4: Top-View PCB Board in E27 Bulb Module

Schematic

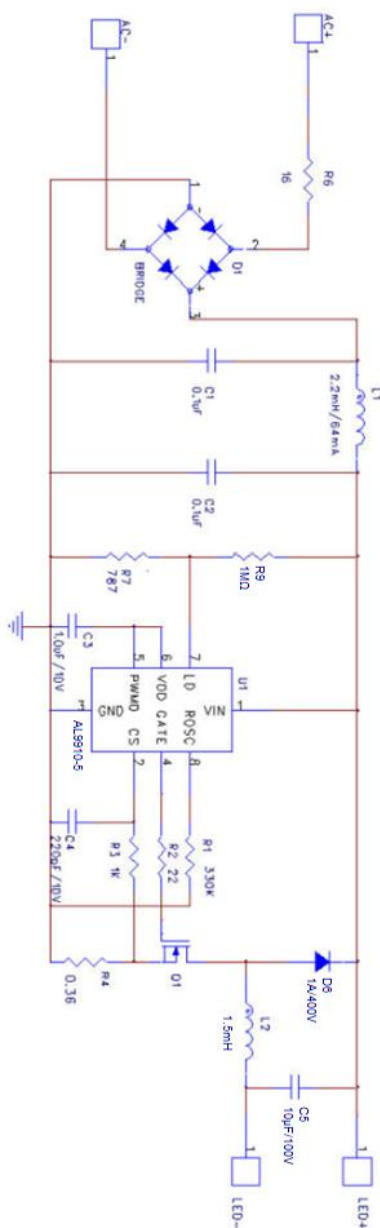
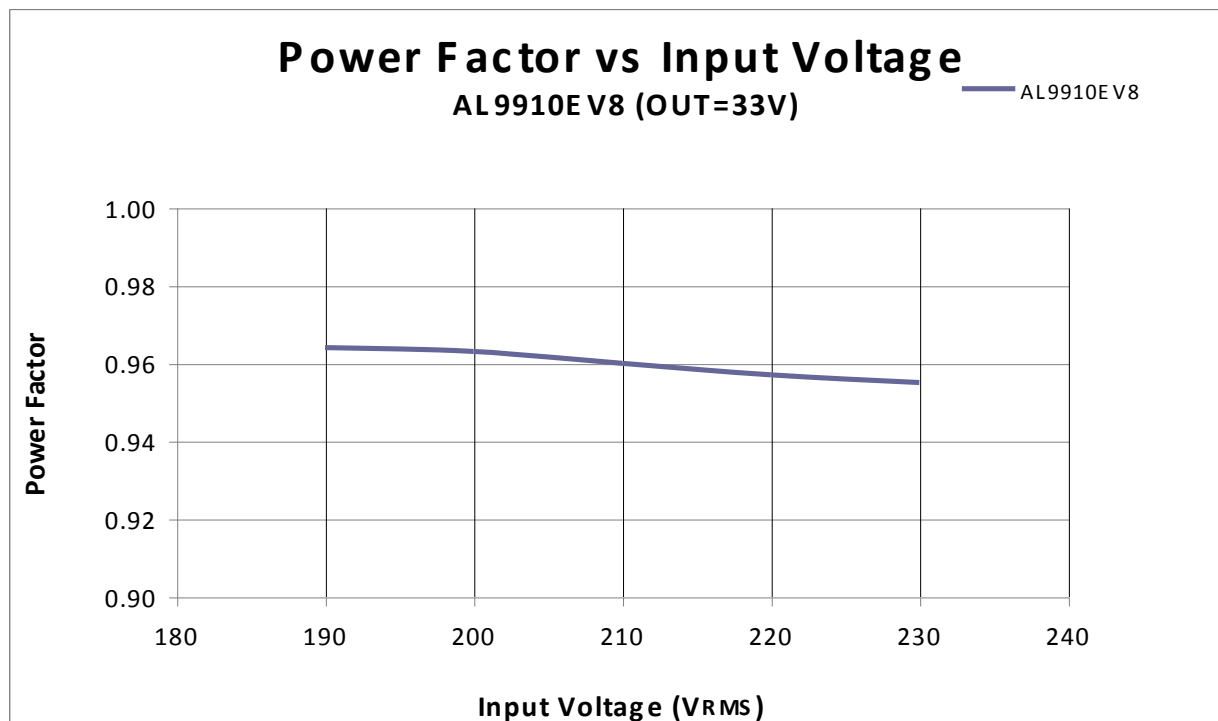
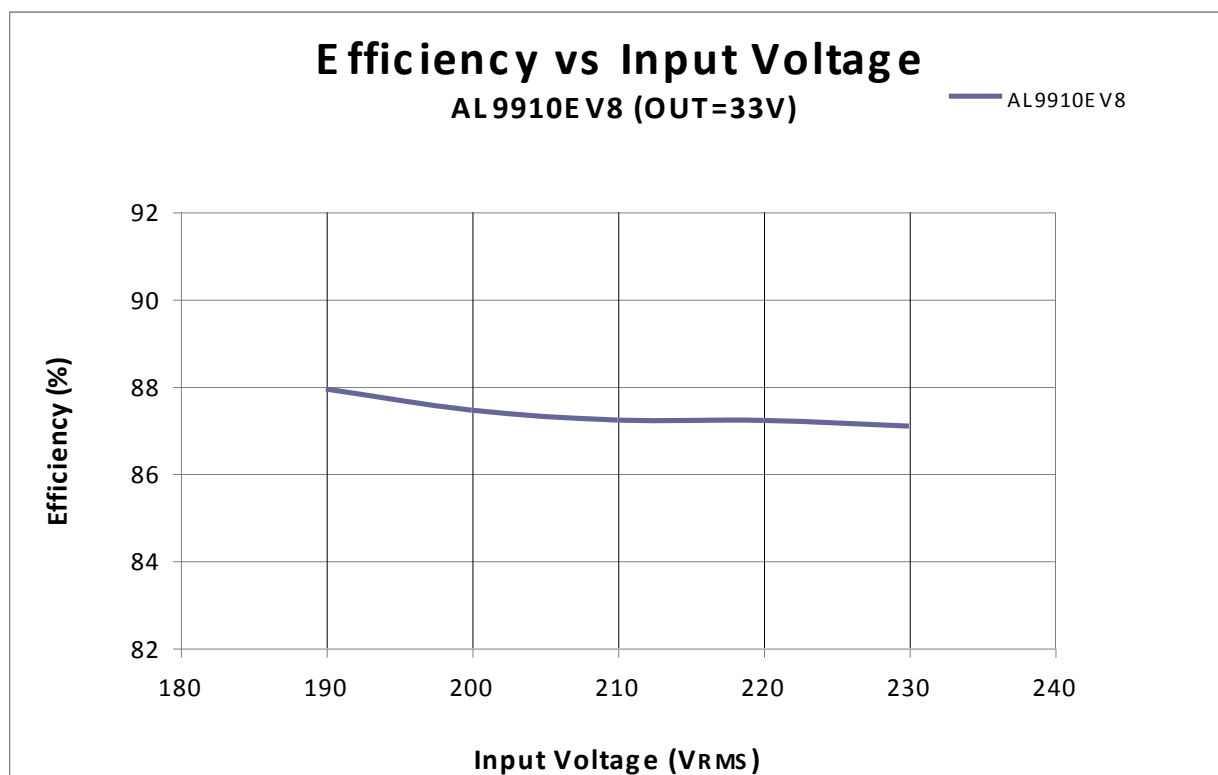


Figure 5: Evaluation Board Schematic

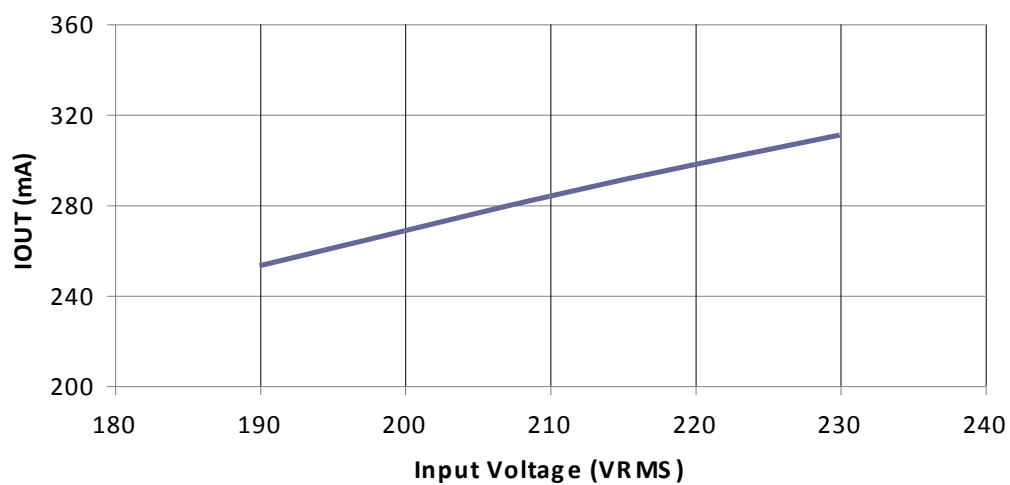
Bill of Material

#	Name	Quantity	Part number	Manufacturer	Description
1	U1	1	AL9910-5S-13	Diodes	Universal High Voltage LED Driver in SO-8 package
2	D1,2,3,4	1	HD06-T	Diodes	RECT BRIDGE GP 600V 0.8A MINIDIP
3	D6	1	ES1G-13-F	Diodes	DIODE SUPER FAST 1A 400V SMA
4	Q1	1	AOD4S60	Alpha Omega	MOSFET N-CH 600V 4A DPAK
5	C4	1	C0402X7R1A221K	Vishay	CAP CER 220PF 10V X7R 01005
6	C3	1	C1608X7R1A105K	TDK	CAP CER 1.0UF 10V X7R 0603
7	R1	1	CRCW0402330KFKTD	Vishay	RES 330K OHM 1/16W 1% 0402 SMD
8	R3	1	CRCW04021K00FKED	Vishay	RES 1.0K OHM 1/16W 1% 0402 SMD
9	R2	1	CRCW040222R0FKED	Vishay	RES 22.0 OHM 1/16W 1% 0402 SMD
10	R4	1	RL1632R-R360-F	Susumu	RESISTOR 0.36 OHM 1/2W 1% 0805
11	R6	1	CRCW120616R0FKEA	Vishay	RES 16.0 OHM 1/4W 1% 1206 SMD
12	R9	1	CRCW12061M00JNEA	Vishay	RES 1M OHM 1/4W 5% 1206 SMD
13	R7	1	CRCW0402787RFKED	Vishay	RES 787 OHM 1/16W 1% 0402 SMD
14	C1, C2	2	VJ1812Y104KXETW1BC	Vishay	CAP Multilayer Cer (MLCC) - SMD/SMT 1812 0.1uF 500volts X7R 10%
15	C5	1	CGA9N3X7S2A106K	TDK	CAP CER 10uF 100V X7S 2220
16	L1	1	LPS5015-225ML	Coilcraft	2.2mH 64mA
17	L2	1	13R155C		IND Radial 1.5mH 280mA

Functional Performance



I_{OUT} vs Input Voltage **AL9910EV8 (OUT=33V/300mA)**



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