

## General Description

The AOZ1081 is a high efficiency, simple to use, 1.8A buck regulator for white LED. The AOZ1081 works from a 4.5V to 16V input voltage range, and provides up to 1.8A of continuous output current with an output voltage adjustable down to 0.25V.

The AOZ1081 comes in an SO-8 package and is rated over a -40°C to +85°C ambient temperature range.

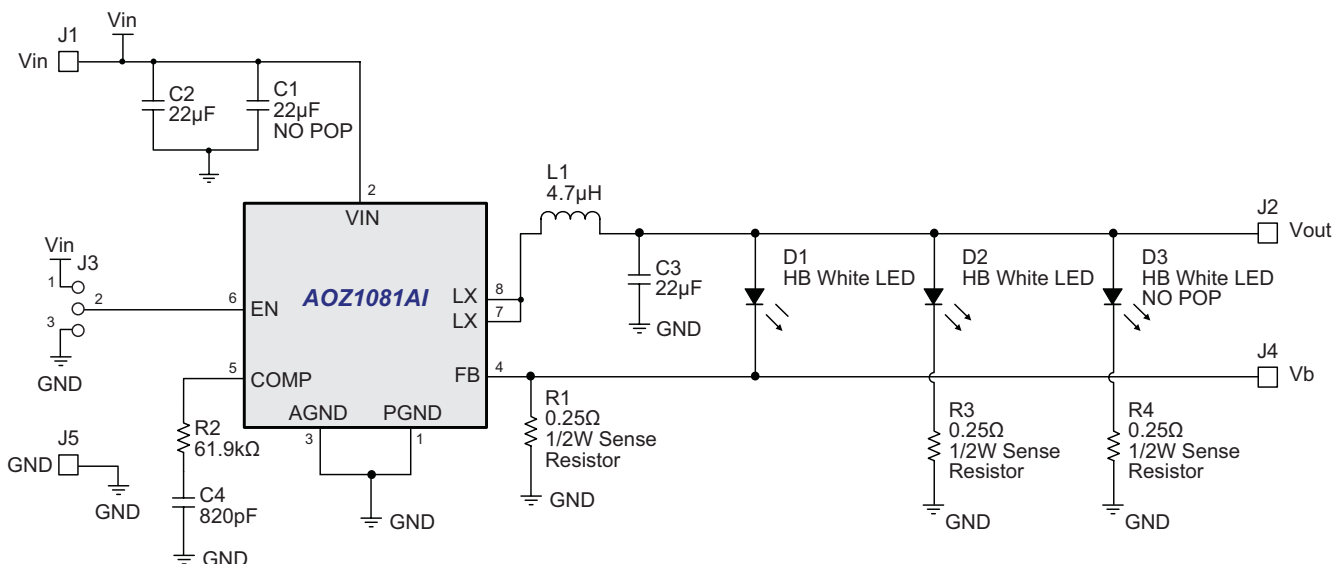
## Features

- 4.5V to 16V operating input voltage range
- 100 mΩ internal PFET switch for high efficiency: up to 95%
- Internal Schottky diode
- Internal soft start
- 0.25V internal reference with ±5% accuracy over temperature
- 1.8A continuous output current
- Fixed 1MHz PWM operation
- Cycle-by-cycle current limit
- Short-circuit protection
- Under voltage lockout
- Output over voltage protection
- Thermal shutdown
- Small size SO-8 package

## Applications

- Buck regulators for white LEDs
- Landscape lighting
- Flashlights
- Battery powered backlight applications

## Evaluation Board Schematic



## Component List

Ref Designation	Part Number	Description	Manufacturer
C1	GRM188R71H104KA01D	Ceramic Capacitor, 0603, 100nF/ 50V, X7R, 10%	Murata
C2,C3	GRM32ER61E226KE15L	Ceramic Capacitor, 1210, 22 $\mu$ F/ 25V, X7R, 10%	Murata
C4	GRM188R71H821KA01D	Ceramic Capacitor, 0603, 820pF/ 50V, X7R, 10%	Murata
D1, D2, D3	Diamond Dragon LW W5AP	White LED, SMD, 255 lm at 1400mA	OSRAM
L1	DO3316P-472	SMD Inductor, 18m $\Omega$ , 4.7 $\mu$ H/5.4A	Coilcraft
R1, R3, R4	RC1206FR-07R250L	Film Resistor, 1206, 250m $\Omega$ , 1%, 0.25W	Yageo
R2	RC0603FR-0761k9L	Film Resistor, 0603, 61.9k, 1%, 0.1W	Yageo
U1	AOZ1081AI	Buck Convert White LED Driver	AOS

PCB Layout

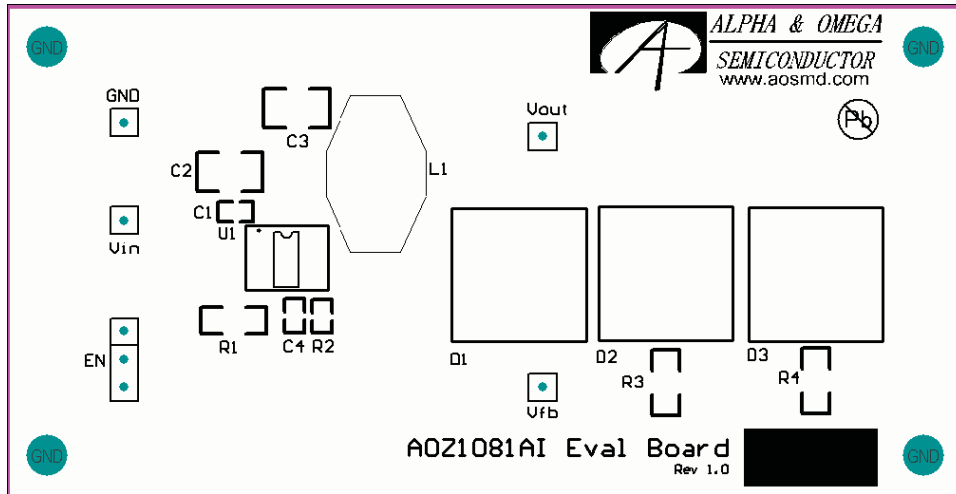


Figure 1. Top Silk Screen

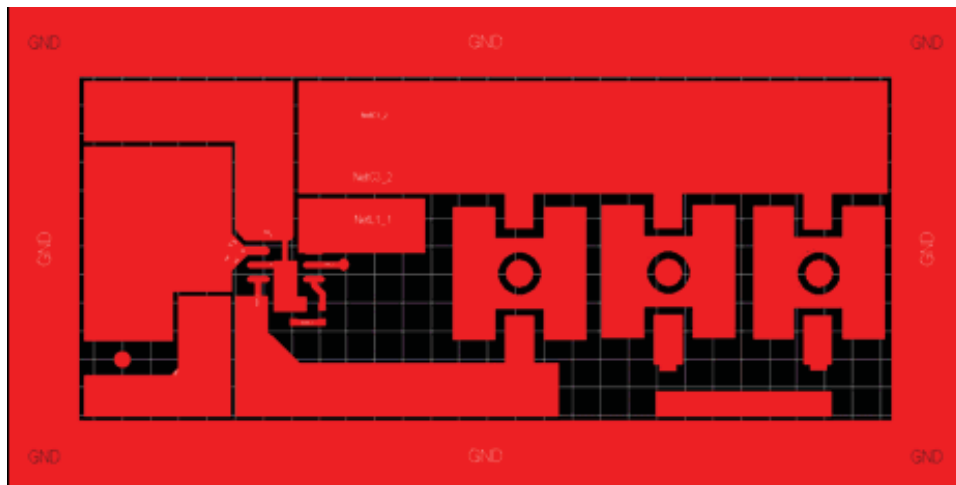


Figure 2. Top Layer

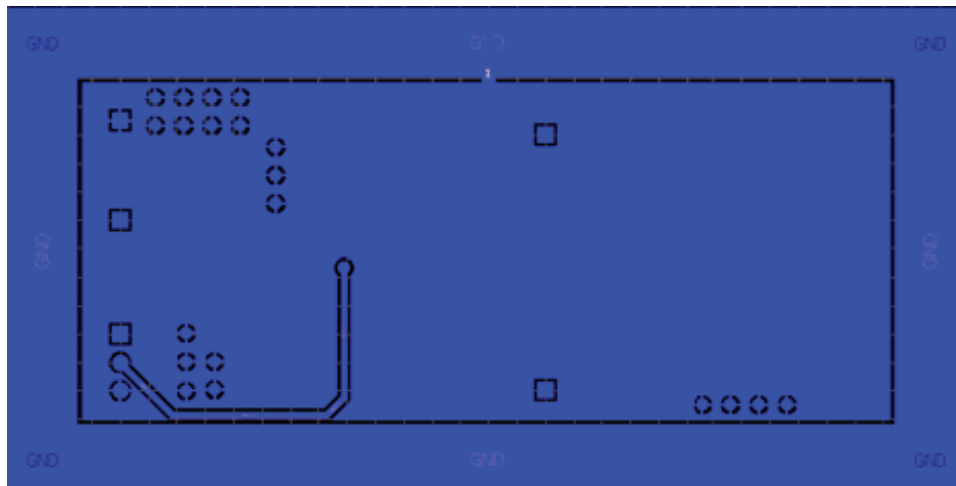


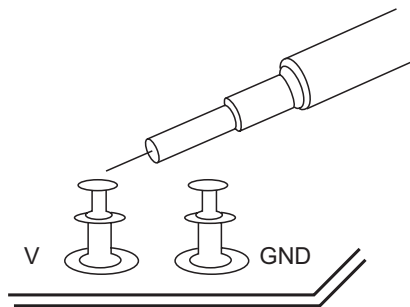
Figure 3. Bottom Layer

## Quick Start Guide

1. Connect one to three LEDs to the output. Be sure that the total output current should be less than 1.8A.
2. Connect the DC power supply to Vin and GND port. Set DC power supply voltage between 4.5V and 16V.
3. The EN pin is active high. Connect EN pin to Vin if not used. It also can be connect to any voltage source which is higher than 2V and less than Vin.
4. Turn on DC power supply and evaluation circuit will start.
5. Measure input voltage at the Vin and GND port to eliminate the affect of voltage drop on wire between DC power supply and evaluation board.
6. Measure output voltage at the Vout and GND port to eliminate the affect of voltage drop on wire between load and evaluation board.
7. Use oscilloscope to monitor input ripple voltage right across input capacitor C2.
8. Use oscilloscope to monitor output ripple voltage right across output capacitor C3.

### Note:

When testing the ripple voltage, remove the cap of the voltage probe and touch the probe tip directly across the Vin or Vout and GND terminals, as shown in the Figure 4.



**Figure 4. Voltage Ripple Test**

**This data sheet contains preliminary data; supplementary data may be published at a later date. Alpha & Omega Semiconductor reserves the right to make changes at any time without notice.**

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2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.