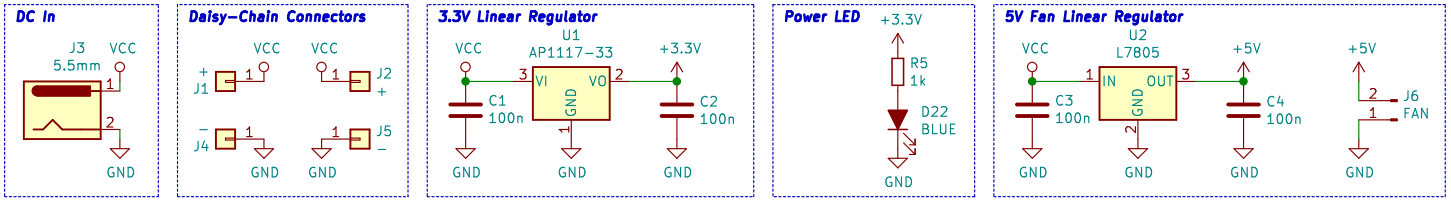
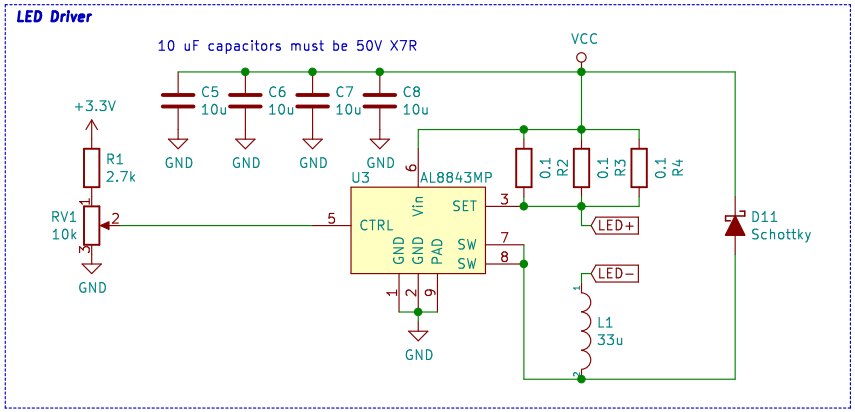
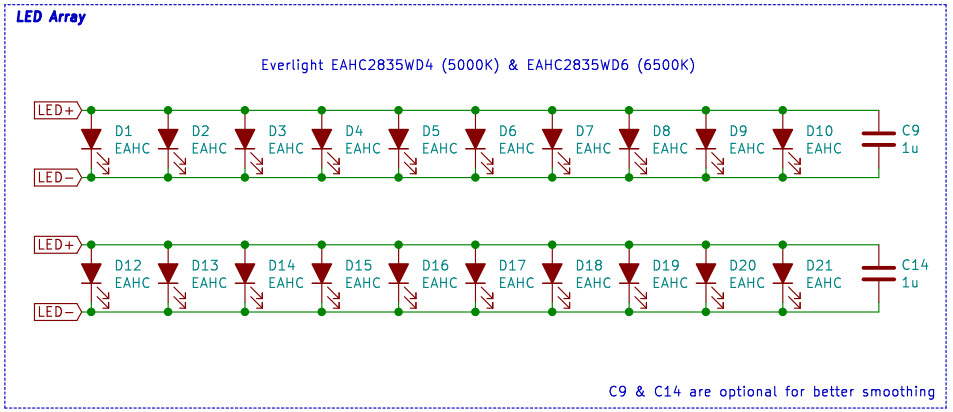






Design Calculations

Analog Dimming

Pin 5 (CTRL) of the AL8843 allows for dimming via either an analog voltage or PWM signal.
The analog voltage control method is used in this design.

Adjustment Range : 10 to 100%
Input Range : 0.4 to 2.5 V
This Design : 0.0 to 2.6 V

The adjustment range in this design is greater than the input range to ensure full control reguardless of resistor tolerances.

RV1 CW:brigther, CCW:dimmer when mounted on LED side.
R1 sets the upper deadzone size (2.7k = 2.598 V).

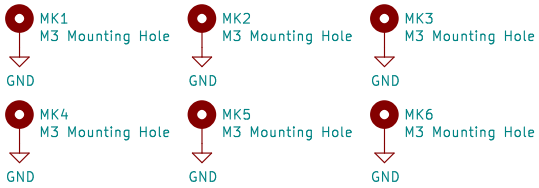
$$Vupper = \frac{Vcc \times RV1}{R1+RV1} = \frac{3.3 \times 10k}{2.7k+10k} = 2.598\ V$$

Current Sense

Pin 3 (SET) of the AL8843 is the input for a high side current sense shunt.
This design uses a 0.033 ohm shunt to acheive 3 A average output current when dimming is at 100%.

The nominal average output current can be configured using those formula

$$I = \frac{0.1}{R} = \frac{0.1}{0.033} = 3 \qquad R2=R3=R4 = R \times 3 = 0.033 \times 3 = 0.1$$



All resistors 1% 250ppm unless specified
All capacitors X7R unless specified

DC Input 5 to 24 V
ARVAR Technologies & WizardTim
Sheet: /
File: AR0004-R1.sch

Title: 10W D50 & D65 Standard Illuminant

Size: A4	Date: 2018-06-12	**Rev: R1**
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