PAM2841EV Board User Guide

AE Department

1. Revision Information

Date	Revision	Description	Comment
2008/03/19	V1.0	Initial Release	
2013/01	V1.1	Update EVB Schematic and View	

2. EV Board Schematic

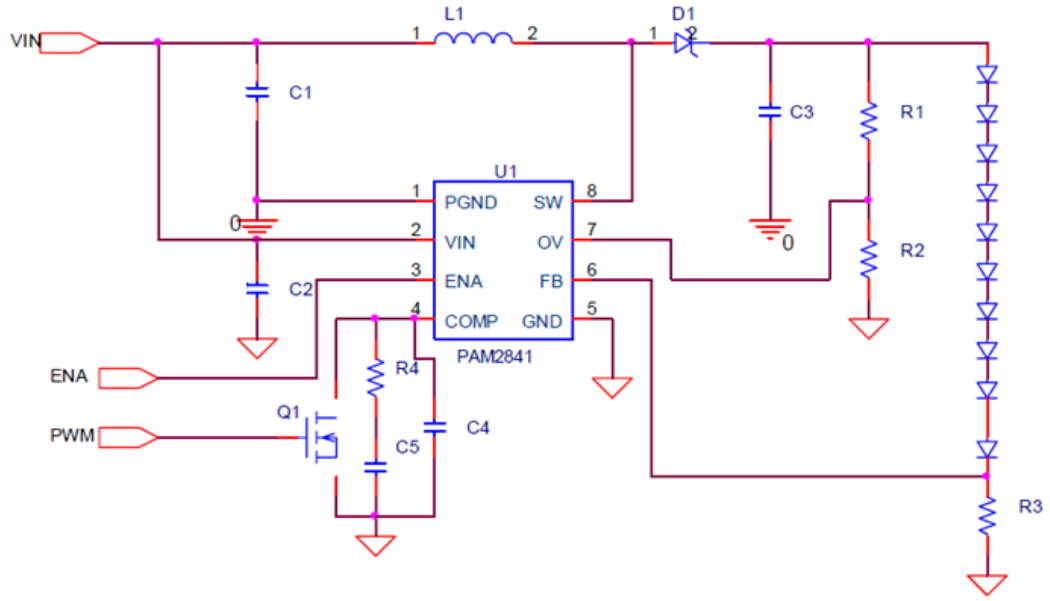


Figure 1

3. EVB PAM2841 EB7CFA Description

PAM2841 EB7CFA evaluation board is a fully assembled and tested circuit board that evaluates the PAM2841 white LED driver. The circuit operates from 2.5V to 5.5V and drives white LEDs in series with a constant current.

4. EV Board View

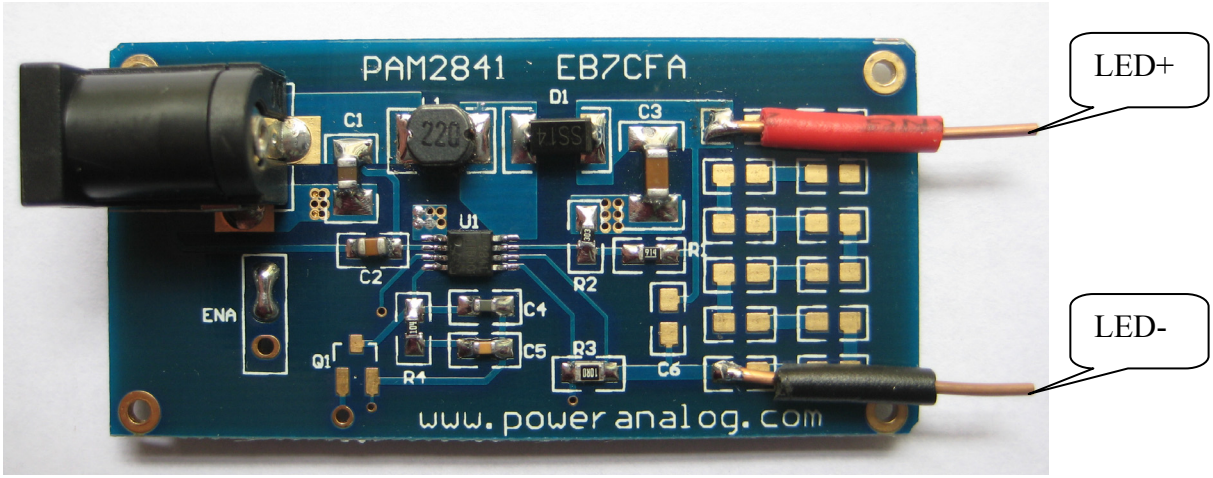


Figure 2

EV board operational sequence:

a. Connect ENA to high (Vin)

b. Preset the power supply to between 2.5V and 5.5V.

c. Turn off the power supply.

d. Connect positive power supply terminal to Vin.

e. Connect power supply ground to EV board GND.

f. Turn on the power supply and verify that the LEDS are lit.

5. EV Board BOM List

Item	Value	Type	Rating	Description	Vender and Part No.
C1	10μF	X5R/X7R,Ceramic/1210	10V	Input coupling CAP	Murata GRM21R71C106B
C2	1μF	X5R/X7R, Ceramic/0805	10V	Vin coupling CAP	Murata GRM21R71C105B
C3	1μF	X5R/X7R, Ceramic/1210	50V	Output CAP	Murata GRM21R71C105B
C4	10nF	X5R/X7R, Ceramic/0805	10V	Comp CAP	Murata GRM21R71C103B
C5	1nF	X5R/X7R, Ceramic/0805	10V	Comp CAP	Murata GRM21R71C102B
R1	910K	0805	5%	OVP Resistor	
R2	27K	0805	5%	OVP Resistor	
R3	10	0805	1%	Iset Resistor	
R4	2K	0805	5%	Comp Resistor	
L1	22μH	1210	1A	Inductor	Murata LQH32CN220K
D1		1210	1A	Schottky diode	NihonES11QS04
Q1		SOT23		Nmosfet	
White LED		3.2V(typ) 3.5V(max) at 20mA			

6. External Components Selection

Input Capacitor (C1) and Output Capacitor (C3)

(1) C1 Low ESR needed, 10uF, X5R/X7R ceramic recommended;

(2) C3 Low ESR needed, 1μF, X5R/X7R (rating 50V) ceramic recommended.

Coupling Capacitor (C2) and Comp Capacitors(C4,C5)

(1) C2, Low ESR needed, 1μF, X5R/X7R ceramic recommended;

(2) C4, Low ESR needed, 10nF, X5R/X7R ceramic recommended;

(3) C5, Low ESR needed, 1nF, X5R/X7R ceramic recommended.

Iset Resistor (R3)

(1) R3 set the string's LED current , Iled=0.2/R3;

(2) R3, 10±1% recommended;

OVP Resistors (R1, R2)

(1) $Vovp=V_{ov}*(R1+R2)/R2$;

(2) R1, 910K±10% recommended; R2,27K±10% recommended;

Inductor (L1)

(1) Low DCR needed, 22μH (rating 1A) recommended.

Schottky Diode (D1)

(1) NihonES11QS06(1A, 60V) recommended.

(2) B140 (1A, 40V) recommended.

Mosfet (Q1)

(1) 2N7002 recommended.

7. PCB Layout Guidelines

Decoupling Capacitors

(1) The capacitors (C2) need to place very close to the PAM2841's pins.

Grounding

(1) The decoupling capacitors C2, C4 should each to be grounded to analog ground AGND;

(2) The capacitors C1, C3, R2 and R3 should each be grounded to power ground PGND;

(3) Connect the AGND and PGND islands by connecting the GND pins directly to the exposed backside pad. Make no other connections between these separate ground planes.

Others

(1) Connect L1, SW, D1, C3 with short and wide connections;

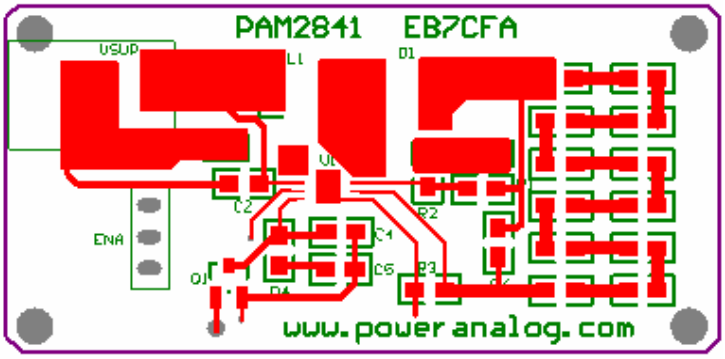
(2) Place the OVP voltage setting-divider resistors (R1, R2) as close to the OV pin as possible. The divider's center trace should be kept short;

(3) Minimize the size of the SW node while keeping it wide and short. Keep the SW node away from the feedback node and ground;

(4) Place the Iset resistors (R3) as close to the Iset pin as possible.

8. PCB Layout Example

Top Layer



Bottom Layer