

A6217 Evaluation Board User Guide

DESCRIPTION

This evaluation board is used to demonstrate the operation and performance of the Allegro A6217 constant-current buck regulator LED driver.

FEATURES

- A6217 constant-current buck LED driver
- User-selectable LED output current up to 1.5 A
- LED dimming control enabled via an external PWM signal
- Test point for connection of external logic sources for enable/disable signal or PWM dimming signal
- Test points for connection of an external LED string

EVALUATION BOARD CONTENTS

- APEK6217 evaluation board



Figure 1: APEK6217 Evaluation Board

Table 1: A6217 Evaluation Board Configurations

Part Number	Package	Output Current
APEK6217KEJ-01-MH-01	DFN-10 (EJ)	1.5 A

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Table 2: General Specifications

Specification	Min.	Nom.	Max.	Units
Input Operating Voltage	6		48	V
Output Current	0		3	A
Switching Frequency	2		2	MHz

USING THE EVALUATION BOARD

The A6217 is a switching regulator that provides constant-current output to drive high-power LEDs. It integrates a high-side N-channel DMOS switch for DC-to-DC step-down (buck) conversion. The A6217 evaluation board input voltage range is from 6 V to 48 V to drive a single LED string. The evaluation board is configured for LED currents up to 1.5 A and is jumper-selectable to 0.5 A, 1 A, and 1.5 A. The switching frequency with dithering is centered at 2 MHz but can be adjusted by changing a single resistor. For further information about the device, refer to the A6217 datasheet.



Figure 2: APM81911 Evaluation Board I/O Connections and Default Jumper Positions

POWER INPUT

Connect a power supply to the VIN and GND test points between 6 V and 48 V. For LED current regulation, ensure that the minimum input voltage is at least 20% higher than the operating voltage of the LED string.

ENABLE/PWM

To enable the LEDs, connect the EN test point to a logic high or tie to VIN.

To enable the LEDs and control the brightness with the PWM duty cycle from 1% to 100%, connect the EN test point to a PWM signal (such as 0 V to 3 V at 200 Hz). For more information about PWM dimming, refer to the A6217 datasheet.

LED OUTPUT

Connect the LED string between the LED+ and LED- test points.

DEVICE CONFIGURATION

To set the LED output current, use the P1 jumper according to the settings shown in Table 3. Test points are described in Table 4.

Table 3: LED Current Jumper Settings

Jumper	Pins 1 – 2	Pins 3 – 4	Description	LED Current
P1	Installed	Installed	Install jumper across pins 1 – 2 and pins 3 – 4	1.5 A
	Installed	Open	Install jumper across pins 1 – 2	1 A
	Open	Installed	Install jumper across pins 3 – 4	0.5 A
	Open	Open	No jumper installed on P1	0 A

Table 4: Test Point Descriptions

Test Point	Description
VIN	Positive terminal for input voltage connection
LED+	Positive terminal for output LED string connection
LED-	Negative terminal for output LED string connection
EN	Enable pin to enable/disable the A6217, or provide a PWM signal on this pin to apply PWM dimming to the LED string
GND	Ground terminal for power supply or measurement probe reference

SCHEMATIC

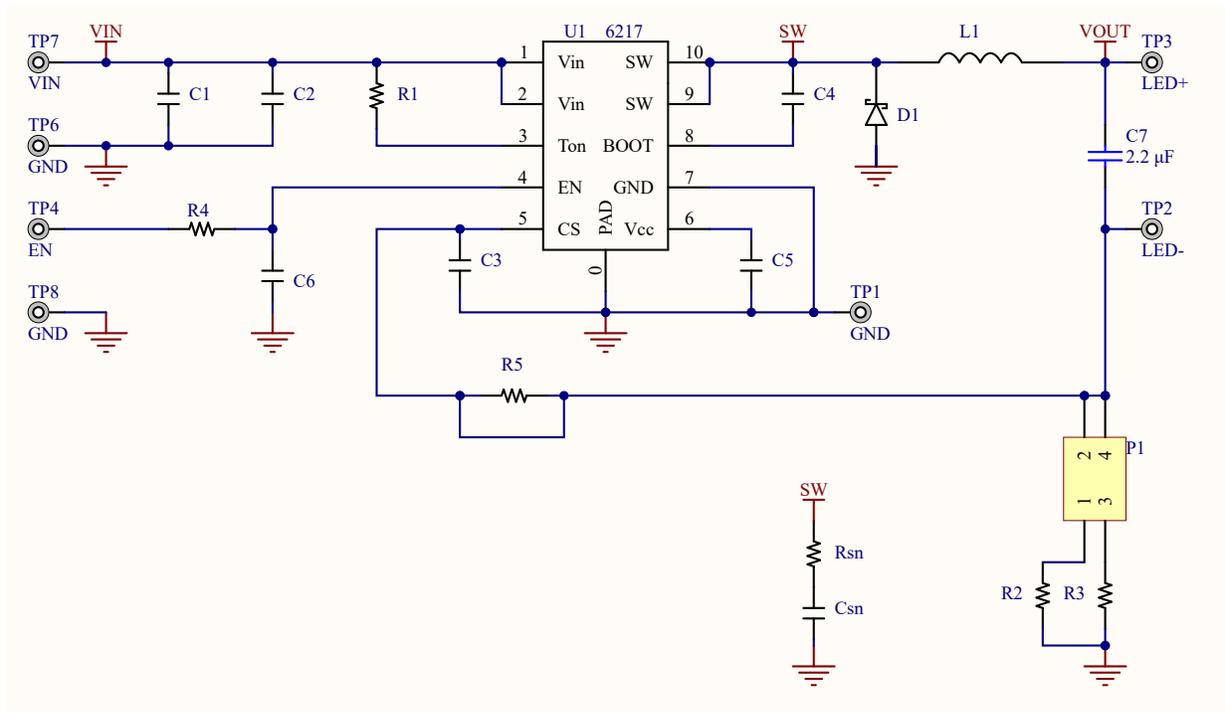


Figure 3: Schematic

LAYOUT

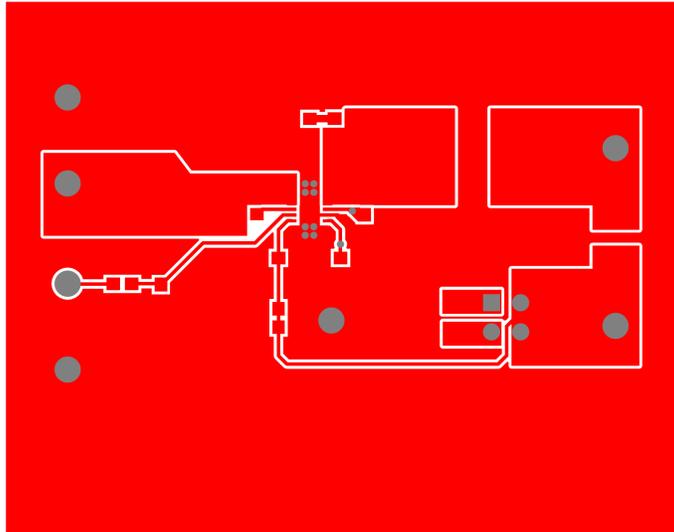


Figure 4: PCB Top Layer

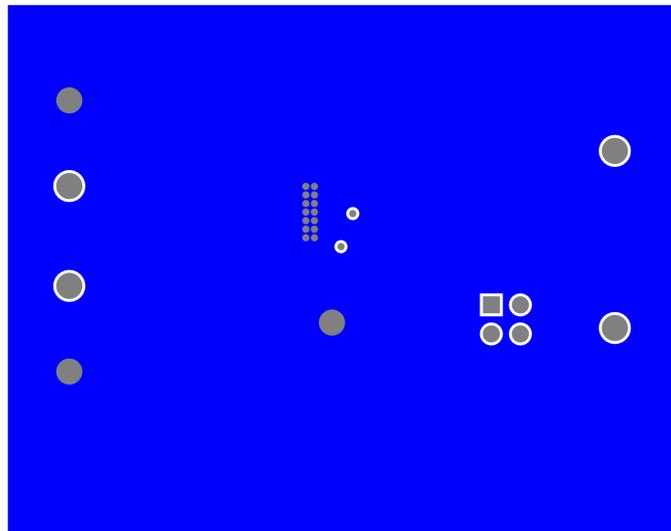


Figure 5: PCB Bottom Layer

BILL OF MATERIALS

Table 2: APEK6217 Evaluation Board Bill of Materials

Designator	Description	Quantity	Manufacturer	Manufacturer Part Number
Electrical				
C1	Capacitor, 47 μ F 50 V elect MZA SMD	1	United Chemi-Con	EMZA500ARA470MF80G
C2	Capacitor, ceramic 4.7 μ F 50 V X5R 1206	1	Murata	GRM31CR71H475KA12L
C4, C5	0.1 μ F 10 V X7R ceramic	2	KEMET	C0603C104K8RACTU
D1	Diode Schottky 60 V 2.1 A DO214AC	1	Vishay	VS-10MQ060NTRPBF
L1	10 μ H 3.4 A 10 mm \times 10 mm x 5 mm	1	TDK EPCOS	B82464G4103M000
R1	31.6 k Ω 0.1W 1%	1	Yageo	RC0603FR-0731K6L
R2	0.20 Ω 0.5W 1%	1	Susumu	RL1632R-R200-F
R3	0.39 Ω 0.5W 1%	1	Susumu	RL1632R-R390-F
R4	1 k Ω 0.1W 1%	1	Yageo	RC0603FR-071KL
U2	A6217 constant-current buck LED driver	1	Allegro MicroSystems	A6217KEJTR-1-J
Mechanical				
GND	Test point, black	3	Keystone Electronics	5011
LED-, EN	Test point, yellow	2	Keystone Electronics	5014
LED+, VIN	Test point, red	2	Keystone Electronics	5010
P1	Header, 2-pin, dual-row	1	Würth Electronics	61300421121
Not Fitted				
C3	0.1 μ F 10 V X7R ceramic	0	KEMET	C0603C104K8RACTU
C6	10 nF 50 V X7R	0	Murata	GRM188R72A103KA01D
C7	2.2 μ F 50 V X5R	0	Taiyo Yuden	UMK316BJ225KD-T
Csn	0603 capacitor DNP	0		
Rsn	0603 resistor DNP	0		
R5	DNP	0		

RELATED LINKS

A6217 Product Page: <https://www.allegromicro.com/en/products/regulate/led-drivers/led-drivers-for-lighting/a6217>

APPLICATION SUPPORT

For applications support contact, go to <https://www.allegromicro.com/en/about-allegro/contact-us/technical-assistance> and navigate to the appropriate region.

Revision History

Number	Date	Description
-	December 1, 2023	Initial release

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