

### General Description

The EV0059 evaluation board is designed to drive Lumileds White LEDs using MPS' MP1567 step down converter. The EV0059 circuit is a positive to negative voltage converter with a positive input voltage range of 2.6V to 6V. The generated output voltage can be as low as -18V with respect to ground.

The MP1567 is a 2A peak, synchronous step down converter utilizing a constant frequency, current mode switching topology. The MP1567 has internal 180mΩ and 220mΩ MOSFETs and has soft start operation. The MP1567 switches at a high frequency (800KHz) reducing the size of external components. It includes under voltage lockout and over-temperature protection and is available in the tiny 10 pin MSOP and 3mm x 3mm QFN packages.

### Ordering Information

Board Number	MPS Part Number
EV0059	<b>MP1567DK</b>
Luxeon Emitter	<b>DS25</b>

Figure 1: EV0059 Evaluation Board



Actual Size: 2.5"X x 2"Y

### Absolute Maximum Ratings

Input Supply Voltage $V_{IN}$	6.5V
Enable Voltage $V_{EN}$	-0.3V to 6V

### Recommended Operating Conditions

Input Supply Voltage $V_{IN}$	2.6V to 6V
Output Voltage $V_{OUT}$	0V to -18V

### Lumileds Emitter Features

- Highest Flux per LED in the world
  - Up to 120 lumens
- Very long operating life (up to 100k hours)
- Superior ESD protection
- More Energy Efficient than Incandescent and most Halogen lamps
- Available in White, Green, Blue, Royal Blue, Cyan, Red, Red-Orange, and Amber

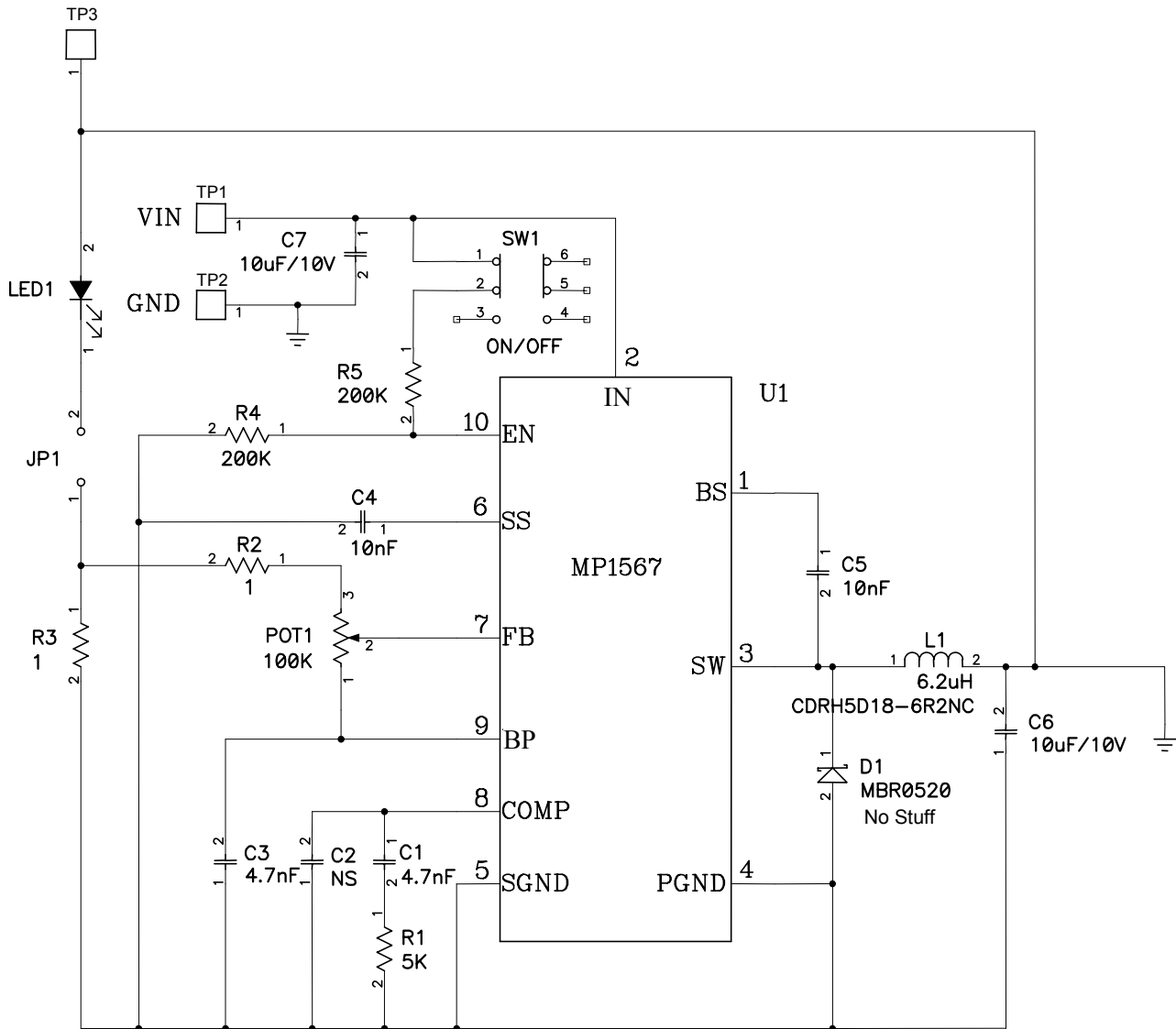
### MP1567 Features

- 2A Peak Current Limit
- Internal 180mΩ and 220mΩ Power Switches
- > 90% efficiency
- Zero Current Shutdown Mode
- Under Voltage Lockout Protection
- Soft Start Operation
- Thermal Shutdown
- Internal Current Limit (Source & Sink)

### Applications

- Handheld Computers, PDAs
- Cell phones, Digital and Video Cameras
- Small LCD Display

Figure 2: EV0059 Schematic



EV0059 / MP1567 Buck Boost Demo Board Schematic

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**Table 1: EV0059 Bill of Materials**

Component	Part Number	Vendor	Package	QTY
U1	MP1567DK	Monolithic Power Systems	MSOP10	1
LED1	Emitter	Lumileds	DS25	1
C1, C3	4.7nF	Any	0805	2
C2	No Stuff	Any	0805	0
C4, C5	10nF	Any	0805	2
C6, C7	10 $\mu$ F, 10V	Any	1210	2
R1	5K $\Omega$	Any	0805	1
R2, R3	1 $\Omega$	Any	0805	1
R4, R5	200K $\Omega$	Any	0805	2
D1	No Stuff	None	1810	0
L1	6.2 $\mu$ H	Sumida	CDRH5D18-6R2NC	1
			<b>Total</b>	<b>13</b>
<b>Optional</b>				
POT1	100K $\Omega$	Any	N/A	1
SW1	SW_DPDT_B	Any	N/A	1

## Board Operation

1. Attach input voltage  $2.6V \leq V_{IN} \leq 6V$  and input ground to VIN and GND pins respectively.
2. Turn SW1 to ON position to enable board. Turn SW1 to OFF position to disable board.
3. Turn POT1 clockwise to increase brightness and counterclockwise to decrease brightness.
4. Jumper JP1 can be replaced with a resistor to measure current.

Figure 3: EV0059 Top Silk Layer

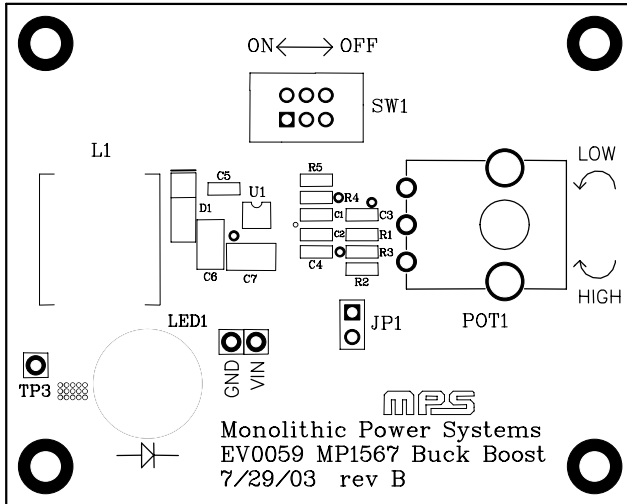


Figure 4: EV0059 Top Layer

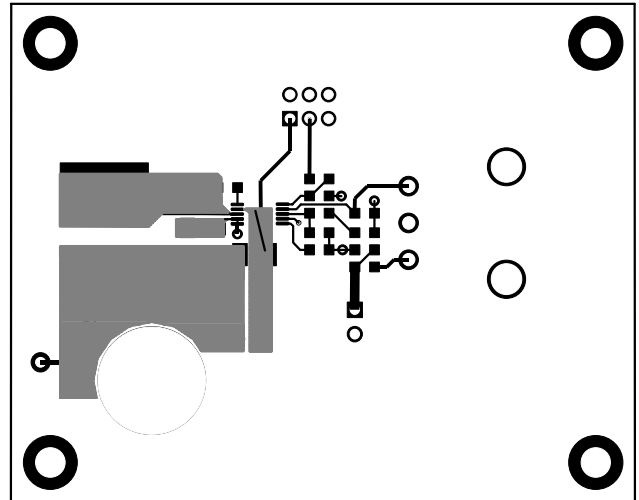


Figure 5: EV0059 Bottom Silk Layer

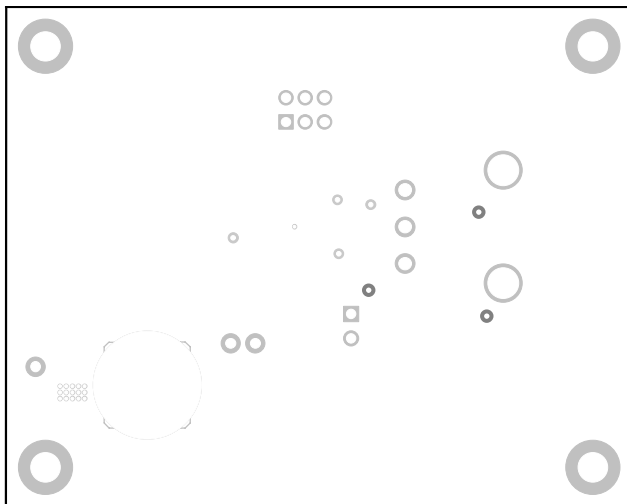
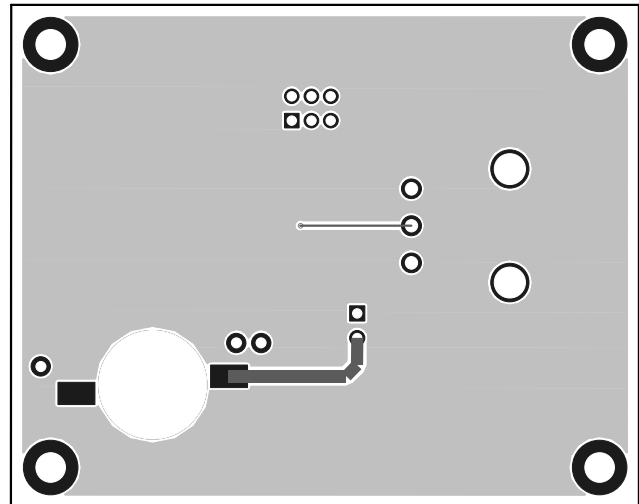


Figure 6: EV0059 Bottom Silk Layer



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