

DESCRIPTION

The EV1517 is the evaluation board used to demonstrate the white LED driver capabilities of the MP1517. The low 0.7V feedback voltage offers higher efficiency in white LED driver applications including cell phone camera flash. Soft-start, cycle-by-cycle current limiting and input under voltage lockout prevent overstressing or damage to sensitive external circuitry at startup and output short-circuit conditions. Current-mode regulation and external compensation components allow the MP1517 control loop to be optimized over a wide variety of input voltages, output voltages and load current conditions.

ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|------------------------------|-------------------|------------|-------|
| Input Voltage ⁽¹⁾ | V _{IN} | 2.6 to 5.5 | V |
| LED Current (Torch) | I _{OUT1} | 20 | mA |
| LED Current (Flash) | I _{OUT2} | 150 | mA |

Note:

- 1) 5.5V input voltage limit is specific to the application circuit on this evaluation board. The input voltage limit of the MP1517 is 25V.

FEATURES

- 4A Peak Current Limit
- Low 700mV Feedback Threshold
- Internal 150mΩ Power Switch
- Input Range of 2.6V to 25V
- 95% Efficiency
- Zero Current Shutdown Mode
- Under Voltage Lockout Protection
- Open Load Protection
- Soft-Start Operation
- Thermal Shutdown
- Tiny QFN16 (4mm x 4mm) Package

APPLICATIONS

- Boost and SEPIC Regulators
- Handheld Computers
- Cell Phone Camera Flash, PDAs
- Digital Still and Video Cameras

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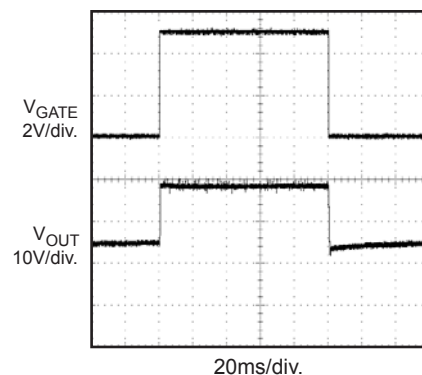
EV0043 EVALUATION BOARD



Dimensions (2.5"X x 2.0"Y x 0.4"Z)

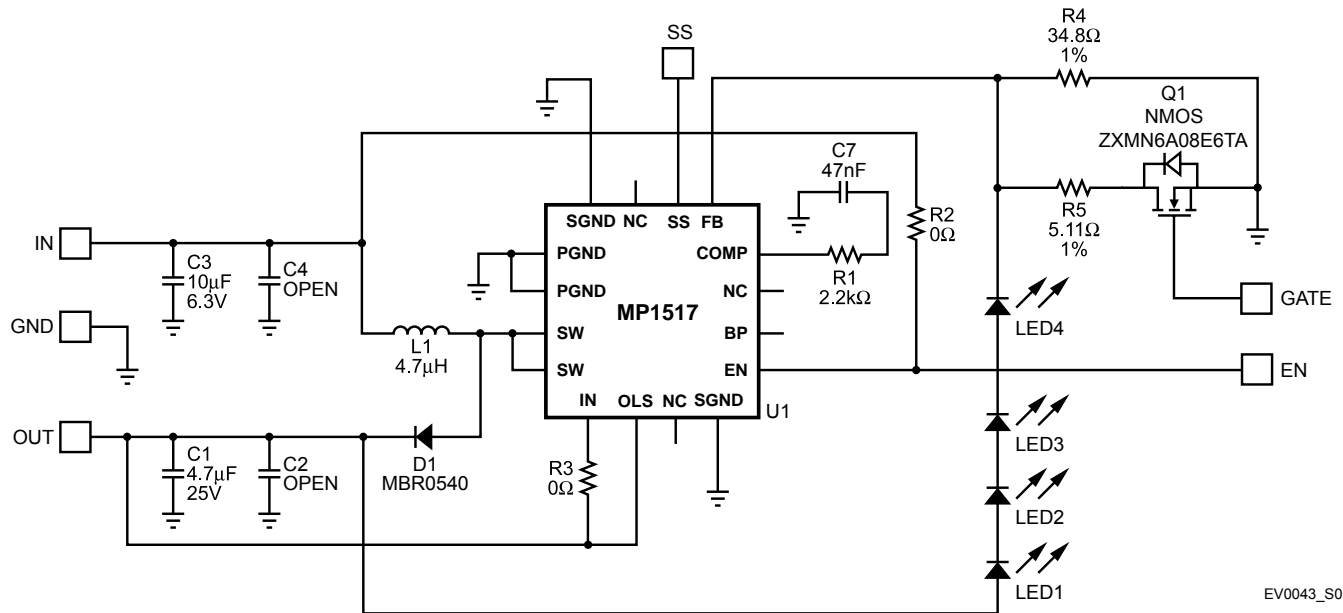
| Board Number | MPS IC Number |
|--------------|---------------|
| EV0043 | MP1517DR |

Waveform in Flash Mode



EV0043_TPC01

EVALUATION BOARD SCHEMATIC



EV0043_S01

EV0043 BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer P/N | Distributor P/N |
|-----|------------------------|-------|-----------------------------|---------|---------------------------|--------------------------|
| 1 | C1 | 4.7uF | Capacitor, 25V, Ceramic X5R | 1210 | Panasonic ECJ-4YB1E475K | Digikey PCC2251CT-ND |
| 2 | C2, C4 | NS | Do Not Stuff | | | |
| 1 | C3 | 10uF | Capacitor, 6.3V Ceramic X5R | 1210 | Taiyo-Yuden JMK325BJ106MF | |
| 1 | C7 | 47nF | Capacitor, 25V, Ceramic X7R | 0603 | Panasonic ECJ-1VB1E473K | Digikey PCC1771CT-ND |
| 1 | D1 | | Schottky Diode, 0.5A, 40V | SOD123 | ON Semi MBR0540T1 | Digikey MBR0540T1OSCT-ND |
| 1 | L1 | 4.7uH | Inductor, 5.6A | | Sumida CDRH8D43-4R7NC | |
| 4 | LED1, LED2, LED3, LED4 | | White LED, 40MCD | 1206 | Lumex SML-LX23UWC-TR | Digikey 67-1607-1-ND |
| 1 | Q1 | | N-Channel MOSFET | SOT23-6 | Zetex ZXMN6A08E6TA | Digikey ZXMN6A08E6CT-ND |
| 1 | R1 | 2.2kΩ | Film Resistor, 5% | 0603 | Panasonic ERJ-3GEYJ222V | Digikey P2.2KGCT-ND |
| 2 | R2, R3 | 0 | Film Resistor, 5% | 0603 | Yageo 9C06032A0R00JLHFT | Digikey 311-0.0GCT-ND |
| 1 | R4 | 34.8Ω | Film Resistor, 1% | 0805 | Panasonic ERJ-6ENF34R8V | Digikey P34.8CCT-ND |
| 1 | R5 | 5.11Ω | Film Resistor, 1% | 0805 | Yageo 9C08052A5R11FGHFT | Digikey 311-5.11CCT-ND |
| 1 | U1 | | Step-Up Converter | QFN16 | MPS MP1517DR | |

PRINTED CIRCUIT BOARD LAYOUT

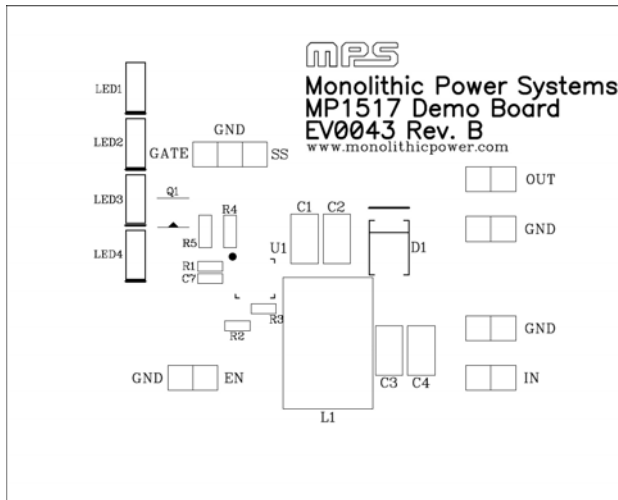


Figure 1—Top Silk Layer

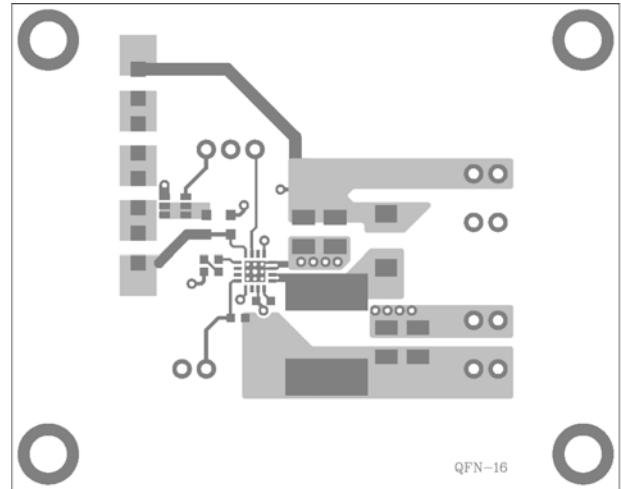


Figure 2—Top Layer

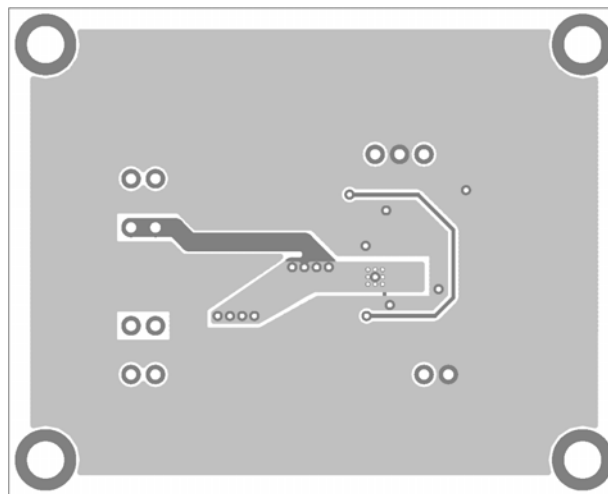


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect LEDs to LED1 to LED4 terminals.
2. Connect positive and negative terminals of the 2.5V to 5.5V power supply to the IN and GND pins, respectively.
3. Drive GATE of Q1 with a pulsed signal to switch between two (2) LED currents.
4. The device is automatically enabled because EN is connected to IN through a 0Ω resistor (R2). It will be disabled only if V_{IN} is removed.

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