



The Future of Analog IC Technology™

# EV1528DQ-00A

9 Lamp, 20mA Precision  
WLED Driver Evaluation Board

## GENERAL DESCRIPTION

The EV1528DQ-00A evaluation board is designed for driving up to nine (9) series WLEDs from a single cell Lithium Ion battery. The board is set up to obtain 20mA LED current. The current can be adjusted by varying the resistor R1.

The MP1528 uses current limited, variable frequency architecture to regulate the LED current while maintaining high efficiency. The BIAS pin measures the output voltage and turns off the converter if an over voltage condition is present to prevent damage due to an open circuit condition. The LED current is measured with an external current sense resistor. The low 0.4V full-scale regulation threshold and 0.4Ω power switch minimize power loss to improve efficiency. Either a DC voltage or a PWM signal at the BRT input can control the LED brightness.

## ELECTRICAL SPECIFICATIONS

| Parameter     | Symbol    | Value     | Units |
|---------------|-----------|-----------|-------|
| Input Voltage | $V_{IN}$  | 2.7 – 5.5 | V     |
| # of WLEDs    |           | 7 – 9     |       |
| LED Current   | $I_{LED}$ | 20        | mA    |

## FEATURES

- 2.7V to 5.5V Input Voltage Range
- Drives up to 9 Series White LEDs
- Analog and Digital PWM Brightness Control Through BRT
- Surface-Mount Components
- Fully Assembled and Tested

## APPLICATIONS

- Handheld Computers
- PDAs
- PDA Phones
- Digital and Video Cameras
- Small LCD Displays

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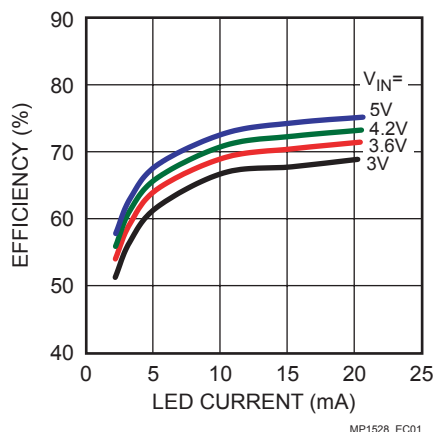
## EV1528DQ-00A EVALUATION BOARD



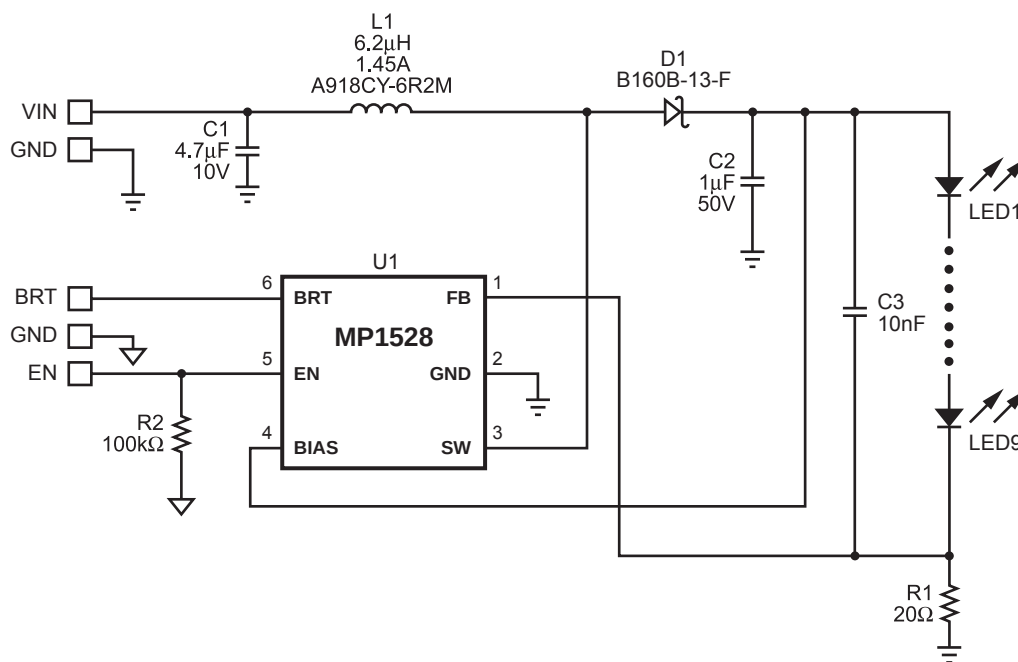
(L x W x H) 2.0" x 1.5" x 0.5"  
(5.0cm x 3.8cm x 1.4cm)

| Board Number | MPS IC Number |
|--------------|---------------|
| EV1528DQ-00A | MP1528DQ      |

Efficiency vs  
Load Current



## EVALUATION BOARD SCHEMATIC



EV1528\_S01

## EV1528DQ-00A BILL OF MATERIALS

| Qty | Ref                | Value | Description                 | Package | Manufacturer P/N            | Distributor P/N            |
|-----|--------------------|-------|-----------------------------|---------|-----------------------------|----------------------------|
| 1   | C1                 | 4.7µF | Ceramic Capacitor, 10V, X5R | 1206    | TDK:<br>C3216X5R1A475K      | Digikey:<br>445-1386-1-ND  |
| 1   | C2                 | 1µF   | Ceramic Capacitor, 50V, X7R | 1206    | TDK:<br>C3216X7R1H105K      | Digikey:<br>445-1423-1-ND  |
| 1   | C3                 | 10nF  | Ceramic Capacitor, 50V, X7R | 0805    | TDK:<br>C2012X7R1H103K      | Digikey:<br>445-1348-1-ND  |
| 1   | D1                 |       | Diode Schottky, 60V, 1A     | SMA     | Diodes Inc.:<br>B160B-13-F  | Digikey:<br>B160B-FDICT-ND |
| 1   | L1                 | 6.2µH | Inductor, 1.45A, D62LCB     | SMD     | Toko:<br>A918CY-6R2M        |                            |
| 9   | LED1<br>to<br>LED9 |       | Not Stuffed                 |         |                             |                            |
| 1   | R1                 | 20Ω   | Resistor, 1%                | 0805    | Panasonic:<br>ERJ-6GEYJ200V | Digikey:<br>P20ACT-ND      |
| 1   | R2                 | 100kΩ | Resistor, 5%                | 0805    | Panasonic:<br>ERJ-6GEYJ104V | Digikey:<br>P100KACT-ND    |
| 1   | U1                 |       | White LED Driver            | QFN6    | MPS:<br>MP1528DQ            |                            |

## PRINTED CIRCUIT BOARD LAYOUT

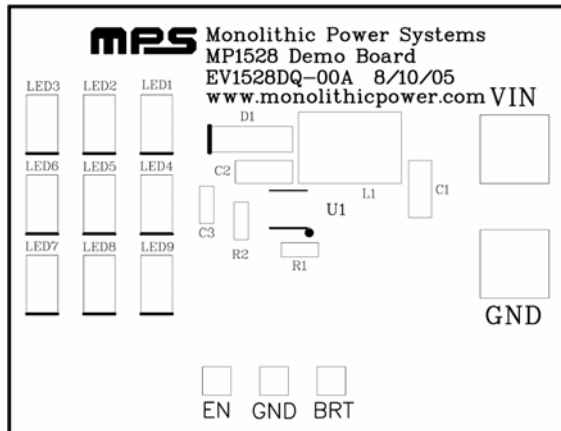


Figure 1—Top Silk Layer

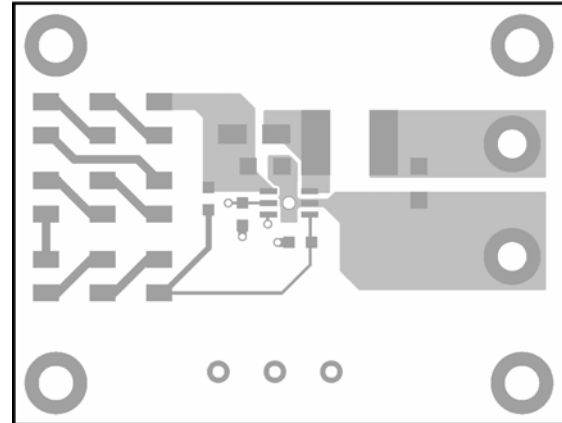


Figure 2—Top Layer

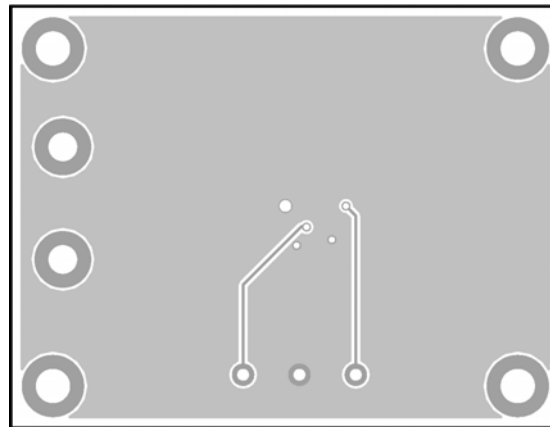


Figure 3—Bottom Layer

## QUICK START GUIDE

1. Solder LED1 - LED9 to the board.
2. Attach the positive and negative terminals of the power supply (2.7V - 5.5V) to the VIN and GND pins, respectively.
3. Drive EN high to enable the MP1528.
4. Apply a DC voltage of 0.3V to 1.2V on BRT for analog dimming. Maximum brightness (20mA typical) occurs with 1.2V applied. For PWM dimming mode, apply a PWM rectangular wave with a minimum voltage less than 0.18V and a maximum greater than 1.2V. When a voltage less than 0.18V is applied to this pin, the output switch is turned off. The frequency of the PWM signal must be between 100Hz to 400Hz.

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