



The Future of Analog IC Technology®

EV2488DN-00A

High Voltage White LED Driver Evaluation Board

DESCRIPTION

The EV2488DN-00A is an evaluation board for the MP2488DN, a step down converter designed for driving up to 10 white LEDs in series with 330mA current.

The MP2488 is a peak current mode control, fixed frequency regulator to deliver a constant current of up to 2A to high power white LEDs. Its low 200mV feedback voltage reduces power loss and improves efficiency.

The wide 4.5V to 55V input range accommodates a variety of step-down applications, making it ideal for automotive, industry and general lighting application.

The MP2488 is available in small 3mmX3mm 10 pin QFN and SOIC8 with exposed pad package.

ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|---------------|------------------|-----------------|-------|
| Input Voltage | V _{IN} | 40 – 55 | V |
| # of WLEDs | | 10 (in series) | |
| LED Current | I _{LED} | 330 | mA |

FEATURES

- Up to 55V Input Voltage
- Drive up to 10 WLEDs series of 330mA
- Up to 200kHz programmable Switching Frequency
- Up to 97.5% Efficiency
- 220mΩ Internal Power MOSFET
- 200mV reference voltage

APPLICATIONS

- High Power white LED Driver
- Automotive, Industry and General Lighting
- Constant Current Source

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EV2488DN-00A EVALUATION BOARD

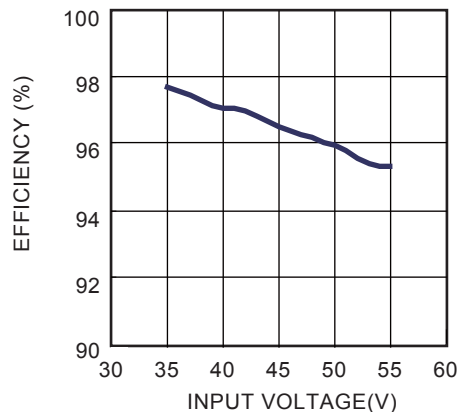


(L x W x H) 2" x 1.8" x 0.4"
5.3cm x 4.6cm x 1.0cm

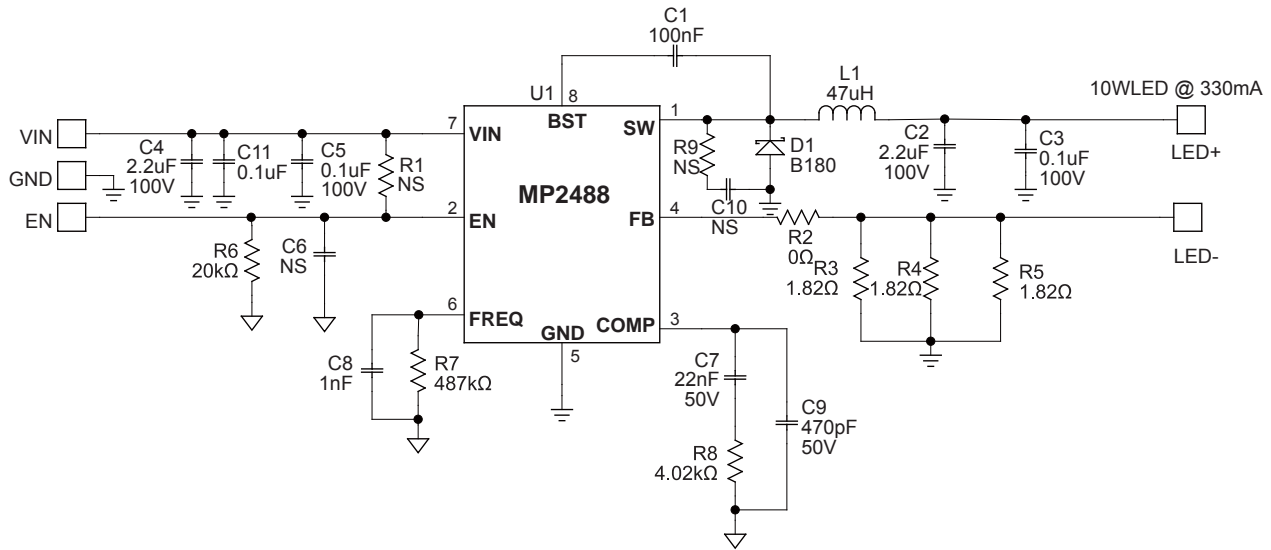
| Board Number | MPS IC Number |
|--------------|---------------|
| EV2488DN-00A | MP2488DN |

Efficiency vs. Input voltage

10 WLED@330mA



EVALUATION BOARD SCHEMATIC



EV2488DN-00A BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Manufacturer P/N |
|-----|-------------|------------|-----------------------------|-----------|--------------|-----------------------|
| 1 | C8 | 1nF/50V | Cemarc capacitor, 50V, X7R | 0603 | TDK | C1608X7R1H102K |
| 1 | C7 | 22nF/50V | Cemarc capacitor, 50V, X7R | 0603 | TDK | C1608X7R1H223K |
| 1 | C1 | 100nF/50V | Cemarc capacitor, 50V, X7R | 0603 | TDK | C1608X7R1H104K |
| 1 | C9 | 470pF/50V | Cemarc capacitor, 50V, X7R | 0603 | TDK | C1608X7R1H471K |
| 1 | C6 | NS | | | | |
| 3 | C3, C5, C11 | 0.1µF/100V | Cemarc capacitor, 100V, X7R | 0805 | TDK | C2012X7R2A104K |
| 1 | C10 | NS | | | | |
| 2 | C2, C4 | 2.2µF/100V | Cemarc capacitor, 100V, X7R | 1210 | TDK | C3225X7R2A225K |
| 1 | D1 | 1A/90V | Schottky diode 90V, 1A | SMA | TDK | B190A |
| 1 | | 1A/80V | Schottky diode 80V, 1A | SMA | TDK | B180-7-F |
| 1 | U1 | | WLED Driver | SOIC8E | MPS | MP2488DN |
| 1 | R2 | 0Ω | Film, 5% | 0603 | Yageo | RC0603JR-070RL |
| 1 | R8 | 4.02kΩ | Film, 1% | 0603 | Yageo | RC0603FR-074k02L |
| 1 | R6 | 20kΩ | Film, 1% | 0603 | Yageo | RC0603FR-0720KL |
| 1 | R7 | 487kΩ | Film, 1% | 0603 | Yageo | RC0603FR-074878KL |
| 1 | R1 | NS | | | | |
| 3 | R3, R4, R5 | 1.82Ω | Film, 1% | 0805 | Yageo | RC0805FR-071R82L |
| 1 | R9 | NS | | | | |
| 1 | L1 | 47µH | Inductor, 130mΩ, 1.2A | 47µH, SMD | TDK | SLF7055T-470M1R2-3PF |
| | | 47µH | Inductor, 175mΩ, 1.7A | 47µH, SMD | TOKO | DS104C2-B952AS-470MP3 |

PRINTED CIRCUIT BOARD LAYOUT

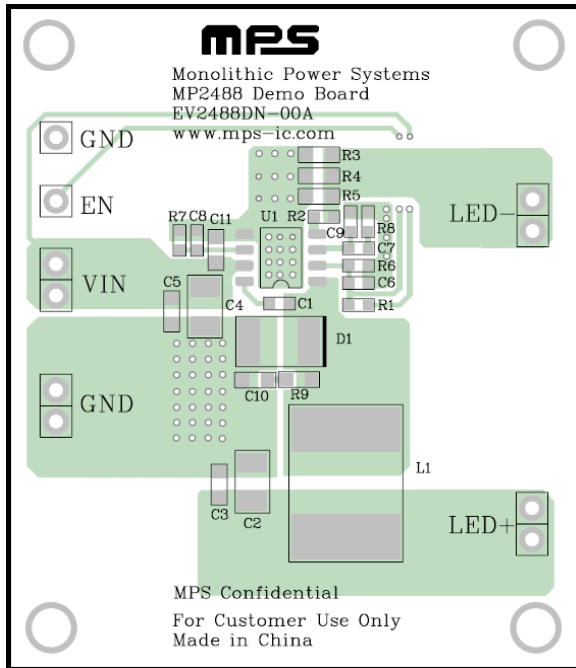


Figure 1—Top Layer

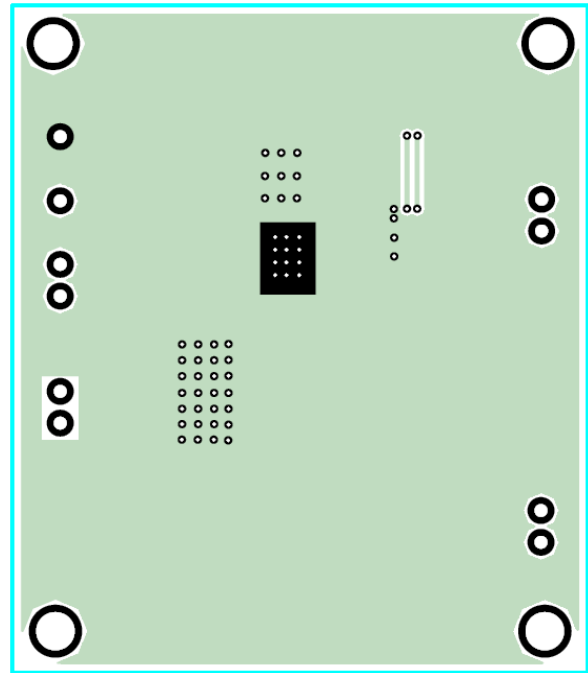


Figure 2—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the WLED (10WLED in series) load to the LED+ and LED- pins on the EV board, respectively.
2. Connect the positive and negative terminals of the power supply (40V ~ 55V) to the VIN and GND pins on the EV board, respectively. Turn the power supply on.
3. Drive EN pin high ($V_{EN} > 1.7V$) to enable the MP2488.
4. For PWM dimming mode, apply a PWM signal with high level greater than 1.7V to the EN pin. The typical PWM frequency should be around 200Hz. The WLED brightness can be controlled by the PWM dimming duty cycle.

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