

DESCRIPTION

The MP2483 is a 55V, 2.5A, white LED driver suitable for either step-down or inverting step-up/down applications. It achieves 2.5A peak output current over a wide input supply range with excellent load and line regulation. Current mode operation provides fast transient response and eases loop stabilization. Fault condition protection includes thermal shutdown, cycle-by-cycle peak current limiting, input over voltage protection, open strings protection and output short circuit protection.

The MP2483 incorporates both DC and PWM dimming onto a single control pin. The separate input reference ground pin allows for direct enable and/or dimming control for a positive to negative power conversion.

The MP2483 requires a minimum number of readily available standard external components and is available in 10-pin 3mm x 3mm QFN packages.

MP2483DQ DEMO BOARDS

| Board number | Operating Mode | Input (V) | LED # | I _{LED} (mA) |
|--------------|----------------|-----------|-------|-----------------------|
| EV2483DQ-00A | Buck | 15~50 | 3 | 700 |
| EV2483DQ-00B | Buck-boost | 12 | 3~5 | 500 |
| EV2483DQ-00C | Boost | 12 | 6~9 | 500 |

FEATURES

- 2.5A Maximum Output Current
- Unique Step-up/down Operation (Buck-Boost Mode)
- Wide 4.5V to 55V Operating Input Range for Step-Down Applications (Buck Mode)
- 0.28Ω Internal Power MOSFET Switch
- Adjustable Switching Frequency
- Analog and PWM Dimming
- 0.198V Reference Voltage
- 5μA Shutdown Mode
- No minimum LED required
- Stable with Low ESR Output Ceramic Capacitors
- Cycle-by-Cycle Over Current Protection
- Thermal Shutdown Protection
- Open Strings Protection
- Input Over Voltage Protection
- Output Short Circuit Protection
- Available in 10-Pin 3x3mm QFN Package

APPLICATIONS

- General LED Illuminations
- LCD Backlight Panels
- Handheld Computers
- Automotive Internal Lighting
- Portable Multimedia Players
- Portable GPS Devices

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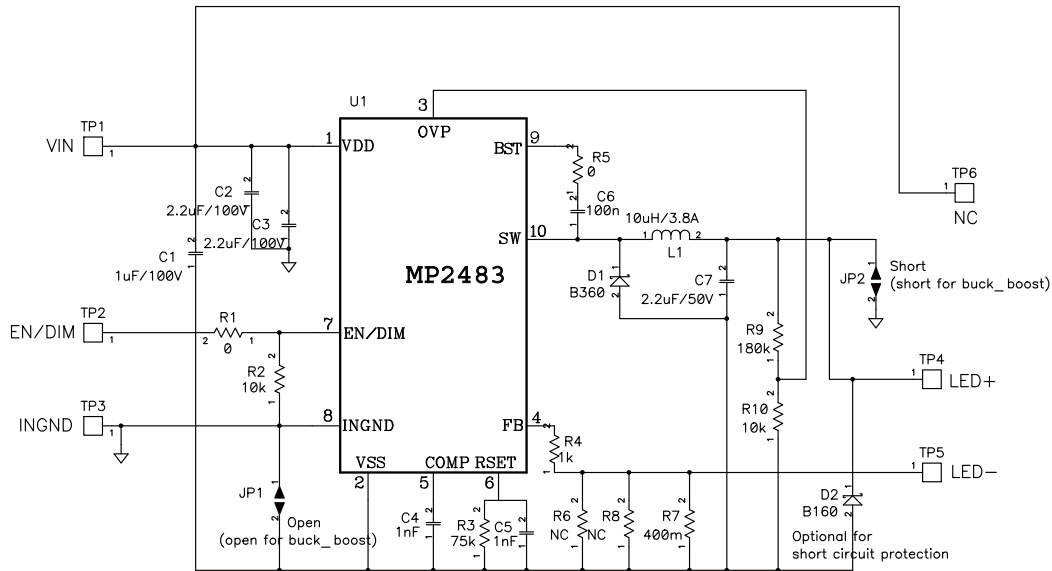
EV2483DQ-00B EVALUATION BOARD



(L x W x H) 5cm x 4.5cm x 0.7cm

| Board Number | MPS IC Number |
|--------------|---------------|
| EV2483DQ-00B | MP2483DQ |

EVALUATION BOARD SCHEMATIC



EV2483DQ-00B BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Manufacturer P/N |
|-----|---------|----------|--|---------|--------------|---------------------|
| 1 | C1 | 1uF | Ceramic Capacitor, 100V, X7R | 1210 | Murata | GRM32ER72A105KA01L |
| 2 | C2, C3 | 2.2uF | Ceramic Capacitor, 100V, X7R | 1210 | Murata | GRM32ER72A225KA35L |
| 2 | C4, C5 | 1n | Ceramic Capacitor, 50V, X7R | 0603 | TDK | C1608X7R1H102K |
| 1 | C6 | 100n | Ceramic Capacitor, 50V, X7R | 0603 | TDK | C1608X7R1H104K |
| 1 | C7 | 2.2uF | Ceramic Capacitor, 50V, X7R | 1210 | TDK | C3225X7R1H225K |
| 1 | D1 | B360 | Diode Schottky | SMA | Diodes Inc. | B360A |
| 1 | D2 | B160 | Diode Schottky | SMA | Diodes Inc. | B160A |
| 1 | L1 | 10uH | Inductor 3.7A, 22mΩ | SM | TOKO | DH124C-1010ASW-100M |
| | | 10uH | Inductor 3.8A, 35mΩ | SM | Cooper | DR1040-100-R |
| | | 10uH | inductor 3.8A, 28mΩ | SM | TDK | VLF10040-100M3R8 |
| 1 | R4 | 1k | resistor, 1% | 0603 | Yageo | RC0603JR-071kL |
| 2 | R1, R5 | 0 | resistor, 1% | 0603 | Yageo | RC0603JR-070RL |
| 2 | R2, R10 | 10kΩ | resistor, 1% | 0603 | Yageo | RC0603FR-0710kL |
| 1 | R3 | 75kΩ | resistor, 1% | 0603 | Yageo | RC0603FR-0775kL |
| 2 | R6, R8 | NC | | 0805 | | |
| 1 | R7 | 400m | resistor, 1% | 0805 | ROYALOHM | 0805F400LT5E |
| 1 | R9 | 180kΩ | resistor, 1% | 0603 | Yageo | RC0603FR-07180kL |
| 1 | U1 | MP2483DQ | MPS WLED Driver, 2.5A, 55V, frequency programmable | QFN3*3 | MPS | MP2483DQ |

PRINTED CIRCUIT BOARD LAYOUT

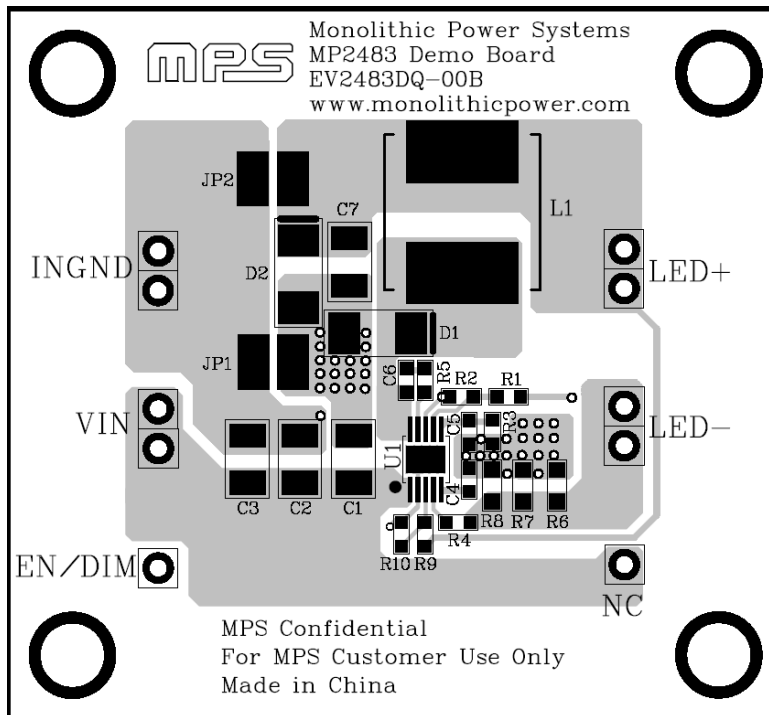


Figure 1—Top Layer

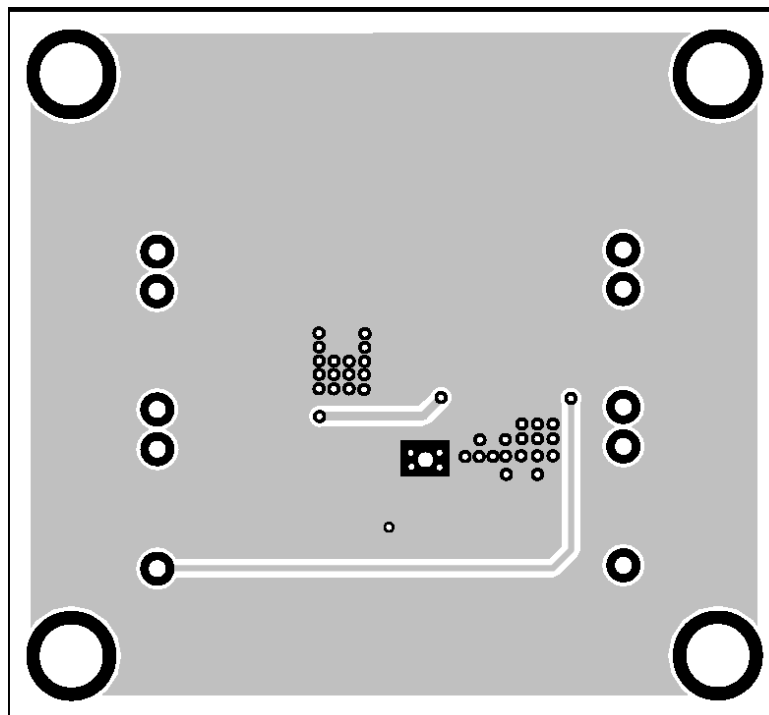


Figure 2—Bottom Layer

QUICK START GUIDE

1. Connect the load (3~5LEDs) to the output. The Anode of the load to “LED+” and the Cathode of the load to “LED -”.
2. Connect the input voltage source to the input VIN and INGND. The input voltage source should be initialed 12V.
3. Connect the EN or dimming signal to EN/Dim pin.
For PWM dimming, connect the PWM signal to EN/Dim pin, the high level should be higher than 1.4V, the low level should be lower than 0.7V.
For analog dimming, connect a DC dimming signal in range of 0.7V~1.4V to EN/Dim pin.
4. Power up the input voltage source, and then power up the EN/Dim signal, the LEDs should be ignited

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