



# EV2480-N-00A

## Hysteretic Step Down High Power LED Driver

### DESCRIPTION

The EV2480-N-00A Evaluation Board is designed to demonstrate the capabilities of MP2480DN. The MP2480 is step-down switching regulator to deliver a constant current of up to 3A for high power LED

With a 30-36V input VIN and a EN DC signal which is higher than 2V, EV2480-N-00A can deliver a regulated voltage to drive a LED string. The LED current is regulated to about 2A.

### ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	VIN	30-36	V
Enable	EN	2- 5	V
Dimming	DIM	2- 5	V
LED Current	I <sub>LED</sub>	2	A
LED Voltage	V <sub>LED</sub>	24	V

### FEATURES

- Wide 5V to 36V Operating Input Range
- Up to 95% Efficiency
- Hysteretic Control with No Compensation
- No Output Capacitor Required
- $\pm 3\%$  LED Current Accuracy
- Up to 2MHz Switching Frequency
- Up to 20kHz Dimming Frequency
- 200mV Reference Voltage
- Short-Circuit Protection with Integrated High-Side MOSFET
- Thermal Shut Down

### AVAILABLE IN SOIC8-EPAPPLICATIONS

- High Power LED Driver
- General Lighting and LCD Backlighting
- Constant Current Source

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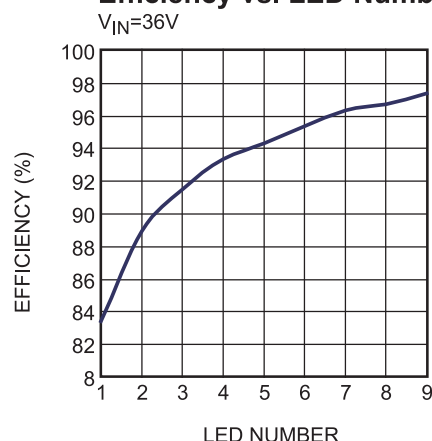
### EV2480-N-00A EVALUATION BOARD



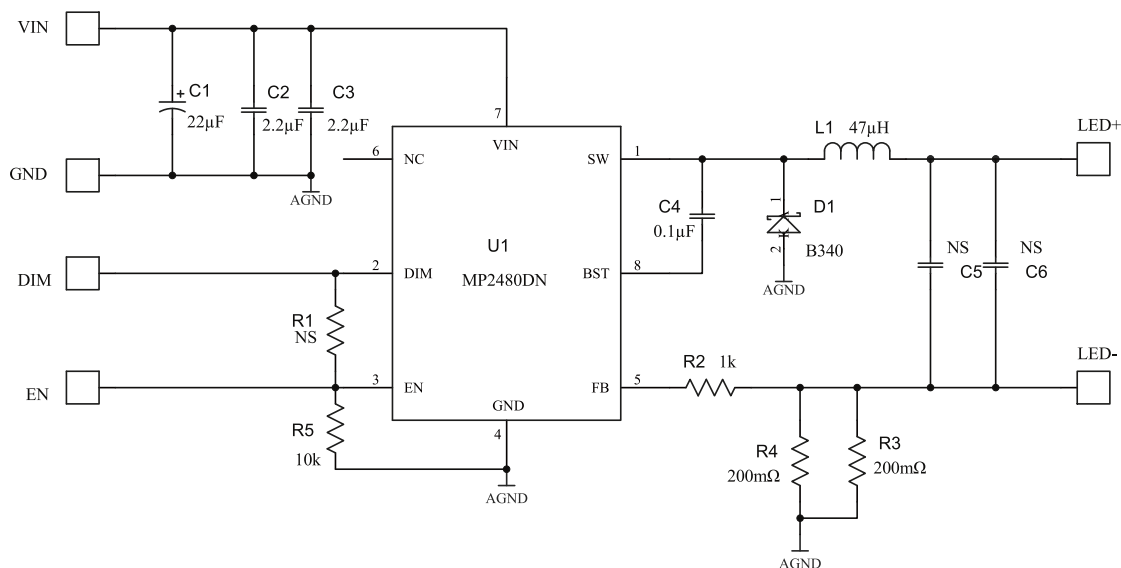
(L x W x H) 6.35cm x 6.35cm x 0.8cm

Board Number	MPS IC Number
EV2480-N-00A	MP2480DN

### Efficiency vs. LED Number



## EVALUATION BOARD SCHEMATIC



## EV2480-N-00A BILL OF MATERIALS

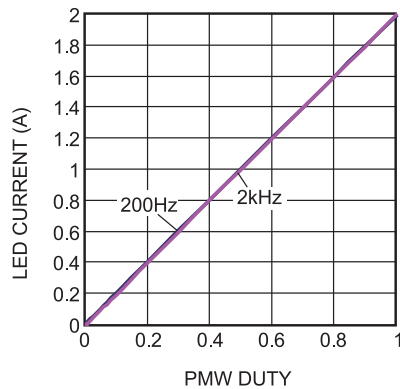
Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1	22µF	Electrolytic Capacitor,50V	DIP		22µF./50V
2	C2,C3	2.2µF	Ceramic Capacitor,50V,X7R	1206	muRata	GRM32ER71H225 KA88L
1	C4	0.1µF	Ceramic Cap., 50V, 10%, X7R	0603	muRata	GRM188R71H104K
2	C5,C6	NC		1206		
1	D1	B340	Diode Schottky	SMC	Diodes Inc.	B340
1	L1	47µH	Inductor 2.7A	SMD	Wurth	744770147
1	R1	NC		0603		
1	R2	1k	Film Res., 1%	0603	Yageo	RC0603FR-071KL
2	R3,R4	200mΩ	Film Res., 1%	1206	Yageo	RL1206FR-070R2L
1	R5	10k	Film Res., 1%	0603	Yageo	RC0603FR-0710KL
1	U1	MP2480DN	MPS WLED Driver	SOIC8-EP	MPS	MP2480DN

## EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.

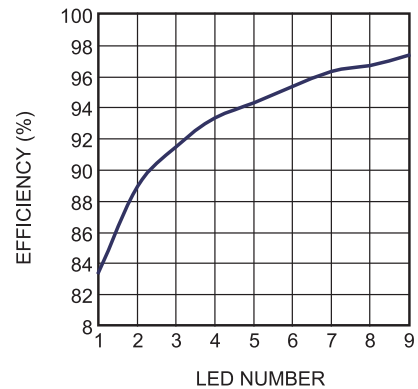
$V_{IN} = 30V$ ,  $I_{LED} = 2A$ , 7 LEDs Load,  $T_A = 25^\circ C$ , unless otherwise noted.

**PMW Dimming Cure**

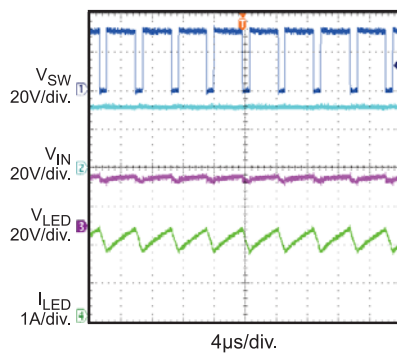


**Efficiency vs. LED Number**

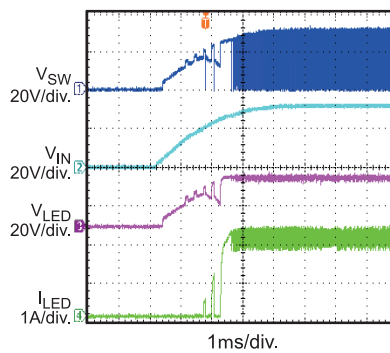
$V_{IN}=36V$



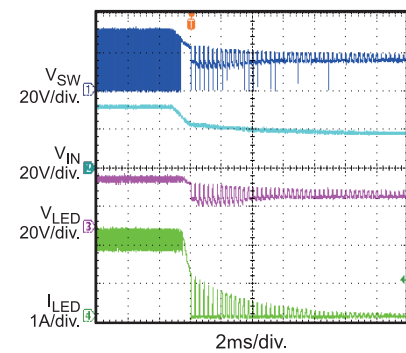
**Steady State**



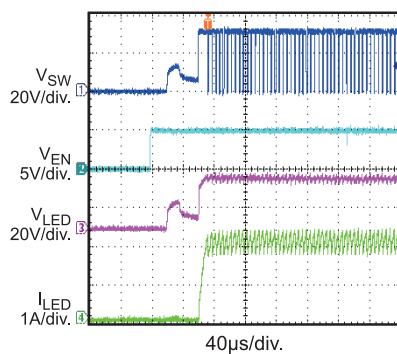
**VIN Startup**



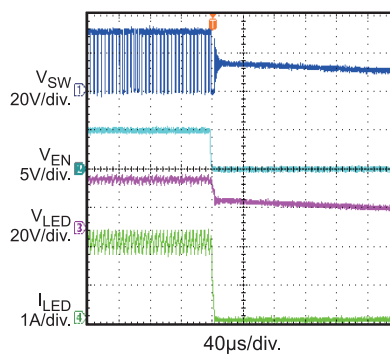
**VIN Off**



**EN Startup**

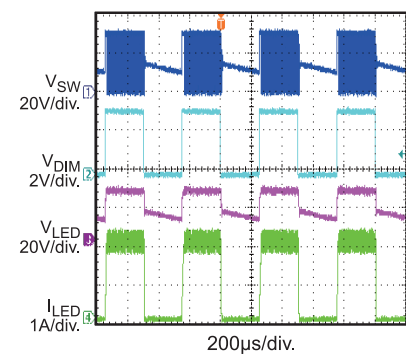


**EN Off**



**PWM Dimming**

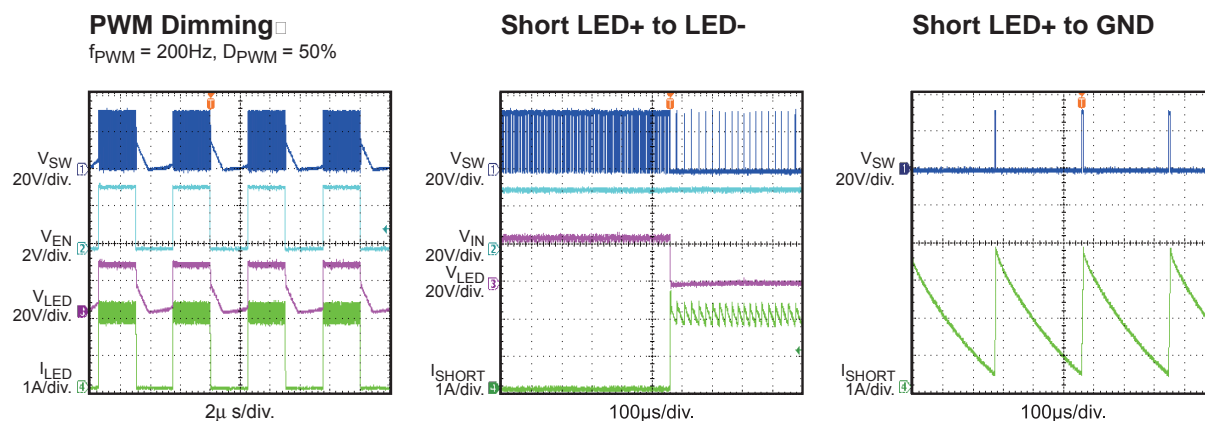
$f_{PWM} = 2kHz$ ,  $D_{PWM} = 50\%$



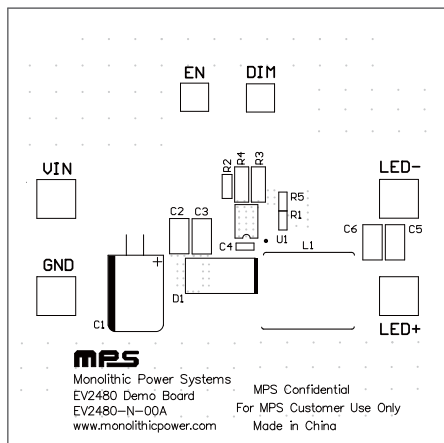
## EVB TEST RESULTS (*continued*)

Performance waveforms are tested on the evaluation board.

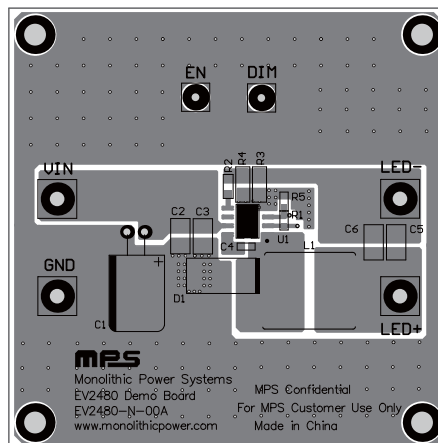
VIN = 30V, ILED = 2A, 7 LEDs Load, TA = 25°C, unless otherwise noted.



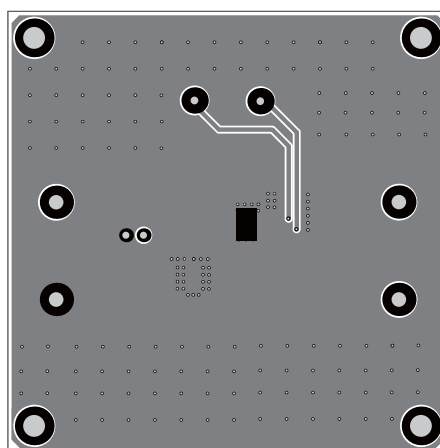
## PRINTED CIRCUIT BOARD LAYOUT



**Figure 1—Top Silk Layer**



**Figure 2—Top Layer**



**Figure 3—Bottom Layer**

## **QUICK START GUIDE**

1. Check the LED string voltage and preset the input voltage power supply to 30-36V.
2. Set a second power supply to 2- 5V as the power supply for 'EN'.
3. Turn-off all power supplies. Connect all the power supply.
4. Connect the anode of the LED string to LED+, and the cathode to LED-.
5. Turn on the power supplies. The LED string should be lighten
6. To demo the dimming function: Connect the 'DIM' with a function generator. Set the PWM signal amplitude to 2- 5V and the frequency within 100Hz to 20kHz range.

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