MP2480

5V—36V Input, 3A High Power LED Driver

DESCRIPTION

The MP2480 is step-down switching regulator that delivers a constant current of up to 3A to high-power LEDs. It integrates a high-side, high-voltage power MOSFET with a current limit of 4.3A. The wide 5V to 36V input range accommodates a variety of step-down applications, making it ideal for general lighting and LCD backlighting applications. Hysteretic current-mode control helps provide for a very fast response, which makes the 20kHz dimming frequency possible. MPS's proprietary feedback control minimizes the number of external components while delivering an LED current with a typical accuracy of ±3%.

The switching frequency goes up to 2MHz, thus permitting smaller components. Thermal shut down, and short circuit protection provide reliable fault-tolerant operation. A 160µA quiescent current allows for use in battery-powered applications.

The MP2480 is available in SOIC8-EP with an exposed pad on the bottom.

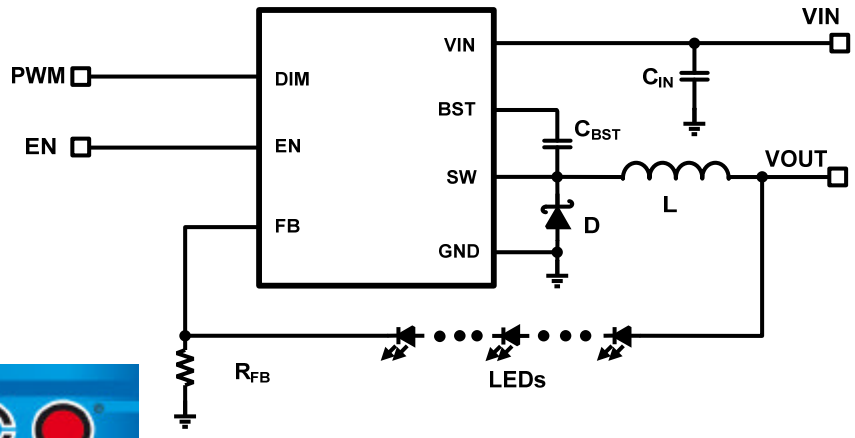
FEATURES

- Wide 5V to 36V Operating Input Range
- Up to 95% Efficiency
- Hysteretic Control with No Compensation
- No Output Capacitor Required
- ±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-EP

APPLICATIONS

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

TYPICAL APPLICATION

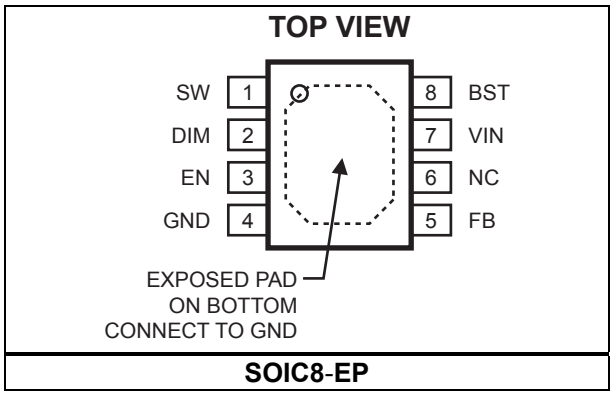


ORDERING INFORMATION

Part Number	Package	Top Marking	Free Air Temperature (T_A)
MP2480DN*	SOIC8-EP	MP2480	-40°C to +85°C

* For Tape & Reel, add suffix –Z (e.g. MP2480DN–Z);
For RoHS compliant packaging, add suffix –LF (e.g. MP2480DN–LF–Z)

PACKAGE REFERENCE



SOIC8-EP

ABSOLUTE MAXIMUM RATINGS (1)

Supply Voltage (V_{IN}).....-0.3V to +40V
Switch Voltage (V_{SW})..... -0.5V to (V_{IN} + 0.5V)
BST to SW .....-0.3V to +6V
All Other Pins.....-0.3V to +6V
Junction Temperature.....150°C
Continuous Power Dissipation (T_A = 25°C) (2)
SOIC8-EP 2.5W
Lead Temperature .....260°C
Storage Temperature..... -65°C to +150°C

Recommended Operating Conditions (3)

Supply Voltage V_{IN} .....5V to 36V
EN and DIM Voltages .....0V to 5V
Maximum Junction Temp. (T_J).....125°C

Thermal Resistance (4) θ_{JA} θ_{JC}

SOIC8-EP .....50 ..... 10 ... °C/W

Notes:

1) Exceeding these ratings may damage the device.
2) The maximum allowable power dissipation is a function of the maximum junction temperature T_J(MAX), the junction-to-ambient thermal resistance θ_{JA}, and the ambient temperature T_A. The maximum allowable continuous power dissipation at any ambient temperature is calculated by P_D(MAX)=(T_J(MAX)-T_A)/θ_{JA}. Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.
3) The device is not guaranteed to function outside of its operating conditions.
4) Measured on JESD51-7 4-layer board.