

National Semiconductor — AC/DC LED Driver Solution – LM3445 Isolated Applications

美国国家半导体 — AC/DC LED 驱动方案 – LM3445 隔离式应用

PART NUMBER (型号) LM3445 Isolated Applications LM3445 隔离式应用

SUPPLIER (供应商)  National Semiconductor

DESCRIPTION

LM3445 based Flyback LED driver solution that can be used to power a single LED string consisting of 4 to 10 series connected LEDs from an 185 VRMS to 265 VRMS, 50Hz input power supply. This is a two-layer board using the bottom and top layer for component placement. The demonstration board can be modified to adjust the LED forward current, the number of series connected LEDs that are driven and the switching frequency.

TARGET APPLICATION (目标应用)

- Retro-fit TRIAC dimming TRIAC 调光升级改造
- Industrial, commercial, residential lighting 工业, 商业, 室内照明

IC FEATURES (IC特性)

- Distinctive Features 特点:**
- Drop-in compatibility with TRIAC dimmers 可配合多款TRIAC调光器
 - Line injection circuitry enables PFC values greater than 0.95 Line injection线路, 令PFC达到0.95
 - Flicker free operation 配合多款牌子的TRIAC调光器都不会闪烁

- Topology 线路结构:** Flyback 反激式拓扑
- Protection 保护:**
- Short Circuit Protection 短路保护
 - Current Limit 限流保护
 - Thermal shutdown 热关断保护

- Switching Frequency 开关频率:** Variable 可变
- Driver Current 驱动电流:** Up to 1A 达到1A
- Package 封装:** MSOP-10 and SOIC-14L

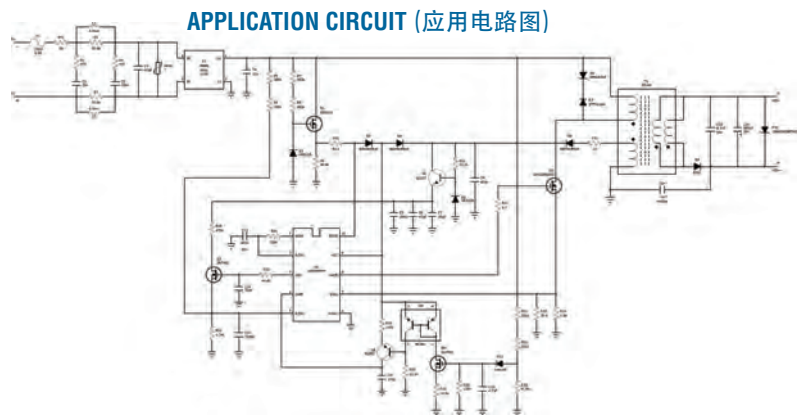
Testing Figures (测试数据)			
Input Power 输入功率	O/P Voltage 输出电压	O/P Current 输出电流	Efficiency 效能
180Vac - 265Vac	~25V	350mA	82.00%

描述

本方案是LM3445用在反激式拓扑驱动一串四至十个LED。输入电压从185VRMS至265VRMS, 50Hz。本方案的主要特点是有很好的调光效果, 它可以配合多款牌子的TRIAC调光器都不会闪烁, 同时增加了Line injection线路, 令PFC达到0.95。另外本方案可以调节不同的输出电流及配合不同数目的LED。

APPLICATION CIRCUIT FEATURES (应用电路特性)

- Peak Power 最大功率:** ~8W (瓦)
- Input Voltage 输入电压:** 180V - 265V (伏)
- Output Voltage 输出电压:** ~25V (伏)
- Estimated Efficiency 预计效率:** up to 82% 达到82%
- Regulation 校准:** +/- 3% below +/- 3% 以下
- Power Factor 功率因数:** up to 0.95 达到0.95



National Semiconductor — AC/DC LED Driver Solution – LM3450

美国国家半导体 — AC/DC LED 驱动方案 – LM3450

PART NUMBER (型号) LM3450

SUPPLIER (供应商)  National Semiconductor

DESCRIPTION

The LM3450 is a power factor controller (PFC) with separate phase dimming decoder. The PFC regulates an accurate output voltage while maintaining excellent power factor at the input. The phase dimming decoder interprets the phase angle and remaps it to a 500Hz PWM output. This combination of features is ideal for implementing a dimmable off-line LED driver for 10-100W loads.

TARGET APPLICATION (目标应用)

- Dimmable downlights, troffers, and lowbays 可调光的吊灯
- Indoor and outdoor area SSL 室内及室外照明

IC FEATURES (IC特性)

- Distinctive Features 特点:**
- No 120Hz LED current ripple 没有120Hz LED电流波纹
 - Better line disturbance rejection 70:1 PWM 70:1 PWM调光比例

- Topology 线路结构:** Flyback 反激式拓扑
- Protection 保护:**
- Over-voltage protection 过压保护
 - Short Circuit Protection 短路保护
 - Over Current Protection 过流保护

- Switching Frequency 开关频率:** Free Running
- Driver Current 驱动电流:** Up to 3A 达到3A
- Package 封装:** TSSOP-16

Testing Figures (测试数据)			
Input Power 输入功率	O/P Voltage 输出电压	O/P Current 输出电流	Efficiency 效能
180Vac - 265Vac	50V	350mA	82.00%

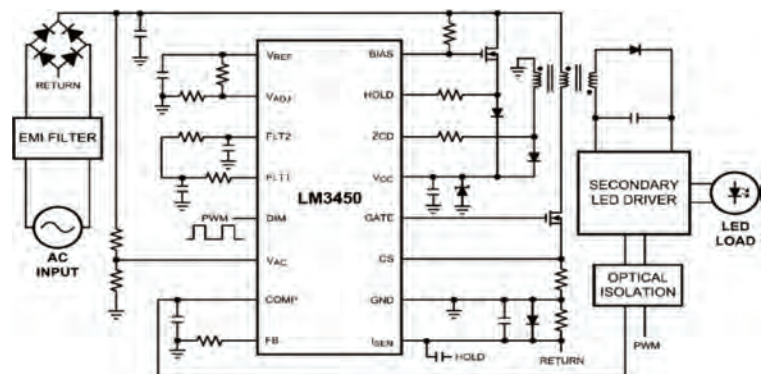
描述

LM3450是Power Factor Controller (PFC), 共增加了相位光暗译码器。本PFC调整出准确的输出电压, 同时能保持非常好的功率因数, 相位光暗译码器检测位相角度以提供一个500Hz的PWM输出。LM3450适合用在10瓦至100瓦可调节光的LED照明方案。

APPLICATION CIRCUIT FEATURES (应用电路特性)

- Peak Power 最大功率:** 100W (瓦)
- Input Voltage 输入电压:** 85V - 265V (伏)
- Output Voltage 输出电压:** 50V (伏)
- Estimated Efficiency 预计效率:** Typical 80 to 85% 80至85%
- Regulation 校准:** +/- 3% below +/- 3% 以下
- Power Factor 功率因数:** up to 0.98 达到0.98

APPLICATION CIRCUIT (应用电路图)



PART NUMBER (型号) LM3464

DESCRIPTION

The LM3464 is a 4-channel high voltage current regulator that provides a simple solution for LED lighting applications. The LM3464 provides four individual current regulator channels and works in conjunction with external N-channel MOSFETs and sense resistors to give accurate driving current for every LED string. Additionally, the Dynamic Headroom Control (DHC) output can be interfaced to the external power supply to adjust the LED supply voltage to the lowest level that is adequate to maintain all the string currents in regulation, yielding the optimal overall efficiency.

TARGET APPLICATION

- Streetlights
- Solid state lighting solutions

IC FEATURES (IC特性)

- Distinctive Features 特点 :**
- Wide input voltage range (12V-80V)
宽电压输入(12V-80V)
 - Dynamic Headroom Control ensures maximum efficiency
Dynamic Headroom Control以提高整体效率
 - 4 output channels with individual current regulation
四个独立的电流调节通道
 - Digital PWM/Analog dimming control interface
Digital PWM/Analog光暗调节介面

Topology 线路结构 :

Protection 保护 :

- High Voltage Current Regulator
- LED Fault detection LED故障检测
 - Over temperature protection 过温保护
 - Thermal shutdown 热关断保护
 - Under voltage lockout 欠压保护

Switching Frequency 开关频率 : D20

Driver Current 驱动电流 : 700mA /ch

Package 封装 : eTSSOP-28

SUPPLIER (供应商)



描述

LM3464是四通道高压电流源控制器，它可提供一个简单的LED照明应用。LM3464需要配四个N沟道的MOSFET以提供四个独立的电流调节通道，同时利用外置的电流感应电阻去准确调节每通道的驱动电流，LM3464增加了Dynamic Headroom Control (DHC)讯号去控制外置电源所提供的LED电压在最低水平，这样可以令到整个电源有最理想的整体效率。

目标应用

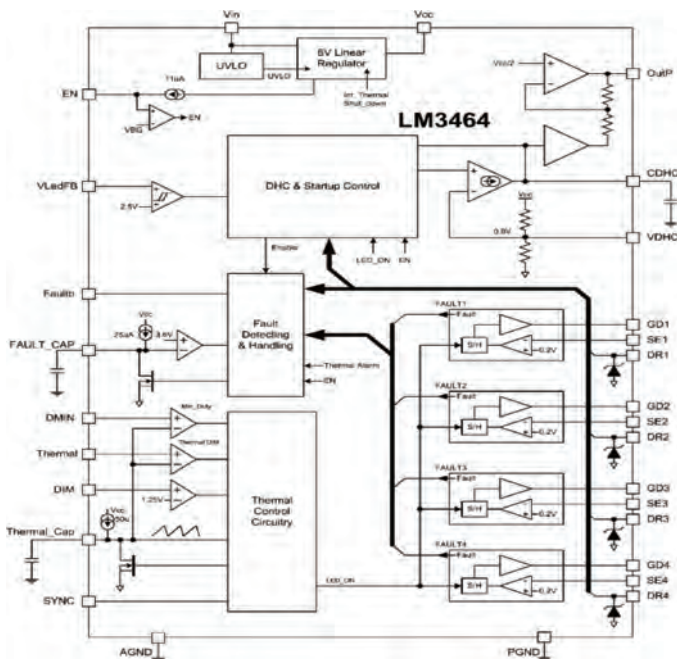
- 路灯
- 固态照明

APPLICATION CIRCUIT FEATURES (应用电路特性)

- Peak Power 最大功率 :** ~150W (瓦)
Input Voltage 输入电压 : 12V - 80V (伏)
Output Voltage 输出电压 : Design depend 看客户设计而定
Estimated Efficiency 预计效率 : up to 95% 达到95%
Regulation 校准 : +/-3%
Power Factor 功率因数 : Nil

Testing Figures (测试数据)			
Input Power 输入功率	O/P Voltage 输出电压	O/P Current 输出电流	Efficiency 效能
12Vdc - 80Vdc	Nil	1A	95.00%

CONTROLLER BLOCK DIAGRAM (控制器原理图)



APPLICATION CIRCUIT (应用电路图)

