适用于高达 90W 的 LED 照明应用并集成高压启动的单级高 PF、低 THD 原边 AC/DC 控制器

1 说明

iW3677 是一款具有功率因数校正 (PFC) 功能的单级高性能 AC/DC 原边反馈 PWM 控制器。iW3677 支持高达 90W 输出功率，针对反激和升降压拓扑。该 IC 集成了高压启动电路，可以减少 BOM 数量、简化设计并提高整体可靠性。

iW3677 支持不同类型的负载，包括恒定功率 (CP) 负载，例如次级 DC/DC 转换器。恒定电阻 (CR) 负载，例如 LED 灯带。

iW3677 采用 Dialog 的 ***PrimAccurate™*** 技术，在各种 AC 电压和负载条件下提供精确的恒压 (CV) 和恒流 (CC) 控制。该器件采用数字控制，因此无需外部环路补偿，同时可在所有工作条件下保持环路稳定。凭借 Dialog 专利的 ***PF-Boost™*** 技术，在整个 AC 电压范围内，当负载为 50% 或更大时，iW3677 的功率因数 (PF) 大于 0.9，总谐波失真 (THD) 低于 20%。

在 CV 模式下，iW3677 可以实现低于 150mW 的待机功耗，同时保持出色的负载瞬态响应。此外，在负载瞬态或启动期间没有可听噪声，而大多数 PFC CV 控制器通常不具备这一优势。iW3677 集成高压启动电路和具有快速启机控制功能，启动时间不足 0.25s。

iW3677 还具有各种保护功能，如输出过压、输出短路、AC 过压、AC 欠压、电流检测电阻短路、过流及过温保护。这样可确保出色的系统可靠性。

2 功能特性

- 集成高压启动电路
- AC 输入电压范围：$90V_{AC}$ ~ $305V_{AC}$
- 采用微型 SOIC-7 封装，支持高达 90W 的输出功率
- CV 模式 AC 输入电压和负载调节 < ±3%
- CC 模式 AC 输入电压和负载调节 < ±5%
- 在整个 AC 电压范围内，当负载大于 50% 时，PF > 0.9，THD < 20%
- 快速启动时间 < 0.25s
- 待机功耗 < 150mW（$230V_{AC}$ 输入电压，小于或等于 90W）
- 在各种 AC 电压和负载条件下，以及负载瞬态或启动期间，可听噪声均为零
- 宽工作电源电压 (V_{VCC}) 范围：8.0V 至 20V
- 全面的保护功能
  - » 输出过压保护
  - » 输出短路保护
  - » AC 过压保护
  - » AC 欠压保护
  - » 逐开关周期峰值电流限制
  - » 电流检测电阻短路保护
  - » 过温保护

3 应用

- 两级或单级 LED 照明驱动器
- 需要功率因数的 AC-DC 适配器、电视、显示器电源

适用于高达 90W 的 LED 照明应用并集成高压启动的单级高 PF、低 THD 原边 AC/DC 控制器

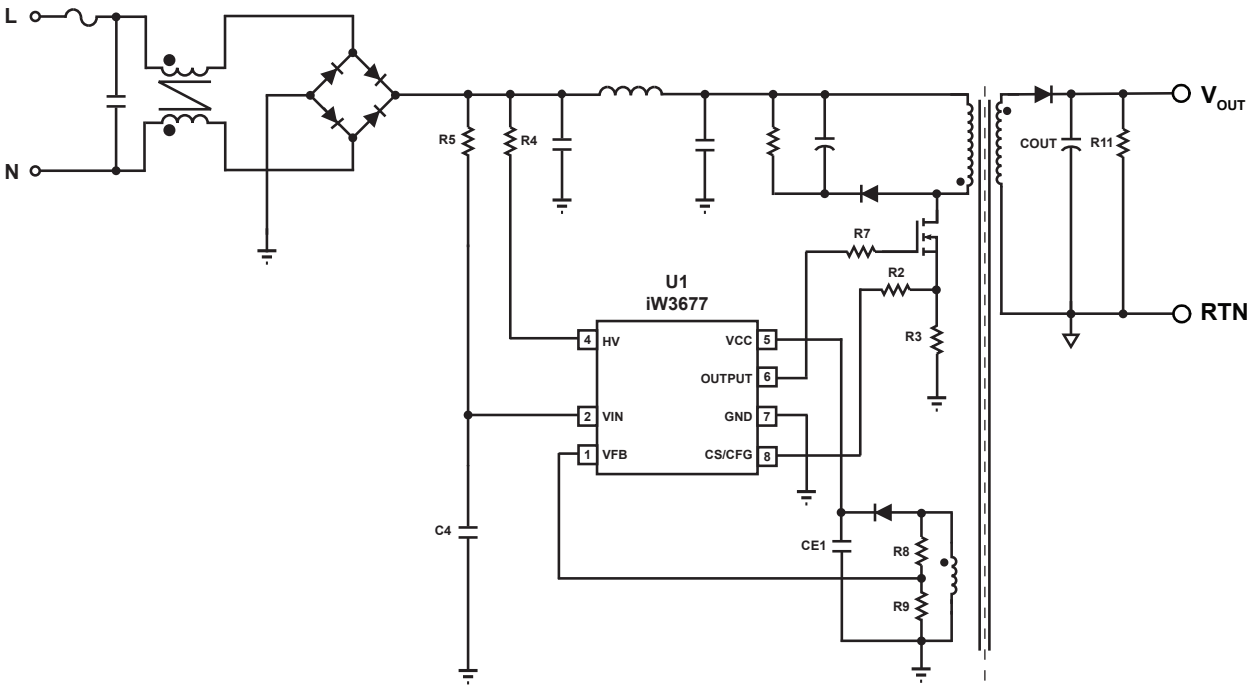


图 3.1 : iW3677 LED电源的典型应用

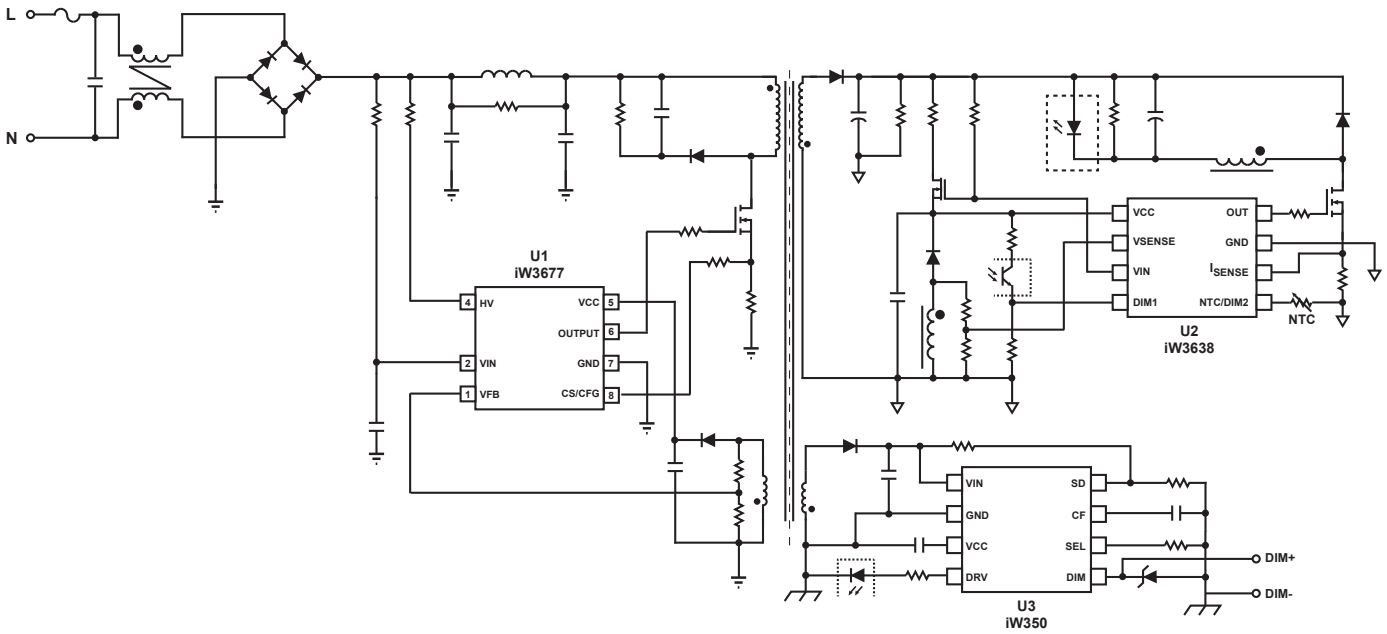


图 3.2 : 适用于可调光 LED 驱动器(配合 iW350)的

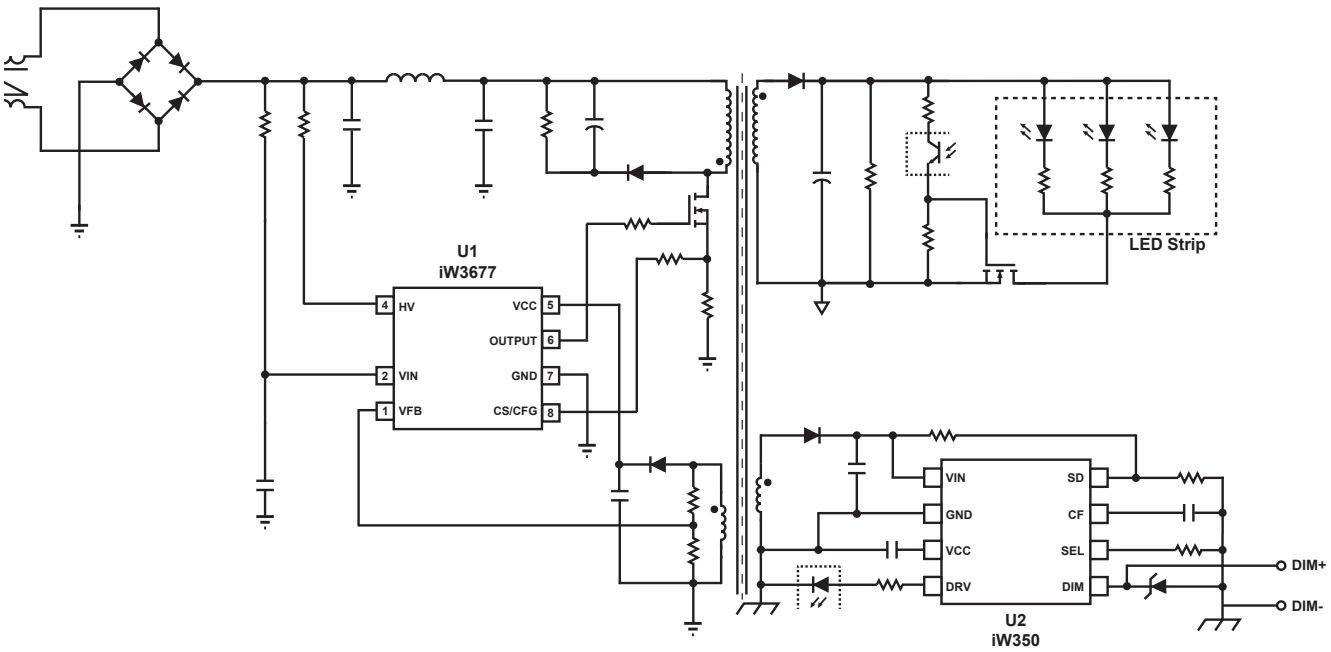


图 3.3 : 适用于可调光 LED 灯带驱动器(配合 iW350)的 iW3677 应用

4 引脚分配说明

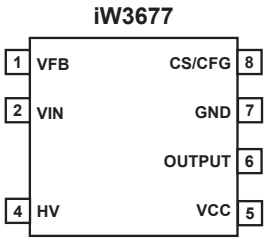


图 4.1 : 7 引脚 SOIC 封装

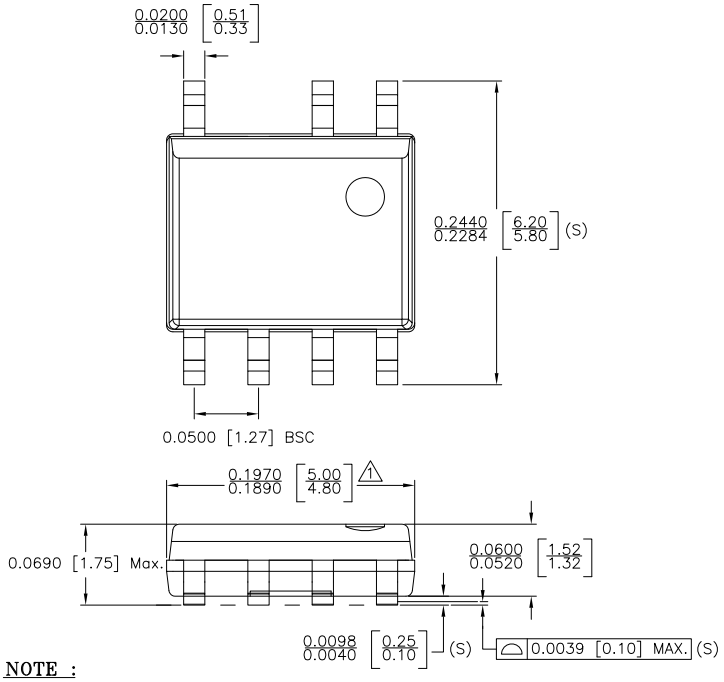
引脚编号	引脚名称	类型	引脚说明
1	VFB	模拟输入	输出电压和变压器退磁检测
2	VIN	模拟输入	输入 AC 电压检测
4	HV	模拟输入	高压启动
5	VCC	功率	IC 电源
6	OUTPUT	模拟输出	功率 MOSFET 栅极驱动
7	GND	接地	接地
8	CS/CFG	模拟输入	功率 MOSFET 电流检测和配置

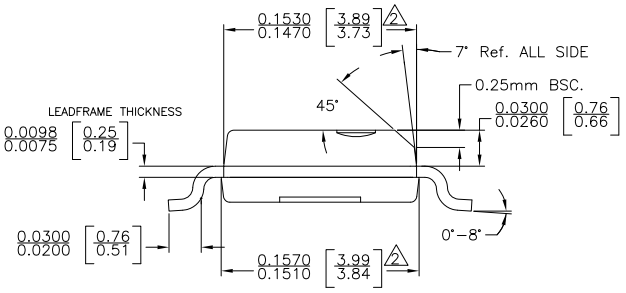
5 绝对最大额定值

绝对最大额定值是参数值或范围，如果超过绝对最大额定值，可能导致永久性损坏。

参数	符号	值	单位
DC supply voltage range (pin 5, I_{VCC} = 20mA max)	V_{VCC}	-0.3 to 22.0	V
Continuous DC supply current at VCC pin (V_{VCC} = 15V)	I_{VCC}	20	mA
V_{VIN} (pin 2)		-0.3 to 20.0	V
OUTPUT (pin 6)		-0.3 to 20.0	V
V_{VFB} (pin 1, I_{VFB} ≤ 10mA)		-0.7 to 5.0	V
CS/CFG input (pin 8)		-0.3 to 5.0	V
HV startup voltage (pin 4)		-0.3 to 600	V
HV startup current (pin 4)		25	mA
Maximum junction temperature	T_{JMAX}	150	°C
Operating junction temperature	T_{JOPT}	-40 to 150	°C
Storage temperature	T_{STG}	-65 to 150	°C
Thermal resistance junction-to-ambient	θ_{JA}	100	°C/W
ESD rating per JEDEC JS-001-2017		±2,000	V
Latch-up test per JESD78E		±100	mA

6外形尺寸





NOTE :

1. DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED .006 INCH PER SIDE.
2. DOES NOT INCLUDE INTER–LEAD FLASH OR PROTRUSIONS. INTER–LEAD FLASH AND PROTRUSIONS SHALL NOT EXCEED .010 INCH PER SIDE.
3. PACKAGE DIMENSION CONFORM TO JEDEC SPECIFICATION MS–012
4. LEAD SPAN/STAND OFF HEIGHT/COPLANARITY ARE CONSIDERED AS SPECIAL CHARACTERISTIC.(S)
5. CONTROLLING DIMENSIONS IN INCHES.[mm]

STATUS: RELEASED	SCALE: DO NOT SCALE
TERMINAL FINISH: 100% Sn or NiPdAu (PPF)	
TITLE: 7 SOIC (NO PIN 3) PACKAGE OUTLINE	
REV: C	REVISION NOTE: ADD PACKAGE CHAMFER / DATE: 01–JUNE–2015

7 订购信息

部件编号	说明	封装	说明
iW3677-00	针对单级或双级 CV 应用优化	SOIC-7	卷带 [1]

注 1:卷带封装数量为 2,500 件/卷。最小封装数量为 2,500 件。

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联系 Dialog Semiconductor

英国
Dialog 半导体(英国)有限公司
电话：+44 1793 757700

德国
Dialog 半导体有限公司
电话：+49 7021 805-0

荷兰
Dialog 半导体有限公司
电话：+31 73 640 8822

电子邮件
info_pcbg@diasemi.com

北美
Dialog 半导体有限公司
电话：+1 408 845 8500

日本
Dialog 半导体有限公司 K.K. 分公司
电话：+81 3 5769 5100

中国台湾
Dialog 半导体有限公司台湾分公司
电话：+886 281 786 222

网站：
www.dialog-semiconductor.com

中国香港
Dialog 半导体有限公司香港分公司
电话：+852 2607 4271

韩国
Dialog 半导体有限公司韩国分公司
电话：+82 2 3469 8200

中国
Dialog 半导体有限公司（深圳）
电话：+86 755 2981 3669

Dialog 半导体有限公司（上海）
电话：+86 21 5424 9058