



NON ISOLATED BUCK CONSTANT CURRENT HIGH PF LED DRIVER IC

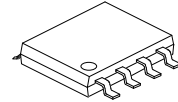
DESCRIPTION

UL83B are a highly integrated power switch with constant current (CC) control for LED lighting applications. which is suitable for the non isolated buck LED constant current power supply with 85Vac~265Vac full range input voltage, active PFC control for high PF, low THD, and high efficiency.

UL83B integrates 550V power MOSFET with high voltage startup and IC power supply circuit, which requires very few external components. The IC senses the inductor current during the whole switching cycle, which can achieve high precision CC control with excellent line and load regulation.

UL83B chip with high precision current sampling circuit, while the use of patented constant current control technology to achieve high accuracy of the LED constant current output and excellent line voltage regulator. The chip operates in the critical mode of inductor current and the output current is not changed with the increase of the inductance and the working voltage of LED.

UL83B has a variety of protection features, including LED short circuit protection, under voltage protection, over temperature adjustment function and so on.



SOP-8

FEATURES

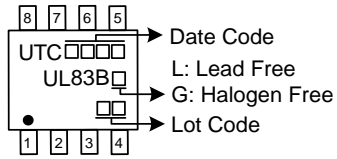
- * Active PFC for High PF and Low THD
- * PF>0.9 with Universal Input
- *The integrated 550V power mos.
- * The integrated high voltage power supply function.
- * The inductor current critical continuous mode.
- * Without auxiliary winding detection and power supply.
- * The wide voltage input voltage.
- * ±5% LED output current accuracy.
- * The LED short circuit and open circuit protection.
- * The chip power supply under voltage protection.
- * The regulating function of overheating

ORDERING INFORMATION

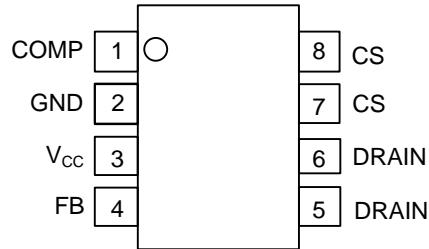
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UL83BL-S08-R	UL83BG-S08-R	SOP-8	Tape Reel

<p>UL83BG-S08-R</p> <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



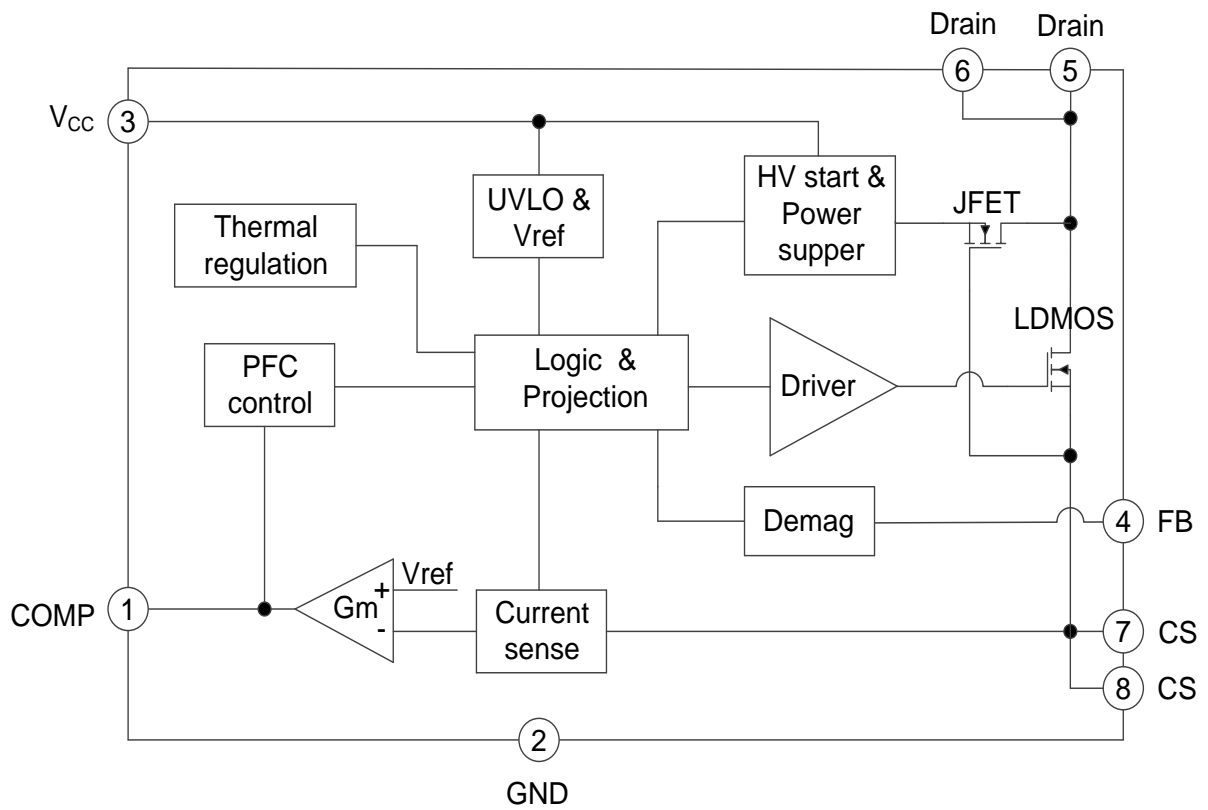
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	COMP	COMP
2	GND	Power Supply
3	V _{CC}	Power Supply
4	FB	OVP Input
5, 6	DRAIN	The Internal High-Voltage Drain
7, 8	CS	Float Ground and Current Sampling Pin

■ BLOCK DIAGRAM



■ **ABSOLUTE MAXIMUM RATING** ($T_A=25^{\circ}\text{C}$, Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	-0.3 ~ 550	V
Supply Voltage	V_{DD}	-0.3 ~ 8.5	V
Power Dissipation	P_D	800	mW
Junction Temperature	T_J	-45 ~ +125	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ **THERMAL DATA**

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	150	$^{\circ}\text{C}/\text{W}$

■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, Unless otherwise specified)

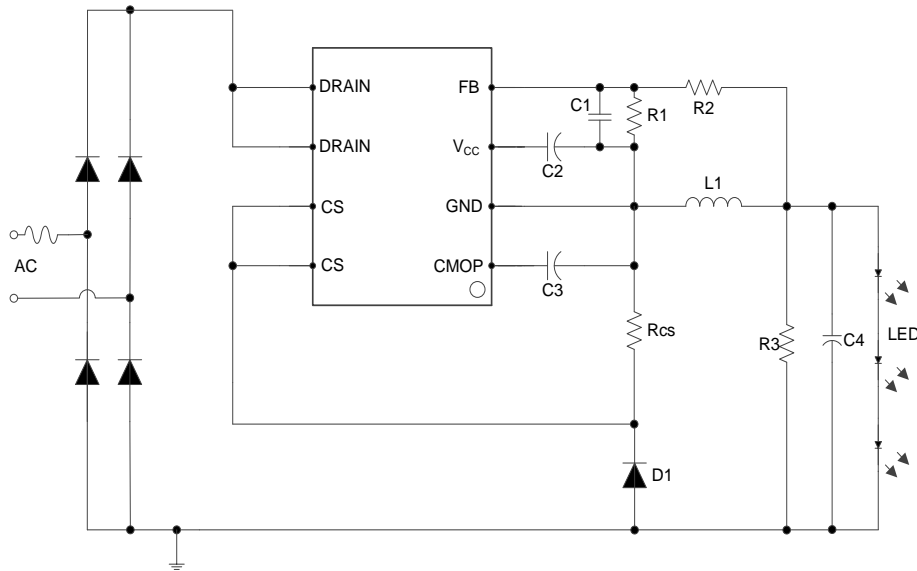
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Section						
Start Voltage	V_{CC_ON}	V_{CC} Rising		8.9		V
OUT Work Voltage	V_{CC_UVLO}	V_{CC} Falling		7.4		V
V_{CC} Charge Limit	V_{CC_HIGH}	V_{CC} Rising		9.9		V
V_{CC} Hysteresis Window	$V_{CC_HIGH_HYS}$	V_{CC} Falling		1		V
V_{CC} Clamp	V_{CC_CLAMP}			12		V
Shut off the Current	I_{CC_UVLO}	V_{CC} Rising, $V_{CC}=V_{CC_ON}-1\text{V}$		33	50	μA
Working Current	I_{CC}	Fop=10KHz, Load=100pf		260	500	μA
Current Sense Section						
Peak current limiting	V_{CS_LIMIT}			1.5		A
Current sampling leading edge blanking time	T_{LEB}			300		ns
off time delay	t_{DELAY}			200		ns
Feedback Section						
Threshold voltage	V_{FB_FALL}	FB Falling		0.2		V
Hysteresis voltage	V_{FB_HYS}	FB Rising		0.15		V
Over voltage protection threshold	V_{FB_OVP}			1.6		V
Maximum On Time	T_{ON_MAX}			20		μs
Minimum Off Time	T_{OFF_MIN}			2.5		μs
Maximum Off Time	T_{OFF_MAX}			150		μs
Internal Reference Voltage	V_{REF}		0.194	0.2	0.206	V
Compensation Section						
COMP Voltage	V_{COMP_LO}			1.5		V
COMP Linear Scope of Work	V_{COMP}		1.5		4.0	V
POWER MOS SECTION						
MOS Withstand Voltage	B_V		500	550	600	V
Conduction Resistance	R_{ON}	$I_{DS}=0.1\text{A}$		5.5		Ω
JFET						
I_{JEFT}	I_{JEFT}			2		mA
BV_{DSS}	BV_{DSS}		600			V
I_{DSS}	I_{DSS}			45		μA

■ **ELECTRICAL CHARACTERISTICS (Cont.)**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
TEMPER SECTION						
Over Temper Adjust				130		°C
Over Temper Protect				150		°C
Over Temper Hysteresis				20		°C

- Notes: 1. The parameters are not 100% tested in production.
 2. The minimum, maximum range of standard specification by the test to ensure, typical values by design, test or analysis to ensure.

■ TYPICAL APPLICATION CIRCUIT



BOM

Reference	Component
R1	5K
R2	195K
R3	75K
RCS	2
C1	100pf
C2	2.2uf
C3	1uf
C4	100uf
D 2~ D5	1N4007
D1	ES1J, SMA
L1	1mH
U1	UL83B

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