



NON ISOLATED BUCK CONSTANT CURRENT HIGH PF LED DRIVER IC

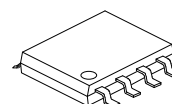
■ DESCRIPTION

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

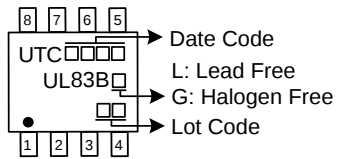
- * Active PFC for High PF and Low THD
- * PF>0.9 with Universal Input
- *The integrated 550V power mos.
- * The integrated high voltage power supply function.
- * The inductor current critical continuous mode.
- * Without auxiliary winding detection and power supply.
- * The wide voltage input voltage.
- * ±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

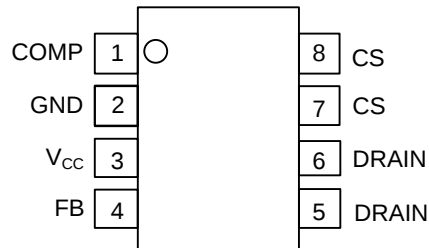
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UL83BL-S08-R	UL83BG-S08-R	SOP-8	Tape Reel

UL83BG-S08-R (1)Packing Type (2)Package Type (3)Green Package		(1) R: Tape Reel (2) S08: SOP-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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■ MARKING



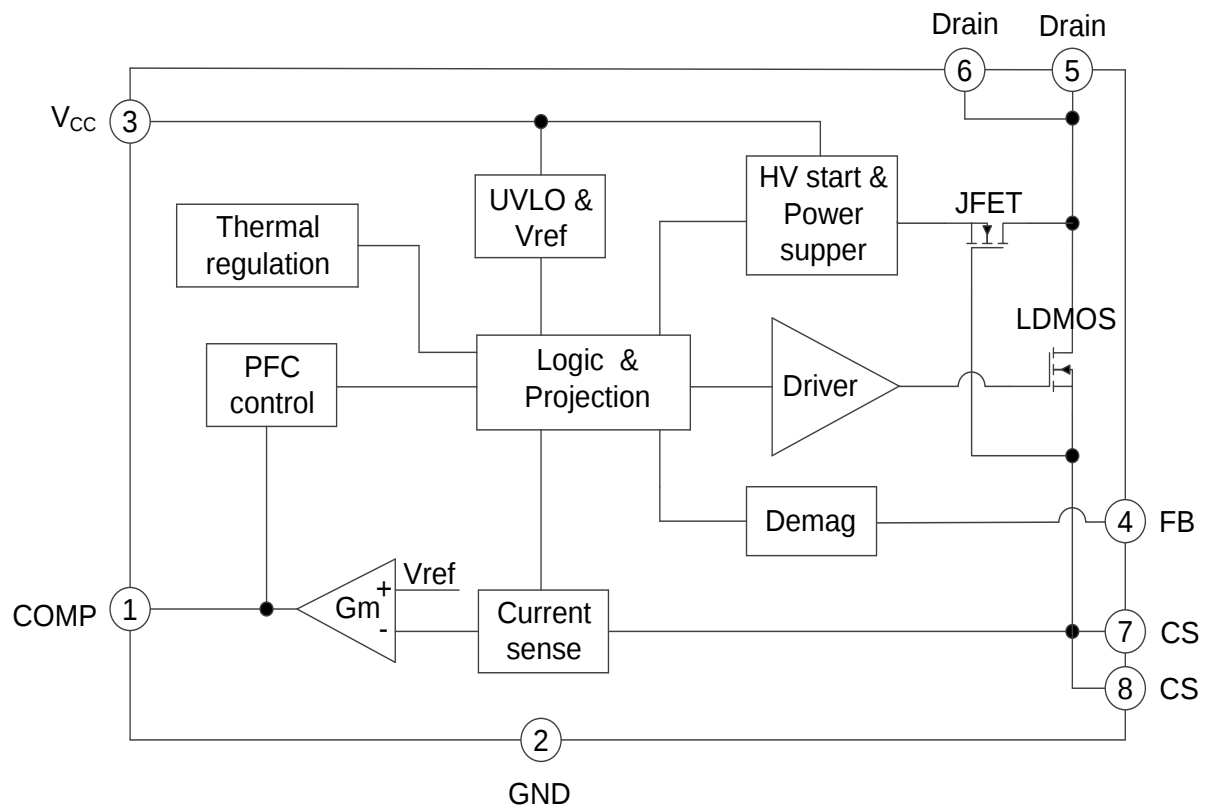
■ PIN CONFIGURATION



■ 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°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	°C
Storage Temperature	T _{STG}	-55 ~ +150	°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	°C/W

■ ELECTRICAL CHARACTERISTICS (T_A=25°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} -1V		33	50	uA
Working Current	I _{CC}	Fop=10KHz, Load=100pf		260	500	uA
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		us
Minimum Off Time	T _{OFF MIN}			2.5		us
Maximum Off Time	T _{OFF MAX}			150		us
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} =0.1A		5.5		Ω
JFET						
I _{JEFT}	I _{JEFT}			2		mA
BV _{DSS}	BV _{DSS}		600			V
I _{DSS}	I _{DSS}			45		uA

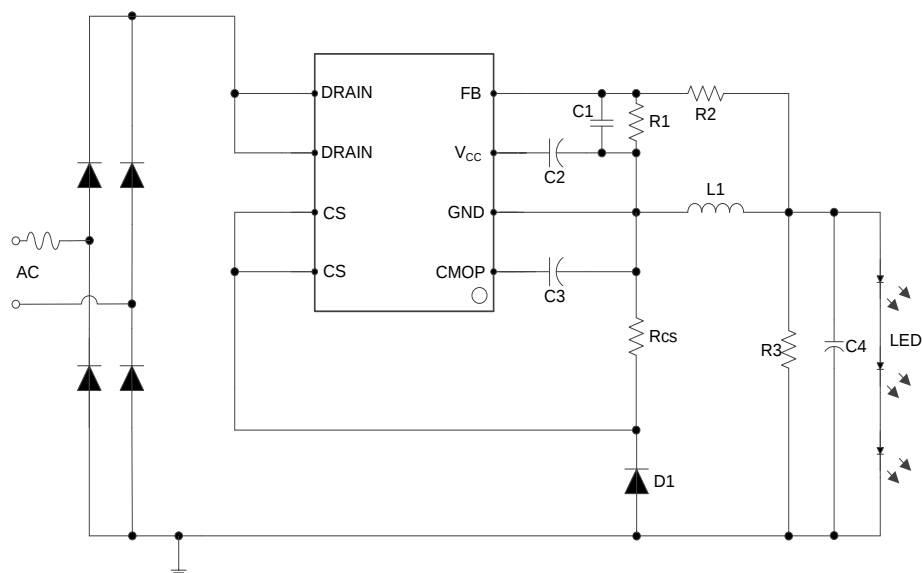
■ ELECTRICAL CHARACTERISTICS (Cont.)

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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