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EV1767B_S0_R1

Offline Step-down LED Regulator
With PFC and High Voltage MOSFET

Parameters Subject to Change Without Notice

FEATURES

- No auxiliary winding
- 600V high voltage MOSFET integrated
- High current accuracy of line and load regulation
- High power factor with low output current-ripple
- Critical conduction mode
- High efficiency over wide operating range
- Cycle-by-cycle current limit
- LED short protection
- LED open protection
- Over-temperature protection
- Compact SOP7 package

APPLICATIONS

- Non-isolation Offline LED driver

DESCRIPTION

EV1767B is a 65V/300mA LED driver EVB based on JW1767B.

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The JW1767B is a constant current LED regulator with high current accuracy which applies to single stage step-down power factor corrected LED drivers. 600V power MOS is integrated, which can significantly simplify the design of LED lighting system.

High accuracy of output current is achieved by sampling the output current directly. Critical conduction mode operation reduces the switching losses and largely increases the efficiency. JW1767B is supplied from the output directly, and auxiliary winding is not needed.

JW1767B has multi-protection functions which largely enhance the safety and reliability of the system, including VCC over-voltage protection, VCC UVLO, short-circuit protection, LED open protection, cycle-by-cycle current limit and over-temperature protection.

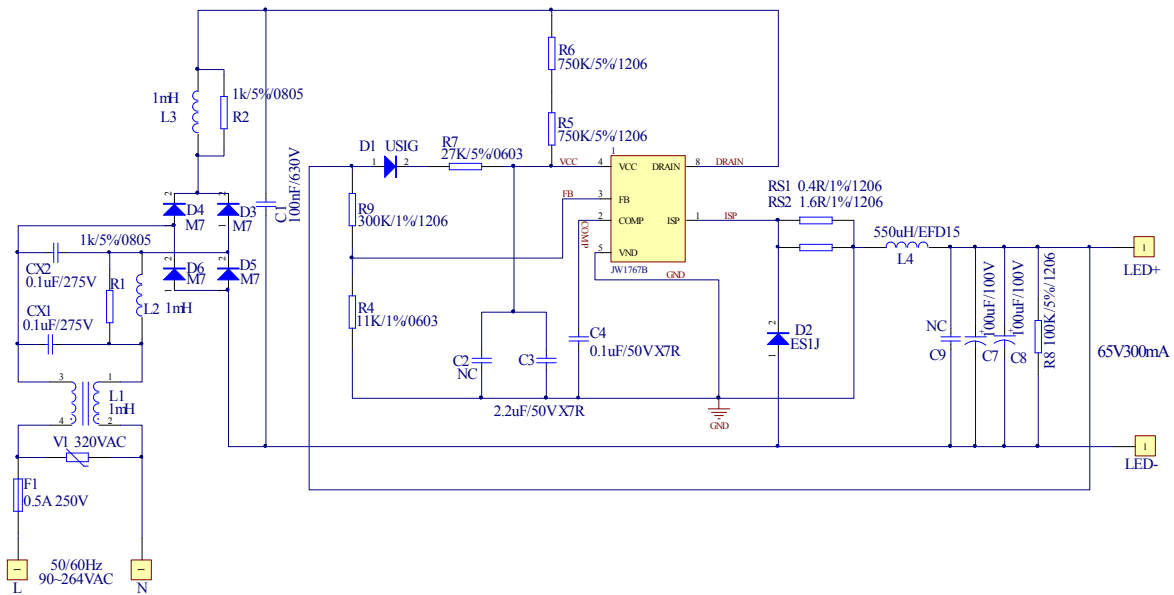
ELECTRICAL SPECIFICATIONS

Parameters	Symbol	Value	Unit
Input voltage	V_{IN}	90~264	V
Output voltage	V_O	65	V
Output current	I_o	0.3	A

EVALUATION BOARD



SCHEMATIC



BILL OF MATERIALS

Quantity	Designator	Comment	Description	Footprint	Manufacturer	Manufacturer P/N
1	C1	100nF/630V	CBB Cap	RAD-0.4	JoulWatt	
0	C2	NC	Ceramic Cap,X7R	0603		
1	C3	2.2uF/50V	Ceramic Cap,X7R	0805		
1	C4	0.1uF/50V	Ceramic Cap,X7R	0603		
2	C7, C8	100uF/100V	Electrolytic capacitor	RB.2/.4		
0	C9	NC	Ceramic Cap,X7R	0805		
2	CX1, CX2	0.1uF/275VAC	X Cap	RAD-0.4		
1	D1	USIG	Diode,400V 1A	SMA		
1	D2	ES1J	Diode,600V 1A	SMA		
4	D3, D4, D5, D6	M7	Diode,1000V 1A	SMA		
1	F1	0.5A/250V	Fuse	AXIAL-0.5		

Quantity	Designator	Comment	Description	Footprint	Manufacturer	Manufacturer P/N
2	L1	1mH	Common mode inductor			
1	L2,,L3	1mH	Differential mode inductor	10*12		
1	L4	550uH	Inductor	EFD15		
2	R1, R2	1K/5%	Resistor	0805		
1	R4	11K/1%	Resistor	0603		
2	R5, R6	750K/5%	Resistor	1206		
1	R7	27K/5%	Resistor	0603		
1	R8	100K/5%	Resistor	1206		
1	R9	300K/1%	Resistor	1206		
1	RS1	0.4R/1%	Resistor	1206		
1	RS2	1.6R/1%	Resistor	1206		
1	U1	JW1767B	Off-line LED controller	SOP8	Joulwatt	JW1767B
1	V1	320VAC	Varistor	AXIAL-0.2		

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PRINTED CIRCUIT BOARD LAYER OUT

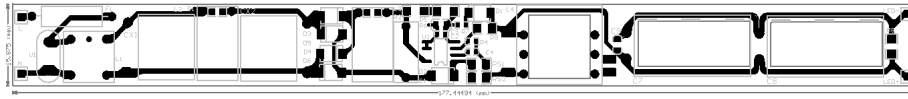


Figure1—Top Layer

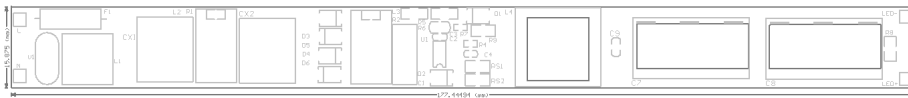


Figure2—Top Silk Layer

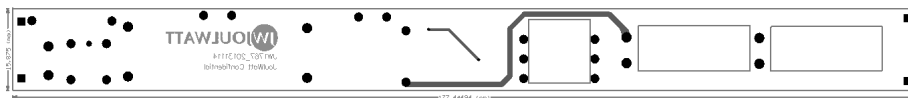


Figure3—Bottom Layer

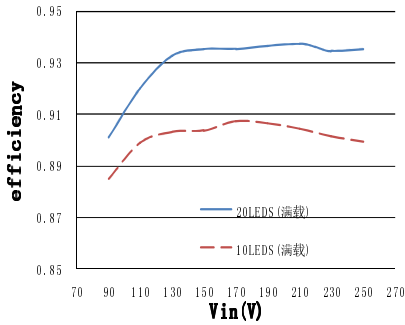
QUICK START

1. Connect the anode of the load (19~21) LEDs whose V_F falls between (3~3.3V) to “LED+” marked on the EVB, and cathode to “LED-”.
2. Set the AC source to 90V ~264V, turn off the source.
3. Connect the “Line” of AC source to the “L”, and “neutral” to “N”.
4. Turn on the AC source; the evaluation board starts operating in normal condition.
5. Change R_{s1} and R_{s2} if you want another output current.
6. Please refer to the datasheet of JW1767B to get more information.

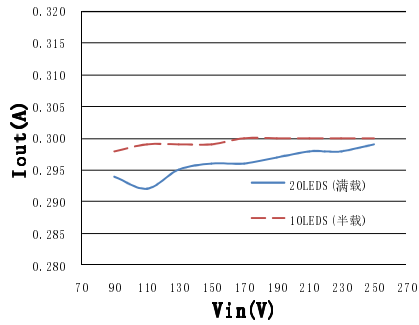
TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN}=90VAC\sim 264VAC$, $V_{OUT}=65V$, $I_o=300mA$, ,unless otherwise noted

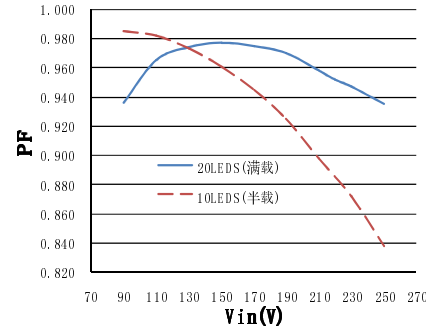
Efficiency



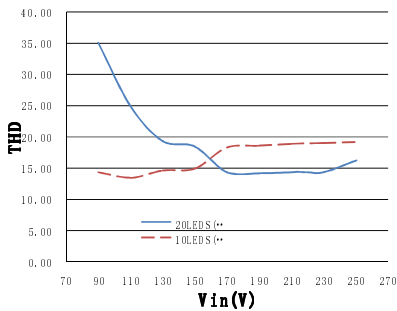
Line regulation



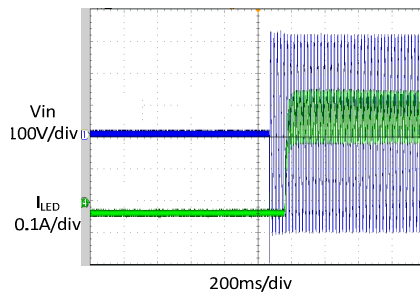
PF



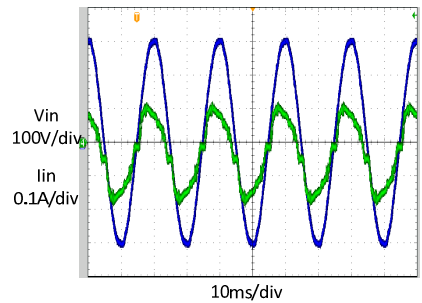
THD



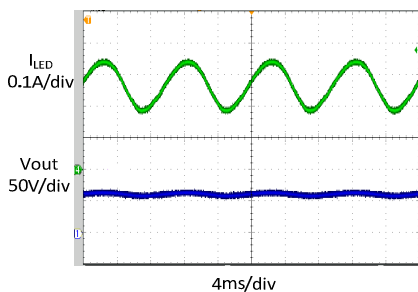
Start State



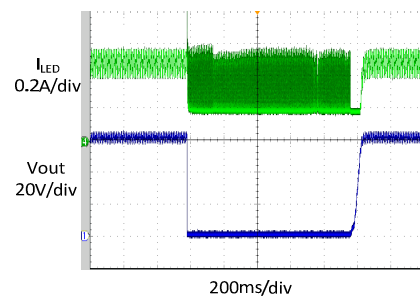
Steady State (Input)



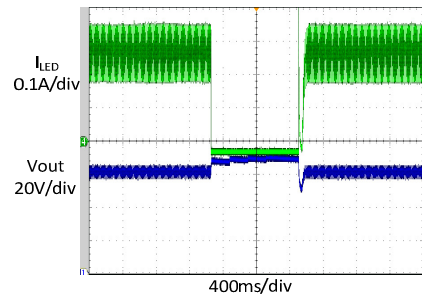
Steady State (Output)



Short Circuit Protection



Open Circuit Protection



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