



The Improved ZD850EVB R3 Evaluation Board Addendum Sheet

General Description

The ZD850 is a constant off-time, high power LED driver IC using a Buck Converter Topology that is capable of driving up to 1.5A of output current.

ZD850EVB R3 Evaluation Board Factory Default Settings

The ZD850EVB R3 is configured to operate at a voltage supply input of 12VDC at the HVCC pin of the device, driving 3 high power LEDs in series with ILED current of 350mA.

An optional AC configuration can be used by applying 12VAC to the internal bridge at VAC1/VAC2 or by using an external diode bridge rectifier.

Stabilizing ILED Over Wide VIN and Temperature Range

The addition of 3 small components to the Typical Application circuit on the ZD850 will improve the stability of the LED current over the temperature range and over a wider VIN range. The improved circuit uses two resistors (R2 and R3) at the SENSEP and SENSEN pins, and one capacitor of 0.1µF (C5) at SENSEN pin to PGND. R2 and R3 are set at 12kΩ.

The ILED current drift is less than 10% at 85°C when it is set below 700mA using a DC voltage (HVCC input or VAC1/VAC2 input) or 60Hz AC voltage at the VAC1/VAC2 inputs. Results may vary when using Electronic-Transformers. The maximum ILED is 350mA when using the VAC1/VAC2 inputs. The new ZD850EVB R3 accommodates the additional components on board.

ZD850EVB R3 Bill of Material (BOM) Listing

Item	Quantity	Location	Part
1	1	C1	1µF
2	1	C2	20µF/470µF
3	1	C5	0.1µF
4	1	RSENSE	Variable
5	1	R2	12kΩ
6	1	R3	12kΩ
7	1	R8*	2Ω
8	1	U1	ZD850LEY
9		HVCC	HB LEDs
10	1	D1	STPS0540Z
11	1	L1	Variable
12	1	V1*	20V varistor
13	1	U2*	Bridge rectifier

*denotes optional configuration setting.

Typical Application

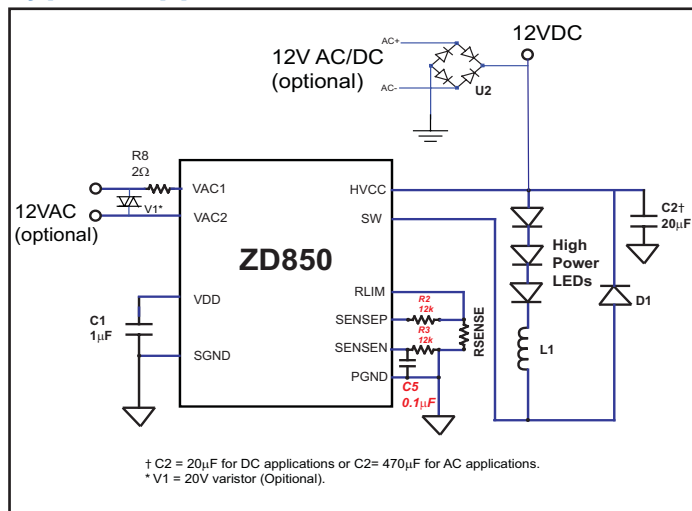


Figure 1. Typical Application of ZD850EVB R3

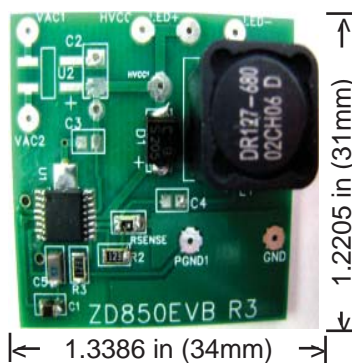


Figure 2 ZD850EVB R3 top view.

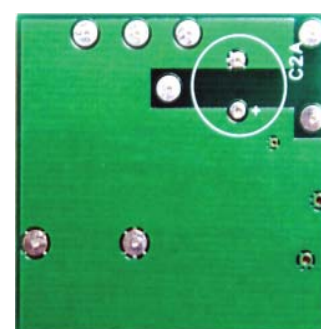


Figure 3 ZD850EVB R3 bottom view.

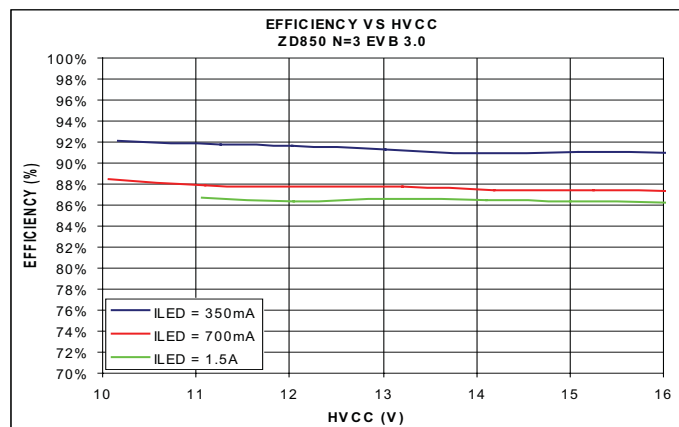


Figure 4 Efficiency vs HVCC

Typical Performance Characteristics

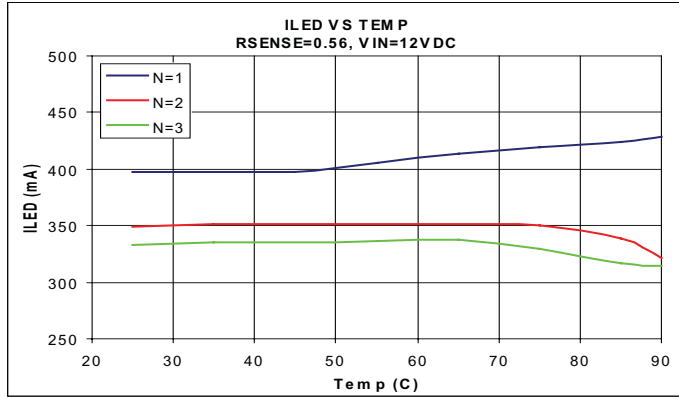


Figure 5 Typical Temperature Variation of ZD850EVB R3 with ILED = 350mA

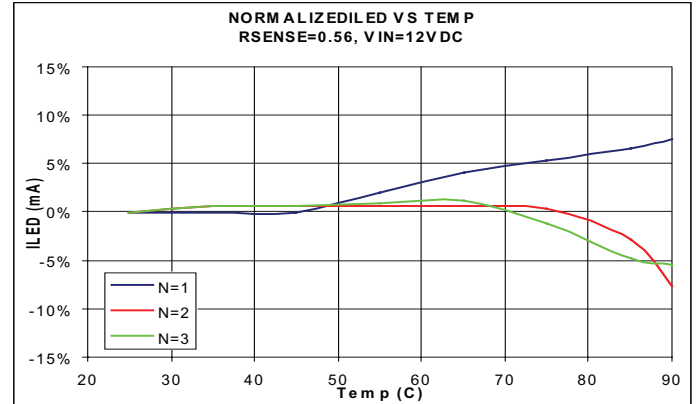


Figure 6 Typical Normalized Temperature Variation of ZD850EVB R3 with ILED = 350mA

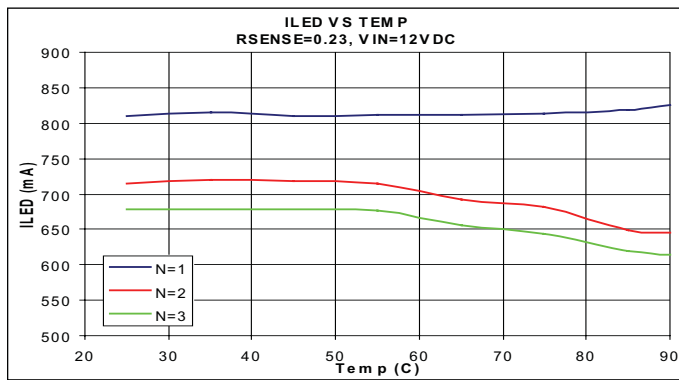


Figure 7 Typical Temperature Variation of ZD850EVB R3 with ILED = 700mA

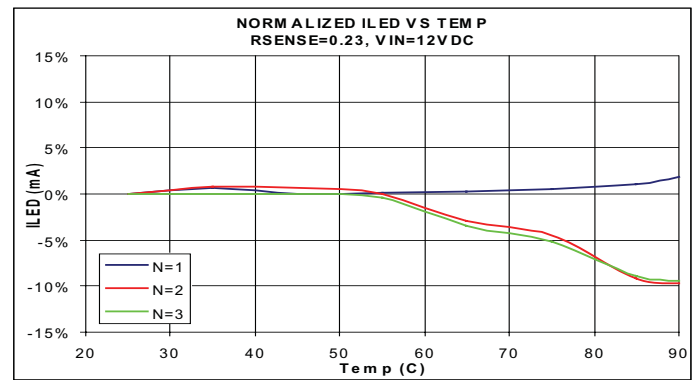


Figure 8 Typical Normalized Temperature Variation of ZD850EVB R3 with ILED = 700mA

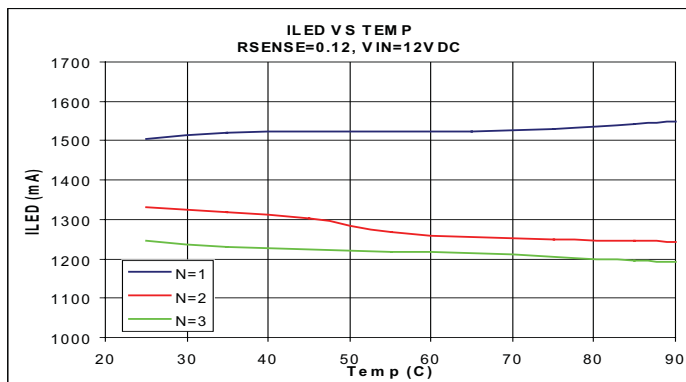


Figure 9 Typical Temperature Variation of ZD850EVB R3 with ILED = 1.5A

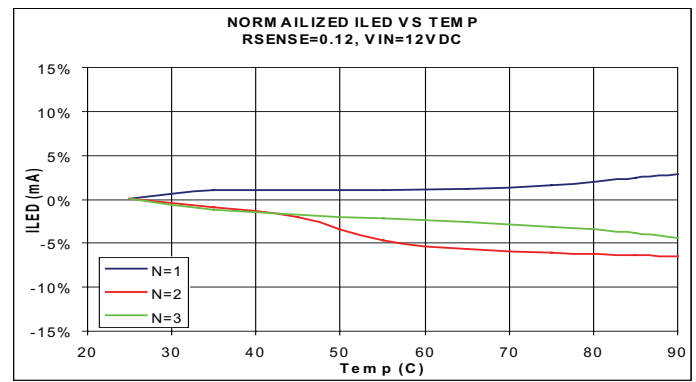


Figure 10 Typical Normalized Temperature Variation of ZD850EVB R3 with ILED = 1.5A

Note that the inductor used in these charts were meant for N=2, and N=3. This causes less ripple in the N=1 charts, causing the charts to be higher.