

ZXLD1371EV3 EVALUATION BOARD USER GUIDE

DESCRIPTION

The ZXLD1371EV3, Figure 1, is an evaluation board for the ZXLD1371 LED driver chip. The board is in a Boost configuration with an input voltage of 12 VDC and will drive a string of 12 LEDs. It is set for an output current of 350mA and offers convenient connections for external control inputs and monitoring. The board also includes additional filters for conducted EMC requirements.

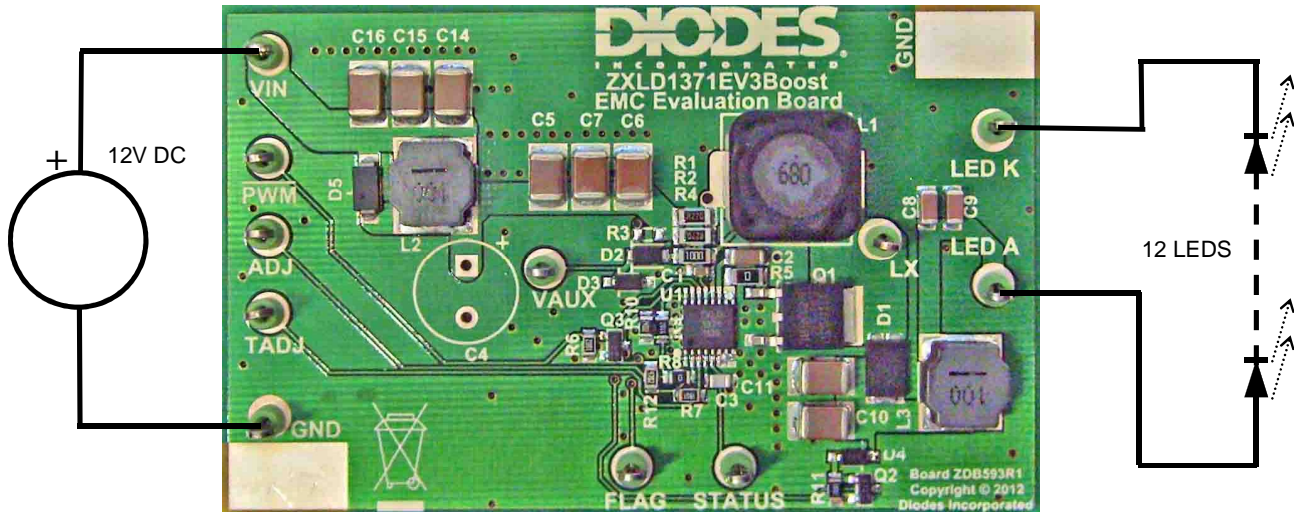


Figure 1: ZXLD1371EV3 evaluation board and connection diagram

QUICK START

- 1) Connect 12V DC supply across Vin and GND points (observe correct polarity).
- 2) Connect LED string across LED A and LED K points (observe correct polarity). LED current is set at 350mA, so ensure LED string is capable of this current.
- 3) Cover LED string or wear eye protection. Do not look directly at LEDs in use.
- 4) Switch on DC power supply.

ZXLD1371EV3 Connection Point Definition	
Name	Description
Vin	Positive supply voltage. 12V DC
GND	Supply Ground (0V).
PWM	External PWM dimming input (note that this input is inverted)
ADJ	External DC dimming input (Remove R8 for DC Dimming)
TADJ	External thermal dimming input (NTC to GND)
VAUX	VAUX monitoring point
FLAG	FLAG pin monitoring point
STATUS	STATUS pin monitoring point
LX	LX monitoring point
LED K	LED Cathode connection
LED A	LED Anode connection

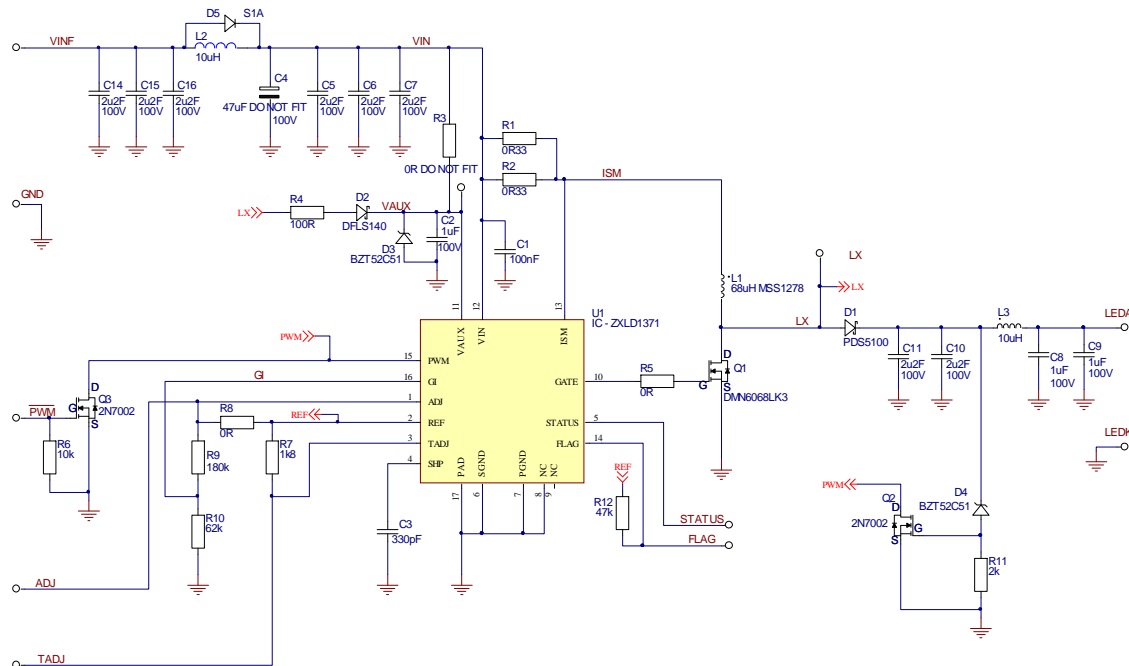


Figure 2: ZXLD1371EV3 evaluation board Schematic

ZXLD1371EV3 EVALUATION BOARD REFERENCE DESIGN

The ZXLD1371EV3 is a Boost reference design, based around the ZXLD1371 lighting IC. The circuit will accept an input voltage of 12 VDC and can drive an output string of 12 LEDs at 350mA. The board has three control inputs and multiple signal monitoring points.

The PWM input allows the user to input a PWM brightness signal. It is recommended to be between 100Hz and 500Hz for maximum LED current dynamic range. Note that the PCB includes a circuit that inverts the signal fed onto this input, in order that the input can be wire-ORed with the over-voltage protection circuit.

The ADJ input allows for DC dimming input, with a voltage between 0.125V and 1.25V for full brightness. In order to use an external control on ADJ, R8 must be removed.

The TADJ input is for connection of an external 10k NTC thermistor which will dim the LEDs as temperature increases, for maximizing LED lifetime. With a 10k NTC and R7 = 1.8kΩ, the thermal trip point will be around 70°C.

The VAUX monitoring point allows easy connection to the chip auxiliary power supply and measurement of the bootstrap circuit where used. It can also be used to feed in an external source of VAUX if R3 and R4 are removed. R4 connects VAUX to LX through D2 as a bootstrap circuit, allowing for operation at low Vin values (5-8V). If bootstrapping is not required, remove R4 and fit R3 = 0Ω.

FLAG and STATUS monitoring points allow these outputs of the chip to be monitored. For further information on output information on these pins see the ZXLD1371 datasheet.

The LX switching point can be monitored on the test point, in order to easily monitor the output PWM.

The LED string load can be connected across the LED A and LED K points.

ZXLD1371EV3 Component list

QTY	PCB IDENT	VALUE	DESCRIPTION
1	U1	ZXLD1371	TSSOP16EP LED driver IC – Diodes Zetex
1	Q1	DMN6068LK3	60V N-Channel Enhancement Mode MOSFET – Diodes Inc.
2	Q2, Q3	2N7002	SOT23 FET - Diodes Zetex
1	D1	PDS5100	Freewheeling diode 5A, 100V – Diodes Inc.
1	D2	DFLS140	Schottky diode 1A, 40V – Diodes Inc.
2	D3, D4	BZT52C51	Zener, 51V 400mW SOD123 – Diodes Inc.
1	D5	S1A	Diode, 1A SMA – Diodes Inc
2	R1, R2	0R27	Resistor 1206 1% thick film 250ppm generic
0	R3	DO NOT FIT	Resistor 0805
1	R4	100R	Resistor 1206 1% thick film 250ppm generic
1	R5	0R0	Resistor 1206 1% thick film 250ppm generic
1	R6	10k	Resistor 0805 1% thick film 250ppm generic
1	R7	1k8	Resistor 0805 1% thick film 250ppm generic
1	R8	0R	Resistor 0805 1% thick film 250ppm generic
1	R9	91k	Resistor 0805 1% thick film 250ppm generic
1	R10	24k	Resistor 0805 1% thick film 250ppm generic
1	R11	2k	Resistor 0805 1% thick film 250ppm generic
1	R12	47k	Resistor 0805 1% thick film 250ppm generic
1	C1	100nF	Capacitor 0603, 100V X7R generic
3	C2, C8, C9	1uF	Capacitor 1206, 100V X7R generic
1	C3	330pF	Capacitor 0805, 100v C0G generic
0	C4	DO NOT FIT	Electrolytic capacitor P5D10
8	C5, C6, C7, C10, C11, C14, C15, C16	2u2F	Capacitor, 1812, 100V X7R generic Murata GRM43ER72A225KA01L
1	L1	68uH	Coilcraft MSS1278-683MLB NIC Components NPIS27H680MTRF
2	L2, L3	10uH	Murata LQH88PN100M38L
11	TP1, TP2, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11	Test Point	2.15mm dia. test loops, green, generic, Hughes 100-108

Note: The component values and part numbers are correct at the time of publication. Diodes Inc. reserves the right to substitute other parts where necessary, without further notification.

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