

# IS31BL3232 FLASH LED DRIVER

## DESCRIPTION

The IS31BL3232 is a charge pump constant current-regulated LED driver ideal for powering high brightness LEDs for camera flash and torch applications. The charge pump can be set to regulate two current levels for Flash or Torch modes. The IS31BL3232 automatically switches between linear and boost modes; the charge pump will start up automatically to offer a higher output voltage when  $V_{FB}$  is lower than the setting value. In the Flash Mode the output will shut down automatically after 1s to save energy.

IS31BL3232 provides low cost, space saving solution for driving LED. It also integrates thermal and short circuit protection function.

## FEATURES

- Operates from 2.7V to 5.5V
- Up to 90% efficiency in Torch Mode
- Output current up to 1.2A(1s) in Flash Mode
- Adjustable output current in Flash Mode
- Time out function with 1s for Flash Mode
- Minimum external components, no external inductor required
- Automatic boost mode
- Less than 1 $\mu$ A shutdown current
- Low ripple and EMI
- Over voltage protection on output
- ESD HBM 8kV
- Short and over temperature protections
- Available in DFN-10 (3mm  $\times$  3mm) package

## QUICK START

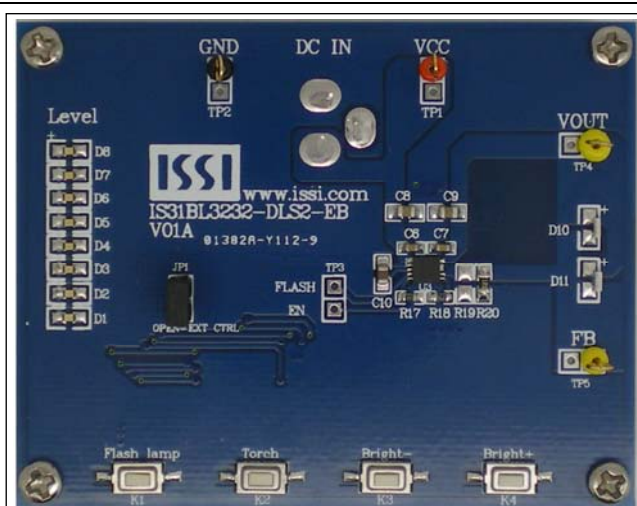


Figure 1: Photo of IS31BL3232 Evaluation Board

## RECOMMENDED EQUIPMENT

- 3.0V~5.0V, 2A power supply

## ABSOLUTE MAXIMUM RATINGS

- $\leq 5.5V$  power supply

**Caution:** Do not exceed the conditions listed above, otherwise the board will be damaged.

## PROCEDURE

The IS31BL3232 evaluation board is fully assembled and tested. Follow the steps listed below to verify board operation.

**Caution:** Do not turn on the power supply until all connections are completed.

- 1) Connect the ground terminal of the power supply to the GND and the positive terminal to the VCC. Or connect the DC power to the connector (DC IN).
- 2) Turn on the power supply and pay attention to the supply current. If the current exceeds 1.5A, please check for circuit fault.

## EVALUATION BOARD OPERATION

The evaluation board is controlled by LPC922 (8051 core).

IS31BL3232 evaluation board demonstrates the Flash and Torch modes by switching between modes when the corresponding buttons are pressed.

- 1) **Torch Mode (Default):** The “Bright+” and “Bright-” buttons are used to control the WLED brightness. The LEDs on the left graphically show the brightness level. The default power on level is D1, the lowest level. The “Torch” button is used to Enable/Disable this mode.
- 2) **Flash Mode:** Once pressed the white LEDs will flash ON for one second.

## SOFTWARE SUPPORT

Please refer to the integrated program.

Jumper JP1 is closed (default). Remove the jumper on JP1 (on board LPC922 MCU disabled) if you want to use an external MCU control. Connect the external MCU I/O signals to the TP3 connector to directly control the IC’s EN and FLASH input pins.

**Please refer to the datasheet to get more information about IS31BL3232.**

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## ORDERING INFORMATION

Part No.	Temperature Range	Package
IS31BL3232-DLS2-EB	-40°C ~ +85°C (Industrial)	DFN-10, Lead-free

Table1: Ordering Information

For pricing, delivery, and ordering information, please contact Lumissil's analog marketing team at [analog@lumissil.com](mailto:analog@lumissil.com) or (408) 969-6600.

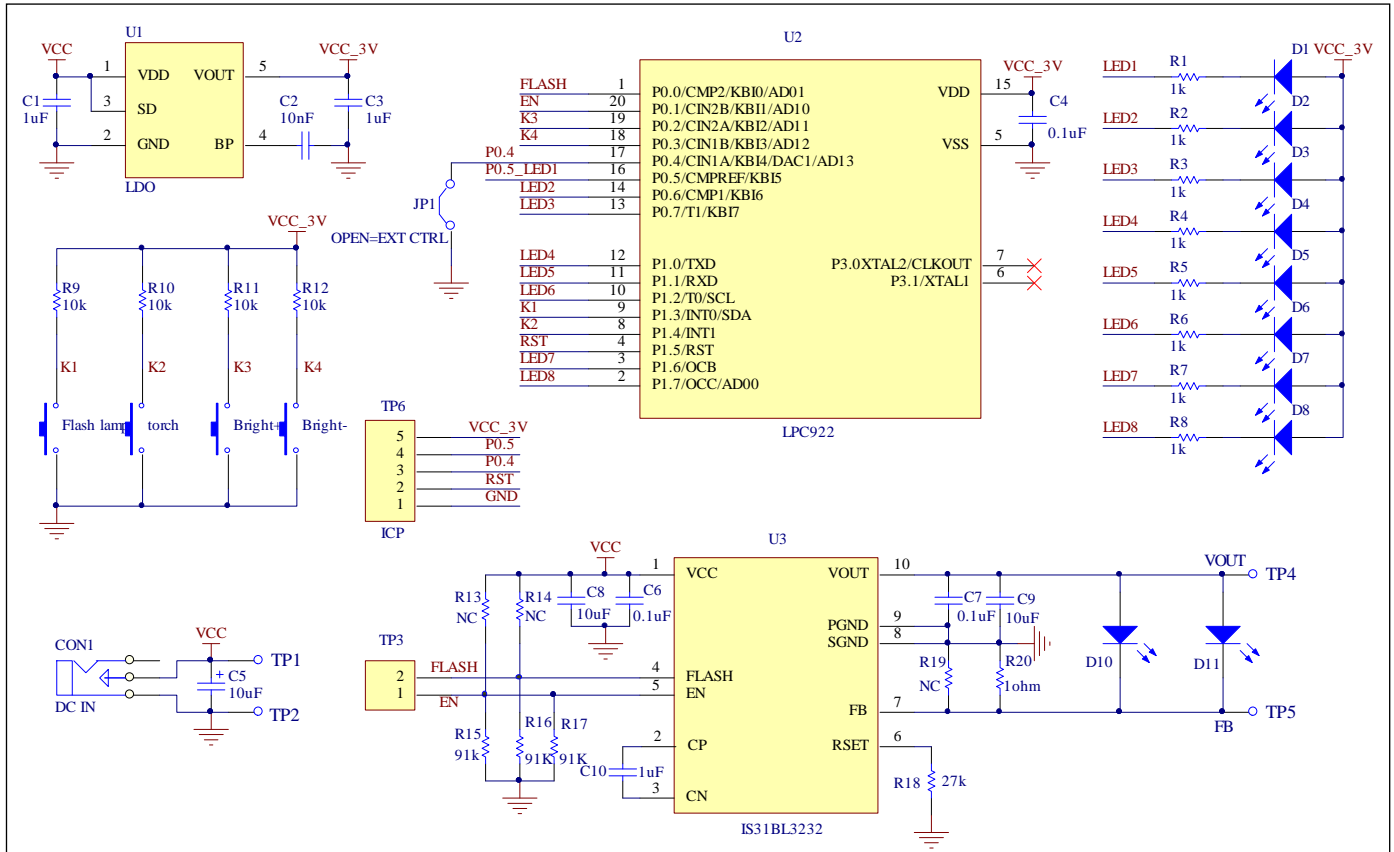


Figure 2: IS31BL3232 Application Schematic

## IS31BL3232 FLASH LED DRIVER

### Bill of Materials

Name	Symbol	Description	Qty	Supplier	Part No.
LDO	U1	Low-dropout regulator	1	PAM	PAM3101
MCU	U2	Microcontroller	1	NXP	LPC922
LED Driver	U3	Torch and Flash LED driver	1	Lumissil	IS31BL3232
Diode	D1~D8	Diode, LED Blue, SMD	8		
Diode	D10~D11	Diode, LED White, peak current 500mA	2	OSRAM	LUW C9SN
Capacitors	C1, C3	CAP,1 $\mu$ F,16V, $\pm$ 20%,SMD	2		
Capacitor	C2	CAP,10nF,16V, $\pm$ 20%,SMD	1		
Capacitors	C4, C6, C7	CAP,0.1 $\mu$ F,16V, $\pm$ 20%,SMD	3		
Capacitor	C5	CAP,10 $\mu$ F,10V, $\pm$ 20%,SMD	1		
Capacitors	C8, C9	CAP,10 $\mu$ F,10V, $\pm$ 20%,SMD	2		
Capacitor	C10	CAP,1 $\mu$ F,16V, $\pm$ 20%,SMD	1		
Resistors	R1~R8	RES,1k,1/16W, $\pm$ 5%,SMD	8		
Resistors	R9~R12	RES,10k,1/16W, $\pm$ 5%,SMD	4		
Resistors	R15,R16, R17	RES,91k,1/16W, $\pm$ 5%,SMD	3		
Resistor	R18	RES,27k,1/16W, $\pm$ 5%,SMD	1		
Resistor	R20	RES,1R,1/16W, $\pm$ 5%,SMD	1		
Resistors	R13,R14 ,R19	Not connect	3		
Buttons	Flash lamp, Torch, Bright-, Bright+	Button SMD	4		

*Bill of materials, refer to Figure 2 above.*

**IS31BL3232 FLASH LED DRIVER**

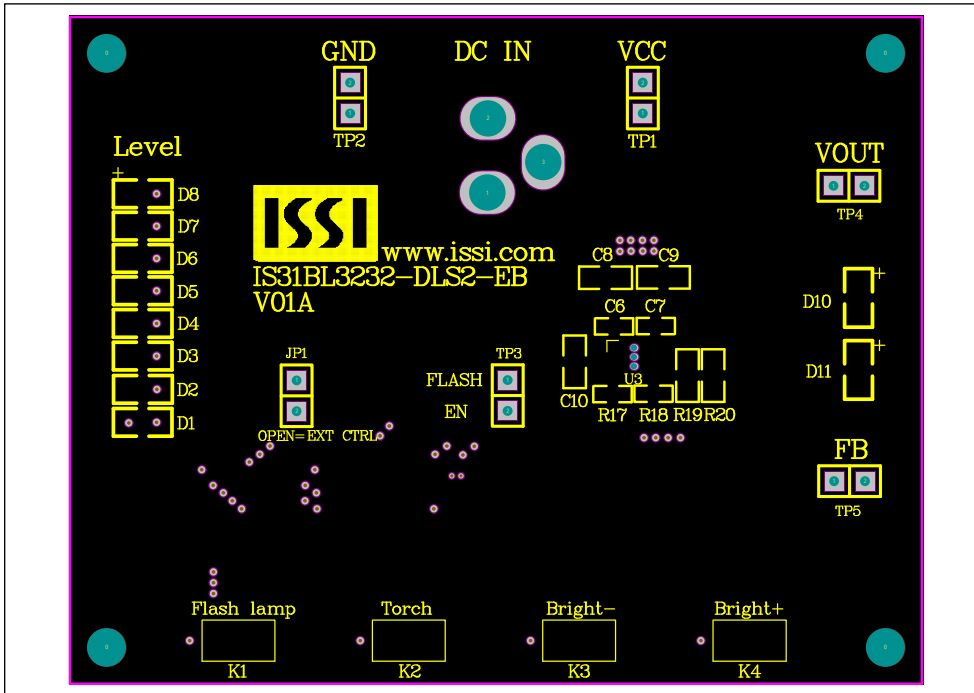


Figure 3: Board Component Placement Guide -Top Layer

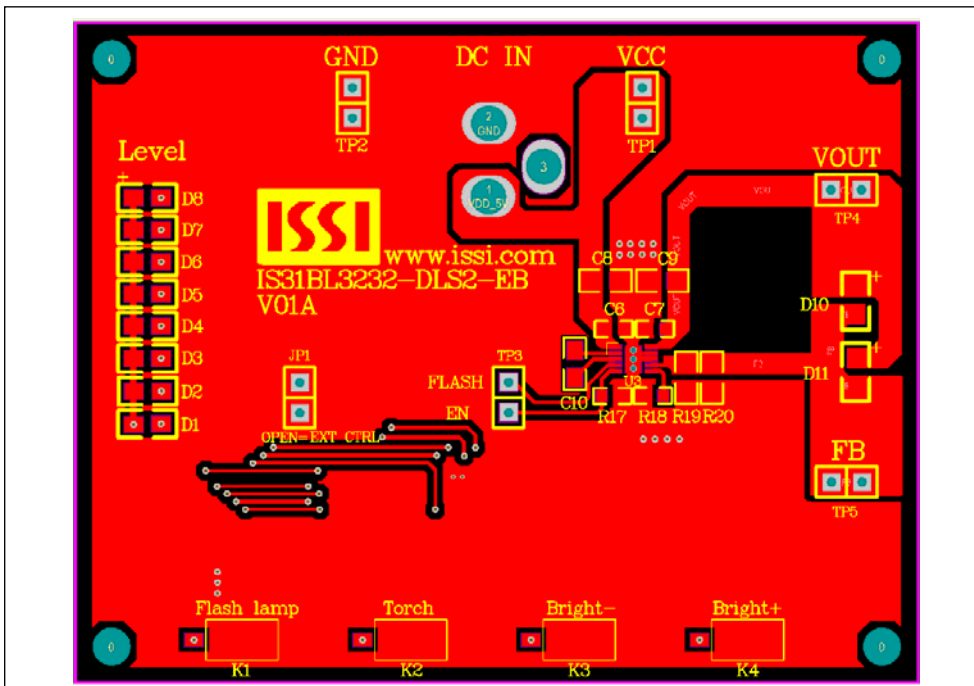
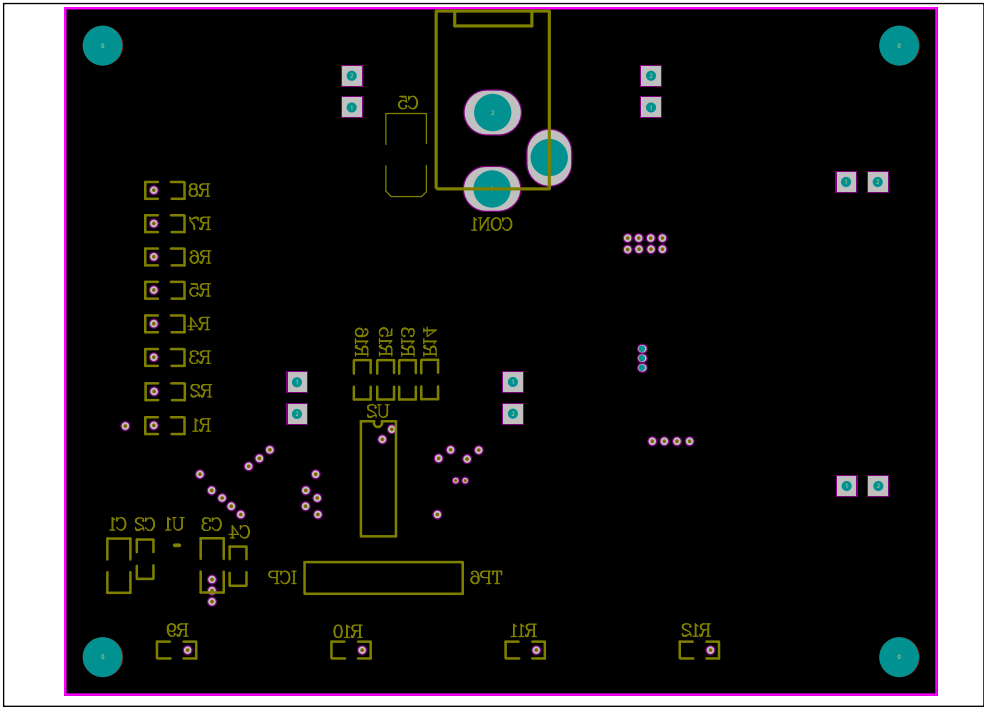
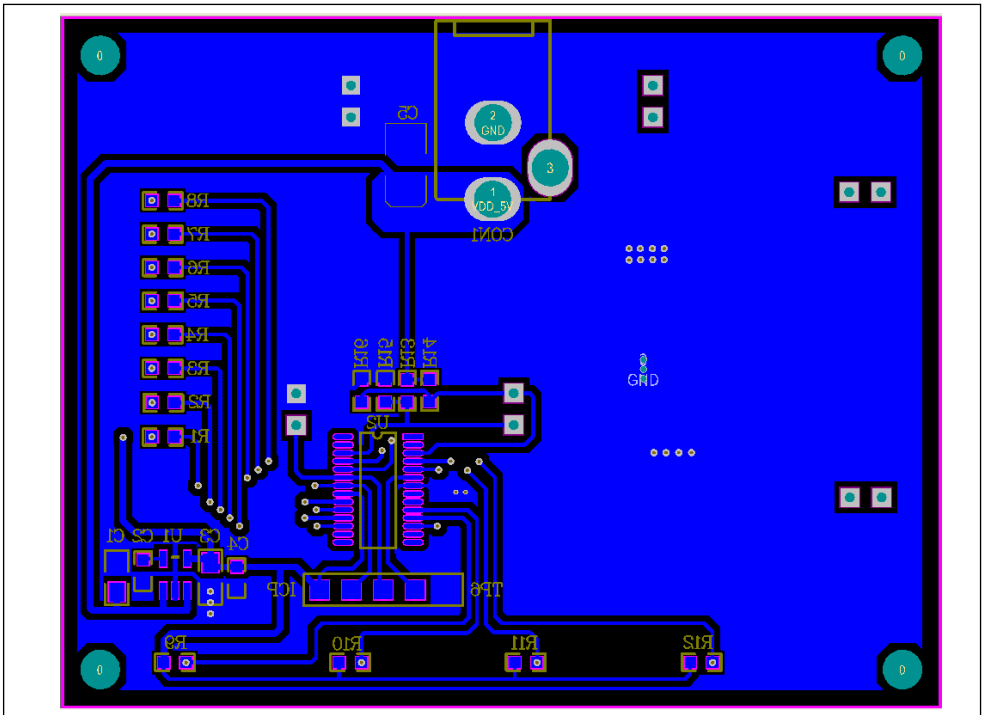


Figure 4: Board PCB Layout- Top Layer



**Figure 5: Board Component Placement Guide -Bottom Layer**



**Figure 6: Board PCB Layout-Bottom Layer**

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