DESCRIPTION

The IS31BL3233A is the ideal solution for high-power flash LEDs used in cell phone camera or digital still camera applications. It is a highly integrated step up DC-DC converter with a 2MHz switching frequency, enabling a small total space solution for portable photo flash. The IS31BL3233A has separate Flash Mode and Torch Mode enable pins for maximum flexibility. The Flash Mode and Torch Mode LED currents are programmed by external resistors respectively, making the flash LED solution simple to control. If both enable pins are at logic high, the LED current will be programmed by the Torch Mode setting resistor. The two LED output sinks can be shorted together externally for higher power single flash LEDs, up to 1.5A continuous LED current. Thermal regulation is integrated in Flash Mode to limit the IC's temperature and continuously provide the maximum allowed output current.

FEATURES

- Input voltage range: 2.7V~5.5V
- Dual flash LED outputs
- Drive up to total 1.5A or 0.75A per channel
- 1s time out in Flash Mode to protect LED
- High efficiency up to 93% (1A, Flash Mode)
- Independent Flash Mode enable and Torch Mode enable pins
- Torch Mode dimming via PWM control
- Integrated thermal regulation control
- LED open/short protection
- Over-voltage protection
- Cycle-by-cycle inductor current limit
- Pb-free package: DFN-14 (2mm × 3mm)

QUICK START

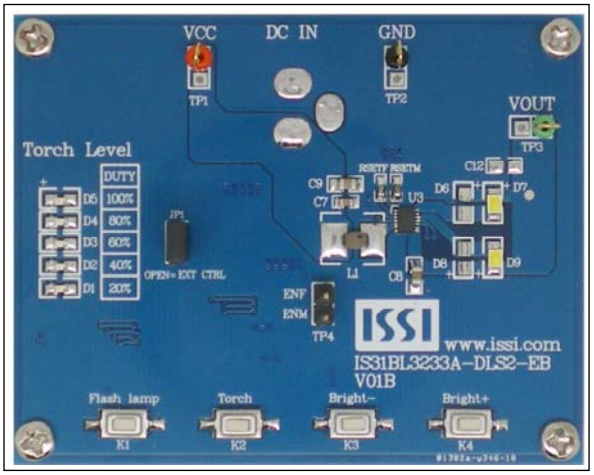

Figure 1: Photo of IS31BL3233A Evaluation Board

RECOMMENDED EQUIPMENT

- 2.7V~5.5V, 2A power supply

ABSOLUTE MAXIMUM RATINGS

- ≤ 5.5V power supply

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

PROCEDURE

The IS31BL3233A 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 2A, please check for circuit fault.
3) Press Torch (K2) or Flash lamp (K1) button to enable the respective function.

EVALUATION BOARD OPERATION

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

IS31BL3233A evaluation board demonstrates the Flash and Torch modes by switching between modes when the corresponding buttons are pressed.

1) **Torch Mode:** The "Bright+" (K3) and "Bright-" (K4) buttons are used to control the WLED brightness. There are five selectable levels, 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.

External Support: 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 TP4 connector to directly control the IC's ENF and ENM input pins. (V_{IL} <0.4V, V_{IH} >1.4V for ENF and ENM)

SOFTWARE SUPPORT

Please refer to the integrated program.

Please refer to the datasheet to get more information about IS31BL3233A.

ORDERING INFORMATION

Part No.	Temperature Range	Package
IS31BL3233A-DLS2-EB	-40°C ~ +85°C (Industrial)	DFN-14, Lead-free

Table1: Ordering Information

For pricing, delivery, and ordering information, please contacts ISSI's analog marketing team at analog@issi.com or (408) 969-6600.

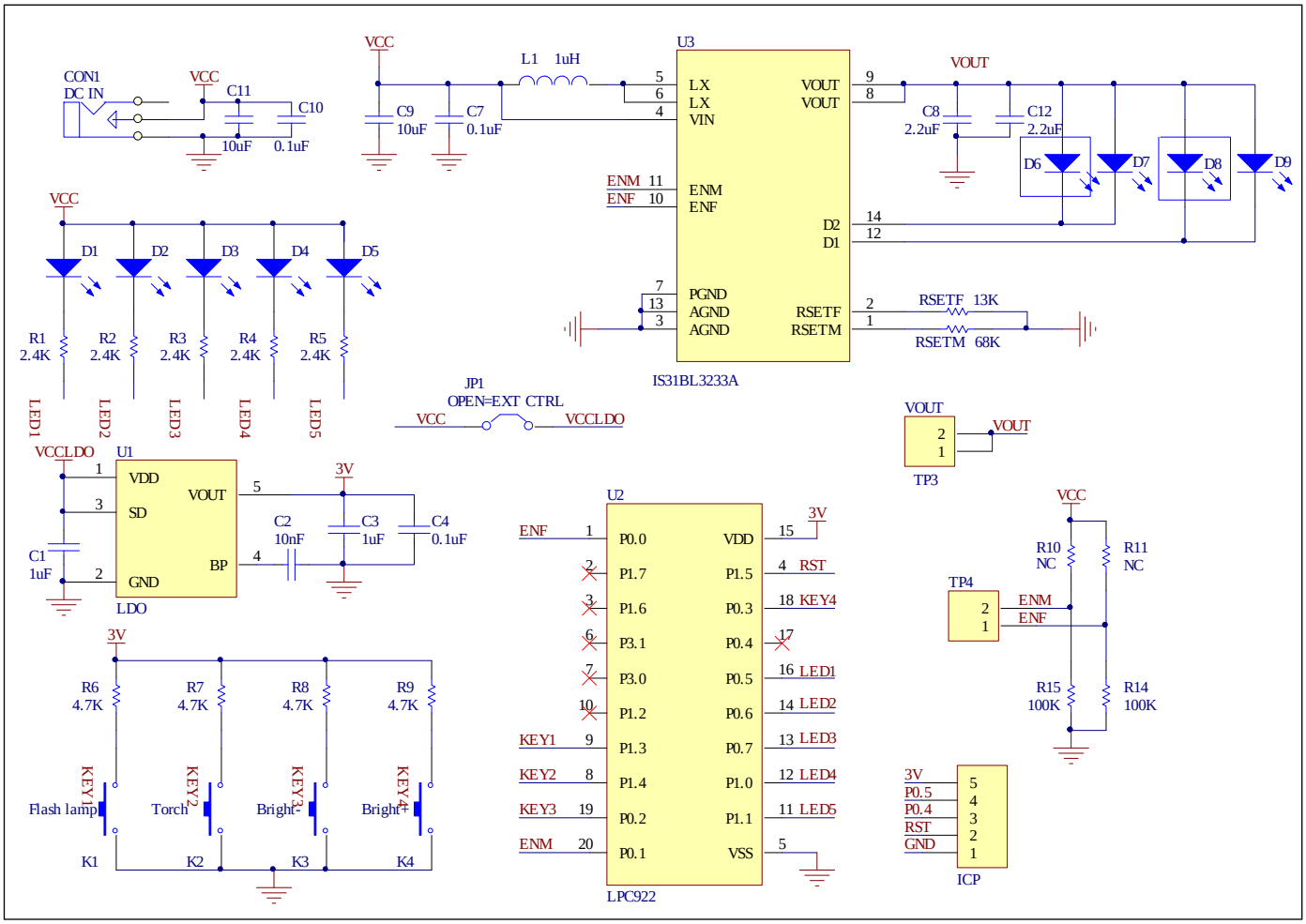

Figure 2: IS31BL3233A Application Schematic

BILL OF MATERIALS

Name	Symbol	Description	Qty	Supplier	Part No.
LED Driver	U3	Torch and Flash LED driver	1	ISSI	IS31BL3233A
CPU	U2	Microcontroller	1	NXP	LPC922
LDO	U1	Low-dropout regulator	1	PAM	PAM3101
Inductor	L1	1.0uH,DCR48mohm,Isat3.6A	1	Sunlord	WPN252012H1R0MT
Diode	D1~D5	Diode, LED Blue, SMD	5	Everlight	EHP-C04/UT01-P01/TR
Diode	D7, D9	Diode, LED White, peek current 3A	2	Everlight	EHP-C04/NT01A-P01/ TR Bin3235
Capacitor	C1, C3,C11	CAP,1μF,50V,±10%,SMD	2	Yageo	CC0805KRX7R9BB105
Capacitor	C2	CAP,10nF,50V,±10%,SMD	1	Yageo	CC0603KRX7R9BB103
Capacitor	C6, C7,C10	CAP,0.1μF,50V,±10%,SMD	2	Yageo	CC0603KRX7R9BB104
Capacitor	C8	CAP,4.7μF,10V,±10%,SMD	1	Yageo	CC0805KRX7R6BB475
Capacitor	C9	CAP,10μF,10V,±10%,SMD	1	Yageo	CC0805KRX7R6BB106
Resistor	R1~R5	RES,2.4k,1/16W,±5%,SMD	5	Yageo	RC0603JR-072.4KL
Resistor	R6~R9	RES,4.7k,1/16W,±5%,SMD	4	Yageo	RC0603JR-074.7KL
Resistor	R14,R15	RES,100k,1/16W,±5%,SMD	2	Yageo	RC0603JR-07100KL
Resistor	RSETM	RES,68k,1/16W,±1%,SMD	1	Yageo	RC0603FR-0768KL
Resistor	RSETF	RES,13k,1/16W,±1%,SMD	1	Yageo	RC0603FR-0713KL
Resistor	R10,R11,D6,D8	Not connect	4		
Connector	CON1	2.5mm DC connector	1		
Button	Flash lamp, Torch, Bright-, Bright+	Button SMD	4		

Bill of materials, refer to Figure 2 above.

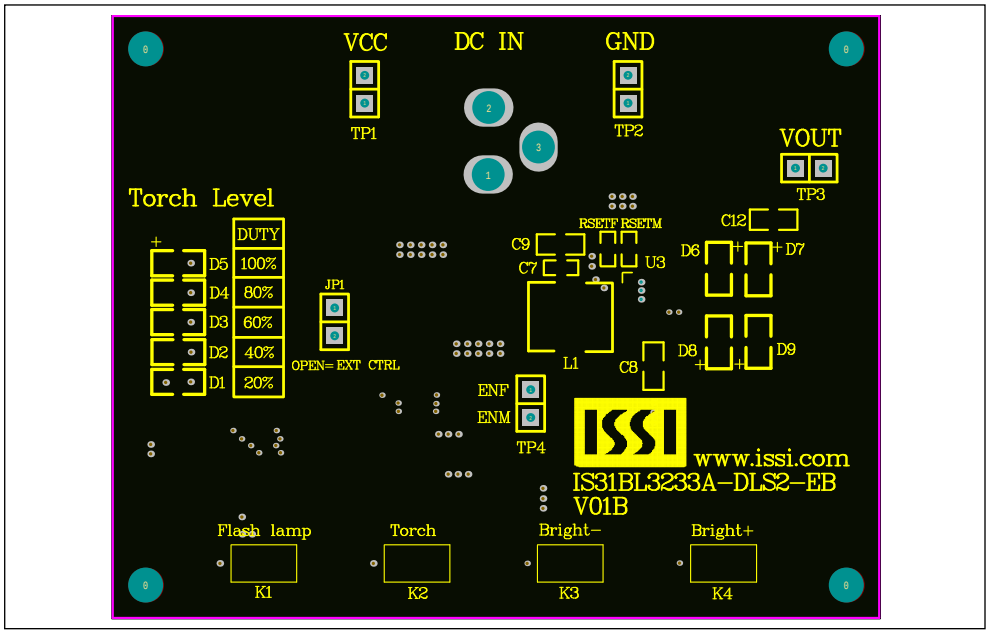

Figure 3: Board Component Placement Guide - Top Layer

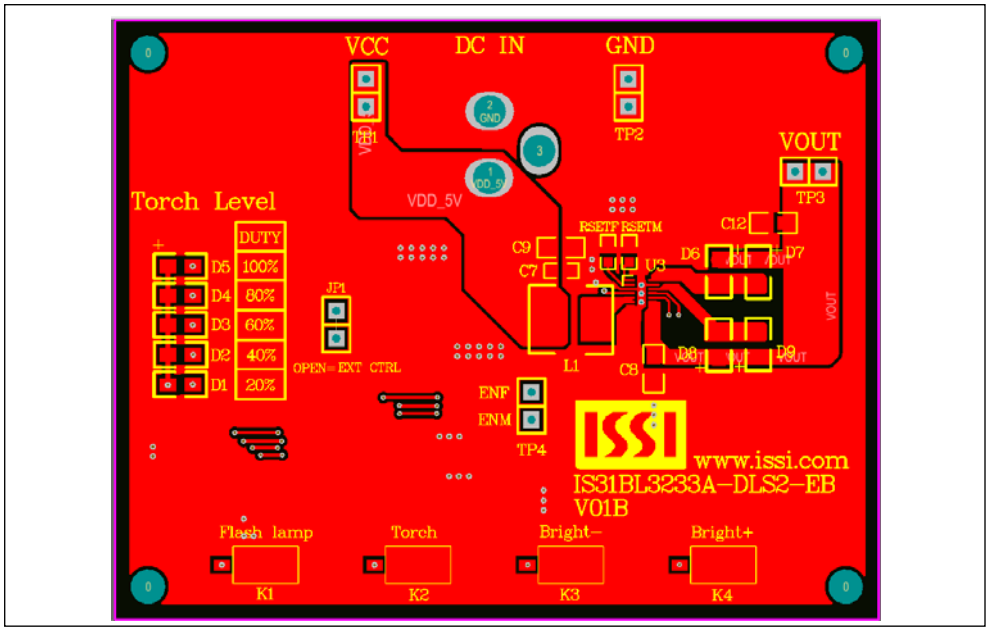

Figure 4: Board PCB Layout - Top Layer

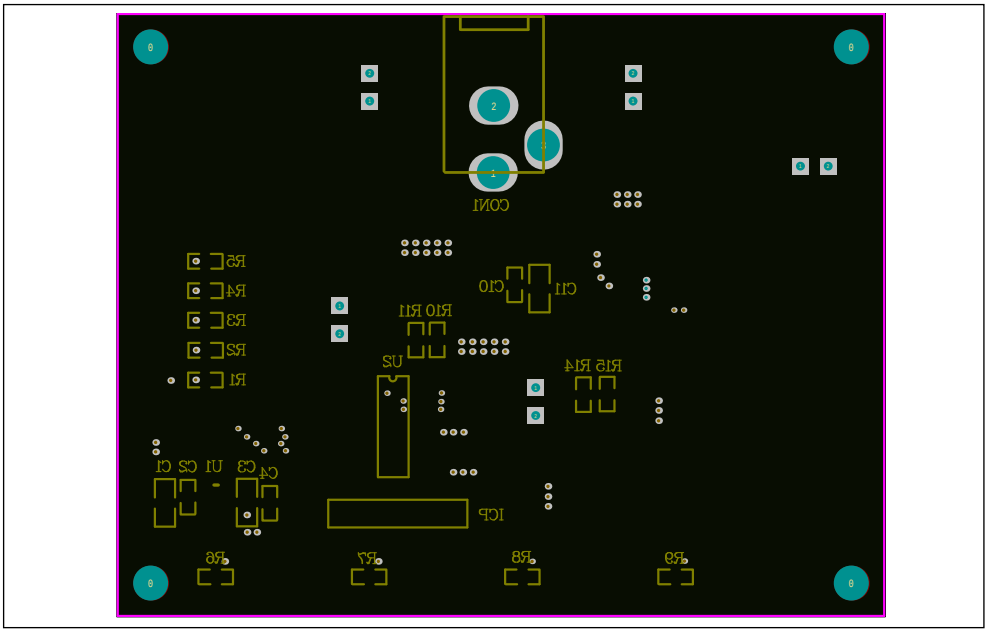

Figure 5: Board Component Placement Guide - Bottom Layer

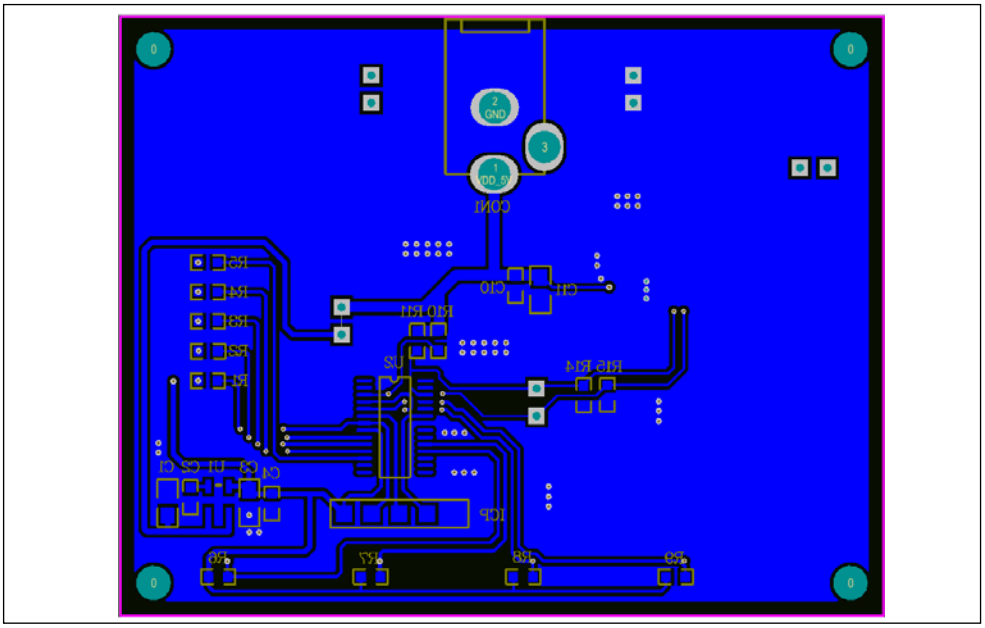

Figure 6: Board PCB Layout - Bottom Layer

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

ISSI:
IS31BL3233A-DLS2-EB