IS31FL3193D 3-CHANNEL FUN LED DRIVER

DESCRIPTION

IS31FL3193D 3-channel LED driver demo board is used to demonstrate and evaluate the IS31FL3193D. IS31FL3193D is a constant current LED driver featuring One Shot Program Mode and PWM Control Mode for RGB lighting effects. The IS31FL3193D can drive three LEDs or one group RGB LED.

The demo board can perform breathing effect in One Shot Programming Mode to display the function of IS31FL3193D.

FEATURES

- Voltage range from 3.5V to 5.5V
- One group RGB LED or three single color LEDs breathing system-free pre-established pattern
- 3 independently controlled outputs of 256 PWM steps
- I2C interface, automatic address increment function
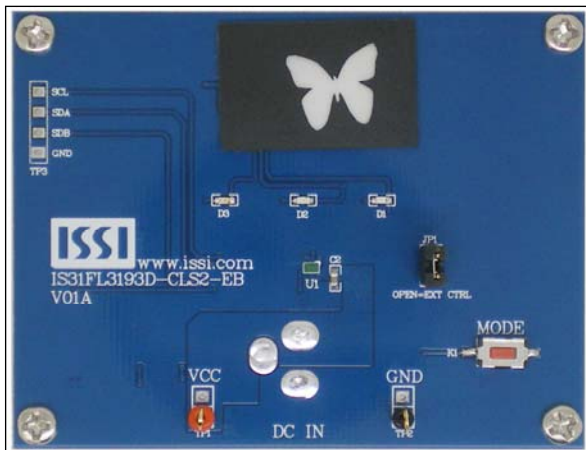- Available in WLCSP-8 package

QUICK START

Figure 1: Photo of IS31FL3193D Evaluation Board

RECOMMENDED EQUIPMENT

- 5.0V, 1A 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 IS31FL3193D 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 300mA, please check for circuit fault.
3) Enter the desired mode of display by toggling the MODE button.

ORDERING INFORMATION

Part No.	Temperature Range	Package
IS31FL3193D-CLS2-EB	-40°C to +85°C (Industrial)	WLCSP-8, Lead-free

Table 1: Ordering Information

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

EVALUATION BOARD OPERATION

The IS31FL3193D evaluation board has three display modes. Press MODE button to switch configurations.

1) One-Shot Program Mode is set by default to function as a RGB unit exhibiting identical breathing patterns. There are twenty possible colors within the LED's breathing range color spectrum.

2) In automatic mode, the LED's will function as a RGB display with automatic color changing patterns.

3) In third configuration, three LED's will brighten individually and exhibit unique behaviors.

Note: IS31FL3193D solely controls the FxLED function on the evaluation board.

SOFTWARE SUPPORT

JP1 default setting is close circuit. If it is set to open, the on-board MCU will stop working. The I2C pins are set to High Impedance. External I2C signals can be connected to TP3 to control the IS31FL3193D LED driver.

Please refer to the datasheet to get more information about IS31FL3193D.
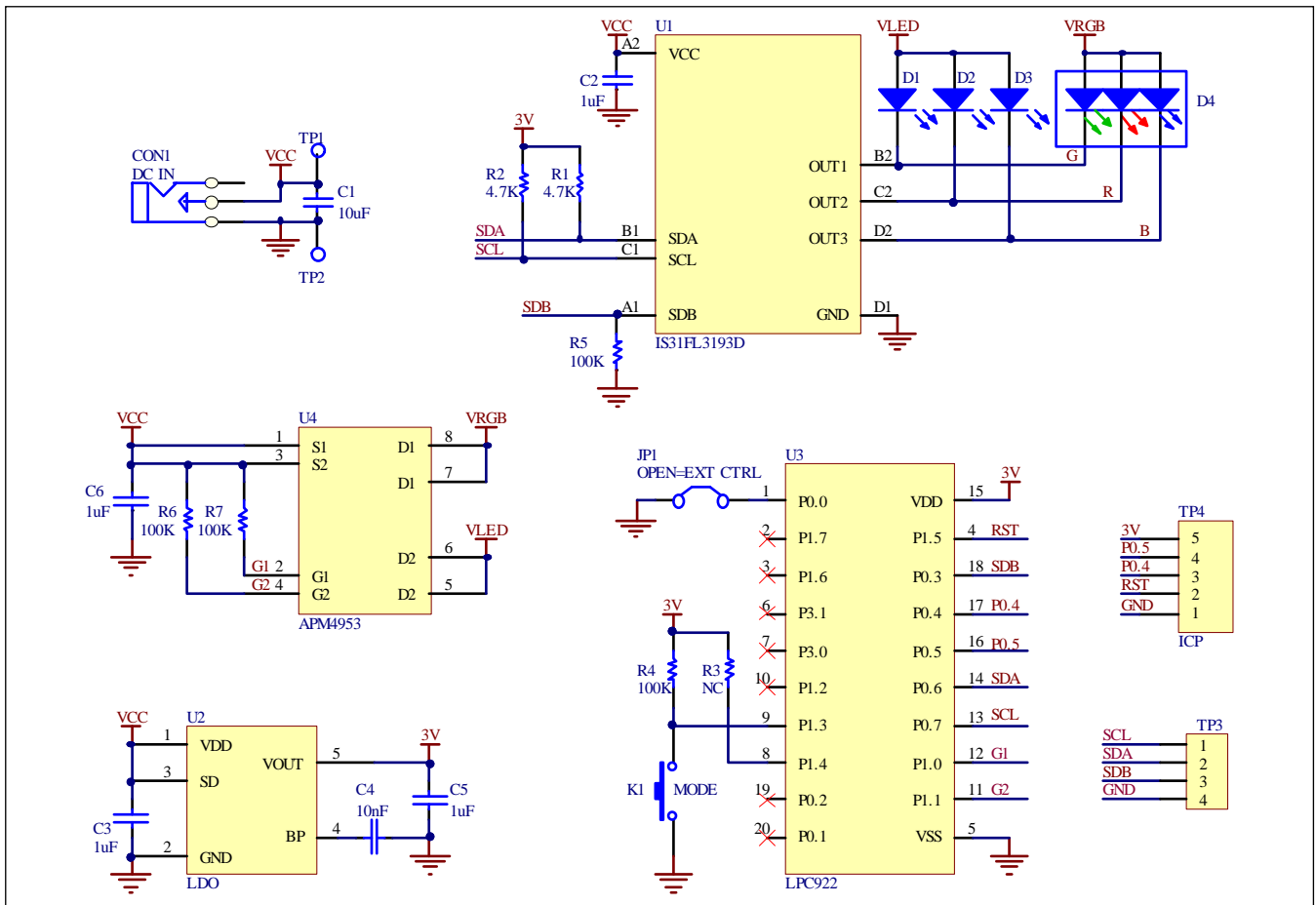

Figure 2: IS31FL3193D Application Schematic

BILL OF MATERIALS

Name	Symbol	Description	Qty	Supplier	Part No.
LED Driver	U1	3CH FxLED Driver	1	ISSI	IS31FL3193D
LDO	U2	Low-dropout Regulator	1	PAM	PAM3101
MCU	U3	Microcontroller	1	NXP	LPC922
PMOS	U4	Dual PMOS	1	ANPEC	APM4953
LED	D1	Diode, LED Red, SMD	1	Everlight	19-217/BHC-ZL1M2RY/3T
LED	D2	Diode, LED Green, SMD	1	Everlight	19-217/BHC-ZL1M2RY/3T
LED	D3	Diode, LED Blue, SMD	1	Everlight	EHP-C04/UT01-P01/TR
LED	D4	Diode, LED RGB, SMD	1	Everlight	99-235/RGBC/TR8
Resistor	R1~R2	RES,4.7k,1/16W,±5%,SMD	2	Yageo	RC0603JR-074K7L
Resistor	R4~R7	RES,100k,1/16W,±5%,SMD	4	Yageo	RC0603JR-07100KL
Resistor	R3	Not installed	1		
Capacitor	C1	CAP,10µF,10V,±10%,SMD	1	Yageo	CC0603KKX7R6BB105
Capacitor	C2,C3,C5,C6	CAP, 1µF,50V,±10%,SMD	4	Yageo	CC0603KKX7R9BB104
Capacitor	C4	CAP,10nF,50V,±10%,SMD	1	Yageo	CC0603KKX7R9BB103
Button	K1	Button SMD	1		

Bill of Materials, refer to Figure 2 above.
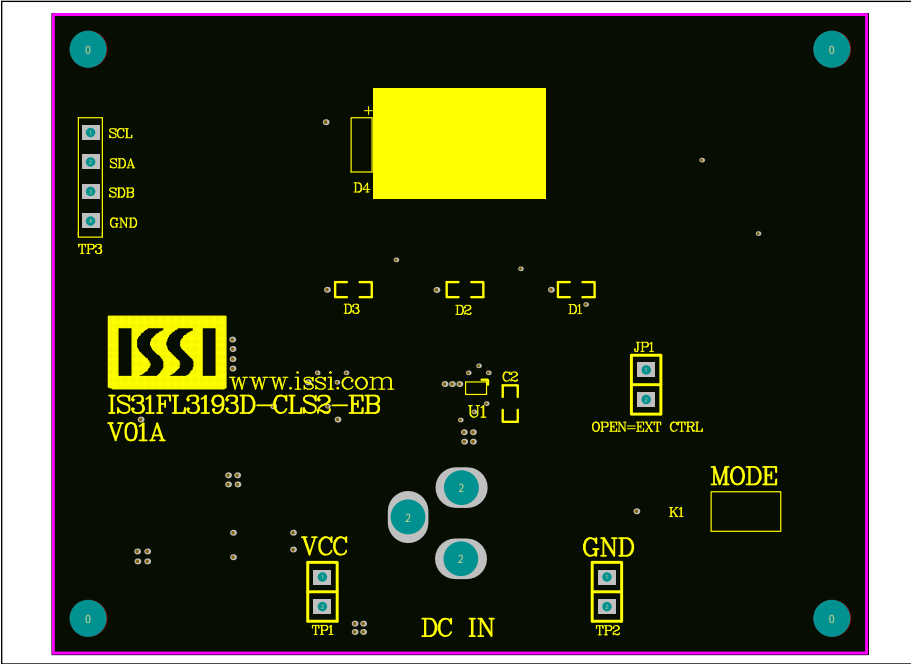
Figure 3: Board Component Placement Guide - Top Layer

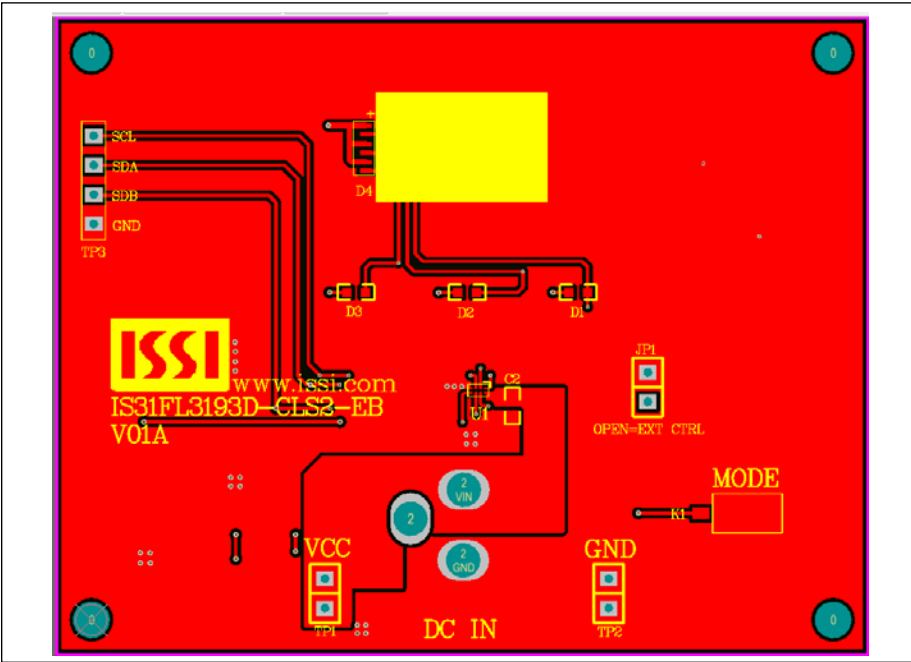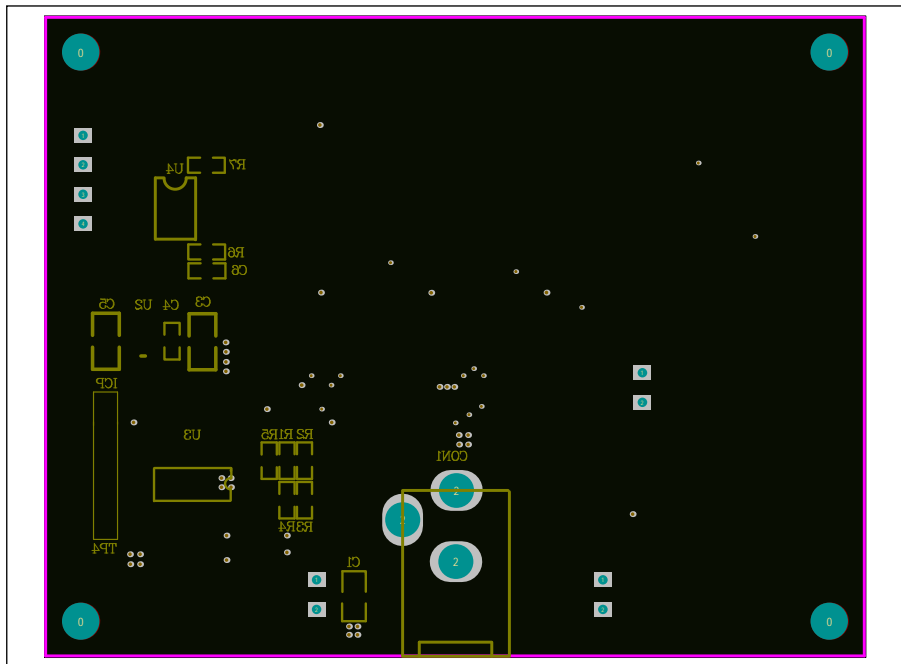*Figure 4: Board PCB Layout - Top Layer*

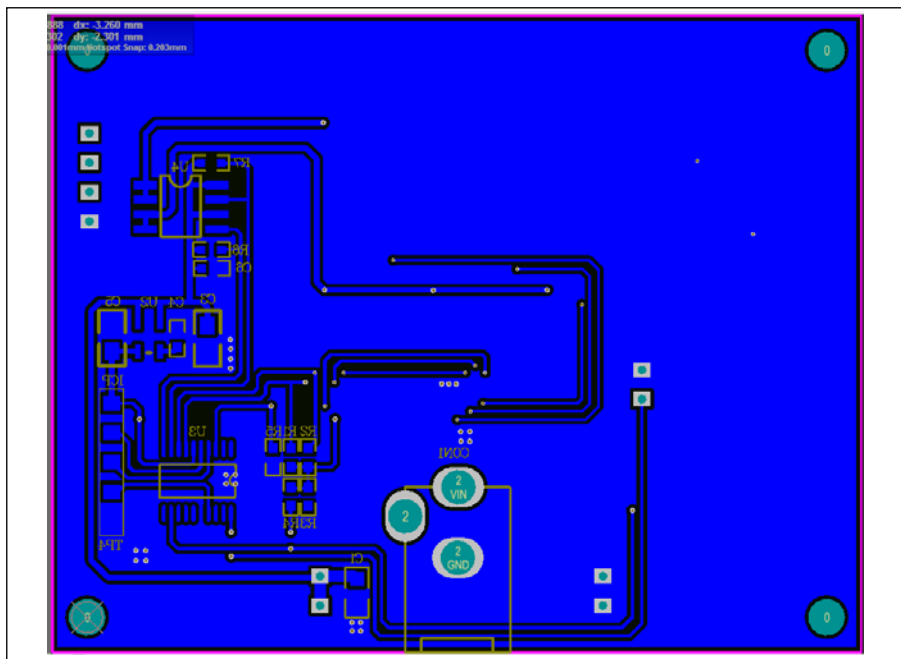*Figure 5: Board Component Placement Guide - Bottom Layer*

Figure 6: Board PCB Layout - Bottom Layer