

Description

IS31FL3728 is a general purpose 8x8 LED matrix driver which features an audio frequency equalizer (EQ) mode or a general LED dot matrix display mode. The general LED matrix display defaults to an 8x8 configuration, however, it can be configured for a 5x11, 6x10, 7x9 dot matrix display. The matrix picture brightness can be modulated by audio. In either the audio EQ mode or matrix display mode, the array is internally scanned, and requires only one-time programming, thus eliminating the need for real time system resource utilization.

Features

- Supply voltage range from 2.7V to 5.5V
- One-time programming, internal scan
- Full scale LED current controlled by internal register setting or audio signal
- Audio frequency EQ display with programmable input gain
- LED matrix brightness can be modulated with audio Signal
- One address pin with 4 logic levels to allow four I2C slave addresses
- I2C interface
- QFN-24 (4mm x 4mm) package

Quick Start

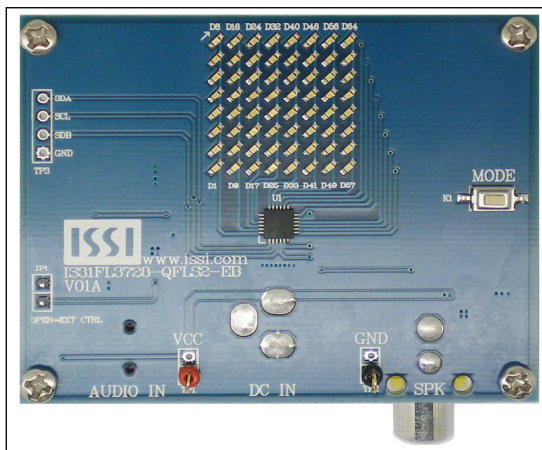


Figure 1: Photo of IS31FL3728 Evaluation Board

Recommended Equipment

- 5.0V, 2A power supply
- Audio source(i.e. MP3 player, Notebook PC, etc)
- 8Ω speaker

Absolute Maximum Ratings

- ≤ 5.5V power supply

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

Procedure

The IS31FL3728 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 an 8Ω speaker to the “SPK” connector.
- 2) Connect the audio source to the “AUDIO IN” connector.
- 3) Connect the DC power to the connector (DC IN).
- 4) Turn on the power supply and pay attention to the supply current. If the current exceeds 800mA, please check for circuit fault.
- 5) Turn on the audio signal.
- 6) Modulation of the audio signal utilized to obtain better sound output performance

Evaluation Board Ordering Information

Part No.	IC Package
IS31FL3728-QFLS2-EB	QFN-24, Lead-free

Table1: Ordering Information

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

Evaluation Board Operation

The IS31FL3728 evaluation board has five display modes. Press MODE button to switch configurations.

- 1) (Default mode) A Hart shape is displayed.
- 2) The number '1' and '2' moving to left.
- 3) Chinese character '王二小来电了' moving to left.
- 4) The Hart shape move according to music input.
- 5) An EQ effect display follow the music input.

***Note:**

IS31FL3728 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 IS31FL3728 LED driver.

Please refer to the datasheet to get more information about IS31FL3728.

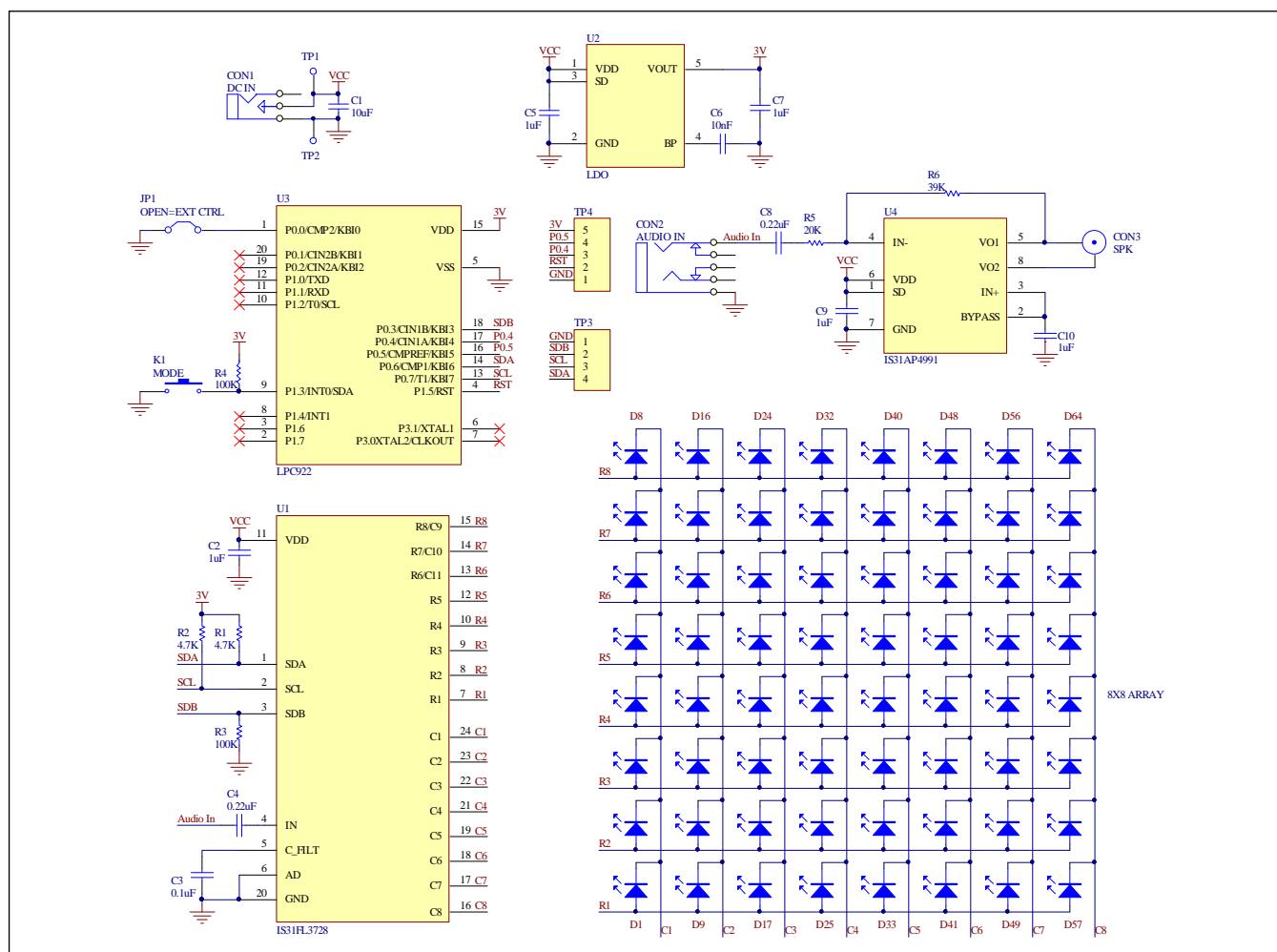


Figure 2: IS31FL3728 Application Schematic

Bill of Materials

Name	Symbol	Description	Qty	Supplier	Part No.
LED Driver	U1	Array FxLED Driver	1	ISSI	IS31FL3728
LDO	U2	Low-dropout Regulator	1	PAM	PAM3101
MCU	U3	Microcontroller	1	NXP	LPC922
Audio Amplifier	U4	Class-AB Audio Amplifier	1	ISSI	IS31AP4991
Diodes	D1~D64	Diode, LED Blue, SMD	64	Everlight	19-217/BHC-ZL 1M2RY/3T
Resistor	R1,R2	RES,4.7k,1/16W,±5%,SMD	2		
Resistors	R3,R4	RES,100k,1/16W,±5%,SMD	2		
Resistor	R5	RES,20k,1/16W,±5%,SMD	1		
Resistor	R6	RES,39k,1/16W,±5%,SMD	1		
Capacitor	C1	CAP,10µF,16V,±20%,SMD	1		
Capacitors	C2,C5,C7,C9, C10	CAP, 1µF,16V,±20%,SMD	5		
Capacitor	C3	CAP, 0.1µF,16V,±20%,SMD	1		
Capacitors	C4,C8	CAP, 0.22µF,16V,±20%,SMD	2		
Capacitor	C6	CAP,10nF,16V,±20%,SMD	1		
Button	K1	Button SMD	1		

Table 2: Bill of Materials, refer to Figure 2 above.

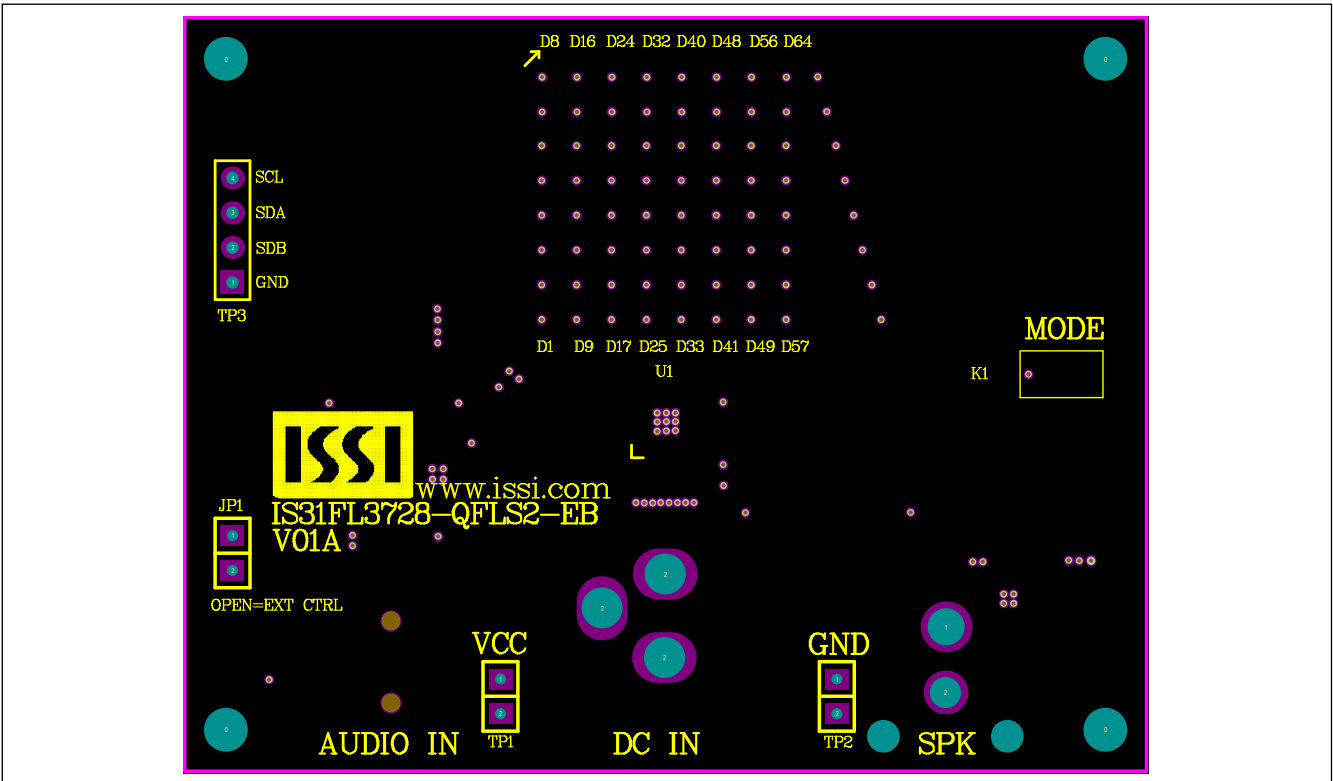


Figure 3: Board Component Placement Guide -Top Layer

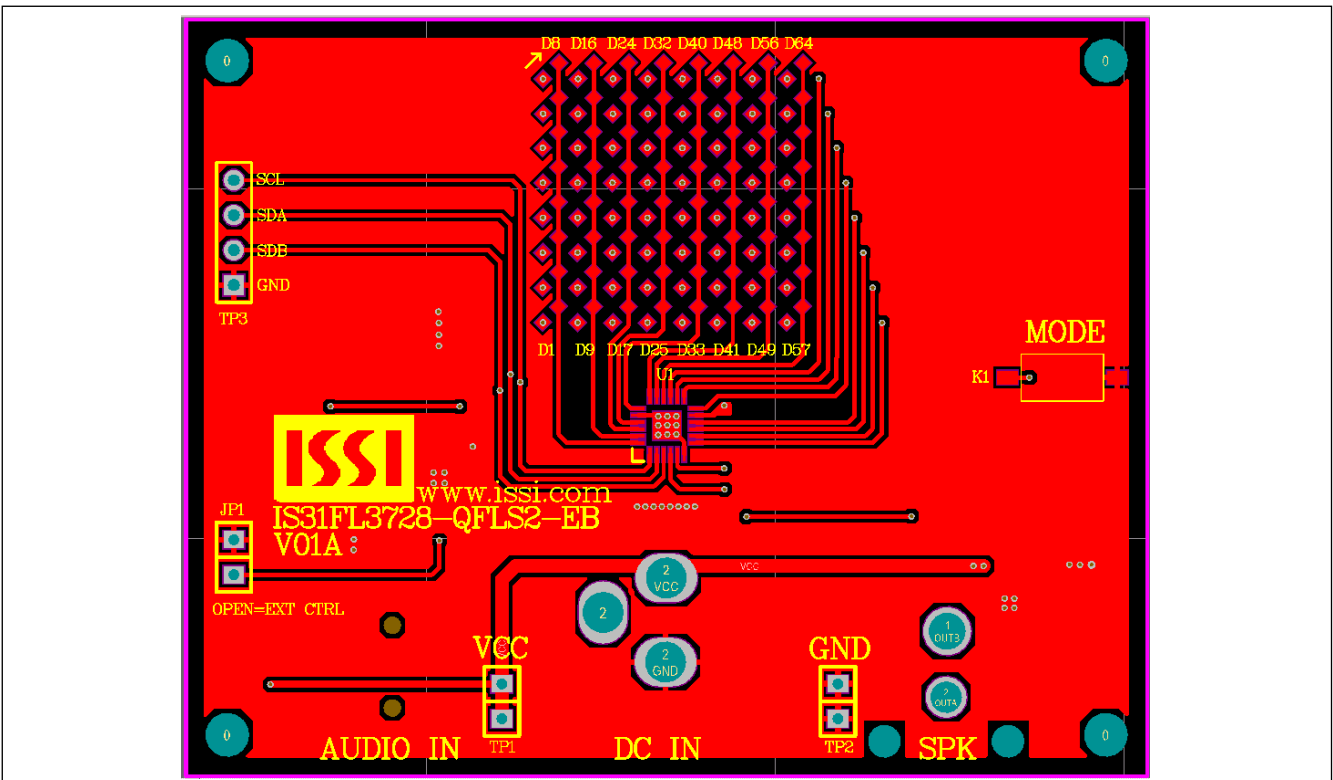


Figure 4: Board PCB Layout- Top Layer

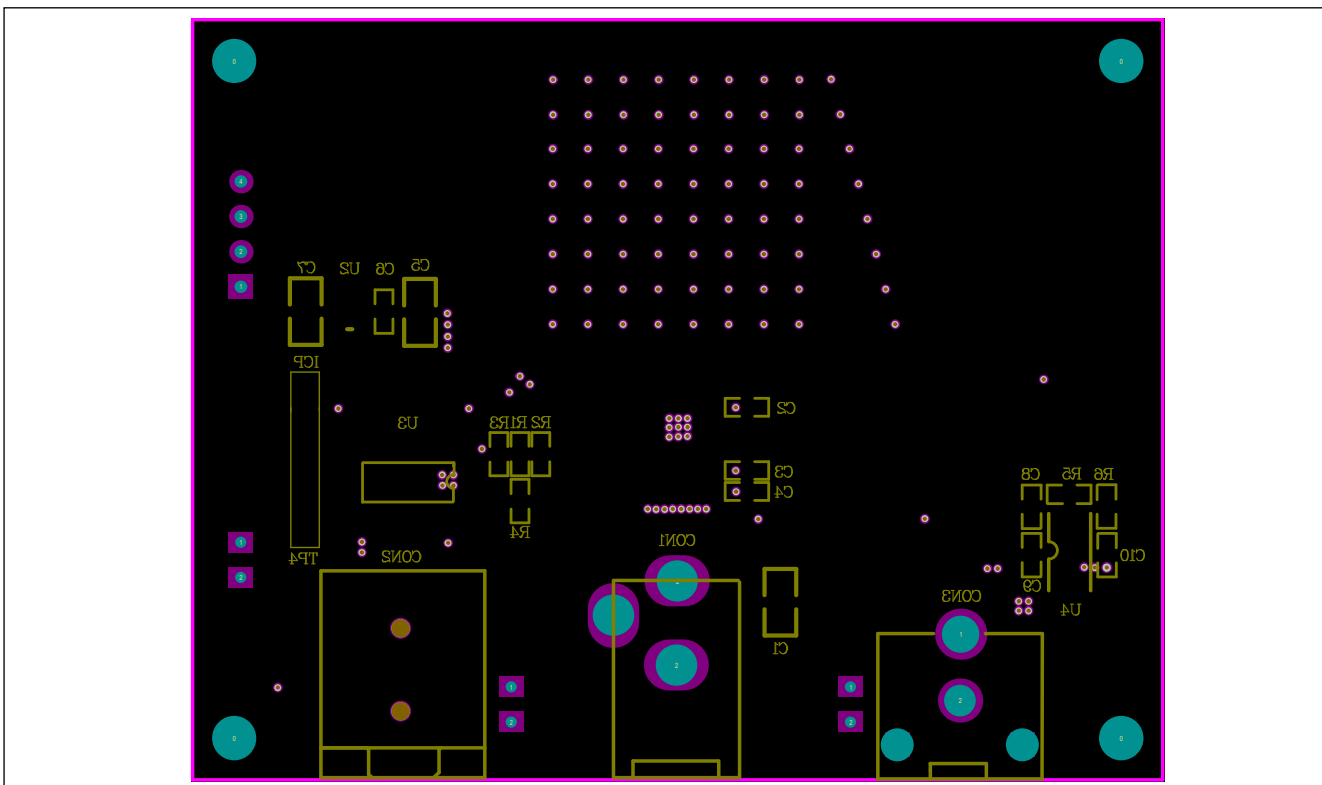


Figure 5: Board Component Placement Guide -Bottom Layer

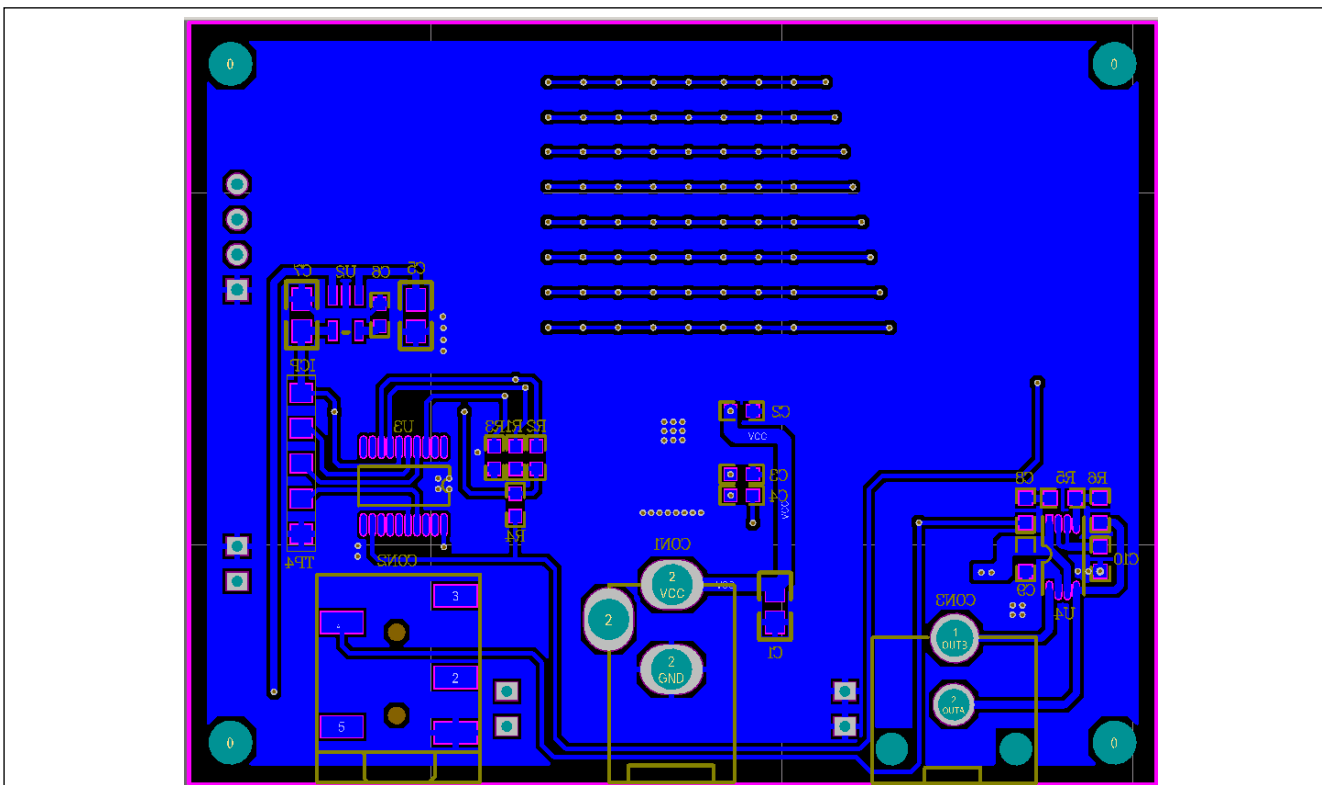


Figure 6: Board PCB Layout-Bottom Layer



IS31FL3728 Audio Modulated Matrix LED Driver Evaluation Board Guide

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