EVAL Board Guide:

16x8 LED Matrix

Matrix LED driver
1MHz I2C bus compatible Interface

U1
IS31FL3729-QFLS4-TR

Pin	Name		Name	Pin
1	CS4		EPAD	33 GND
2	CS5		CS3	32 CS3
3	CS6		CS2	31 CS2
4	CS7		CS1	30 CS1
5	CS8		SDB	29 SDB
6	CS9		AD	28 AD
7	CS10		SCL	27 SCL
8	CS11		SDA	26 SDA
9	GND		ISET	25
	CS1210		GND	24 GND
	CS1311		VCC	23 VCC
	CS1412		SW1	22 SW1
	CS1513		SW2	21 SW2
	CS1614		SW3	20 SW3
	SW9/CS16		SW4	19 SW4
15	SW8		SW5	18 SW5
16	SW7		SW6	17 SW6

R14 10K GND
C4 100nF VCC
GND

AD = Low (0x68)
AD = High(0x6E)
AD = SCL (0x6A)
AD = SDA (0x6C)

Notes:

The VIH of I2C bus should be smaller than VCC (5V).
And if VIH is lower than 3.0V, it is recommended add a level shift circuit to avoid extra shutdown current.
Hence, VIH = 3.3V

I2C Address Setting

JP1
SolderJumper_3_Open
JP2
SolderJumper_3_Bridged12

SCL — SDA   GND — VCC
R17 10K
AD

Selected Address is GND

Labels:

5V VCC   3V3
SCL   SDA
Clock   Clock

3V3
3V3 SW1
3V3 SW2
3V3 SW3
3V3 SW4
3V3 SW5
3V3 SW6
3V3 SW7
3V3 SW8

Current Calculation:

1) Quiescent Current = 3mA (When Shotdown Vsdb = Vcc) and all LEDs are off.
2) Shutdown Current = 5uA
3) Maximum constant current of CSx pins = 35mA — LED Forward Current 20mA (When R-ISET =10K)

To Limit the current in CSx Pins: Page 13

Scaling register control the DC output current of each CSy. Each CSy has a byte to modulate the scaling in 256 steps.
The value of the Scaling Register decides the peak current of each LED noted IOUT(PEAK).

Mikroe Connector

U2
Mikroe_Connector

Pin	Name		Name	Pin
1	AN		PWM	16
2	RST		INT	15
3	CS		RX	14
4	SCK		TX	13
5	SDO		SCL	12
6	SDI		SDA	11
7	3V3		5V	10
8	GND		GND	9

SDB
3V3
R13 2.2k   R15 22k — DNP
VCC PWR_FLAG

Shut down Chip When pulled Low
SDB Given to GPIO
SDB
R16 100K   C2 100nF
GND

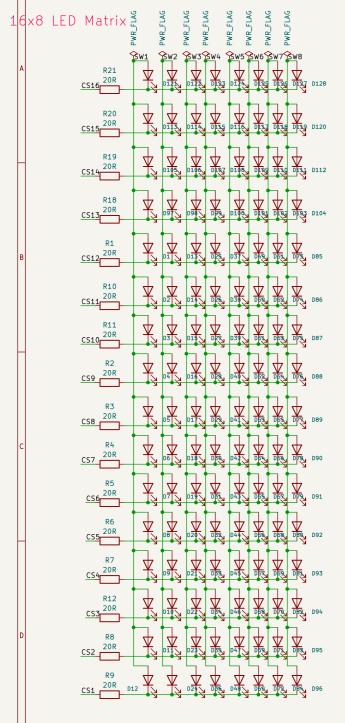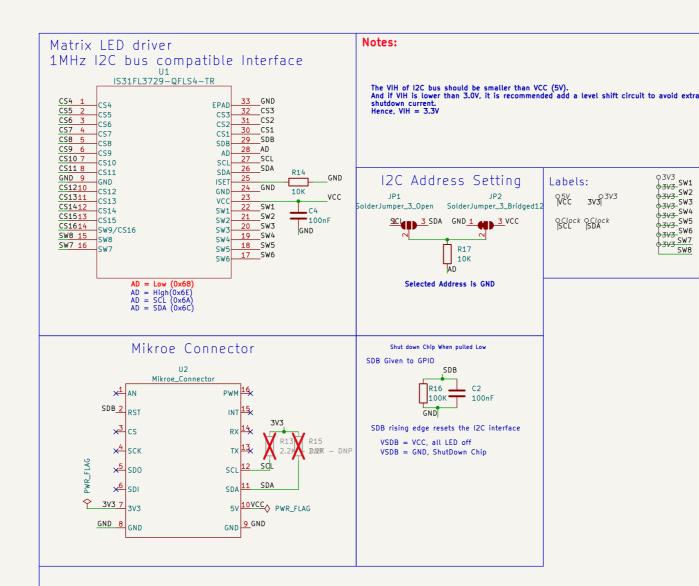SDB rising edge resets the I2C interface

VSDB = VCC, all LED off
VSDB = GND, ShutDown Chip

These optional resistors are for offloading the thermal dissipation (P=I^2*R) away from the IS31FL3729.
For red LED, it is recommended to use about 300hm more than blue/green LED, to offload more extra voltage due to lower forward voltage of red LED.

For Blue/Green it is 20ohm, and for White LED (Since forward voltage and current values are nearby to Blue and Green LED) = 20ohm