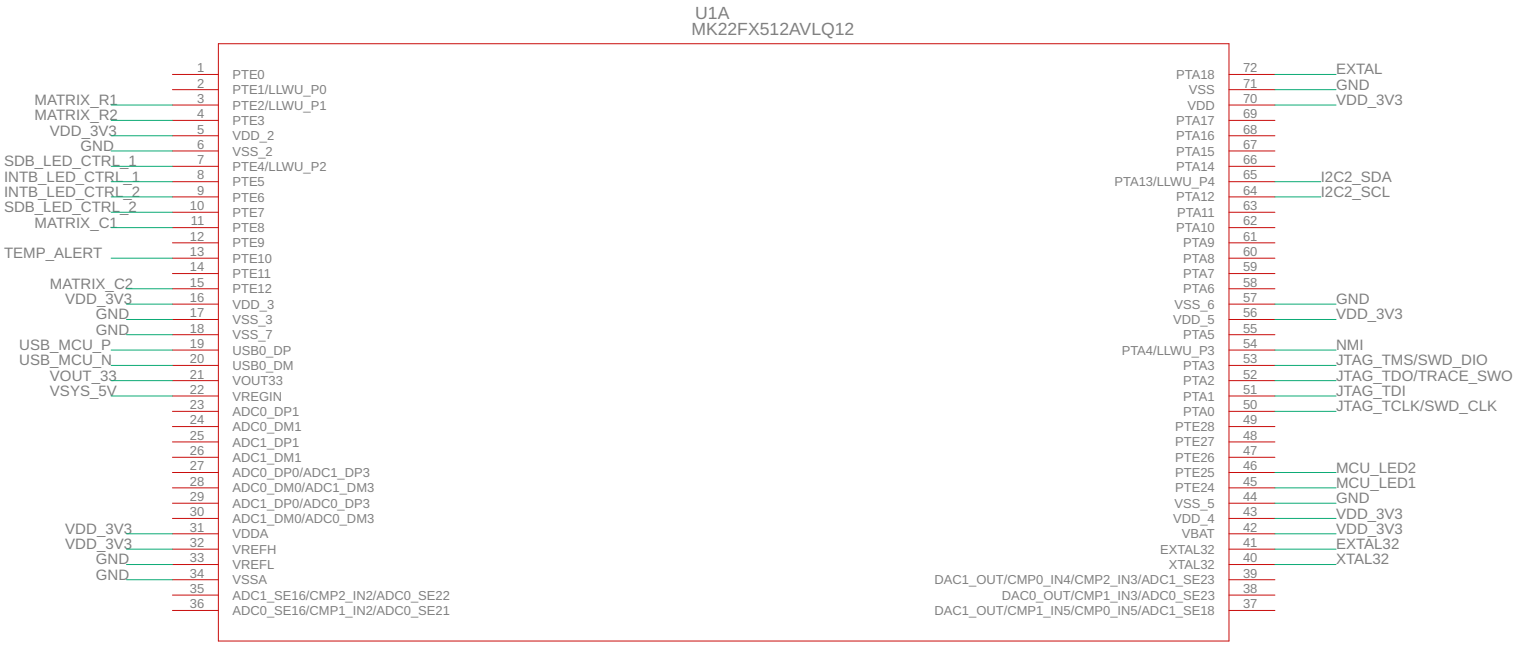
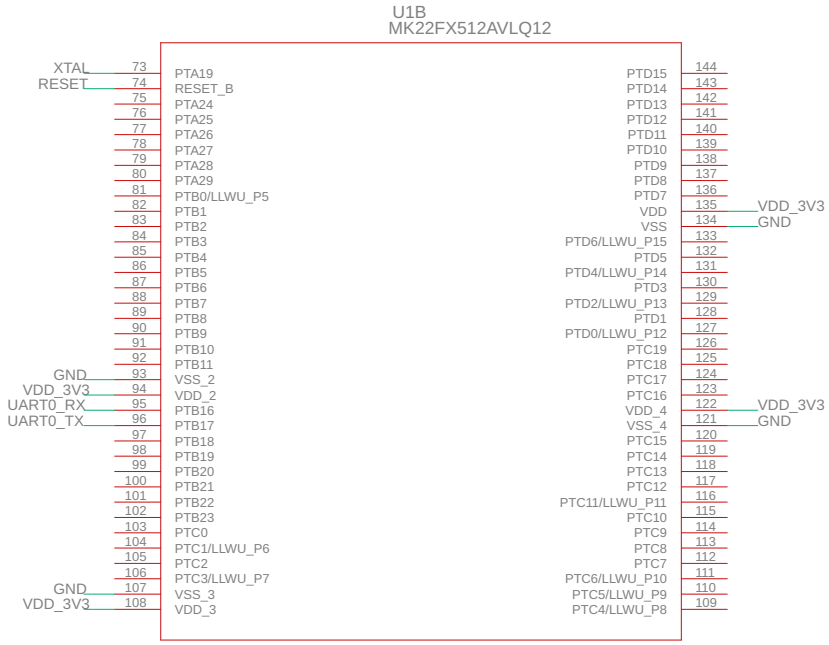
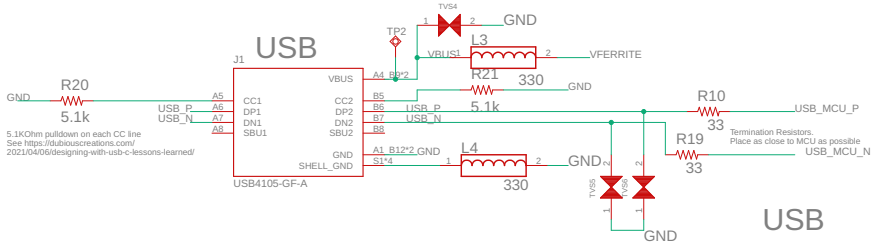
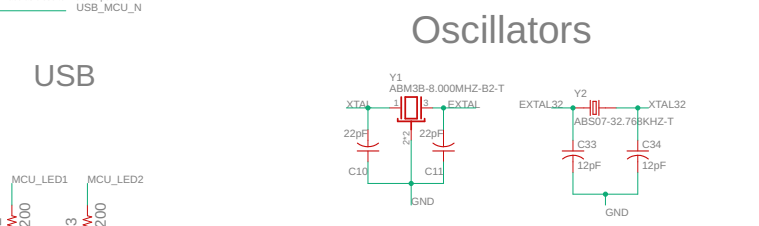

U1A
MK22FX512AVLQ12
1 PTE0
2 PTE1/LLWU_P0
MATRIX_R1 3 PTE2/LLWU_P1
MATRIX_R2 4 PTE3
VDD_3V3 5 VDD_2
GND 6 VSS_2
SDB_LED_CTRL_1 7 PTE4/LLWU_P2
INTB_LED_CTRL_1 8 PTE5
INTB_LED_CTRL_2 9 PTE6
SDB_LED_CTRL_2 10 PTE7
MATRIX_C1 11 PTE8
12 PTE9
TEMP_ALERT 13 PTE10
14 PTE11
MATRIX_C2 15 PTE12
VDD_3V3 16 VDD_3
GND 17 VSS_3
GND 18 VSS_7
USB_MCU_P 19 USB0_DP
USB_MCU_N 20 USB0_DM
VOUT_33 21 VOUT33
VSYS_5V 22 VREGIN
23 ADC0_DP1
24 ADC0_DM1
25 ADC1_DP1
26 ADC1_DM1
27 ADC0_DP0/ADC1_DP3
28 ADC0_DM0/ADC1_DM3
29 ADC1_DP0/ADC0_DP3
30 ADC1_DM0/ADC0_DM3
VDD_3V3 31 VDDA
VDD_3V3 32 VREFH
GND 33 VREFL
GND 34 VSSA
35 ADC1_SE16/CMP2_IN2/ADC0_SE22
36 ADC0_SE16/CMP1_IN2/ADC0_SE21
PTA18 72 EXTAL
VSS 71 GND
VDD 70 VDD_3V3
PTA17 69
PTA16 68
PTA15 67
PTA14 66
PTA13/LLWU_P4 65 I2C2_SDA
PTA12 64 I2C2_SCL
PTA11 63
PTA10 62
PTA9 61
PTA8 60
PTA7 59
PTA6 58
VSS_6 57 GND
VDD_5 56 VDD_3V3
PTA5 55
PTA4/LLWU_P3 54 NMI
PTA3 53 JTAG_TMS/SWD_DIO
PTA2 52 JTAG_TDO/TRACE_SWO
PTA1 51 JTAG_TDI
PTA0 50 JTAG_TCLK/SWD_CLK
PTE28 49
PTE27 48
PTE26 47
PTE25 46 MCU_LED2
PTE24 45 MCU_LED1
VSS_5 44 GND
VDD_4 43 VDD_3V3
VBAT 42 VDD_3V3
EXTAL32 41 EXTAL32
XTAL32 40 XTAL32
39
38
DAC1_OUT/CMP0_IN4/CMP2_IN3/ADC1_SE23 37
DAC0_OUT/CMP1_IN3/ADC0_SE23
DAC1_OUT/CMP1_IN5/CMP0_IN5/ADC1_SE18

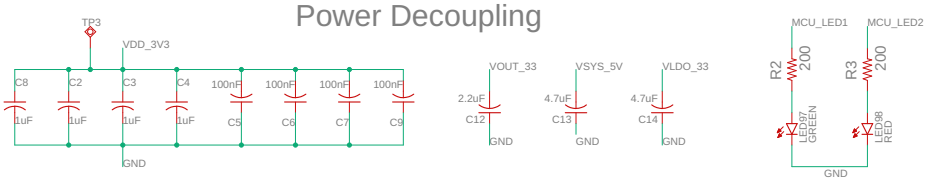

U1B
MK22FX512AVLQ12
XTAL 73 PTA19
RESET 74 RESET_B
75 PTA24
76 PTA25
77 PTA26
78 PTA27
79 PTA28
80 PTA29
81 PTB0/LLWU_P5
82 PTB1
83 PTB2
84 PTB3
85 PTB4
86 PTB5
87 PTB6
88 PTB7
89 PTB8
90 PTB9
91 PTB10
92 PTB11
GND 93 VSS_2
VDD_3V3 94 VDD_2
UART0_RX 95 PTB16
UART0_TX 96 PTB17
97 PTB18
98 PTB19
99 PTB20
100 PTB21
101 PTB22
102 PTB23
103 PTC0
104 PTC1/LLWU_P6
105 PTC2
106 PTC3/LLWU_P7
GND 107 VSS_3
VDD_3V3 108 VDD_3
PTD15 144
PTD14 143
PTD13 142
PTD12 141
PTD11 140
PTD10 139
PTD9 138
PTD8 137
PTD7 136
VDD 135 VDD_3V3
VSS 134 GND
PTD6/LLWU_P15 133
PTD5 132
PTD4/LLWU_P14 131
PTD3 130
PTD2/LLWU_P13 129
PTD1 128
PTD0/LLWU_P12 127
PTC19 126
PTC18 125
PTC17 124
PTC16 123
VDD_4 122 VDD_3V3
VSS_4 121 GND
PTC15 120
PTC14 119
PTC13 118
PTC12 117
PTC11/LLWU_P11 116
PTC10 115
PTC9 114
PTC8 113
PTC7 112
PTC6/LLWU_P10 111
PTC5/LLWU_P9 110
PTC4/LLWU_P8 109

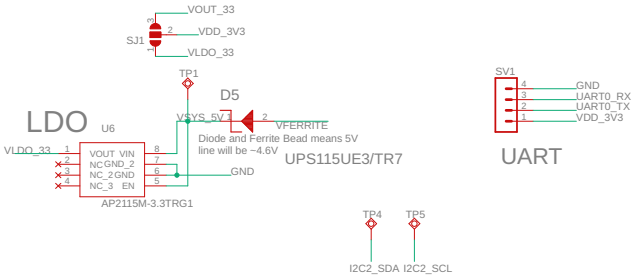
MCU




USB

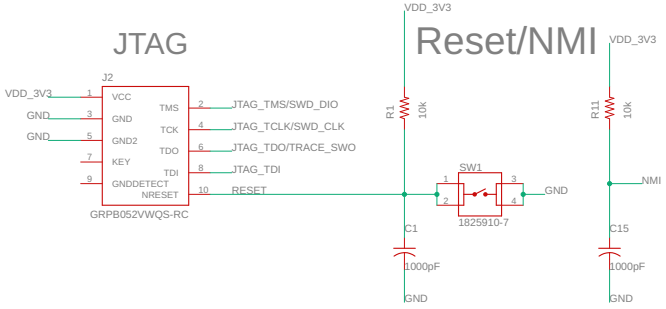




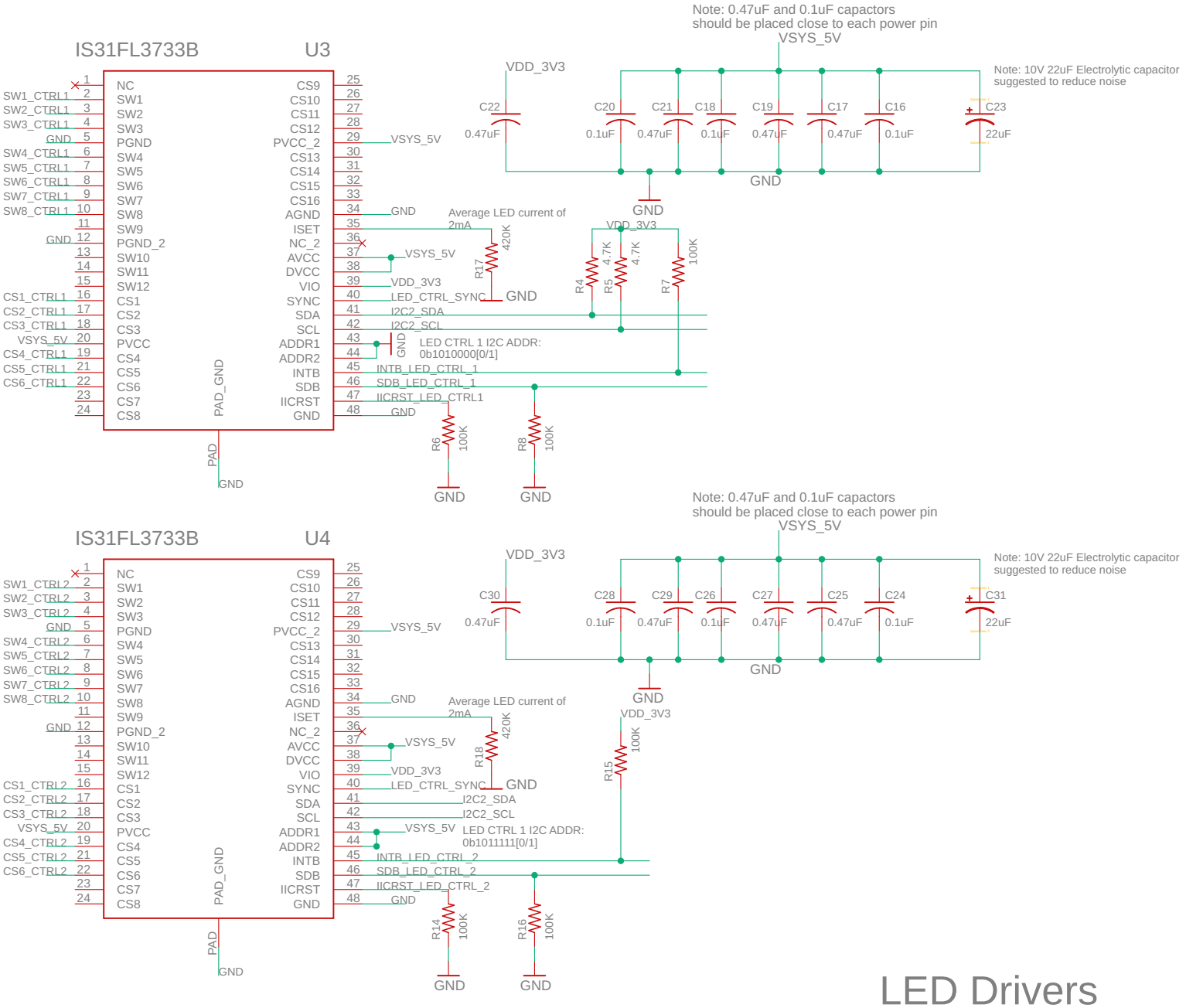





# MCU Support



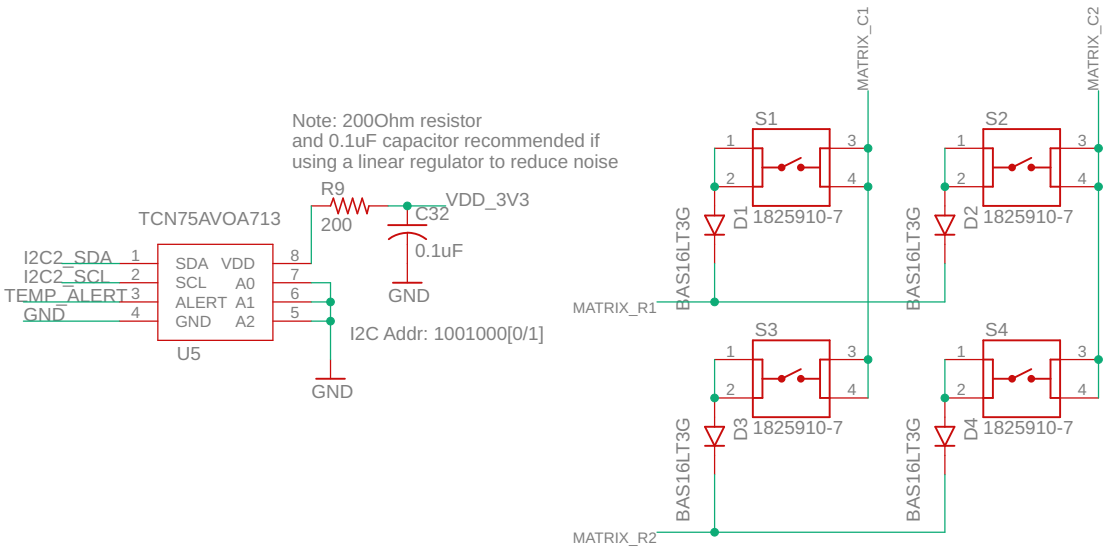

Test Points


IS31FL3733B
U3
Note: 0.47uF and 0.1uF capactors should be placed close to each power pin
VSYS_5V
VDD_3V3
Note: 10V 22uF Electrolytic capacitor suggested to reduce noise
C22 0.47uF
C20 0.1uF
C21 0.47uF
C18 0.1uF
C19 0.47uF
C17 0.47uF
C16 0.1uF
C23 22uF
GND
Average LED current of 2mA
R17 420K
R4 4.7K
R5 4.7K
R7 100K
LED CTRL 1 I2C ADDR: 0b1010000[0/1]
INTB_LED_CTRL_1
SDB_LED_CTRL_1
IICRST_LED_CTRL1
R6 100K
R8 100K
PAD_GND
PAD
SW1_CTRL1
SW2_CTRL1
SW3_CTRL1
SW4_CTRL1
SW5_CTRL1
SW6_CTRL1
SW7_CTRL1
SW8_CTRL1
CS1_CTRL1
CS2_CTRL1
CS3_CTRL1
CS4_CTRL1
CS5_CTRL1
CS6_CTRL1
NC
SW1
SW2
SW3
PGND
SW4
SW5
SW6
SW7
SW8
SW9
PGND_2
SW10
SW11
SW12
CS1
CS2
CS3
PVCC
CS4
CS5
CS6
CS7
CS8
CS9
CS10
CS11
CS12
PVCC_2
CS13
CS14
CS15
CS16
AGND
ISET
NC_2
AVCC
DVCC
VIO
SYNC
SDA
SCL
ADDR1
ADDR2
INTB
SDB
IICRST
GND
IS31FL3733B
U4
Note: 0.47uF and 0.1uF capactors should be placed close to each power pin
VSYS_5V
VDD_3V3
Note: 10V 22uF Electrolytic capacitor suggested to reduce noise
C30 0.47uF
C28 0.1uF
C29 0.47uF
C26 0.1uF
C27 0.47uF
C25 0.47uF
C24 0.1uF
C31 22uF
GND
Average LED current of 2mA
R18 420K
R15 100K
LED CTRL 1 I2C ADDR: 0b1011111[0/1]
INTB_LED_CTRL_2
SDB_LED_CTRL_2
IICRST_LED_CTRL_2
R14 100K
R16 100K
PAD_GND
PAD
SW1_CTRL2
SW2_CTRL2
SW3_CTRL2
SW4_CTRL2
SW5_CTRL2
SW6_CTRL2
SW7_CTRL2
SW8_CTRL2
CS1_CTRL2
CS2_CTRL2
CS3_CTRL2
CS4_CTRL2
CS5_CTRL2
CS6_CTRL2
I2C2_SDA
I2C2_SCL

# LED Drivers

CS1_CTRL1
CS2_CTRL1
CS3_CTRL1
CS4_CTRL1
CS5_CTRL1
CS6_CTRL1
SW1_CTRL1
SW2_CTRL1
SW3_CTRL1
SW4_CTRL1
SW5_CTRL1
SW6_CTRL1
SW7_CTRL1
SW8_CTRL1
LED1 LED2 LED3 LED4 LED5 LED6
LED7 LED8 LED9 LED10 LED11 LED12
LED13 LED14 LED15 LED16 LED17 LED18
LED19 LED20 LED21 LED22 LED23 LED24
LED25 LED26 LED27 LED28 LED29 LED30
LED31 LED32 LED33 LED34 LED35 LED36
LED37 LED38 LED39 LED40 LED41 LED42
LED43 LED44 LED45 LED46 LED47 LED48
CS1_CTRL2
CS2_CTRL2
CS3_CTRL2
CS4_CTRL2
CS5_CTRL2
CS6_CTRL2
SW1_CTRL2
SW2_CTRL2
SW3_CTRL2
SW4_CTRL2
SW5_CTRL2
SW6_CTRL2
SW7_CTRL2
SW8_CTRL2
LED49 LED50 LED51 LED52 LED53 LED54
LED55 LED56 LED57 LED58 LED59 LED60
LED61 LED62 LED63 LED64 LED65 LED66
LED67 LED68 LED69 LED70 LED71 LED72
LED73 LED74 LED75 LED76 LED77 LED78
LED79 LED80 LED81 LED82 LED83 LED84
LED85 LED86 LED87 LED88 LED89 LED90
LED91 LED92 LED93 LED94 LED95 LED96

# LED Array


Note: 200Ohm resistor
and 0.1uF capacitor recommended if
using a linear regulator to reduce noise
R9
200
C32
0.1uF
VDD_3V3
GND
TCN75AVOA713
I2C2_SDA
I2C2_SCL
TEMP_ALERT
GND
SDA
SCL
ALERT
GND
VDD
A0
A1
A2
U5
I2C Addr: 1001000[0/1]
GND
MATRIX_C1
MATRIX_C2
S1
S2
S3
S4
D1 1825910-7
D2 1825910-7
D3 1825910-7
D4 1825910-7
BAS16LT3G
MATRIX_R1
MATRIX_R2