MCU

ATMEGA32U4-AU

MUX_OUT_1
MUX_OUT_2
MUX_S0
MUX_S1
MUX_S2
MUX_S3

RESET /RESET PF0(ADC0)
VBUS PF1(ADC1)
PF4(ADC4/TCK)
PF5(ADC5/TMS)
PF6(ADC6/TDO)
PF7(ADC7/TDI)

+5V
VCC
VCC1
UVCC
AVCC
AVCC1

PE2(HWB)
PE6(INT.6/AIN0)
10k R21
S66
BOOT_LED

D- PC6(OC3A/OC4A)
D+ PC7(ICP3/CLKO/OC4A)

C1 0.01u PB7(OC0A/OC1C/RTS)
UCAP PB6(OC1B/OC4B/ADC13)
GND PB5(OC1A/ADC12/OC4B)
AREF PB4(ADC11)
AREF PB3(PDO/MISO)
PB2(PDI/MOSI)
C4 22p PB1(SCK)
Y1 PB0(SS)
16MHz
C5 22p XTAL1
XTAL2

PD7(OC4D/ADC10/T0)
PD6(T1/ADC9/OC4D)
PD5(XCK/CTS)
PD4(ICP1/ADC8)
PD3(INT3/TXD1)
PD2(INT2/RXD1)
PD1(INT1/SDA)
PD0(INT0/OC0B/SCL)

LR_5
LR_4
LR_1
LR_6
LR_3
DEC_LM_A0/SCK
DEC_LM_A1/MOSI
DEC_LM_A2/MISO
LR_2
SR_OUT
TX
RX
SR_LATCH
SR_CLOCK

UGND
GND
GND1
GND2
GND3
U1

VCC C8 0.1u
VCC1 C12 0.1u
UVCC C13 0.1u
AVCC C14 0.1u
AVCC1 C12 0.1u

10k R31
RESET S65
BOOT_LED 220 R24 BOOT_LED

USB

RX TX
D+ 22 JP1
R22
D- 22 R7
USB-B

I/O2 I/O1
VCC GND
PRTR5V0U2X

R23 220
POWER_LED

POWER

ANALOG

MCP1825-3.3V
+5V IN OU AREF
GND
C22 4.7u C3 4.7u

LEDs

LP2985IM5-4.0
+5V VIN VOUT LEDS_VCC
ON/OFF
BP
GND
C6 4.7u C15 10u C16 4.7u

COMPONENTS

ANALOG

GND U2
4067D
INH
A
B
C
D
MUX_OUT_1 X
X0 A_IN_1
X1 A_IN_2
X2 A_IN_3
X3 A_IN_4
X4 A_IN_5
X5 A_IN_6
X6 A_IN_7
X7 A_IN_8
X8 A_IN_9
X9 A_IN_10
X10 A_IN_11
X11 A_IN_12
X12 A_IN_13
X13 A_IN_14
X14 A_IN_15
X15 A_IN_16

GND U3
4067D
INH
MUX_OUT_2 X
X0 A_IN_17
X1 A_IN_18
X2 A_IN_19
X3 A_IN_20
X4 A_IN_21
X5 A_IN_22
X6 A_IN_23
X7 A_IN_24
X8 A_IN_25
X9 A_IN_26
X10 A_IN_27
X11 A_IN_28
X12 A_IN_29
X13 A_IN_30
X14 A_IN_31
X15 A_IN_32

U2 POWER
VDD U2P VSS
C21 0.1u
AREF GND

U3 POWER
VDD U3P VSS
C22 0.1u
AREF GND

BUTTON MATRIX

BC_1 ... BC_8
D1 S1 ... D8 S8 BR_1
D9 S9 ... D16 S16 BR_2
D17 S17 ... D24 S24 BR_3
D25 S25 ... D32 S32 BR_4
D33 S33 ... D40 S40 BR_5
D41 S41 ... D48 S48 BR_6
D49 S49 ... D56 S56 BR_7
D57 S57 ... D64 S64 BR_8

LED MATRIX

LEDS_VCC
LR_1 Q1 L01 L02 L03 L04 L05 L06 L07 L08
LR_2 Q2 L09 L10 L11 L12 L13 L14 L15 L16
LR_3 Q3 L17 L18 L19 L20 L21 L22 L23 L24
LR_4 Q4 L25 L26 L27 L28 L29 L30 L31 L32
LR_5 Q5 L33 L34 L35 L36 L37 L38 L39 L40
LR_6 Q6 L41 L42 L43 L44 L45 L46 L47 L48

MULTIPLEXING

LED MATRIX

DEC_LM_A0/SCK U4 U5
DEC_LM_A1/MOSI A Y0 LC_1
DEC_LM_A2/MISO B Y1 LC_2
C Y2 LC_3
+5V G1 Y3 LC_4
G2A Y4 LC_5
G2B Y5 LC_6
74AC11238D Y6 LC_7
Y7 LC_8
ULN2803

U4 POWER
VCC GND
C11 0.1u

C7 0.1u

BUTTON MATRIX

SR_OUT U6
74AC165D
SER QH BR_1
A
B
C
D
E
F
G
H
CLK
INH
SH/LD QH

10k R8 BR_1
10k R9 BR_2
10k R10 BR_3
10k R11 BR_4
10k R12 BR_5
10k R13 BR_6
10k R14 BR_7
10k R15 BR_8

DEC_BM_A0 U7
DEC_BM_A1 74HC138
DEC_BM_A2 A Y0 BC_1
B Y1 BC_2
C Y2 BC_3
+5V G1 Y3 BC_4
G2A Y4 BC_5
G2B Y5 BC_6
Y6 BC_7
Y7 BC_8

U6 POWER
VCC GND
C10 0.1u
SR_LATCH SR_CLOCK

U7 POWER
VCC GND
C9 0.1u

MIDI

MIDI IN
MIDI_IN
MIDI_OUT
NC1
NC2
NC3
R16 220 U8
D65
6N138
4k2 R17
+5V
RX
5k6 R20
GND

MIDI OUT
MIDI_IN
MIDI_OUT
NC1
NC2
NC3
R18 220
+5V
R19 220 TX

ICSP

HEADER_1
+5V DEC_LM_A0/SCK
MISO
DEC_LM_A1/SCK
ICSP
GND RESET

open hardware

TITLE: OpenDeck-r1
Design by: Igor Petrovic
REV: 1
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