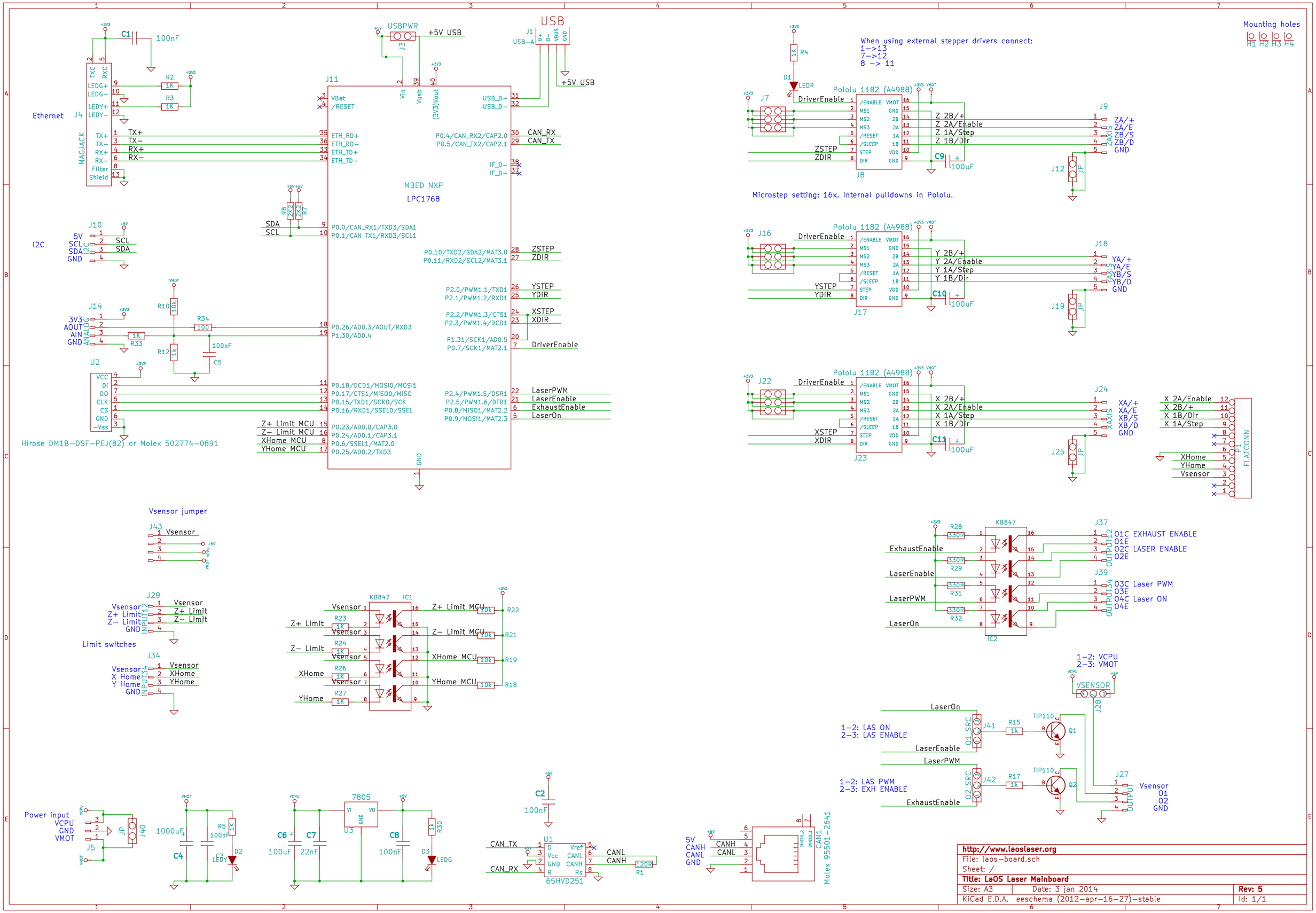
Ethernet
J4
MAGJACK
TX+
TX−
RX+
RX−
Filter
Shield
C1
100nF
R2
1K
R3
1K
USBPWR
J3
+5V USB
USB
J1
USB−A
J11
MBED NXP
LPC1768
VBat
/RESET
Vin
Vusb
(3V3)Vout
USB_D+
USB_D−
ETH_RD+
ETH_RD−
ETH_TD+
ETH_TD−
P0.4/CAN_RX2/CAP2.0
P0.5/CAN_TX2/CAP2.1
CAN_RX
CAN_TX
IF_D−
IF_D+
SDA
SCL
P0.0/CAN_RX1/TXD3/SDA1
P0.1/CAN_TX1/RXD3/SCL1
P0.10/TXD2/SDA2/MAT3.0
P0.11/RXD2/SCL2/MAT3.1
ZSTEP
ZDIR
P2.0/PWM1.1/TXD1
P2.1/PWM1.2/RXD1
YSTEP
YDIR
P2.2/PWM1.3/CTS1
P2.3/PWM1.4/DCD1
XSTEP
XDIR
P1.31/SCK1/AD0.5
P0.7/SCK1/MAT2.1
DriverEnable
P0.26/AD0.3/AOUT/RXD3
P1.30/AD0.4
P0.18/DCD1/MOSI0/MOSI1
P0.17/CTS1/MISO0/MISO
P0.15/TXD1/SCK0/SCK
P0.16/RXD1/SSEL0/SSEL
P2.4/PWM1.5/DSR1
P2.5/PWM1.6/DTR1
P0.8/MISO1/MAT2.2
P0.9/MOSI1/MAT2.3
LaserPWM
LaserEnable
ExhaustEnable
LaserOn
P0.23/AD0.0/CAP3.0
P0.24/AD0.1/CAP3.1
P0.6/SSEL1/MAT2.0
P0.25/AD0.2/TXD3
Z+ Limit MCU
Z− Limit MCU
XHome MCU
YHome MCU
GND
I2C
J10
5V
SCL
SDA
GND
R8
2K2
R7
2K2
J14
3V3
AOUT
AIN
GND
ANALOG
R10
10k
R34
100
R33
1K
R12
1k
C5
100nF
U2
VCC
DI
DO
CLK
CS
GND
−Vss
Hirose DM1B−DSF−PEJ(82) or Molex 502774−0891
R4
1K
D1
LEDR
When using external stepper drivers connect:
1−>13
7−>12
8 −> 11
Mounting holes
H1 H2 H3 H4
J7
Pololu 1182 (A4988)
DriverEnable
/ENABLE
MS1
MS2
MS3
/RESET
/SLEEP
STEP
DIR
VMOT
GND
2B
2A
1A
1B
VDD
Z 2B/+
Z 2A/Enable
Z 1A/Step
Z 1B/Dir
ZSTEP
ZDIR
C9
100uF
J8
J9
ZA/+
ZA/E
ZB/S
ZB/D
GND
ZAXIS
J12
JP
Microstep setting: 16x. Internal pulldowns in Pololu.
J16
J17
Y 2B/+
Y 2A/Enable
Y 1A/Step
Y 1B/Dir
YSTEP
YDIR
C10
100uF
J18
YA/+
YA/E
YB/S
YB/D
YAXIS
J19
J22
J23
X 2B/+
X 2A/Enable
X 1A/Step
X 1B/Dir
XSTEP
XDIR
C11
100uF
J24
XA/+
XA/E
XB/S
XB/D
XAXIS
J25
X 2A/Enable
X 2B/+
X 1B/Dir
X 1A/Step
XHome
YHome
Vsensor
P1
FLATCONN
Vsensor jumper
J43
Vsensor
VCPU
VMOT
J29
Vsensor
Z+ Limit
Z− Limit
GND
INPUT12
Limit switches
J34
X Home
Y Home
INPUT34
KB847
IC1
R23
1K
R24
1K
R26
1K
R27
1K
R22
R21
R19
R18
10k
R28
330R
R29
330R
R31
330R
R32
330R
IC2
J37
O1C EXHAUST ENABLE
O1E
O2C LASER ENABLE
O2E
OUTPUT12
J39
O3C Laser PWM
O3E
O4C Laser ON
O4E
OUTPUT34
1−2: VCPU
2−3: VMOT
VSENSOR
J28
1−2: LAS ON
2−3: LAS ENABLE
1−2: LAS PWM
2−3: EXH ENABLE
O1_SRC
O2_SRC
J41
J42
R15
1k
R17
1k
TIP110
Q1
Q2
J27
Vsensor
O1
O2
GND
OUTPUT
Power input
VCPU
GND
VMOT
J5
J40
1000uF
C4
R5
100nF
C3
1K
LEDY
D2
7805
U3
C6
100uF
C7
22nF
C8
100nF
R30
1K
D3
LEDG
C2
100nF
U1
65HVD251
CAN_TX
CAN_RX
CANL
CANH
R1
120R
5V
CANH
CANL
GND
CAN1
Molex 95501−2641
http://www.laoslaser.org
File: laos−board.sch
Sheet: /
Title: LaOS Laser Mainboard
Size: A3
Date: 3 jan 2014
Rev: 5
KiCad E.D.A. eeschema (2012−apr−16−27)−stable
Id: 1/1