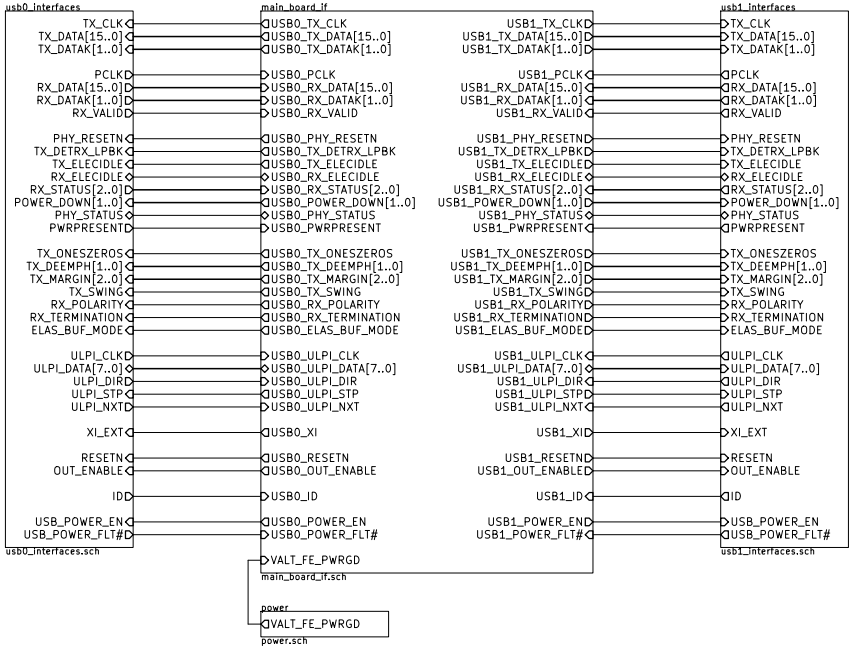


H1 HOLE

H5 HOLE

H7 HOLE

H2 HOLE

H4 HOLE

H6 HOLE

H8 HOLE

usb0_power

usb0_power.sch

usb1_power

usb1_power.sch


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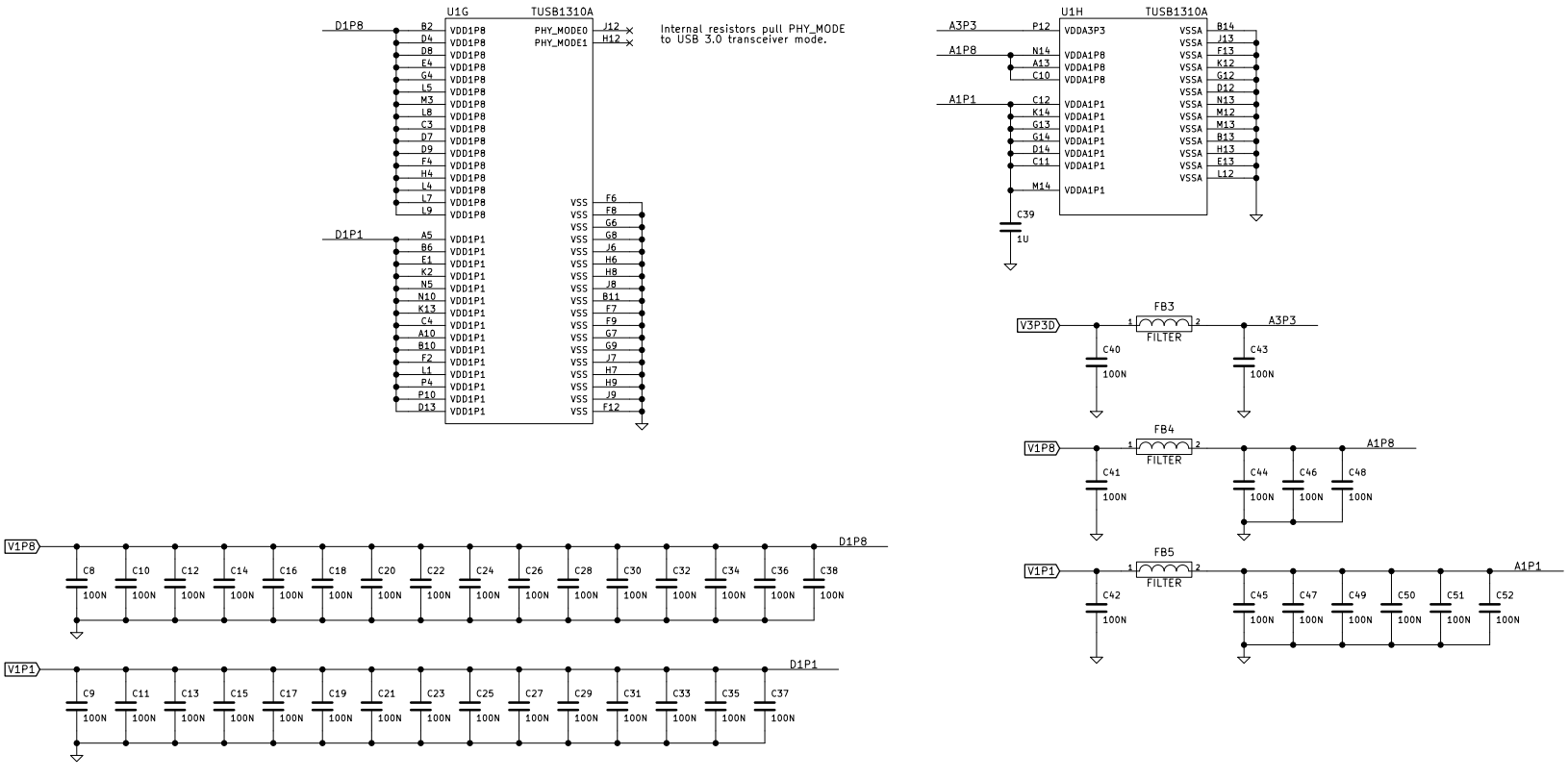
Sheet: /
File: usb.sch

***Title: Daisho Project USB Front-End***

| Size: A3 | Date: 07 Oct 2014 | **Rev: 0** |
|---|---|---|
| KiCad E.D.A. eeschema (2014-03-01 BZR 4730)-product | | Id: 1/7 |



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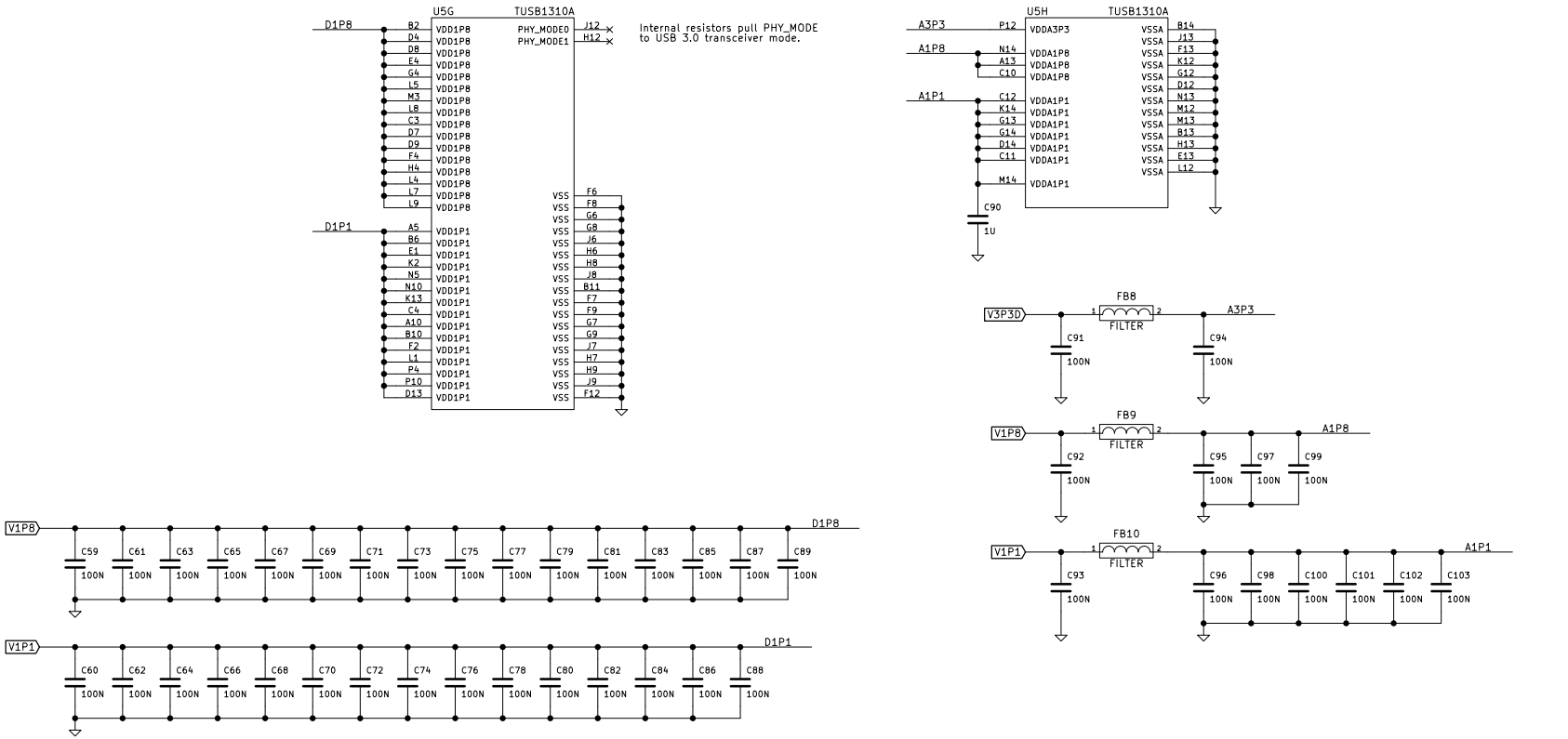
| ***Title: Daisho Project USB Front-End*** | |
| Size: A3 | Date: 07 Oct 2014 |
| KiCad E.D.A. eeschema (2014-03-01 BZR 4730)-product | Id: 2/7 |

**Rev: 0**






Sheet: /usb1_power/
File: usb1_power.sch

***Title: Daisho Project USB Front-End***

| Size: A3 | Date: 07 Oct 2014 | **Rev: 0** |
|---|---|---|
| KiCad E.D.A. eeschema (2014-03-01 BZR 4730)-product | | Id: 3/7 |

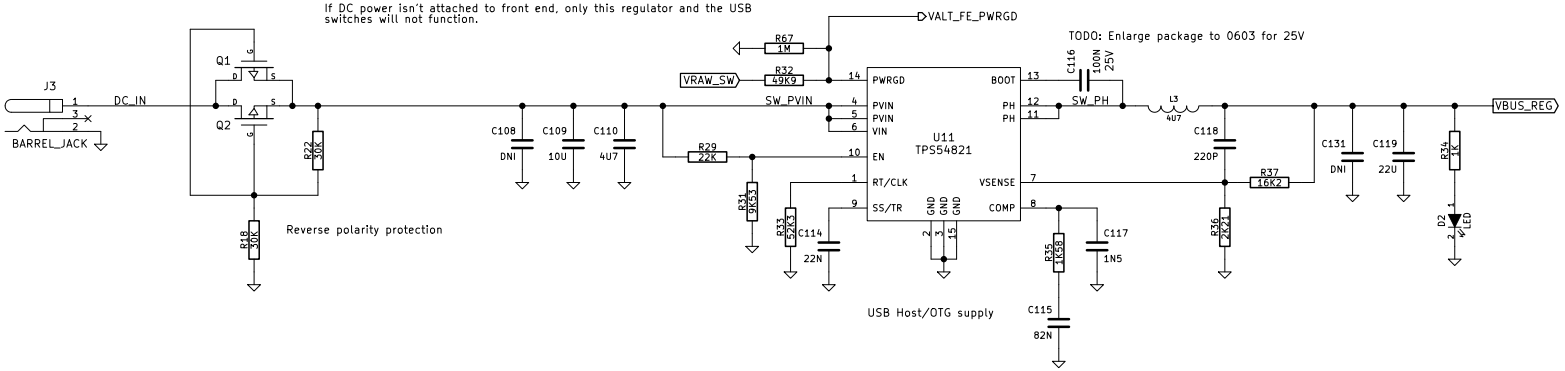
USB regulator accepts DC input from 5.5V to 12.5V.
Efficiency above 0.3A is >95.5% at 5.5V input, >91.5% across all inputs.
Power dissipation is 1.1W, worst case (12.5V in, 4.0A out).
IC dissipation is 0.8W worst case (12.5V in, 4.0A out).

USB regulator is on whenever DC power is attached.

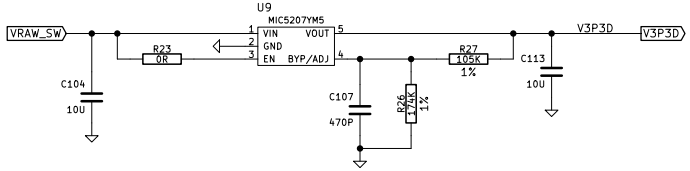
USB power switches must be held off when front end is powered down.

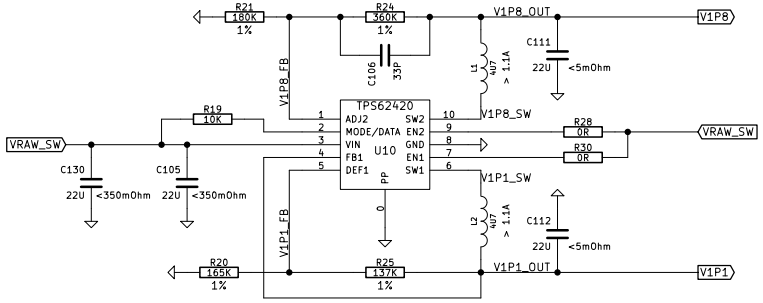
Regulator supplies power to main board (up to 5V@2A), if the main board doesn't have an overriding power source attached.

If DC power isn't attached to front end, only this regulator and the USB switches will not function.




USB 3.0 supply
Requirements:
3.3V output: 8mA (26mW) typical
Input: 8mA typical (36mW at 5V in)




USB 3.0 internal supply
Requirements:
1.8V output: 228mA (410mW) typical
1.1V output: 393mA (432mW) typical
Input: 936mW typical (222mA at 4.2V in, 90% efficiency)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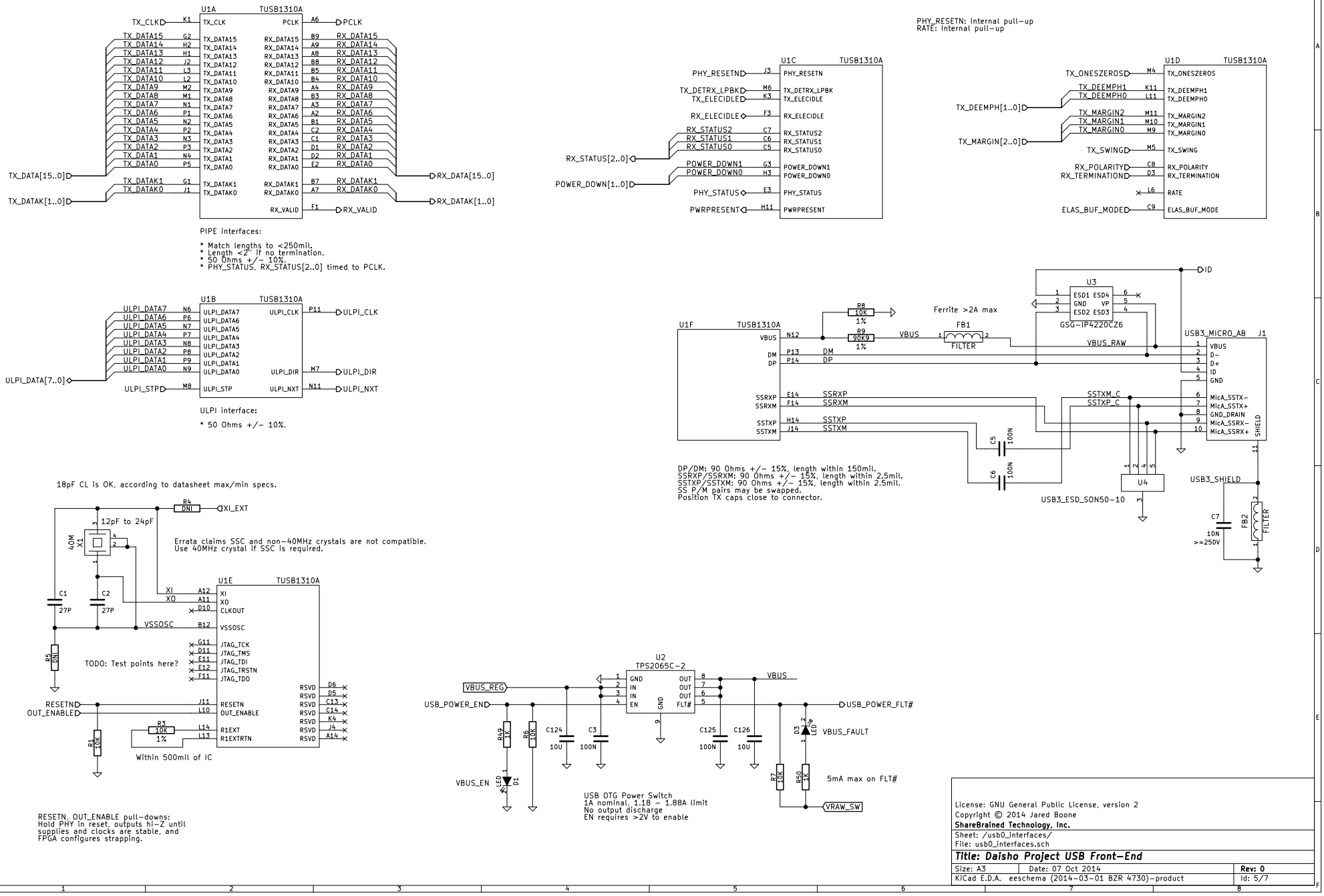
| | | |
|---|---|---|
| Sheet: /power/<br>File: power.sch | | |
| ***Title: Daisho Project USB Front-End*** | | |
| Size: A3 | Date: 07 Oct 2014 | **Rev: 0** |
| KiCad E.D.A. eeschema (2014-03-01 BZR 4730)-product | | Id: 4/7 |





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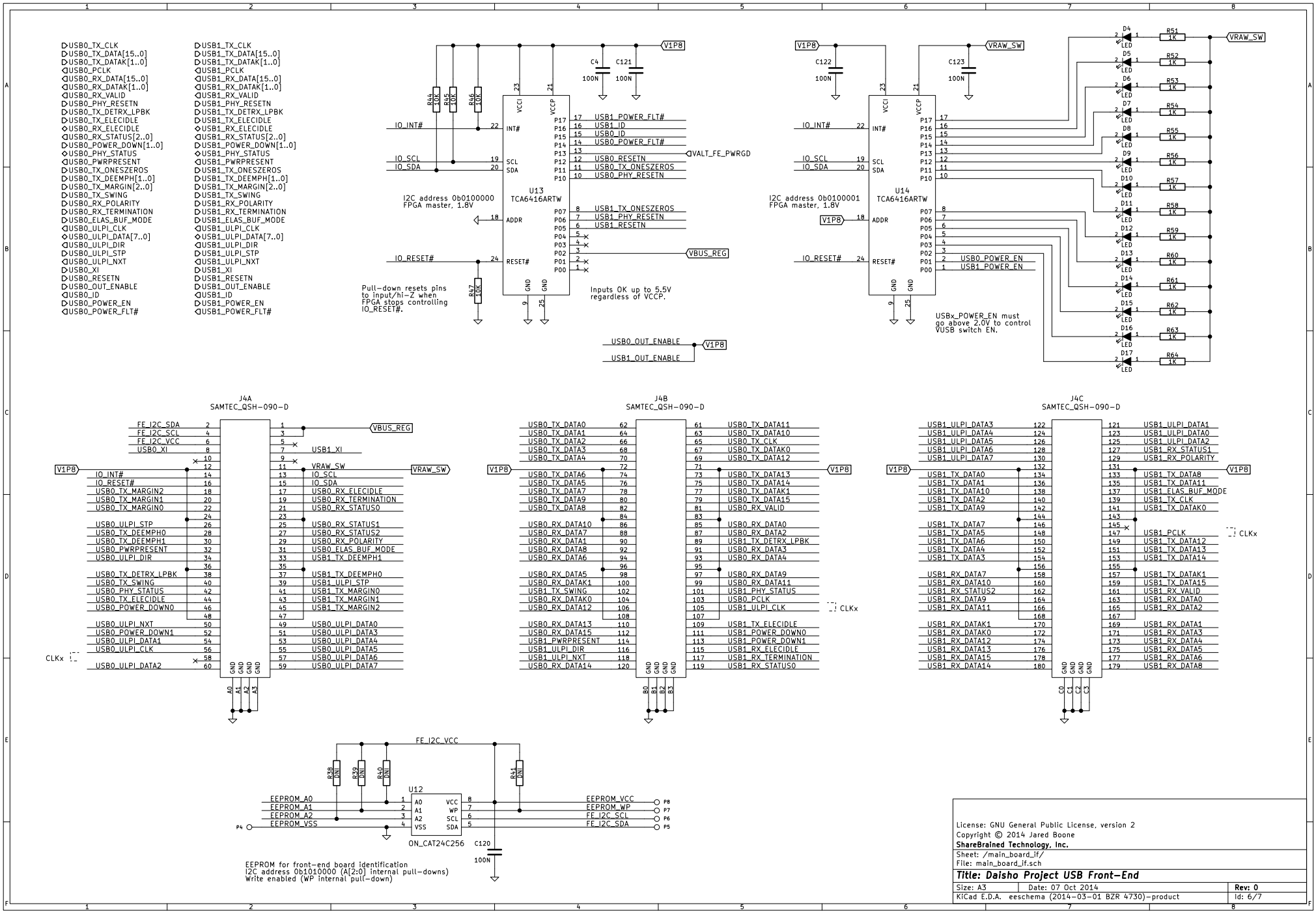
Sheet: /usb0_interfaces/
File: usb0_interfaces.sch

***Title: Daisho Project USB Front-End***

| Size: A3 | Date: 07 Oct 2014 | **Rev: 0** |
|---|---|---|
| KiCad E.D.A. | eeschema (2014-03-01 BZR 4730)-product | Id: 5/7 |


USB0_TX_CLK
USB0_TX_DATA[15..0]
USB0_TX_DATAK[1..0]
USB0_PCLK
USB0_RX_DATA[15..0]
USB0_RX_DATAK[1..0]
USB0_RX_VALID
USB0_PHY_RESETN
USB0_TX_DETRX_LPBK
USB0_TX_ELECIDLE
USB0_RX_ELECIDLE
USB0_RX_STATUS[2..0]
USB0_POWER_DOWN[1..0]
USB0_PHY_STATUS
USB0_PWRPRESENT
USB0_TX_ONESZEROS
USB0_TX_DEEMPH[1..0]
USB0_TX_MARGIN[2..0]
USB0_TX_SWING
USB0_RX_POLARITY
USB0_RX_TERMINATION
USB0_ELAS_BUF_MODE
USB0_ULPI_CLK
USB0_ULPI_DATA[7..0]
USB0_ULPI_DIR
USB0_ULPI_STP
USB0_ULPI_NXT
USB0_XI
USB0_RESETN
USB0_OUT_ENABLE
USB0_ID
USB0_POWER_EN
USB0_POWER_FLT#
USB1_TX_CLK
USB1_TX_DATA[15..0]
USB1_TX_DATAK[1..0]
USB1_PCLK
USB1_RX_DATA[15..0]
USB1_RX_DATAK[1..0]
USB1_RX_VALID
USB1_PHY_RESETN
USB1_TX_DETRX_LPBK
USB1_TX_ELECIDLE
USB1_RX_ELECIDLE
USB1_RX_STATUS[2..0]
USB1_POWER_DOWN[1..0]
USB1_PHY_STATUS
USB1_PWRPRESENT
USB1_TX_ONESZEROS
USB1_TX_DEEMPH[1..0]
USB1_TX_MARGIN[2..0]
USB1_TX_SWING
USB1_RX_POLARITY
USB1_RX_TERMINATION
USB1_ELAS_BUF_MODE
USB1_ULPI_CLK
USB1_ULPI_DATA[7..0]
USB1_ULPI_DIR
USB1_ULPI_STP
USB1_ULPI_NXT
USB1_XI
USB1_RESETN
USB1_OUT_ENABLE
USB1_ID
USB1_POWER_EN
USB1_POWER_FLT#
V1P8
R44 10K
R45 10K
R46 10K
R47 10K
C4 100N
C121 100N
U13
TCA6416ARTW
IO_INT#
IO_SCL
IO_SDA
IO_RESET#
I2C address 0b0100000
FPGA master, 1.8V
Pull-down resets pins to input/hi-Z when FPGA stops controlling IO_RESET#.
Inputs OK up to 5.5V regardless of VCCP.
USB1_POWER_FLT#
USB1_ID
USB0_ID
USB0_POWER_FLT#
VALT_FE_PWRGD
USB0_RESETN
USB0_TX_ONESZEROS
USB0_PHY_RESETN
USB1_TX_ONESZEROS
USB1_PHY_RESETN
USB1_RESETN
VBUS_REG
USB0_OUT_ENABLE
USB1_OUT_ENABLE
C122 100N
C123 100N
U14
I2C address 0b0100001
FPGA master, 1.8V
VRAW_SW
USB0_POWER_EN
USB1_POWER_EN
USBx_POWER_EN must go above 2.0V to control VUSB switch EN.
D4 LED
D5 LED
D6 LED
D7 LED
D8 LED
D9 LED
D10 LED
D11 LED
D12 LED
D13 LED
D14 LED
D15 LED
D16 LED
D17 LED
R51 1K
R52 1K
R53 1K
R54 1K
R55 1K
R56 1K
R57 1K
R58 1K
R59 1K
R60 1K
R61 1K
R62 1K
R63 1K
R64 1K
J4A
SAMTEC_QSH-090-D
FE_I2C_SDA
FE_I2C_SCL
FE_I2C_VCC
USB0_XI
USB1_XI
VRAW_SW
USB0_TX_MARGIN2
USB0_TX_MARGIN1
USB0_TX_MARGIN0
USB0_ULPI_STP
USB0_TX_DEEMPH0
USB0_TX_DEEMPH1
USB0_PWRPRESENT
USB0_ULPI_DIR
USB0_TX_DETRX_LPBK
USB0_TX_SWING
USB0_PHY_STATUS
USB0_TX_ELECIDLE
USB0_POWER_DOWN0
USB0_ULPI_NXT
USB0_POWER_DOWN1
USB0_ULPI_DATA1
USB0_ULPI_CLK
USB0_ULPI_DATA2
USB0_RX_ELECIDLE
USB0_RX_TERMINATION
USB0_RX_STATUS0
USB0_RX_STATUS1
USB0_RX_STATUS2
USB0_RX_POLARITY
USB0_ELAS_BUF_MODE
USB0_ULPI_DIR
USB1_TX_DEEMPH0
USB1_ULPI_STP
USB1_TX_MARGIN0
USB1_TX_MARGIN1
USB1_TX_MARGIN2
USB0_ULPI_DATA0
USB0_ULPI_DATA3
USB0_ULPI_DATA4
USB0_ULPI_DATA5
USB0_ULPI_DATA6
USB0_ULPI_DATA7
CLKx
J4B
SAMTEC_QSH-090-D
USB0_TX_DATA0
USB0_TX_DATA1
USB0_TX_DATA2
USB0_TX_DATA3
USB0_TX_DATA4
USB0_TX_DATA6
USB0_TX_DATA5
USB0_TX_DATA7
USB0_TX_DATA9
USB0_TX_DATA8
USB0_RX_DATA10
USB0_RX_DATA7
USB0_RX_DATA1
USB0_RX_DATA8
USB0_RX_DATA6
USB0_RX_DATA5
USB0_RX_DATAK1
USB1_TX_SWING
USB0_RX_DATAK0
USB0_RX_DATA12
USB0_RX_DATA13
USB0_RX_DATA15
USB1_PWRPRESENT
USB1_ULPI_DIR
USB1_ULPI_NXT
USB0_RX_DATA14
USB0_TX_DATA11
USB0_TX_DATA10
USB0_TX_CLK
USB0_TX_DATAK0
USB0_TX_DATA12
USB0_TX_DATA13
USB0_TX_DATA14
USB0_TX_DATAK1
USB0_TX_DATA15
USB0_RX_VALID
USB0_RX_DATA0
USB0_RX_DATA2
USB1_TX_DETRX_LPBK
USB0_RX_DATA3
USB0_RX_DATA4
USB0_RX_DATA9
USB0_RX_DATA11
USB1_PHY_STATUS
USB0_PCLK
USB1_ULPI_CLK
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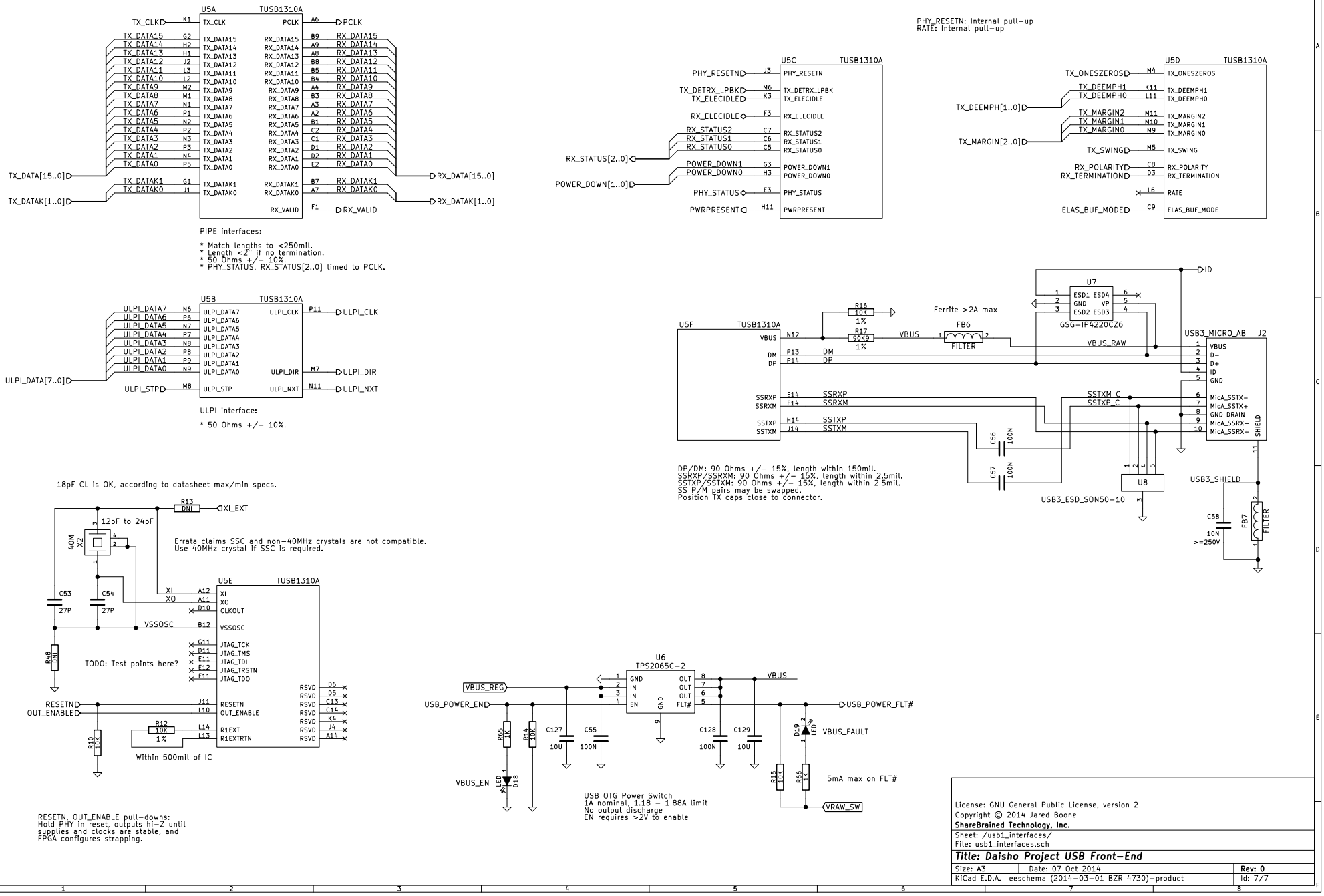
USB1_POWER_DOWN1
USB1_RX_ELECIDLE
USB1_RX_TERMINATION
USB1_RX_STATUS0
J4C
SAMTEC_QSH-090-D
USB1_ULPI_DATA3
USB1_ULPI_DATA4
USB1_ULPI_DATA5
USB1_ULPI_DATA6
USB1_ULPI_DATA7
USB1_TX_DATA0
USB1_TX_DATA1
USB1_TX_DATA10
USB1_TX_DATA2
USB1_TX_DATA9
USB1_TX_DATA7
USB1_TX_DATA5
USB1_TX_DATA6
USB1_TX_DATA4
USB1_TX_DATA3
USB1_RX_DATA7
USB1_RX_DATA10
USB1_RX_STATUS2
USB1_RX_DATA9
USB1_RX_DATA11
USB1_RX_DATAK1
USB1_RX_DATAK0
USB1_RX_DATA12
USB1_RX_DATA13
USB1_RX_DATA15
USB1_RX_DATA14
USB1_ULPI_DATA1
USB1_ULPI_DATA0
USB1_ULPI_DATA2
USB1_RX_STATUS1
USB1_RX_POLARITY
USB1_TX_DATA8
USB1_TX_DATA11
USB1_ELAS_BUF_MODE
USB1_TX_CLK
USB1_TX_DATAK0
USB1_PCLK
USB1_TX_DATA12
USB1_TX_DATA13
USB1_TX_DATA14
USB1_TX_DATAK1
USB1_TX_DATA15
USB1_RX_VALID
USB1_RX_DATA0
USB1_RX_DATA2
USB1_RX_DATA1
USB1_RX_DATA3
USB1_RX_DATA4
USB1_RX_DATA5
USB1_RX_DATA6
USB1_RX_DATA8
R38 DN
R39 DN
R40 DN
R41 DN
U12
ON_CAT24C256
C120 100N
EEPROM_A0
EEPROM_A1
EEPROM_A2
EEPROM_VSS
EEPROM_VCC
EEPROM_WP
FE_I2C_SCL
FE_I2C_SDA
EEPROM for front-end board identification
I2C address 0b1010000 (A2:0 internal pull-downs)
Write enabled (WP internal pull-down)
License: GNU General Public License, version 2
Copyright © 2014 Jared Boone
ShareBrained Technology, Inc.
Sheet: /main_board_lf/
File: main_board_lf.sch
Title: Daisho Project USB Front-End
Size: A3
Date: 07 Oct 2014
Rev: 0
KiCad E.D.A. eeschema (2014-03-01 BZR 4730)-product
Id: 6/7



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| Sheet: /usb1_interfaces/ | |
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| | Id: 7/7 |