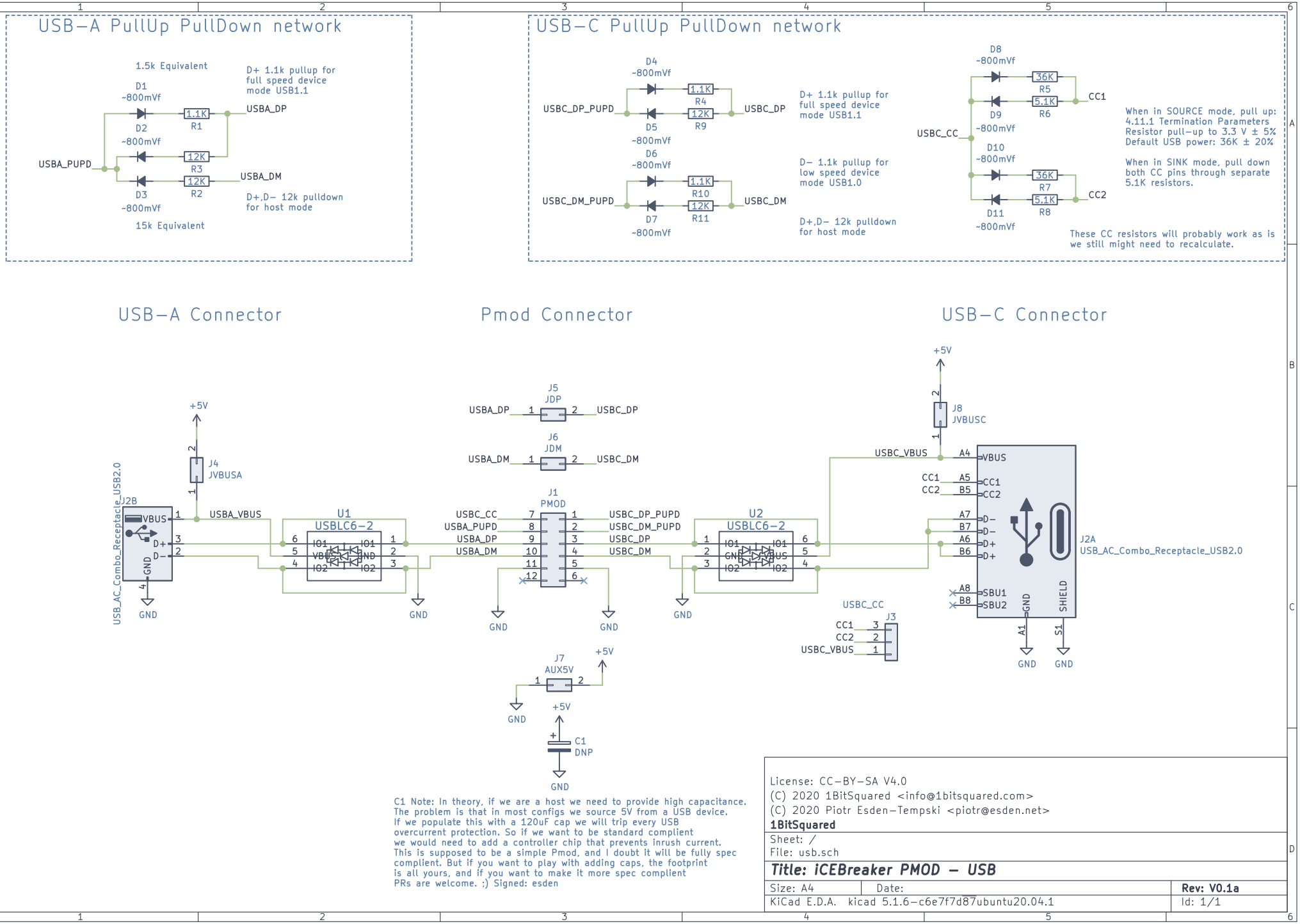
USB–A PullUp PullDown network
1.5k Equivalent
D1
~800mVf
D2
~800mVf
D3
~800mVf
15k Equivalent
1.1K
R1
12K
R3
12K
R2
USBA_DP
USBA_PUPD
USBA_DM
D+ 1.1k pullup for full speed device mode USB1.1
D+,D– 12k pulldown for host mode
USB–C PullUp PullDown network
D4
~800mVf
D5
~800mVf
D6
~800mVf
D7
~800mVf
1.1K
R4
12K
R9
1.1K
R10
12K
R11
USBC_DP_PUPD
USBC_DM_PUPD
USBC_DP
USBC_DM
D+ 1.1k pullup for full speed device mode USB1.1
D– 1.1k pullup for low speed device mode USB1.0
D+,D– 12k pulldown for host mode
D8
~800mVf
D9
~800mVf
D10
~800mVf
D11
~800mVf
36K
R5
5.1K
R6
36K
R7
5.1K
R8
USBC_CC
CC1
CC2
When in SOURCE mode, pull up: 4.11.1 Termination Parameters Resistor pull–up to 3.3 V ± 5% Default USB power: 36K ± 20%
When in SINK mode, pull down both CC pins through separate 5.1K resistors.
These CC resistors will probably work as is we still might need to recalculate.
USB–A Connector
J4
JVBUSA
+5V
J2B
USB_AC_Combo_Receptacle_USB2.0
VBUS
D+
D–
GND
USBA_VBUS
U1
USBLC6–2
IO1
VBUS
GND
IO2
Pmod Connector
J5
JDP
USBA_DP
USBC_DP
J6
JDM
USBA_DM
USBC_DM
J1
PMOD
USBC_CC
USBA_PUPD
USBA_DP
USBA_DM
USBC_DP_PUPD
USBC_DM_PUPD
USBC_DP
USBC_DM
U2
USBLC6–2
USB–C Connector
J8
JVBUSC
+5V
USBC_VBUS
CC1
CC2
A4
A5
B5
A7
B7
A6
B6
A8
B8
VBUS
CC1
CC2
D–
D–
D+
D+
SBU1
SBU2
GND
SHIELD
A1
S1
J2A
USB_AC_Combo_Receptacle_USB2.0
J3
USBC_CC
USBC_VBUS
J7
AUX5V
C1
DNP
C1 Note: In theory, if we are a host we need to provide high capacitance. The problem is that in most configs we source 5V from a USB device. If we populate this with a 120uF cap we will trip every USB overcurrent protection. So if we want to be standard complient we would need to add a controller chip that prevents inrush current. This is supposed to be a simple Pmod, and I doubt it will be fully spec complient. But if you want to play with adding caps, the footprint is all yours, and if you want to make it more spec complient PRs are welcome. :) Signed: esden
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File: usb.sch
Title: iCEBreaker PMOD – USB
Size: A4
Date:
Rev: V0.1a
KiCad E.D.A. kicad 5.1.6–c6e7f7d87ubuntu20.04.1
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