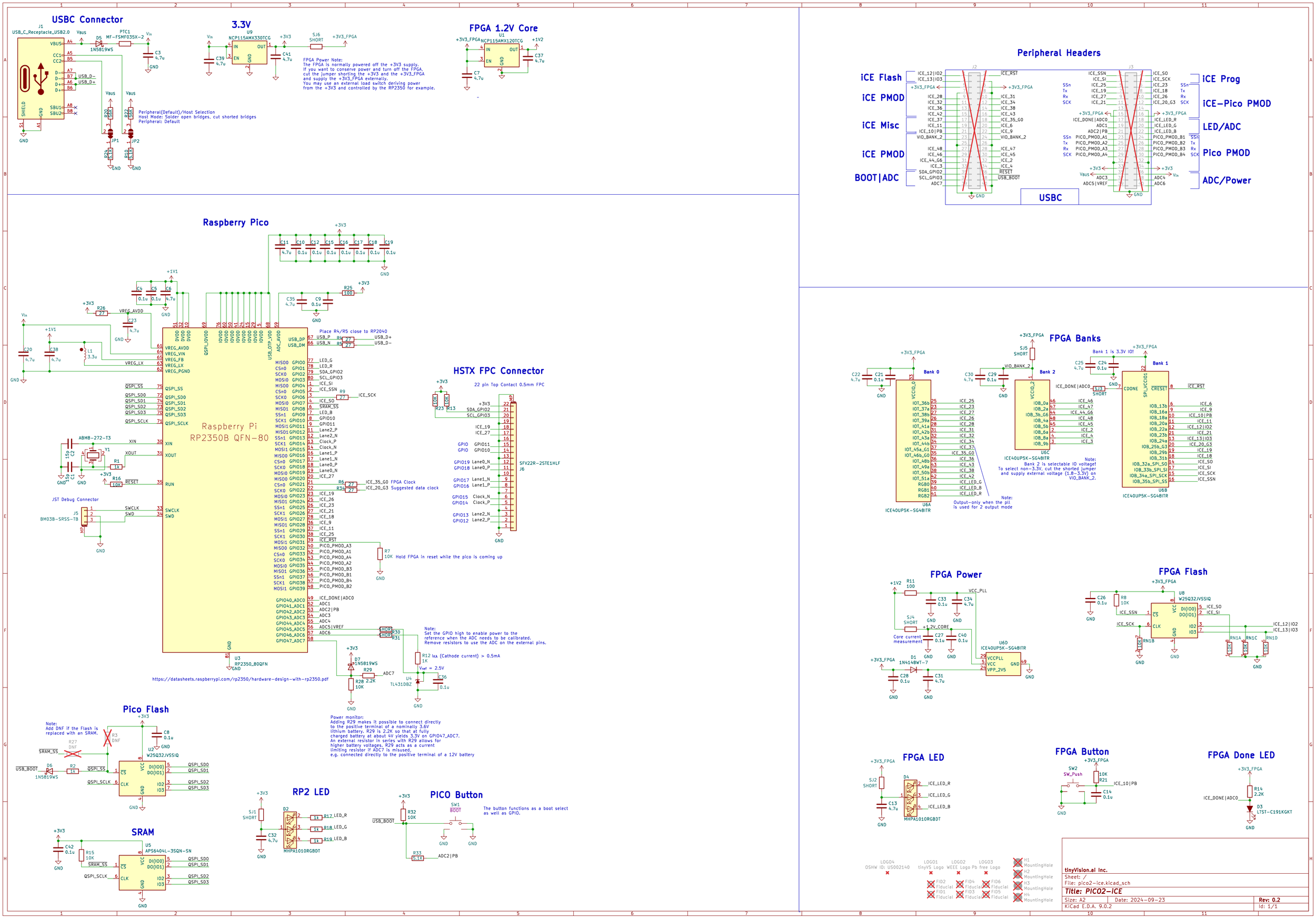
USBC Connector
J1
USB_C_Receptacle_USB2.0
D5
1N5819WS
PTC1
MF-FSMF035X-2
C3
4.7u
Peripheral(Default)/Host Selection
Host Mode: Solder open bridges, cut shorted bridges
Peripheral: Default
3.3V
U9
NCP115AMX330TCG
C39
4.7u
C41
4.7u
SJ6
SHORT
FPGA Power Note:
The FPGA is normally powered off the +3V3 supply.
If you want to conserve power and turn off the FPGA,
cut the jumper shorting the +3V3 and the +3V3_FPGA
and supply the +3V3_FPGA externally.
You may use an external load switch deriving power
from the +3V3 and controlled by the RP2350 for example.
FPGA 1.2V Core
U1
NCP115AMX120TCG
C7
4.7u
C37
4.7u
Peripheral Headers
iCE Flash
iCE PMOD
iCE Misc
iCE PMOD
BOOT|ADC
iCE Prog
iCE-Pico PMOD
LED/ADC
Pico PMOD
ADC/Power
J2
J3
USBC
Raspberry Pico
Raspberry Pi
RP2350B QFN-80
U3
RP2350_80QFN
Place R4/R5 close to RP2040
https://datasheets.raspberrypi.com/rp2350/hardware-design-with-rp2350.pdf
HSTX FPC Connector
22 pin Top Contact 0.5mm FPC
SFV22R-2STE1HLF
J6
FPGA Clock
Suggested data clock
Hold FPGA in reset while the pico is coming up
JST Debug Connector
J5
BM03B-SRSS-TB
Note:
Set the GPIO high to enable power to the
reference when the ADC needs to be calibrated.
Remove resistors to use the ADC on the external pins.
R12 1kΩ (Cathode current) > 0.5mA
Vref = 2.5V
U4
TL431DBZ
D7
1N5819WS
Power monitor:
Adding R29 makes it possible to connect directly
to the positive terminal of a nominally 3.6V
lithium battery. R29 is 2.2K so that at fully
charged battery at about 4V yields 3.3V on GPIO47_ADC7.
An external resistor in series with R29 allows for
higher battery voltages. R29 acts as a current
limiting resistor if ADC7 is misused.
e.g. connected directly to the positive terminal of a 12V battery
Pico Flash
Note:
Add DNF if the Flash is
replaced with an SRAM.
U2
W25Q32JVSSIQ
SRAM
U5
APS6404L-3SQN-SN
RP2 LED
MHPA1010RGBDT
PICO Button
SW1
BOOT
The button functions as a boot select
as well as GPIO.
FPGA Banks
Bank 0
Bank 1
Bank 2
U6A
ICE40UP5K-SG48ITR
U6B
ICE40UP5K-SG48ITR
U6C
ICE40UP5K-SG48ITR
Bank 1 is 3.3V IO!
Note:
Bank 2 is selectable IO voltage!
To select non-3.3V, cut the shorted jumper
and supply external voltage (1.8-3.3V) on
VIO_BANK_2.
Note:
Output-only when the pll
is used for 2 output mode
FPGA Power
U6D
ICE40UP5K-SG48ITR
Core current
measurement
FPGA Flash
U8
W25Q32JVSSIQ
FPGA LED
MHPA1010RGBDT
FPGA Button
FPGA Done LED
LTST-C191KGKT
LOGO04
OSHW ID: US002140
LOGO01
tinyVS Logo
LOGO02
WEEE Logo
LOGO03
Pb free Logo
FID1 Fiducial
FID2 Fiducial
FID3 Fiducial
FID4 Fiducial
FID5 Fiducial
FID6 Fiducial
H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole
tinyVision.ai Inc.
Sheet: /
File: pico2-ice.kicad_sch
Title: PICO2-ICE
Size: A2
Date: 2024-09-23
Rev: 0.2
KiCad E.D.A. 9.0.2
Id: 1/1