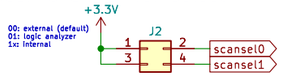
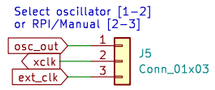
TinyTapeout Motherboard

User Input + Config

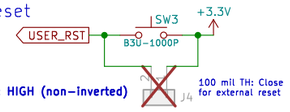
Scan Chain Driver Select



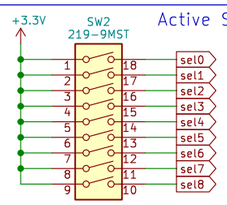
Clock Source



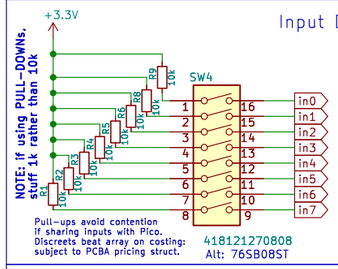
Reset



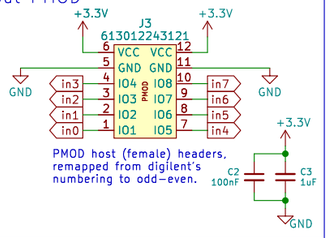
Active Select



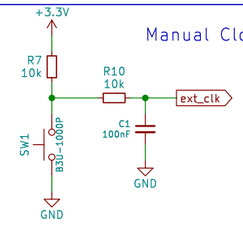
Input DIP



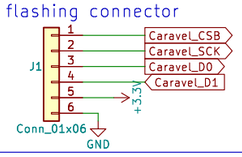
Input PMOD



Manual Clock

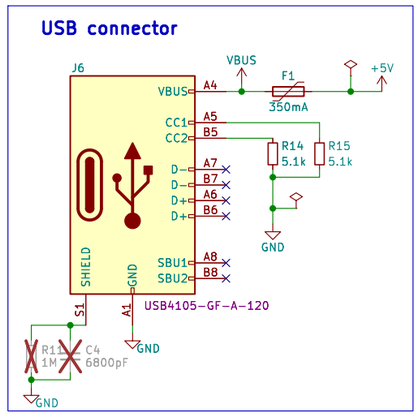


Memory flashing connector

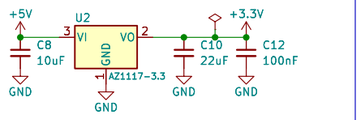


Power

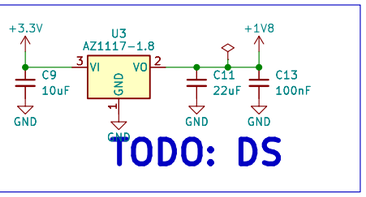
USB connector



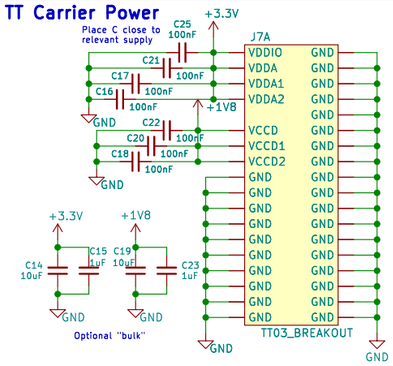
3.3V LDO



1.8V LDO

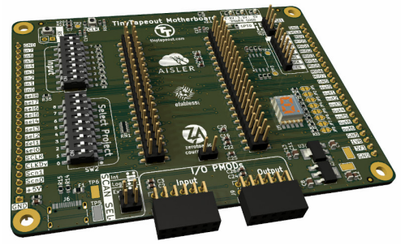


TT Carrier Power



Note: All this decoupling should be amply handled by the carrier. Would rather DNP than regret.

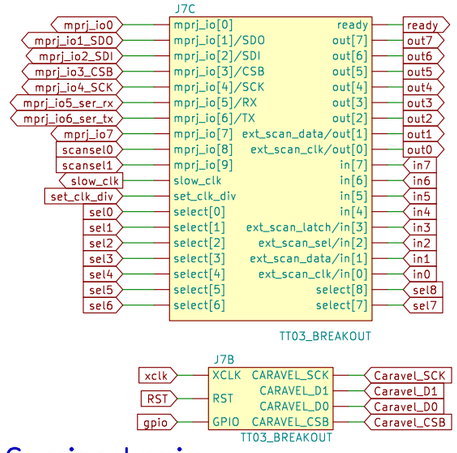
Version 2.1 Preview



Extensive labelling, jumpers to set scan selection and clock source (on–board oscillator or manual/pico), DIP switches for inputs and selection, 7–segment display (remappable with jumpers) on outputs, full access to 8 in and out via PMODs, all pins broken out in breadboardable headers. Optional Raspberry Pi Pico, pads on underside.

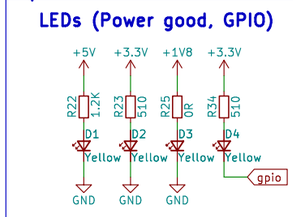
Power via +5V USB, or 5V breakout pin. On–board regulation to 3v3 and 1v8. VDDIO is 3v3, including on PMODs.

TT Carrier Logic

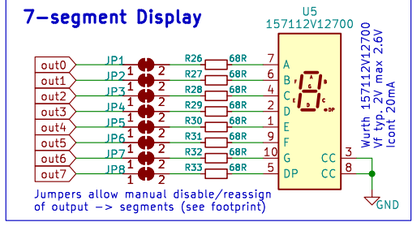


Outputs

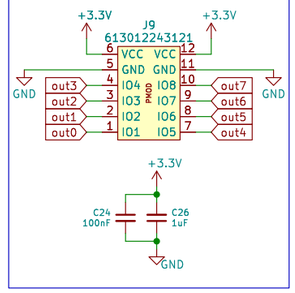
LEDs (Power good, GPIO)



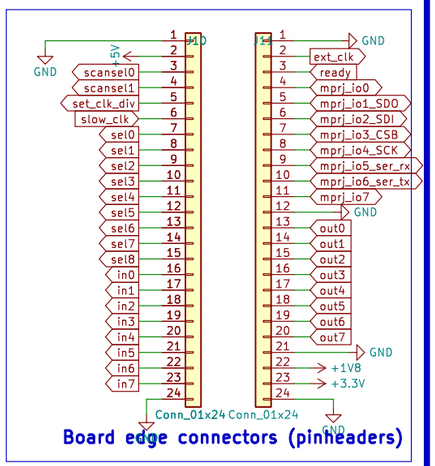
7–segment Display



Output PMOD

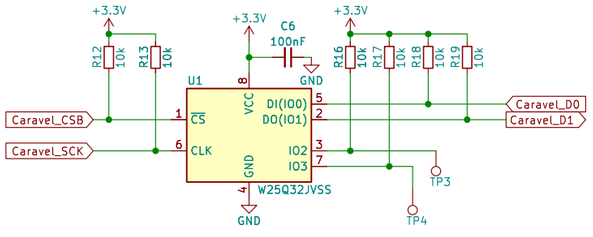


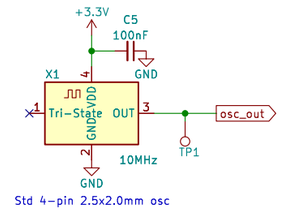
Board edge connectors (pinheaders)



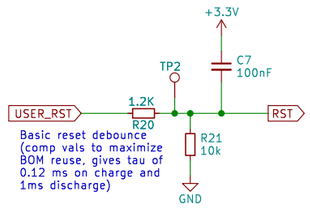
Board edge connectors (pinheaders)

Peripherals



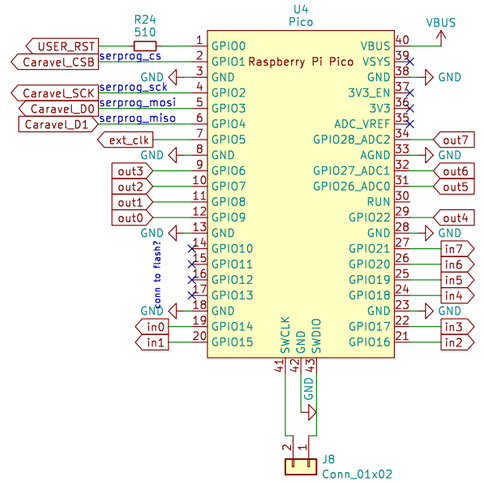


Std 4–pin 2.5x2.0mm osc



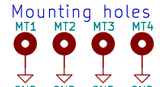
Basic reset debounce (comp vals to maximize BOM reuse, gives tau of 0.12 ms on charge and 1ms discharge)

RPi Pico (optional)



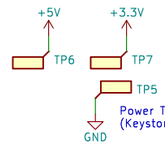
Misc Support

Mounting holes

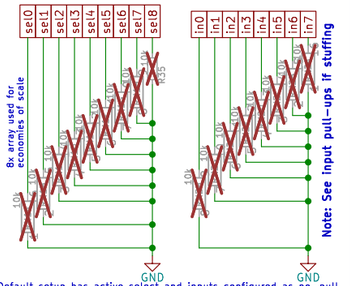


Fiducials

Panel–level fids for prod but included for one–offs and testing.



Pull–downs



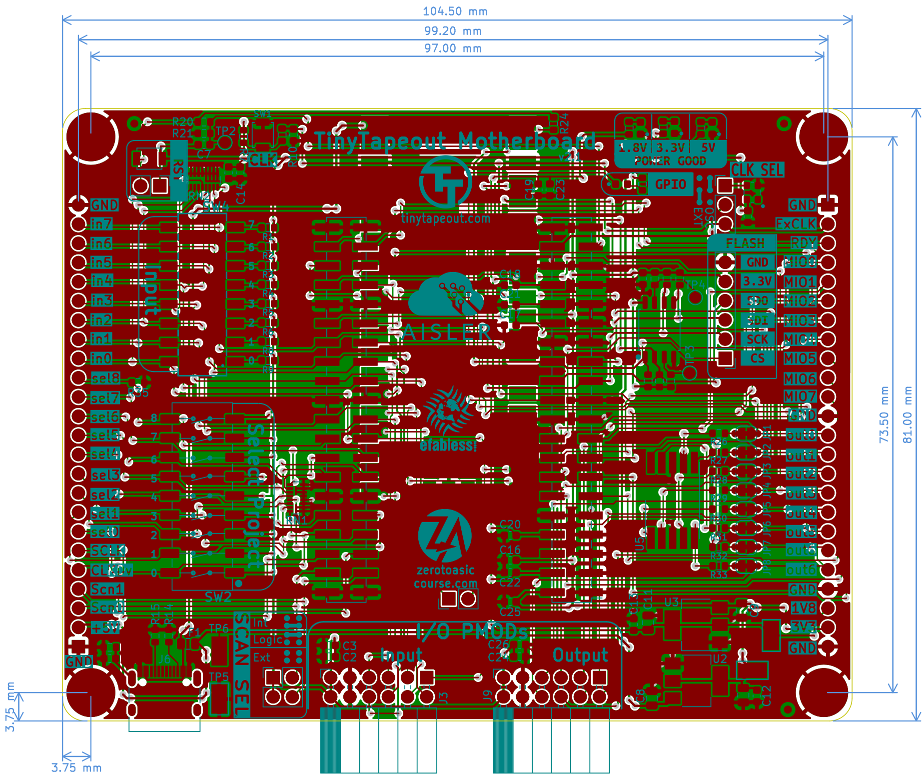
Default setup has active select and inputs configured as no–pull, i.e. floating. Should they remain in this state, pull–downs are required. However, the plan is to have caravel fw configure the I/O appropriately on startup.
Though unlikely to be required, as a safeguard resistor arrays are used here (DNP): a compromise between defensive design and area/BOM cost.

Sheet: /
File: mpw–mb1.kicad_sch

Title: TinyTapeout Motherboard

Size: A3	Date: 2023–07–19	Rev: 2.1
KiCad E.D.A. kicad 7.0.6–7.0.6~ubuntu22.04.1		Id: 1/1

TinyTapeout Motherboard
v2.1
tinytapeout.com
AISLER
efabless
zerotoasic
1.8V 3.3V 5V
POWER GOOD
GPIO
SEL
RST
CLK
Input
Select Project
SW2
RN1
SCAN SEL
Int
Logic
Ext
I/O PMODs
Input
Output
GND
in7
in6
in5
in4
in3
in2
in1
in0
sel8
sel7
sel6
sel5
sel4
sel3
sel2
sel1
sel0
SCLK
CLKDv
Scn1
Scn0
+5V
ExCLK
RDY
MIO0
MIO1
MIO2
MIO3
MIO4
MIO5
MIO6
MIO7
SCK
CS
out0
out1
out2
out3
out4
out5
out6
out6
1V8
3V3



104.50 mm
99.20 mm
97.00 mm
73.50 mm
81.00 mm
3.75 mm
3.75 mm
TinyTapeout Motherboard
tinytapeout.com
AISLER
efabless
zerotoasic
course.com
1.8V
3.3V
5V
POWER GOOD
CLK SEL
GPIO
FLASH
GND
3.3V
SCK
CS
Input
Select Project
SW2
SCAN SEL
Int
Logic
Ext
I/O PMODs
Input
Output
GND
in7
in6
in5
in4
in3
in2
in1
in0
sel8
sel7
sel6
sel5
sel4
sel3
sel2
sel1
sel0
GND
ExCLK
MIO0
MIO1
MIO2
MIO3
MIO4
MIO5
MIO6
MIO7
GND
out0
out1
out2
out3
out4
out5
out6
GND
1V8