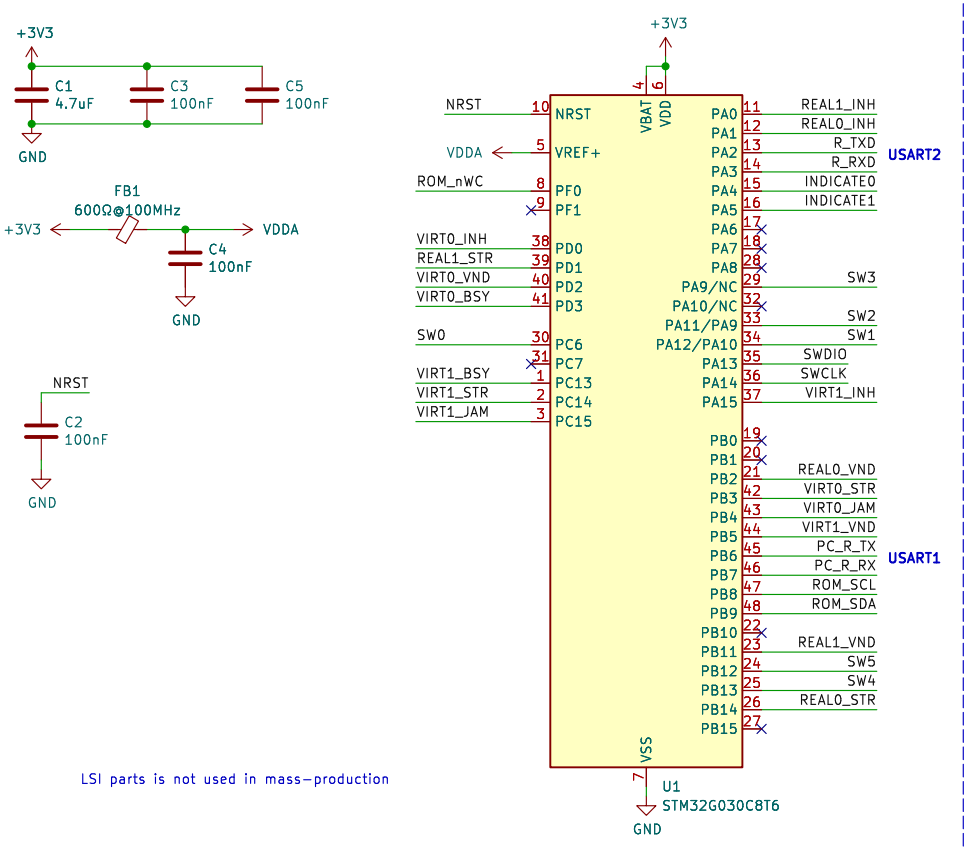
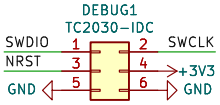
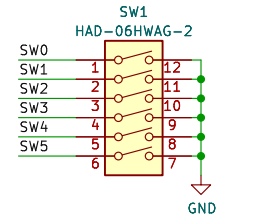
MCU (STM32G030)

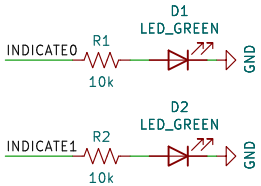


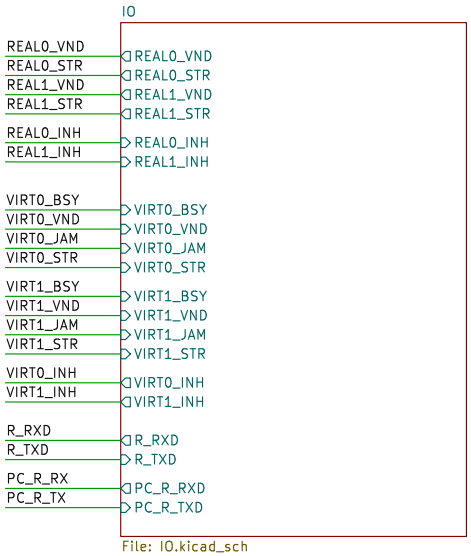
STM32 DEBUG(POGO)



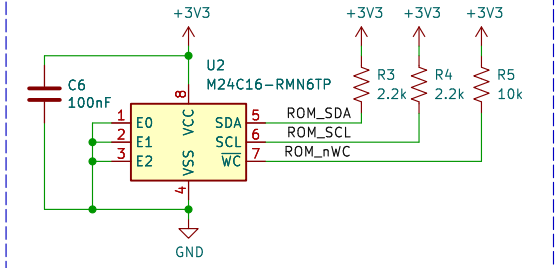
Special POGO solution used.
Normal user is hard to handling this port.
But dedicated developer or Manufacturer
can download firmware or debugging.





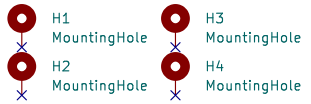


EEPROM 16Kb



CHANGE LOG

2023.06.12 (v0.1) : Initial release (but no PCB) 62.5mm x 62.5mm.
2023.06.13 (v0.2) : Fault DIP-SW footprint fixed and 0Ω on 3v3 removed. 62.5mm -> 63.0mm
2023.08.11 (v0.3) : Vend side I/O contains vend/start on 2P side, then remove JAM signal.
Power domain feedback resistor has been tunned. 62.5mm -> 65.0mm
2023.08.30 (v0.4) : Very weak P-MOS pull-up is applied on the Host Side (Floating Issue - Host Inhibit P1/2)
Fix missing Player 1 Start Input routing, 12V track 1.2mm -> 1.4mm, No changes on GPIO config



LambdaEE_Logo
Symbol_Extended:LamudaEE-12.3x7.6mm
backside-logo-ferris:ferris-back

LICENSE : CC BY-SA 3.0 (pmnxis@gmail.com)

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Card payment acceptor mocking board
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Jinwoo Park, pmnxis@gmail.com

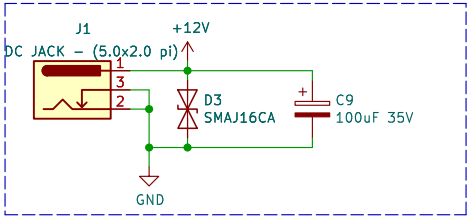
Sheet:
File: BillMock-HW.kicad_sch

Title: Main Block

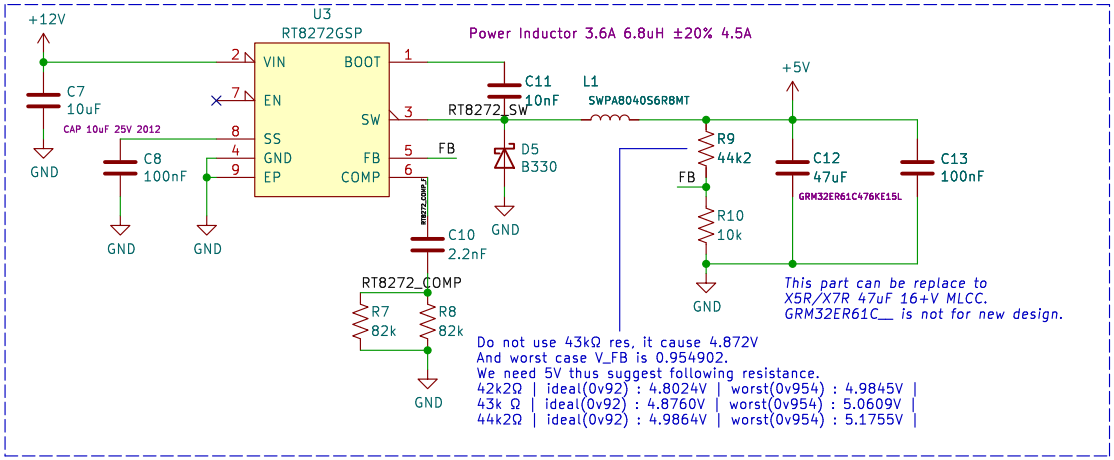
Size: A4	Date: 2023-09-08	**Rev: 0.4**
KiCad E.D.A. kicad 7.0.7+dfsg-1		Id: 1/5

Power Domain

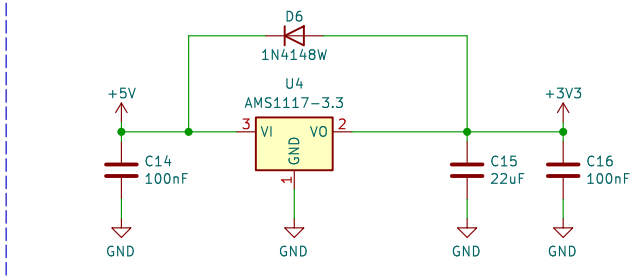
12V Input Jack

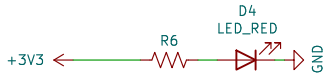


12V to 5V : Switching Regulator



5V to 3V3 : Linear Regulator





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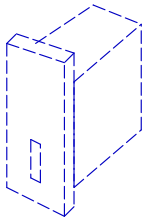
Sheet: Power
File: Power.kicad_sch

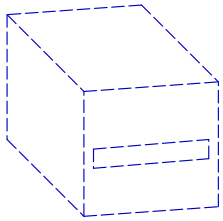
Title: Power domain

Size: A4	Date: 2023-09-08	**Rev: 0.4**
KiCad E.D.A. kicad 7.0.7+dfsg-1		Id: 2/5

Transducer ...
Sensor ...
Switch ...



Coin Acceptor



Paper Acceptor

VendSide

Vending Machine (Coin and bill-paper acceptor) side
Or some start button led and switch.
There're some 12v pull-up input lines with CD4050,
open-drain and push-pull output lines.

REAL0_VND
REAL0_STR
REAL1_VND
REAL1_STR
REAL0_INH
REAL1_INH

In * 4 , Out * 2

File: VendSide.kicad_sch

HostSide

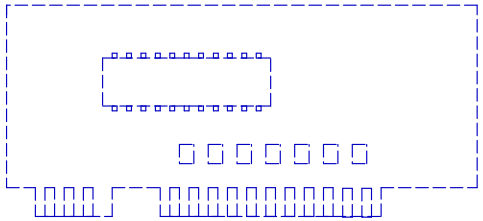
GAME PCB or I/O Board Side
Emulate the vending device such as paper and coin acceptor.
Or emulate start button signal by some mode.
There're some 12v pull-up input lines with CD4050,
open-drain and push-pull output lines.

VIRT0_BSY
VIRT0_VND
VIRT0_JAM
VIRT0_STR
VIRT1_BSY
VIRT1_VND
VIRT1_JAM
VIRT1_STR
VIRT0_INH
VIRT1_INH

Out * 8 , In * 2

File: HostSide.kicad_sch

PCB ...
IO Board ...



Game IO Board

U5
SP3232EEY-L

+3.3V
C17 100nF
C18 100nF
C19 100nF
C20 100nF
C21 100nF
GND

VCC
C1+
C1-
C2+
C2-
V+
V-
T1IN
T2IN
R1OUT
R2OUT
T1OUT
T2OUT
R1IN
R2IN

PC_R_TX
R_TXD
PC_R_RX
R_RXD
PC_M_RX
M_RX
PC_M_TX
M_TX

Sub RS232 Port (to connect PC)

J2
53014-0410
GND
PC_M_RX
PC_M_TX
+5V_PROT

Card Reader RS232 Port (Main)

J3
5268-04
GND
M_TX
M_RX
+5V_PROT
+5V
F1
PolyFuse 16V/2.2A
MF-MSMF110/16-2
D7
1N4148W
C22
100nF

5268-04 (22057045) alternative

5264-4AW C146138
A2506WR-04P C382524
A2505WR-4P C225440
HC-5264-4AW C2845827

R_RXD
R_TXD
PC_R_RX
PC_R_TX

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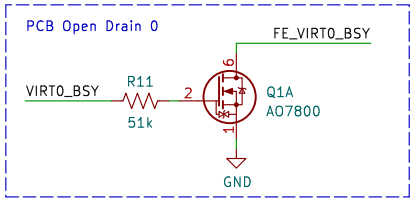
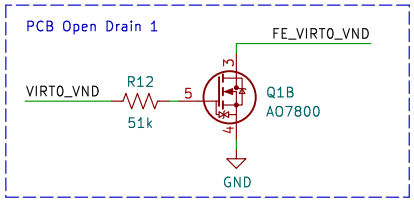
Sheet: IO
File: IO.kicad_sch

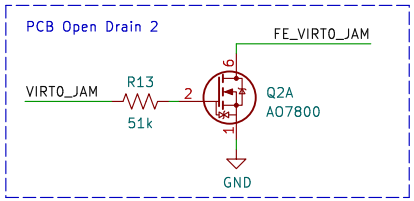
Title: IO

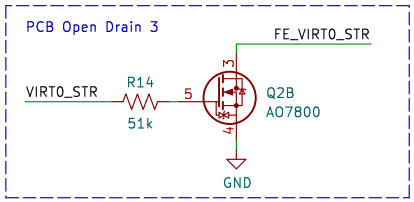
Size: A4	Date: 2023-09-08	**Rev: 0.4**
KiCad E.D.A. kicad 7.0.7+dfsg-1		Id: 3/5

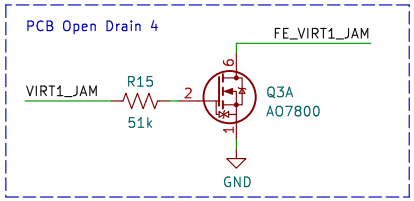
PCB Side Open Drain Output

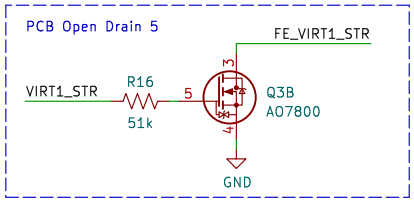


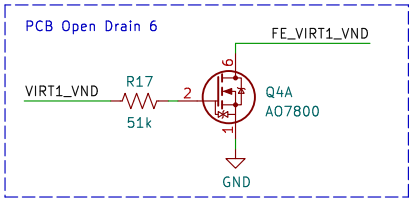


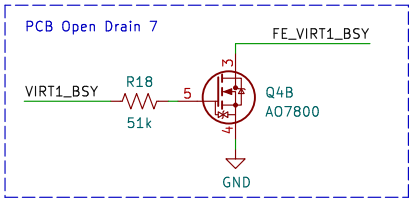












CHANGE LOG

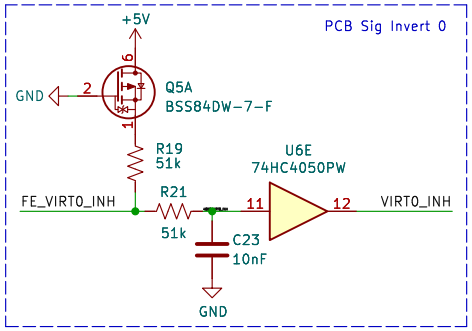
Formal arcade system use Game PCB have pull up line on input. and this domain make drop to 0V very safely, even each pin's voltage level is different.

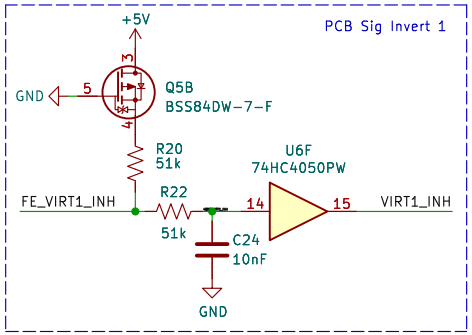
ULN2003AIDR has some issue COM line is shared. so we didn't used for seperate voltage level. Q4:7 was changed to PMV100ENEA from IRFL014PBF. Because IRFL014PBF was obsoleted JLCPCB type. JLCPCB Assembly service don't have stock or option for PMV100. DMN100 and PESD__ is alternation for this assembly system.

2020-07-20 : DMN100 or PMV100 NMOS reduce to dual channel NMOS.
Recommend is DMN3190LDW and
Alternative is DMN2004DWK
Requirements : high desity, high current , Volt accept. Gate,D-S Protection.

2023-05-18 :
Dual-N : AO7800, Used for open-drain output
Dual-P : DMP2004VK, Used for inverse voltage input protect.
N+P CH : DMG1016V, N/P role both
Add B330 to inhibit reverse power output.

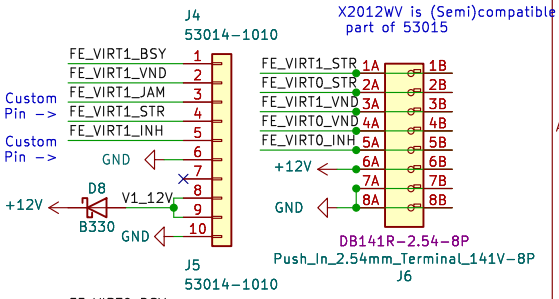
PCB Side extSignal Invert Input

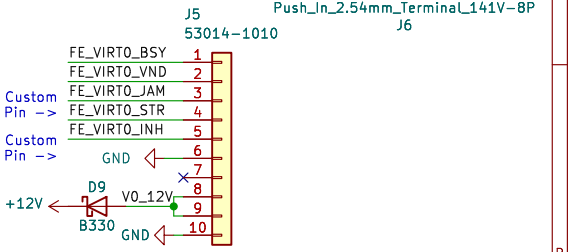




Vend side has 4.7kΩ.
But host and counterside host has res
Thus 10kΩ

Emulated player 1/2 side common signal
(Paper Acceptor, start button etc)





VIRT0_BSY ◁ VIRT0_BSY
VIRT0_VND ◁ VIRT0_VND
VIRT0_JAM ◁ VIRT0_JAM
VIRT0_STR ◁ VIRT0_STR

VIRT1_BSY ◁ VIRT1_BSY
VIRT1_VND ◁ VIRT1_VND
VIRT1_JAM ◁ VIRT1_JAM
VIRT1_STR ◁ VIRT1_STR

VIRT0_INH ▷ VIRT0_INH
VIRT1_INH ▷ VIRT1_INH

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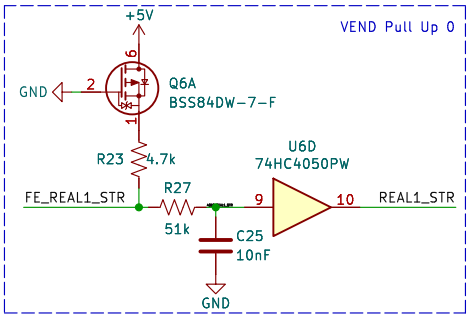
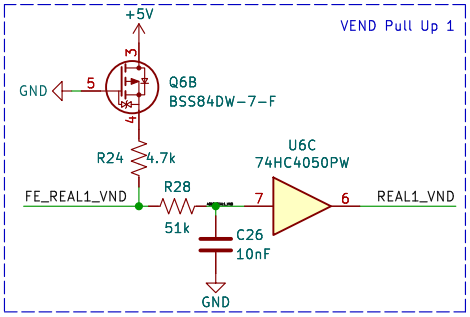
Sheet: HostSide
File: HostSide.kicad_sch

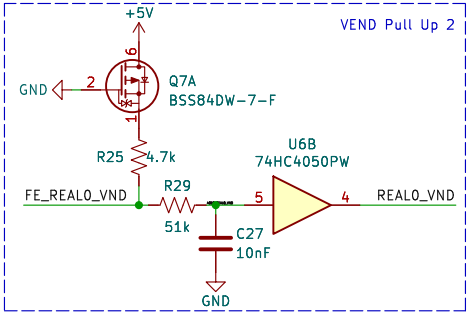
Title: Host Side

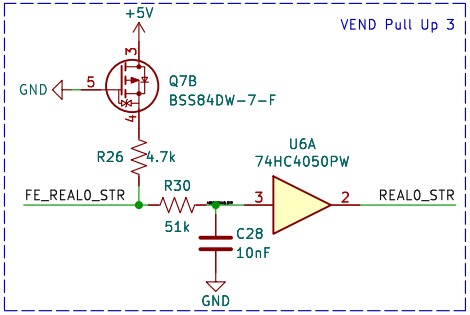
Size: A4	Date: 2023-09-08	**Rev: 0.4**
KiCad E.D.A. kicad 7.0.7+dfsg-1		Id: 4/5

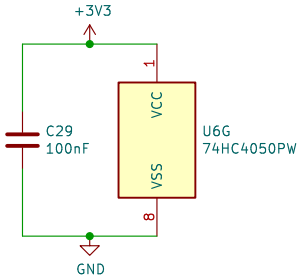
Vend Side Pull Up Input











CHANGE LOG

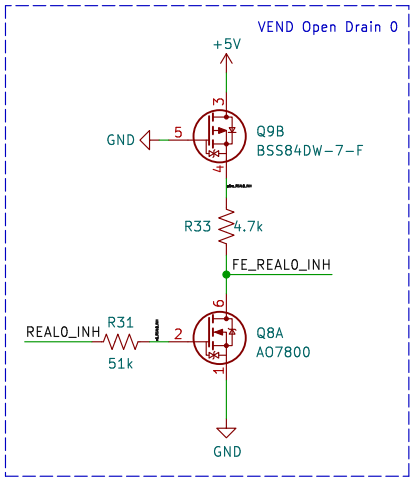
2020-07-16 : LTV217 Optocopuler is removed.
Replaced to high voltage input hex inverter.
Ti CD4049UBDR recommend 1uA input.
Ti require too few input current. So this design use "ONSemi MC14049UBDR2G" , "Nxp HEF4049BT"

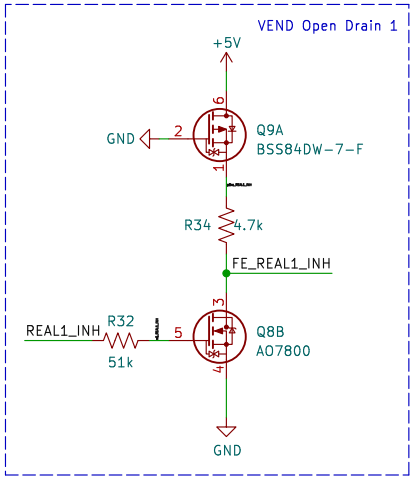
2020-07-20 : DMN100 or PMV100 NMOS reduce to dual channel NMOS. DMN3190LDW or DMN2004DWK Recommend is DMN3190LDW , Alternative is DMN2004DWK Requirements : high desity, high current and voltage accept. Gate,D-S Protection.

2023-05-18 :
Dual-N : AO7800, Used for open-drain output
Dual-P : DMP2004VK, Used for inverse voltage input protect.
N+P CH : DMG1016V, N/P role both

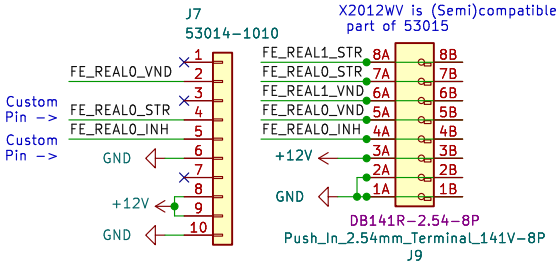
2023-08-11 :
Dual-P : DMP2004VK changed to BSS84DW for bigger package
N+P CH : Remove DMG1016V for reduce BOM

Vend Side Push Pull Active Low

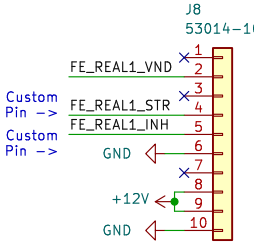


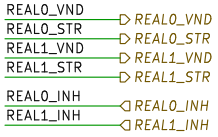


Player 1 side common signal
(Paper Acceptor, start button etc)



Player 2 side purchase/start button and led





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Card payment acceptor mocking board
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Sheet: VendSide
File: VendSide.kicad_sch

Title: Vend Side

Size: A4	Date: 2023-09-08	**Rev: 0.4**
KiCad E.D.A. kicad 7.0.7+dfsg-1		Id: 5/5