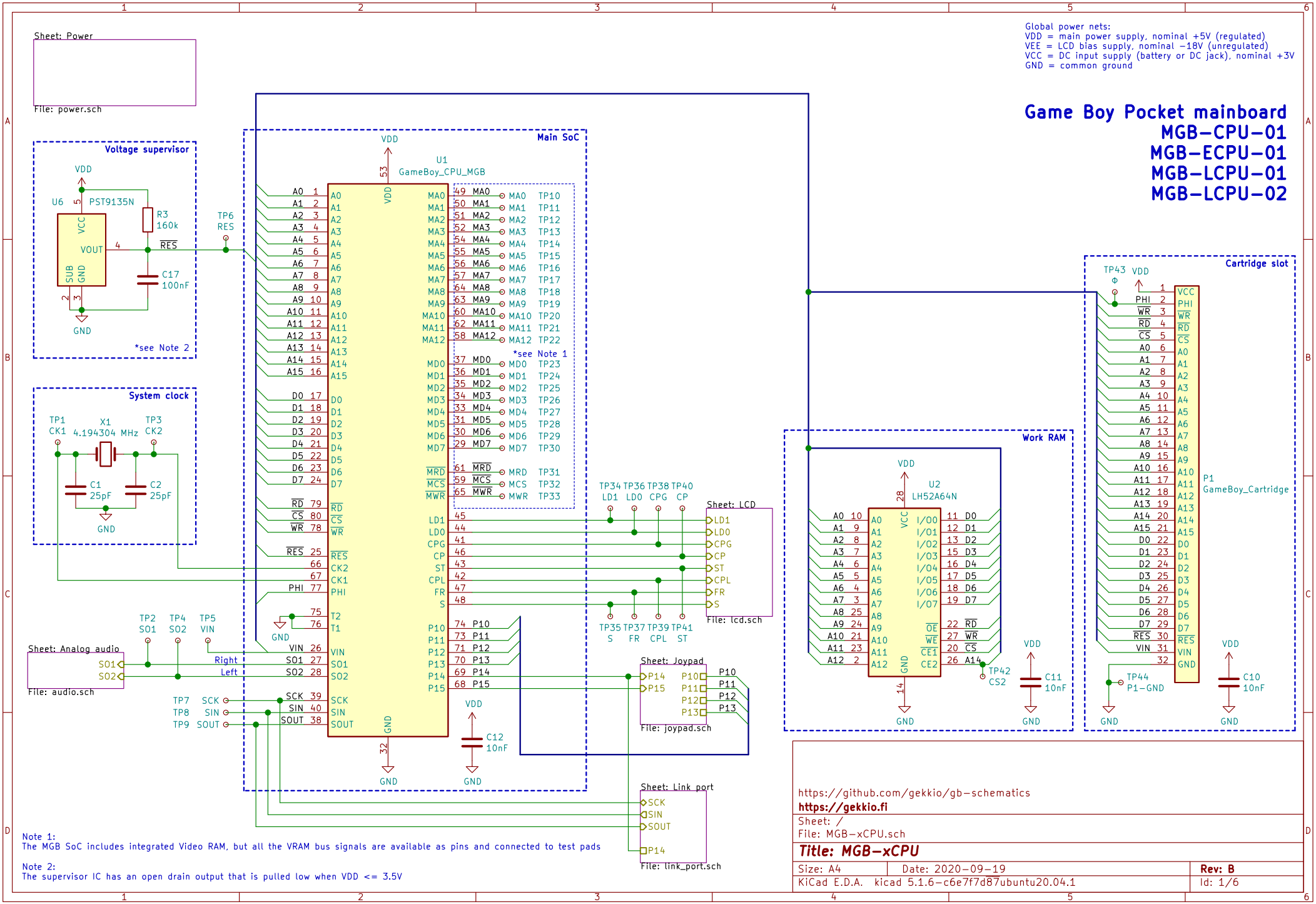
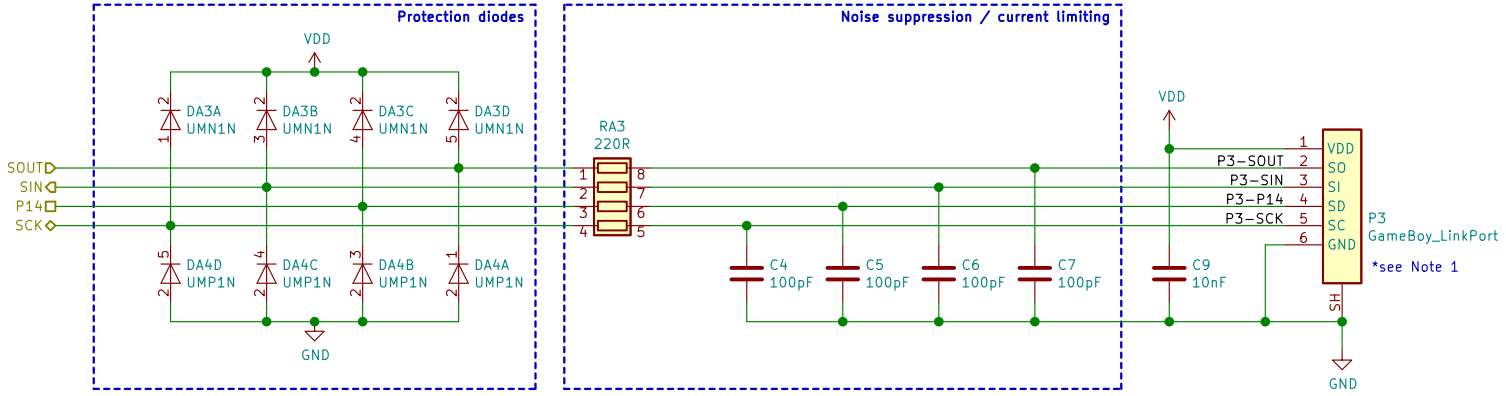

Sheet: Power
File: power.sch
Global power nets:
VDD = main power supply, nominal +5V (regulated)
VEE = LCD bias supply, nominal −18V (unregulated)
VCC = DC input supply (battery or DC jack), nominal +3V
GND = common ground
Game Boy Pocket mainboard
MGB−CPU−01
MGB−ECPU−01
MGB−LCPU−01
MGB−LCPU−02
Voltage supervisor
U6 PST9135N
R3 160k
C17 100nF
*see Note 2
TP6 RES
System clock
X1 4.194304 MHz
C1 25pF
C2 25pF
TP1 CK1
TP3 CK2
Main SoC
U1 GameBoy_CPU_MGB
*see Note 1
Work RAM
U2 LH52A64N
C11 10nF
TP42 CS2
Cartridge slot
P1 GameBoy_Cartridge
TP43 Φ
TP44 P1−GND
C10 10nF
Sheet: LCD
File: lcd.sch
Sheet: Joypad
File: joypad.sch
Sheet: Analog audio
File: audio.sch
Sheet: Link port
File: link_port.sch
C12 10nF
Note 1:
The MGB SoC includes integrated Video RAM, but all the VRAM bus signals are available as pins and connected to test pads
Note 2:
The supervisor IC has an open drain output that is pulled low when VDD <= 3.5V
https://github.com/gekkio/gb−schematics
https://gekkio.fi
Sheet: /
File: MGB−xCPU.sch
Title: MGB−xCPU
Size: A4
Date: 2020−09−19
Rev: B
KiCad E.D.A. kicad 5.1.6−c6e7f7d87ubuntu20.04.1
Id: 1/6



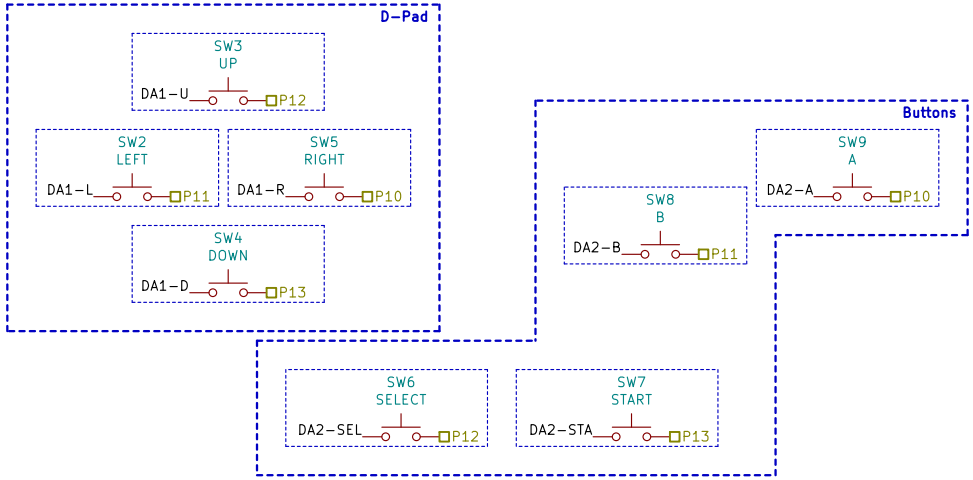
Note 1:
Official link cables omit pin 1 (VDD) and pin 4 (P14/SD), but unofficial cables usually have all 6 signals with VDD/SD crossed

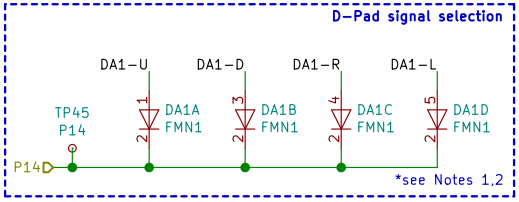
https://github.com/gekkio/gb-schematics
https://gekkio.fi

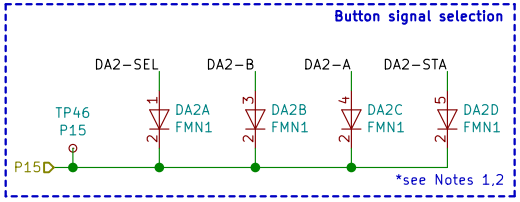
Sheet: /Link port/
File: link_port.sch

Title: MGB-xCPU - Link port

Size: A4	Date: 2020-09-19	**Rev: B**
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu20.04.1		Id: 2/6







Note 1:
Earlier boards use Panasonic MA6X124 (SOT-23-6 footprint) instead of Rohm FMN1 (SOT-23-5 footprint)
The SOT-23-6 footprint on the board is compatible with both

Note 2:
Warning: MA6X124 and FMN1 datasheets use non-standard pin numbering!
This schematic uses standard SOT-23-5/SOT-23-6 numbering

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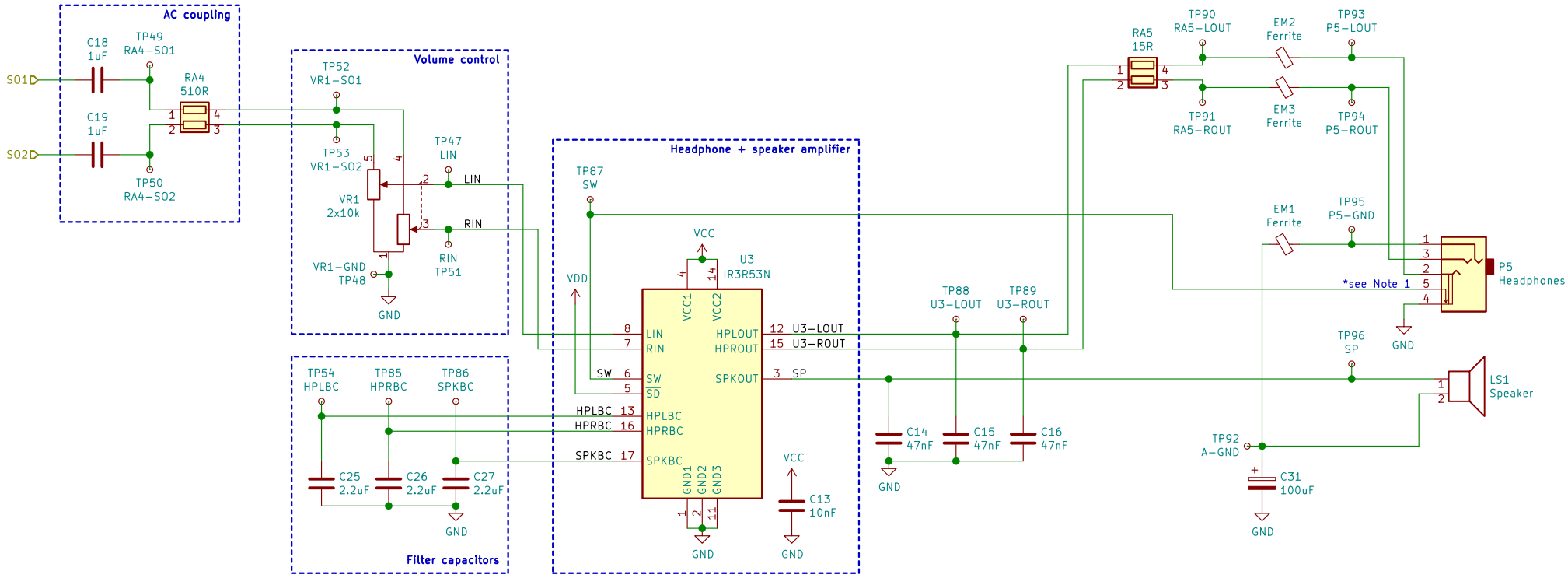
Sheet: /Joypad/
File: joypad.sch

Title: MGB-xCPU - Joypad

Size: A4	Date: 2020-09-19	**Rev: B**
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu20.04.1		Id: 3/6



Note 1:
Pins 4 (GND) and 5 (SW) are normally connected, and inserting a plug disconnects SW from GND.

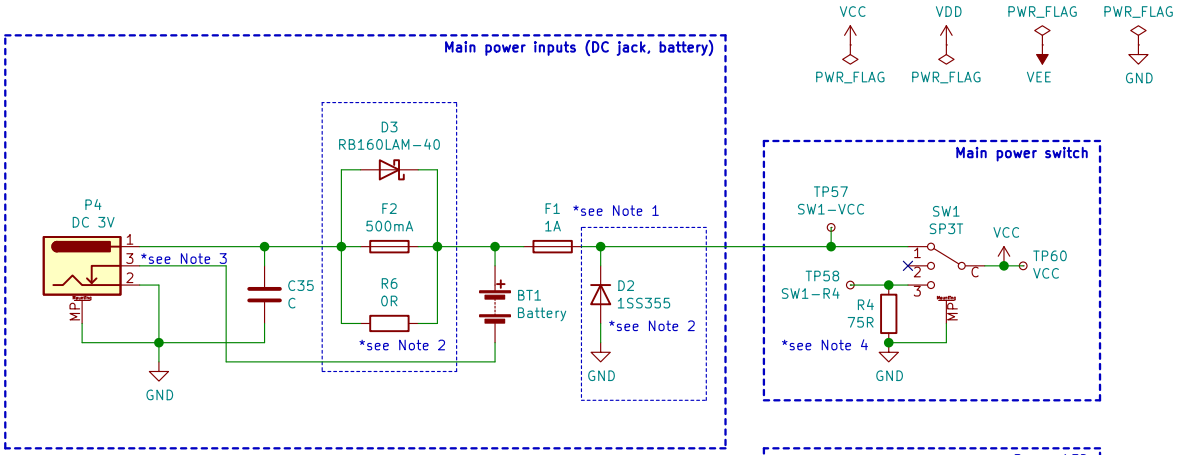
https://github.com/gekkio/gb-schematics
https://gekkio.fi

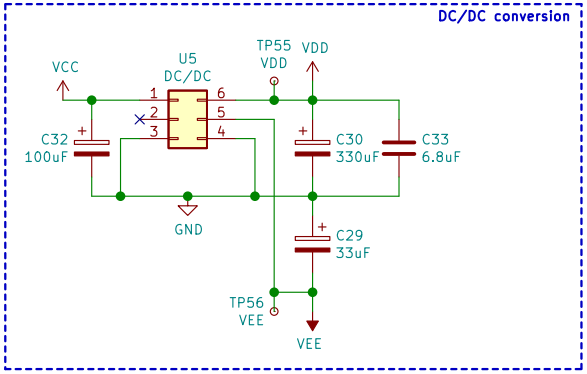
Sheet: /Analog audio/
File: audio.sch

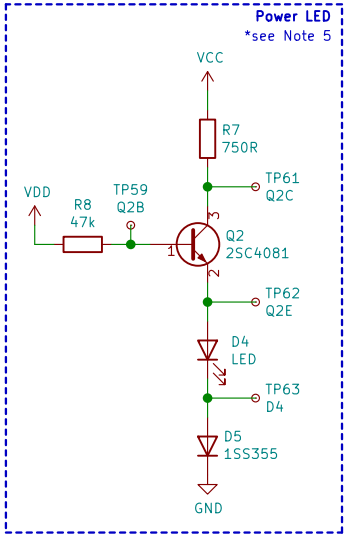
Title: MGB-xCPU – Analog audio

Size: A4	Date: 2020-09-19	**Rev: B**
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu20.04.1		Id: 4/6

Global power nets:
VDD = main power supply, nominal +5V (regulated)
VEE = LCD bias supply, nominal −18V (unregulated)
VCC = DC input supply (battery or DC jack), nominal +3V
GND = common ground







Note 1:
F1 is 600mA on earlier boards

Note 2:
D3/F2/R6 share the same footprint, and the actual device can be only one of them
D2 is also optional and not used in all cases.
Known combinations:
1) only D2 populated, no D3/F2/R6
2) D2 + R6 populated
3) D2 + F2 populated
4) only D3 populated, no D2

Note 3:
Pins 2 (GND) and 3 (BT−) are normally connected, and inserting a DC plug disconnects GND from BT−

Note 4:
R4 provides a discharge path from VCC to GND when the power switch is in the off position

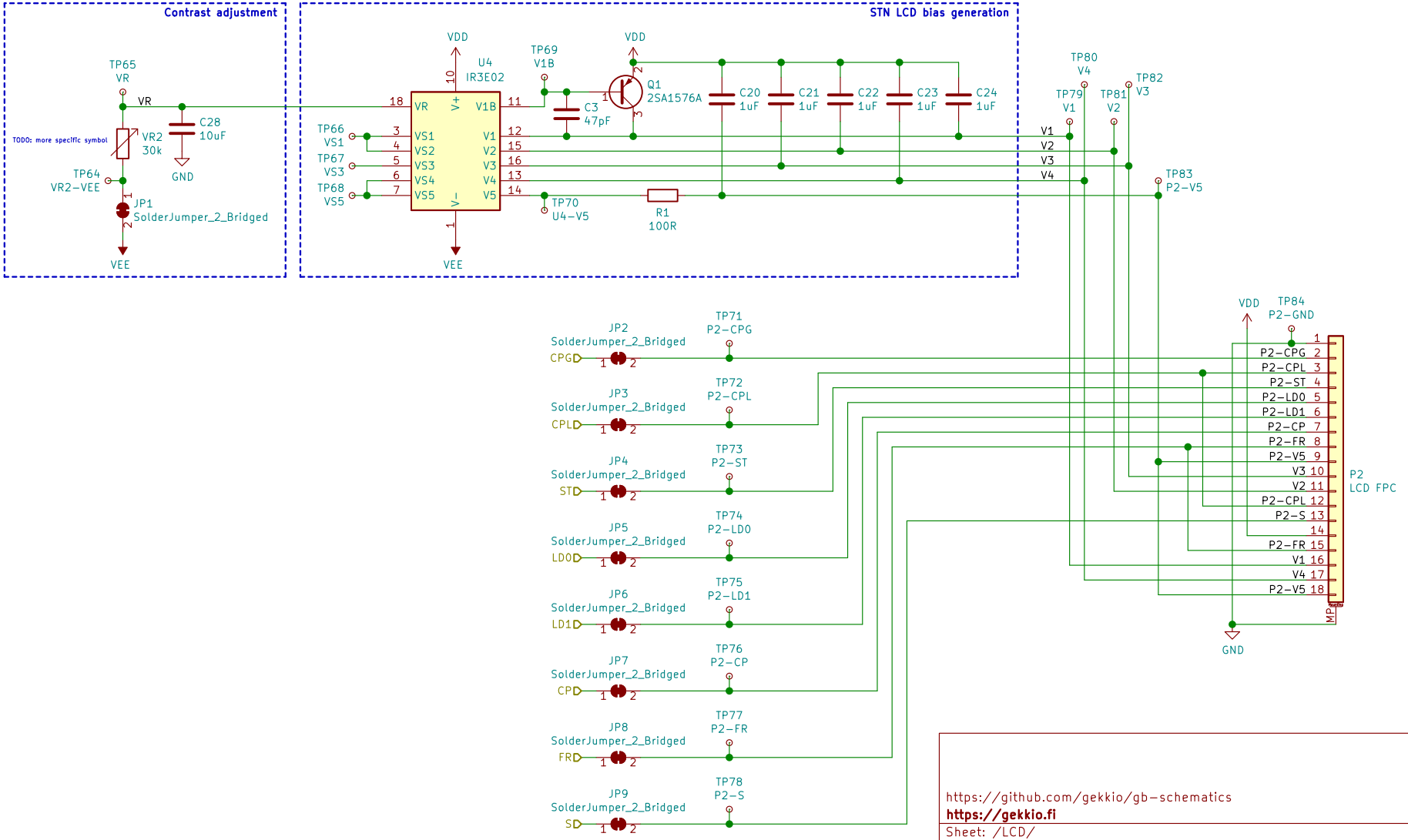
Note 5:
Power LED circuit is not present on early MGB−CPU−01 boards

https://github.com/gekkio/gb−schematics
https://gekkio.fi

Sheet: /Power/
File: power.sch

Title: MGB−xCPU − Power

Size: A4	Date: 2020−09−19	**Rev: B**
KiCad E.D.A. kicad 5.1.6−c6e7f7d87ubuntu20.04.1		Id: 5/6


Contrast adjustment
STN LCD bias generation
TP65
VR
VR
C28
10uF
TODO: more specific symbol
VR2
30k
GND
TP64
VR2-VEE
JP1
SolderJumper_2_Bridged
VEE
VDD
U4
IR3E02
TP69
V1B
C3
47pF
Q1
2SA1576A
C20
1uF
C21
1uF
C22
1uF
C23
1uF
C24
1uF
TP66
VS1
TP67
VS3
TP68
VS5
TP70
U4-V5
R1
100R
TP80
V4
TP79
V1
TP81
V2
TP82
V3
TP83
P2-V5
JP2
SolderJumper_2_Bridged
CPG
TP71
P2-CPG
JP3
CPL
TP72
P2-CPL
JP4
ST
TP73
P2-ST
JP5
LD0
TP74
P2-LD0
JP6
LD1
TP75
P2-LD1
JP7
CP
TP76
P2-CP
JP8
FR
TP77
P2-FR
JP9
S
TP78
P2-S
TP84
P2-GND
P2
LCD FPC
P2-CPG
P2-CPL
P2-ST
P2-LD0
P2-LD1
P2-CP
P2-FR
P2-V5
V3
V2
P2-S
V1
V4
MP
https://github.com/gekkio/gb-schematics
https://gekkio.fi
Sheet: /LCD/
File: lcd.sch
Title: MGB-xCPU - LCD
Size: A4
Date: 2020-09-19
Rev: B
KiCad E.D.A. kicad 5.1.6-c6e7f7d87ubuntu20.04.1
Id: 6/6