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Nimrod

Sheet: /

File: reDIP-64.kicad_sch

Title: reDIP 64

Size: A4 Date: 2022-04-23

KiCad E.D.A. kicad 6.0.4-1.fc35

Rev: 1.0

Id: 1/6



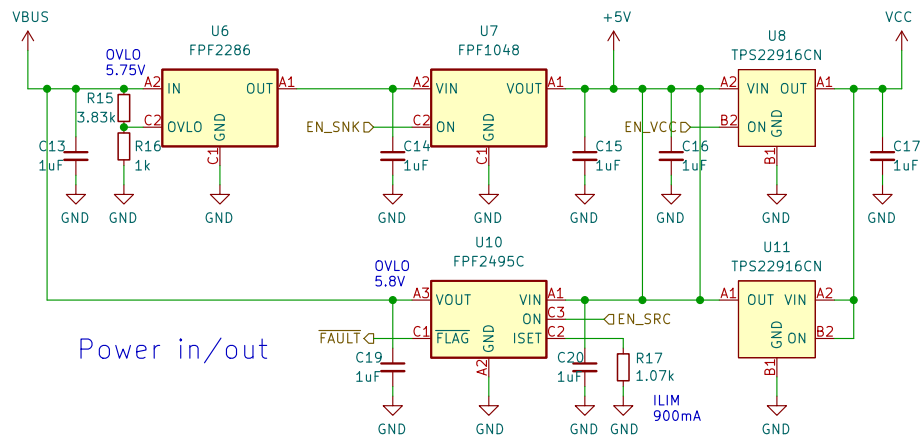
D



Id: 2/6

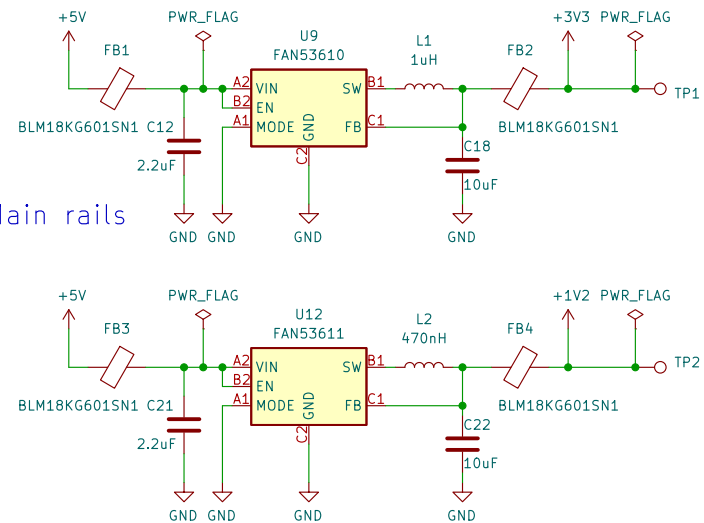


Power

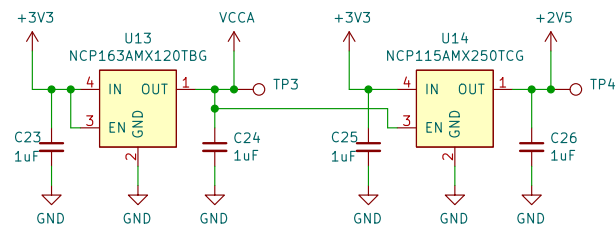


Power in/out

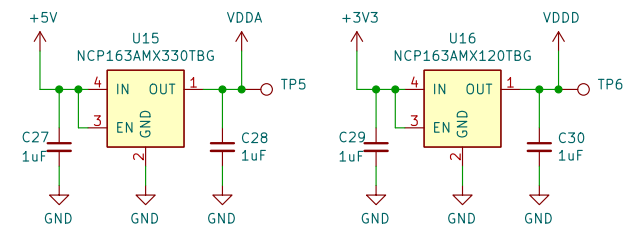
Main rails



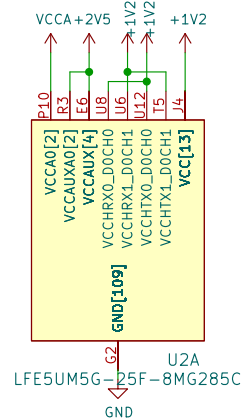
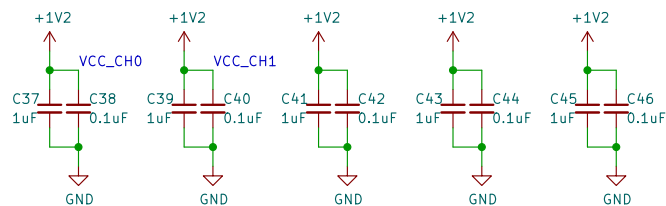
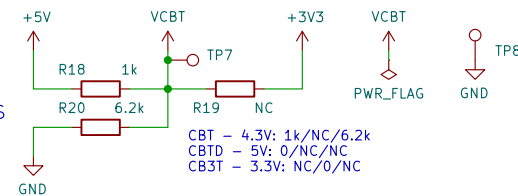
FPGA



Audio



Level shifters



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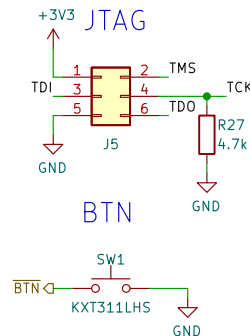
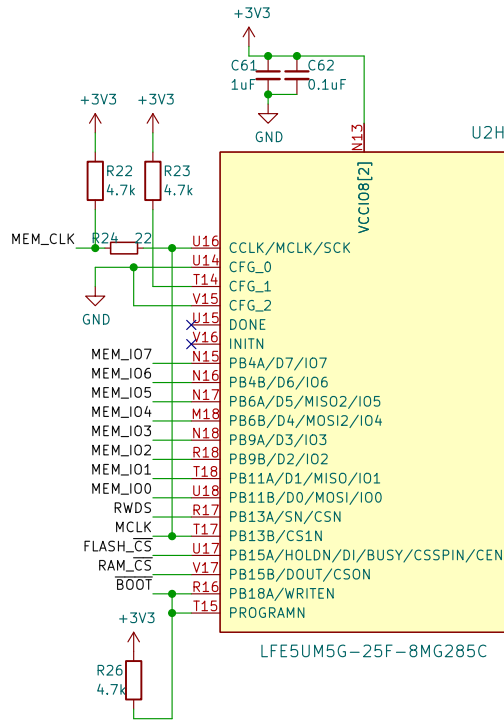
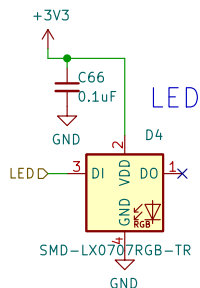
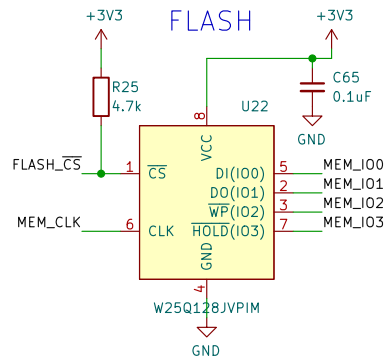
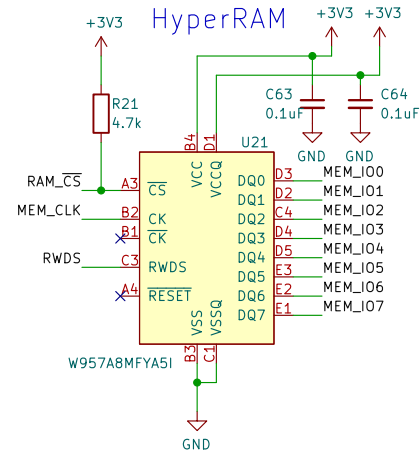
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Rev: 1.0

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Config / Memory



Example derivation of clocks:

- * Audio: 135MHz/5 = 27MHz -> SGT5000 PLL -> 24.576MHz
- * USB: 135MHz -> ECP5 PLL1 -> 48MHz
- * HyperRAM: 135MHz, 135MHz/2 = 67.5MHz, or 135MHz/3 = 45MHz
- * FLASH: 135MHz, 135MHz/2, or 135MHz/3 (max 50MHz for 03h Read Data Instruction)
Note: 135MHz is above datasheet maximum FR of 133MHz

Commodore 64, no clock input:

- * Ø_COLOR*4: 135MHz -> ECP PLL2 -> 17.734472MHz*4 (PAL) / 14.31818MHz*4 (NTSC)
- * DOT CLOCK: Ø_COLOR*4/9 = 7.88MHz (PAL) / Ø_COLOR*4/7 = 8.1818MHz (NTSC)
- * COLOR CLOCK: Ø_COLOR*4/16 = 4.433618MHz (PAL) / 3.579545MHz (NTSC)

Commodore 64, Ø_COLOR as input:

- * Ø_COLOR*4: 135MHz -> ECP5 PLL2 -> 17.734472MHz*4 (PAL) / 14.31818MHz*4 (NTSC)
- * DOT CLOCK: See above
- * COLOR CLOCK: See above

Commodore 64, DOT CLOCK as input:

- * Ø_COLOR*4: DOT_CLOCK -> ECP5 PLL2 -> 7.88MHz*9 (PAL) / 8.1818MHz*7 (NTSC)
Note: 7.88MHz is below datasheet PLL minimum FIN of 8MHz
- * COLOR CLOCK: See above

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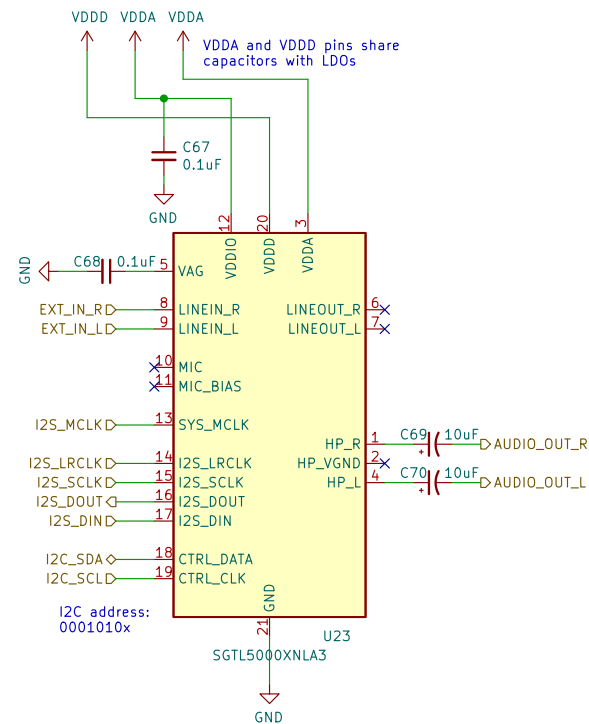
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Audio



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Sheet: /Audio/

File: reDIP-64-Audio.kicad_sch

Title: reDIP 64

Size: A4 Date: 2022-04-23

KiCad E.D.A. kicad 6.0.4-1.fc35

Rev: 1.0

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