Sheet: PeripheralBoard

File: PeripheralBoard.sch

Sheet: MainBoard

File: MainBoard.sch

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Sheet: /
File: JNTUB.sch

Title: *JoyfulNoise Tiny Utility Board*

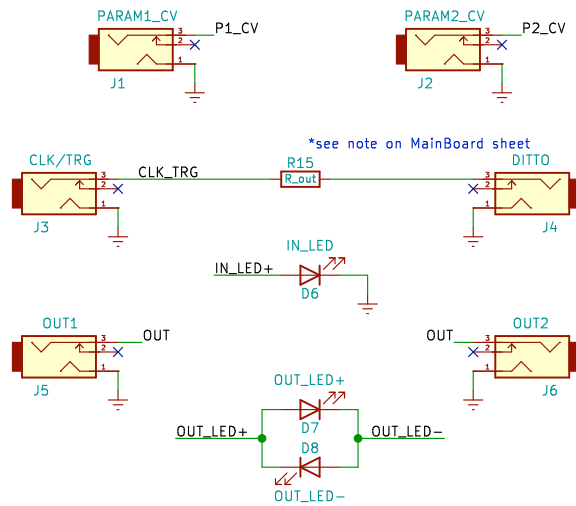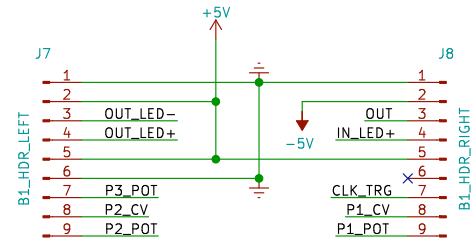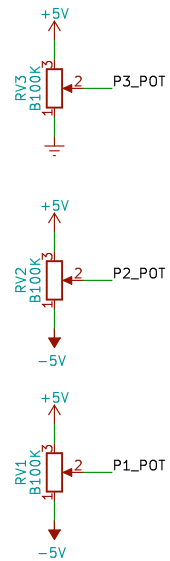| Size: USLetter | Date: 2020−12−29 | **Rev: 0.1** |
| KiCad E.D.A. kicad (5.1.9−0−10_14) | | Id: 1/3 |

+5V

RV3
B100K 3   2 P3_POT

+5V

RV2
B100K 3   2 P2_POT

−5V

+5V

RV1
B100K 3   2 P1_POT

−5V

+5V

J7   J8
1   ÷   1
2   2
3   OUT_LED−   OUT   3
4   OUT_LED+   −5V IN_LED+ 4
5   5
6   6
7   P3_POT   CLK_TRG 7
8   P2_CV   P1_CV   8
9   P2_POT   P1_POT 9

B1_HDR_LEFT   B1_HDR_RIGHT

PARAM1_CV   P1_CV   PARAM2_CV   P2_CV
J1   J2

*see note on MainBoard sheet

CLK/TRG   CLK_TRG   R15   DITTO
                             R_out
J3   J4

IN_LED
IN_LED+   D6

OUT1   OUT   OUT   OUT2
J5   J6

OUT_LED+
D7
OUT_LED+   OUT_LED−
D8
OUT_LED−

NOTES:

− OUT_LED− can be omitted from the front
  panel but must be substituted for a regular
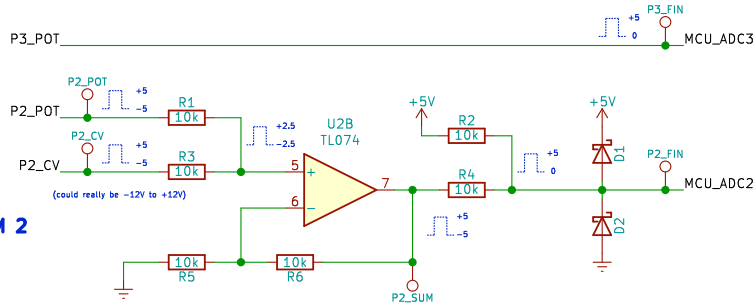 switching diode to avoid damage to OUT_LED+.

Created by Ben Reeves
Sheet: /PeripheralBoard/
File: PeripheralBoard.sch
Title: JoyfulNoise Tiny Utility Board − Board 1 − Peripheral Board
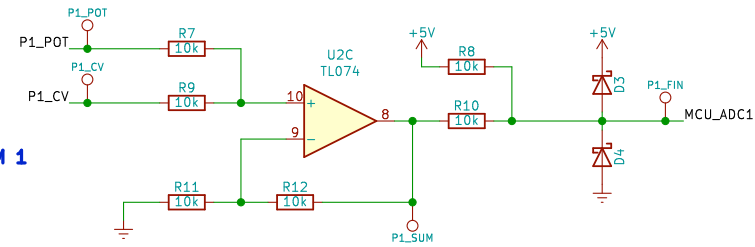Size: USLetter | Date: 2020−12−29 | Rev: 0.1
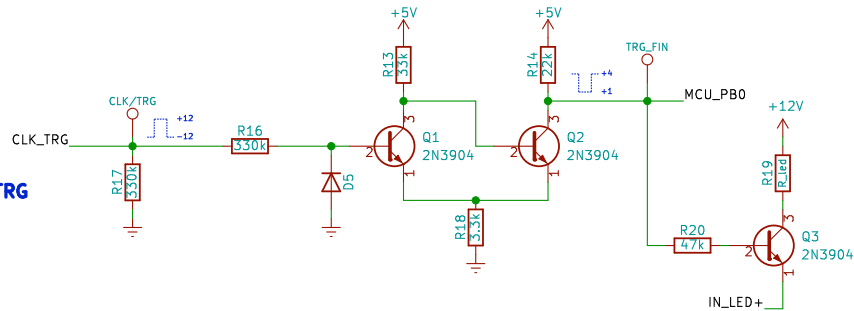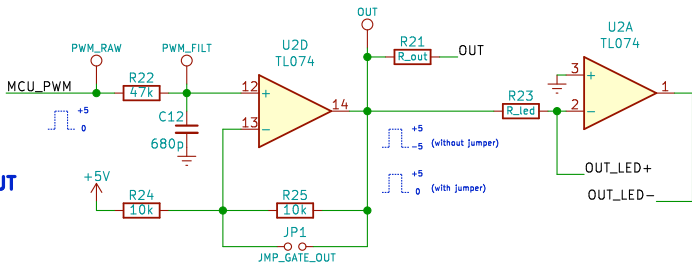KiCad E.D.A. kicad (5.1.9−0−10_14) | Id: 2/3

PARAM 3

P3_POT — P3_FIN — MCU_ADC3

PARAM 2

P2_POT, P2_CV (could really be −12V to +12V)

R1 10k, R3 10k, U2B TL074, R2 10k, R4 10k, D1, D2, P2_FIN, MCU_ADC2, R5 10k, R6 10k, P2_SUM

PARAM 1

P1_POT, P1_CV, R7 10k, R9 10k, U2C TL074, R8 10k, R10 10k, D3, D4, P1_FIN, MCU_ADC1, R11 10k, R12 10k, P1_SUM

CLK/TRG

CLK/TRG, R16 330k, R17 330k, D5, Q1 2N3904, Q2 2N3904, R13 33k, R14 22k, TRG_FIN, MCU_PB0, R18 3.3k, R20 47k, Q3 2N3904, R19 R_led, IN_LED+

OUTPUT

MCU_PWM, PWM_RAW, R22 47k, PWM_FILT, C12 680p, U2D TL074, R24 10k, R25 10k, JP1 JMP_GATE_OUT, R21 R_out, OUT, R23 R_led, U2A TL074, OUT_LED+, OUT_LED−

J9 POWER, D10 1N5818, +12V, C1 15u, PWR_FLAG, GNDREF, C2 15u, D11 1N5818, −12V, C8 0.1u, C9 0.1u, U2E TL074, +12V, −12V, 78L05 U3, 79L05 U4, +5V, C4 0.1u, C6 0.1u, −5V

J10 B2_HDR_LEFT: OUT_LED−, OUT_LED+, P3_POT, P2_CV, P2_POT
J11 B2_HDR_RIGHT: OUT, IN_LED+, CLK_TRG, P1_CV, P1_POT, −5V

U1 ATtiny85: MCU_PB0 → AREF/PB0 (5), MCU_PWM → PB1 (6), PB2 (7), MCU_ADC1 → PB2, MCU_ADC3 → XTAL1/PB3 (2), MCU_ADC2 → XTAL2/PB4 (3), RESET/PB5 (1), VCC (8), GND (4), C10 0.1u, R26 10k
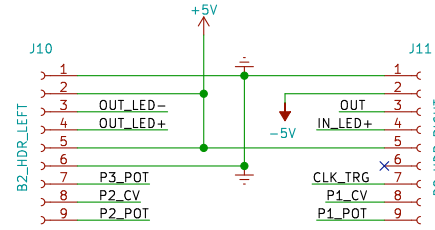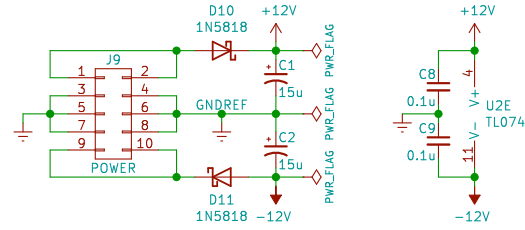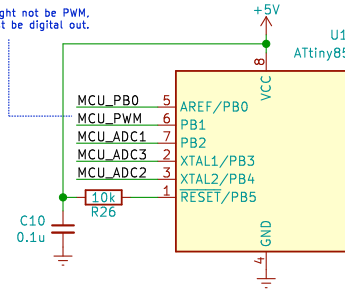
Note: might not be PWM, might just be digital out.

NOTES:

− R_out: Use 1k for 1/4W resistors.
 Use 2k for 1/8W resistors.

− R_led: Will depend on the color.
 I use XXX for my red LEDs.

− 10k resistors in PARAM 1 and PARAM 2
 can be replaced with anything 10k−100k.

− Schottky diodes in PARAM 1 and PARAM 2
 can be replaced with regular switching diodes,
 but clamping will not be as tight.

− Output is default scaled to −5V/+5V.
 Place jumper where shown to change to 0V/+5V.

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Sheet: /MainBoard/
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Title: JoyfulNoise Tiny Utility Board − Board 2 − Main Board

Size: A4 | Date: 2020−12−29 | Rev: 0.1
KiCad E.D.A. kicad (5.1.9−0−10_14) | Id: 3/3