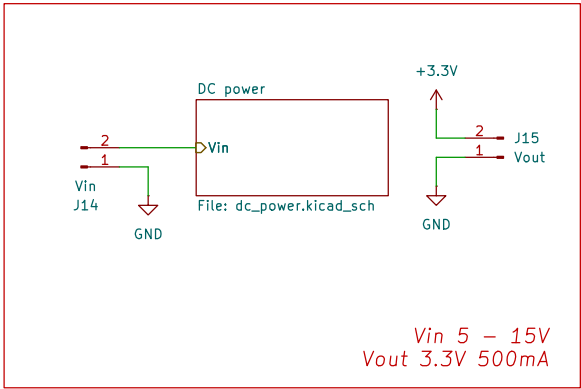
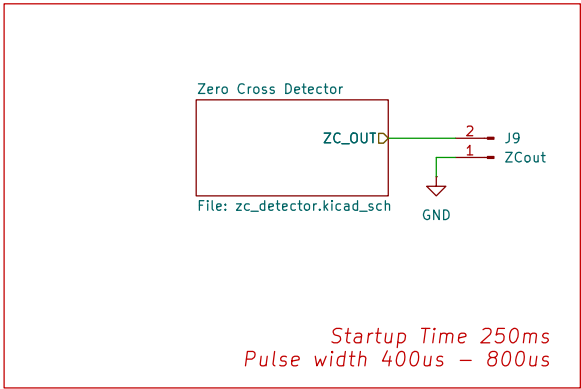


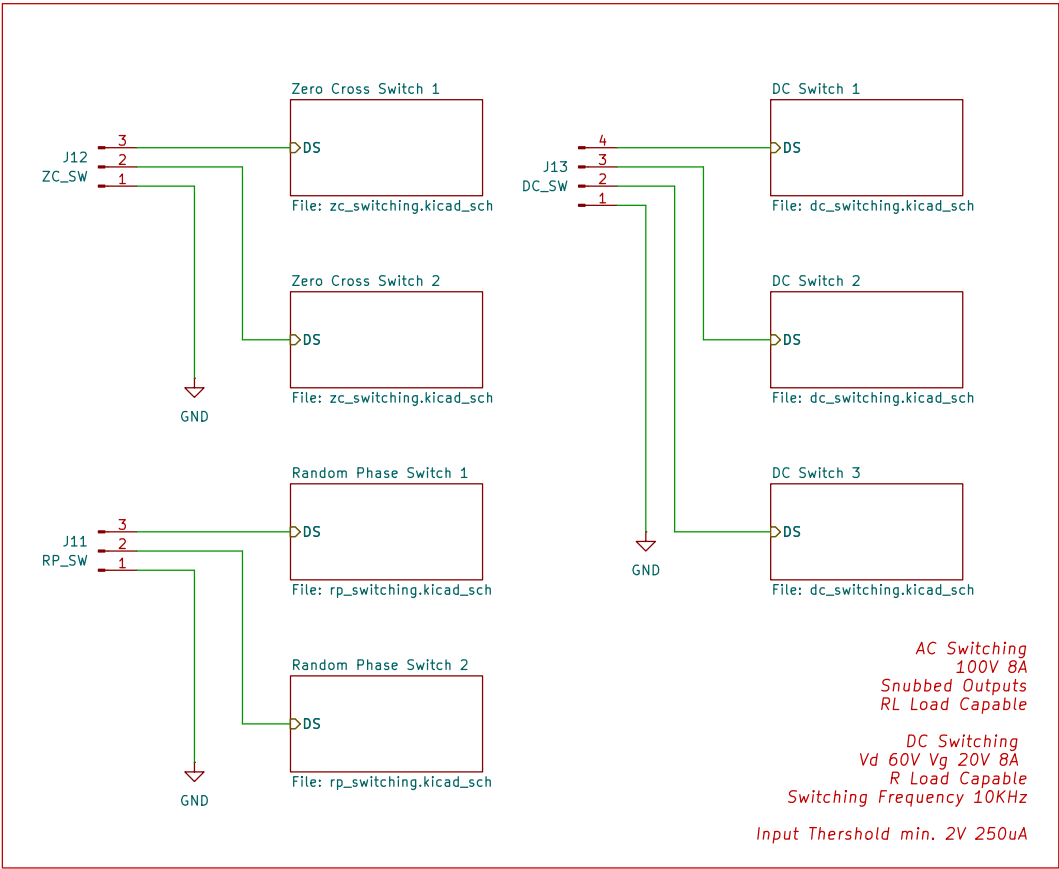
DC Regulation Circuit



Zero Cross Detection Circuit



Switching Circuits



All AC circuits are designed for 100V 50/60Hz systems only.



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Sheet: /
File: ac_switching.kicad_sch

Title: AC switching circuit

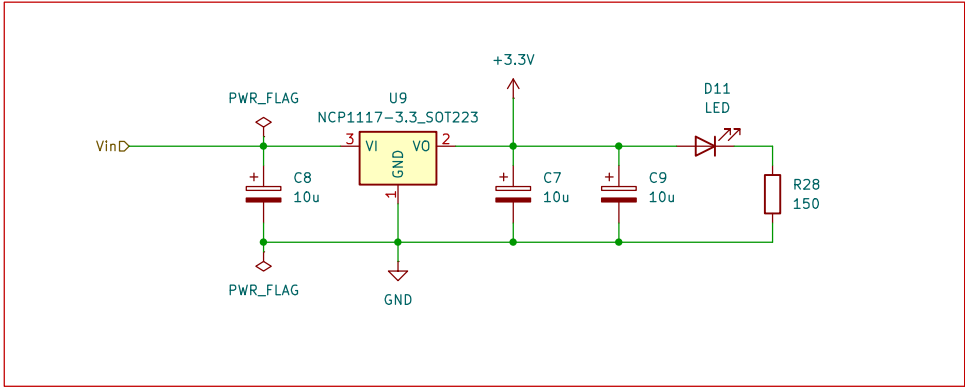
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KiCad E.D.A. 9.0.0

Rev: 0

Id: 1/10

DC Power regulation Circuit



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Sheet: /DC power/
File: dc_power.kicad_sch

Title: AC switching circuit

Size: A4

Date: 2025-04-01

Rev: 0

KiCad E.D.A. 9.0.0

Id: 2/10

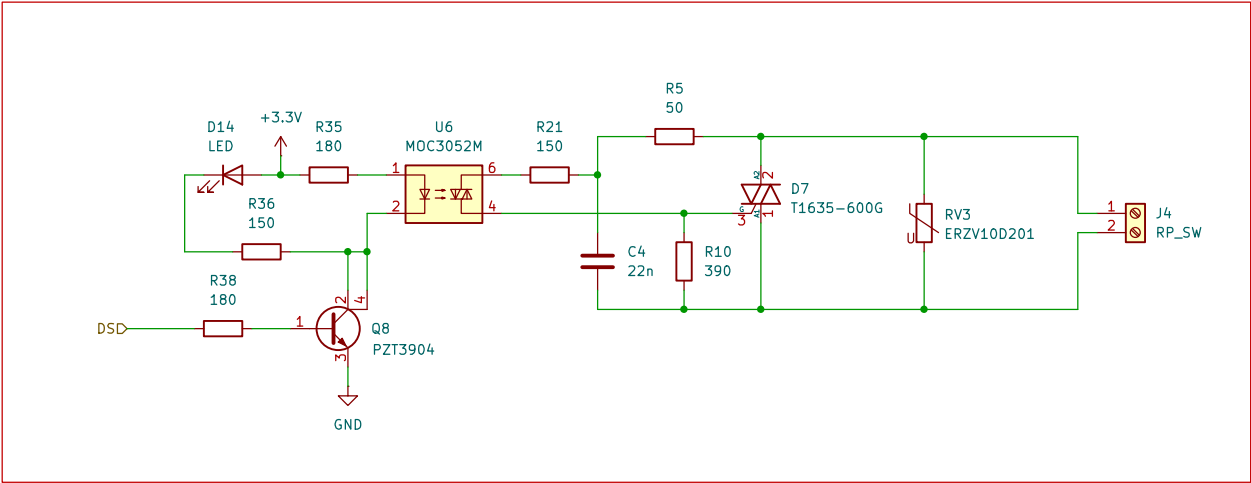
[illegible]

Id: 3/10

The diagram shows a relay driver circuit. A DSD input signal is connected to the base of a PZT3904 transistor (Q7) through a resistor R34 (180Ω). The emitter of Q7 is grounded, and its collector is connected to the input of an optocoupler U5 (MOC3062M) through a resistor R31 (150Ω). The optocoupler's output is connected to the coil of a relay RV2 (ERZV10D201) through a resistor R20 (150Ω). A diode D6 (T1635-600G) is connected in parallel with the relay coil for flyback protection. The relay is also connected to a common terminal and a switch terminal J3 (ZC_SW). A +3.3V supply is connected to the LED input of the optocoupler through a resistor R33 (180Ω). A capacitor C3 (22nF) is connected between the output of the optocoupler and ground. A resistor R4 (50Ω) is connected between the output of the optocoupler and the relay coil. A resistor R9 (390Ω) is connected between the output of the optocoupler and ground. A diode D13 (LED) is connected between the +3.3V supply and ground through a resistor R31 (150Ω).

Id: 4/10

Random Phase Switching



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Sheet: /Random Phase Switch 1/

File: rp_switching.kicad_sch

Title: AC switching circuit

Size: A4

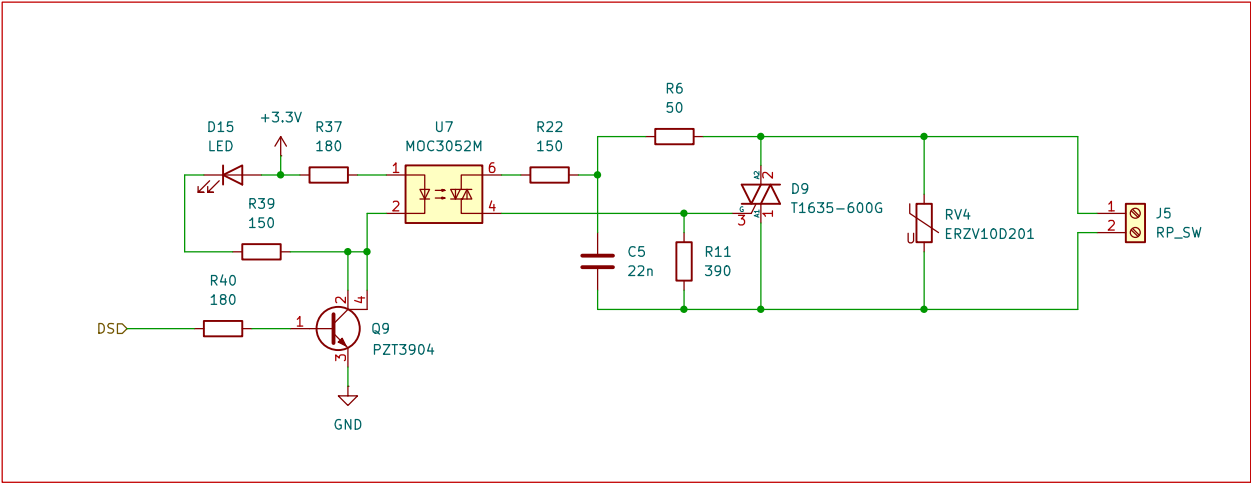
Date: 2025-04-01

Rev: 0

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Id: 5/10

Random Phase Switching



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Sheet: /Random Phase Switch 2/

File: rp_switching.kicad_sch

Title: AC switching circuit

Size: A4

Date: 2025-04-01

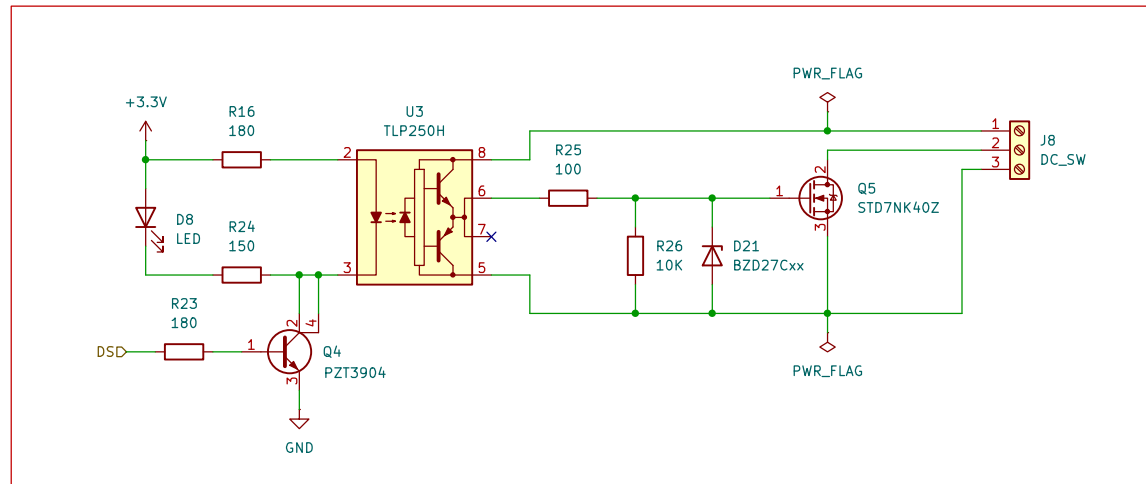
Rev: 0

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Id: 6/10

Id: 7/10

High Speed DC Switching



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Sheet: /DC Switch 2/
File: dc_switching.kicad_sch

Title: AC switching circuit

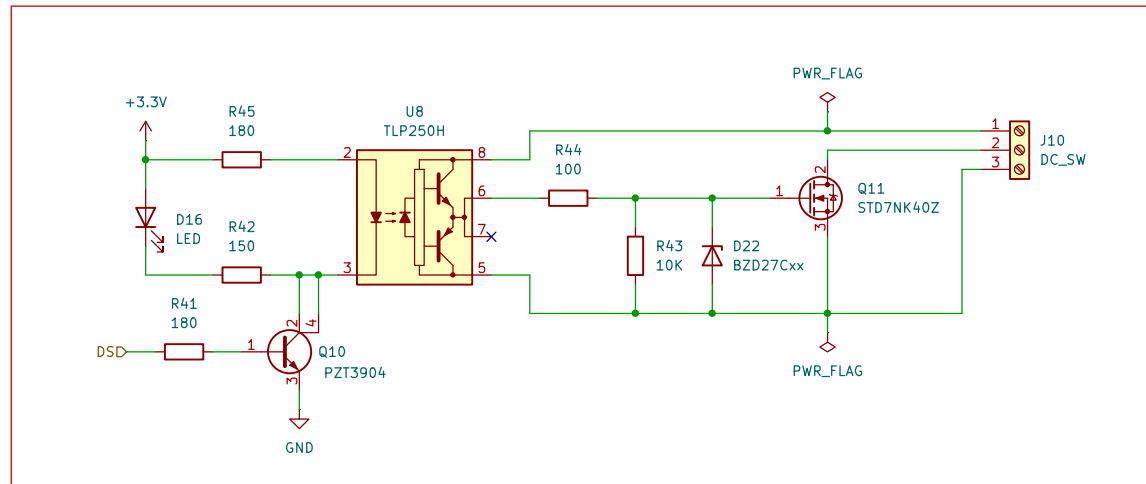
Size: A4 Date: 2025-04-01

KiCad E.D.A. 9.0.0

Rev: 0

Id: 8/10

High Speed DC Switching



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Sheet: /DC Switch 3/
File: dc_switching.kicad_sch

Title: AC switching circuit

Size: A4 Date: 2025-04-01

KiCad E.D.A. 9.0.0

Rev: 0

Id: 9/10

Zero Cross Detection Circuit

