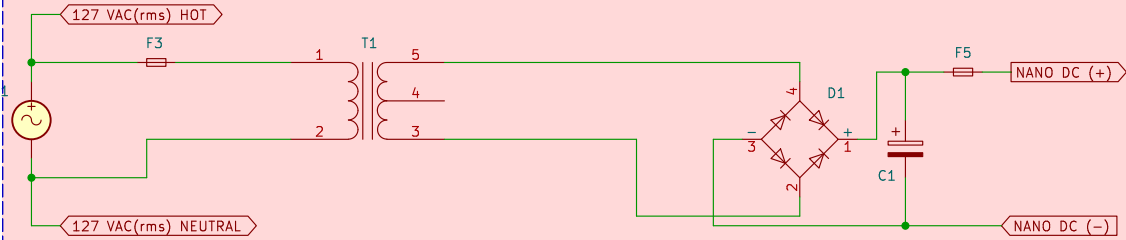
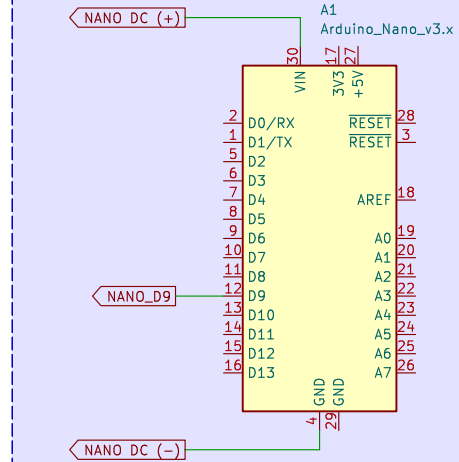


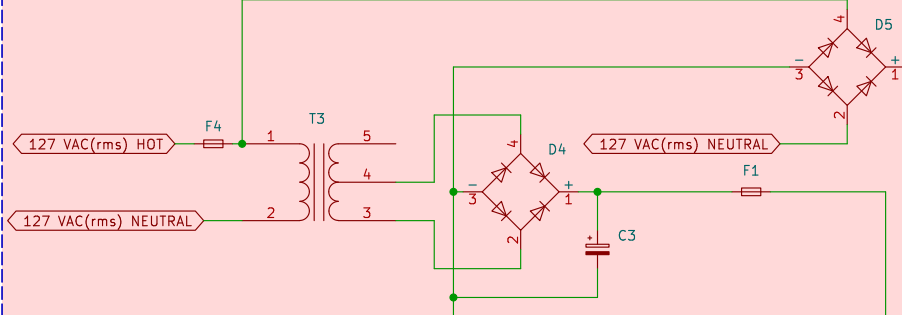
# AC TO DC MCU POWER MANAGEMENT



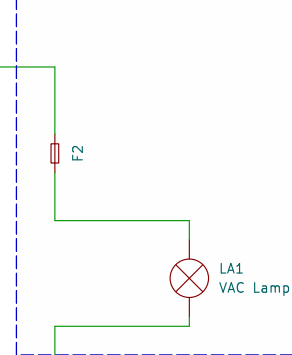
## MCU/DIGITAL CONTROL



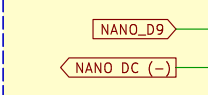
## SWITCH POWER EFFICIENCY



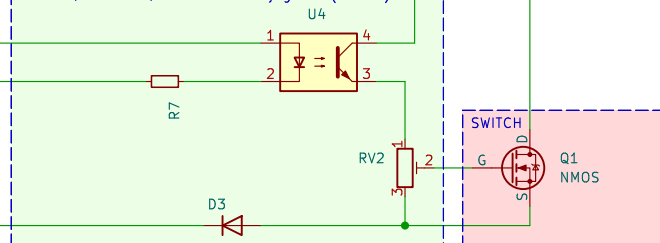
## AC HARDWARE CONTROL OUTPUT



## CONTROL SIGNALS



## SAFETY: UX & CONTROL ISOLATION UL1577, CA95323, UL flammability grade (94V-0)



ID	Component	Use	Reference	Qty
A1	Arduino Nano v3.x	DC to AC Control	FR3, FR4	1
C1	Polarized capacitor	AC to DC sourcing	FR1, FR2	1
C3	Polarized capacitor	AC to DC sourcing	FR1, FR2	1
D1	Diode Bridge Rectifier	Full AC rectification	FR1, FR2	1
D3	Diode	Transient shielding	FR1, FR2	1
D4,D5	Diode Bridge Rectifier	Full AC rectification	FR1, FR2	2
F1,F2,F3,F4, F5	Fuse	Overcurrent protection		5
LA1	VAC Lamp	AC light bulb		1
Q1	NMOS	Power MOSFET switch	FR8	1
R7	Resistor	Current limiting resistor		1
RV2	Potentiometer	Voltage calibration and division		1
T1,T3	Transformer	VAC peak voltage attenuation	FR1, FR2	2
U4	Optoisolator	Overvoltage isolation, advised: UL1577, CA95323, UL flammability grade (94V-0)	FR6	1
V1	Mains	127 VAC, 60Hz	FR1, FR2	1

## Further reading/research media:

FR1. Simon Monk, Electronics Cookbook. Published by O'Reilly Media, Inc.  
FR2. Paul Scherz, Simon Monk, Practical Electronics for Inventors, Fourth Edition, 4th Edition. Published by McGraw-Hill Education TAB. e-ISBN 978-1-25-958755-9.  
FR3. ARDUINO, Arduino Nano Reference Manual, SKU: A000005.  
FR4. ARDUINO, Arduino Nano Wiring Schematic, [https://www.arduino.cc/en/uploads/Main/Arduino\\_Nano-Rev3.2-SCH.pdf](https://www.arduino.cc/en/uploads/Main/Arduino_Nano-Rev3.2-SCH.pdf).  
FR5. TEXAS INSTRUMENTS, LM1117, Sheet No.: SN054120 - FEBRUARY 2000 - REVISED JANUARY 2023.  
FR6. SHARP, PCB17XxNS19 Series, Sheet No.: 0P18002EN.  
FR7. ATMEL, ATmega328p, Sheet No.: 7810D-AVR-01/15.  
FR8. INFINEON, IRFP250NPbF, Sheet No.: Rev. 2.1, 2024-10-08.

Contact: <https://sites.google.com/view/b-eng-jarl/home>

Sheet: /

File: MOSFET AC Switch.kicad\_sch

Title: AC Switch 'Blink' Project

Size: A4

Date: 2025-04-07

KiCad E.D.A. 9.0.1

Rev: 1

Id: 1/1