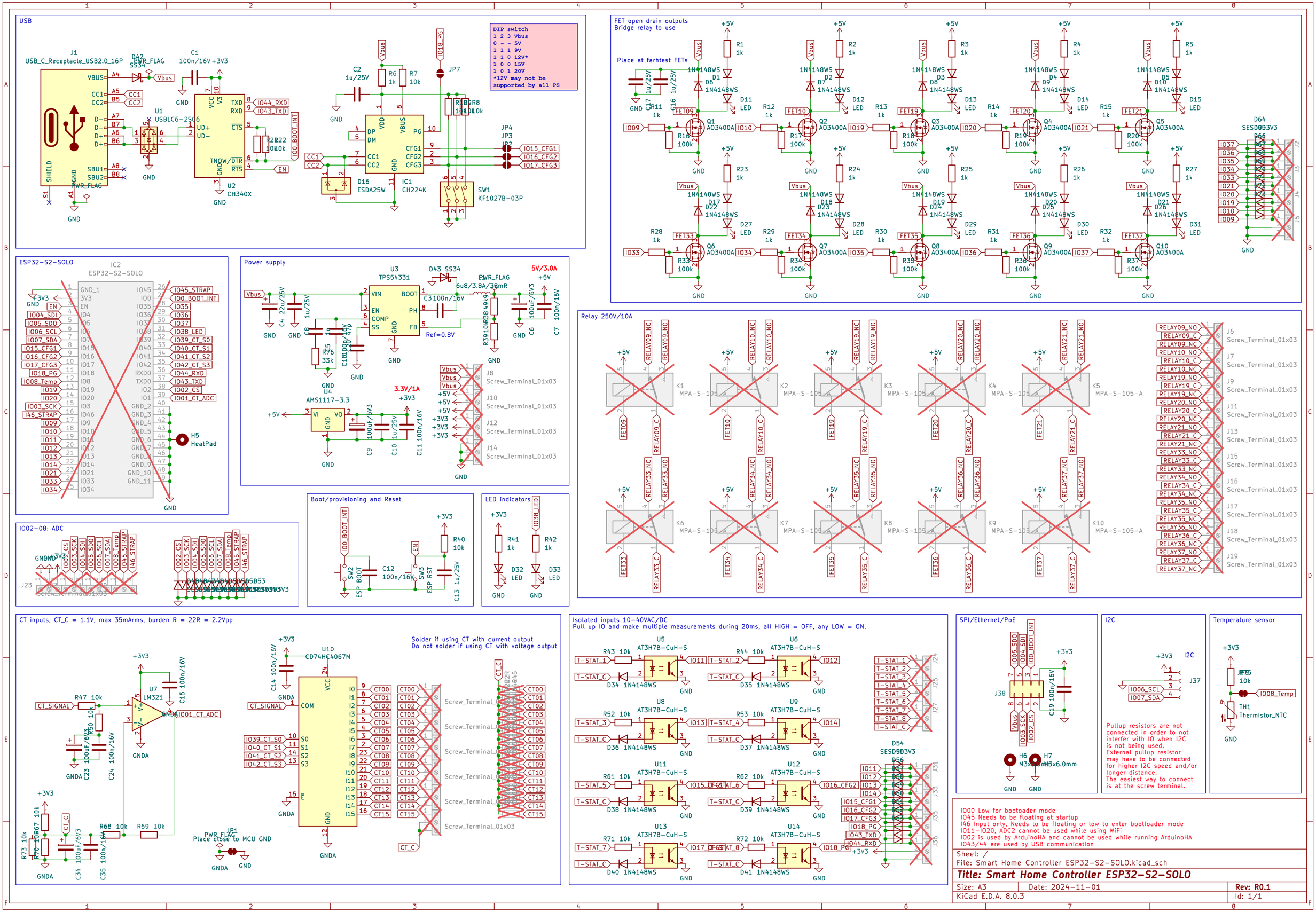
USB
J1
USB_C_Receptacle_USB2.0_16P
D42 SS34
PWR_FLAG
C1 100n/16V
+3V3
U1 USBLC6-2SC6
U2 CH340X
C2 1u/25V
R6 1k
R7 10k
JP7
D16 ESDA25W
IC1 CH224K
SW1 KF1027B-03P
JP4
JP3
JP2
DIP switch
1 2 3 Vbus
0 - - 5V
1 1 1 9V
1 1 0 12V*
1 0 0 15V
1 0 1 20V
*12V may not be supported by all PS
FET open drain outputs
Bridge relay to use
Place at farhtest FETs
D64 SESD9B3V3
ESP32-S2-SOLO
IC2 ESP32-S2-SOLO
H5 HeatPad
Power supply
U3 TPS54331
D43 SS34
5V/3.0A
U4 AMS1117-3.3
3.3V/1A
J8 Screw_Terminal_01x03
J10 Screw_Terminal_01x03
J12 Screw_Terminal_01x03
J14 Screw_Terminal_01x03
Relay 250V/10A
K1 MPA-S-105-A
K2 MPA-S-105-A
K3 MPA-S-105-A
K4 MPA-S-105-A
K5 MPA-S-105-A
K6 MPA-S-105-A
K7 MPA-S-105-A
K8 MPA-S-105-A
K9 MPA-S-105-A
K10 MPA-S-105-A
J6 Screw_Terminal_01x03
J7 Screw_Terminal_01x03
J9 Screw_Terminal_01x03
J11 Screw_Terminal_01x03
J13 Screw_Terminal_01x03
J15 Screw_Terminal_01x03
J16 Screw_Terminal_01x03
J17 Screw_Terminal_01x03
J18 Screw_Terminal_01x03
J19 Screw_Terminal_01x03
IO02-08: ADC
J23 Screw_Terminal_01x03
Boot/provisioning and Reset
SW2 ESP BOOT
SW3 ESP RST
C12 100n/16V
C13 1u/25V
R40 10k
LED indicators
R41 1k
R42 1k
D32 LED
D33 LED
CT inputs, CT_C = 1.1V, max 35mArms, burden R = 22R = 2.2Vpp
Solder if using CT with current output
Do not solder if using CT with voltage output
U7 LM321
U10 CD74HC4067M
JP1 PWR_FLAG
Place close to MCU GND
Isolated inputs 10-40VAC/DC
Pull up IO and make multiple measurements during 20ms, all HIGH = OFF, any LOW = ON.
U5 AT3H7B-CuH-S
U6 AT3H7B-CuH-S
U8 AT3H7B-CuH-S
U9 AT3H7B-CuH-S
U11 AT3H7B-CuH-S
U12 AT3H7B-CuH-S
U13 AT3H7B-CuH-S
U14 AT3H7B-CuH-S
D54 SESD9B3V3
SPI/Ethernet/PoE
J38
H6 M3x6.0mm
H7 M3x6.0mm
I2C
J37
Pullup resistors are not connected in order to not interfer with IO when I2C is not being used.
External pullup resistor may have to be connected for higher I2C speed and/or longer distance.
The easiest way to connect is at the screw terminal.
Temperature sensor
TH1 Thermistor_NTC
IO00 Low for bootloader mode
IO45 Needs to be floating at startup
IO46 Input only, Needs to be floating or low to enter bootloader mode
IO11-IO20, ADC2 cannot be used while using WiFi
IO02 is used by ArduinoHA and cannot be used while running ArduinoHA
IO43/44 are used by USB communication
Sheet: /
File: Smart Home Controller ESP32-S2-SOLO.kicad_sch
Title: Smart Home Controller ESP32-S2-SOLO
Size: A3
Date: 2024-11-01
Rev: R0.1
KiCad E.D.A. 8.0.3
Id: 1/1