Smart Garden *R1*

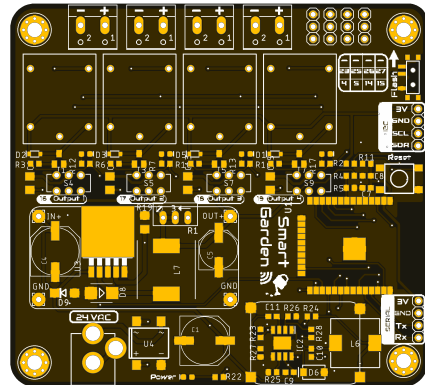## 1 Overview

✓ ESP32-S based

✓ Power supply though $24V_{AC}$ jack input

✓ 4 independent relays with selectable output voltage ($24V_{AC}$ / regulable $0 - 24V_{DC}$

✓ Support for 4 LED ring metallic push-buttons

✓ I2C bus for expansions

2 Description

The Smart Garden is an electronic board based on the ESP32 with the target of controlling up to 4 relays. The output voltage of each relay can be switched between a fixed ($24V_{AC}$ (for the standard $24V_{AC}$ solenoid valve used in generic sprinkler systems) or a regulable $0 - 24V_{DC}$.

3 Technical specification

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Supply voltage (AC)	V_{AC}		24		V	
Output voltage (DC)	V_{DC}	0		24	V	
Working temperature [1]	T_{amb}	0	25	60	$°C$	
Storage temperature [1]	T_{amb}	-20		100	$°C$	

[1] Based on components datasheets.

Table 1: Absolute ratings

4 Bill of Materials

Value	ID	Package
	JP2	1X03
	JP3	1X03
	JP4	1X03
	JP5	1X03
	PAD1	2 54/1 1
	PAD2	2 54/1 1
	PAD3	2 54/1 1
	PAD4	2 54/1 1
	R1	RJ9W
	X2	W237-102
	X4	W237-102
	X6	W237-102
	X7	W237-102
1.2k	R5	R0603
1.5k	R3 R6 R10 R16	R0603
1N4148WS	D2 D3 D5 D10	SOD-323
3A/40V/500mV	D6	SMA-DIODE
4.7uF	C2 C6 C13 C15	C1206
10K	R2	R0603
10k	R4 R11	R0603
10uF	C9	C0603
22uF	C8	C0603
24.9k	R26	R0603
40.2k	R23	R0603
47μH	L7	WE-PD 1260/1245/1280/1210
68.1k	R27	R0603
100k	R28	R0603
100nF	C7 C10	C0603
124k	R24	R0603
200k	R25	R0603
220pF	C11	C0603
220μ/35V Low ESR	C5	PANASONIC F
330	R7 R12 R13 R17	R0603
330μ/50V	C1 C4	PANASONIC G
470	R22	R0603
470R	R19	R1206
BLUE	L2 L3 L5 L9	LED-0603
DB107S	U4	DBS
ESP-32S	U1	ESP-32S
GREEN	LED2	LED-0603
I2C	JP6	1X04
JS202011CQN	S4 S5 S7 S9	DPDT JS202011CQN
LM2596S	U3	TO263-5
MMBT2222A	T1 T3 T5 T7	SOT23

| Value	ID	Package
MOUNT-PAD-ROUND	H1 H2 H3 H4	3 0-PAD
MP1584EN-LF-Z	IC2	SOIC127P600X170-9N
POWER JACK	J2	POWER JACK PTH
RELAYPTH	RL1 RL3 RL5 RL7	SRD-05VDC-SL-C
RS1G	D9	DO214AC
Reset	S2	TACTILE SWITCH TALL
SLF10145T-100M2R5-H	L6	SLF10145
SS34	D8	SMB
SWITCH SPDT	S1	KPS-1290
Serial	JP1	1X04
TPTP20SQ	TP1 TP2 TP3 TP4	TP20SQ

5 Measures
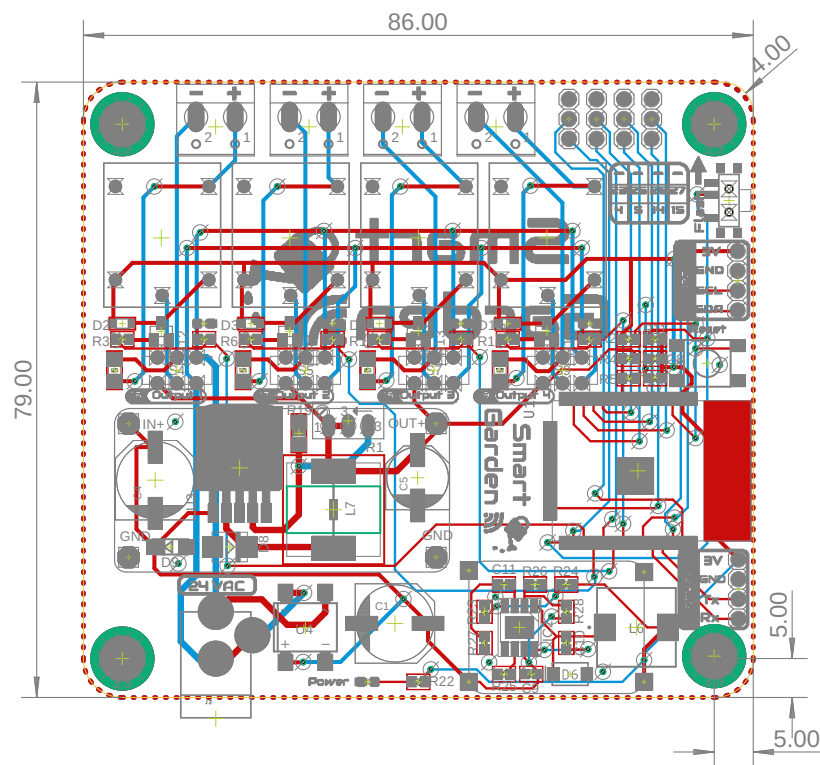
Note: Indicated measures in mm.

6   Schematics
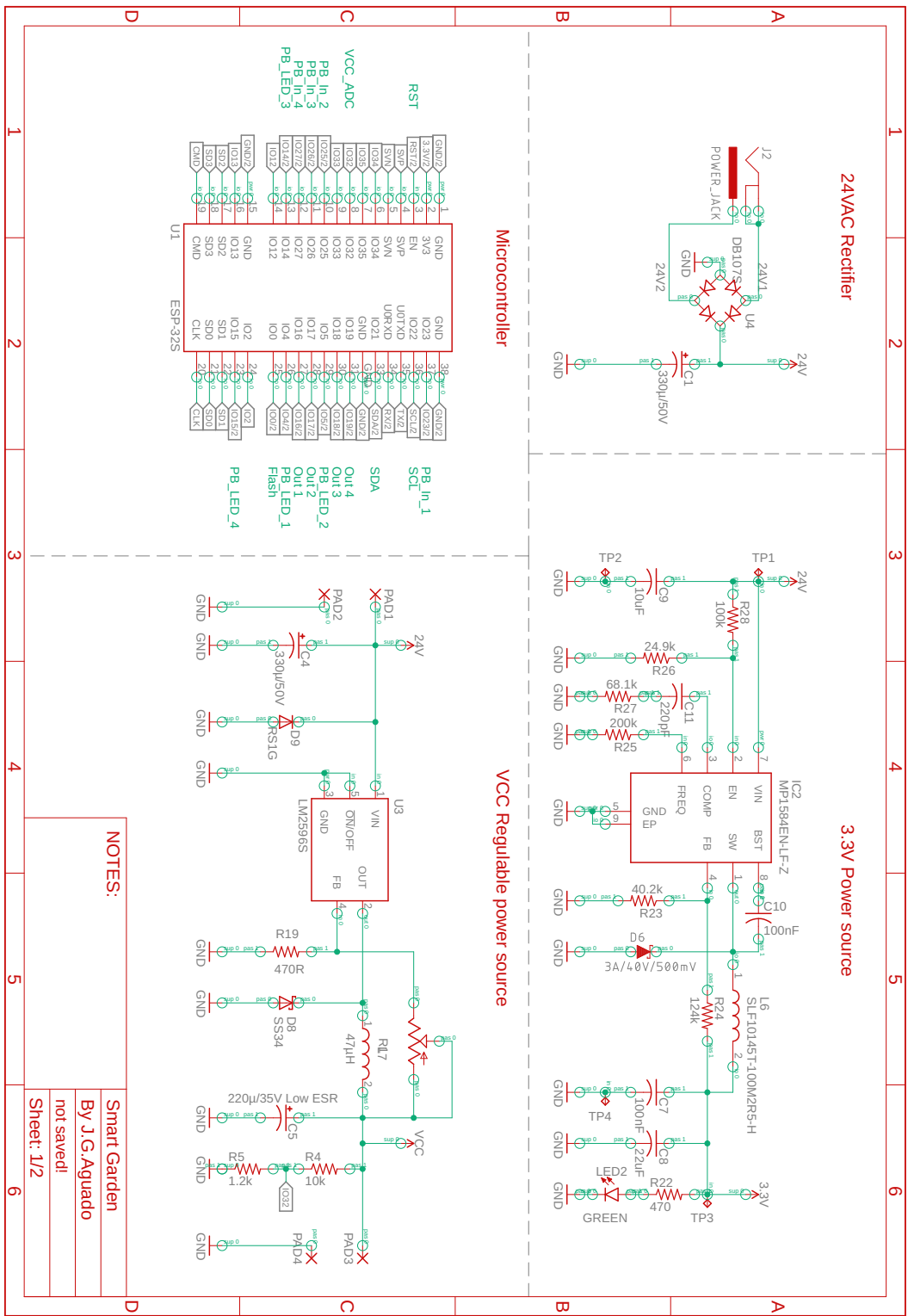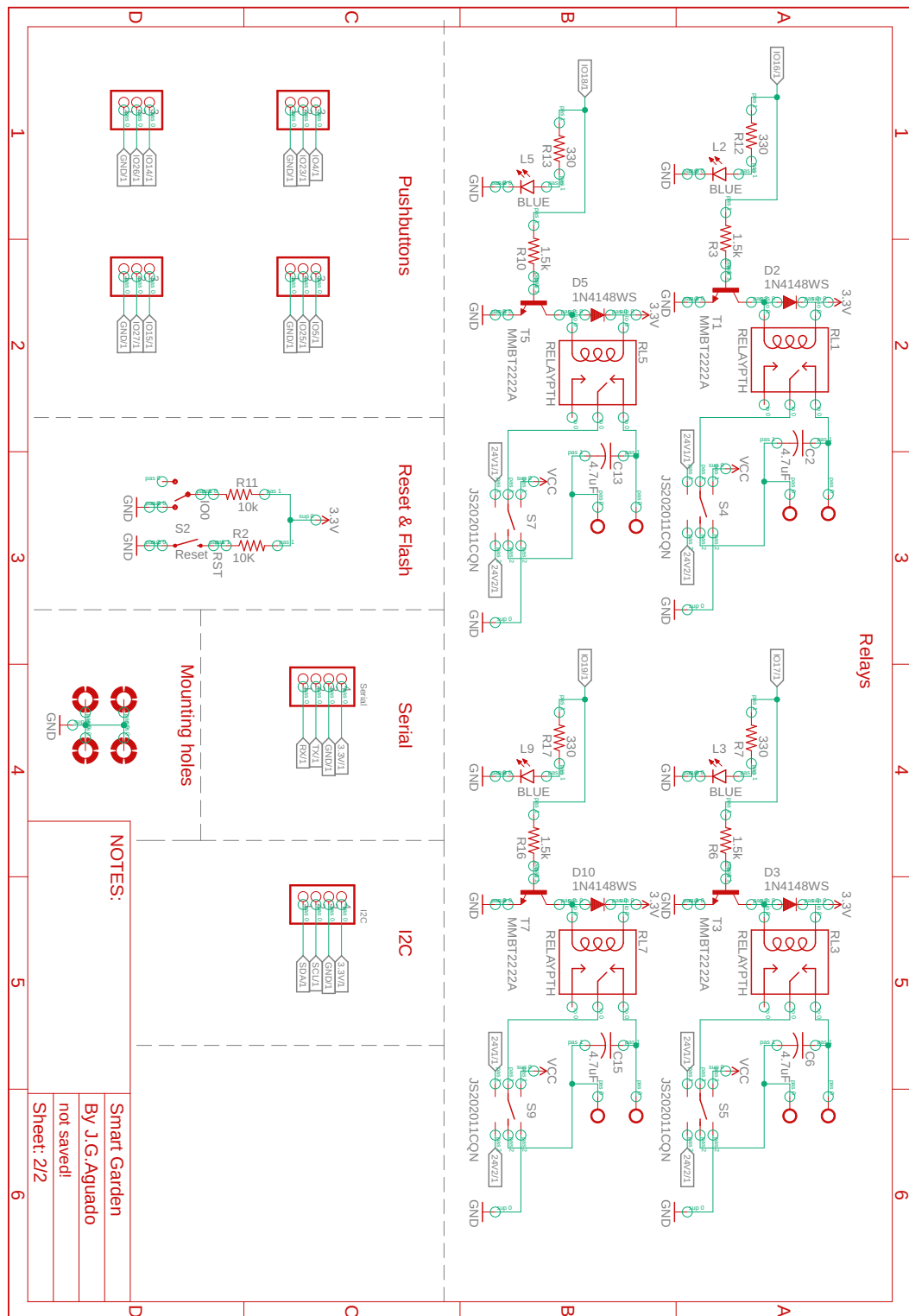
More information ...

You can find this document and many more under the documentation section available in the Github repository https://github.com/JGAguado/Smart_Garden.