Comment	Description	Designator	Footprint	LibRef	Quantity
100nF	Capacitor	C1, C4, C7, C10, C11, C12	CAP_0805	CapSMD	6
10uF	Capacitor	C2, C3, C21, C22, C23, C24	CAP_0805	CapSMD	6
22pF	Capacitor	C5, C6	CAP_0805	CapSMD	2
1uF	Capacitor	C8	CAP_0805	CapSMD	1
10nF	Capacitor	C9, C14	CAP_0805	CapSMD	2
4.7uF	Capacitor	C13, C17, C18	CAP_0805	CapSMD	3
220uF/16V	Polarized Capacitor (Axial)	C15	C8mm	Cap Pol	1
470uF/25V	Polarized Capacitor (Axial)	C16	C8mm	Cap Pol	1
470uF/16V	Polarized Capacitor (Axial)	C19, C20	C8mm	Cap Pol	2
SS34	Default Diode	DIO1	DIO-SMD-106	Diode SMD	1
1N4148	Default Diode	DIO2, DIO3, DIO4, DIO5	DIO-SMD-106	Diode SMD	4
CH340C		IC1	SO16	CH340C	1
TPS5430	TPS5430	IC2	TPS5430-2	TPS5430	1
RT9013	RT9013-33GB IC REG LINEAR 3.3V 500mA SOT23-5	IC3, IC4	SOT23-5	RT9013	2
USB-5		J1, J3	USB-M1	USB-5	2
ST_Link	Header IDC, 4 x 1 Pin Vertical 2.54mm Pitch (Non-Boxed, Male)	J2	JP4-C1T	Header4	1
JP4	WR-PHD 2.54 mm Angled Socket Header	J4, J5	JP4-C1T	JP4	2
JP17x2	WR-PHD 2.54 mm Dual Socket Header	J6	JP17-C2T	JP17x2	1
KF3		J7, J8, J9, J10	KF3-5.08	KF3	4
Jac DC	Jac DC input	JDC1	DC-IN	DCIN	1
JP 2x5 2.54	Cắm	JP1	JP5-D2T	JP 2x5 2.54 Duc Thang	1
Relay-SPDT	Single-Pole Dual-Throw Relay	K1, K2, K3, K4	RELAY5PIN-10A	Relay-SPDT	4
22uH	Inductor	L1	L-SMD-M-7.3x4.5	Inductor	1
LED	LED Single colour Green and Red	LED1	LED-0805-Red	LED	1
LED	LED Single colour Green and Red	LED2	LED-0805-Green	LED	1
LED	LED Single colour Green and Red	LED3	LED-0805-Blue	LED	1
C1815	NPN 600mW, ECB	Q1, Q2	SOT23D	2SC1815	2
2SC1815	NPN 600mW, ECB	Q3, Q4, Q5, Q6	SOT23	2SC1815	4
10k	Resistor	R1, R2, R3, R4, R6, R10	RES-SMD-0805	Resistor - SMD	6
100k	Resistor	R5, R12, R13, R16, R17, R20, R21	RES-SMD-0805	Resistor - SMD	7
1k	Resistor	R7, R8, R9	RES-SMD-0805	Resistor - SMD	3
3.3k	Resistor	R11	RES-SMD-0805	Resistor - SMD	1
330R	Resistor	R14, R15, R18, R19	RES-SMD-0805	Resistor - SMD	4
SW	Switch button 2 pin	SW1, SW2, SW3	SW2	SW2	3
A_ON/OFF	Switch button 2 pin	SW4	SW2	SW2	1
esp_32_wroom		U1	MODULE_ESP32-WROOM-32	esp_32_wroom	1
Ra-02 LoRa	LoRa Module Ra-02	U2	Ra-02	Ra-02 LoRa	1
stm32f103rct6		U3	QFP50P1200X1200X160-64N	stm32f103rct6	1
8MHz	Crystal Oscillator	Y1	XTAL	XTAL	1