



Title		
Size	Number	Revision
A		
Date:	4/16/2024	Sheet of:
File:	E:\University\...LoraWAN_Node_SchDoc	Drawn By:

BT1

P5 P2 P3 C1 U1 U2 U3 C4

B- A+ GND GND +12 GND +5

Node LoraWAN  
Ver1.0

GBT1  
R11 R10  
F2 F1 U5  
TVS2  
TVS3 TVS1  
R3 R7  
C12 C13  
D1  
LED1 LED2

5V GND G\_TX G\_RX G\_PPS  
P7  
MODULE  
GPS  
U6

C7 C8 C5 C16 C15  
PWR R21 C10  
RST  
R22 R23 R24  
R19 LED7  
R12 R13  
C1 R20  
P4

SW2

P6

GND  
5V  
L\_RX  
L\_TX

SW3

BOOT

RL1 RL2 RL3 RL4

P8 P9 P10 P11  
R14 LED3 R15 LED4 R16 LED5 R17 LED6  
RL1 RL2 RL3 RL4

+



Nguyễn Trung Nghĩa  
0906631096

BAT  
16V

P1

BT1

SW1  
P2

OFF

SW4

ON

Comment	Description	Designator	Footprint	LibRef	Quantity
BK-18650-PC4	Battery Holder (Open) 18650 2 Cell PC Pin	BT1	BAT_BK-18650-PC4	BK-18650-PC4	1
25V/680uF	Capacitor pol	C1	C SMD ALU (G)	Capacitor	1
0.1uF	Capacitor non-pol	C2, C3, C5, C6, C7, C8, C9, C10, C11, C12, C14, C16	C 0603 (1608)	Capacitor NP	12
16V/220uF	Capacitor pol	C4	C SMD ALU (D8)	Capacitor	1
33pF	Capacitor non-pol	C13	C 0603 (1608)	Capacitor NP	1
10uF	Capacitor non-pol	C15	C 0603 (1608)	Capacitor NP	1
Diode	Default Diode	D1, D2, D3, D4, D5	DO-214AC (SMA)	Diode	5
MS_MSMF	Fuse	F1, F2	Fuse 1812P050	Fuse	2
Gas Discharge Tube	Gas Discharge Tube	GDT1	CAPC4532X110N	Gas Discharge Tube	1
Header 1	Header, 1-Pin	H1, H2, H3, H4	M3	Header 1	4
Led	Typical LED	LED1, LED2, LED3, LED4, LED5, LED6, LED7, PWR	Led SMD 0805	Led	8
Header 2	Header, 2-Pin	P1	XH2.54-2P	Header 2	1
Header 2	Header, 2-Pin	P2, P3, P8, P9, P10, P11	HDR Domino 2 - 5MM	Header 2	6
Header 4	Header, 4-Pin	P4	Header 4	Header 4	1
Header 3	Header, 3-Pin	P5	HDR Domino 3 - 5MM	Header 3	1
110990030		P6	SEED_110990030	110990030	1
Header 5	Header, 5-Pin	P7	Header 5	Header 5	1
470	Resistor	R1, R4, R5, R14, R15, R16, R17, R19	R 0603 (1608)	Resistor	8
10k	Resistor	R2, R13, R20, R21	R 0603 (1608)	Resistor	4
22k	Resistor	R3	R 0603 (1608)	Resistor	1
4k7	Resistor	R6, R7, R8, R9	R 0603 (1608)	Resistor	4
121	Resistor	R10	R 0603 (1608)	Resistor	1
0_Open	Resistor	R11, R22, R24	R 0603 (1608)	Resistor	3
20k	Resistor	R12	R 0603 (1608)	Resistor	1
0_Close	Resistor	R23	R 0603 (1608)	Resistor	1
SRA-05VDC-CL		RL1, RL2, RL3, RL4	RELAY_SRA-05VDC-CL	SRA-05VDC-CL	4
Tact Switch	Tact switch 4 pin	SW1	SW/4/DIP/SMALL	SW SPST-4	1
Button	Tact switch 2 pin	SW2, SW3	SW/2/SMD	SW SPST	2
SW SPDT		SW4	SW/3/SPDT/SS12D10	SW SPDT	1
Diode TVS	Bi-directional TVS Diode	TVS1, TVS2, TVS3	DO-214AA (SMB)	Diode TVS Bi-Dir	3
L7xxx	LDO Fixed Voltage regulator	U1, U2	TO-263 (D2PAK)	L7xxx	2
AMS1117	1A LDO Voltage Regulator, ADJ or fixed 1.5/1.8/2.5/2.85/3.3/5V	U3	SOT-223	AMS1117	1
74HC14D	Inverter IC 6 Channel Schmitt Trigger 14-SOIC	U4	SOIC127P600X175-14N	74HC14D	1
SP485EN-L	SP485 Series 5 Mbps 5 V Low Power Half Duplex RS-485 Transceiver - NSOIC-8	U5	SOIC-8	SP485EN-L	1
ULN2003	High-voltage, high-current Darlington transistor arrays	U6	SOIC-16	ULN2003	1
ESP32-WROOM-32U	Bluetooth, WiFi 802.11b/g/n, Bluetooth v4.2 +EDR, Class 1, 2 and 3 Transceiver Module 2.4GHz ~ 2.5GHz Antenna Not Included, U.FL Surface Mount	U7	XCVR_ESP32-WROOM-32U	ESP32-WROOM-32U	1