Revision History

Version	Date	By	Change Dsecription	Approved
A01	2024-7-10	LU HAO	1:Revision preliminary version	
A05	2024-10-14	LU HAO	1:去掉D1/Q1休眠弯插指示灯控制部分； 2:核心板固定方式由六角双通螺柱H1,H2变更为贴片螺母； 3.24V_DO改为3路； 4.U8的供电输入由24V0改为5V0_JETSON； 5.删除MINI PCIE-4G_Module功能部分 6.增加R519,R520电阻并NC，硬件上禁用蓝牙功能。 7.去除U31,J29部分，取消外接视频转接板和6.8寸触摸LCD屏功能。 8.去除CSI_Camera功能部分。 9.去除J19,J20,J21三个DB9连接器，将CAN/RS485/RS232直接引出到大端子。 10.J10大端子由引出一组USB接口改为引出2组，预留外接其他外设。 11.MCU 调试串口UART1一分二接灯带IC，支持灯带OTA快速升级。	
A06	2025-3-1	LU HAO	1:增加电池开关电路并引出到线束端子。 2:删除SSD预留的2230贴片螺母MEC3。 3.删除USB2.0 HUB U47。 4.增加MCU U16的硬件版本管理，ADC分压检测。 5.删除灯带IC U20和烧录座J8。 6.增加一路RS485输出和一路CAN输出，并连接到线束端子。 7.取消蓝牙功能，将其USB信号线连接至J3 USB-TYPEA连接器。 8.增加板载IMU电路。 9.增加DOUT为6路。 10.对CAN电路和485电路进行抗干扰处理设计，增加共模电感。 11.MCU烧录线SWCLK和SWDIO之间走线用地隔离，减小信号干扰。 12.对大端子处的引脚进行防护，增加TVS管器件。 13.烧录与产测治具相关测试点全部放置于底层。 14.修改DCDC转换频率，R22修改为43K，R29修改为200K，应对CE测试。 15.增加U5的EN下拉R574，避免不插核心板时EN悬空导致U5直接上电不受控。 15.将R46改为靠近U8.EN脚位置。	

Title	L600_MB		
Size B	Document Number 01.Revision History		Rev A06
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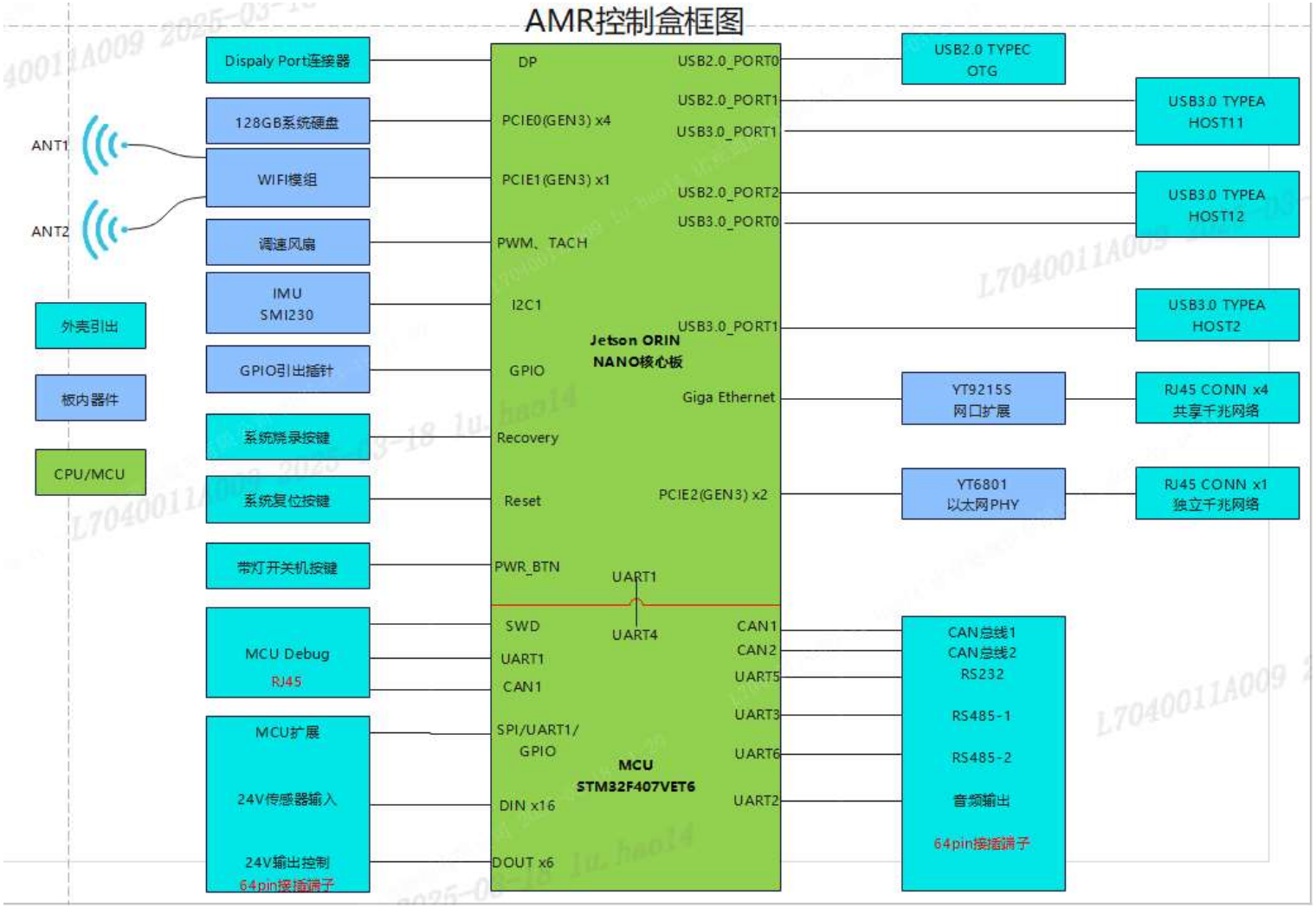
AMR控制盒框图



Title	L600_MB	
Size B	Document Number 02.Block_Diagram	Rev A06
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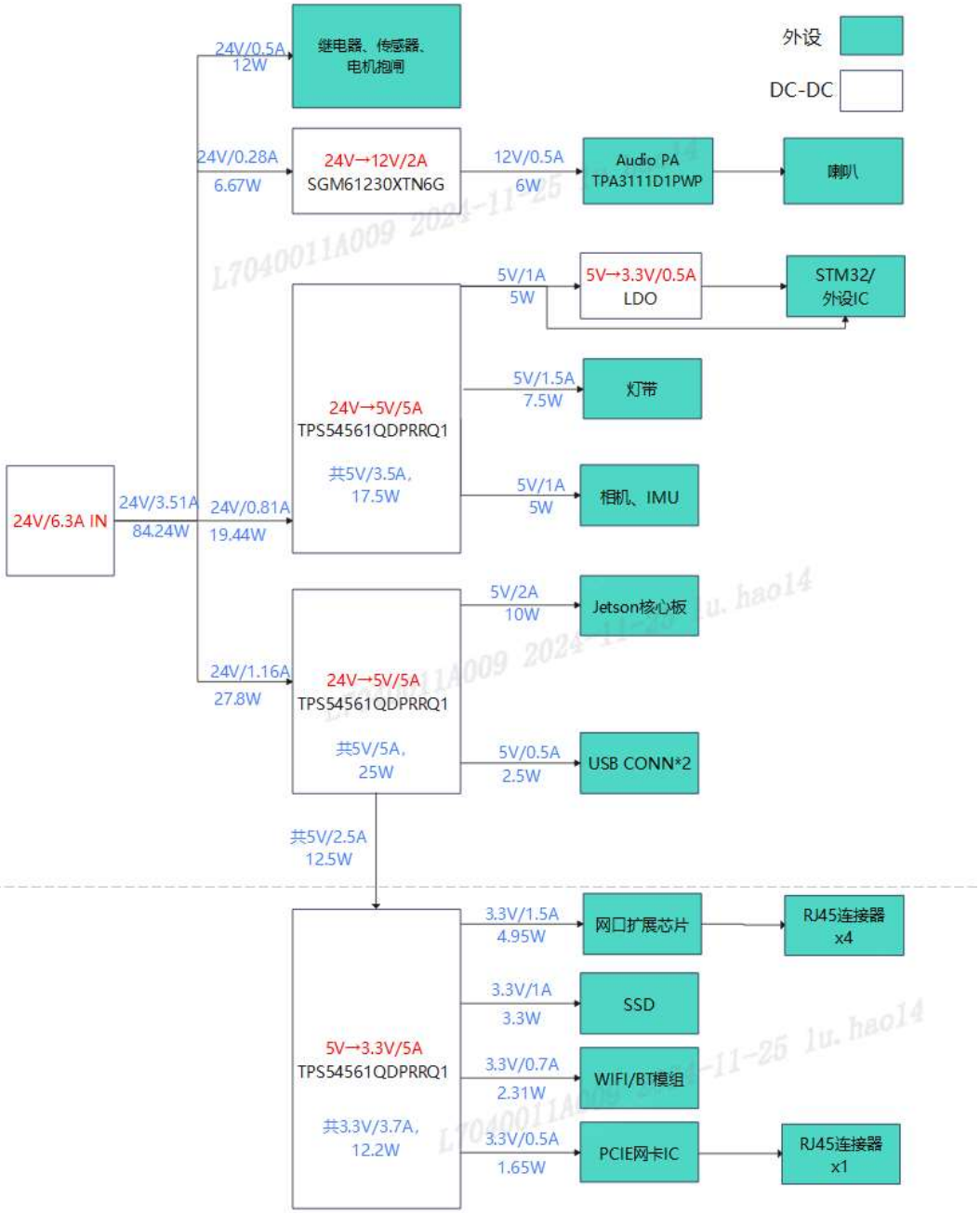
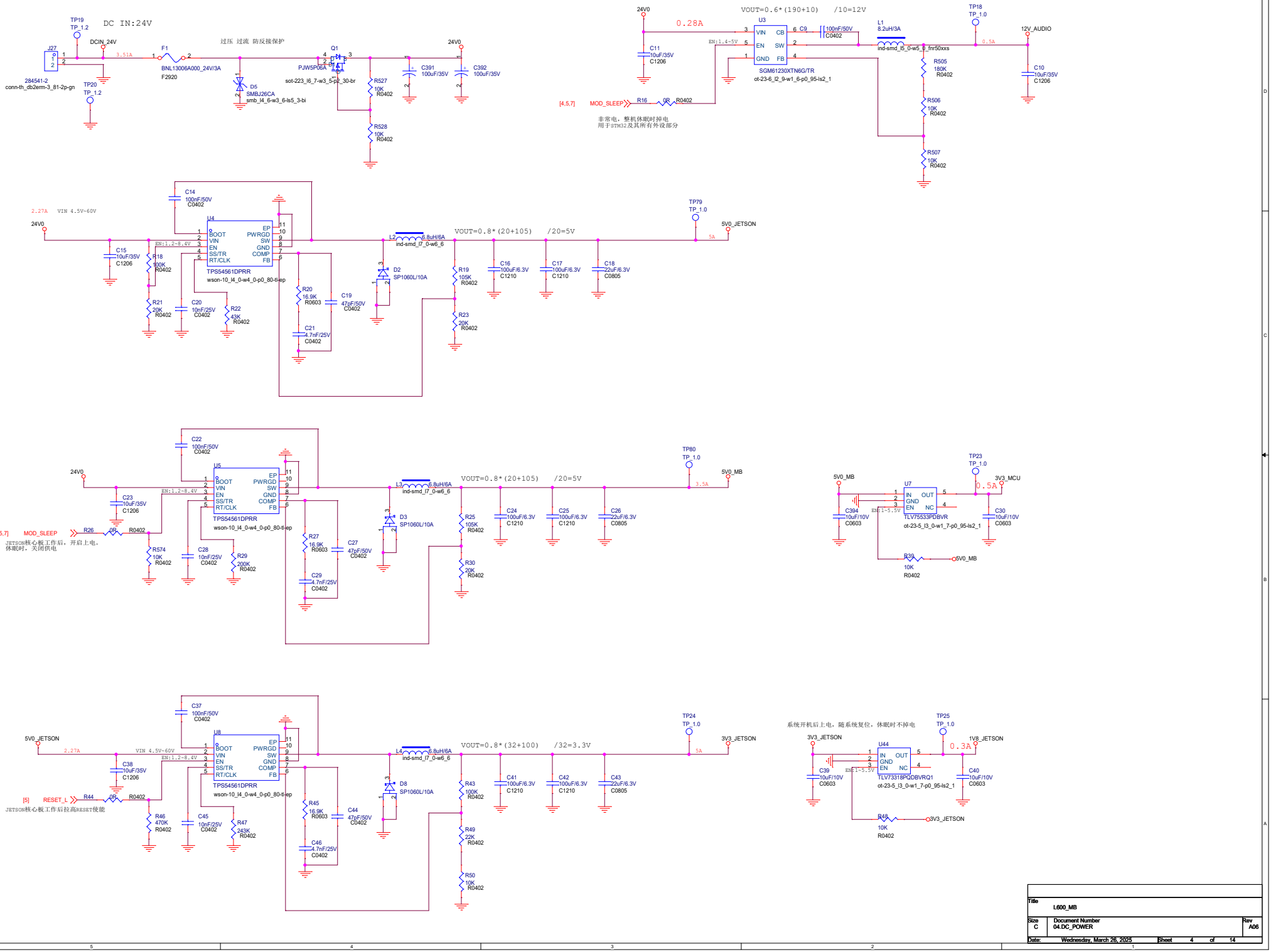


Title	L600_MB	
Size B	Document Number 03.Power_Tree	Rev A06
Date: Wednesday, March 26, 2025	Sheet 3 of 14	



Title	L600_MB	
Size C	Document Number 04.DC_POWER	Rev A06
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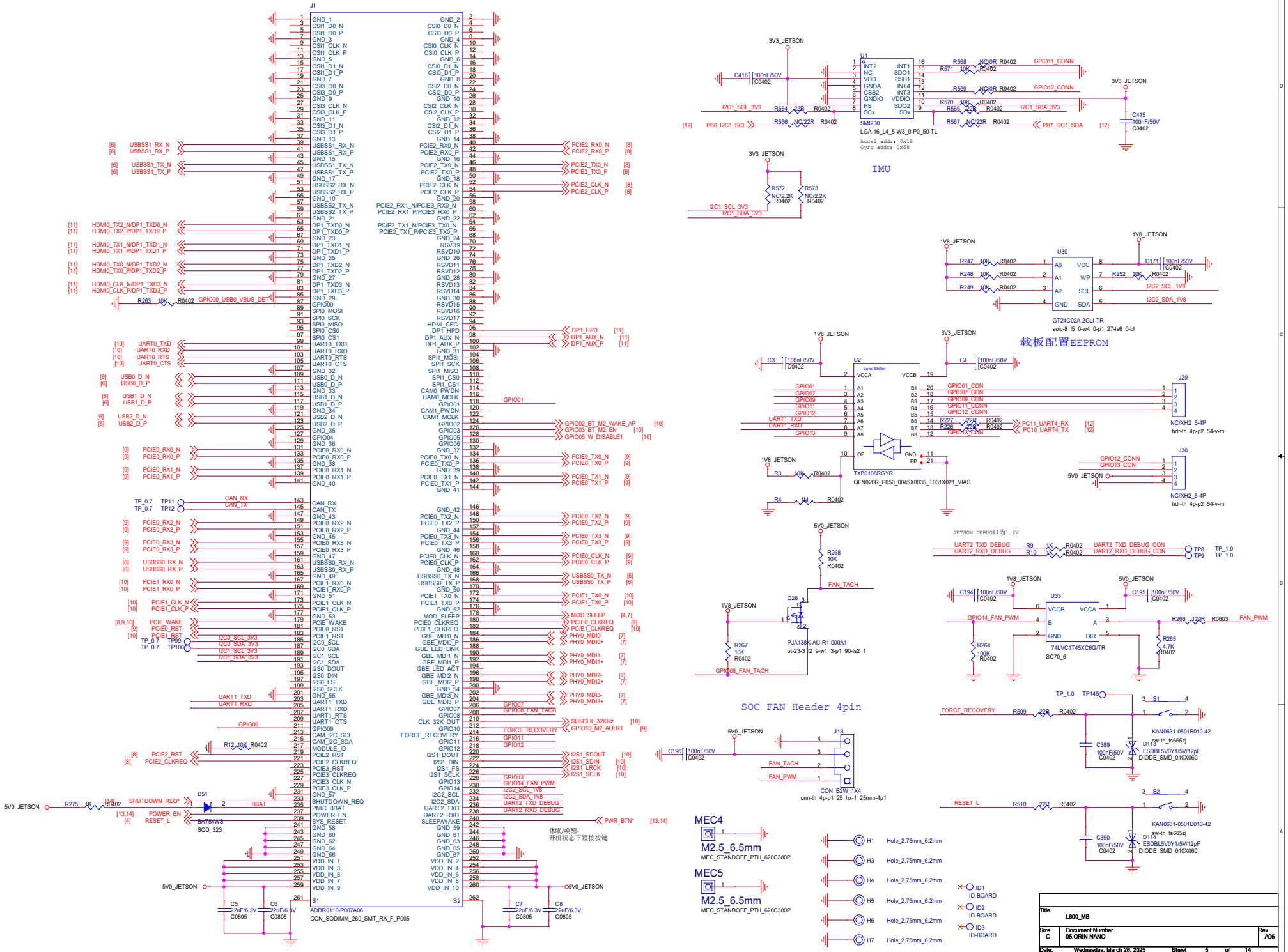
J1
ADDR0110-P007A06
CON_SODIMM_260_SMT_RA_F_P005
S1
S2
U1
SMI230
LGA-16_L4_5-W3_0-P0_50-TL
IMU
U30
GT24C02A-2GLI-TR
soic-8_l5_0-w4_0-p1_27-ls6_0-bl
载板配置EEPROM
U2
TXB0108RGYR
QFN020R_P050_0045X0035_T031X021_VIAS
J29
J30
NC/XH2_5-4P
hdr-th_4p-p2_54-v-m
U33
74LVC1T45XC6G/TR
SC70_6
Q28
PJA138K-AU-R1-000A1
ot-23-3_l2_9-w1_3-p1_90-ls2_1
SOC FAN Header 4pin
J13
CON_B2W_1X4
onn-th_4p-p1_25_hx-1_25mm-4p1
MEC4
MEC5
M2.5_6.5mm
MEC_STANDOFF_PTH_620C380P
D51
BAT54WS
SOD_323
D113
D114
KAN0631-0501B010-42
sw-th_ts665zj
ESDBL5V0Y1/5V/12pF
DIODE_SMD_010X060
休眠/唤醒;
开机状态下短按按键
JETSON DEBUG口为1.8V
Title
L600_MB
Size
C
Document Number
05.ORIN NANO
Rev
A06
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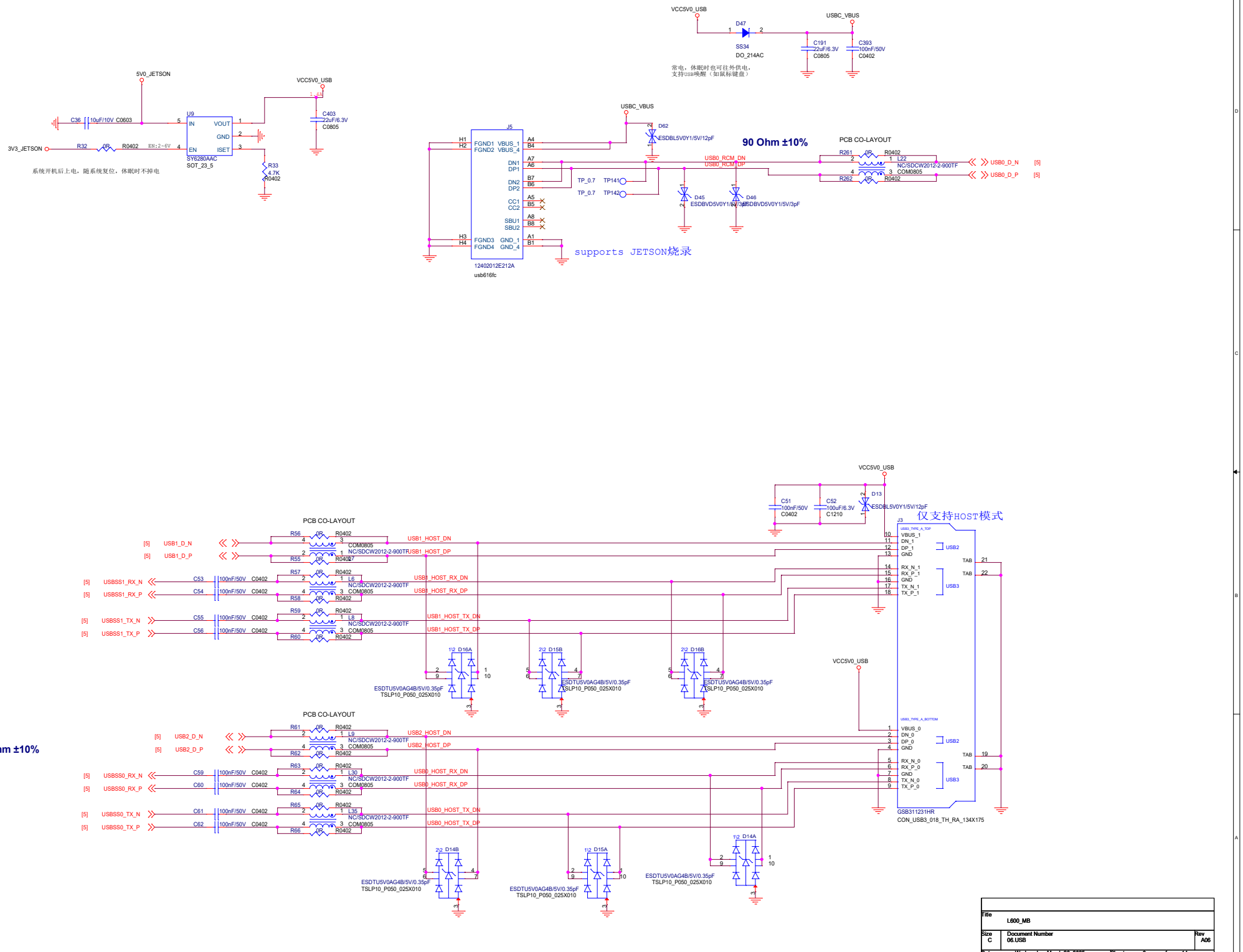
14


5V0_JETSON
VCC5V0_USB
U9
C36 10uF/10V C0603
IN
VOUT
GND
EN
ISET
SY6280AAC
SOT_23_5
C403 22uF/6.3V C0805
3V3_JETSON
R32 0R R0402 EN:2~6V
R33 4.7K R0402
系统开机后上电，随系统复位，休眠时不掉电
USBC_VBUS
D47 SS34 DO_214AC
C191 22uF/6.3V C0805
C393 100nF/50V C0402
常电，休眠时也可往外供电，
支持USB唤醒（如鼠标键盘）
J5
FGND1 VBUS_1 FGND2 VBUS_4
DN1 DP1 DN2 DP2 CC1 CC2 SBU1 SBU2
FGND3 GND_1 FGND4 GND_4
12402012E212A
usb616fc
D62 ESDBL5V0Y1/5V/12pF
TP_0.7 TP141
TP_0.7 TP142
D45 ESDBVD5V0Y1/5V/3pF
D46 ESDBVD5V0Y1/5V/3pF
USB0_RCM_DN
USB0_RCM_DP
90 Ohm ±10%
PCB CO-LAYOUT
R261 0R R0402
R262 0R R0402
L22 NC/SDCW2012-2-900TF COM0805
USB0_D_N [5]
USB0_D_P [5]
supports JETSON烧录
VCC5V0_USB
C51 100nF/50V C0402
C52 100uF/6.3V C1210
D13 ESDBL5V0Y1/5V/12pF
仅支持HOST模式
J3
USB3_TYPE_A_TOP
VBUS_1 DN_1 DP_1 GND
RX_N_1 RX_P_1 GND TX_N_1 TX_P_1
USB2
USB3
TAB 21
TAB 22
PCB CO-LAYOUT
USB1_D_N [5]
USB1_D_P [5]
R56 0R R0402
R55 0R R0402
COM0805
NC/SDCW2012-2-900TF
USB1_HOST_DN
USB1_HOST_DP
USBSS1_RX_N [5]
USBSS1_RX_P [5]
C53 100nF/50V C0402
C54 100nF/50V C0402
R57 0R R0402
R58 0R R0402
L6
USB1_HOST_RX_DN
USB1_HOST_RX_DP
USBSS1_TX_N [5]
USBSS1_TX_P [5]
C55 100nF/50V C0402
C56 100nF/50V C0402
R59 0R R0402
R60 0R R0402
L8
USB1_HOST_TX_DN
USB1_HOST_TX_DP
1\2 D16A
2\2 D15B
2\2 D16B
ESDTU5V0AG4B/5V/0.35pF
TSLP10_P050_025X010
VCC5V0_USB
PCB CO-LAYOUT
USB2_D_N [5]
USB2_D_P [5]
R61 0R R0402
R62 0R R0402
L9
NC/SDCW2012-2-900TF
COM0805
USB2_HOST_DN
USB2_HOST_DP
90 Ohm ±10%
USBSS0_RX_N [5]
USBSS0_RX_P [5]
C59 100nF/50V C0402
C60 100nF/50V C0402
R63 0R R0402
R64 0R R0402
L30
USB0_HOST_RX_DN
USB0_HOST_RX_DP
USBSS0_TX_N [5]
USBSS0_TX_P [5]
C61 100nF/50V C0402
C62 100nF/50V C0402
R65 0R R0402
R66 0R R0402
L35
USB0_HOST_TX_DN
USB0_HOST_TX_DP
2\2 D14B
1\2 D15A
1\2 D14A
USB3_TYPE_A_BOTTOM
VBUS_0 DN_0 DP_0 GND
RX_N_0 RX_P_0 GND TX_N_0 TX_P_0
USB2
USB3
TAB 19
TAB 20
GSB311231HR
CON_USB3_018_TH_RA_134X175
Title
L600_MB
Size C
Document Number 06.USB
Rev A06
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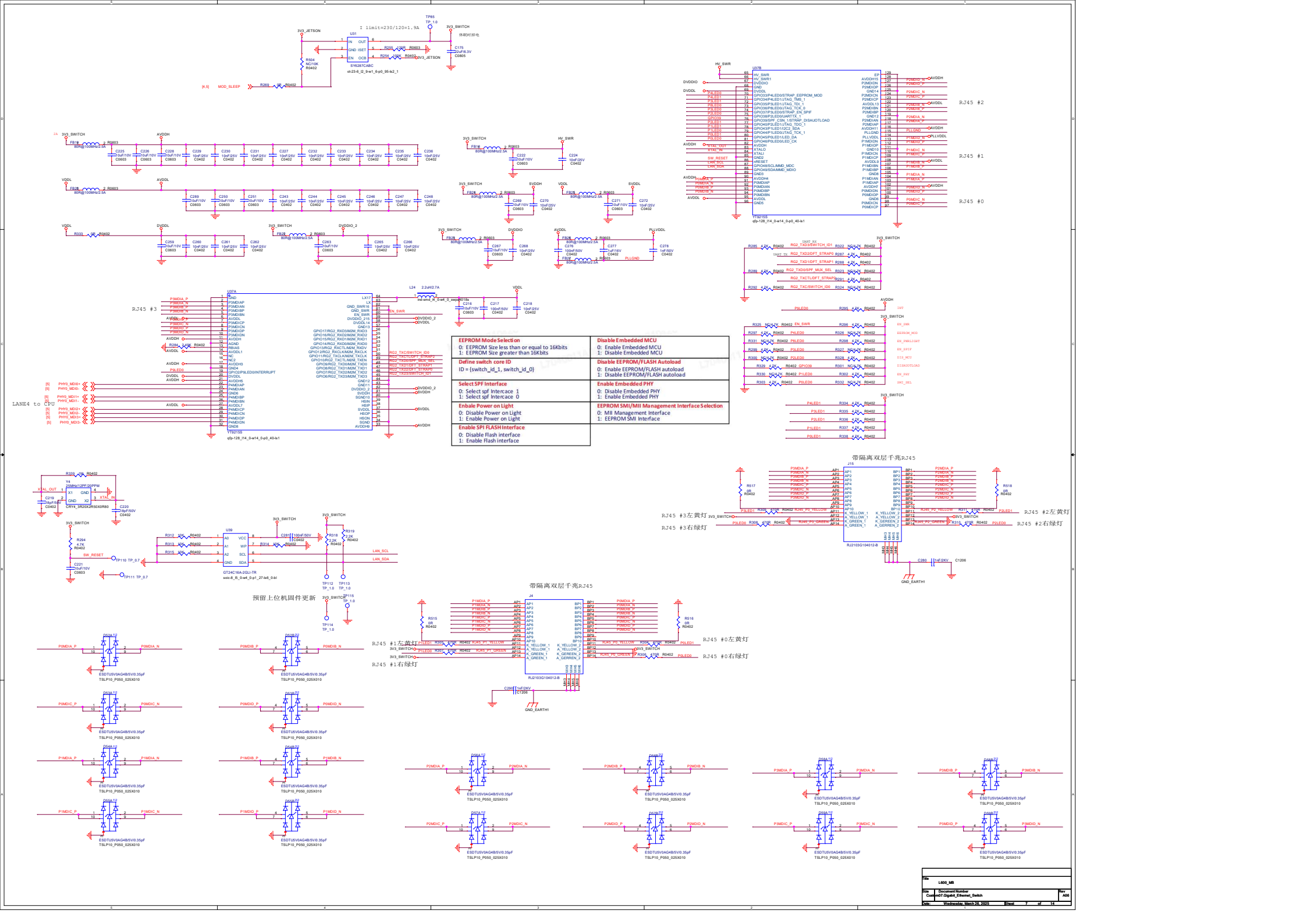
I limit=230/120=1.9A
3V3_JETSON
3V3_SWITCH
休眠时掉电
MOD_SLEEP
RJ45 #2
RJ45 #1
RJ45 #0
RJ45 #3
LANE4 to CPU
EEPROM Mode Selection
0: EEPROM Size less than or equal to 16Kbits
1: EEPROM Size greater than 16Kbits
Disable Embedded MCU
0: Enable Embedded MCU
1: Disable Embedded MCU
Define switch core ID
ID = {switch_id_1, switch_id_0}
Disable EEPROM/FLASH Autoload
0: Enable EEPROM/FLASH autoload
1: Disable EEPROM/FLASH autoload
Select SPF Interface
0: Select spf Intercace 1
1: Select spf Intercace 0
Enable Embedded PHY
0: Disable Embedded PHY
1: Enable Embedded PHY
Enbale Power on Light
0: Disable Power on Light
1: Enable Power on Light
EEPROM SMI/MII Management Interface Selection
0: MII Management Interface
1: EEPROM SMI Interface
Enable SPI FLASH Interface
0: Disable Flash interface
1: Enable Flash interface
带隔离双层千兆RJ45
预留上位机固件更新
RJ45 #3左黄灯
RJ45 #3右绿灯
RJ45 #2左黄灯
RJ45 #2右绿灯
RJ45 #1左黄灯
RJ45 #1右绿灯
RJ45 #0左黄灯
RJ45 #0右绿灯
L600_MB
Custom07-Gigabit_Ethernet_Switch
Wednesday, March 26, 2025

系统开机后上电，随系统复位，休眠时不掉电

0.5A

3V3_JETSON — R355 0R R0402 — AVDD33

C304 10uF/10V C0603 | C305 100nF/50V C0402 | C306 100nF/50V C0402

3V3_JETSON — R356 0R R0402 — VDDREG

C307 10uF/10V C0603 | C308 100nF/50V C0402

R361 0R R0402

L29 NC/2.2uH/1.2A

REGOUT — IND_252012 — VDD12

C315 100nF/50V C0402 | C316 NC/10uF/10V C0603 | C317 NC/100nF/50V C0402

VDD12 — R357 0R R0402 — AVDD12

C309 1uF/16V C0402 | C310 100nF/50V C0402 | C311 100nF/50V C0402 | C312 100nF/50V C0402

VDD12 — R358 0R R0402 — DVDD12

C313 1uF/16V C0402 | C314 100nF/50V C0402

U40

	MDI0_P	1	TPXP0	AVDD333	32
	MDI0_N	2	TRXN0	RBIAS	31
AVDD12		3	AVDD12	AVDD122	30
	MDI1_P	4	TRXP1	XTAL_O	29
	MDI1_N	5	TRXN1	XTAL_I	28
	MDI2_P	6	TRXP2	LED0	27
	MDI2_N	7	TRXN2	LED1	26
AVDD12		8	AVDD121	LED2	25
	MDI3_P	9	TRXP3	REGOUT	24
	MDI3_N	10	TRXN3	VDDREG	23
AVDD33		11	AVDD33	DVDD12	22
[5] PCIE2_CLKREQ		12	CLKREQ_N	WAKE_N	21
[5] PCIE2_TX0_P	C300 100nF/50V C0402 HSIP	13	HSIP	NC	20
[5] PCIE2_TX0_N	C301 100nF/50V C0402 HSIN	14	HSIN	PERST_N	19
[5] PCIE2_CLK_P		15	REFCLK_P	HSON	18
[5] PCIE2_CLK_N	close to CPU	16	REFCLK_N	HSOP	17
			GND	GND	33

R353 2.49K R0402

AVDD33 — AVDD12 — XTAL_O — XTAL_I — LED0 — LED1 — LED2 — REGOUT — VDDREG — DVDD12

R360 0R R0402

PCIE_WAKE [5,9,10]

HSON C298 100nF/50V C0402 — PCIE2_RST [5] — PCIE2_RX0_N [5]

HSOP C299 100nF/50V C0402 — PCIE2_RX0_P [5]

核心板带上拉

YT6801 qfn-32_l4_0-w4_0-p0_40-tl-ep2_7

close to YT6801

100 Ohm ±10%
GEN1

R354 1M R0402

Y5
25MHz/12PF/20PPM

XTAL_O — C302 18pF/50V C0402 — X1 GND GND X2 — XTAL_I — C303 18pF/50V C0402

CRY4_3R20X2R50X0R80

D66A 1\2

MDI0_P — 1 — 10 — 2 — 9 — MDI0_N

3

ESDTU5V0AG4B/5V/0.35pF
TSLP10_P050_025X010

D66B 2\2

MDI1_P — 4 — 7 — 5 — 6 — MDI1_N

3

ESDTU5V0AG4B/5V/0.35pF
TSLP10_P050_025X010

D67A 1\2

MDI2_P — 1 — 10 — 2 — 9 — MDI2_N

3

ESDTU5V0AG4B/5V/0.35pF
TSLP10_P050_025X010

D67B 2\2

MDI3_P — 4 — 7 — 5 — 6 — MDI3_N

3

ESDTU5V0AG4B/5V/0.35pF
TSLP10_P050_025X010

J16

MDI0_P	1	MD0+	J1
MDI0_N	2	MD0-	J2
MDI1_P	3	MD1+	J3
MDI1_N	6	MD1-	J6
	4	MCT	
MDI2_P	7	MD2+	J4
MDI2_N	8	MD2-	J5
	5	MCT	
MDI3_P	9	MD3+	J7
MDI3_N	10	MD3-	J8
	11	VC1	
	12	VC2	
	13	VC3	
	14	VC4	

C318 100nF/50V C0402

4 * 22nF / 100V

4 * 75 ohm

Green — Yellow

C319 1nF/2KV C1206 — SHIELD 19 — SHIELD 20 — 1000pF / 2KV

GND_EARTH2

RJD103Q005012-A
CON_RJ45_018_TH_RA_F_2LED

GRN+ 15 — GRN- 16 — YEL+ 17 — YEL- 18

LED2 — R362 470R R0402 — R363 4.7K R0402

绿灯：千兆指示

黄灯：百兆指示

LED1 — R364 470R R0402 — R365 4.7K R0402

LED0 — R366 4.7K R0402

Title	L600_MB		
Size B	Document Number 08.PCIE to Gigabit		Rev A06
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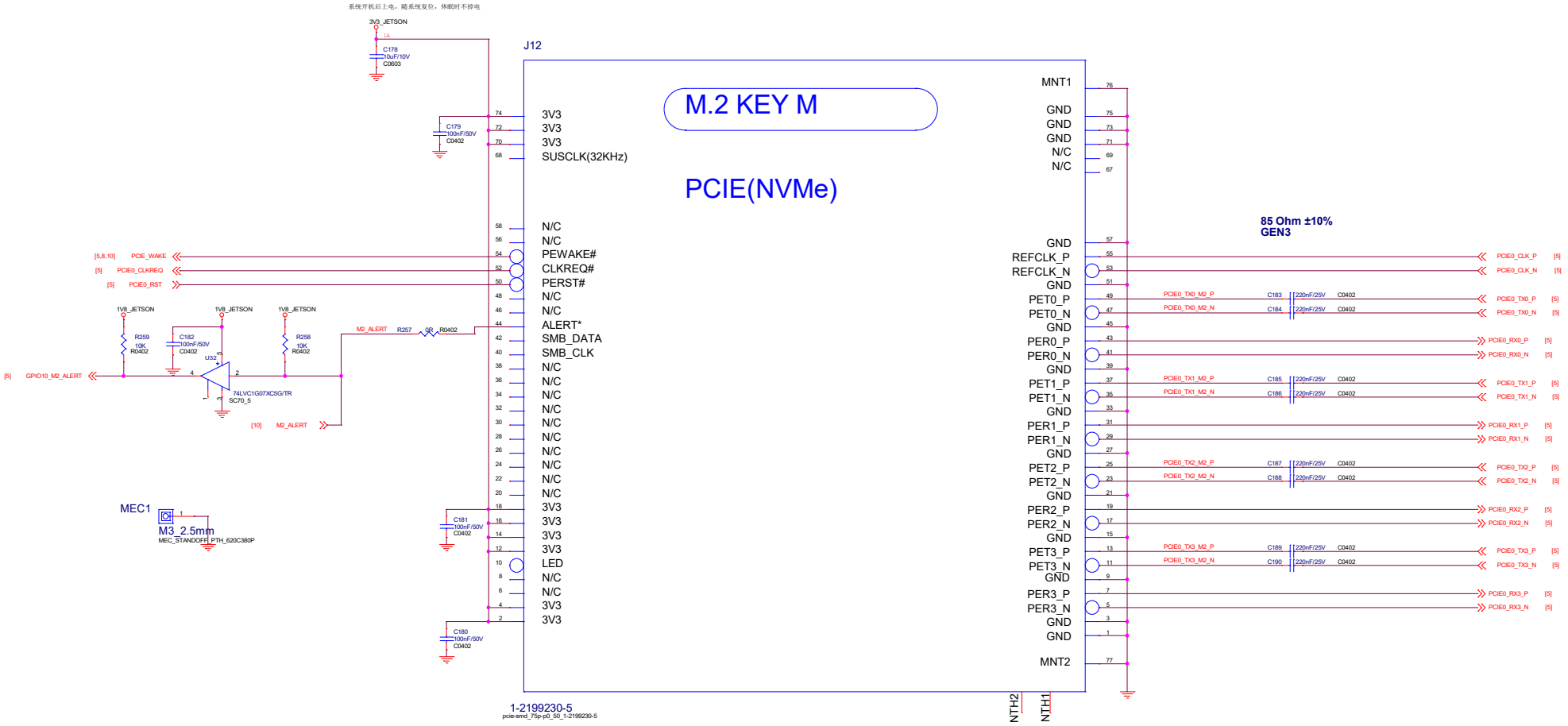

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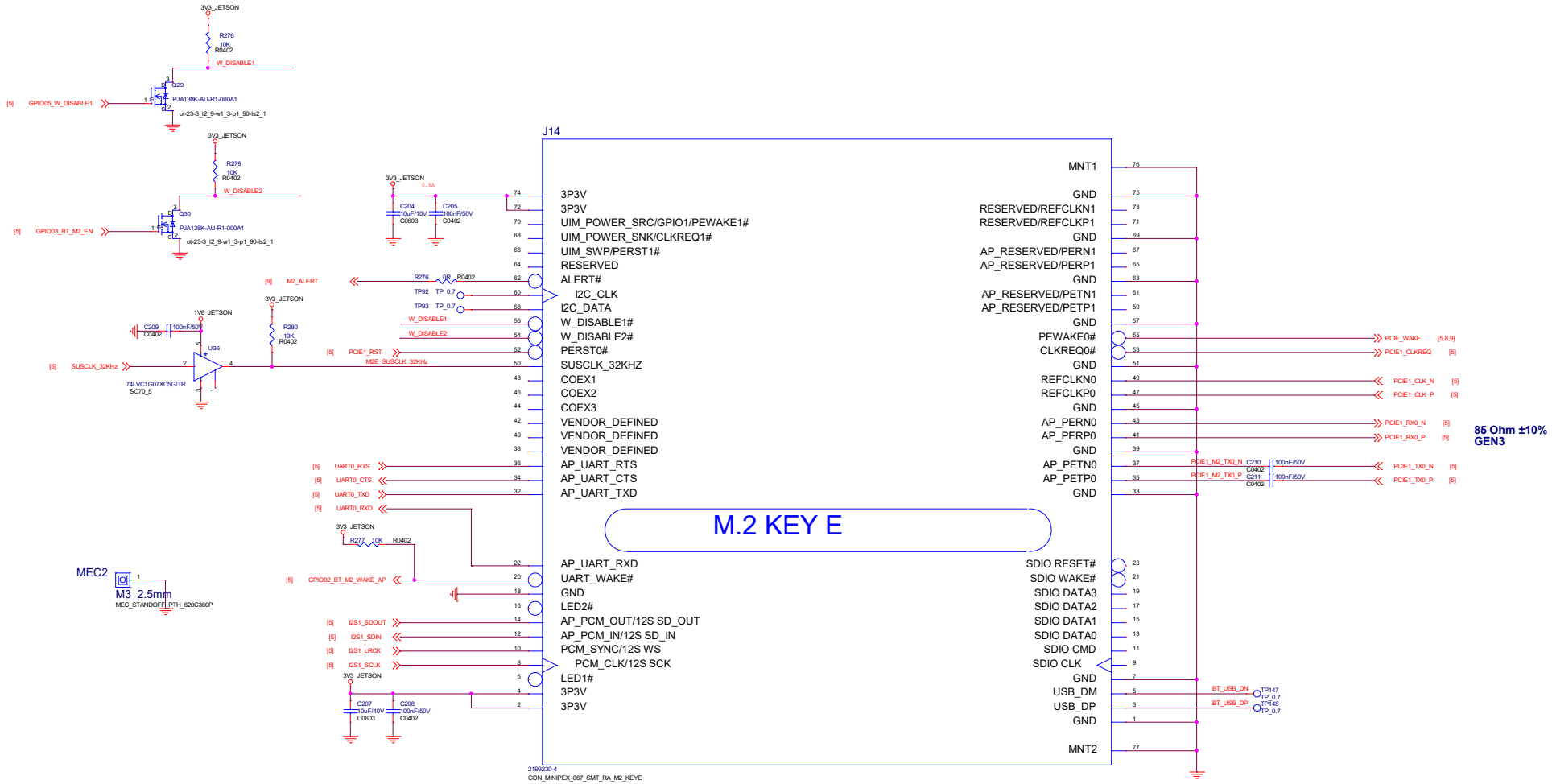
Size	Document Number: Custom08.M.2 KEY-M-SSD		Rev: A08
Date: Wednesday, March 26, 2025	Sheet 9 of 14		



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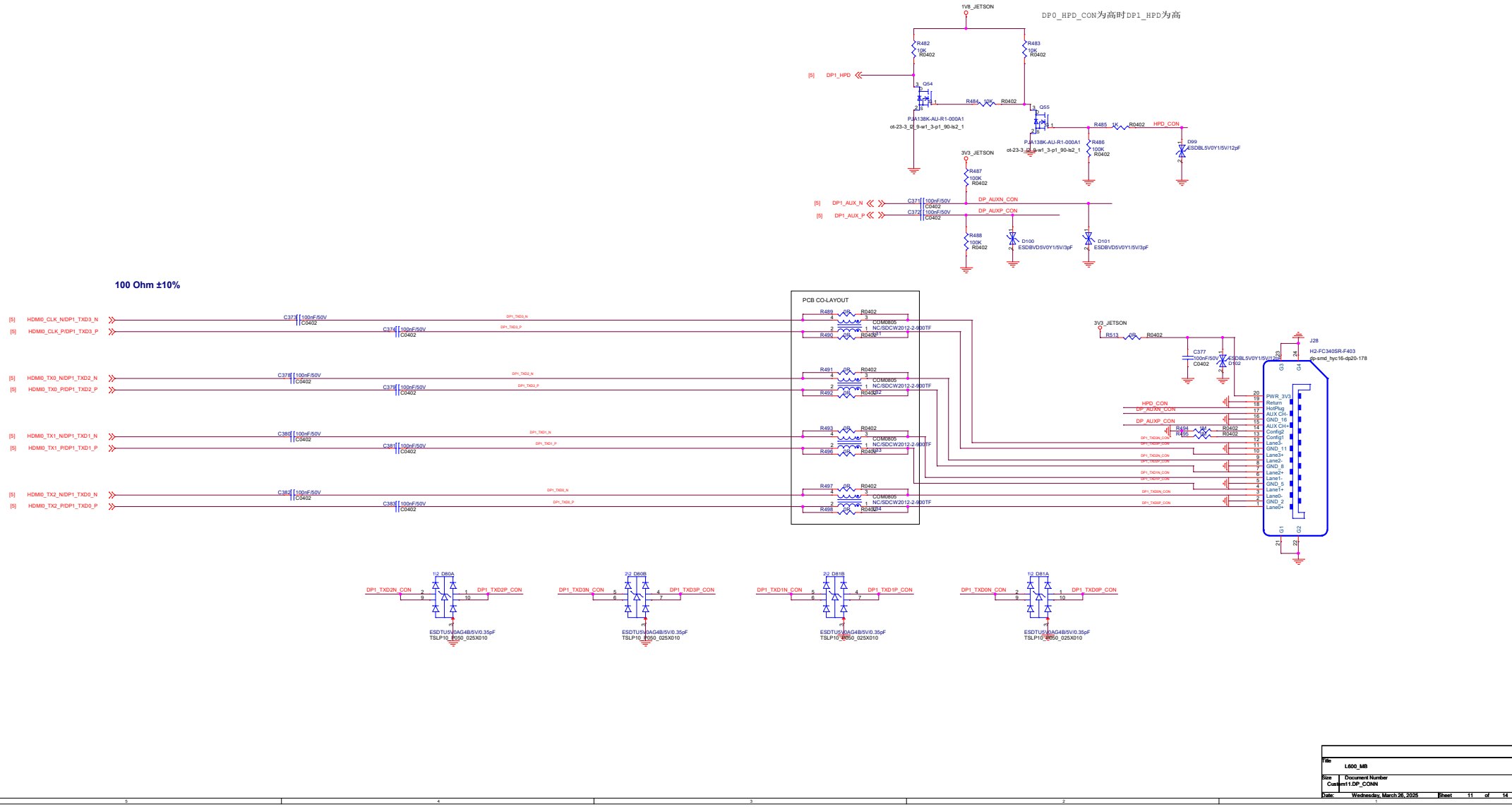
Size: Custom	Document Number: H0.M.2 KEY-E_WIFI_BT		Rev: A06
Date: Wednesday, March 26, 2025	Sheet 10 of 14		



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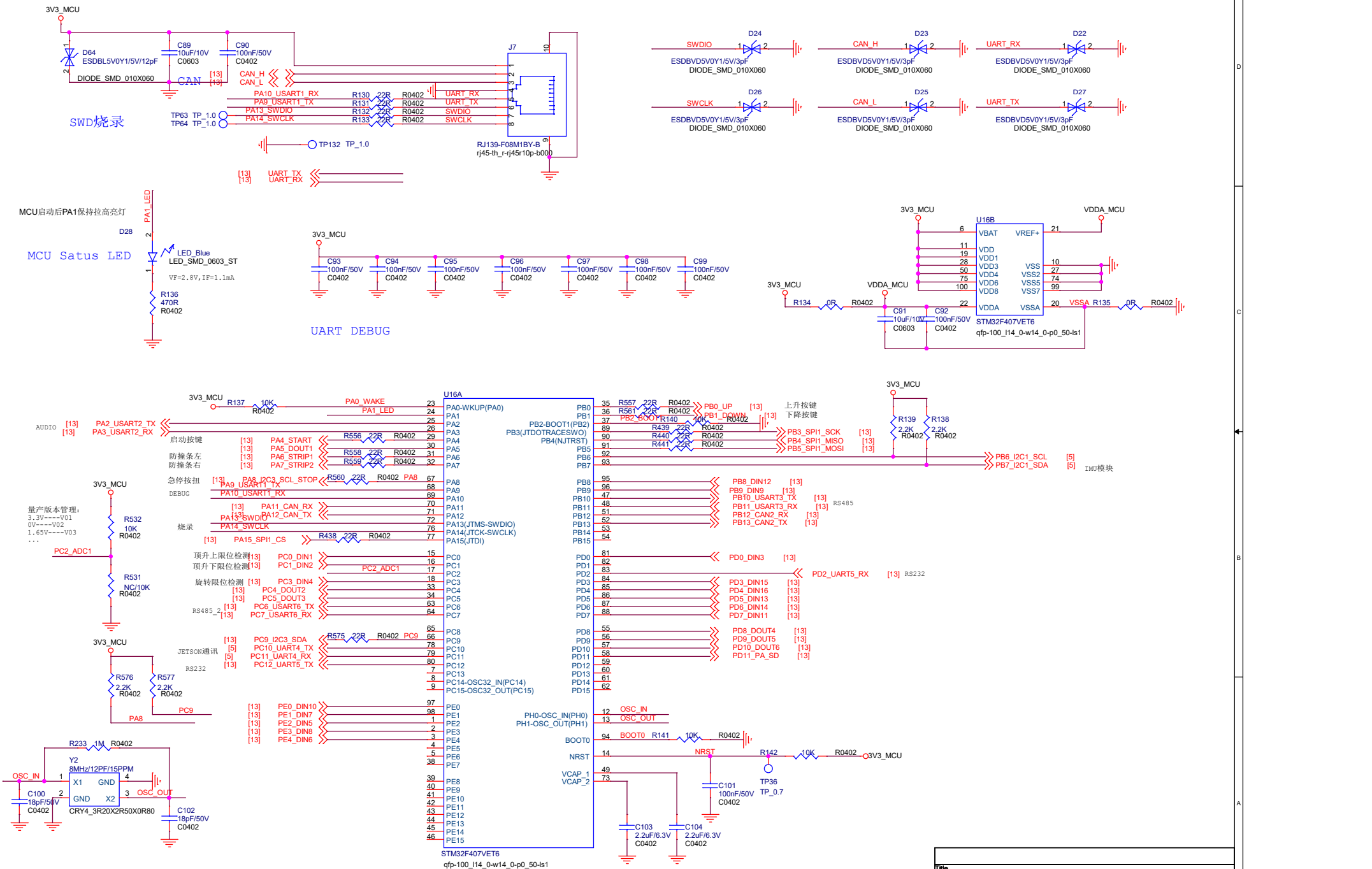
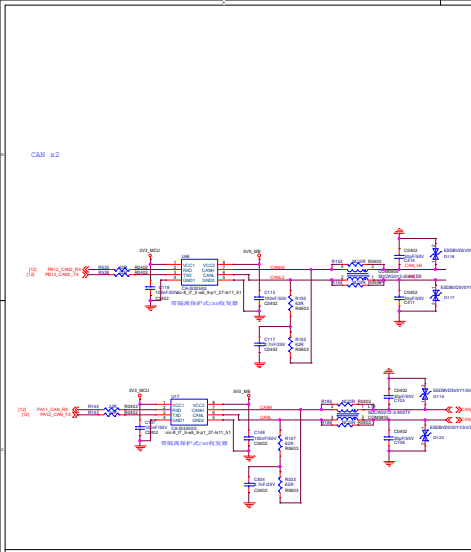
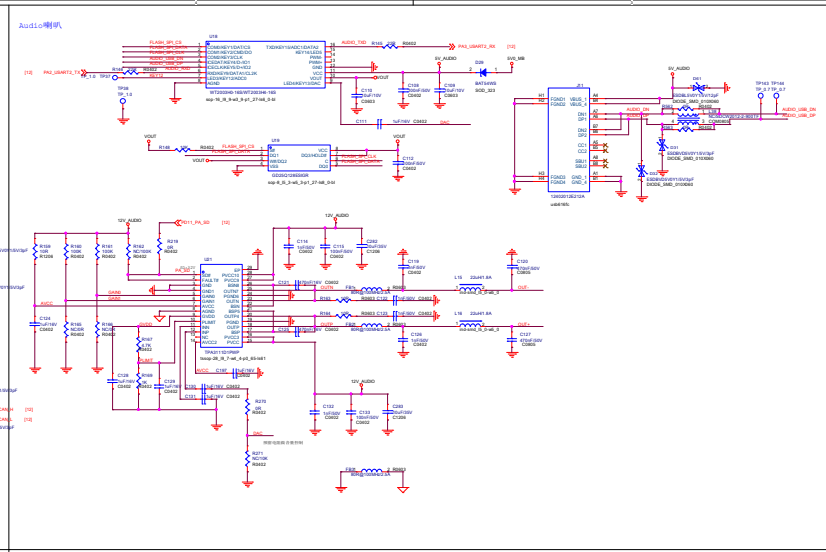
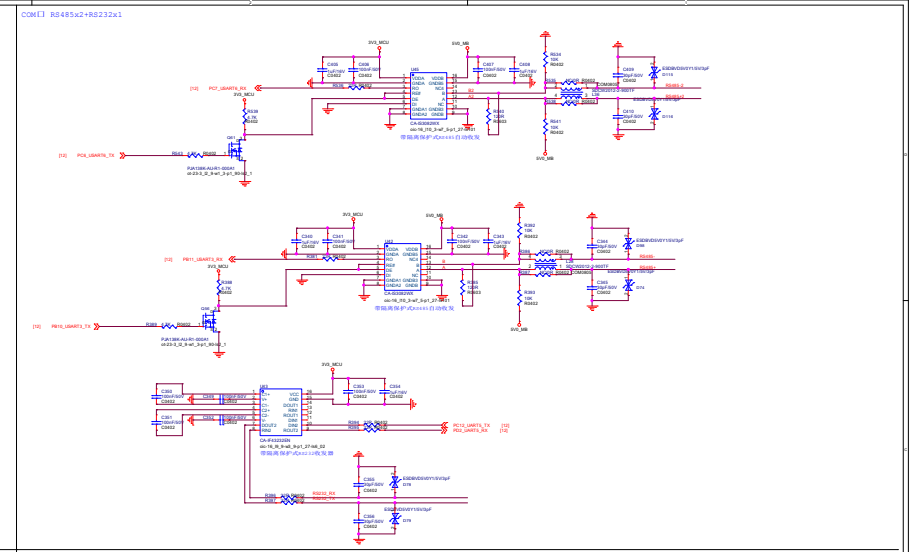
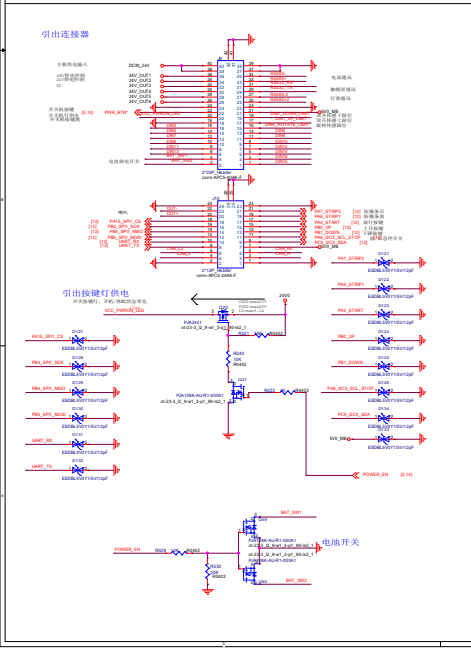
Date:	Wednesday, March 26, 2025	Sheet 11 of 14	

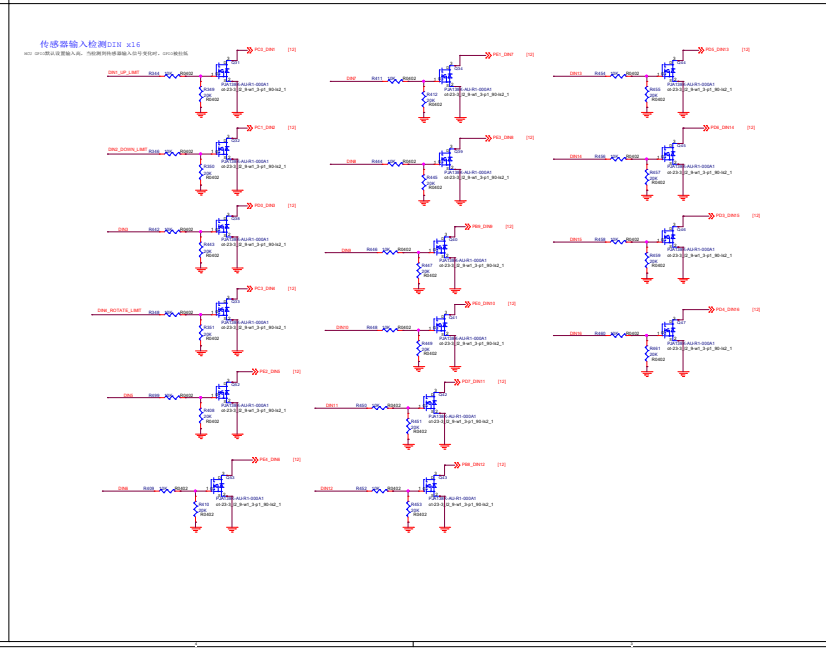

3V3_MCU
D64
ESDBL5V0Y1/5V/12pF
DIODE_SMD_010X060
C89
10uF/10V
C0603
C90
100nF/50V
C0402
CAN
[13] CAN_H
[13] CAN_L
SWD烧录
PA10_USART1_RX
PA9_USART1_TX
PA13_SWDIO
PA14_SWCLK
R130 22R R0402
R131 22R R0402
R132 22R R0402
R133 22R R0402
UART_RX
UART_TX
SWDIO
SWCLK
TP63 TP_1.0
TP64 TP_1.0
TP132 TP_1.0
J7
RJ139-F08M1BY-B
rj45-th_r-rj45r10p-b000
[13] UART_TX
[13] UART_RX
D24
SWDIO
ESDBVD5V0Y1/5V/3pF
DIODE_SMD_010X060
D23
CAN_H
D22
UART_RX
D26
SWCLK
D25
CAN_L
D27
UART_TX
MCU启动后PA1保持拉高亮灯
PA1_LED
D28
MCU Satus LED
LED_Blue
LED_SMD_0603_ST
VF=2.8V,IF=1.1mA
R136
470R
R0402
C93 100nF/50V C0402
C94 100nF/50V C0402
C95 100nF/50V C0402
C96 100nF/50V C0402
C97 100nF/50V C0402
C98 100nF/50V C0402
C99 100nF/50V C0402
UART DEBUG
VDDA_MCU
U16B
VBAT
VREF+
VDD
VDD1
VDD3
VDD4
VDD6
VDD8
VSS
VSS2
VSS5
VSS7
VDDA
VSSA
R134 0R R0402
R135 0R R0402
C91 10uF/10V C0603
C92 100nF/50V C0402
STM32F407VET6
qfp-100_l14_0-w14_0-p0_50-ls1
U16A
R137 10K R0402
PA0_WAKE
PA1_LED
AUDIO
PA2_USART2_TX
PA3_USART2_RX
启动按键
防撞条左
防撞条右
急停按扭
PA4_START
PA5_DOUT1
PA6_STRIP1
PA7_STRIP2
PA8_I2C3_SCL_STOP
DEBUG
PA9_USART1_TX
PA10_USART1_RX
PA11_CAN_RX
PA12_CAN_TX
烧录
PA15_SPI1_CS
量产版本管理：
3.3V----V01
0V----V02
1.65V----V03
R532 10K R0402
R531 NC/10K R0402
PC2_ADC1
顶升上限位检测
顶升下限位检测
旋转限位检测
PC0_DIN1
PC1_DIN2
PC3_DIN4
PC4_DOUT2
PC5_DOUT3
PC6_USART6_TX
PC7_USART6_RX
RS485_2
JETSON通讯
PC9_I2C3_SDA
PC10_UART4_TX
PC11_UART4_RX
PC12_UART5_TX
RS232
R576 2.2K R0402
R577 2.2K R0402
PC9
PA8
PE0_DIN10
PE1_DIN7
PE2_DIN5
PE3_DIN8
PE4_DIN6
R233 1M R0402
Y2
8MHz/12PF/15PPM
CRY4_3R20X2R50X0R80
C100 18pF/50V C0402
C102 18pF/50V C0402
OSC_IN
OSC_OUT
PB0_UP
PB1_DOWN
上升按键
下降按键
PB3_SPI1_SCK
PB4_SPI1_MISO
PB5_SPI1_MOSI
R139 2.2K R0402
R138 2.2K R0402
PB6_I2C1_SCL
PB7_I2C1_SDA
IMU模块
PB8_DIN12
PB9_DIN9
PB10_USART3_TX
PB11_USART3_RX
PB12_CAN2_RX
PB13_CAN2_TX
PD0_DIN3
PD2_UART5_RX
PD3_DIN15
PD4_DIN16
PD5_DIN13
PD6_DIN14
PD7_DIN11
PD8_DOUT4
PD9_DOUT5
PD10_DOUT6
PD11_PA_SD
BOOT0
R141 10K R0402
NRST
R142 10K R0402
TP36
TP_0.7
C101 100nF/50V C0402
C103 2.2uF/6.3V C0402
C104 2.2uF/6.3V C0402
Title
L600_MB
Size
Document Number
Custom12.STM32_MCU
Rev
A06
Date: Wednesday, March 26, 2025
Sheet 12 of 14

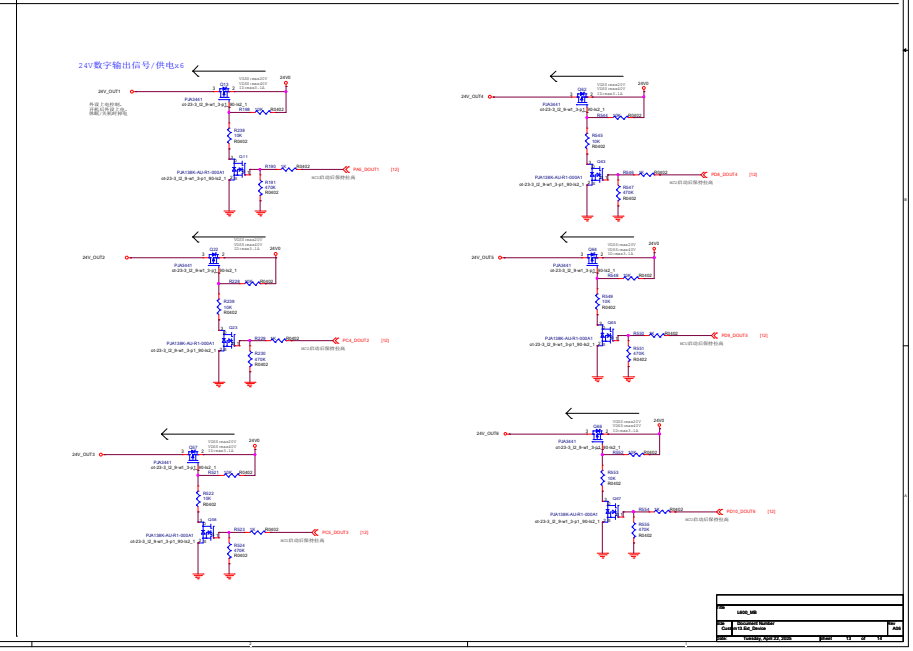

CAN x2
3V3_MCU
3V3_MB
带隔离保护式can收发器
带隔离保护式can收发器


Audio喇叭
12V_AUDIO
5V_AUDIO
3V3_MB

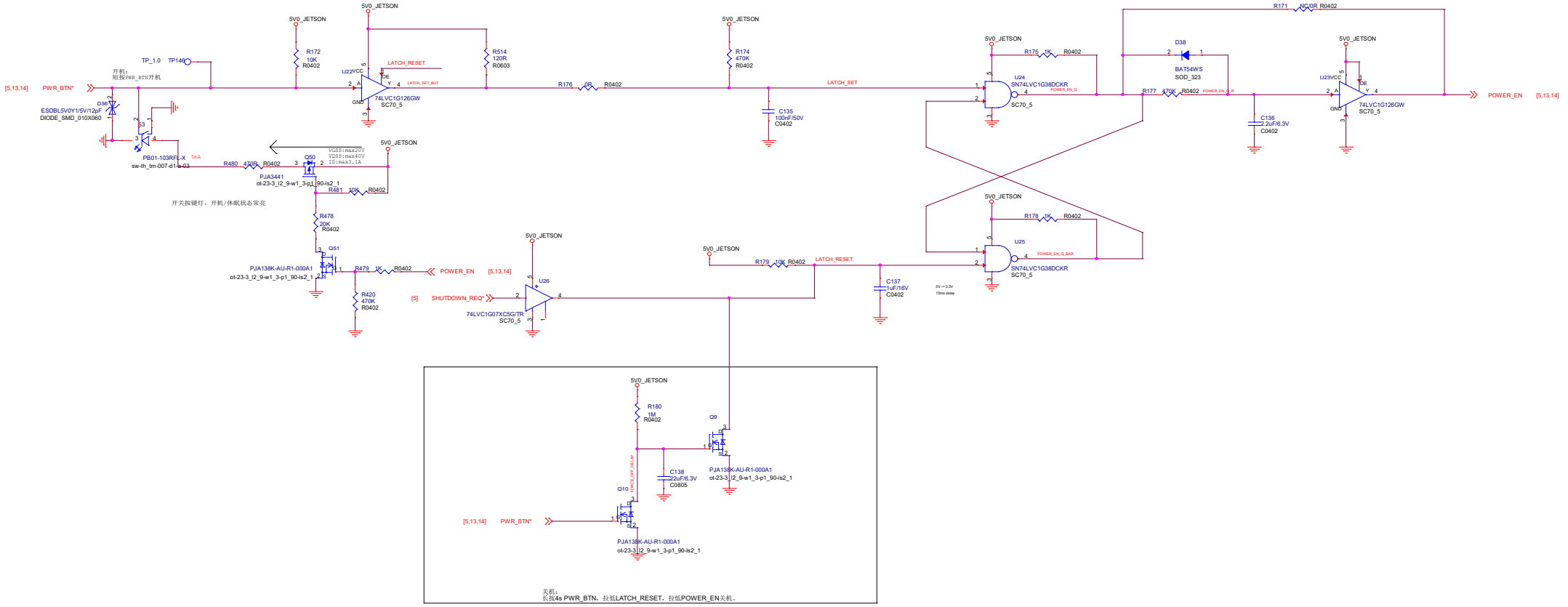

COM口 RS485x2+RS232x1
3V3_MCU
3V3_MB
带隔离保护式rs485自动收发
带隔离保护式rs485自动收发
带隔离保护式rs232收发器


引出连接器
引出按键灯供电
电池开关


传感器输入检测DIN x16


24V数字输出信号/供电x6

Module Power ON/OFF logic



Title: L600_MB			
Size: Custom	Document Number: 14.Power ON_OFF Logic		Rev: A06
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