01 Descriptions

File: 01 Descriptions.kicad_sch

02 Block Diagram

File: 02 Block Diagram.kicad_sch

03 Power

File: 03 Power.kicad_sch

04 ESP32-S3

File: 04 ESP32-S3.kicad_sch

05 Debug&Interface

File: 05 Debug&Interface.kicad_sch

06 Peripherals

File: 06 Peripherals.kicad_sch

07 50P FPC Connector

File: 07 50P FPC Connector.kicad_sch

08 24P FPC Connector

File: 08 24P FPC Connector.kicad_sch

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Sheet: /
File: reTerminal E1002.kicad_sch

Title: reTerminal E1002			CC BY-SA 4.0
Size: A4	Date: 2025-11-20	Design:	**Rev: v1.2**
KiCad E.D.A. 9.0.0			Id: 1/9

Version	Descriptions	Data	Name
v1.0	First Release	4/30/2025	WK
v1.1	P7 : CP1N/CP1P/VCP1	9/11/2025	Genta
v1.2	Page4: Change the U2 ETA6003 to SY6974B Page7: Change Q8 to DMN3404L-7	11/20/2025	Harry

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Sheet: /01 Descriptions/
File: 01 Descriptions.kicad_sch

Title: reTerminal E1002

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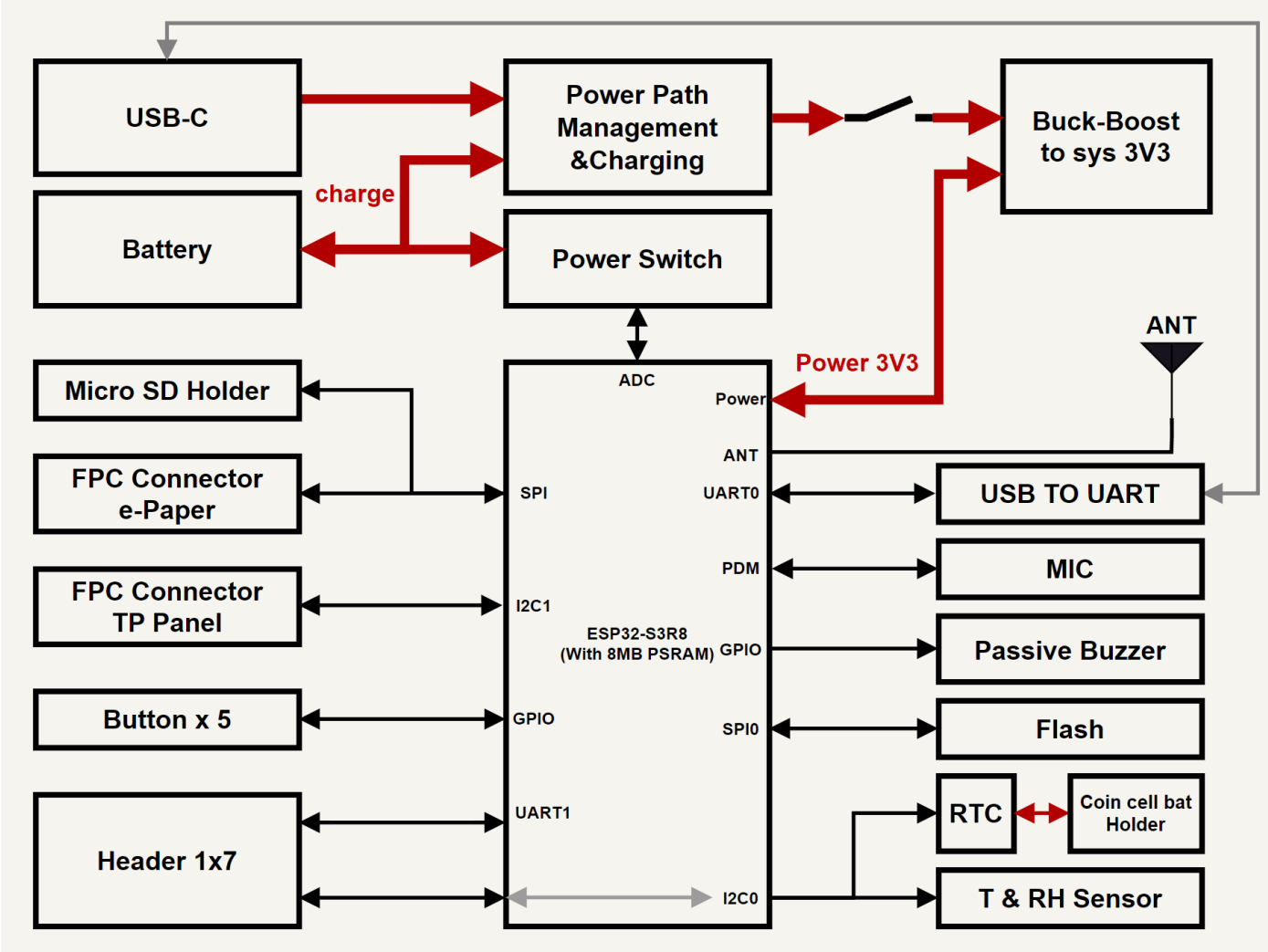
Size: A4 | Date: 2025-11-20 | Design:

Rev: v1.2

KiCad E.D.A. 9.0.0

Id: 2/9



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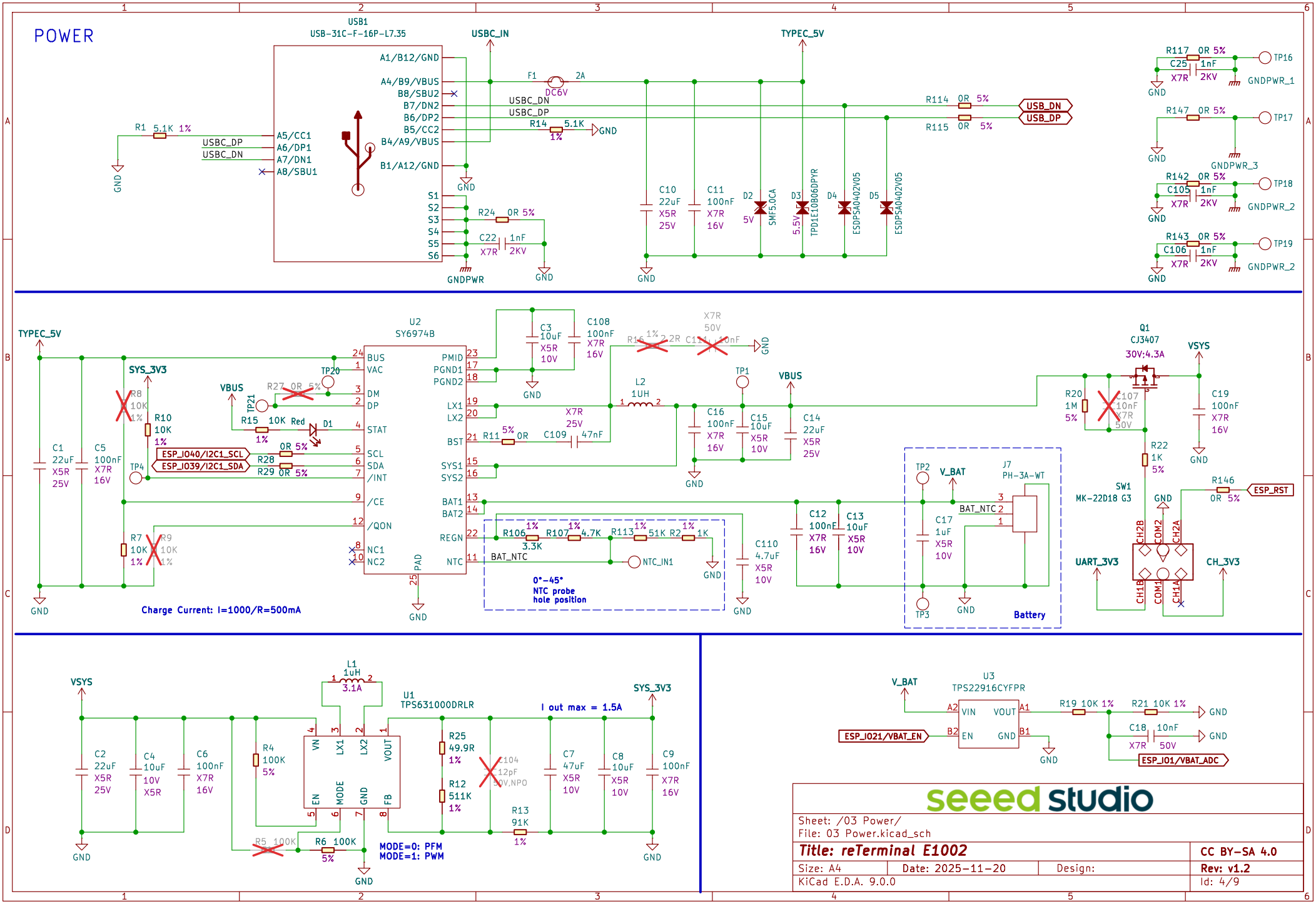
Sheet: /02 Block Diagram/
File: 02 Block Diagram.kicad_sch

Title: reTerminal E1002			CC BY-SA 4.0
Size: A4	Date: 2025-11-20	Design:	Rev: v1.2
KiCad E.D.A. 9.0.0			Id: 3/9


POWER
USB1
USB-31C-F-16P-L7.35
USBC_IN
TYPEC_5V
A1/B12/GND
A4/B9/VBUS
B8/SBU2
B7/DN2
B6/DP2
B5/CC2
B4/A9/VBUS
B1/A12/GND
A5/CC1
A6/DP1
A7/DN1
A8/SBU1
S1
S2
S3
S4
S5
S6
GNDPWR
F1
2A
DC6V
USBC_DN
USBC_DP
R1 5.1K 1%
R14 5.1K 1%
R24 0R 5%
C22 1nF X7R 2KV
R114 0R 5%
R115 0R 5%
USB_DN
USB_DP
C10 22uF X5R 25V
C11 100nF X7R 16V
D2 5V SMF5.0CA
D3 5.5V TPD1E10B06DPYR
D4 ESDPSA0402V05
D5 ESDPSA0402V05
R117 0R 5%
C25 1nF X7R 2KV
TP16
GNDPWR_1
R147 0R 5%
TP17
GNDPWR_3
R142 0R 5%
C105 1nF X7R 2KV
TP18
GNDPWR_2
R143 0R 5%
C106 1nF X7R 2KV
TP19
GNDPWR_2
U2
SY6974B
TYPEC_5V
SYS_3V3
VBUS
BUS
VAC
DM
DP
STAT
SCL
SDA
/INT
/CE
/QON
NC1
NC2
PAD
PMID
PGND1
PGND2
LX1
LX2
BST
SYS1
SYS2
BAT1
BAT2
REGN
NTC
C3 10uF X5R 10V
C108 100nF X7R 16V
L2 1UH
C16 100nF X7R 16V
C15 10uF X5R 10V
C14 22uF X5R 25V
C109 47nF X7R 25V
R11 5% 0R
C1 22uF X5R 25V
C5 100nF X7R 16V
R8 10K 1%
R10 10K 1%
R7 10K 1%
R9 10K 1%
R15 10K Red 1%
D1
R27 0R 5%
R28 0R 5%
R29 0R 5%
TP20
TP21
TP4
ESP_IO40/I2C1_SCL
ESP_IO39/I2C1_SDA
R106 3.3K 1%
R107 4.7K 1%
R113 51K 1%
R2 1K 1%
BAT_NTC
NTC_IN1
0°-45° NTC probe hole position
C110 4.7uF X5R 10V
C12 100nF X7R 16V
C13 10uF X5R 10V
C17 1uF X5R 10V
TP2
V_BAT
TP3
J7
PH-3A-WT
Battery
Q1
CJ3407
30V;4.3A
VSYS
R20 1M 5%
C107 10nF X7R 50V
C19 100nF X7R 16V
R22 1K 5%
SW1
MK-22D18 G3
R146 0R 5%
ESP_RST
CH2B
COM2
CH2A
CH1B
COM1
CH1A
UART_3V3
CH_3V3
Charge Current: I=1000/R=500mA
L1
1uH
3.1A
U1
TPS631000DRLR
I out max = 1.5A
VSYS
SYS_3V3
VN
LX1
LX2
VOUT
EN
MODE
GND
FB
C2 22uF X5R 25V
C4 10uF 10V X5R
C6 100nF X7R 16V
R4 100K 5%
R5 100K
R6 100K 5%
R25 49.9R 1%
R12 511K 1%
C104 12pF 50V,NPO
R13 91K 1%
C7 47uF X5R 10V
C8 10uF X5R 10V
C9 100nF X7R 16V
MODE=0: PFM
MODE=1: PWM
U3
TPS22916CYFPR
V_BAT
ESP_IO21/VBAT_EN
VIN
VOUT
EN
GND
R19 10K 1%
R21 10K 1%
C18 10nF X7R 50V
ESP_IO1/VBAT_ADC
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Sheet: /03 Power/
File: 03 Power.kicad_sch
Title: reTerminal E1002
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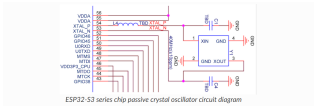
Size: A4
Date: 2025-11-20
Design:
Rev: v1.2
KiCad E.D.A. 9.0.0
Id: 4/9



Please place a series component on the XTAL_P clock trace. It is initially recommended to use a 24 nH inductor to reduce the impact of the crystal oscillator's high-frequency harmonics on the RF performance. The final value needs to be confirmed after testing.

Layout Note: Close to Pin 2,3; 45*lead out

Flash

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Sheet: /04 ESP32-S3/		
File: 04 ESP32-S3.kicad_sch		
Title: reTerminal E1002		CC BY-SA 4.0
Size: A4	Date: 2025-11-20	Design:	Rev: v1.2
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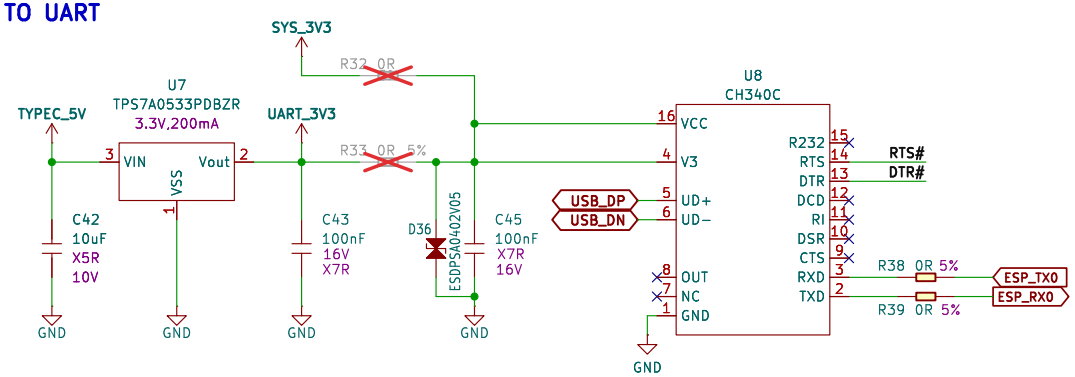
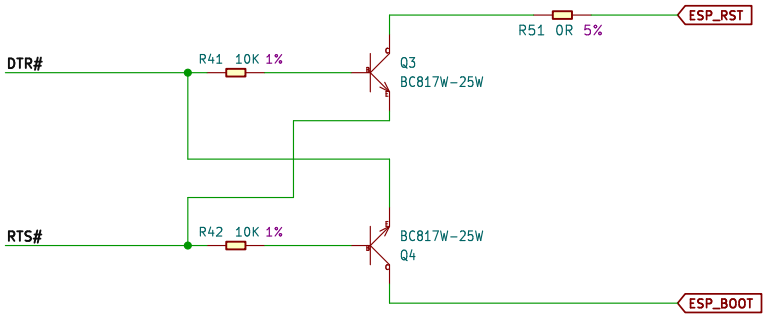
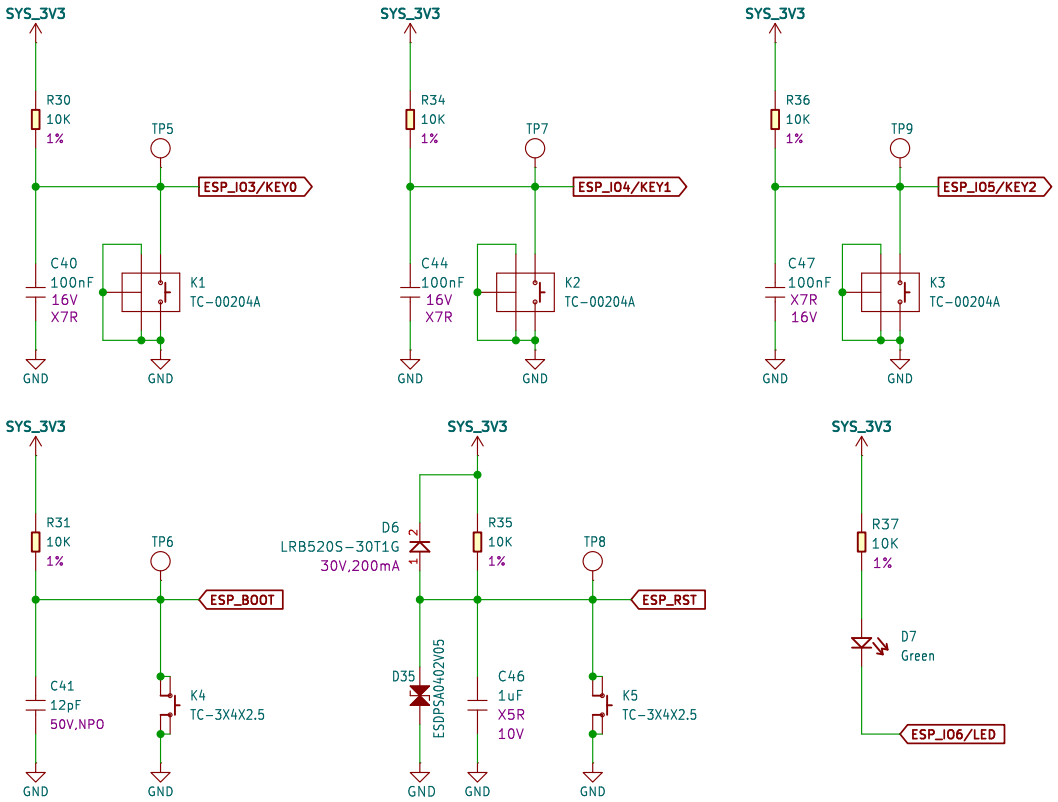
USB TO UART

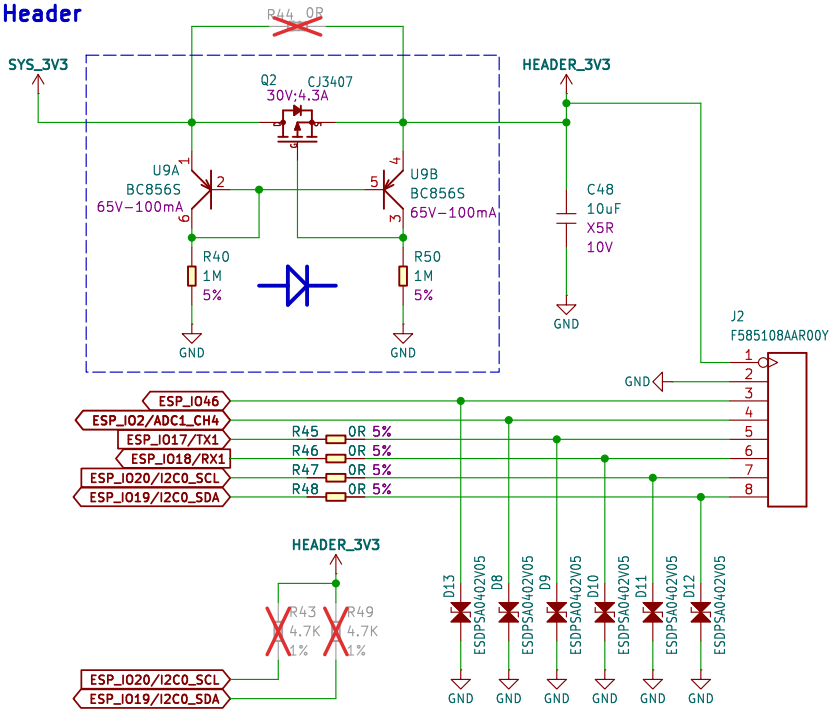




RST & BOOT & USER KEY



Header



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Sheet: /05 Debug&Interface/
File: 05 Debug&Interface.kicad_sch

Title: reTerminal E1002

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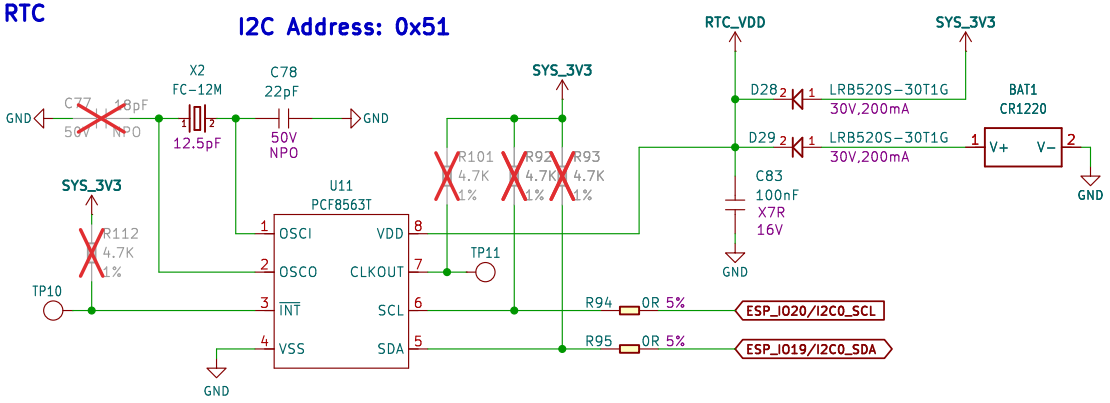
Size: A4 | Date: 2025-11-20 | Design: | Rev: v1.2

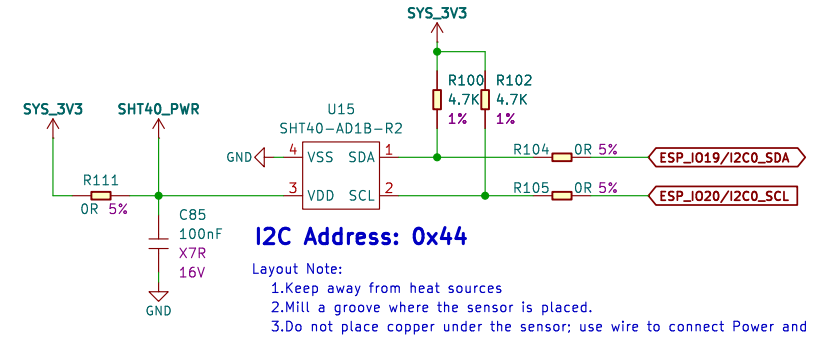
KiCad E.D.A. 9.0.0 | Id: 6/9

RTC

I2C Address: 0x51



Temperature and Humidity sensor



I2C Address: 0x44

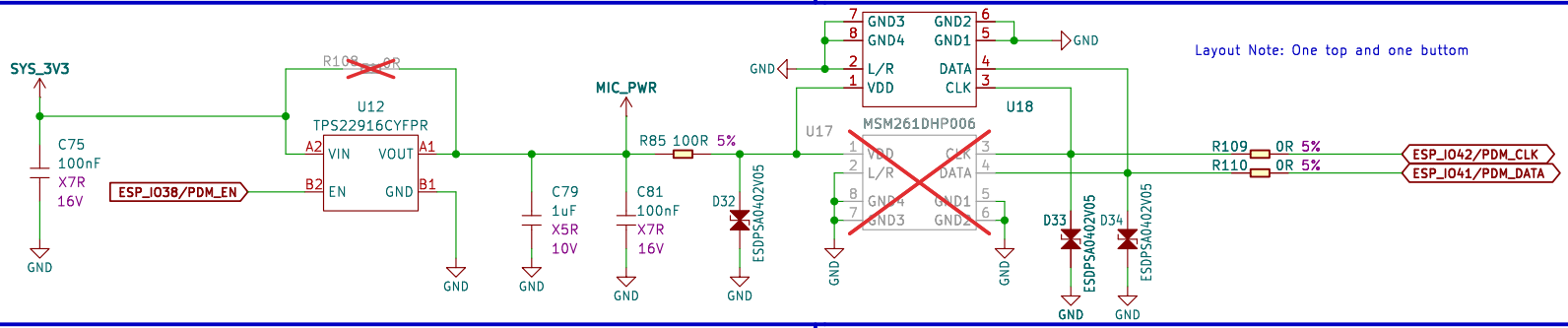
Layout Note:

1.Keep away from heat sources

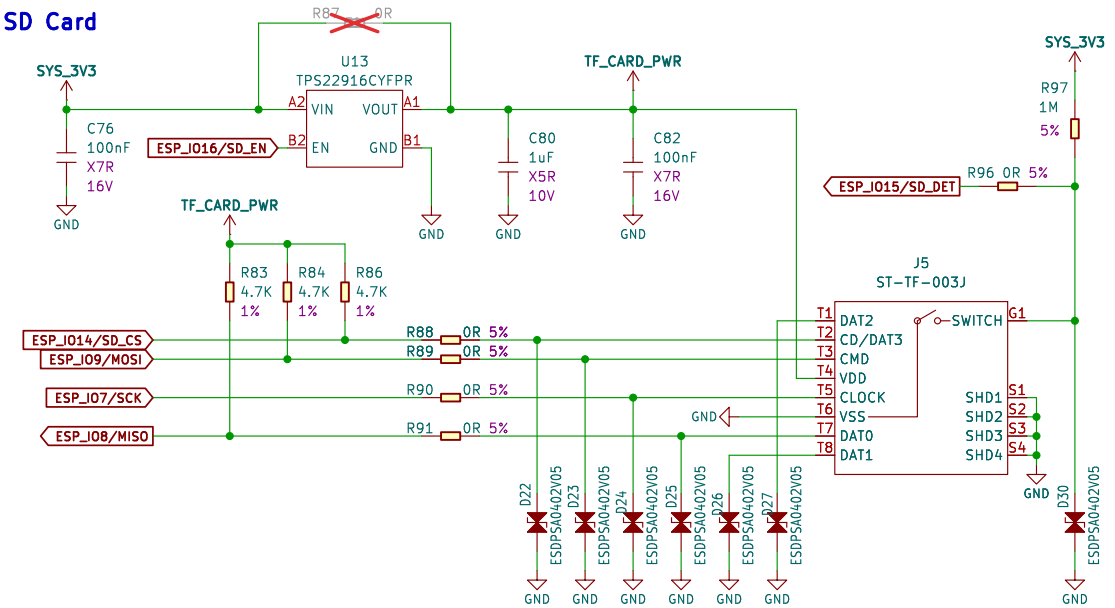
2.Mill a groove where the sensor is placed.

3.Do not place copper under the sensor; use wire to connect Power and GND.

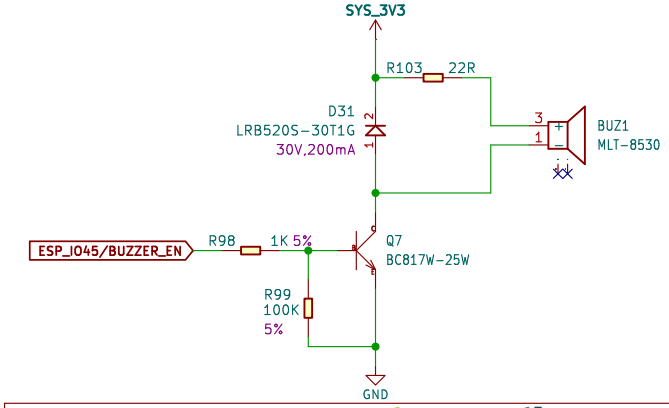
PDM MIC



SD Card



BUZZER



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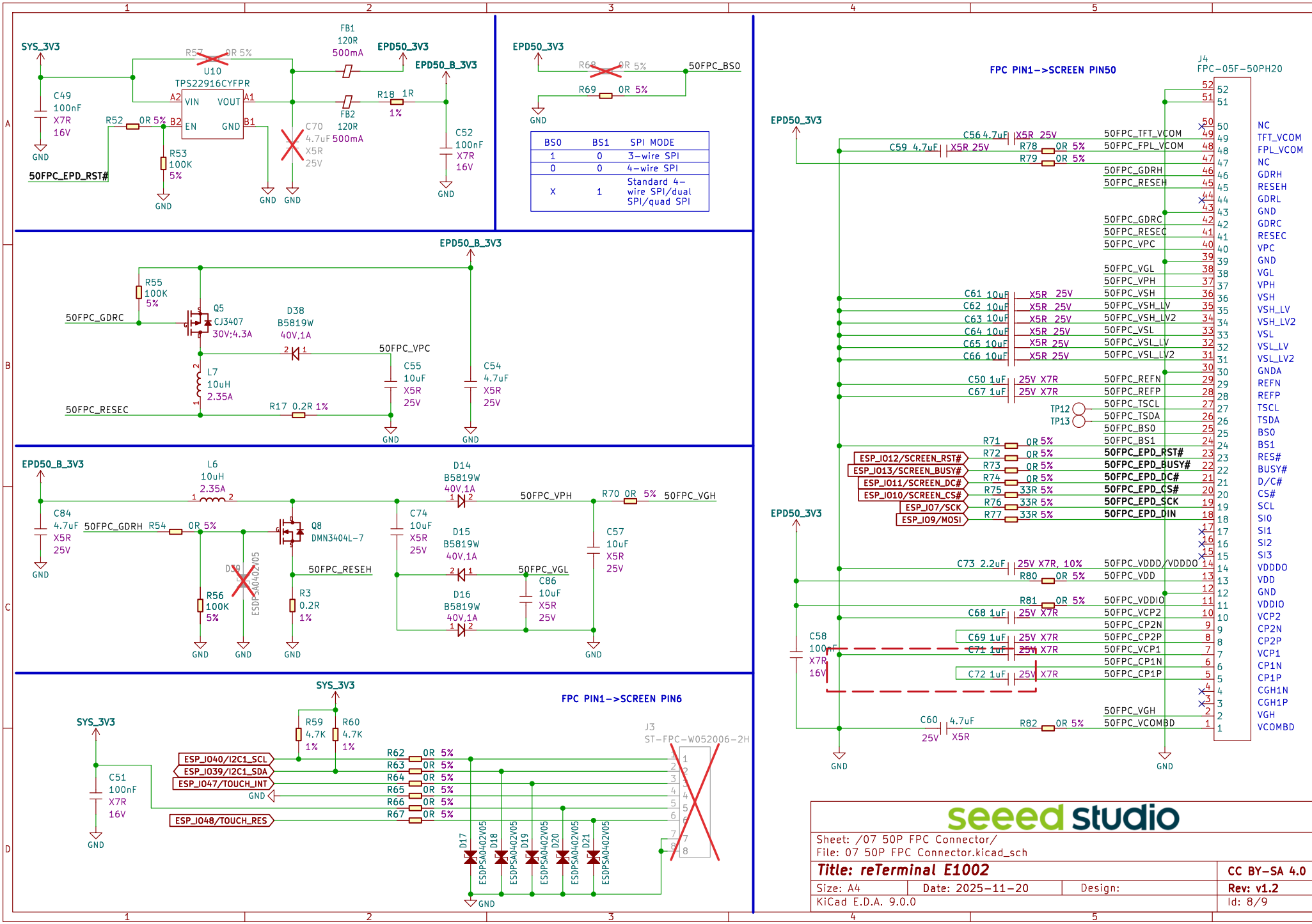
Sheet: /06 Peripherals/ File: 06 Peripherals.kicad_sch			
Title: reTerminal E1002			CC BY-SA 4.0
Size: A4	Date: 2025-11-20	Design:	**Rev: v1.2**
KiCad E.D.A. 9.0.0			Id: 6/9


SYS_3V3
U10
TPS22916CYFPR
VIN
VOUT
EN
GND
FB1
120R
500mA
FB2
120R
500mA
EPD50_3V3
EPD50_B_3V3
R57 0R 5%
R52 0R 5%
R53 100K 5%
R18 1R 1%
C49 100nF X7R 16V
C70 4.7uF X5R 25V
C52 100nF X7R 16V
50FPC_EPD_RST#
R68 0R 5%
R69 0R 5%
50FPC_BS0
BS0 BS1 SPI MODE
1 0 3-wire SPI
0 0 4-wire SPI
X 1 Standard 4-wire SPI/dual SPI/quad SPI
R55 100K 5%
Q5 CJ3407 30V;4.3A
D38 B5819W 40V,1A
50FPC_GDRC
50FPC_VPC
50FPC_RESEC
L7 10uH 2.35A
R17 0.2R 1%
C55 10uF X5R 25V
C54 4.7uF X5R 25V
L6 10uH 2.35A
C84 4.7uF X5R 25V
50FPC_GDRH
R54 0R 5%
Q8 DMN3404L-7
D14 B5819W 40V,1A
D15 B5819W 40V,1A
D16 B5819W 40V,1A
50FPC_VPH
50FPC_VGH
R70 0R 5%
C74 10uF X5R 25V
C57 10uF X5R 25V
50FPC_VGL
C86 10uF X5R 25V
50FPC_RESEH
R56 100K 5%
R3 0.2R 1%
D39 ESDPSA0402V05
C51 100nF X7R 16V
R59 4.7K 1%
R60 4.7K 1%
ESP_IO040/I2C1_SCL
ESP_IO039/I2C1_SDA
ESP_IO047/TOUCH_INT
ESP_IO048/TOUCH_RES
R62 0R 5%
R63 0R 5%
R64 0R 5%
R65 0R 5%
R66 0R 5%
R67 0R 5%
J3 ST-FPC-W052006-2H
D17 ESDPSA0402V05
D18 ESDPSA0402V05
D19 ESDPSA0402V05
D20 ESDPSA0402V05
D21 ESDPSA0402V05
FPC PIN1->SCREEN PIN6
FPC PIN1->SCREEN PIN50
J4 FPC-05F-50PH20
C56 4.7uF X5R 25V
C59 4.7uF X5R 25V
R78 0R 5%
R79 0R 5%
50FPC_TFT_VCOM
50FPC_FPL_VCOM
50FPC_GDRH
50FPC_RESEH
50FPC_GDRC
50FPC_RESEC
50FPC_VPC
50FPC_VGL
50FPC_VPH
50FPC_VSH
50FPC_VSH_LV
50FPC_VSH_LV2
50FPC_VSL
50FPC_VSL_LV
50FPC_VSL_LV2
C61 10uF X5R 25V
C62 10uF X5R 25V
C63 10uF X5R 25V
C64 10uF X5R 25V
C65 10uF X5R 25V
C66 10uF X5R 25V
C50 1uF 25V X7R
C67 1uF 25V X7R
50FPC_REFN
50FPC_REFP
TP12
TP13
50FPC_TSCL
50FPC_TSDA
50FPC_BS0
50FPC_BS1
R71 0R 5%
R72 0R 5%
R73 0R 5%
R74 0R 5%
R75 33R 5%
R76 33R 5%
R77 33R 5%
ESP_IO12/SCREEN_RST#
ESP_IO13/SCREEN_BUSY#
ESP_IO11/SCREEN_DC#
ESP_IO10/SCREEN_CS#
ESP_IO7/SCK
ESP_IO9/MOSI
50FPC_EPD_RST#
50FPC_EPD_BUSY#
50FPC_EPD_DC#
50FPC_EPD_CS#
50FPC_EPD_SCK
50FPC_EPD_DIN
C73 2.2uF 25V X7R, 10%
R80 0R 5%
50FPC_VDDD/VDDDO
50FPC_VDD
R81 0R 5%
50FPC_VDDIO
C68 1uF 25V X7R
50FPC_VCP2
50FPC_CP2N
C69 1uF 25V X7R
C71 1uF 25V X7R
50FPC_CP2P
50FPC_VCP1
50FPC_CP1N
C72 1uF 25V X7R
50FPC_CP1P
C58 100nF X7R 16V
C60 4.7uF 25V X5R
R82 0R 5%
50FPC_VGH
50FPC_VCOMBD
NC
TFT_VCOM
FPI_VCOM
NC
GDRH
RESEH
GDRL
GND
GDRC
RESEC
VPC
GND
VGL
VPH
VSH
VSH_LV
VSH_LV2
VSL
VSL_LV
VSL_LV2
GNDA
REFN
REFP
TSCL
TSDA
BS0
BS1
RES#
BUSY#
D/C#
CS#
SCL
SI0
SI1
SI2
SI3
VDDDO
VDD
GND
VDDIO
VCP2
CP2N
CP2P
VCP1
CP1N
CP1P
CGH1N
CGH1P
VGH
VCOMBD
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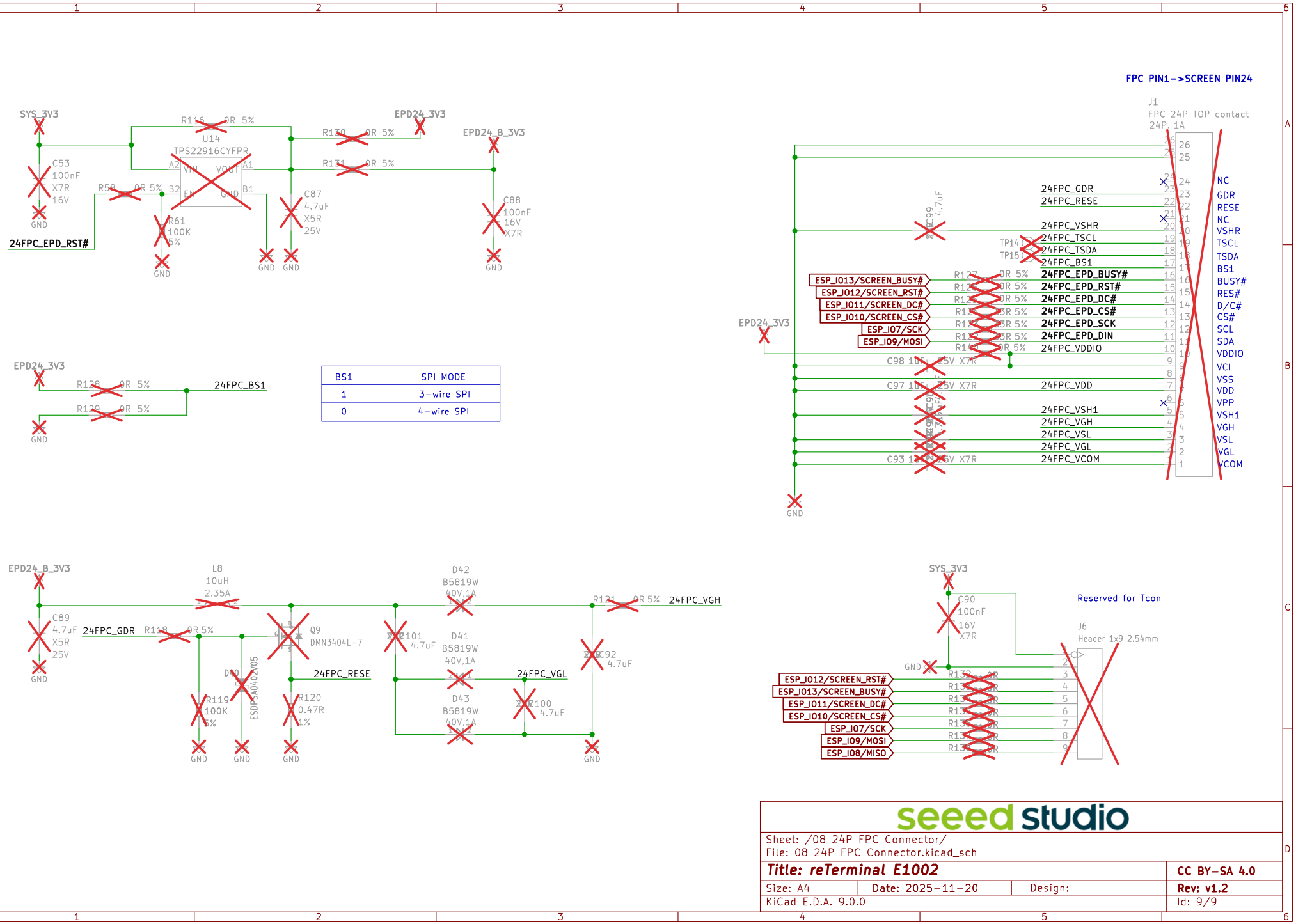
Sheet: /07 50P FPC Connector/
File: 07 50P FPC Connector.kicad_sch
Title: reTerminal E1002
CC BY-SA 4.0
Size: A4
Date: 2025-11-20
Design:
Rev: v1.2
KiCad E.D.A. 9.0.0
Id: 8/9


FPC PIN1->SCREEN PIN24
SYS_3V3
EPD24_3V3
EPD24_B_3V3
TPS22916CYFPR
U14
C53 100nF X7R 16V
R58 0R 5%
R61 100K 5%
C87 4.7uF X5R 25V
C88 100nF 16V X7R
R116 0R 5%
R130 0R 5%
R131 0R 5%
24FPC_EPD_RST#
GND
J1
FPC 24P TOP contact
24P, 1A
NC
GDR
RESE
VSHR
TSCL
TSDA
BS1
BUSY#
RES#
D/C#
CS#
SCL
SDA
VDDIO
VCI
VSS
VDD
VPP
VSH1
VGH
VSL
VGL
VCOM
24FPC_GDR
24FPC_RESE
24FPC_VSHR
24FPC_TSCL
24FPC_TSDA
24FPC_BS1
24FPC_EPD_BUSY#
24FPC_EPD_RST#
24FPC_EPD_DC#
24FPC_EPD_CS#
24FPC_EPD_SCK
24FPC_EPD_DIN
24FPC_VDDIO
24FPC_VDD
24FPC_VSH1
24FPC_VGH
24FPC_VSL
24FPC_VGL
24FPC_VCOM
ESP_IO13/SCREEN_BUSY#
ESP_IO12/SCREEN_RST#
ESP_IO11/SCREEN_DC#
ESP_IO10/SCREEN_CS#
ESP_IO7/SCK
ESP_IO9/MOSI
R128 0R 5%
R129 0R 5%
24FPC_BS1
BS1 SPI MODE
1 3-wire SPI
0 4-wire SPI
L8 10uH 2.35A
D42 B5819W 40V,1A
D41 B5819W 40V,1A
D43 B5819W 40V,1A
Q9 DMN3404L-7
D40 ESDPSA0402V05
R118 0R 5%
R119 100K 5%
R120 0.47R 1%
R121 0R 5%
C89 4.7uF X5R 25V
C92 4.7uF
24FPC_GDR
24FPC_RESE
24FPC_VGH
24FPC_VGL
Reserved for Tcon
J6
Header 1x9 2.54mm
C90 100nF 16V X7R
ESP_IO8/MISO
seeed studio
Sheet: /08 24P FPC Connector/
File: 08 24P FPC Connector.kicad_sch
Title: reTerminal E1002
CC BY-SA 4.0
Size: A4
Date: 2025-11-20
Design:
Rev: v1.2
KiCad E.D.A. 9.0.0
Id: 9/9