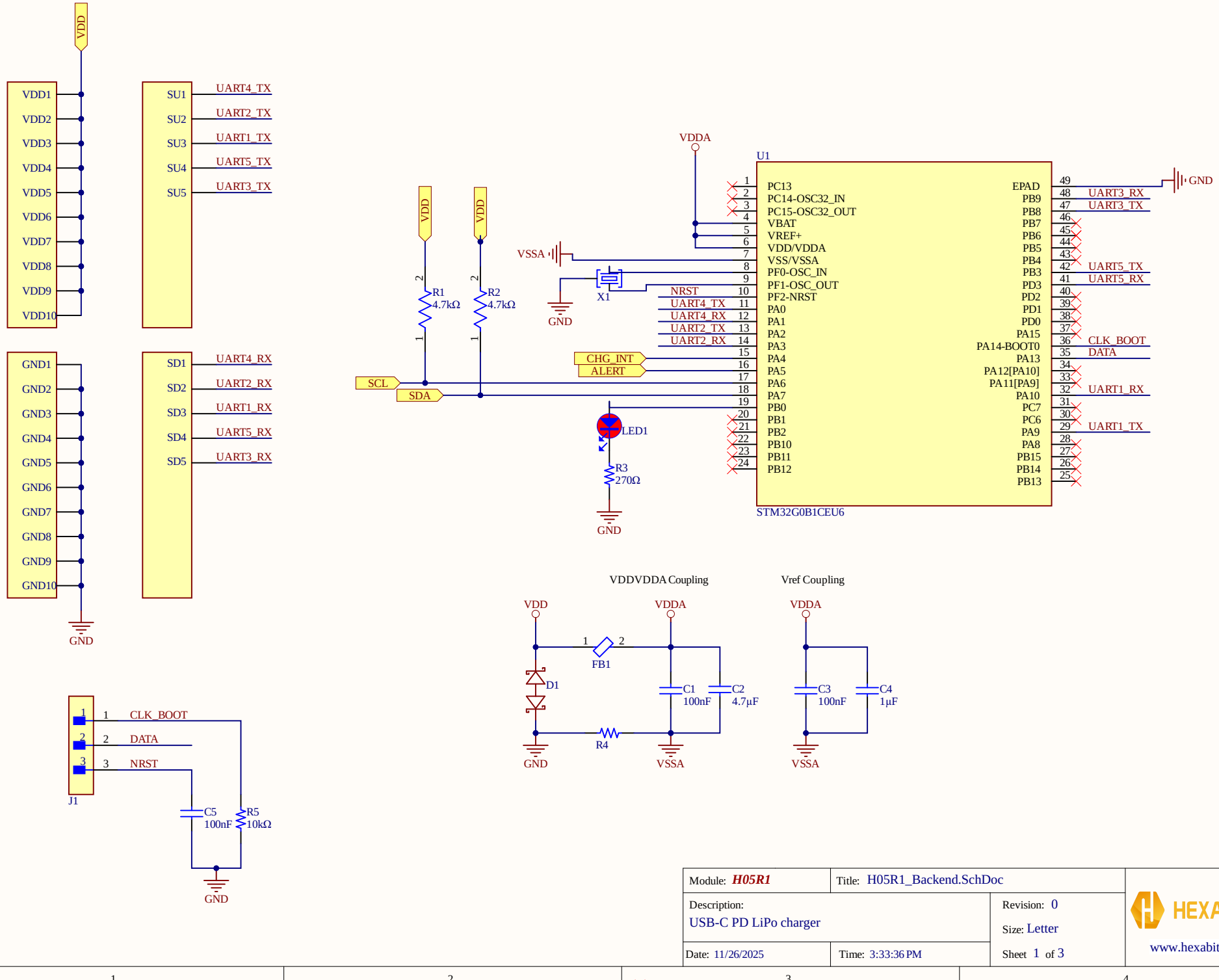

Module: ***H05R1***	Title: H05R1_Backend.SchDoc	
Description: USB-C PD LiPo charger		Revision: 0
		Size: Letter
Date: 11/26/2025	Time: 3:33:36 PM	Sheet 1 of 3

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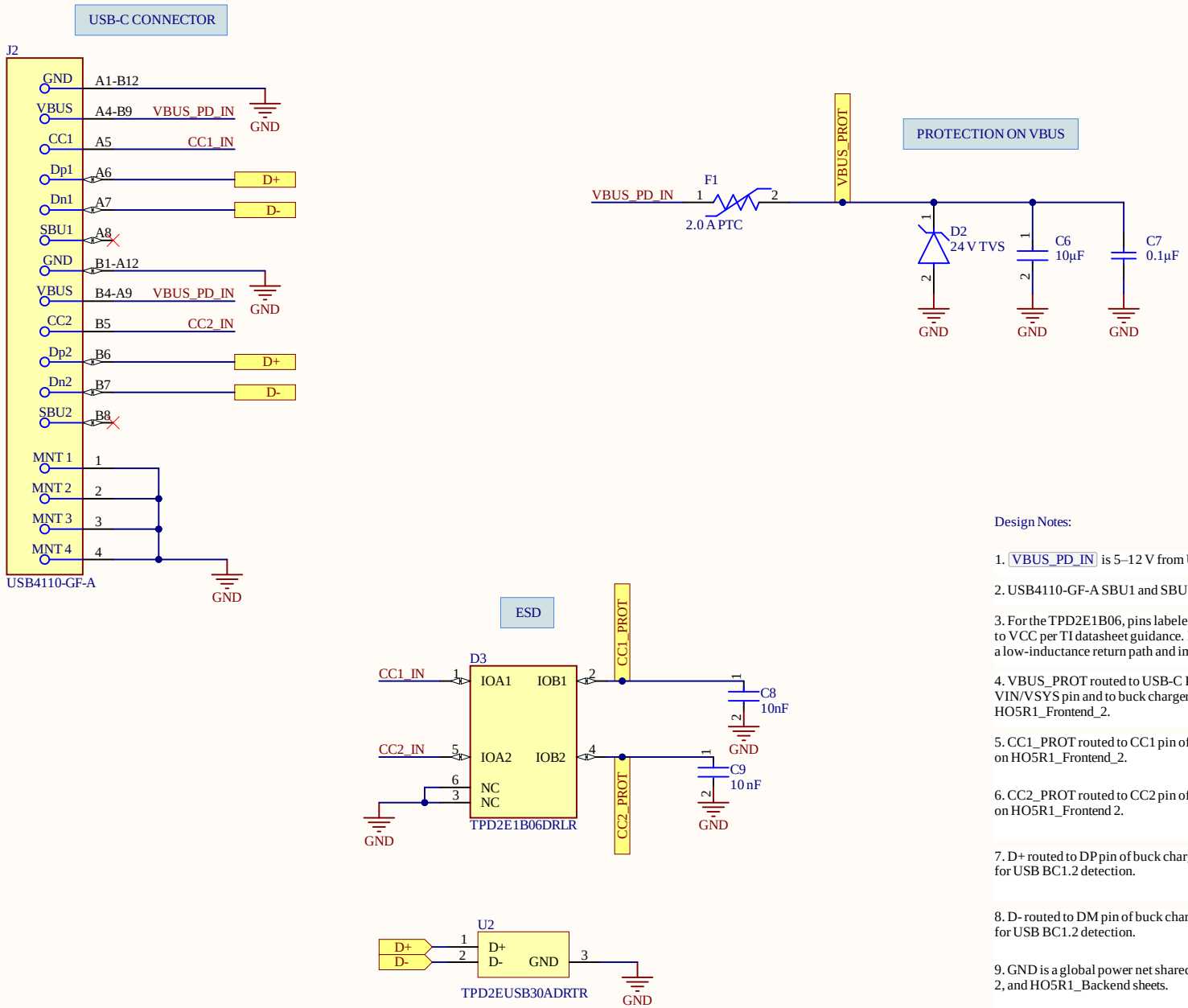

Design Notes:

1. VBUS_PD_IN is 5–12 V from USB-C PD source.
2. USB4110-GF-A SBU1 and SBU2 pins unused (USB2-only design).
3. For the TPD2E1B06, pins labeled NC may be left floating, grounded, or connected to VCC per TI datasheet guidance. In this design, NC pins are tied to GND to provide a low-inductance return path and improve ESD performance.
4. VBUS_PROT routed to USB-C PD sink controller U5 (STUSB4500QTR) VIN/VSYS pin and to buck charger U3 (BQ25895RTWR) VIN/PMID pins on HO5R1_Frontend_2.
5. CC1_PROT routed to CC1 pin of USB-C PD sink controller U5 (STUSB4500QTR) on HO5R1_Frontend_2.
6. CC2_PROT routed to CC2 pin of USB-C PD sink controller U5 (STUSB4500QTR) on HO5R1_Frontend 2.
7. D+ routed to DP pin of buck charger U3 (BQ25895RTWR) on HO5R1_Frontend_2 for USB BC1.2 detection.
8. D- routed to DM pin of buck charger U3 (BQ25895RTWR) on HO5R1_Frontend_2 for USB BC1.2 detection.
9. GND is a global power net shared between HO5R1_Frontend 1, HO5R1_Frontend 2, and HO5R1_Backend sheets.

Module: *H05R1*	Title: H05R1_Frontend_1.SchDoc	
Description: USB-C PD LiPo charger		Revision: 0
		Size: Letter
Date: 11/26/2025	Time: 3:33:36 PM	Sheet 2 of 3

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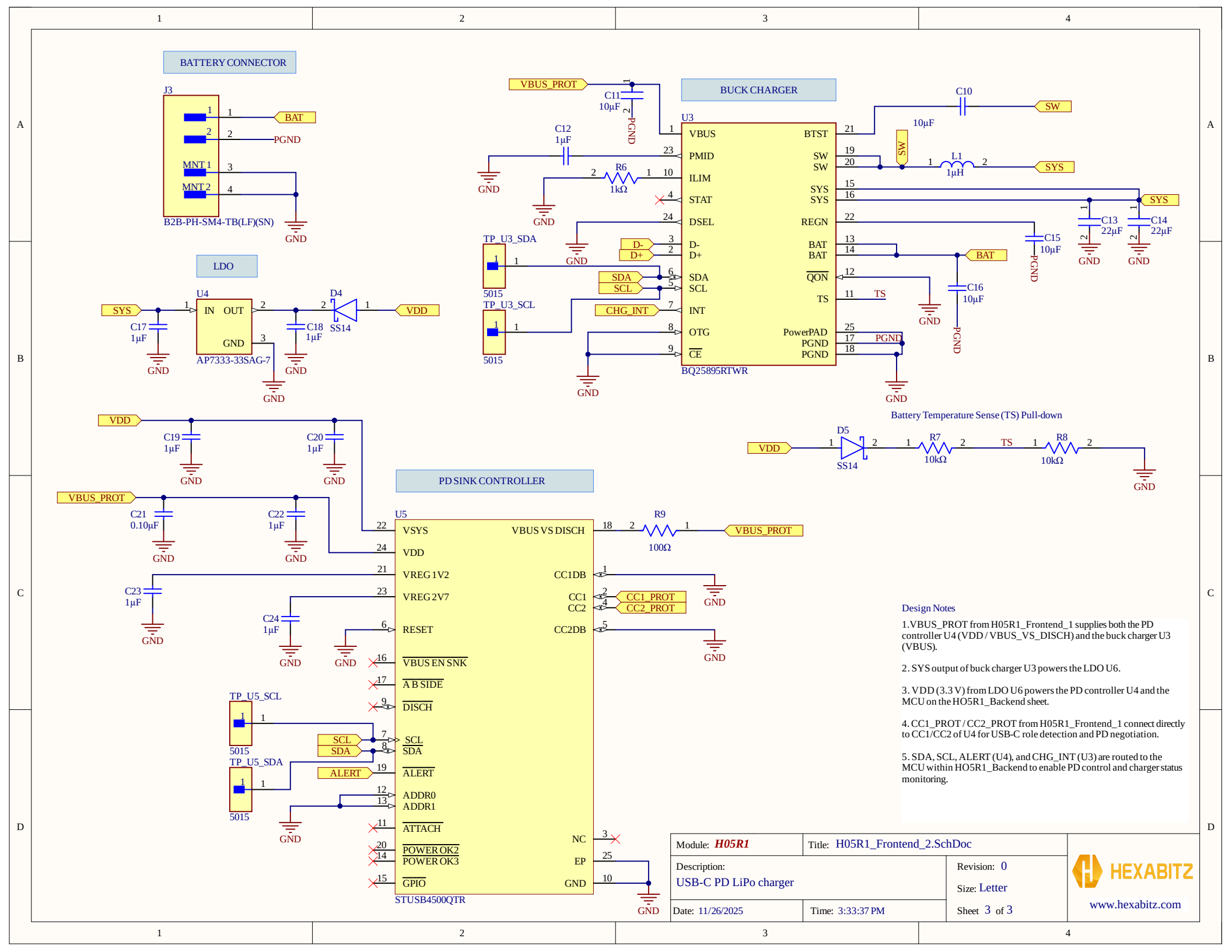
BATTERY CONNECTOR
J3
BAT
PGND
MNT 1
MNT 2
B2B-PH-SM4-TB(LF)(SN)
GND
LDO
U4
SYS
IN
OUT
GND
AP7333-33SAG-7
C17 1µF
C18 1µF
D4
SS14
VDD
BUCK CHARGER
U3
VBUS_PROT
C11 10µF
C12 1µF
R6 1kΩ
TP_U3_SDA
TP_U3_SCL
5015
D-
D+
SDA
SCL
CHG_INT
VBUS
PMID
ILIM
STAT
DSEL
OTG
CE
BTST
SW
SYS
REGN
BAT
QON
TS
PowerPAD
BQ25895RTWR
C10 10µF
L1 1µH
C13 22µF
C14 22µF
C15 10µF
C16 10µF
Battery Temperature Sense (TS) Pull-down
D5
SS14
R7 10kΩ
R8 10kΩ
PD SINK CONTROLLER
U5
VSYS
VDD
VREG 1V2
VREG 2V7
RESET
VBUS EN SNK
A B SIDE
DISCH
SCL
SDA
ALERT
ADDR0
ADDR1
ATTACH
POWER OK2
POWER OK3
GPIO
VBUS VS DISCH
CC1DB
CC1
CC2
CC2DB
NC
EP
STUSB4500QTR
C19 1µF
C20 1µF
C21 0.10µF
C22 1µF
C23 1µF
C24 1µF
R9 100Ω
CC1_PROT
CC2_PROT
Design Notes
1.VBUS_PROT from H05R1_Frontend_1 supplies both the PD controller U4 (VDD / VBUS_VS_DISCH) and the buck charger U3 (VBUS).
2. SYS output of buck charger U3 powers the LDO U6.
3. VDD (3.3 V) from LDO U6 powers the PD controller U4 and the MCU on the HO5R1_Backend sheet.
4. CC1_PROT / CC2_PROT from H05R1_Frontend_1 connect directly to CC1/CC2 of U4 for USB-C role detection and PD negotiation.
5. SDA, SCL, ALERT (U4), and CHG_INT (U3) are routed to the MCU within HO5R1_Backend to enable PD control and charger status monitoring.
Module: H05R1
Title: H05R1_Frontend_2.SchDoc
Description:
USB-C PD LiPo charger
Revision: 0
Size: Letter
Date: 11/26/2025
Time: 3:33:37 PM
Sheet 3 of 3
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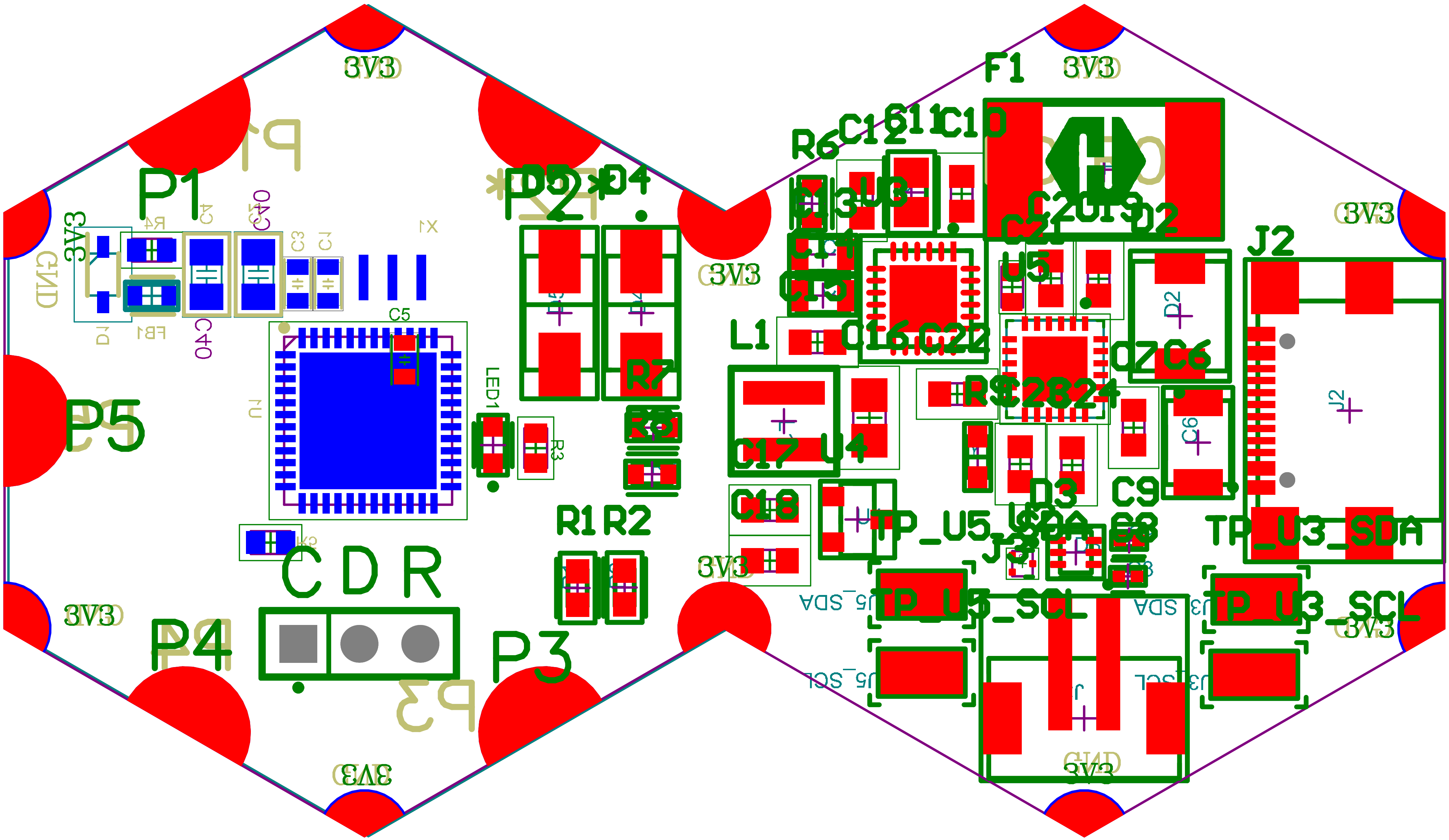
P1
P2
P3
P4
P5
C D R
3V3
GND
U1
C5
LED1
R3
R1 R2
R7
D4
F1
J2
U5
L1
C17
U4
C18
C9
D2
D3
TP_U5_SDA
TP_U3_SDA
TP_U5_SCL
TP_U3_SCL

Board Stack Report