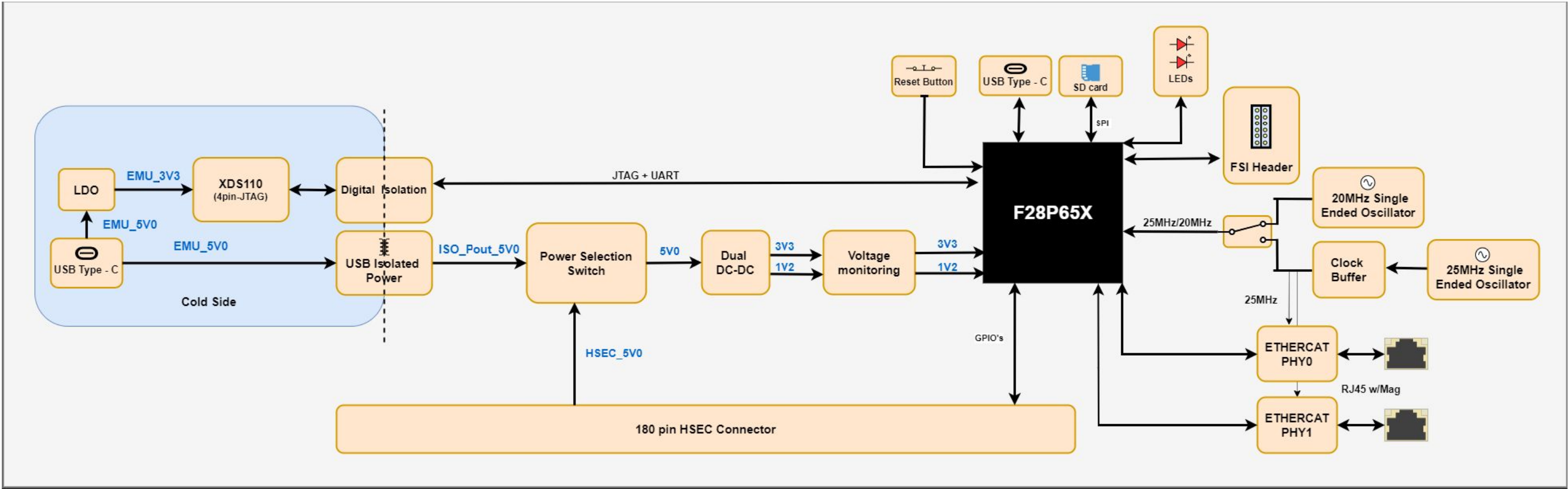
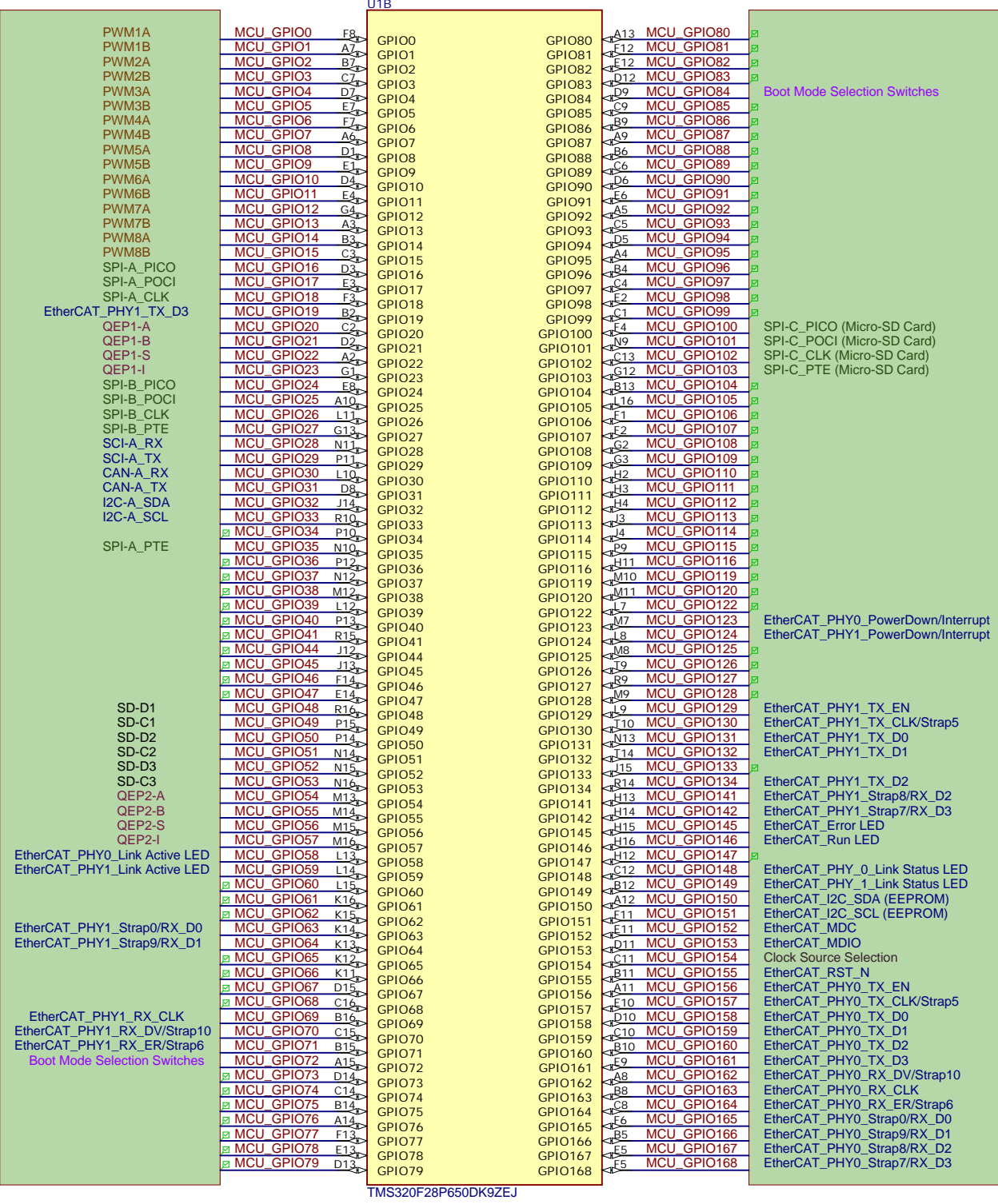


- 1) USB Differential Pairs - 90 Ohm
(A) XDS_D_P and XDS_D_N
(B) USB_D_P (GPIO42) and USB_D_N (GPIO43)
- 2) ADC Differential pair Impedance Matching - 50 Ohm
(A) HSEC_ADC even pins should match with HSEC_ADC + 1 pin(ie ADC-C2 should match with ADC-C3)
(B) MCU_ADC even pins should match with MCU_ADC + 1 pin(ie MCU_ADC-A0 should match with MCU_ADC-A1)
- 3) ETHERCAT Differential pairs - 100 Ohm
(A) TD_P and TD_N
(B) RD_P and RD_N
- 4) CLK Paths - 50 Ohm
(A) F28P65x_25MHz_CLK
(B) PHY0_25MHz_CLK and PHY1_25MHz_CLK

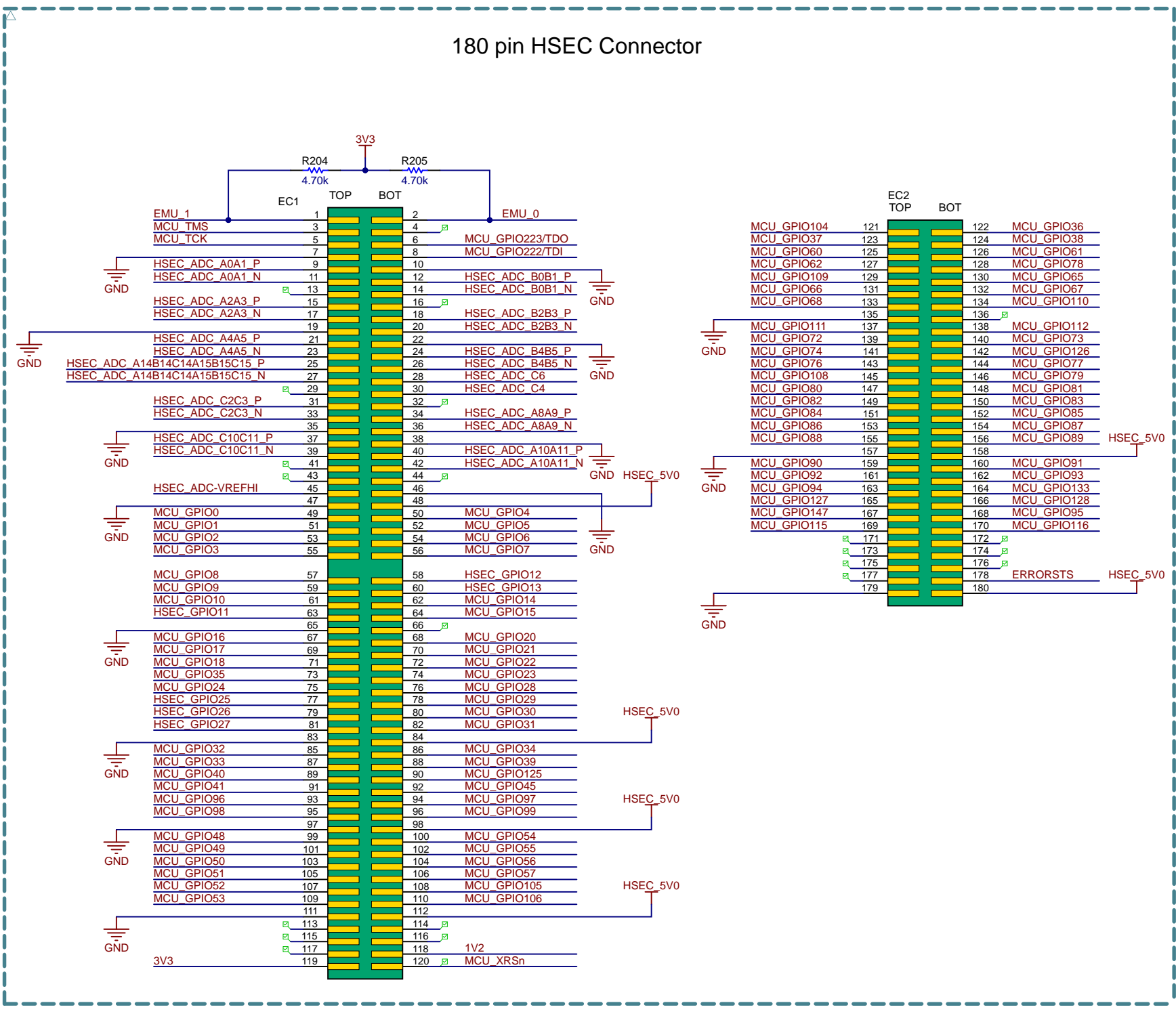
Revision History				
Rev	ECN #	Approved Date	Approved by	Notes
E1	N/A	September 12, 2022	UR	Original engineering release
E2	N/A	April 8, 2023	UR	Refer Errata section in the TMDSCNCD28P65X controlCARD Information Guide
A	N/A	June 7, 2023	UR	Cosmetic changes to PCB silk screen

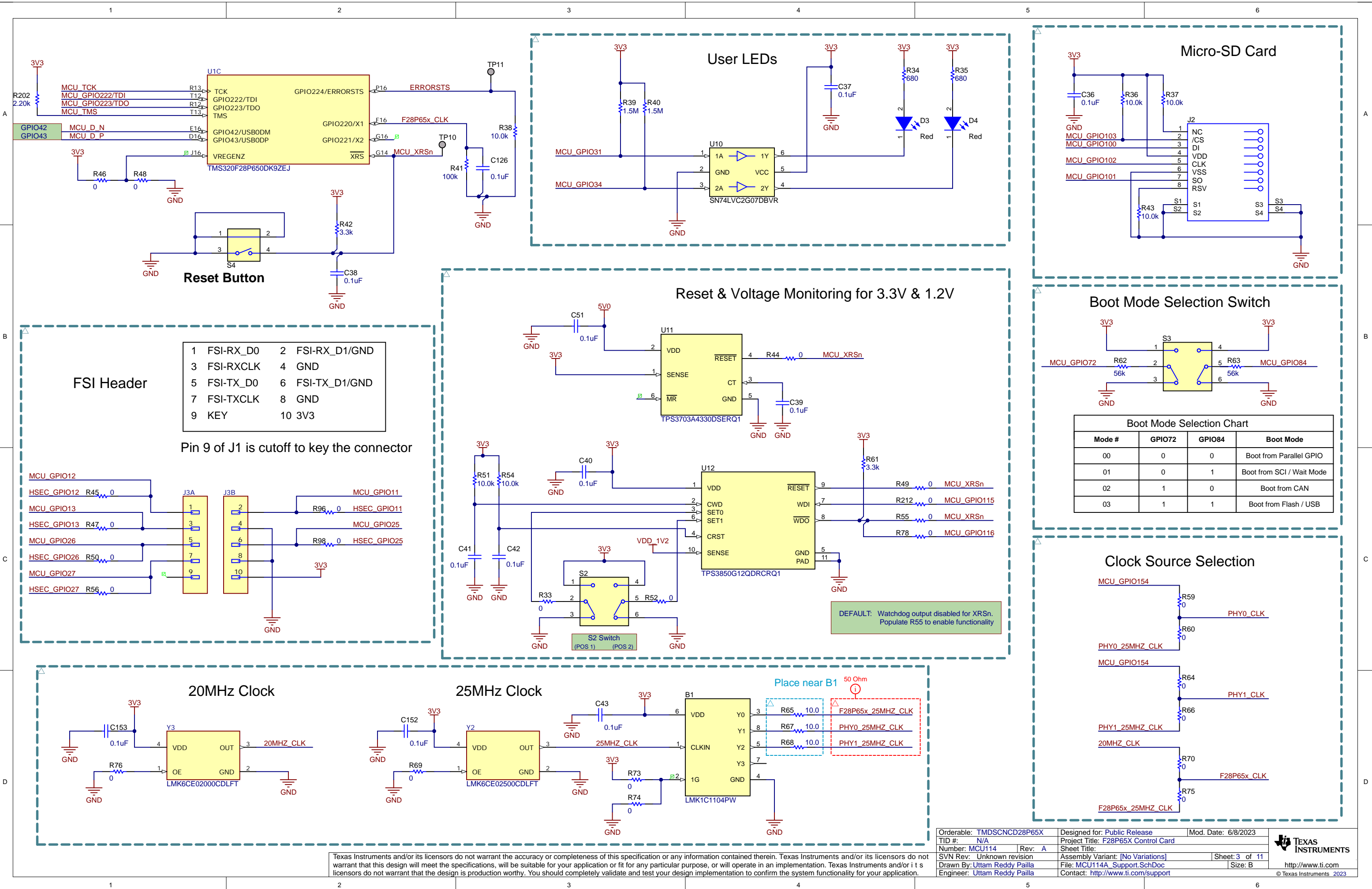


Power to the MCU is either supported by the USB-C on the left or the HSEC 180 pin.



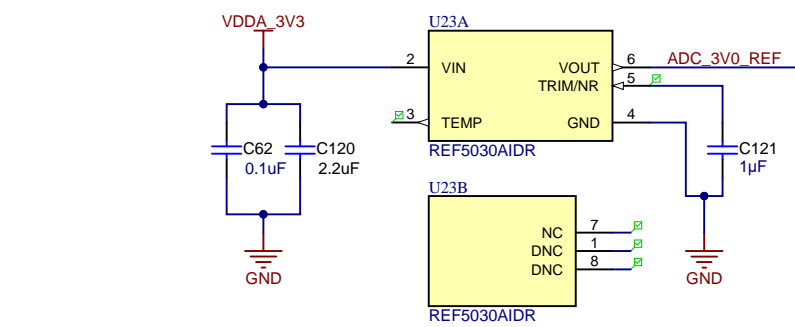
168 TMS320F28P650DK9ZEJ



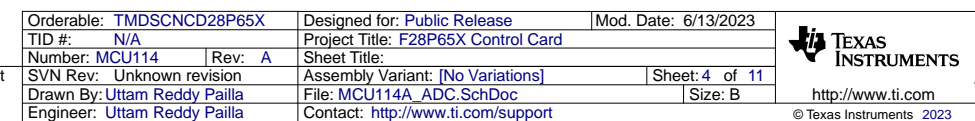


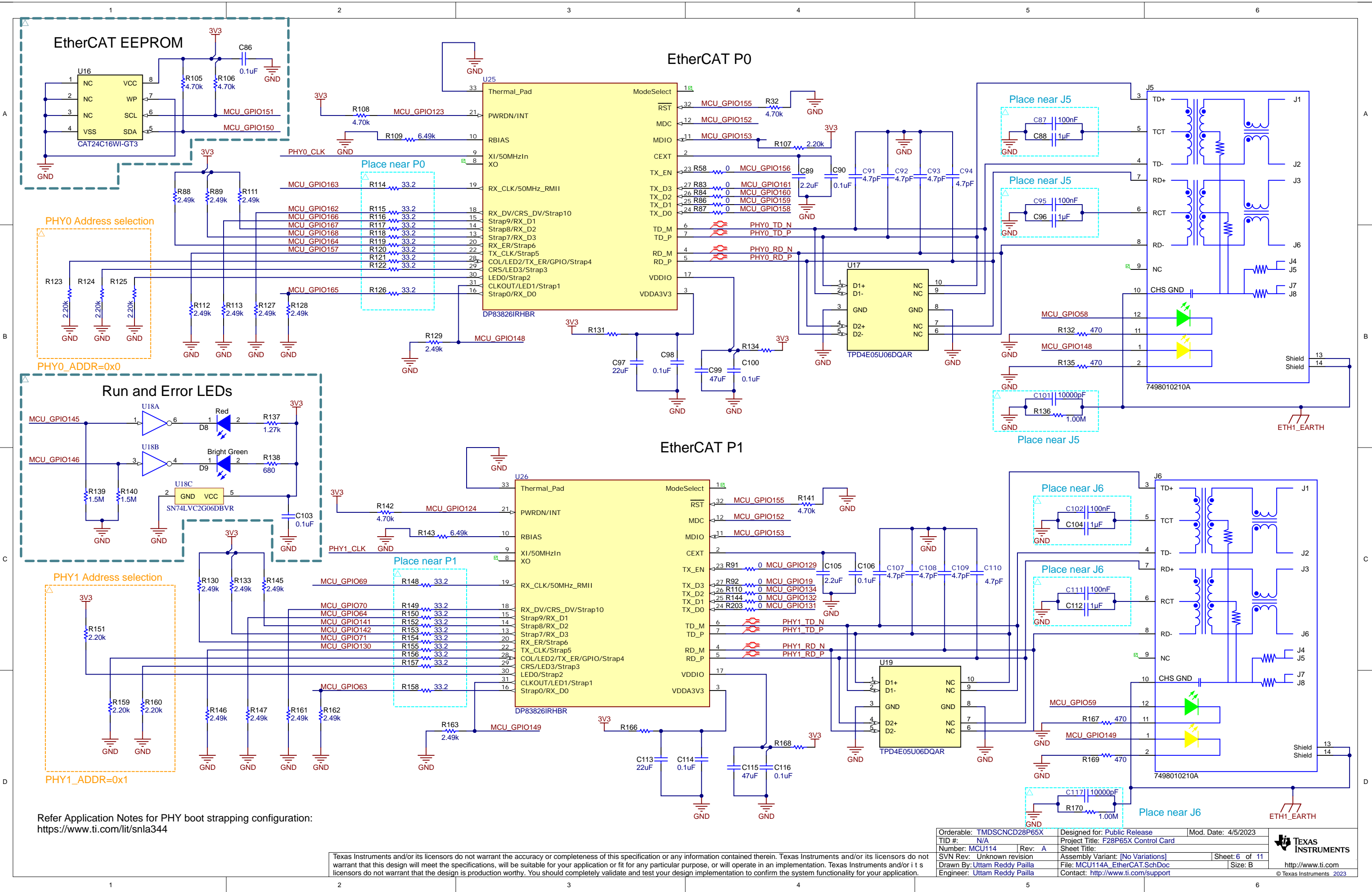
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Orderable: TMDSCNCD28P65X	Designed for: Public Release	Mod. Date: 6/8/2023
TID #: N/A	Project Title: F28P65X Control Card	
Number: MCU114	Rev: A	Sheet Title:
SVN Rev: Unknown revision	Assembly Variant: [No Variations]	Sheet: 3 of 11
Drawn By: Uttam Reddy Paila	File: MCU114A_Support.SchDoc	Size: B
Engineer: Uttam Reddy Paila	Contact: http://www.ti.com/support	



Ext. V_REF Selection	
S6 (POS 2)	ADC_REF
1	HSEC_ADC-VREFHI
0	ADC_3V0_REF (DEFAULT)

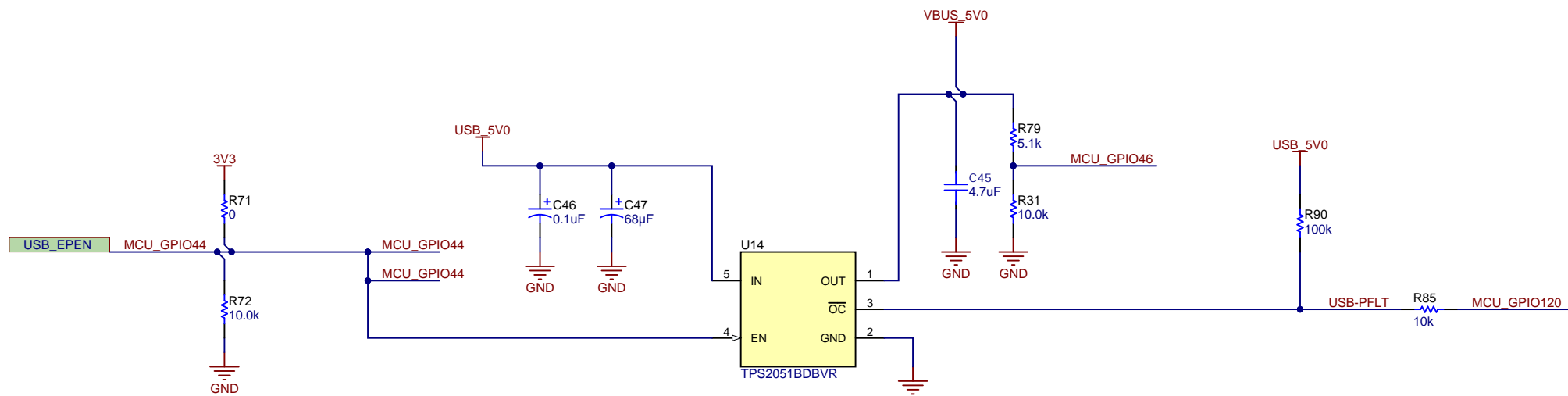
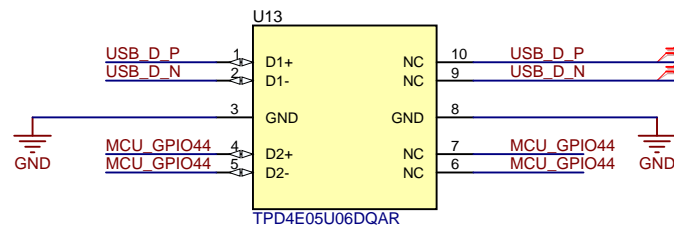
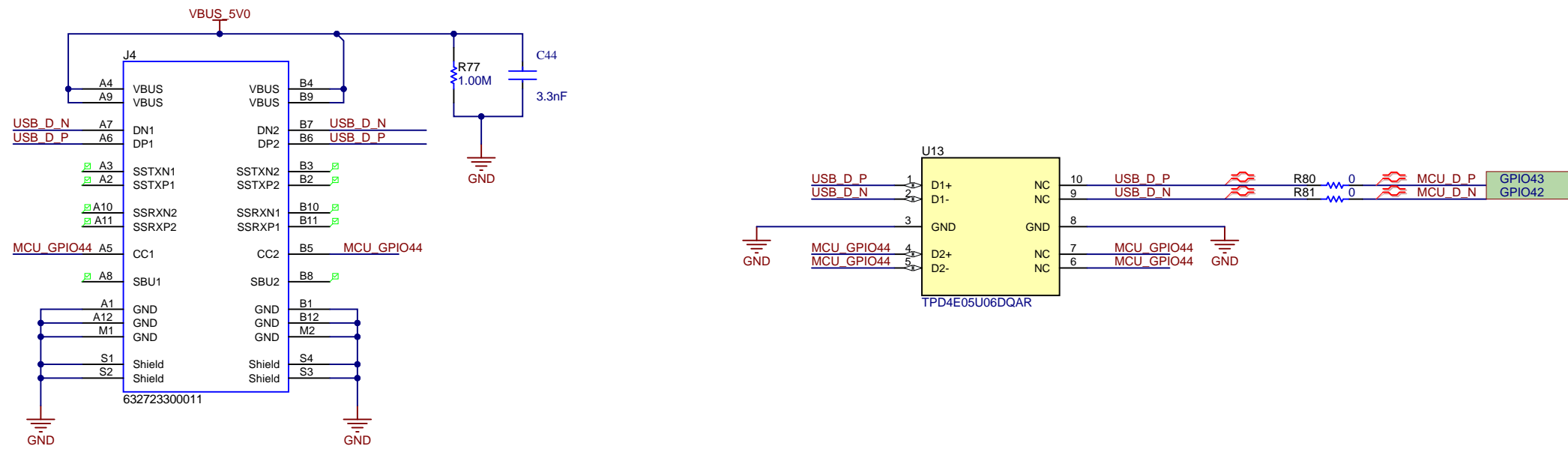




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Orderable: TMDSCNCD28P65X	Designed for: Public Release	Mod. Date: 4/5/2023
TID #: N/A	Project Title: F28P65X Control Card	
Number: MCU114	Rev: A	Sheet Title:
SVN Rev: Unknown revision	Assembly Variant: [No Variations]	Sheet: 6 of 11
Drawn By: Uttam Reddy Paila	File: MCU114A_EtherCAT.SchDoc	Size: B
Engineer: Uttam Reddy Paila	Contact: http://www.ti.com/support	

USB- Type C Connector - Data Peripheral to MCU



Switch Truth Table

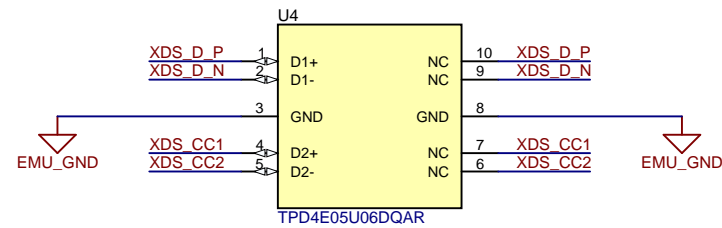
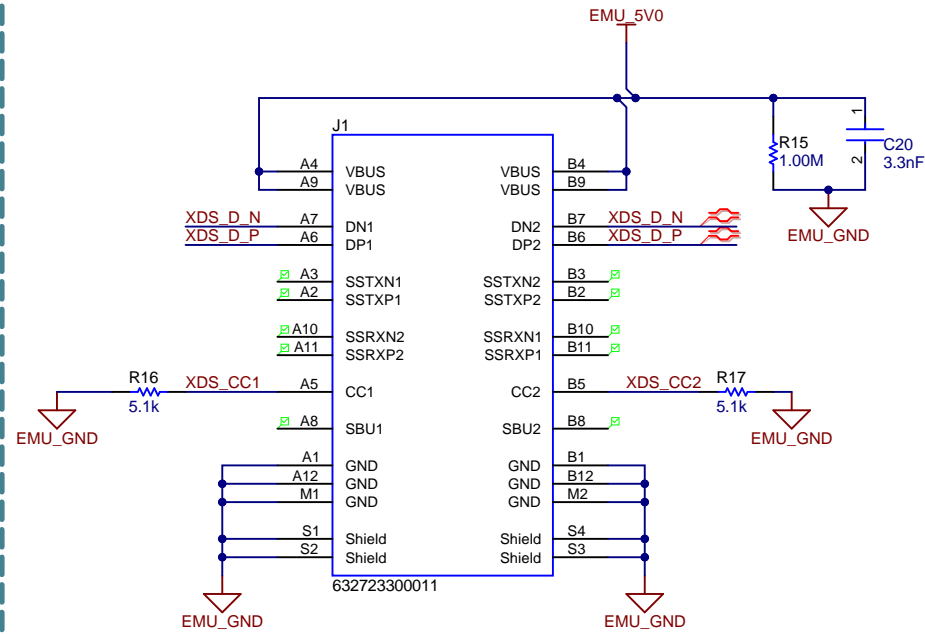
MCU_GPIO44 STATUS	DESCRIPTION	USB_MODE
1 (HIGH)	UB_CC1 & USB_CC2 are pulled up	Host mode
0 (LOW)	UB_CC1 & USB_CC2 are strongly pulled down	Device mode (DEFAULT)

NOTE: USB VBUS_5V0, PFLT & EPEN do not have a specific mux position in this device.

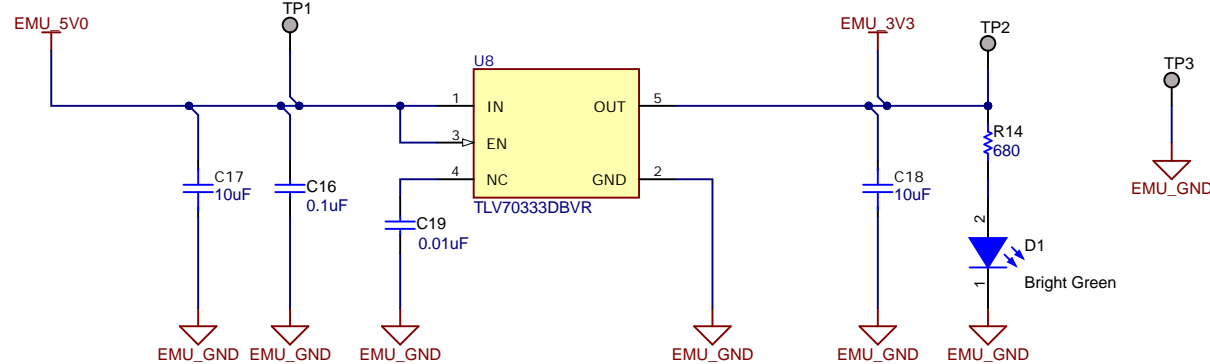
In this controlCARD, a standard GPIO is used to detect changes to these signals.

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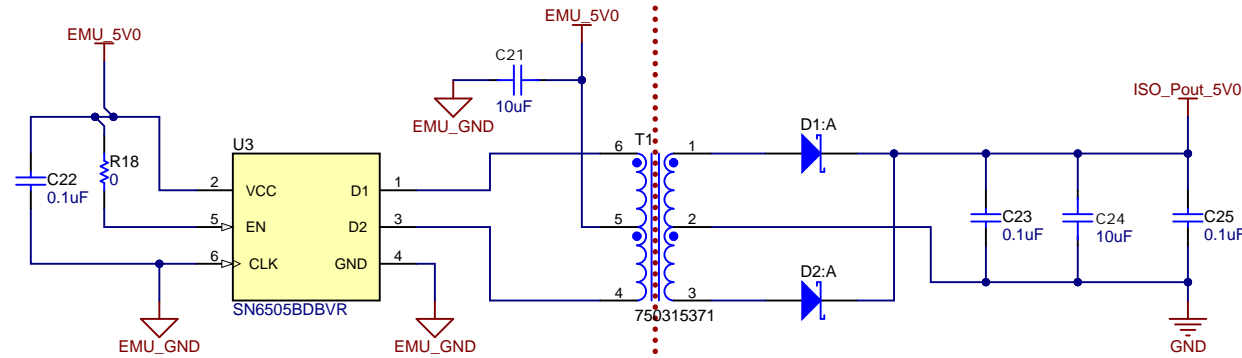
USB- Type C Connector - XDS110



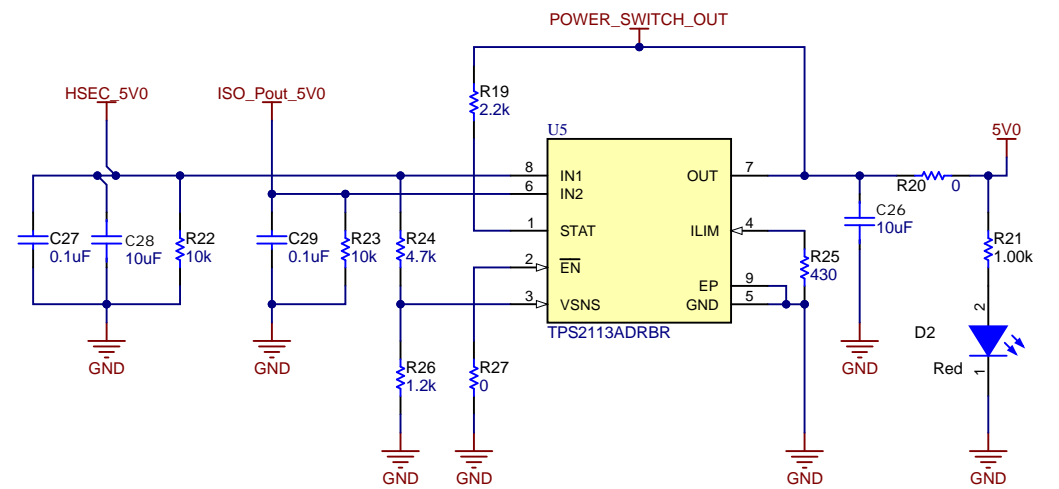
LDO_5V0_3V3



USB Isolated Power



Power Selection Switch

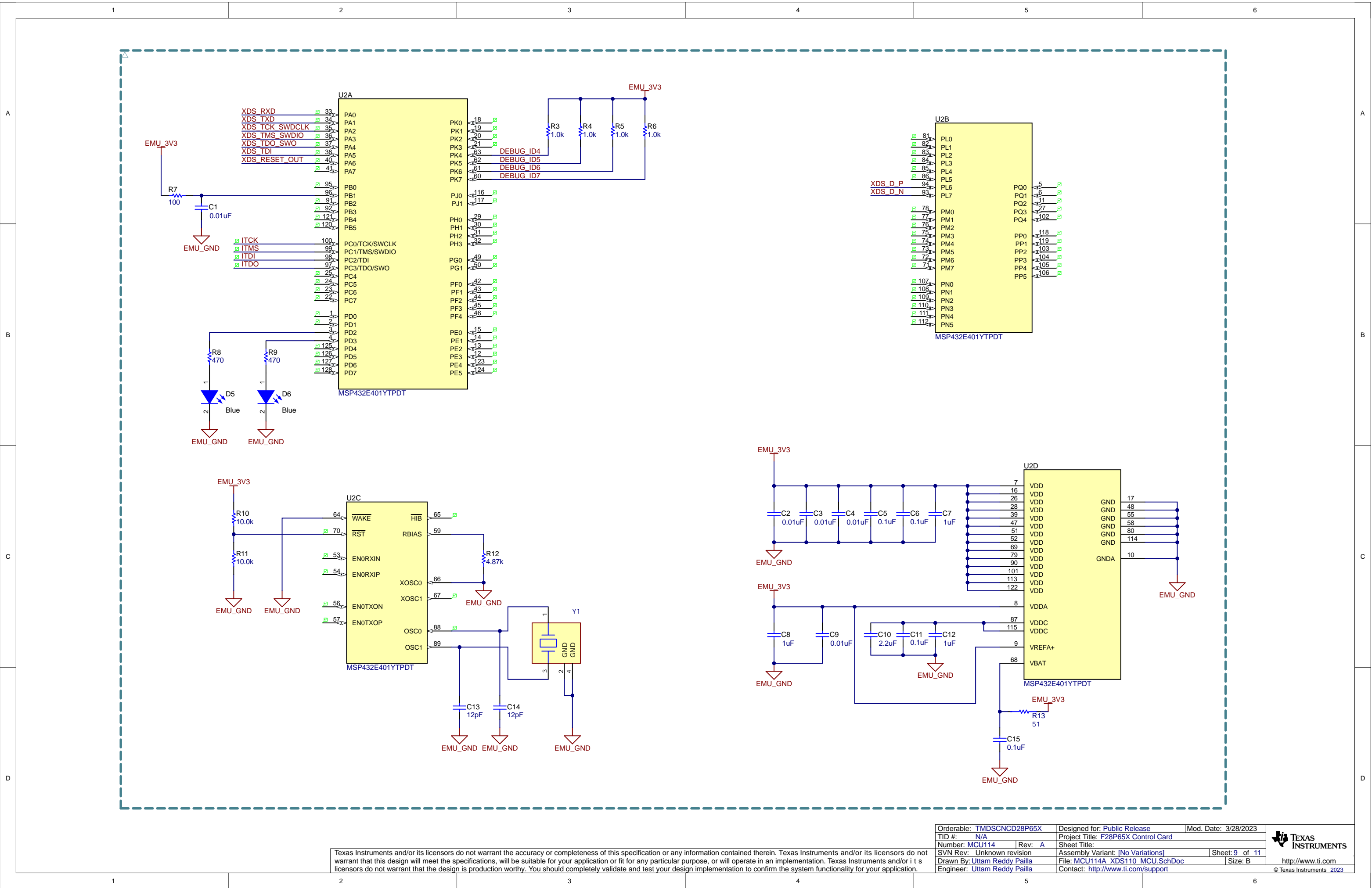


Switch Truth Table		
HSEC_5V0 > 4V	ISO_Pout_5V0 > HSEC_5V0	POWER_SWITCH_OUT
Yes	X	HSEC_5V0
No	No	HSEC_5V0
No	Yes	ISO_Pout_5V0

NOTE: for TYPE C, the USB2.0 OTG device is referred as a Dual Role Port (DRP)

DRP can function either as a USB host or USB peripheral, the selection choice depends on the channel configuration (CC1/CC2).

1. USB host (DFP) - Use pull-up resistors on CC1/CC2 ; Provides Vbus to the attached peripheral
2. USB peripheral (UFP) -Use pull-down resistors on CC1/CC2 ; monitors Vbus to establish a data connection and/or power on board circuits



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Orderable: TMDSCNCD28P65X	Designed for: Public Release	Mod. Date: 3/28/2023
TID #: N/A	Project Title: F28P65X Control Card	
Number: MCU114	Rev: A	Sheet Title:
SVN Rev: Unknown revision	Assembly Variant: [No Variations]	Sheet: 9 of 11
Drawn By: Uttam Reddy Pailla	File: MCU114A_XDS110_MCU.SchDoc	Size: B
Engineer: Uttam Reddy Pailla	Contact: http://www.ti.com/support	

