

1	2	3	4	5	6
				REVISION	DESCRIPTION
					DATE
				1.1	New stackup 8 layers 12/18/2021
				1.2	Change R77 (ADC REF) to 0R, C54 DNP, onboard EEPROM and revers pol protection added 05/09/2022

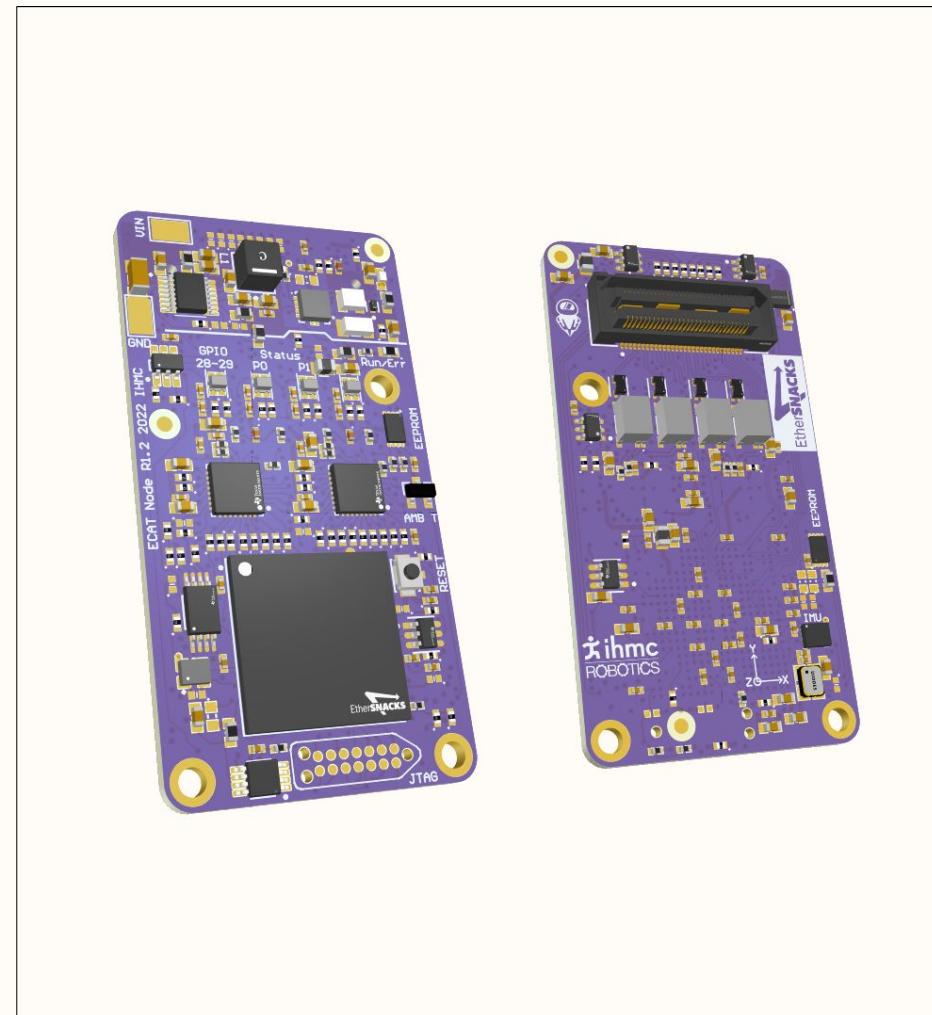
Nadia

F28388D_ECAT_Node

REV1.2

Page Index

-
- 1 COVER PAGE
- 2 BLOCK DIAGRAM
- 3 POWER
- 4 F2838 GPIO
- 5 F2838 JTAG CLOCK SUP
- 6 F2838 ADC
- 7 ETHERCAT
- 8 SENSORS
- 9 CONNECTORS MECH

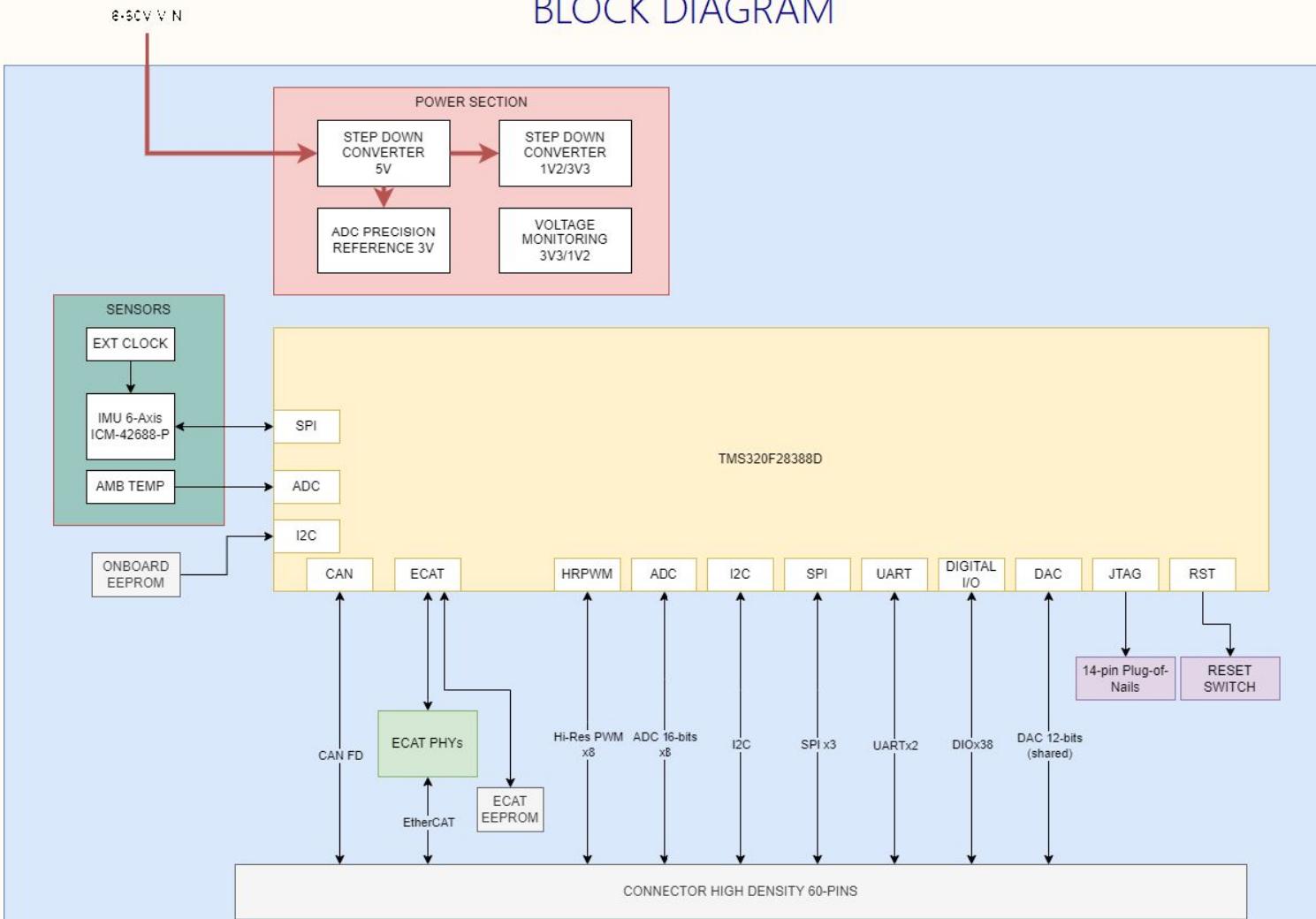


	PROJECT: Nadia	AUTHOR: A. MASLYCZYK
	TITLE: F28388D_ECAT_Node	
	FILE NAME: [0] COVER PAGE.SchDoc	
	CUR REV: 1.1	DATE: 24/11/2021
	PCB: PCB_F2838_Node	SHEET: 1 OF 9

1	2	3	4	5	6
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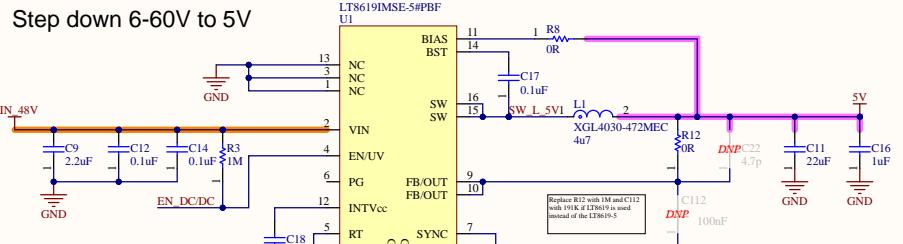
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REVISION	DESCRIPTION			DATE	
1.1	New stackup 8 layers			12/18/2021	
1.2	Change R77 (ADC REF) to 0R, C54 DNP, onboard EEPROM and revers pol protection added			05/09/2022	

BLOCK DIAGRAM

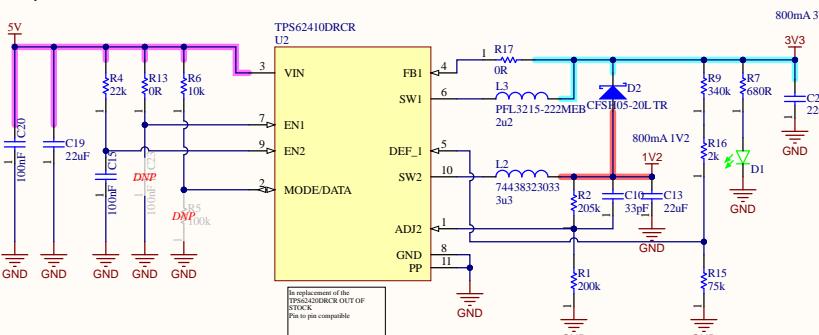


PROJECT: Nadia	AUTHOR: A. MASLYCZYK
TITLE: F28388D_ECAT_Node	
FILE NAME: [1] BLOCK DIAGRAM.SchDoc	
CUR REV: 1.1	DATE: 24/11/2021
PCB: PCB_F2838_Node	SHEET: 2 OF 9

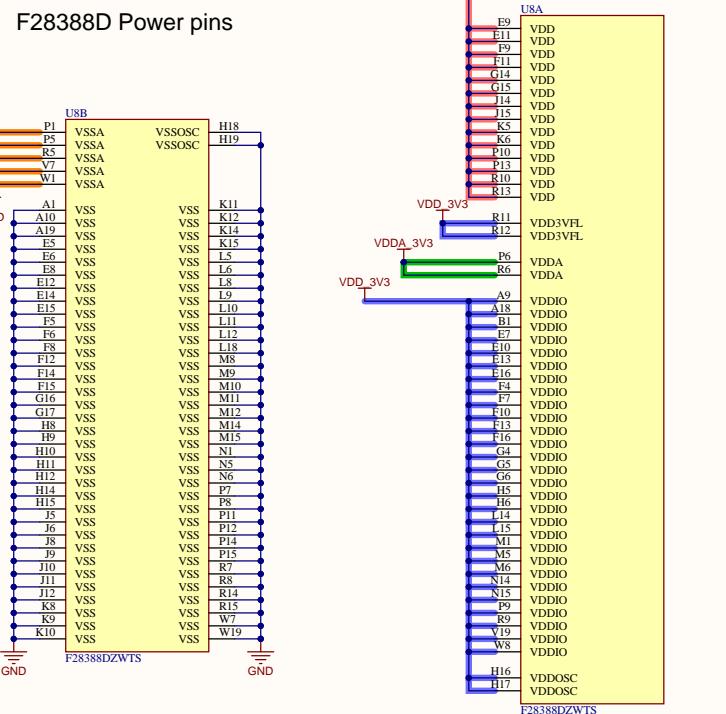
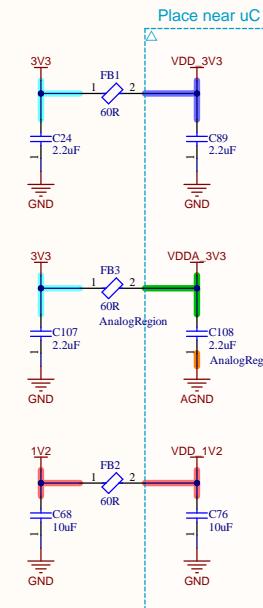
1	2	3	4	5	6	
				REVISION	DESCRIPTION	DATE
				1.1	New stackup 8 layers	12/18/2021
				1.2	Change R77 (ADC REF) to 0R, C54 DNP, onboard EEPROM and revers pol protection added	05/09/2022



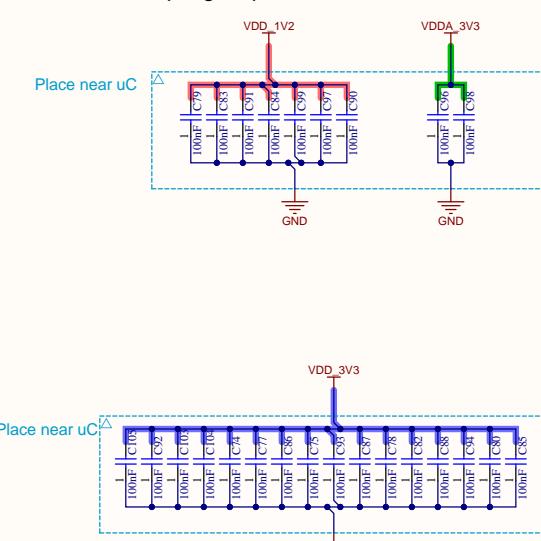
Step down 1V2 and 3V3 - 800mA



Ferrite Beads

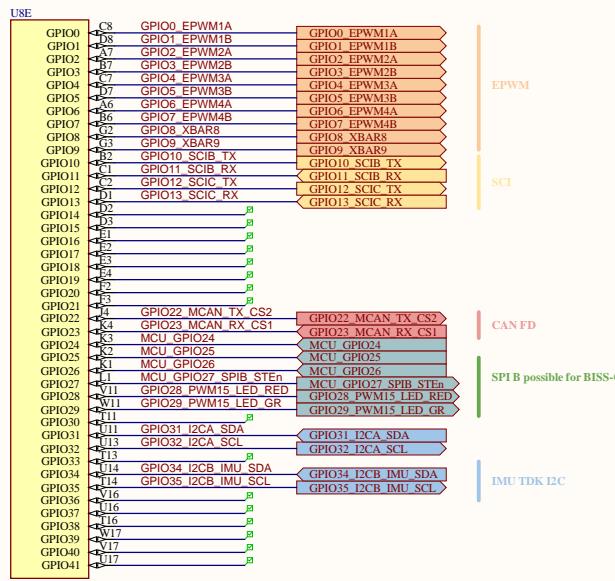


Decoupling Capacitors

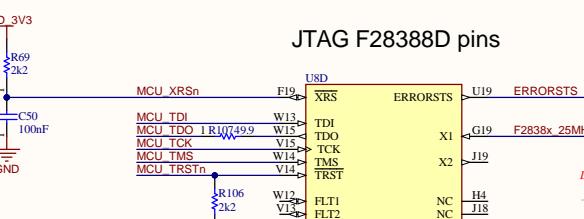
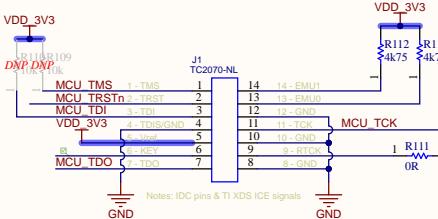


1	2	3	4	5	6
REVISION	DESCRIPTION			DATE	
1.1	New stackup 8 layers				12/18/2021
1.2	Change R77 (ADC REF) to 0R, C54 DNP, onboard EEPROM and revers pol protection added				05/09/2022

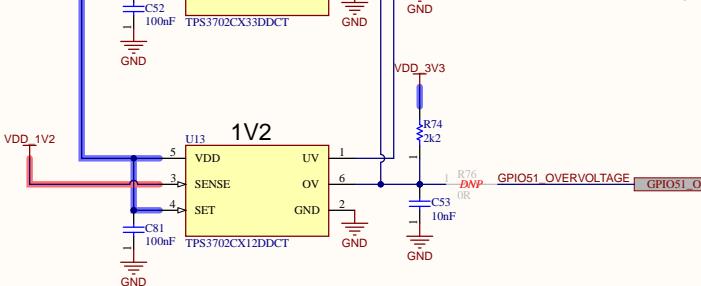
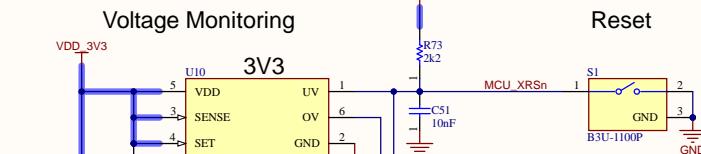
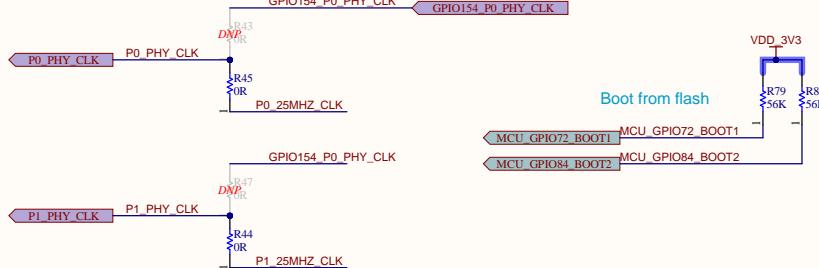
F28388D GPIO pins



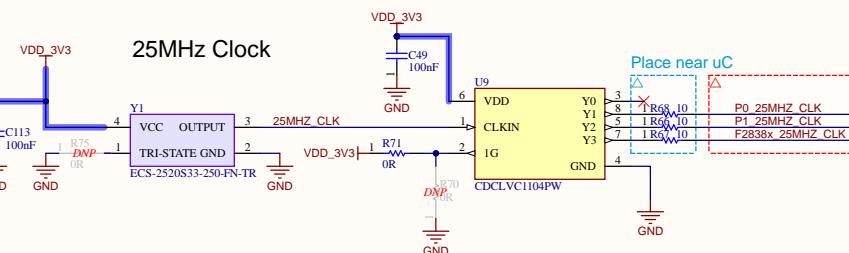
1	2	3	4	5	6
REVISION	DESCRIPTION			DATE	
1.1	New stackup 8 layers			12/18/2021	
1.2	Change R77 (ADC REF) to OR, C54 DNP, onboard EEPROM and revers pol protection added			05/09/2022	



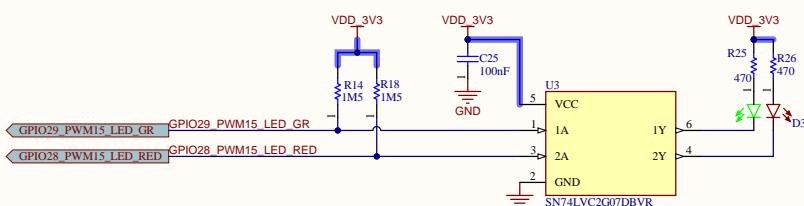
Clock Source Selection



25MHz Clock

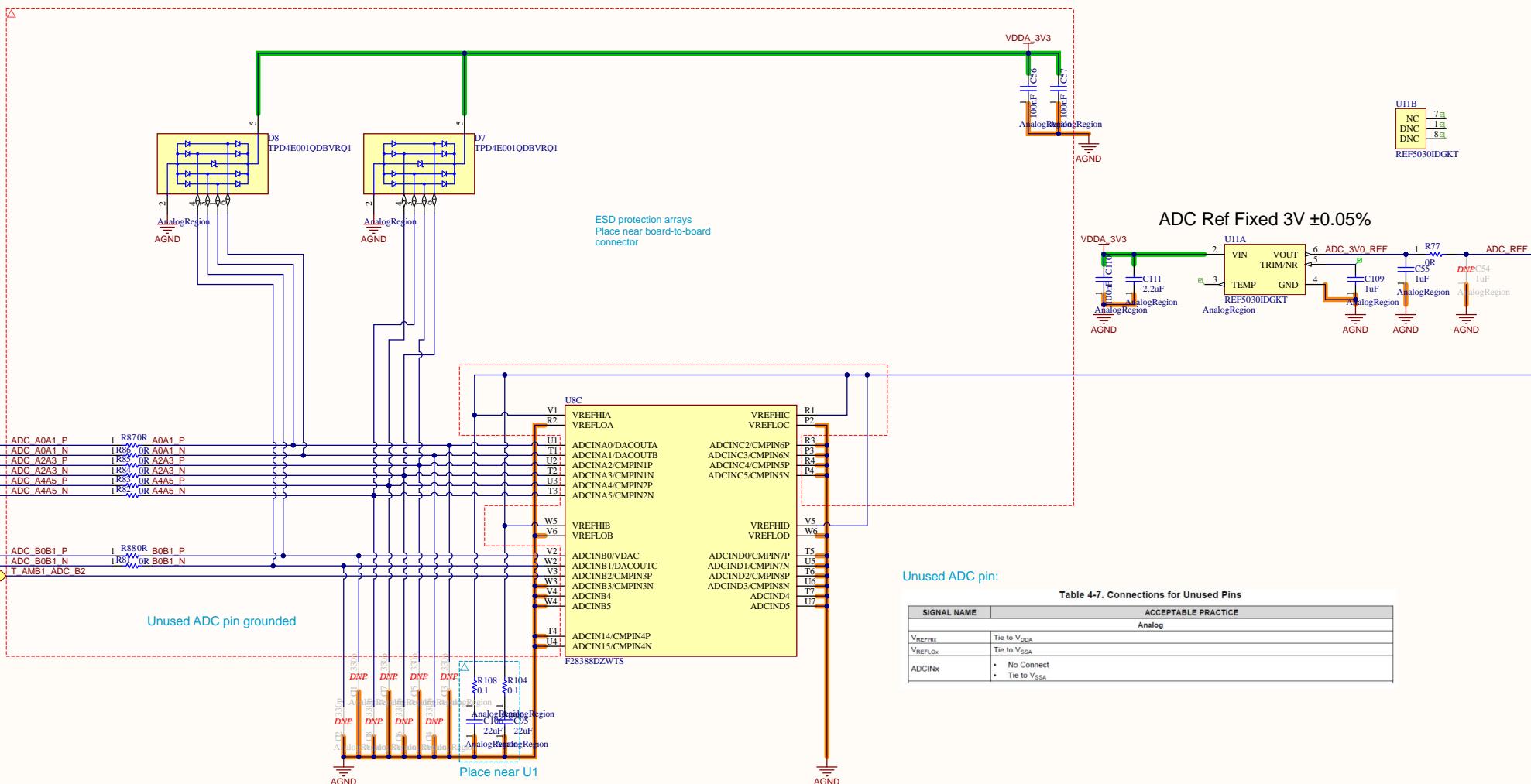


LEDs PWM



PROJECT: Nadia	AUTHOR: A. MASLYCZYK
TITLE: F28388D_ECAT_Node	
FILE NAME: [4] F28388 JTAG CLOCK SUP.SchDoc	
CUR REV: 1.1	DATE: 24/11/2021
PCB: PCB_F28388_Node	SHEET: 5 OF 9

1	2	3	4	5	6	
				REVISION	DESCRIPTION	DATE
1.1	New stackup 8 layers				12/18/2021	
1.2	Change R77 (ADC REF) to OR, C54 DNP, onboard EEPROM and revers pol protection added				05/09/2022	



PROJECT: Nadia	AUTHOR: A. MASLYCZYK
TITLE: F2838BD_ECAT_Node	
FILE NAME: [5] F2838 ADC.SchDoc	
CUR REV: 1.1	DATE: 24/11/2021
PCB: PCB_F2838_Node	SHEET: 6 OF 9

1	2	3	4	5	6
A	B	C	D	E	F
EtherCAT P0				REVISION	DESCRIPTION DATE
VDD_3V3	C41 10nF C64 1uF C67 100nF C62 10nF GND	C45 10nF C73 1uF C43 100nF C71 10nF GND	R33 49.9 VDD_3V3 R31 49.9 C38 100nF C56 1uF GND	1.1	New stackup 8 layers 12/18/2021
VDD_3V3	U5 VDDIO AVD TX EN/TX CTRL TX CLK	TD P RD P TD M RD M	R93 49.9 VDD_3V3 R92 49.9 C66 100nF C59 1uF GND	1.2	Change R77 (ADC REF) to 0R, C54 DNP, onboard EEPROM and revers pol protection added 05/09/2022
VDD_3V3	GPIO156 ESC TX0 EN GPIO157 ESC TX0 CLR	LED 0	12 P0 TD_P P0 TD_N 11 P0 RD_P P0 RD_N 10 R95 4k87 GND		
VDD_3V3	GPIO158 ESC TX0 DATA0 GPIO159 ESC TX0 DATA1	MDC MDIO	19 GPIO152 ESC MDIO CLK GPIO153 ESC MDIO DATA VDD_3V3		
VDD_3V3	GPIO160 ESC TX0 DATA2 GPIO161 ESC TX0 DATA3	INT/PWDN	8 R3 10k 1 R42 2k GND		
VDD_3V3	GPIO162 ESC RX0 DV GPIO164 ESC RX0 ERR	RESET	18 GPIO155 ESC PHY_RESETn GPIO156 ESC PHY RESETn		
VDD_3V3	GPIO165 ESC RX0 DATA0 GPIO166 ESC RX0 DATA1	XI	23 P0 PHY_CLK P0 PHY_CLK		
VDD_3V3	GPIO167 ESC RX0 DATA2 GPIO168 ESC RX0 DATA3	XO	22 R46 2k49 GND		
VDD_3V3	GPIO169 ESC RX0 CLK	LED 1/GPIO1	24 R39 2k2 D4		
VDD_3V3	DP83822IRHBR	GND	GPIO143 ESC LED_LINK0_ACTIVE		
VDD_3V3			GPIO148 ESC PHY0 LINKSTATUS		
EtherCAT P1					
VDD_3V3	C63 10nF C42 1uF C61 100nF C69 10nF GND	U6 VDDIO AVD TX EN/TX CTRL TX CLK	R34 49.9 VDD_3V3 R32 49.9 C39 100nF C37 1uF GND		
VDD_3V3	GPIO129 ESC TX1 EN GPIO130 ESC TX1 CLR	TD P RD P TD M RD M	12 P1 TD_P P1 TD_N 11 P1 RD_P P1 RD_N 10 R91 4k87 GND		
VDD_3V3	GPIO131 ESC TX1 DATA0 GPIO132 ESC TX1 DATA1	LED 0	19 GPIO152 ESC MDIO CLK GPIO153 ESC MDIO DATA VDD_3V3		
VDD_3V3	GPIO133 ESC TX1 DATA2 GPIO134 ESC TX1 DATA3	MDC MDIO	8 R3 10k 1 R41 2k GND		
VDD_3V3	GPIO135 ESC TX1 DATA4	INT/PWDN	18 GPIO155 ESC PHY_RESETn		
VDD_3V3	GPIO136 ESC RX1 DV GPIO138 ESC RX1 ERR	RESET	23 P1 PHY_CLK P1 PHY_CLK		
VDD_3V3	GPIO139 ESC RX1 DATA0 GPIO140 ESC RX1 DATA1	XI	22 R46 2k49 GND		
VDD_3V3	GPIO141 ESC RX1 DATA2 GPIO142 ESC RX1 DATA3	XO	24 R40 2k2 D5		
VDD_3V3	GPIO143 ESC RX1 CLK	LED 1/GPIO1	GPIO144 ESC LED_LINK1_ACTIVE		
VDD_3V3	DP83822IRHBR	GND	GPIO149 ESC PHY1 LINKSTATUS		
EtherCAT EEPROM					
VDD_3V3	CAT24C16HU4L-GT3 U4 A0 VCC WP A1 SCL SDA VSS PAD A2 GND	C40 R35 4k75 R36 4k75 GND	C58 100nF GND		
VDD_3V3	GPIO151 ESC I2C_SCL GPIO150 ESC I2C_SDA	GPIO145 ESC LED_ERR	U12 VCC 1A 1Y 2A 2Y GND		
VDD_3V3	GPIO151 ESC I2C_SDA	GPIO146 ESC LED_RUN	1Y 2A 1R24 470 1R23 470 GND		
VDD_3V3	GPIO150 ESC I2C_SDA	SN74LVC2G06DBVR	2Y 1R90 1M5 R89 1M5 GND		
VDD_3V3			D6		
Run and Error LEDs					
VDD_3V3					

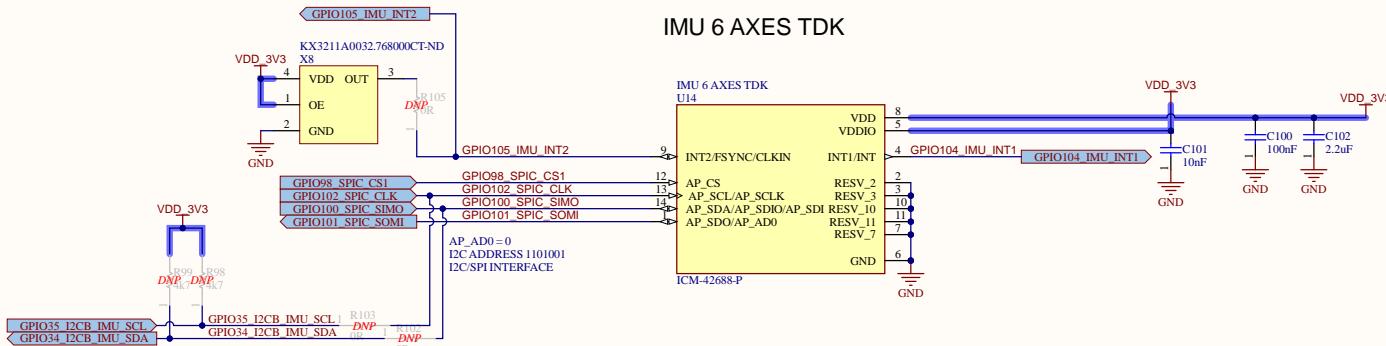


PROJECT: Nadia	AUTHOR: A. MASLYCZYK
TITLE: F2838D_ECAT_Node	
FILE NAME: [6] ETHERCAT.SchDoc	
CUR REV: 1.1	DATE: 24/11/2021
PCB: PCB_F2838_Node	SHEET: 7 OF 9

1	2	3	4	5	6
				REVISION	DESCRIPTION
				1.1	New stackup 8 layers 12/18/2021
				1.2	Change R77 (ADC REF) to 0R, C54 DNP, onboard EEPROM and revers pol protection added 05/09/2022

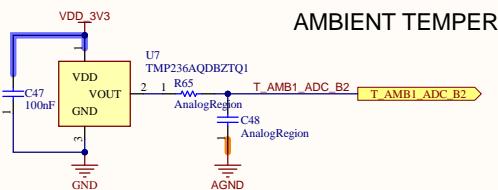
A

IMU 6 AXES TDK



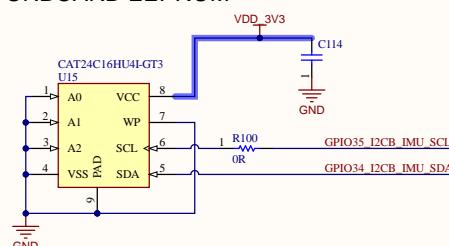
B

AMBIENT TEMPERATURE $\pm 0.5^{\circ}\text{C}$



C

ONBOARD EEPROM



PROJECT: Nadia	AUTHOR: A. MASLYCZYK
TITLE: F2838BD_ECAT_Node	
FILE NAME: [7] SENSORS.SchDoc	
CUR REV: 1.1	DATE: 24/11/2021
PCB: PCB_F2838_Node	SHEET: 8 OF 9

D

1

2

3

4

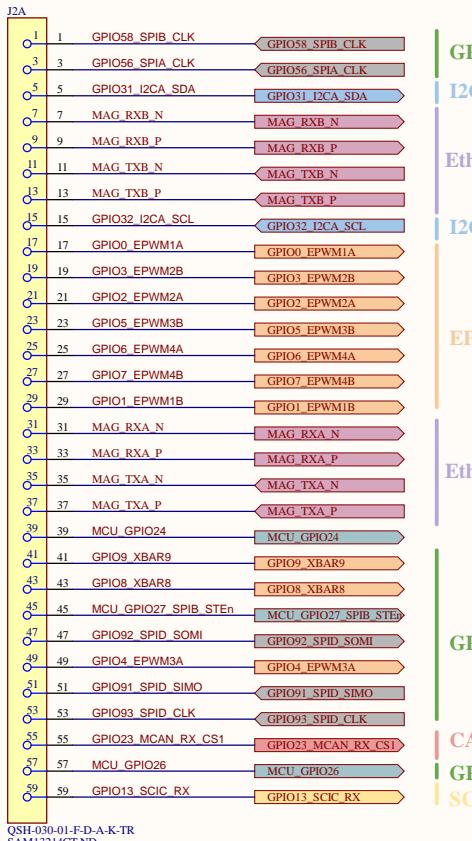
5

6

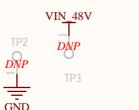
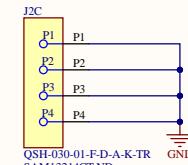
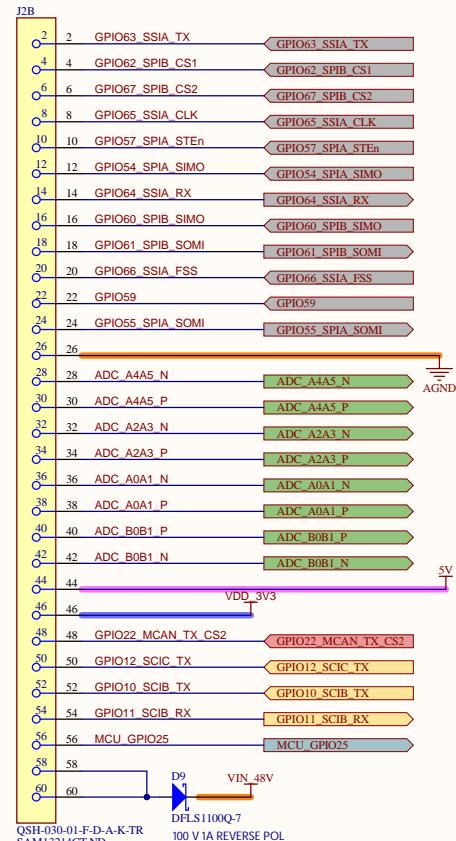
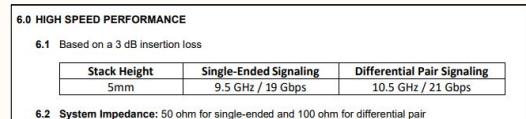
1	2	3	4	5	6	
				REVISION	DESCRIPTION	DATE
1.1	New stackup 8 layers					12/18/2021
1.2	Change R77 (ADC REF) to 0R, C54 DNP, onboard EEPROM and revers pol protection added					05/09/2022

High Speed Socket Strip 60 POS

the blade and beam design of the QSH delivers 25 Gbps performance



QSH-030-01-F-D-A-K-TR
SAM13214CT-ND



GPIO/SPI

MOUNTING HOLES



FIDUCIALS



CAN FD

SCI

GPIO



PROJECT: Nadia	AUTHOR: A. MASLYCZYK
TITLE: F2838BD_ECAT_Node	
FILE NAME: [8] CONNECTORS MECH.SchDoc	
CUR REV: 1.1	DATE: 24/11/2021
PCB: PCB_F2838_Node	SHEET: 9 OF 9