

Project : Dashcam Prototype / CPU Board

Revision and Version : 2.0E

Current Released : NA

Table of Content :

Page 1: Cover and Rev History

Page 2: Top Level

Revision History:

02.27.2024 : Starting Design

03.02.2024 : Schematics Finished

04.04.2024 : Starting PCB Layout

04.19.2024 : Dashcam CPU PCB Layout Done

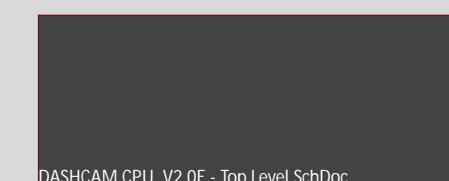
04.19.2024 : Starting with Review it

Mechanicals :



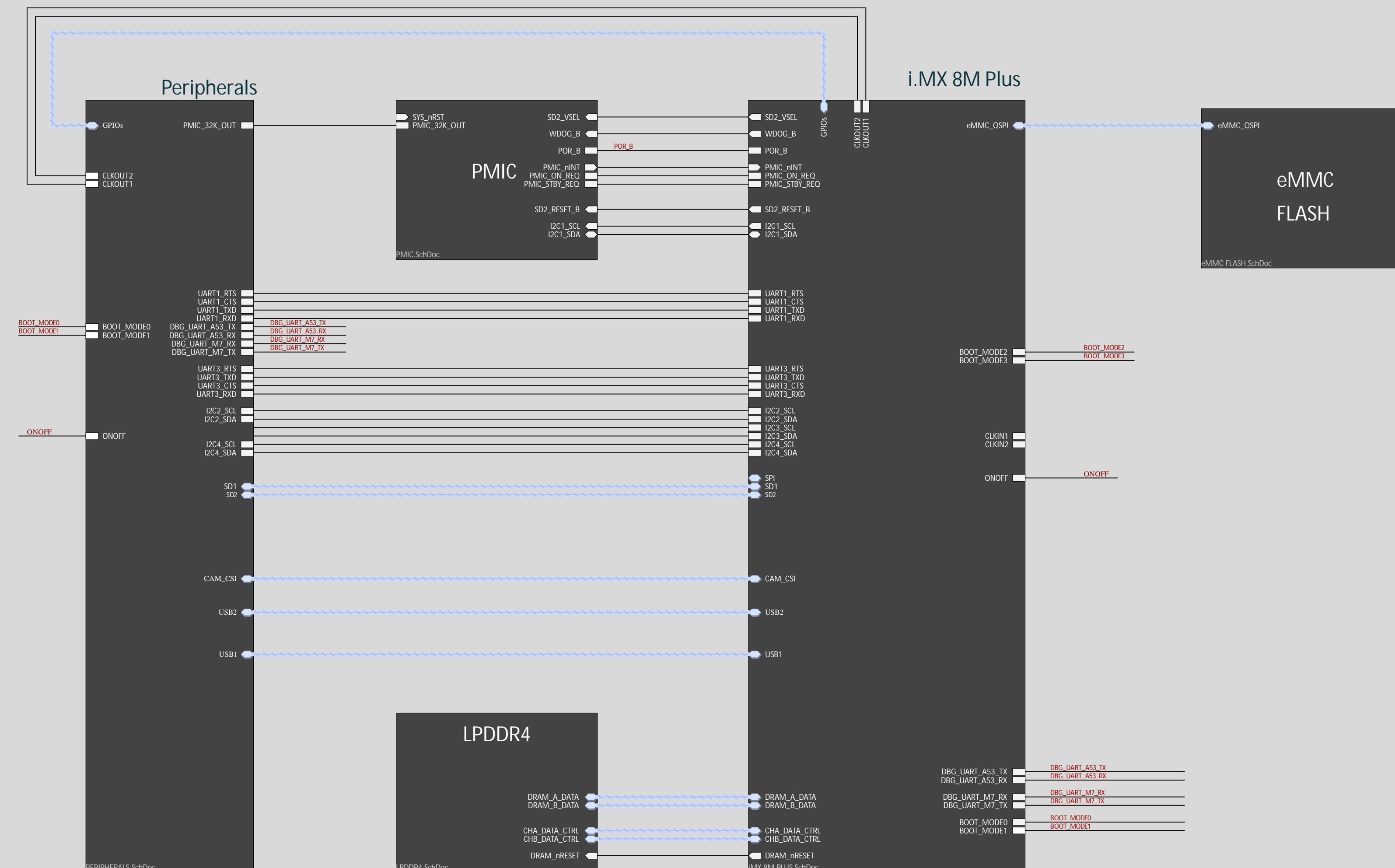
4 mount Holes in the corners
3mm Diameter

Main Schematics :



PCB Des :	UKAYACIK	
Approv By :	UKAYACIK	
Project Title :	Dashcam_V2.0E.PrjPcb	Sheet Title :
Date :	2/12/2025	PCB Version : 2.0
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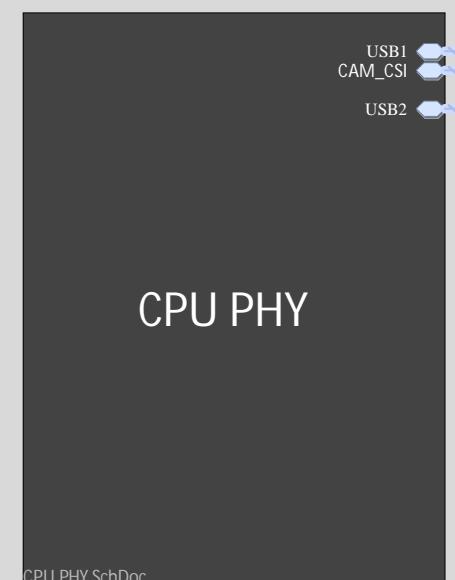
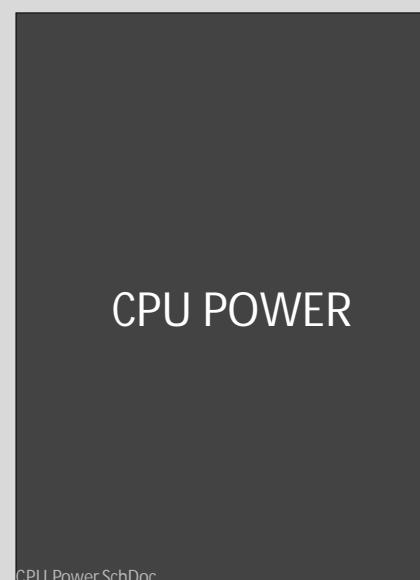
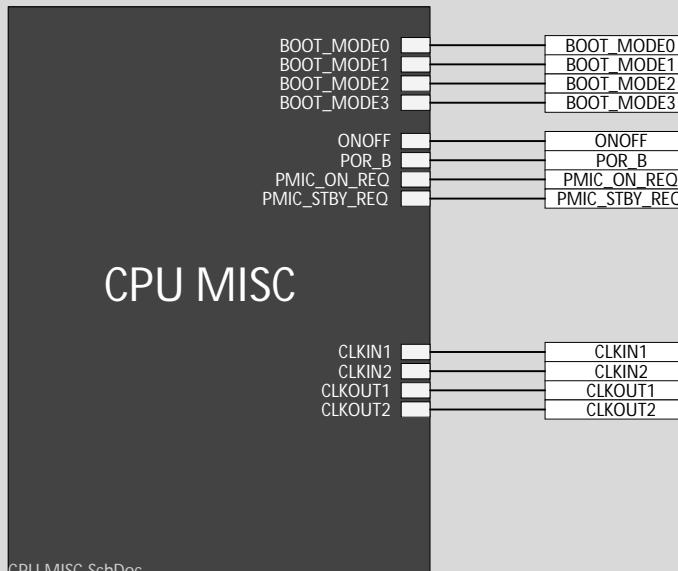
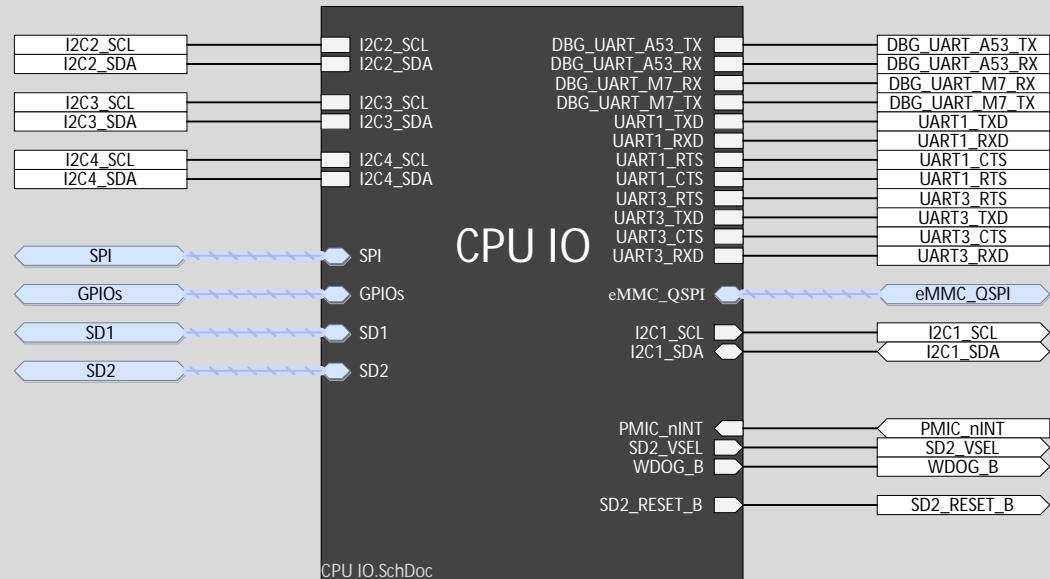
Top Level / Block Diagram



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Approv By :	UKAYACIK	
Project Title :	Dashcam_V2.0E.PnjPcb	Sheet Title : Top Level
Date :	2/13/2025	PCB Version : 1.0
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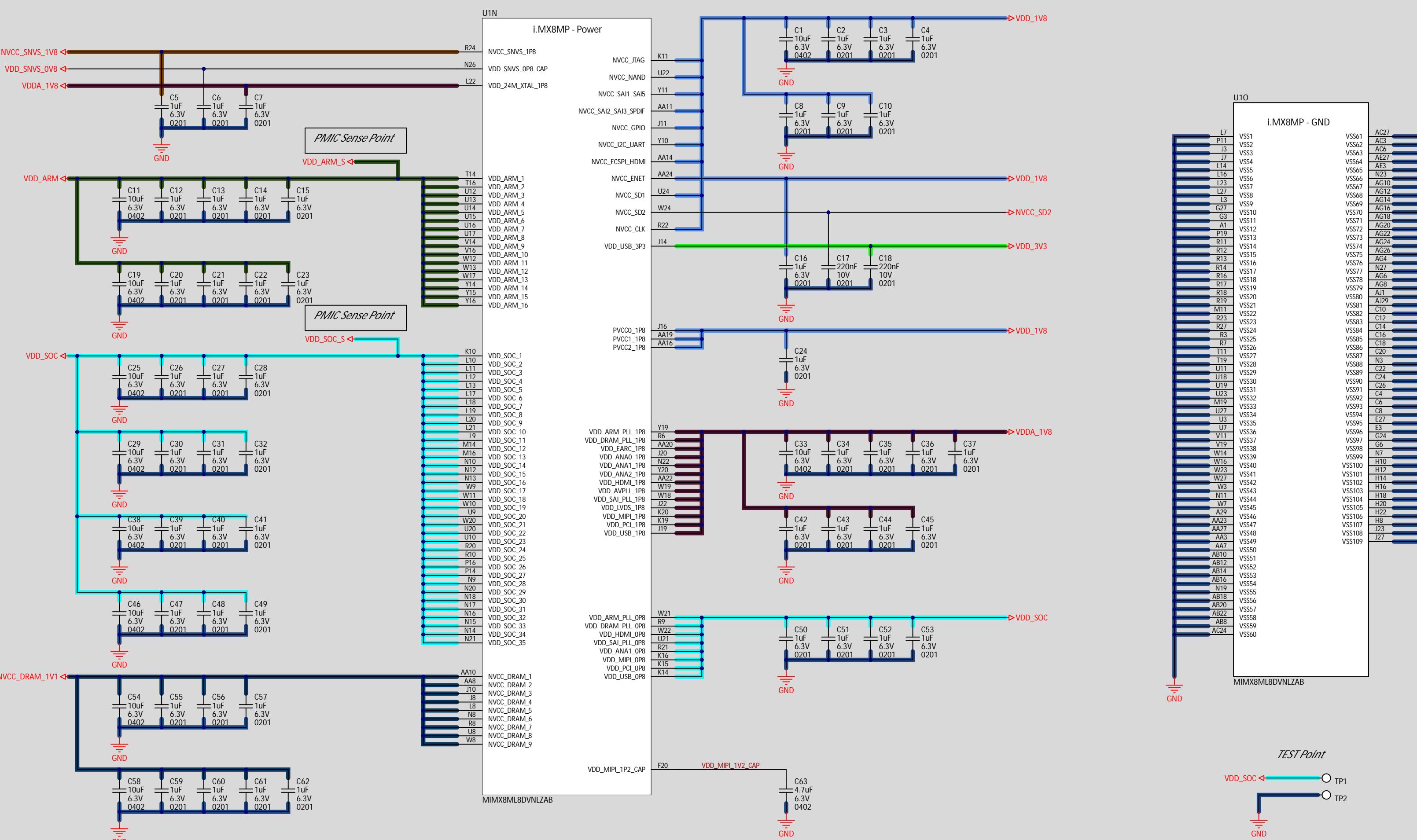
iMX 8M PLUS / Block Diagram

A



PCB Des :	UKAYACIK	
Approv By :	UKAYACIK	
Project Title :		Sheet Title :
Dashcam_V2.0E.PrjPcb		'i.MX 8M - BLOCK DIAGRAM
Date :	2/13/2025	PCB Version : 2.0
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CPU Power



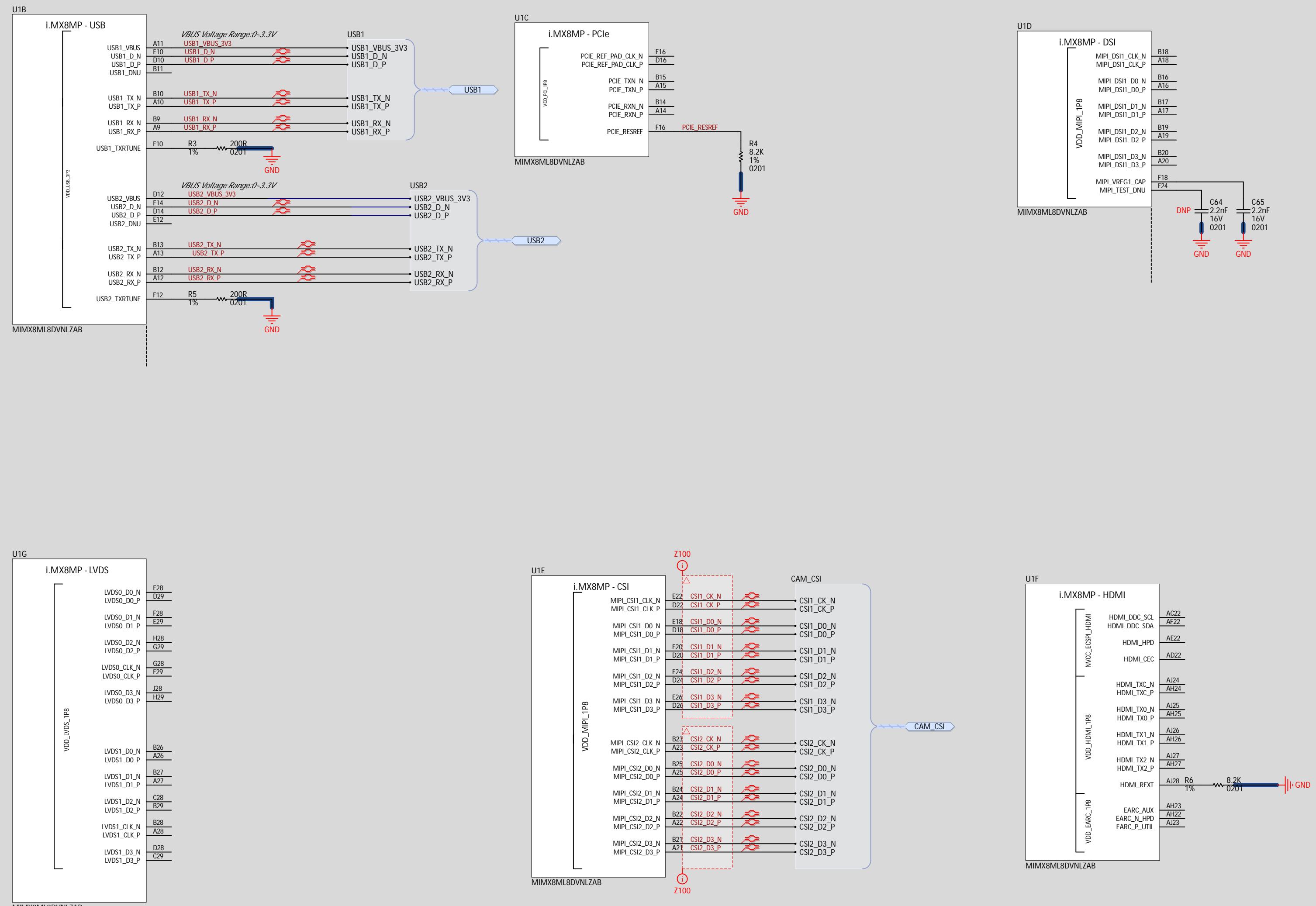
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Approv By :	UKAYACIK	
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Dashcam_V2.0E.PnjPcb		'CPU POWER
Date :	1/30/2025	PCB Version : 2.0
Page : 4 21	PCB Revision : A	Size : A2

CPU DDR



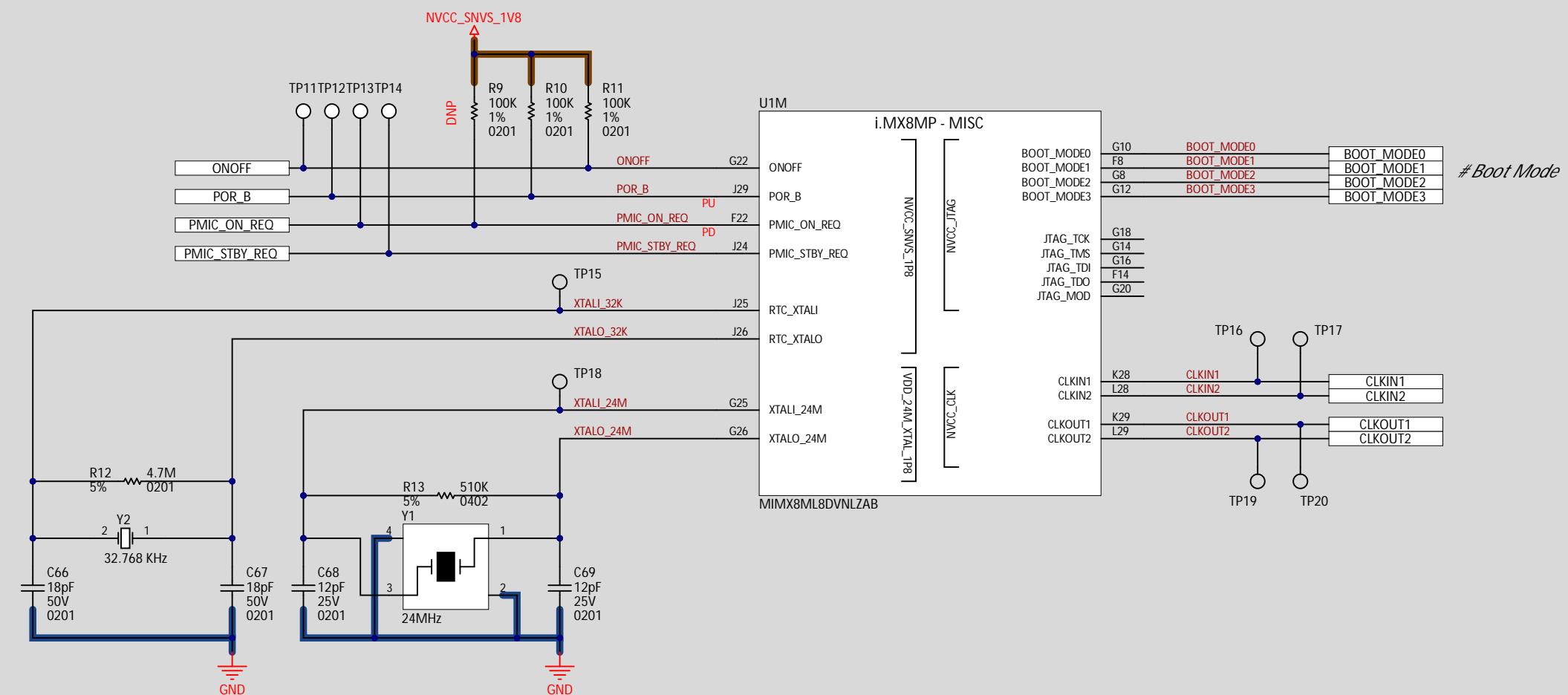
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CPU PHY



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Approv By :	UKAYACIK	
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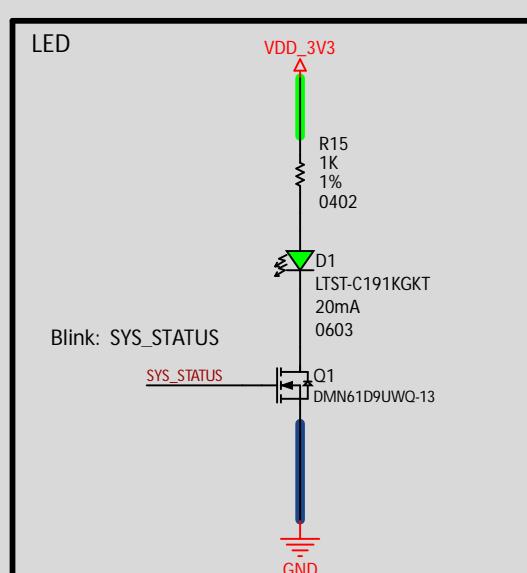
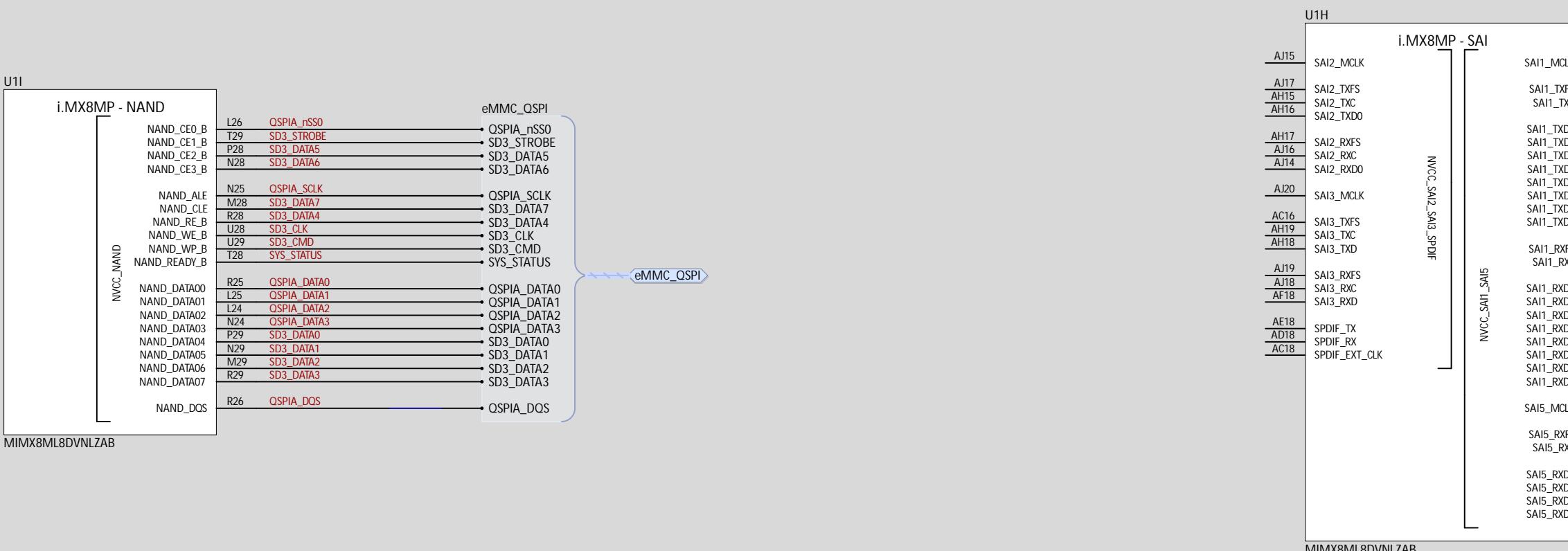
CPU Misc



Caution:

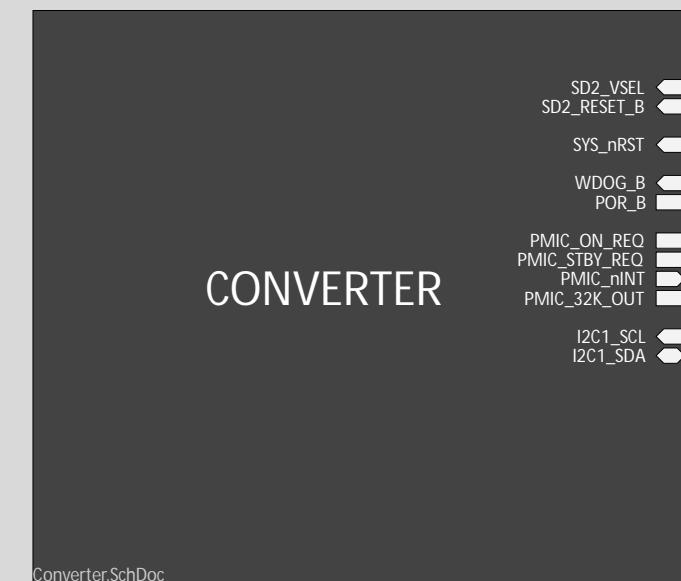
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CPU IO

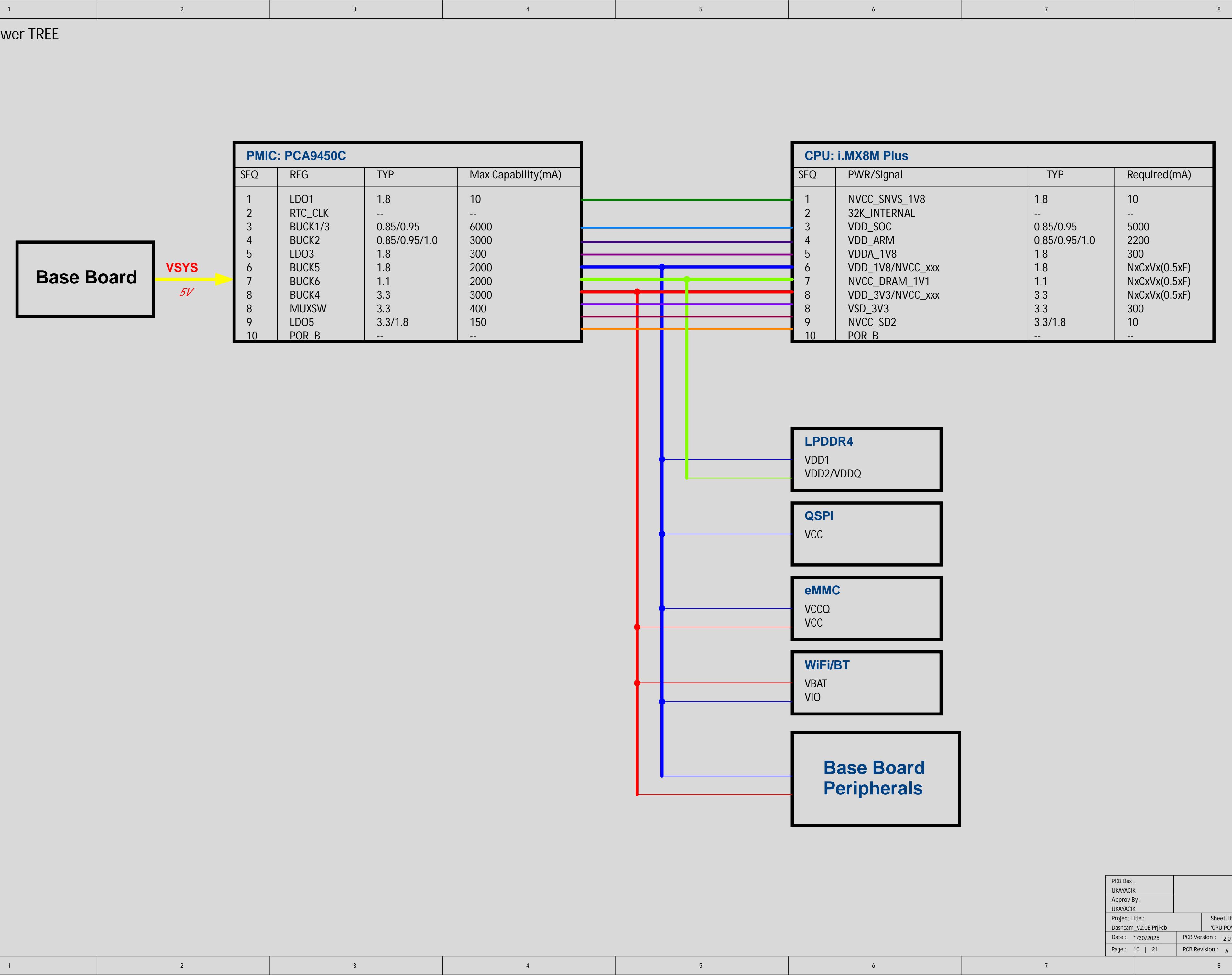


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Approv By :	UKAYACIK	
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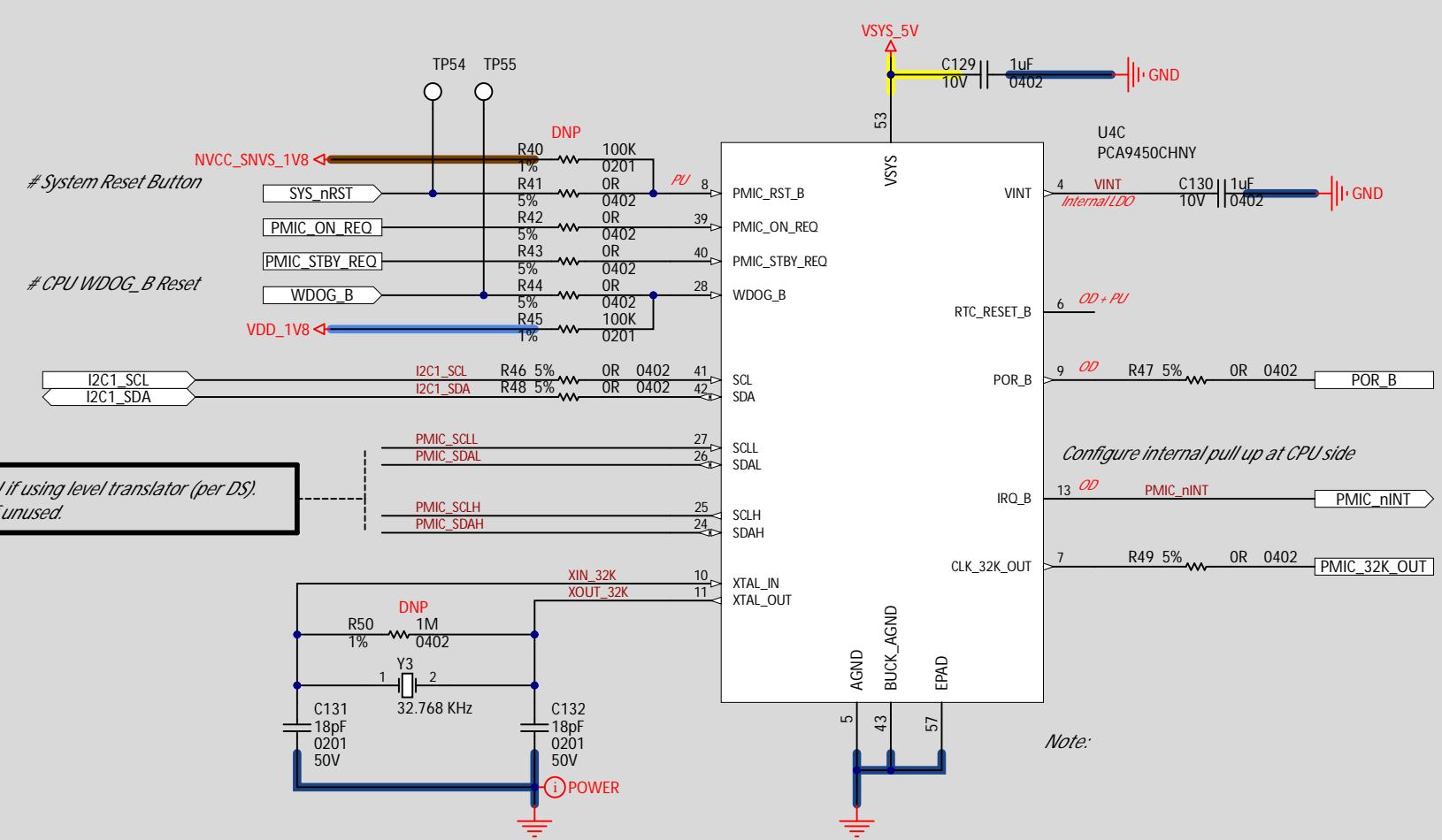
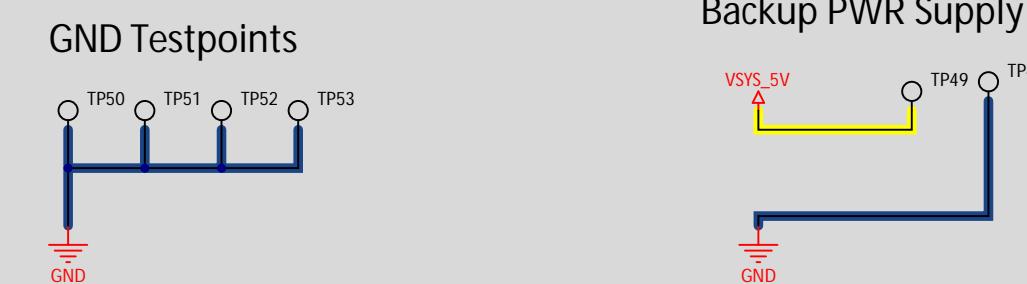
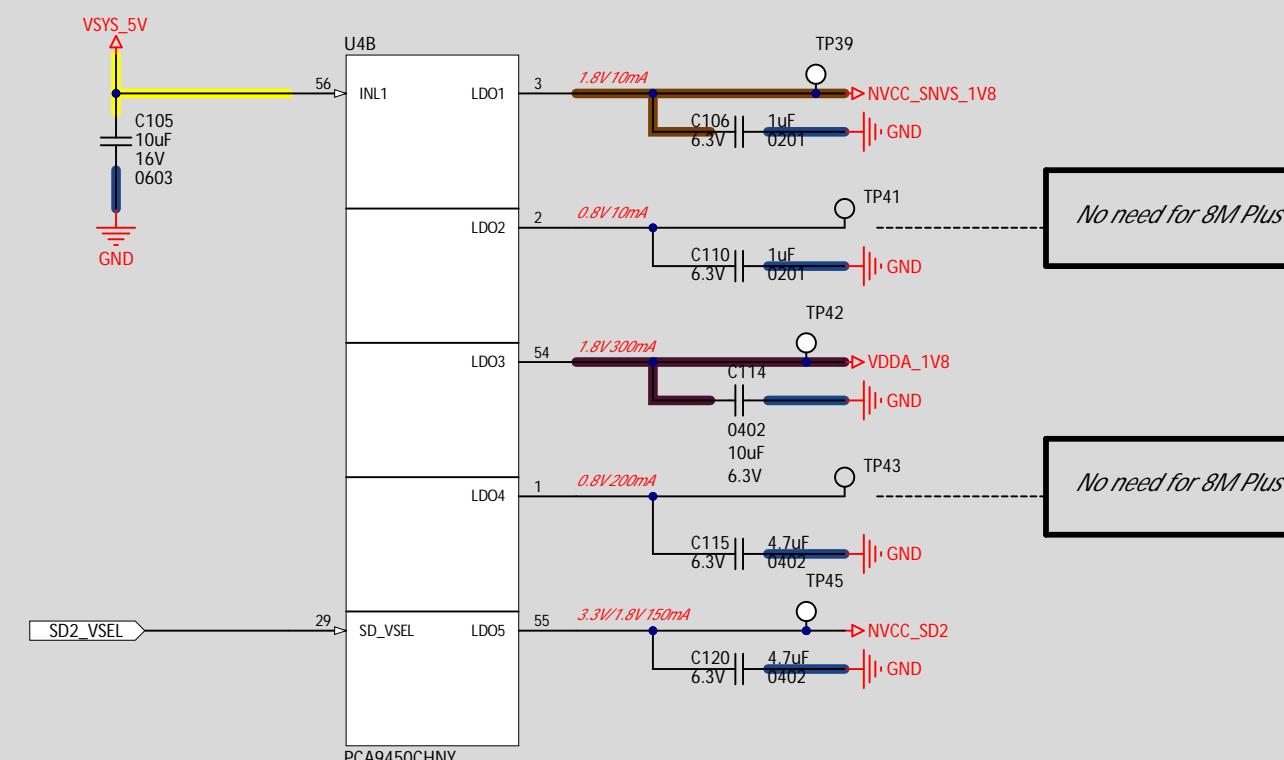
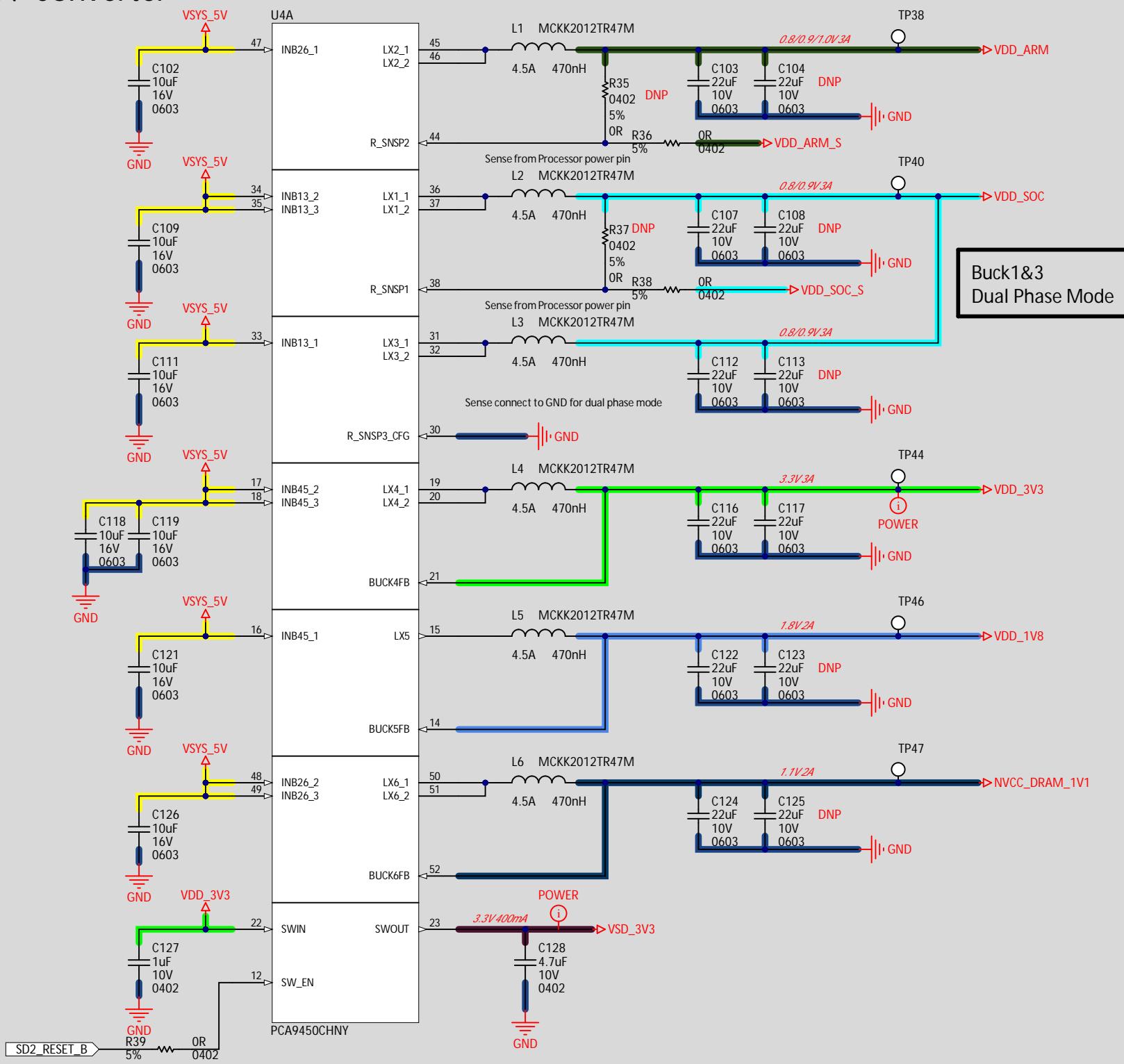
PMIC / Bloack Diagram



PCB Des :	UKAYACIK	
Approv By :	UKAYACIK	
Project Title :	Dashcam_V2.0E.PrjPcb	Sheet Title :
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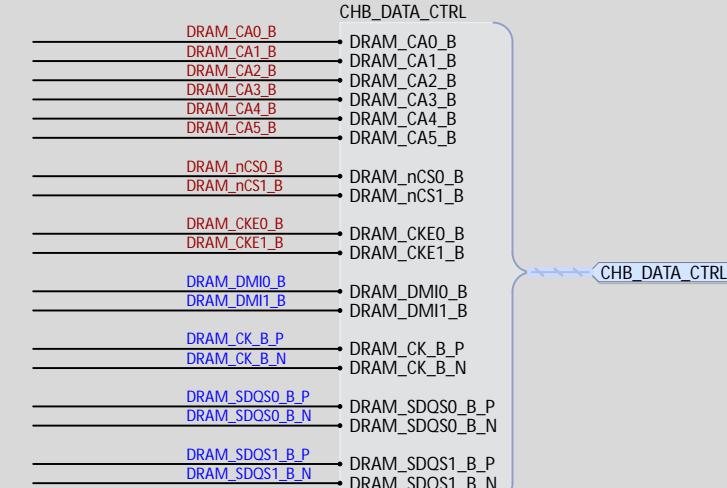
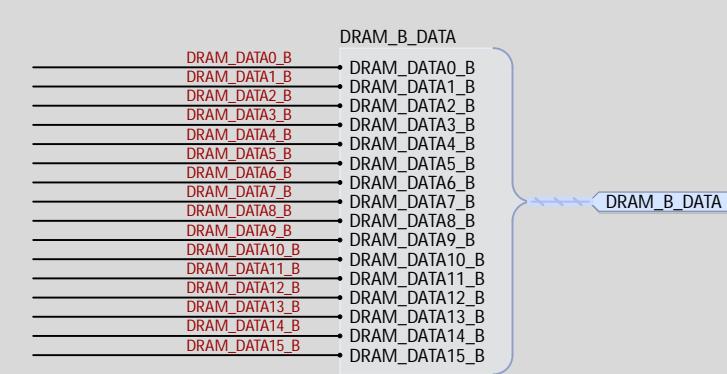
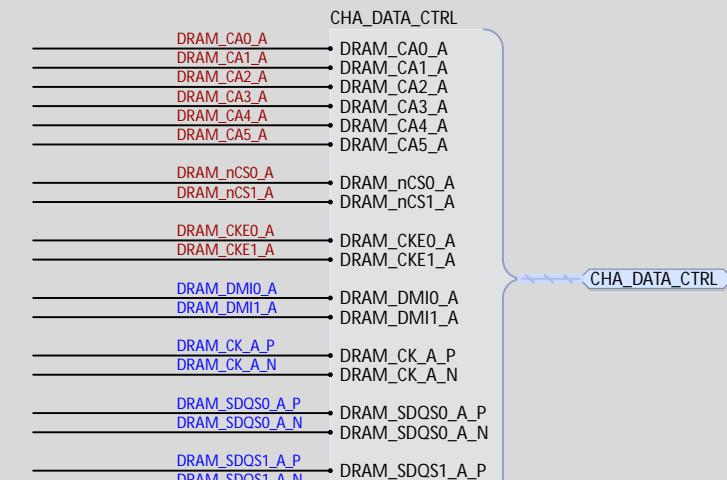
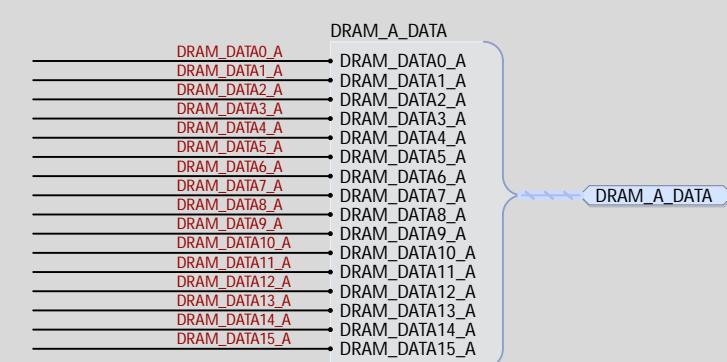
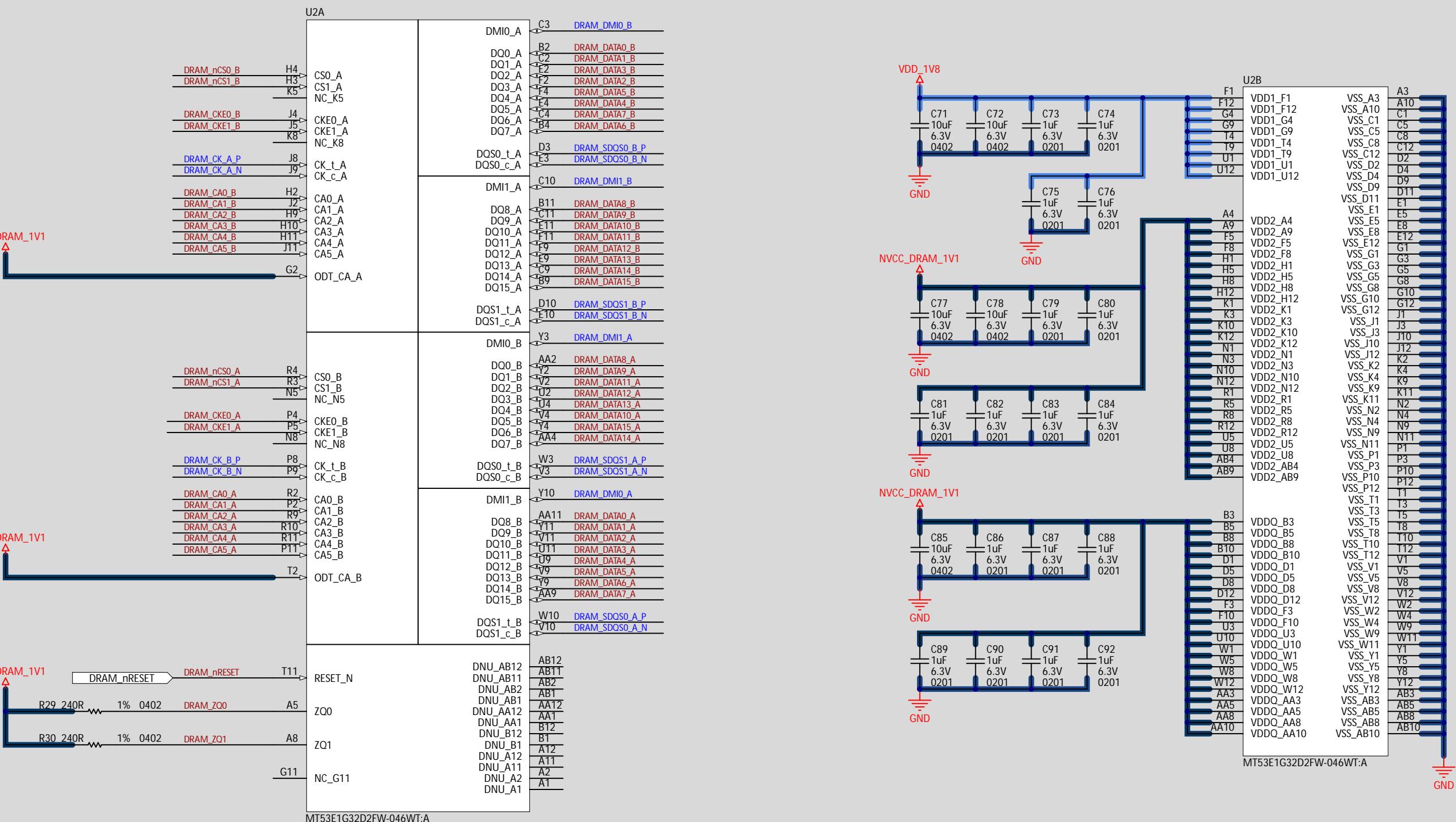
Power PMIC / Converter



i.MX8M Plus LPDDR4 EVK Power Sequence and Operating Range

SEQ	PWR/Signal	REG	MIN	TYP	MAX	Max Current(mA)
1	NVCC_SNVS_1V8	LDO1	1.71	1.8	1.95	10
2	32K_INTERNAL	RTC_CLK	--	--	--	--
3	VDD_SOC	BUCK1/3	0.805/0.9	0.85/0.95	0.9/1.0	6000
4	VDD_ARM	BUCK2	0.805/0.9/0.95	0.85/0.95/1.0	0.9/1.0/1.05	3000
5	VDDA_1V8	LDO3	1.71	1.8	1.89	300
6	VDD_1V8/NVCC_xxx	BUCK5	1.65	1.8	1.95	2000
7	NVCC_DRAM_1V1	BUCK6	1.045	1.1	1.155	2000
8	VDD_3V3/NVCC_xxx	BUCK4	3	3.3	3.6	3000
8	VSD_3V3	MUXSW	3	3.3	3.6	400
9	NVCC_SD2	LDO5	3.0/1.65	3.3/1.8	3.6/1.95	150
10	POR_B	POR_B	--	--	--	--

PCB Des :	UKAYACK	
Approv By :	UKAYACK	
Project Title :		Sheet Title :
Dashcam_V2.0E.PnjPcb		'CONVERTER
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Note:

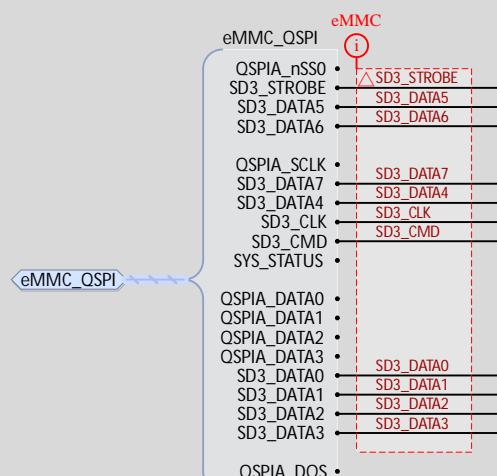
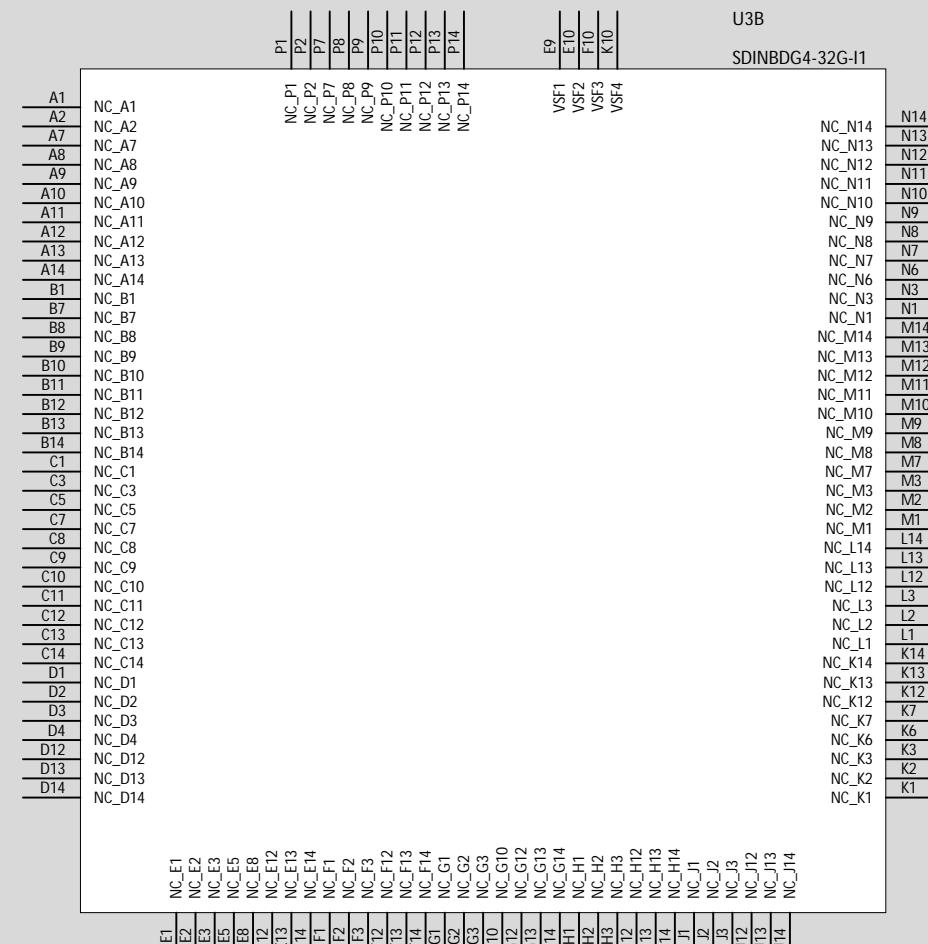
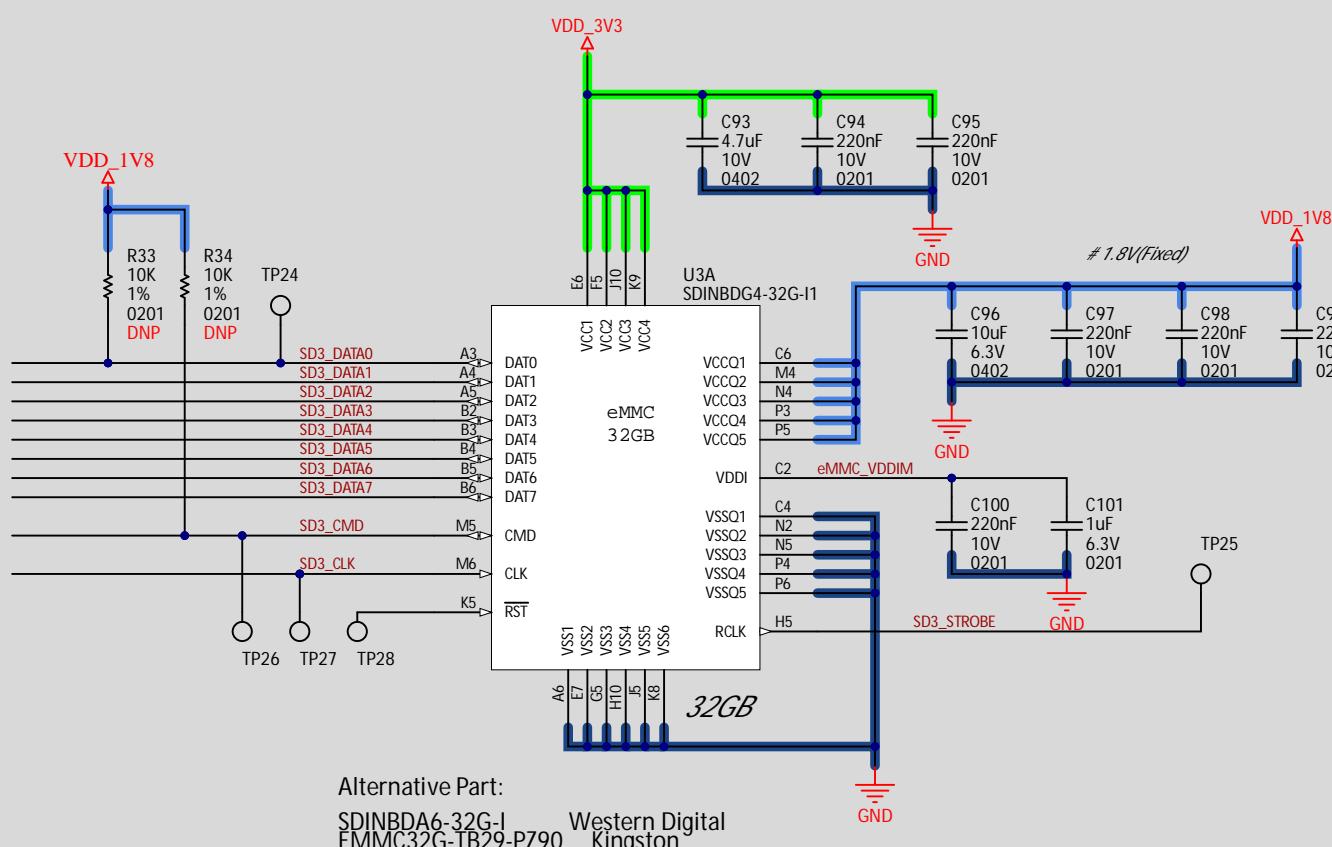
LPDDR4 ODT on i.MX 8M Plus is command-based, ODT_CA_A/B of LPDDR4 part should be connected directly to VDD2.

Data Bus		Command/Address			
Pin Name	LPDDR4	DDR4	Pin Name	LPDDR4	DDR4
DRAM_DQS0_P	DQSL_A	DQSL_A	RESET_N	RESET_N	RESET_N
DRAM_DQS0_N	DQS0_C_A	DQS0_C_A	DRMM_ALERT_N	MTEST1	ALERT_N / MTEST1
DRAM_DQ0	DQ0_A	DQ0_A / DBIL_nA	DRMM_ALERTR_N	C0E2	C0E2
DRAM_DQ00	DQ1_A	DQ1_A	DRMM_AC01	CKE1_A	CKT
DRAM_DQ01	DQ1_A	DQ1_A	DRMM_AC02	CSD2_A	CSD2
DRAM_DQ02	DQ2_A	DQ2_A	DRMM_AC03	CSD1_A	C0
DRAM_DQ03	DQ2_A	DQ2_A	DRMM_AC04	CK_L_A	BG0
DRAM_DQ04	DQ4_A	DQ4_A	DRMM_AC05	CK_C_A	BG1
DRAM_DQ05	DQ5_A	DQ5_A	DRMM_AC06	/	ACT_n
DRAM_DQ06	DQ6_A	DQ6_A	DRMM_AC07	/	/
DRAM_DQ07	DQ6_A	DQ6_A	DRMM_AC08	C40_A	A12
DRAM_DQ08	DQ7_A	DQ7_A	DRMM_AC09	C41_A	A11
DRAM_DQ09	DQ7_A	DQ7_A	DRMM_AC10	C42_A	A7
DRAM_DQ10	DQ7_A	DQ7_A / DBIL_nA	DRMM_AC11	C43_A	A8
DRAM_DQ11	DQ11_A	DQ11_A	DRMM_AC12	C44_A	A6
DRAM_DQ12	DQ12_A	DQ12_A	DRMM_AC13	C45_A	A5
DRAM_DQ13	DQ12_A	DQ12_A	DRMM_AC14	/	A4
DRAM_DQ14	DQ12_A	DQ12_A	DRMM_AC15	/	A3
DRAM_DQ15	DQ12_A	DQ12_A	DRMM_AC16	/	CK_L_A
DRAM_DQ16	DQ12_A	DQ12_A	DRMM_AC17	/	CK_C_A
DRAM_DQ17	DQ12_A	DQ12_A	MTEST	MTEST	MTEST
DRAM_DQ18	DQ12_A	DQ12_A	DRMM_AC20	CKE2_B	CK_L_B
DRAM_DQ19	DQ12_A	DQ12_A	DRMM_AC21	CKT_B	CK_C_B
DRAM_DQ20	DQ4_B	DQ4_B	DRMM_AC22	CSD2_B	/
DRAM_DQ21	DQ5_B	DQ5_B	DRMM_AC23	CSD2_B	
DRAM_DQ22	DQ6_B	DQ6_B	DRMM_AC24	CK_L_B	A2
DRAM_DQ23	DQ7_B	DQ7_B	DRMM_AC25	CK_C_B	A1
DRAM_DQ24	DQ7_B	DQ7_B / DBIL_nB	DRMM_AC26	/	BAT
DRAM_DQ25	DQ2_B	DQ2_B	DRMM_AC27	/	PARITY
DRAM_DQ26	DQ3_B	DQ3_B	DRMM_AC28	C40_B	A13
DRAM_DQ27	DQ5_B	DQ5_B	DRMM_AC29	C41_B	B40
DRAM_DQ28	DQ6_B	DQ6_B	DRMM_AC30	C42_B	A10 / AP
DRAM_DQ29	DQ7_B	DQ7_B	DRMM_AC31	C43_B	A0
DRAM_DQ30	DQ5_LB	DQ5_LB	DRMM_AC32	C44_B	C2
DRAM_DQ31	DQ5_LB	DQ5_LB	DRMM_AC33	C45_B	C45_n / A15
DRAM_DM1	DQ0_B	DQ0_B / DBIL_nB	DRMM_AC34	/	WE_n / A14
DRAM_DM2	DQ0_B	DQ0_B	DRMM_AC35	/	RAS_n / A16
DRAM_DM3	DQ1_B	DQ1_B	DRMM_AC36	/	ODT0
DRAM_DM4	DQ1_B	DQ1_B	DRMM_AC37	/	ODT1
DRAM_DM5	DQ11_B	DQ11_B	DRMM_AC38	/	CSD1_B
DRAM_DM6	DQ12_B	DQ12_B	DRMM_ZN	ZD	ZD
DRAM_DM7	DQ12_B	DQ12_B	DRMM_VREF	VREF	VREF

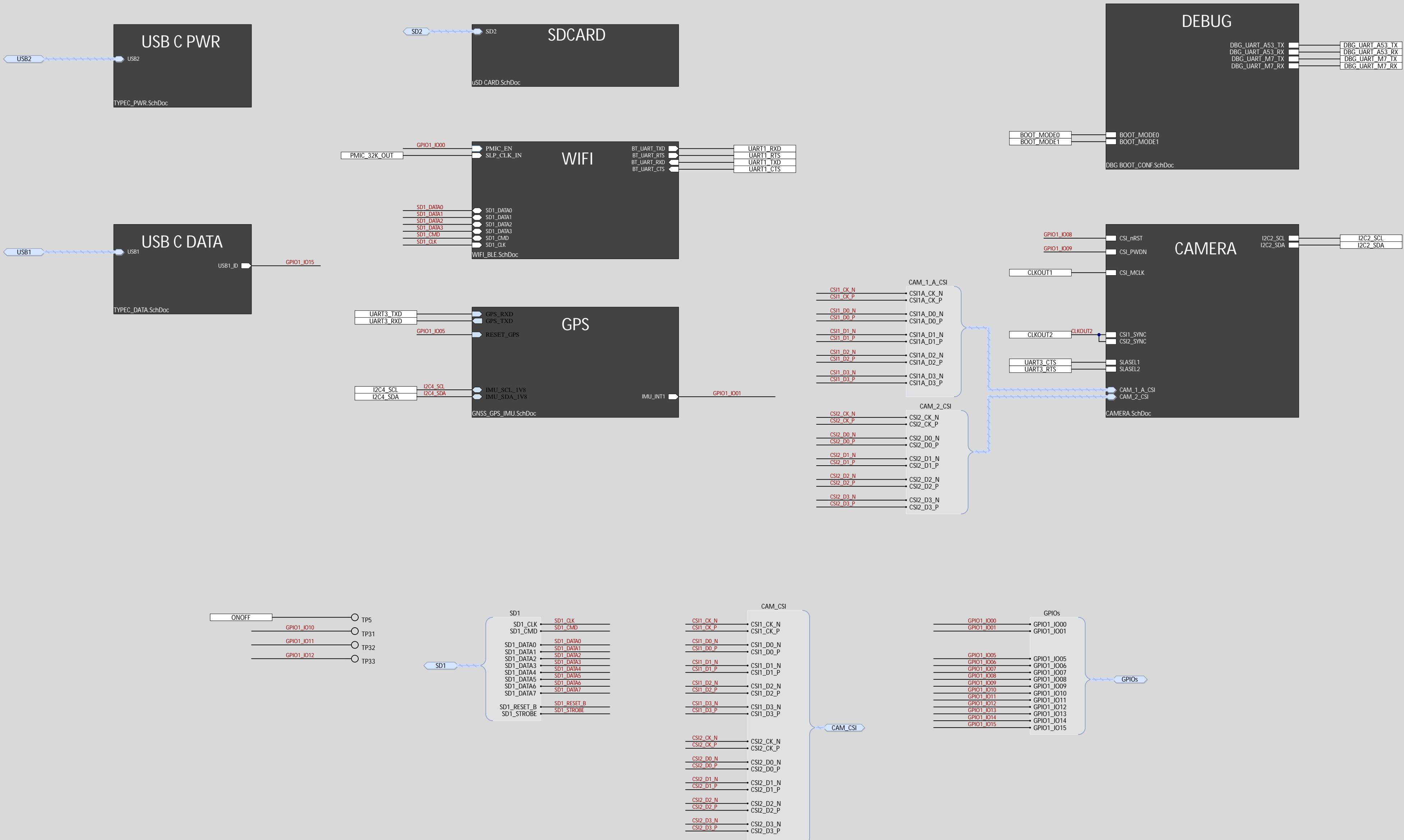
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Approv By :	UKAYACIK
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Sheet Title :	'LPDDR4'
Date :	2/17/2025
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Storage

eMMC5.1



PCB Des :	UKAYACIK	
Approv By :	UKAYACIK	
Project Title :		Sheet Title :
Dashcam_V2.0E.PnjPcb		'eMMC'
Date :	1/30/2025	PCB Version : 2.0
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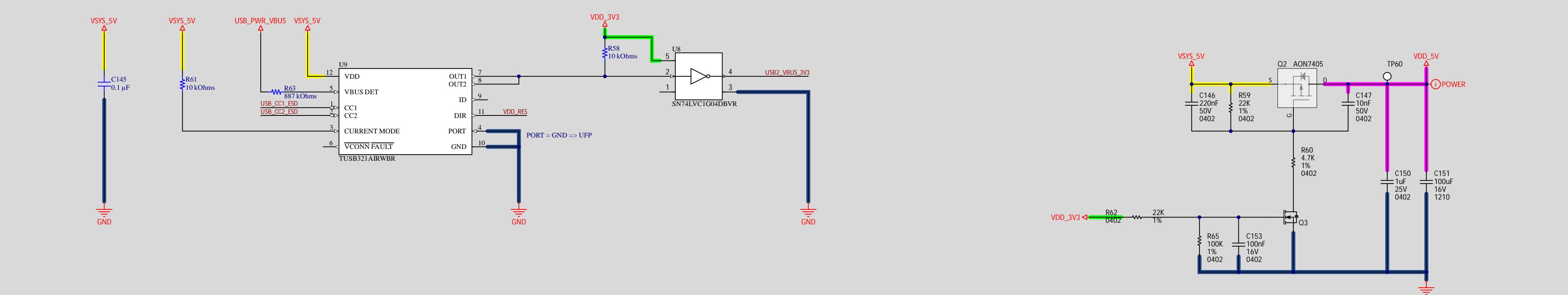
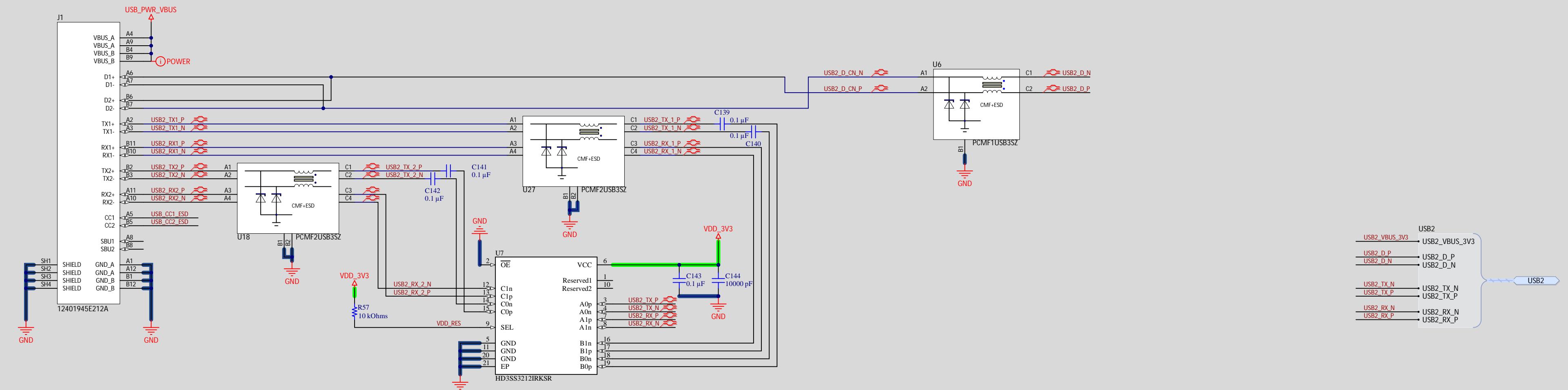


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Approv By :	UKAYACIK	
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Date :	2/13/2025	PCB Version : 2.0
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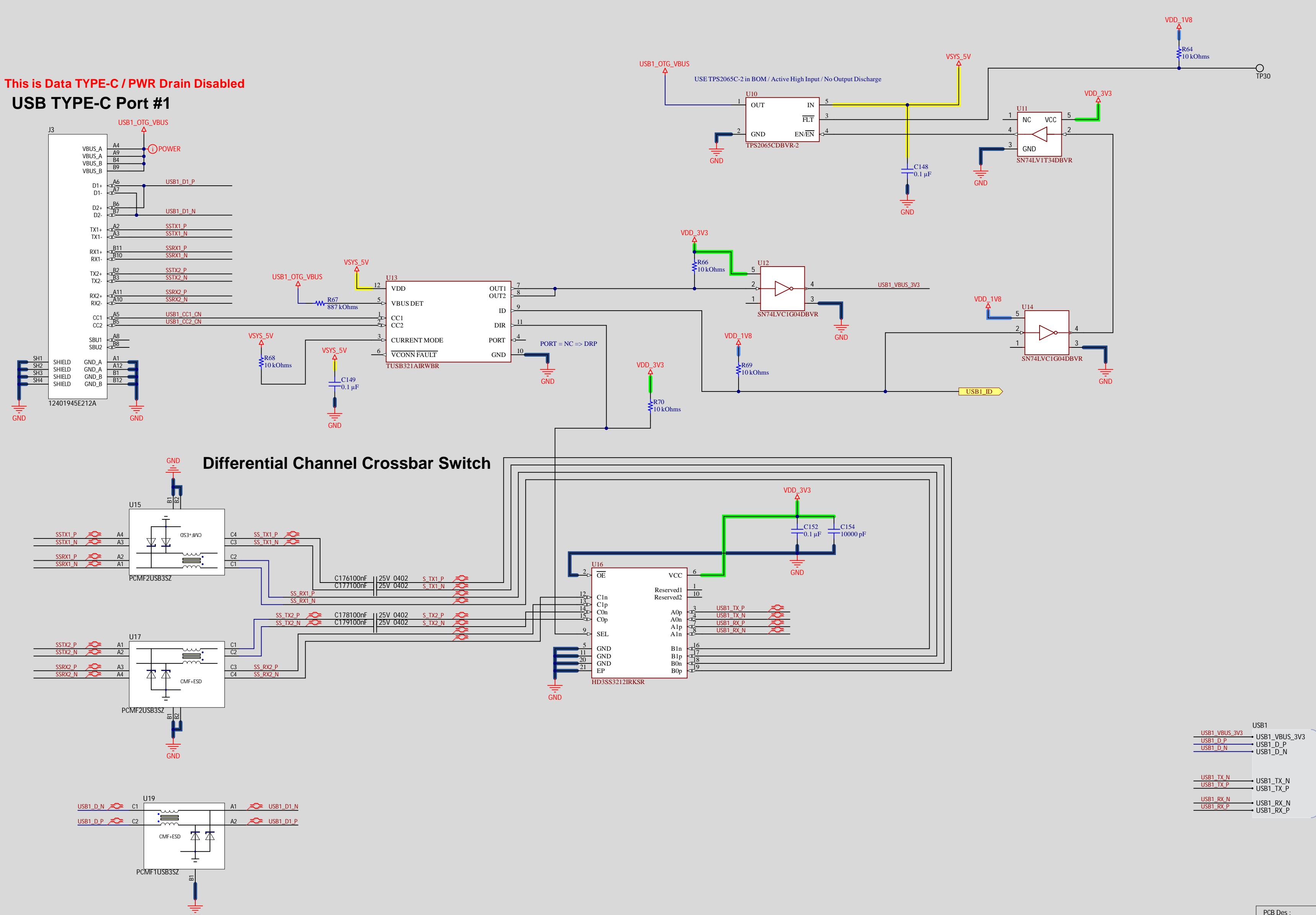
Power IN - USB C This is the power supply, must be ON for system running

USB TYPE-C Port #2



PCB Des :	UKAYACIK	
Approv By :	UKAYACIK	
Project Title :	Dashcam_V2.0E.PnjPcb	Sheet Title : *
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USB C 3.0 - HOST



PCB Des :	UKAYACIK
Approv By :	UKAYACIK
Project Title :	Sheet Title : *
Dashcam_V2.0E.PriPcb	
Date : 2/13/2025	PCB Version : 2.0
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A

A

B

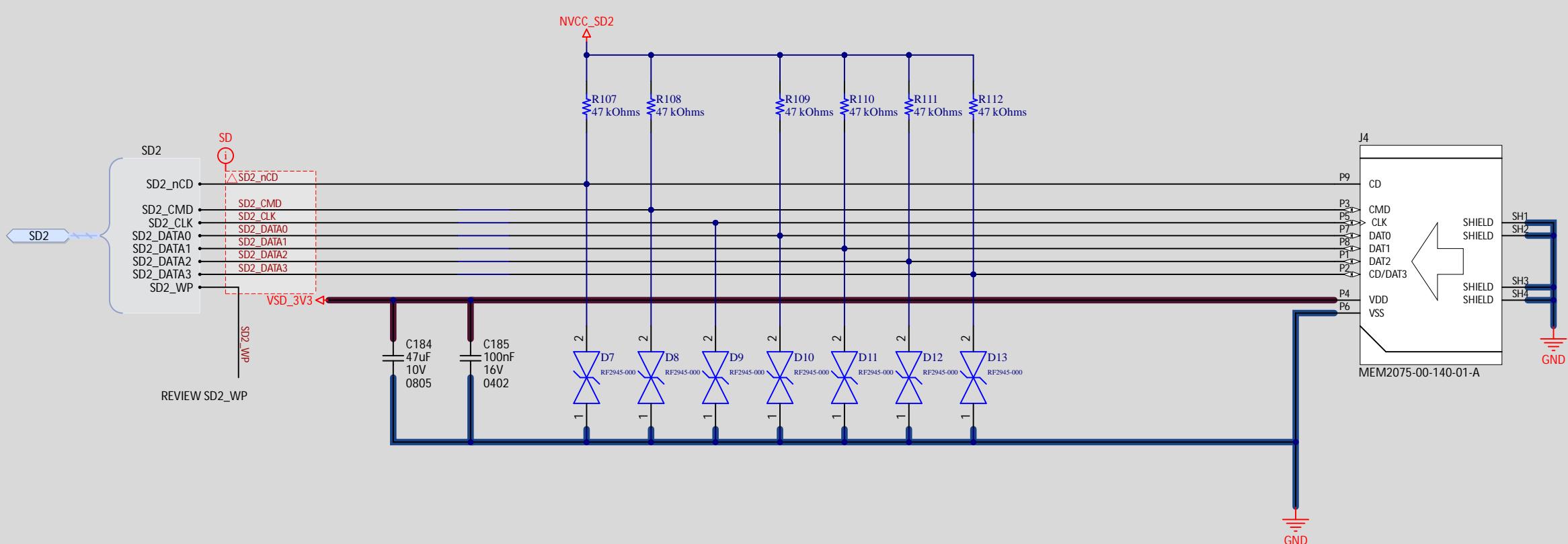
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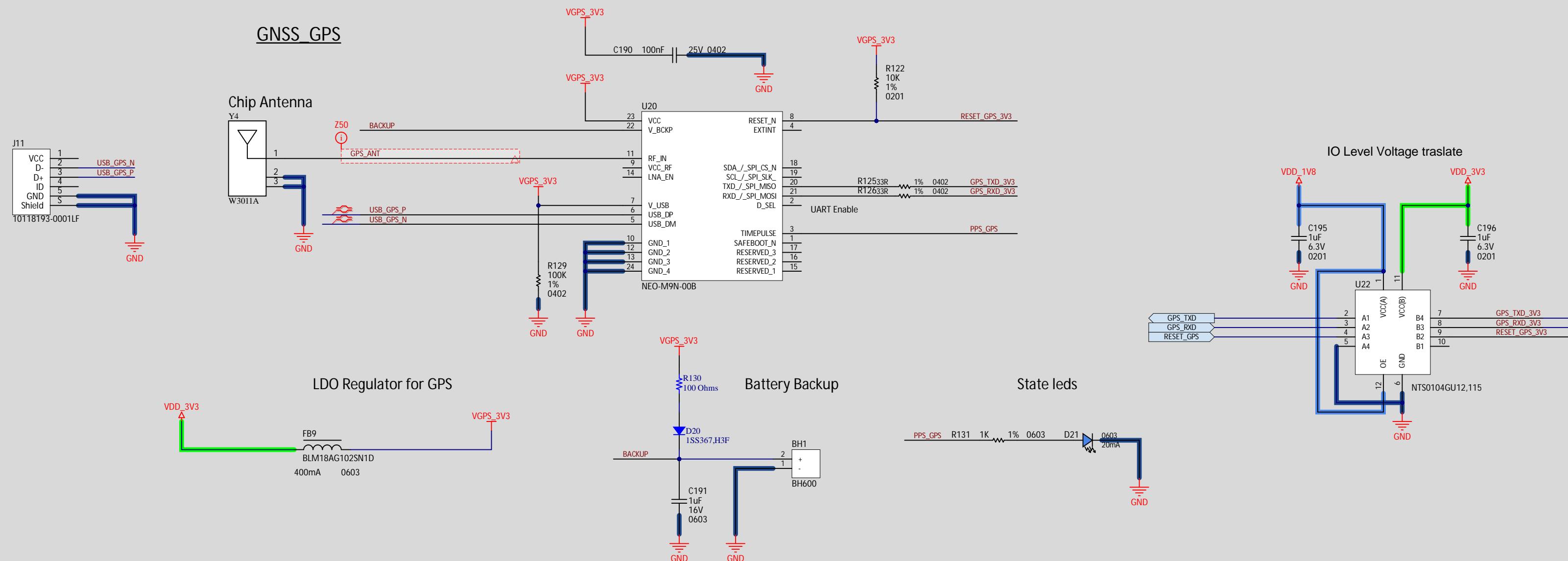
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D

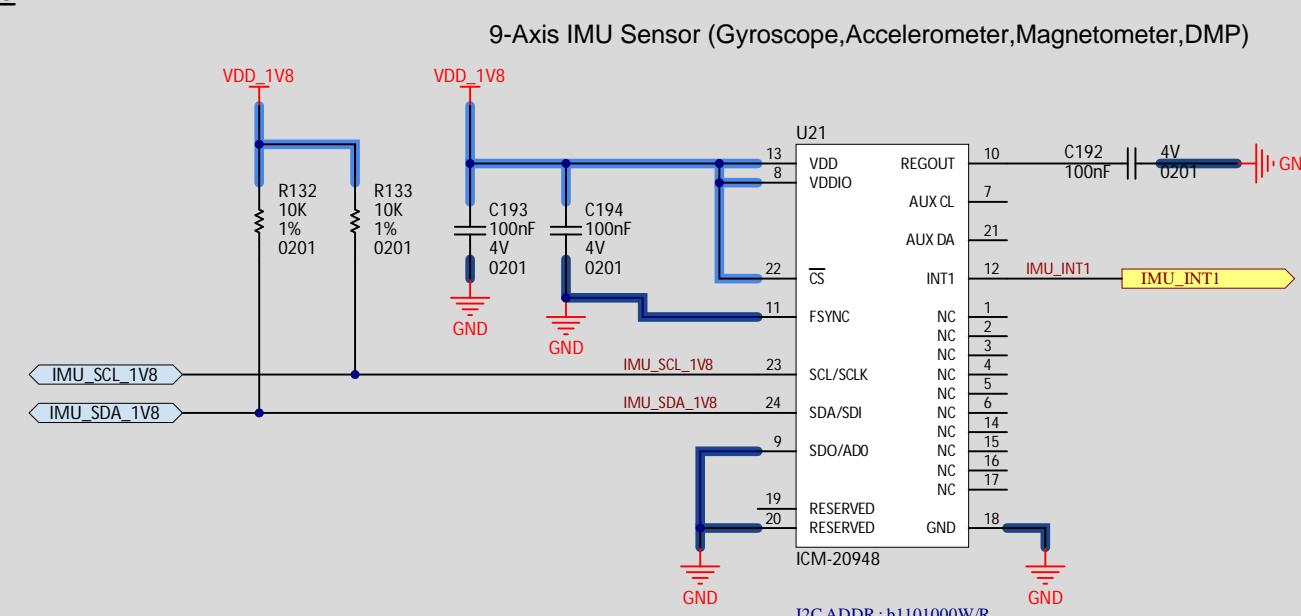
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Approv By :	UKAYACIK	
Project Title :	Sheet Title :	*
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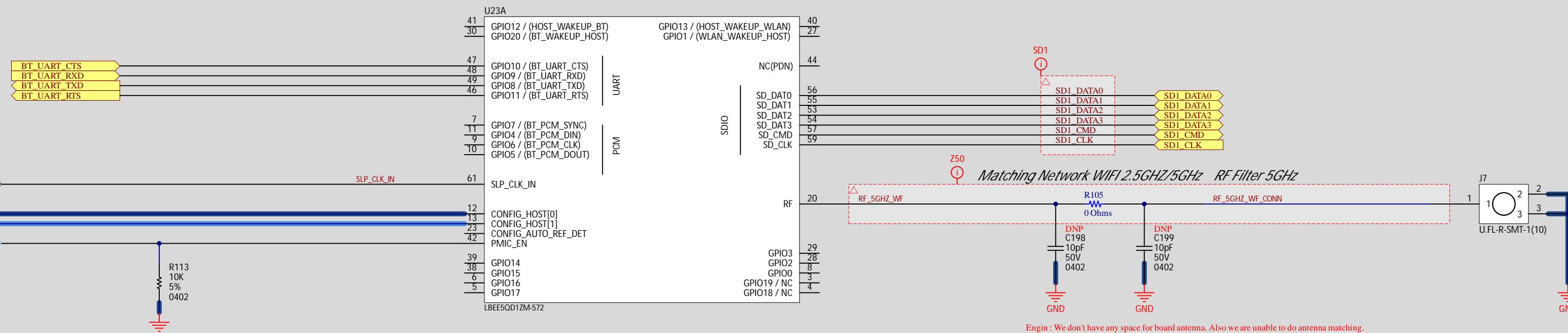
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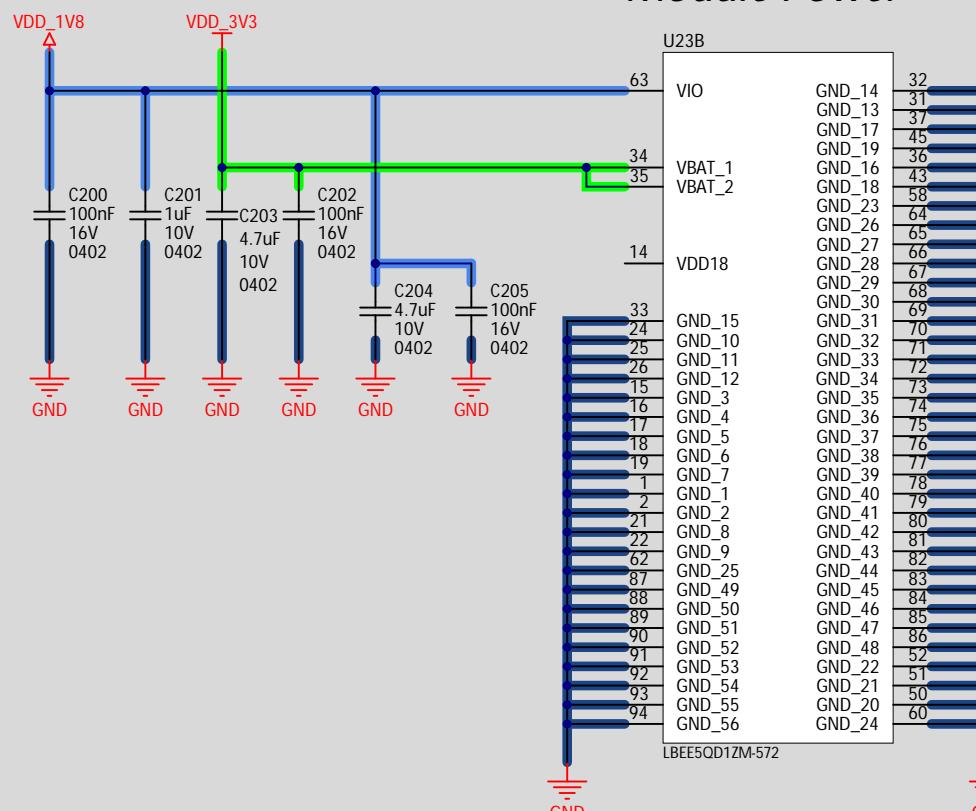
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Dashcam_V2.0E.PnjPcb		
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Wi-Fi / BL 2.4/5 GHz (802.11ac) BL 5.0

Module System

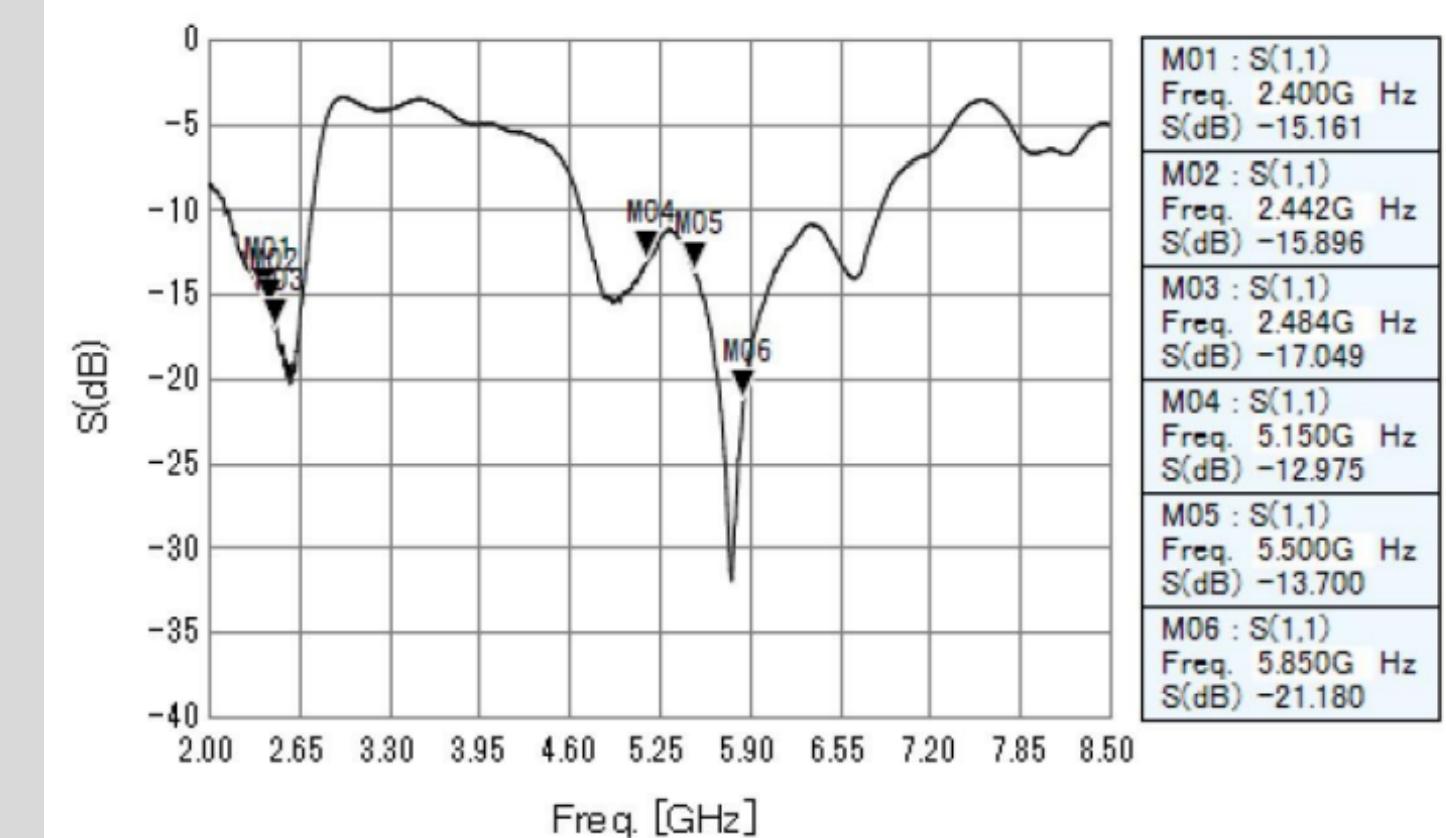


Module Power



Parameter	Minimum	Typical	Maximum	Unit
Operating Temperature	-30	25	+85	°C
Supply Voltage	VBAT	2.7		V
	VIO	1.62	1.8	V
IO Current	VIO		0.1	mA
Peak Current	VBAT		770	mA

<Return Loss>



M01 : S(1,1)
 Freq. 2.400G Hz
 S(dB) -15.161

 M02 : S(1,1)
 Freq. 2.442G Hz
 S(dB) -15.896

 M03 : S(1,1)
 Freq. 2.484G Hz
 S(dB) -17.049

 M04 : S(1,1)
 Freq. 5.150G Hz
 S(dB) -12.975

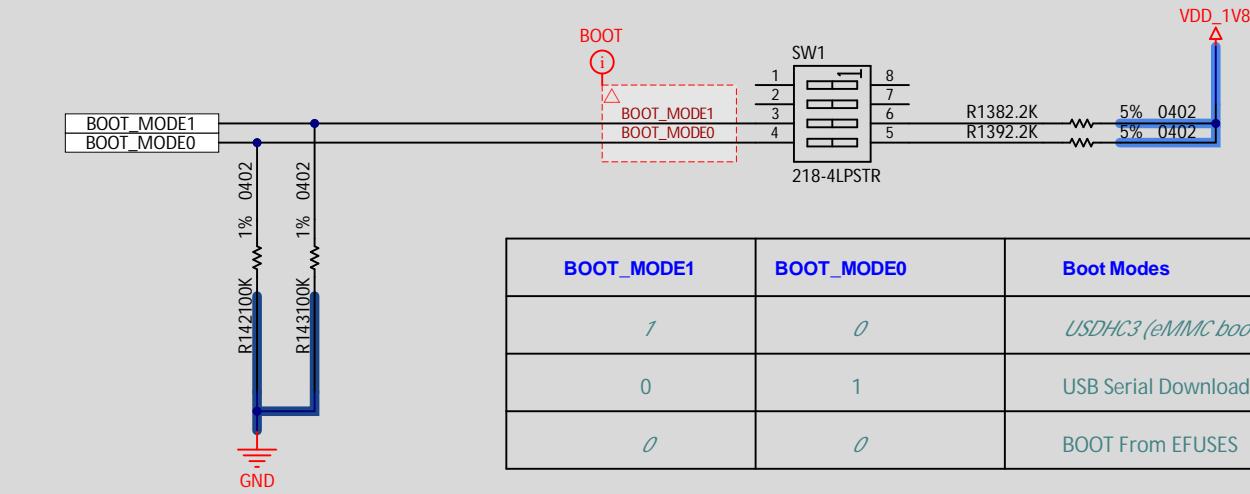
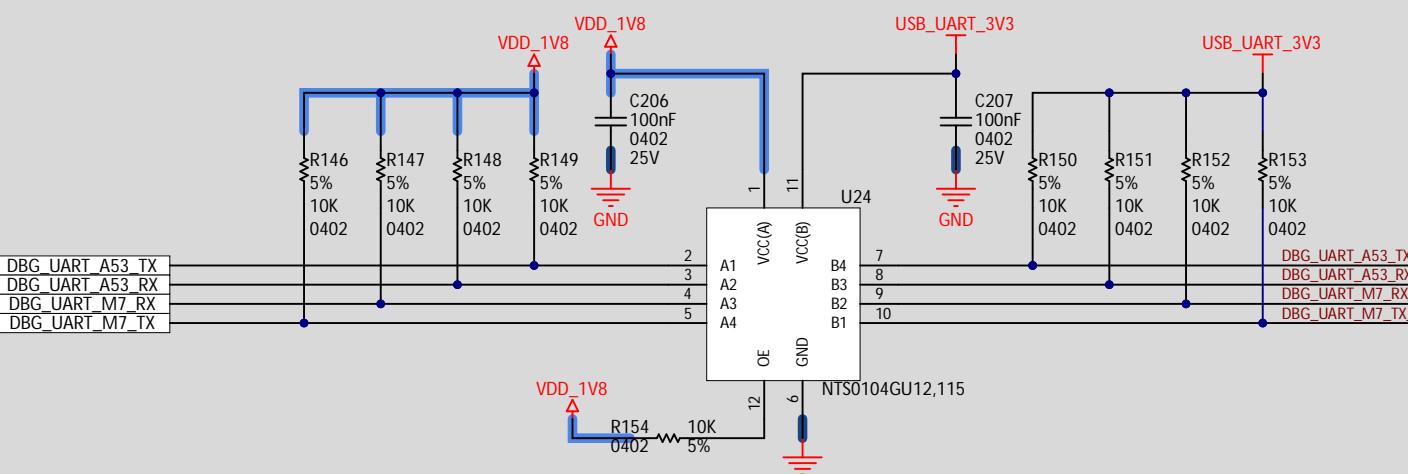
 M05 : S(1,1)
 Freq. 5.500G Hz
 S(dB) -13.700

 M06 : S(1,1)
 Freq. 5.850G Hz
 S(dB) -21.180

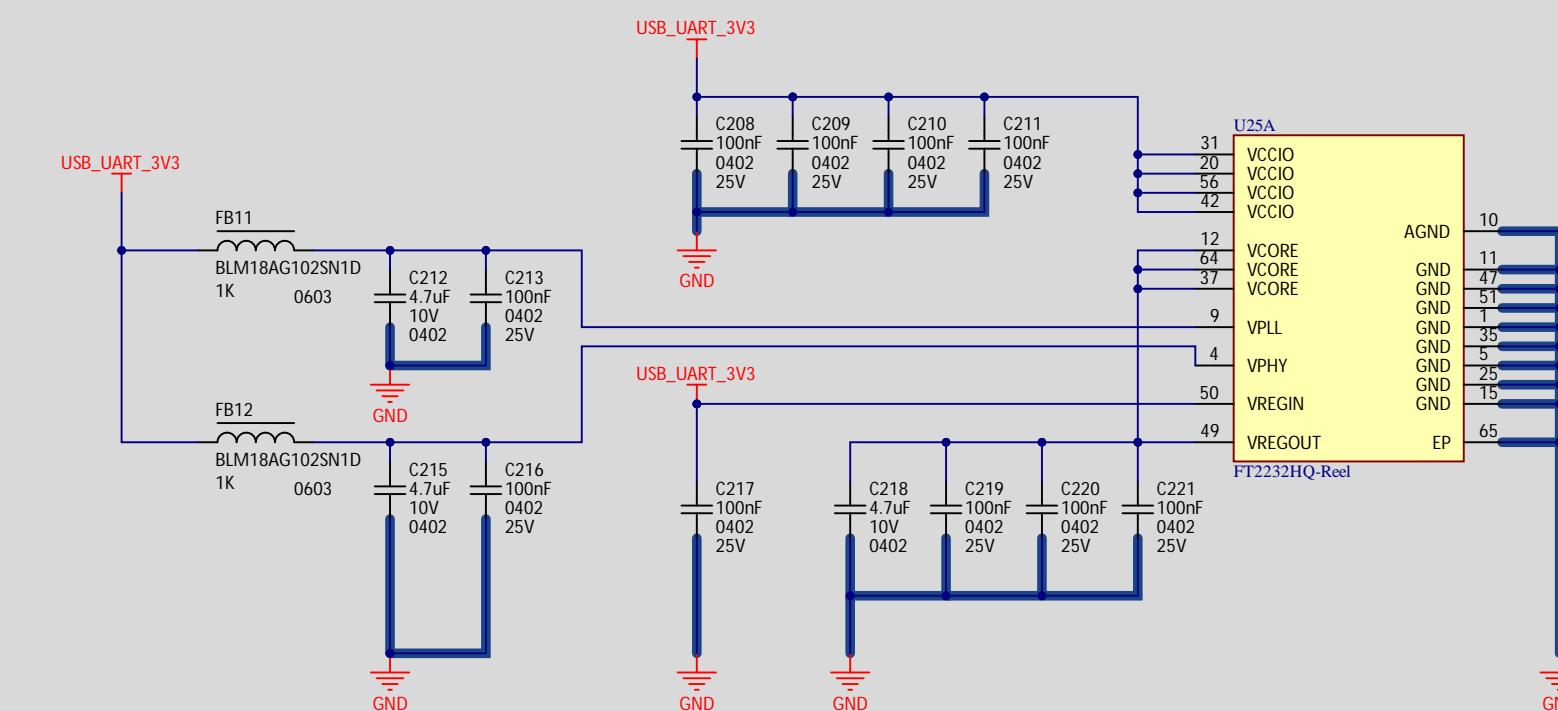
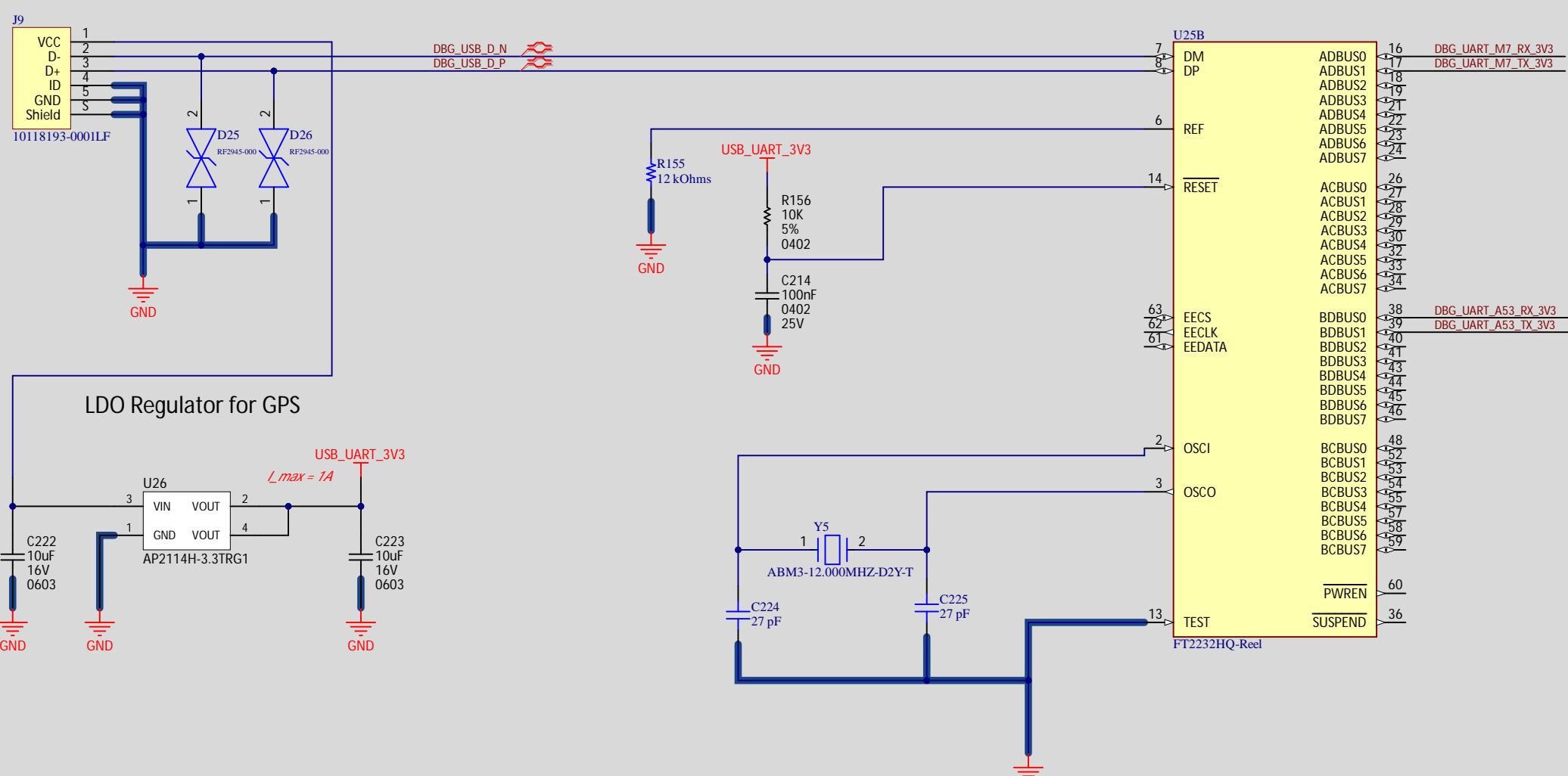
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Approv By :	UKAYACIK	
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Date :	2/17/2025	PCB Version : 2.0
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muRata

Boot Mode and CFG Switch

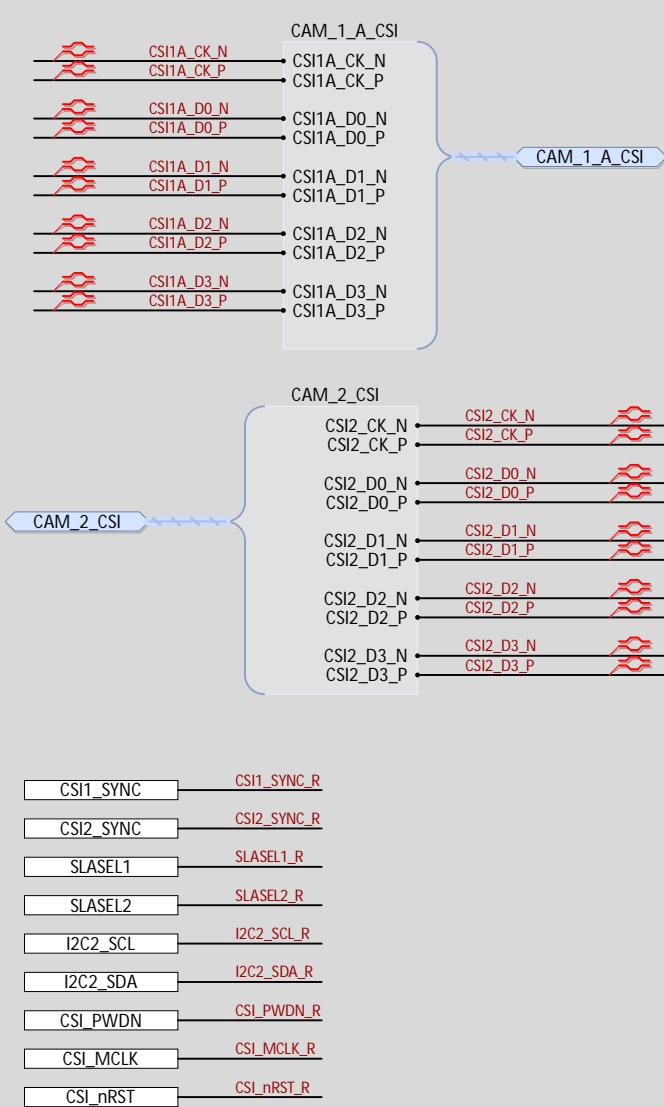


Debug USB

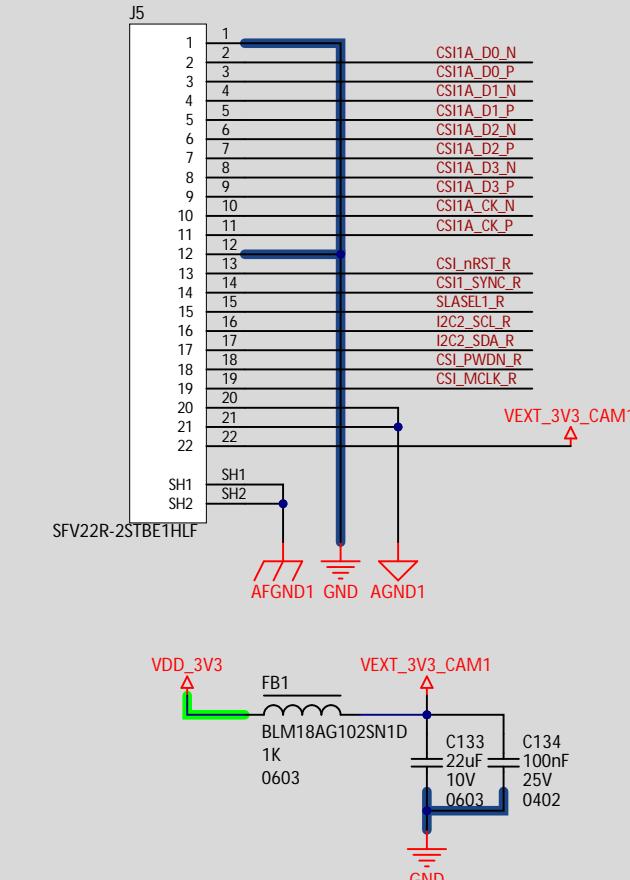


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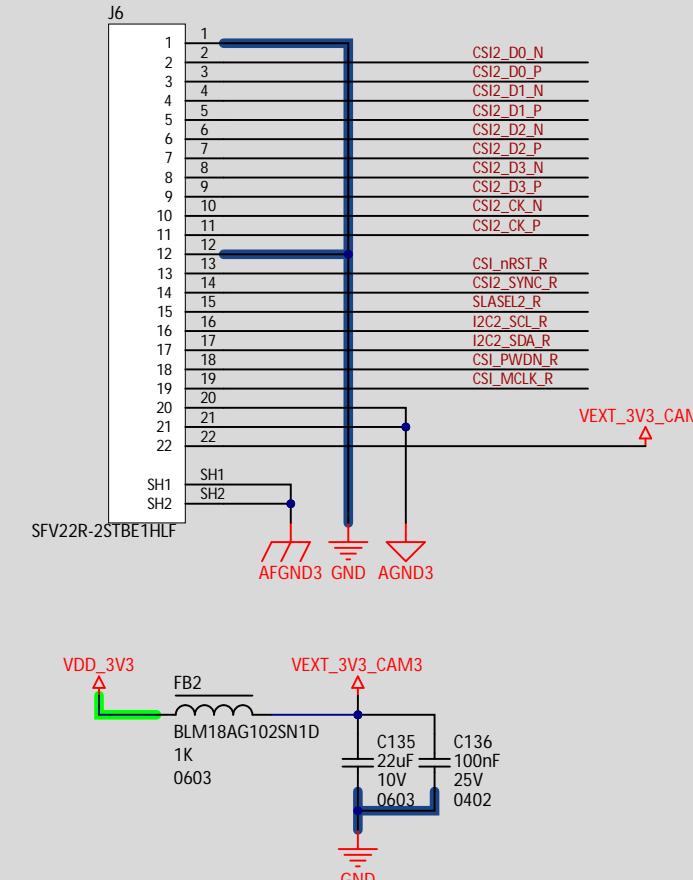
Connector to Camera Module



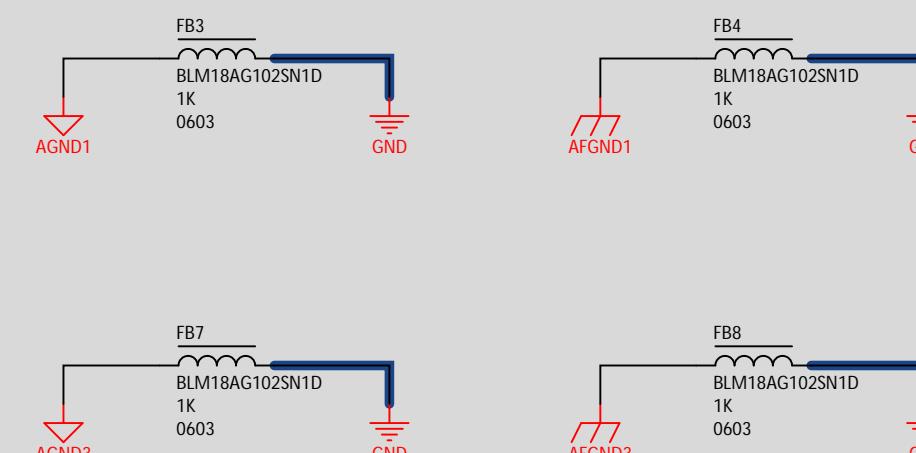
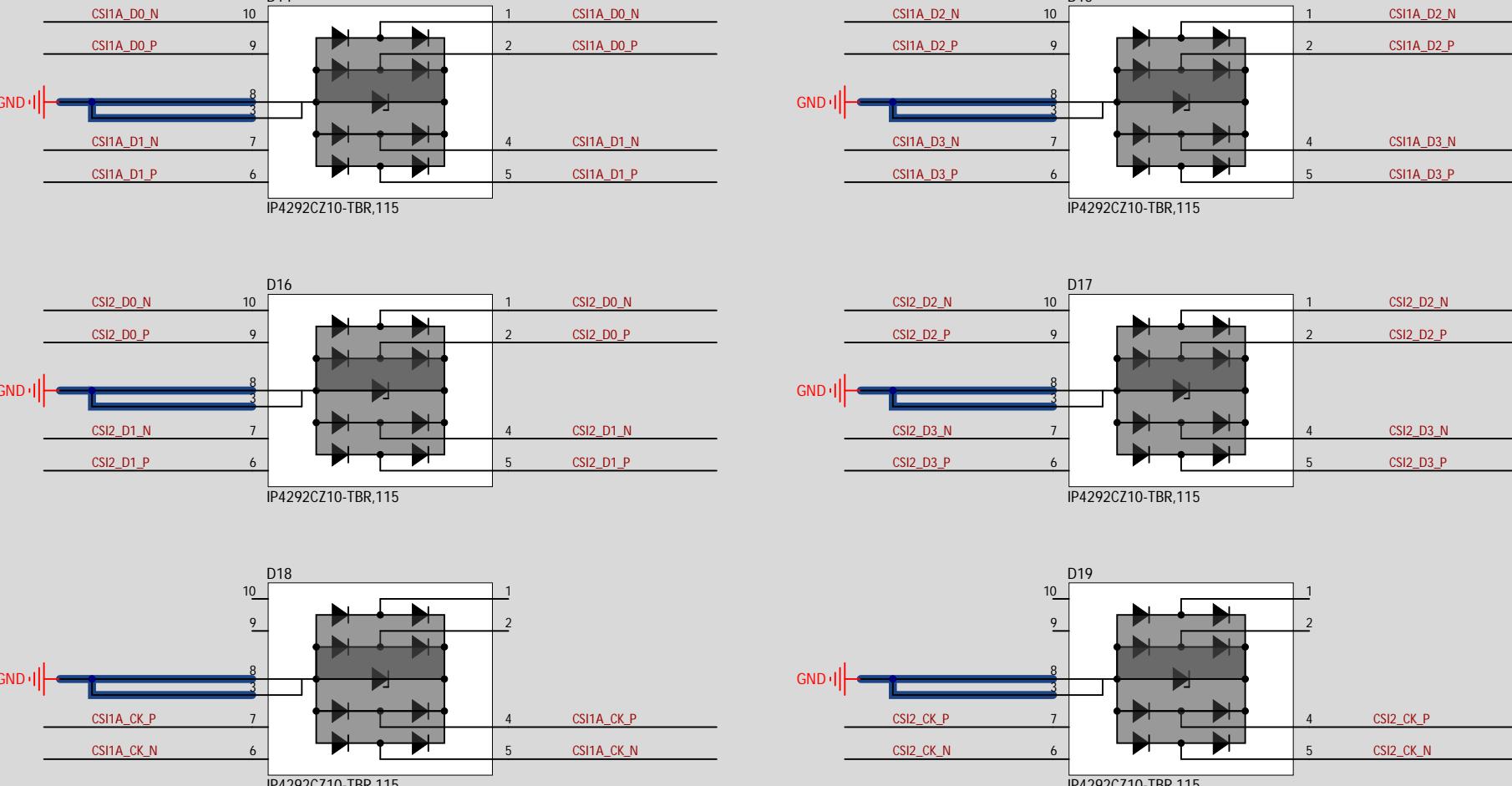
Connector CAM RGB (CAM1)



Connector CAM RGB (CAM3)



Single point connection for GND's from the cameras



PCB Des :	*
Approv By :	UKAYACIK
Project Title :	Dashcam_V2.0.E.PrtPcb
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