STM32MP25XXAK_2_DDR3L

Schematics not complete, only for layout example

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Legend

General comment such as function title, configuration, ...

Text to be added to silkscreen.

Warning text.

Notes to generate the board layout.

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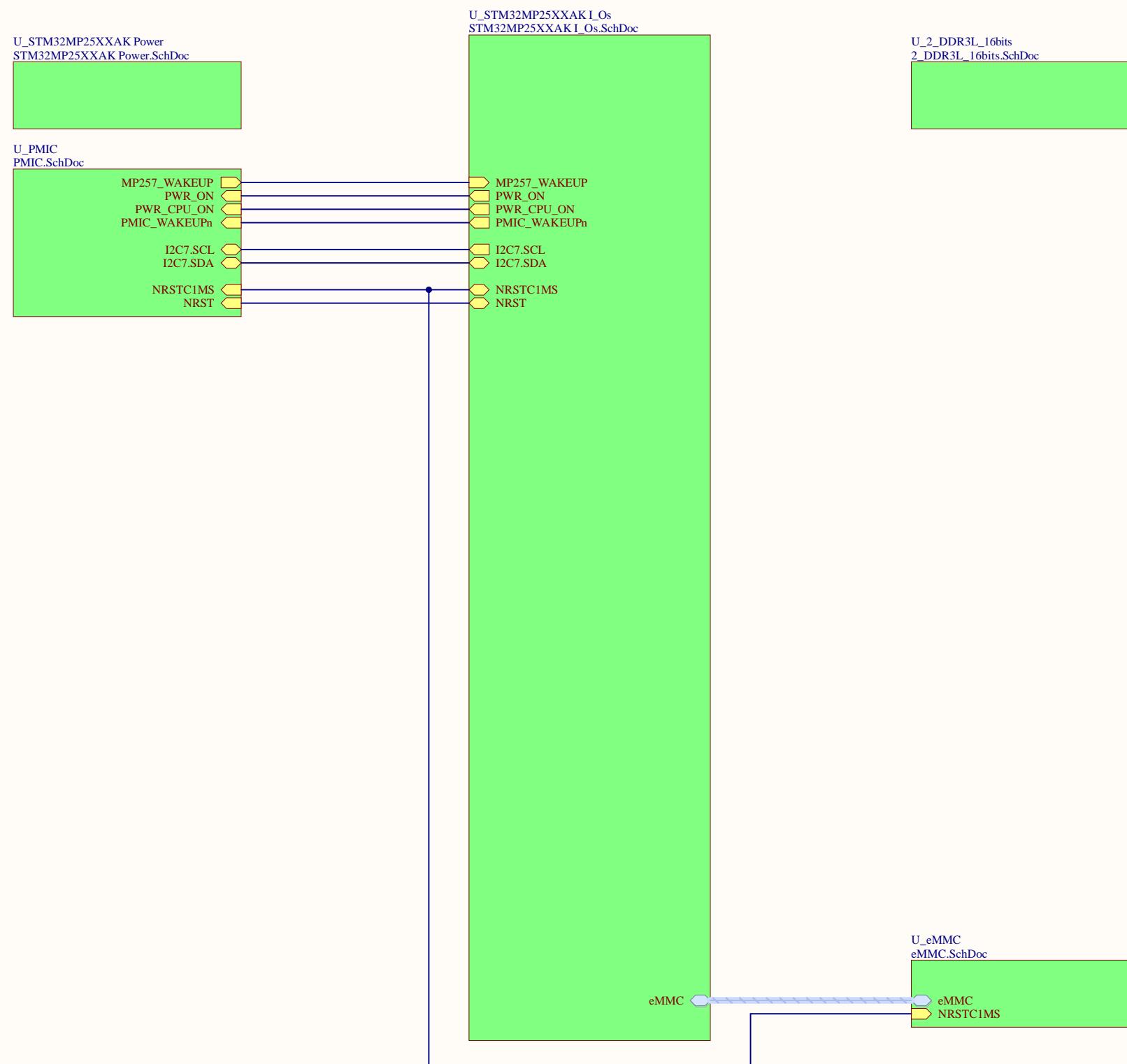
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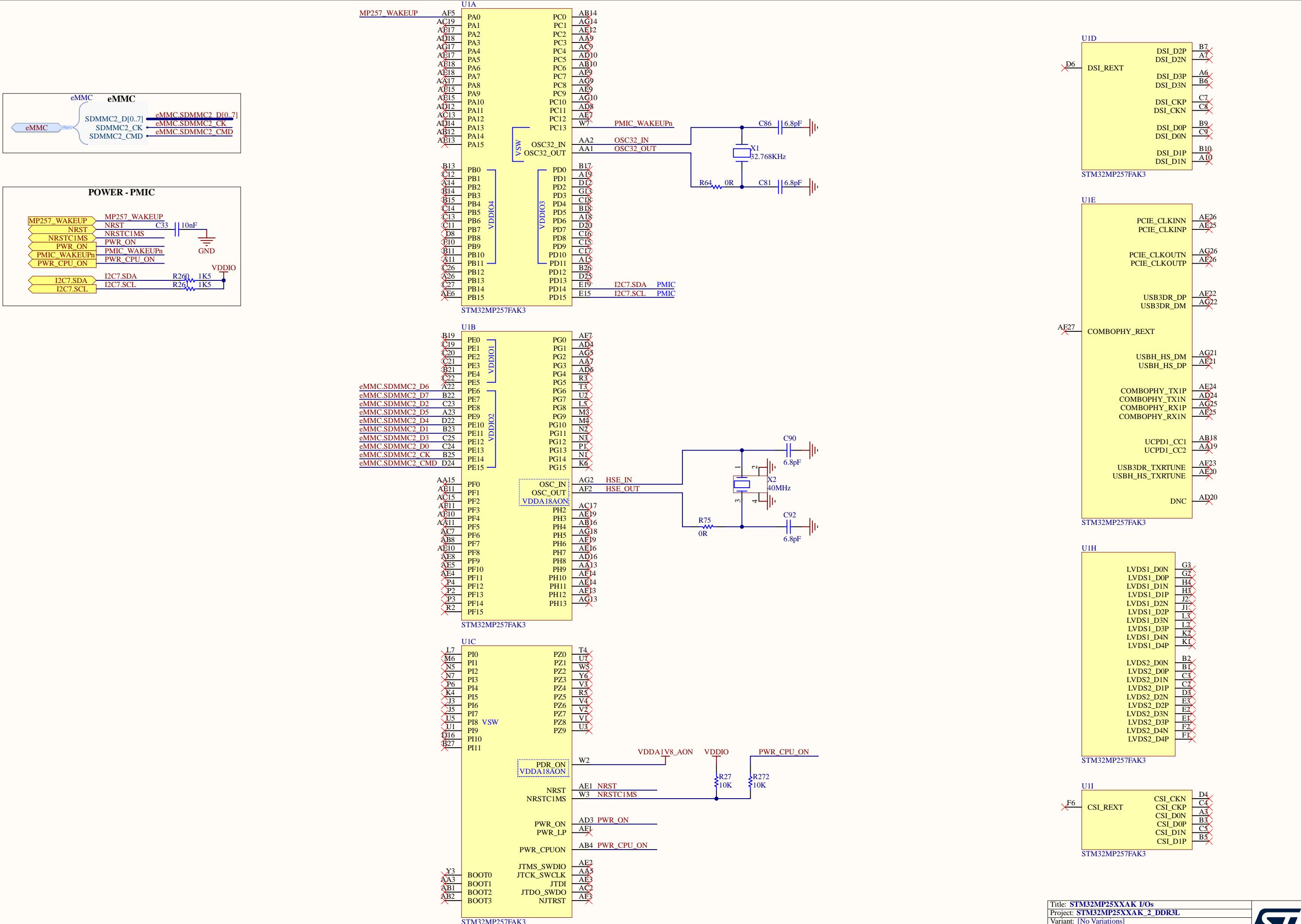
U_STM32MP25XXAK_2_DDR3L-TOP
STM32MP25XXAK_2_DDR3L-TOP.SchDoc
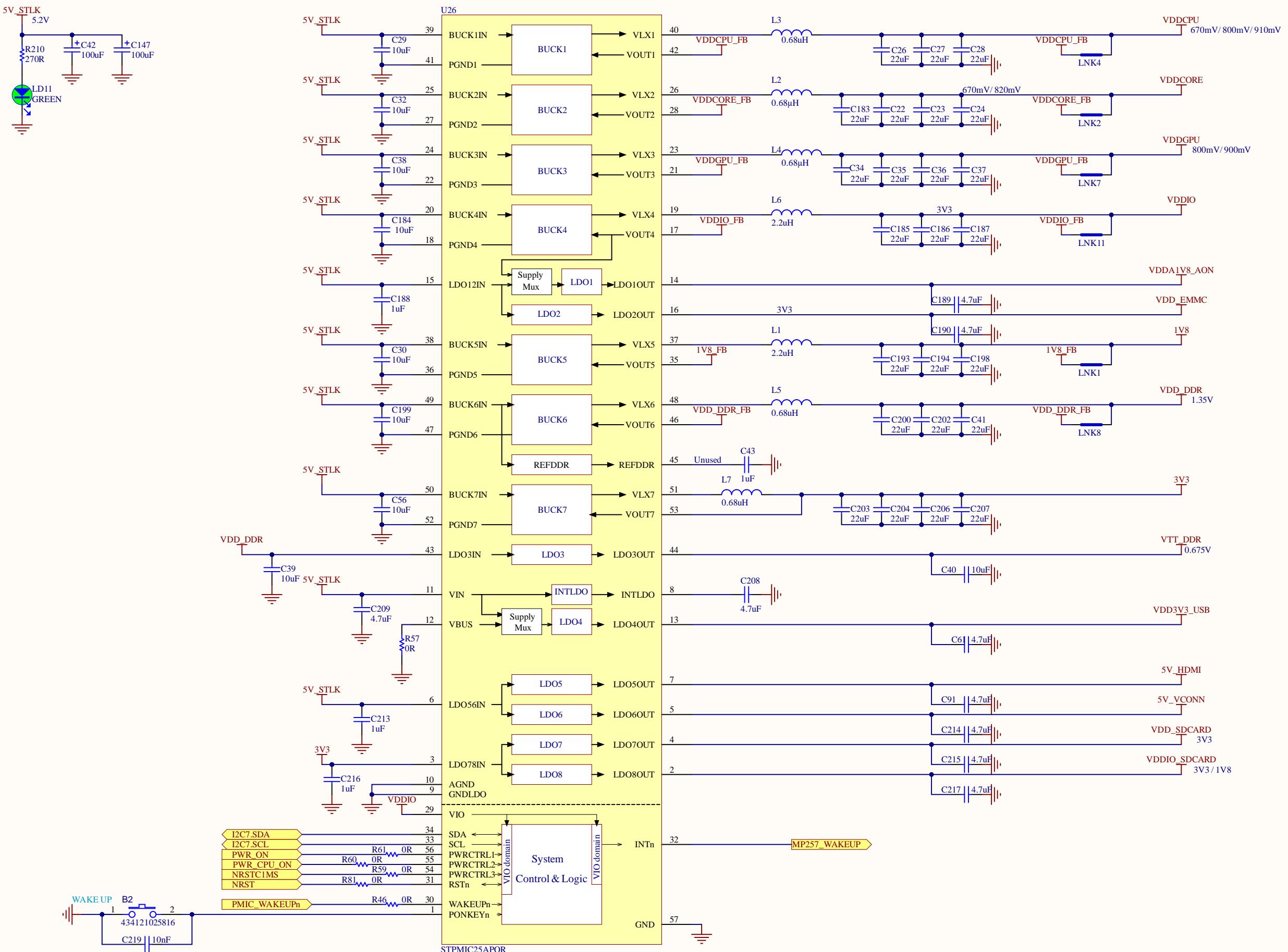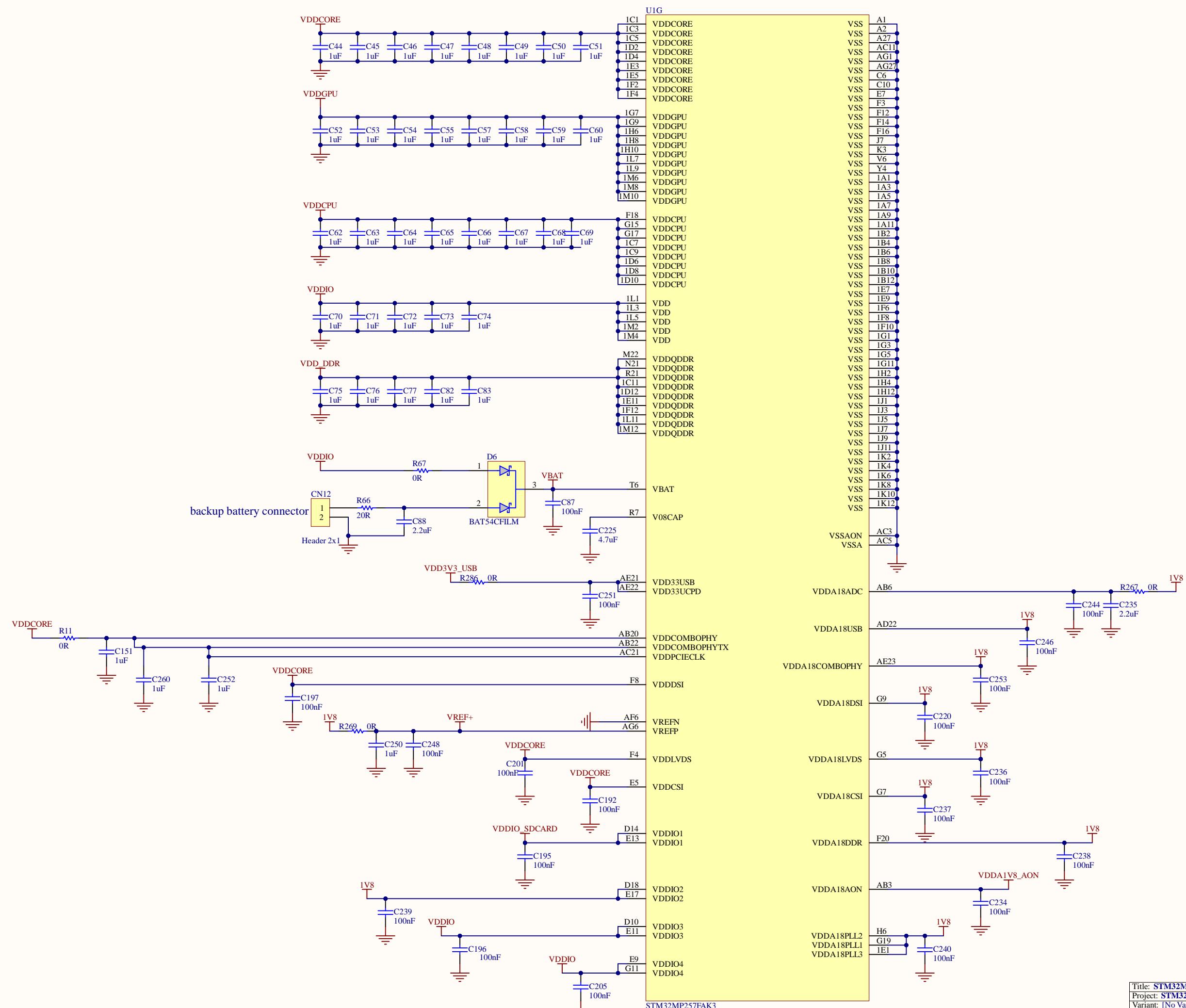
Title: **Project overview**	
Project: **STM32MP25XXAK_2_DDR3L**	
Variant: [No Variations]	
Revision: B-01	Reference: Schematics no
Size: A4	Date: 25- APR-25	Sheet: 1 of 7

U_STM32MP25XXAK Power
STM32MP25XXAK Power.SchDoc

U_STM32MP25XXAK I_Os
STM32MP25XXAK I_Os.SchDoc

U_2_DDR3L_16bits
2_DDR3L_16bits.SchDoc

U_PMIC
PMIC.SchDoc

MP257_WAKEUP	MP257_WAKEUP
PWR_ON	PWR_ON
PWR_CPU_ON	PWR_CPU_ON
PMIC_WAKEUPn	PMIC_WAKEUPn
I2C7.SCL	I2C7.SCL
I2C7.SDA	I2C7.SDA
NRSTC1MS	NRSTC1MS
NRST	NRST

U_eMMC
eMMC.SchDoc

eMMC

eMMC
NRSTC1MS

POWER - PMIC

MP257_WAKEUP | MP257_WAKEUP
NRST | NRST
NRSTC1MS | NRSTC1MS
PWR_ON | PWR_ON
PMIC_WAKEUPn | PMIC_WAKEUPn
PWR_CPU_ON | PWR_CPU_ON

C33 10nF
GND
VDDIO

I2C7.SDA | I2C7.SDA R260 1K5
I2C7.SCL | I2C7.SCL R261 1K5

U1A

MP257_WAKEUP AF5 PA0
AC19 PA1
AF17 PA2
AD18 PA3
AG17 PA4
AE17 PA5
AF18 PA6
AE18 PA7
AA17 PA8
AF15 PA9
AE15 PA10
AD12 PA11
AC13 PA12
AD14 PA13
AB12 PA14
AE13 PA15

PC0 AB14
PC1 AG14
PC2 AE12
PC3 AA9
PC4 AC9
PC5 AD10
PC6 AB10
PC7 AE9
PC8 AG9
PC9 AE9
PC10 AG10
PC11 AD8
PC12 AE7
PC13 W7 PMIC_WAKEUPn

VSW
OSC32_IN AA2 OSC32_IN
OSC32_OUT AA1 OSC32_OUT

B13 PB0
C12 PB1
AA14 PB2
B14 PB3
B15 PB4
C14 PB5
C13 PB6
D8 PB7
F10 PB8
B11 PB9
A11 PB10
C26 PB11
A26 PB12
C27 PB13
B14 PB14
AE6 PB15

VDDIO4
VDDIO3

PD0 B17
PD1 A19
PD2 D12
PD3 G13
PD4 C18
PD5 B18
PD6 A18
PD7 D20
PD8 C16
PD9 C15
PD10 C17
PD11 A15
PD12 B26
PD13 D25
PD14 E19 I2C7.SDA PMIC
PD15 E15 I2C7.SCL PMIC

C86 6.8pF
X1 32.768KHz
R64 0R C81 6.8pF

STM32MP257FAK3

U1B

B19 PE0
C19 PE1
C20 PE2
C21 PE3
B21 PE4
C22 PE5
eMMC.SDMMC2_D6 A22 PE6
eMMC.SDMMC2_D7 B22 PE7
eMMC.SDMMC2_D2 C23 PE8
eMMC.SDMMC2_D5 A23 PE9
eMMC.SDMMC2_D4 D22 PE10
eMMC.SDMMC2_D1 B23 PE11
eMMC.SDMMC2_D3 C25 PE12
eMMC.SDMMC2_D0 C24 PE13
eMMC.SDMMC2_CK B25 PE14
eMMC.SDMMC2_CMD D24 PE15

VDDIO1
VDDIO2

PG0 AF7
PG1 AD4
PG2 AG5
PG3 AA7
PG4 AD6
PG5 R3
PG6 U2
PG7 L5
PG8 M3
PG9 M4
PG10 N2
PG11 N3
PG12 P1
PG13 N1
PG14 K6
PG15

AA15 PF0
AE11 PF1
AC15 PF2
AF11 PF3
AF10 PF4
AA11 PF5
AC7 PF6
AB8 PF7
AE10 PF8
AE8 PF9
AE5 PF10
AE4 PF11
P4 PF12
P2 PF13
P3 PF14
R2 PF15

OSC_IN AG2 HSE_IN
OSC_OUT AF2 HSE_OUT
VDDA18AON

PH2 AC17
PH3 AE19
PH4 AB16
PH5 AG18
PH6 AF19
PH7 AE16
PH8 AD16
PH9 AA13
PH10 AF14
PH11 AE14
PH12 AF13
PH13 AG13

C90 6.8pF
X2 40MHz
R75 0R C92 6.8pF

STM32MP257FAK3

U1C

L7 PI0
M6 PI1
N5 PI2
N7 PI3
P6 PI4
K4 PI5
J3 PI6
J5 PI7
U5 PI8 VSW
U1 PI9
D16 PI10
B27 PI11

PZ0 T4
PZ1 U7
PZ2 W5
PZ3 Y6
PZ4 V3
PZ5 R5
PZ6 V4
PZ7 V2
PZ8 V1
PZ9 U3

PDR_ON W2
VDDA18AON

NRST AE1 NRST
NRSTC1MS W3 NRSTC1MS

PWR_ON AD3 PWR_ON
PWR_LP AE1

PWR_CPUON AB4 PWR_CPU_ON

Y3 BOOT0
AA3 BOOT1
AB1 BOOT2
AB2 BOOT3

JTMS_SWDIO AE2
JTCK_SWCLK AA5
JTDI AE3
JTDO_SWDO AC2
NJTRST AE3

VDDA1V8_AON VDDIO PWR_CPU_ON
R27 10K R272 10K

STM32MP257FAK3

U1D

D6 DSI_REXT

DSI_D2P B7
DSI_D2N A7
DSI_D3P A6
DSI_D3N B6
DSI_CKP C7
DSI_CKN C8
DSI_D0P B9
DSI_D0N C9
DSI_D1P B10
DSI_D1N A10

STM32MP257FAK3

U1E

PCIE_CLKINN AE26
PCIE_CLKINP AE25
PCIE_CLKOUTN AG26
PCIE_CLKOUTP AF26
USB3DR_DP AE22
USB3DR_DM AG22

AF27 COMBOPHY_REXT

USBH_HS_DM AG21
USBH_HS_DP AE21

COMBOPHY_TX1P AE24
COMBOPHY_TX1N AD24
COMBOPHY_RX1P AG25
COMBOPHY_RX1N AE25

UCPD1_CC1 AB18
UCPD1_CC2 AA19

USB3DR_TXRTUNE AE23
USBH_HS_TXRTUNE AE20

DNC AD20

STM32MP257FAK3

U1H

LVDS1_D0N G3
LVDS1_D0P G2
LVDS1_D1N H4
LVDS1_D1P H3
LVDS1_D2N J2
LVDS1_D2P J1
LVDS1_D3N L3
LVDS1_D3P L2
LVDS1_D4N K2
LVDS1_D4P K1

LVDS2_D0N B2
LVDS2_D0P B1
LVDS2_D1N C3
LVDS2_D1P C2
LVDS2_D2N D3
LVDS2_D2P E3
LVDS2_D3N E2
LVDS2_D3P E1
LVDS2_D4N F2
LVDS2_D4P F1

STM32MP257FAK3

U1I

F6 CSI_REXT

CSI_CKN D4
CSI_CKP C4
CSI_D0N A3
CSI_D0P B3
CSI_D1N C5
CSI_D1P B5

STM32MP257FAK3

STM32MP25XXAK_2_DDR3L — PMIC (STPMIC25APQR, U26)

5V_STLK 5.2V
R210 270R
C42 100uF
C147 100uF
LD11 GREEN

U26 — STPMIC25APQR

Pin	Signal	Block	Output	Net
39	BUCK1IN	BUCK1		5V_STLK, C29 10uF
41	PGND1			
40	VLX1		VDDCPU_FB	L3 0.68uH → VDDCPU 670mV/800mV/910mV
42	VOUT1			C26 22uF, C27 22uF, C28 22uF, LNK4
25	BUCK2IN	BUCK2		5V_STLK, C32 10uF
27	PGND2			
26	VLX2		VDDCORE_FB	L2 0.68uH → VDDCORE 670mV/820mV
28	VOUT2			C183 22uF, C22 22uF, C23 22uF, C24 22uF, LNK2
24	BUCK3IN	BUCK3		5V_STLK, C38 10uF
22	PGND3			
23	VLX3		VDDGPU_FB	L4 0.68uH → VDDGPU 800mV/900mV
21	VOUT3			C34 22uF, C35 22uF, C36 22uF, C37 22uF, LNK7
20	BUCK4IN	BUCK4		5V_STLK, C184 10uF
18	PGND4			
19	VLX4		VDDIO_FB	L6 2.2uH 3V3 → VDDIO
17	VOUT4			C185 22uF, C186 22uF, C187 22uF, LNK11
15	LDO12IN	Supply Mux / LDO1		5V_STLK
14	LDO1OUT			VDDA1V8_AON
16	LDO2OUT	LDO2		3V3 VDD_EMMC, C189 4.7uF
38	BUCK5IN	BUCK5		5V_STLK, C30 10uF
36	PGND5			
37	VLX5		1V8_FB	L1 2.2uH → 1V8
35	VOUT5			C190 4.7uF, C193 22uF, C194 22uF, C198 22uF, LNK1
49	BUCK6IN	BUCK6		5V_STLK, C199 10uF
47	PGND6			
48	VLX6		VDD_DDR_FB	L5 0.68uH → VDD_DDR 1.35V
46	VOUT6			C200 22uF, C202 22uF, C41 22uF, LNK8
45	REFDDR	REFDDR		Unused, C43 1uF
50	BUCK7IN	BUCK7		5V_STLK, C56 10uF
52	PGND7			
51	VLX7			L7 0.68uH → 3V3
53	VOUT7			C203 22uF, C204 22uF, C206 22uF, C207 22uF
43	LDO3IN	LDO3		VDD_DDR, C39 10uF
44	LDO3OUT			VTT_DDR 0.675V, C40 10uF
11	VIN	INTLDO		5V_STLK
8	INTLDO			C208 4.7uF
12	VBUS	Supply Mux / LDO4		C209 4.7uF, R57 0R
13	LDO4OUT			VDD3V3_USB, C61 4.7uF
6	LDO56IN	LDO5 / LDO6		5V_STLK, C213 1uF
7	LDO5OUT			5V_HDMI, C91 4.7uF
5	LDO6OUT			5V_VCONN, C214 4.7uF
3	LDO78IN	LDO7 / LDO8		3V3, C216 1uF
4	LDO7OUT			VDD_SDCARD 3V3, C215 4.7uF
2	LDO8OUT			VDDIO_SDCARD 3V3/1V8, C217 4.7uF
10	AGND			
9	GNDLDO			
29	VIO			VDDIO

System Control & Logic (VIO domain)

Pin	Signal
34	SDA — I2C7.SDA
33	SCL — I2C7.SCL
56	PWRCTRL1 — PWR_ON, R61 0R
55	PWRCTRL2 — PWR_CPU_ON, R60 0R
54	PWRCTRL3 — NRSTC1MS, R59 0R
31	RSTn — NRST, R81 0R
30	WAKEUPn — PMIC_WAKEUPn, R46 0R
1	PONKEYn
32	INTn — MP257_WAKEUP
57	GND

WAKE UP
B2 434121025816
C219 10nF

U1G

VDDCORE

C44 1uF	C45 1uF	C46 1uF	C47 1uF	C48 1uF	C49 1uF	C50 1uF	C51 1uF

1C1 VDDCORE
1C3 VDDCORE
1C5 VDDCORE
1D2 VDDCORE
1D4 VDDCORE
1E3 VDDCORE
1E5 VDDCORE
1F2 VDDCORE
1F4 VDDCORE

VDDGPU

C52 1uF	C53 1uF	C54 1uF	C55 1uF	C57 1uF	C58 1uF	C59 1uF	C60 1uF

1G7 VDDGPU
1G9 VDDGPU
1H6 VDDGPU
1H8 VDDGPU
1H10 VDDGPU
1L7 VDDGPU
1L9 VDDGPU
1M6 VDDGPU
1M8 VDDGPU
1M10 VDDGPU

VDDCPU

C62 1uF	C63 1uF	C64 1uF	C65 1uF	C66 1uF	C67 1uF	C68 1uF	C69 1uF

F18 VDDCPU
G15 VDDCPU
G17 VDDCPU
1C7 VDDCPU
1C9 VDDCPU
1D6 VDDCPU
1D8 VDDCPU
1D10 VDDCPU

VDDIO

C70 1uF	C71 1uF	C72 1uF	C73 1uF	C74 1uF

1L1 VDD
1L3 VDD
1L5 VDD
1M2 VDD
1M4 VDD

VDD_DDR

C75 1uF	C76 1uF	C77 1uF	C82 1uF	C83 1uF

M22 VDDQDDR
N21 VDDQDDR
R21 VDDQDDR
1C11 VDDQDDR
1D12 VDDQDDR
1E11 VDDQDDR
1F12 VDDQDDR
1L11 VDDQDDR
1M12 VDDQDDR

VSS: A1, A2, A27, AC11, AG1, AG27, C6, C10, E7, F3, F12, F14, F16, J7, K3, V6, Y4, 1A1, 1A3, 1A5, 1A7, 1A9, 1A11, 1B2, 1B4, 1B6, 1B8, 1B10, 1B12, 1E7, 1E9, 1F6, 1F8, 1F10, 1G1, 1G3, 1G5, 1G11, 1H2, 1H4, 1H12, 1J1, 1J3, 1J5, 1J7, 1J9, 1J11, 1K2, 1K4, 1K6, 1K8, 1K10, 1K12

VDDIO
R67 0R
D6
1
VBAT
3 T6 VBAT
C87 100nF

backup battery connector
CN12
R66 20R
2
BAT54CFILM
C88 2.2uF
Header 2x1

R7 V08CAP
C225 4.7uF

VSSAON AC3
VSSA AC5

VDD3V3_USB
R286 0R
AE21 VDD33USB
AE22 VDD33UCPD
C251 100nF

VDDA18ADC AB6
R267 0R 1V8
C244 100nF
C235 2.2uF

VDDCORE
R11 0R
C151 1uF
C260 1uF
C252 1uF

AB20 VDDCOMBOPHY
AB22 VDDCOMBOPHYTX
AC21 VDDPCIECLK

VDDA18USB AD22
C246 100nF 1V8

VDDA18COMBOPHY AE23
C253 100nF 1V8

VDDCORE
C197 100nF
F8 VDDDSI

VDDA18DSI G9
C220 100nF 1V8

1V8
R269 0R
VREF+
AF6 VREFN
AG6 VREFP
C250 1uF
C248 100nF

VDDA18LVDS G5
C236 100nF 1V8

VDDCORE
C201 100nF
F4 VDDLVDS

VDDCORE
C192 100nF
E5 VDDCSI

VDDA18CSI G7
C237 100nF 1V8

VDDIO_SDCARD
D14 VDDIO1
E13 VDDIO1
C195 100nF

VDDA18DDR F20
C238 100nF 1V8

1V8
D18 VDDIO2
E17 VDDIO2
C239 100nF

VDDA18AON AB3
VDDA1V8_AON
C234 100nF

VDDIO
D10 VDDIO3
E11 VDDIO3
C196 100nF

VDDA18PLL2 H6
VDDA18PLL1 G19
VDDA18PLL3 1E1
C240 100nF 1V8

VDDIO
E9 VDDIO4
G11 VDDIO4
C205 100nF

STM32MP257FAK3

U1F — STM32MP257FAK3

Signal	Pin		Pin	Signal
DDR_DQ0	AB26	DDR_DQ0	DDR_A0	U21	DDR_CKE
DDR_DQ1	AC26	DDR_DQ1	DDR_A1	AD25	
DDR_DQ2	AB27	DDR_DQ2	DDR_A2	V24	DDR_CSN
DDR_DQ3	AC27	DDR_DQ3	DDR_A3	P22	DDR_ODT
DDR_DQ4	W25	DDR_DQ4	DDR_A4	U23	DDR_CLK_P
DDR_DQ5	W27	DDR_DQ5	DDR_A5	T24	DDR_CLK_N
DDR_DQ6	W26	DDR_DQ6	DDR_A6	Y24	
DDR_DQ7	Y25	DDR_DQ7	DDR_A7	AC25	
DDR_DQS0_P	V25	DDR_DQS0P	DDR_A8	V22	DDR_A10
DDR_DQS0_N	U26	DDR_DQS0N	DDR_A9	T22	DDR_A15
DDR_DQM0	AB25	DDR_DQM0	DDR_A10	R23	DDR_A1
			DDR_A11	L23	DDR_BA2
DDR_DQ8	R27	DDR_DQ8	DDR_A12	K24	DDR_BA0
DDR_DQ9	R26	DDR_DQ9	DDR_A13	M24	DDR_WEN
DDR_DQ10	P27	DDR_DQ10	DDR_A14	N23	DDR_CASN
DDR_DQ11	P26	DDR_DQ11	DDR_A15	J23	DDR_A3
DDR_DQ12	V26	DDR_DQ12	DDR_A16	V26	DDR_A2
DDR_DQ13	V27	DDR_DQ13	DDR_A17	V25	DDR_A6
DDR_DQ14	V25	DDR_DQ14	DDR_A18	G23	DDR_A9
DDR_DQ15	U25	DDR_DQ15	DDR_A19	L21	
DDR_DQS1_P	V25	DDR_DQS1P	DDR_A20	J21	DDR_A0
DDR_DQS1_N	W25	DDR_DQS1N	DDR_A21	H22	DDR_A7
DDR_DQM1	U26	DDR_DQM1	DDR_A22	F22	DDR_A4
			DDR_A23	E23	DDR_A13
DDR_DQ16	F25	DDR_DQ16	DDR_A25	W21	DDR_A11
DDR_DQ17	E26	DDR_DQ17	DDR_A26	AB24	DDR_A4
DDR_DQ18	F24	DDR_DQ18	DDR_A27	AA23	DDR_A14
DDR_DQ19	E25	DDR_DQ19	DDR_A28	AC23	DDR_A8
DDR_DQ20	J25	DDR_DQ20	DDR_A29	Y24	DDR_BA1
DDR_DQ21	H25	DDR_DQ21	DDR_A30	AA21	DDR_A6
DDR_DQ22	G26	DDR_DQ22	DDR_A31	W23	DDR_A12
DDR_DQ23	G25	DDR_DQ23			
DDR_DQS2_P	F27	DDR_DQS2P			
DDR_DQS2_N	F26	DDR_DQS2N			
DDR_DQM2	G27	DDR_DQM2			
DDR_DQ24	J26	DDR_DQ24	DDR_RESETN	E21	DDR_RESETN
DDR_DQ25	K25	DDR_DQ25			
DDR_DQ26	K26	DDR_DQ26			
DDR_DQ27	K27	DDR_DQ27	DDR_VREF	G21	
DDR_DQ28	L25	DDR_DQ28			
DDR_DQ29	N25	DDR_DQ29			
DDR_DQ30	N26	DDR_DQ30			
DDR_DQ31	P25	DDR_DQ31	DDR_ZQ	K22	
DDR_DQS3_P	P26	DDR_DQS3P			
DDR_DQS3_N	R27	DDR_DQS3N			
DDR_DQM3	M25	DDR_DQM3			

R1 240R

U2 — NT5CC256M16ER-EK

U8 — NT5CC256M16ER-EK

R141 1K, R142 1K, R143 1K, R144 1K, R145 240R, C138 100nF, C137 100nF
R146 1K, R147 1K, R148 1K, R149 1K, R150 240R, C121 100nF, C120 100nF

R156 10K
R167 100R - 0.5%

VDD_DDR: C177 100nF, C167 100nF, C146 100nF

VDD_DDR: C100 10uF, C101 10uF, C102 100nF, C103 100nF, C104 100nF, C105 100nF, C106 100nF, C107 100nF, C108 100nF

VDD_DDR: C109 10uF, C110 10uF, C111 100nF, C112 100nF, C113 100nF, C114 100nF, C115 100nF, C116 100nF, C119 100nF

VTT_DDR: C122 100nF, C123 22uF, C124 22uF

Signal	R	Value	C
DDR_A0	R116	56R	C125 100nF
DDR_A1	R117	56R	
DDR_A2	R118	56R	C126 100nF
DDR_A3	R119	56R	
DDR_A4	R120	56R	C127 100nF
DDR_A5	R121	56R	
DDR_A6	R122	56R	C139 100nF
DDR_A7	R123	56R	
DDR_A8	R124	56R	
DDR_A9	R125	56R	C129 100nF
DDR_A10	R126	56R	
DDR_A11	R127	56R	C140 100nF
DDR_A12	R128	56R	
DDR_A13	R129	56R	C131 100nF
DDR_A14	R130	56R	
DDR_A15	R131	56R	C132 100nF
DDR_BA0	R132	56R	
DDR_BA1	R133	56R	C133 100nF
DDR_BA2	R134	56R	
DDR_RASN	R135	56R	C134 100nF
DDR_CASN	R136	56R	
DDR_CSN	R137	56R	C135 100nF
DDR_CKE	R138	56R	
DDR_WEN	R139	56R	C136 100nF
DDR_ODT	R140	56R	

eMMC

eMMC

SDMMC2_D[0..7]	eMMC.SDMMC2_D[0..7]
SDMMC2_CK	eMMC.SDMMC2_CK
SDMMC2_CMD	eMMC.SDMMC2_CMD

U37

1V8

R101
10K

eMMC.SDMMC2_D0	A3	DAT0
eMMC.SDMMC2_D1	A4	DAT1
eMMC.SDMMC2_D2	A5	DAT2
eMMC.SDMMC2_D3	B2	DAT3
eMMC.SDMMC2_D4	B3	DAT4
eMMC.SDMMC2_D5	B4	DAT5
eMMC.SDMMC2_D6	B5	DAT6
eMMC.SDMMC2_D7	B6	DAT7

VCC   E6
VCC   F5
VCC   J10
VCC   K9

VCCQ   N4
VCCQ   C6
VCCQ   M4
VCCQ   P3
VCCQ   P5

VDDI   C2

VSSQ   C4
VSSQ   N2
VSSQ   N5
VSSQ   P4
VSSQ   P6

VSS   A6
VSS   E7
VSS   G5
VSS   H10
VSS   J5
VSS   K8

VDD_EMMC

1V8

C9
100nF   C117
2.2uF

C118
100nF   C128
2.2uF

C130
100nF   C148
2.2uF

1V8

R248   R103
10K   10K

BAT60JFILM   D7

NRSTC1MS

K5	RSTn
M6	CLK
M5	CMD
H5	DS

eMMC.SDMMC2_CK

1V8

R104
10K

TP21

eMMC.SDMMC2_CMD

THGBMTG5D1LBAIL