<XR_PAGE_TITLE>

ODROID - H2 Schematics

Intel GeminiLake Platform

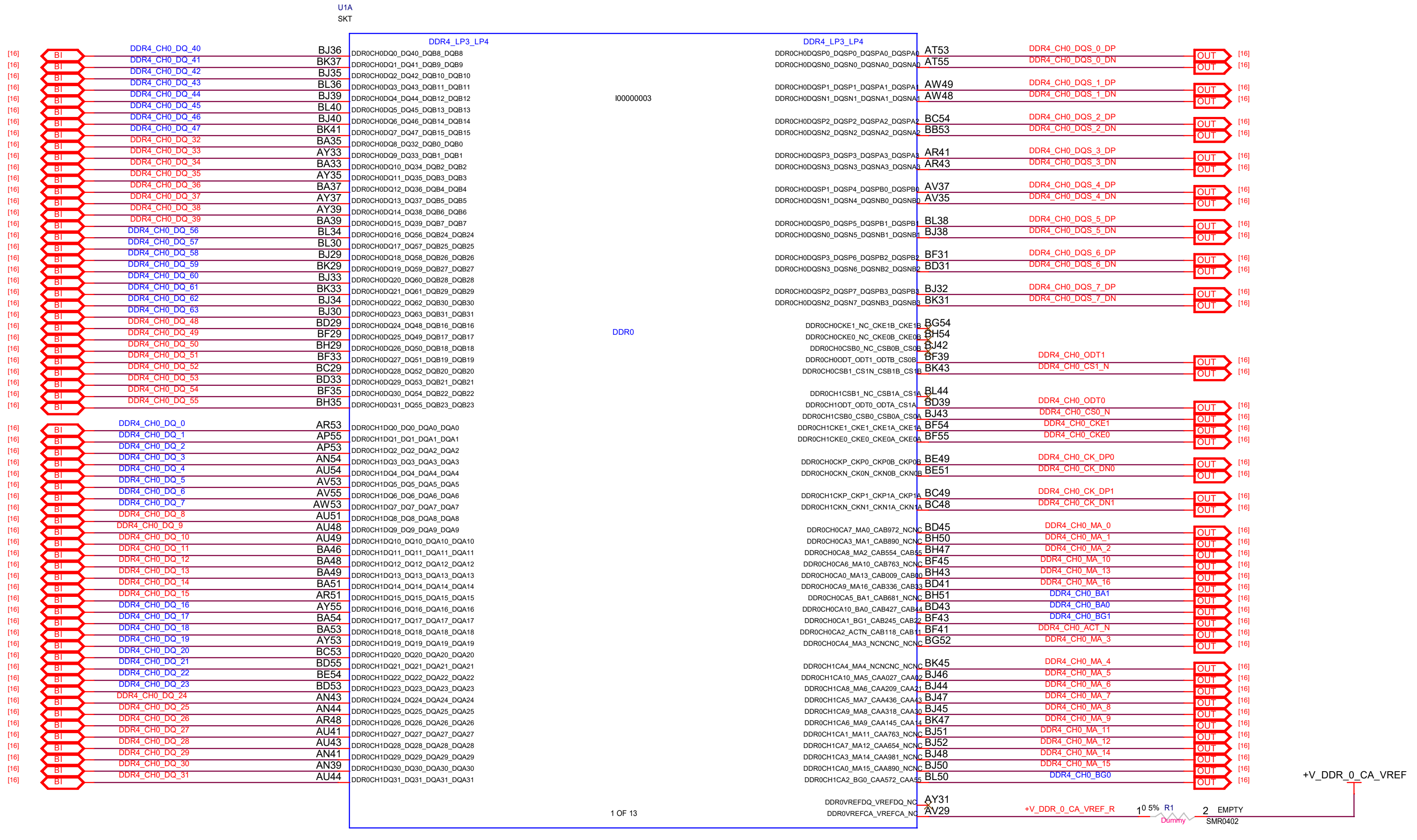
2018-10-01

Title	ODROID-H2	
Size	Document Number	Rev
		A
Date: Monday, December 24, 2018	Sheet 1 of 61	

SCH Content

Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 2 of 61	

<XR_PAGE_TITLE>

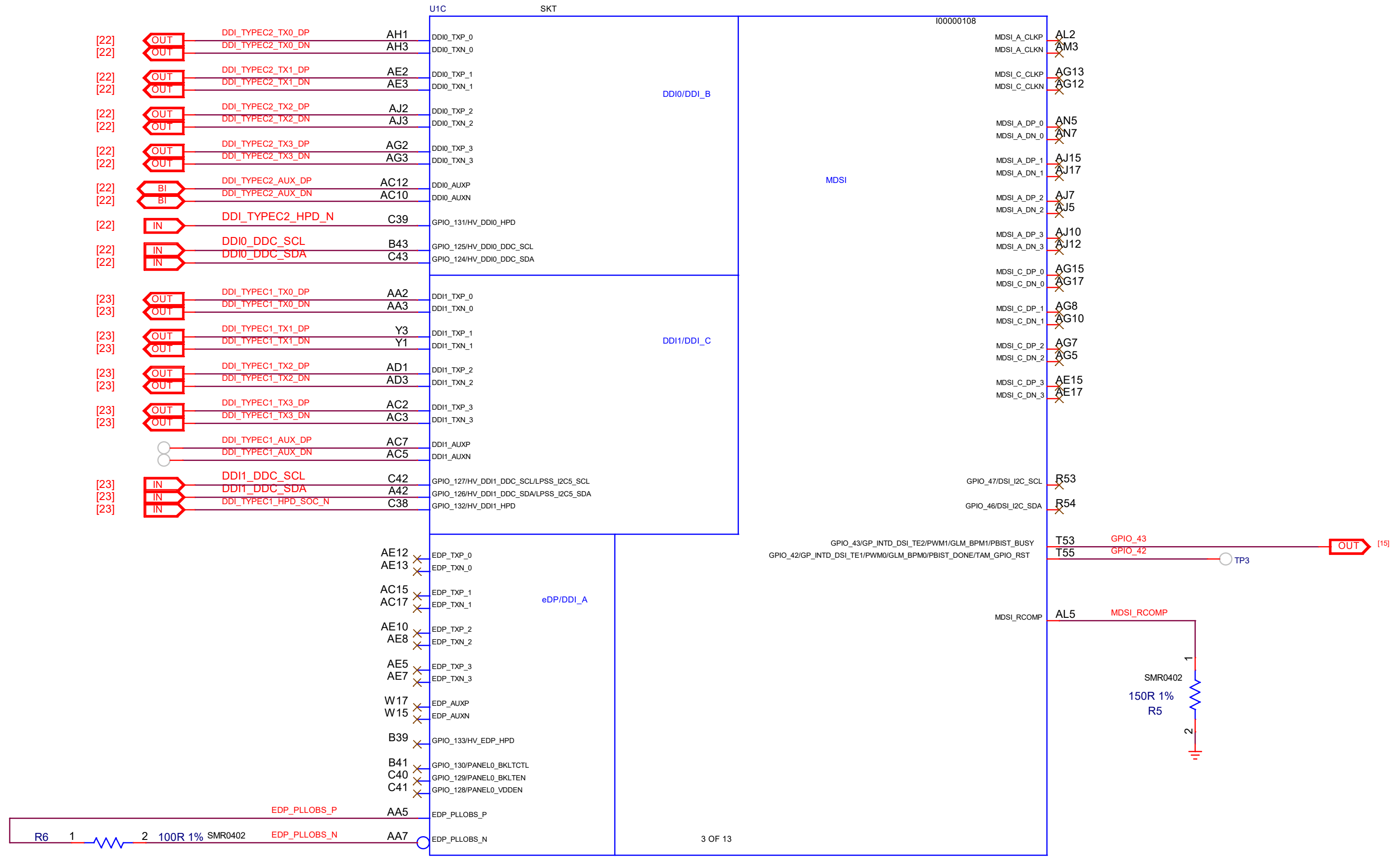


Title
ODROID-H2
Size Document Number Rev
A
Date: Monday, December 24, 2018 Sheet 3 of 61

<XR_PAGE_TITLE>

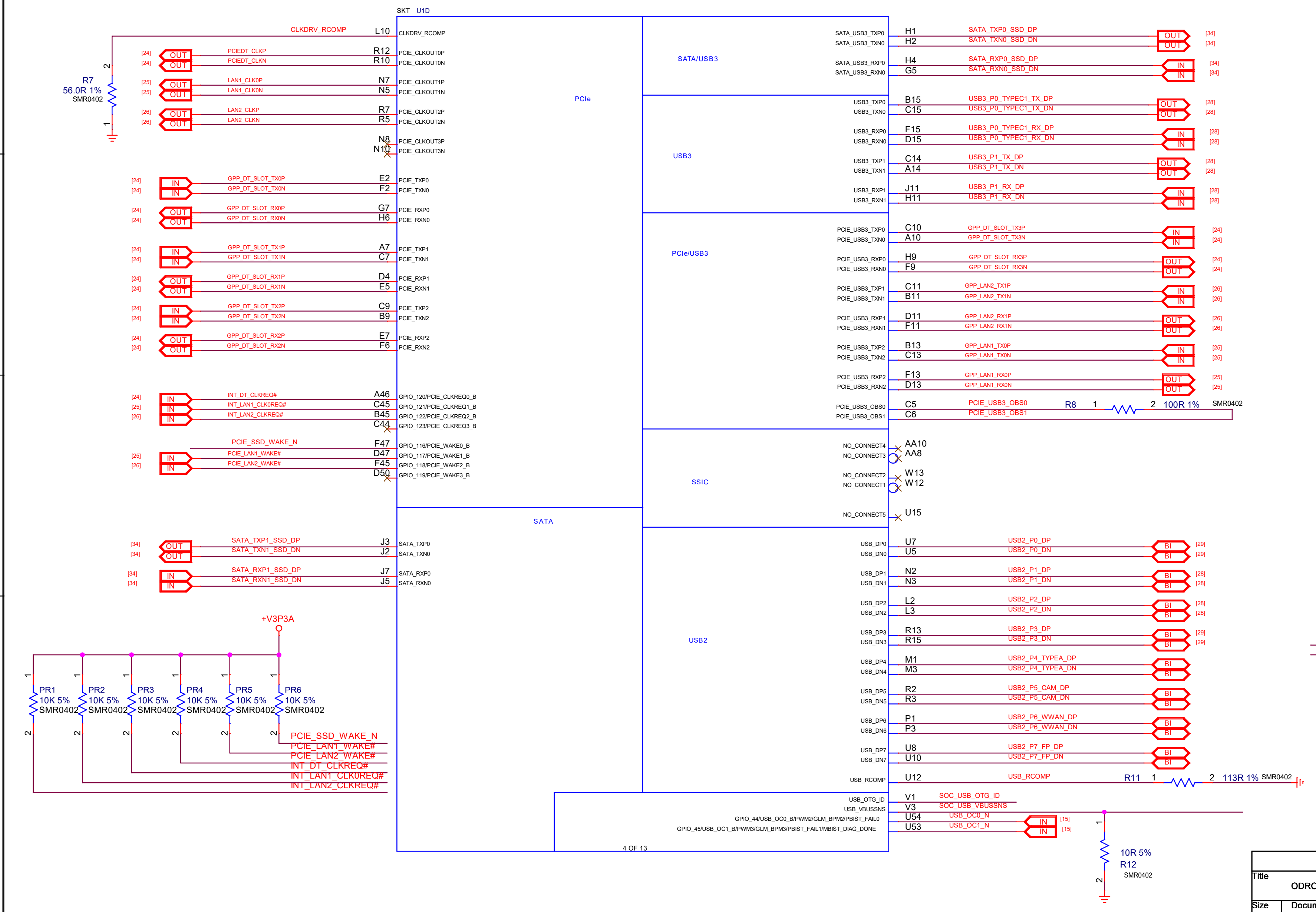
Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	4 of 61

SOC 3 OF 13:



Title	ODROID-H2		
Size	Document Number		Rev A
Date:	Monday, December 24, 2018	Sheet 5	of 81

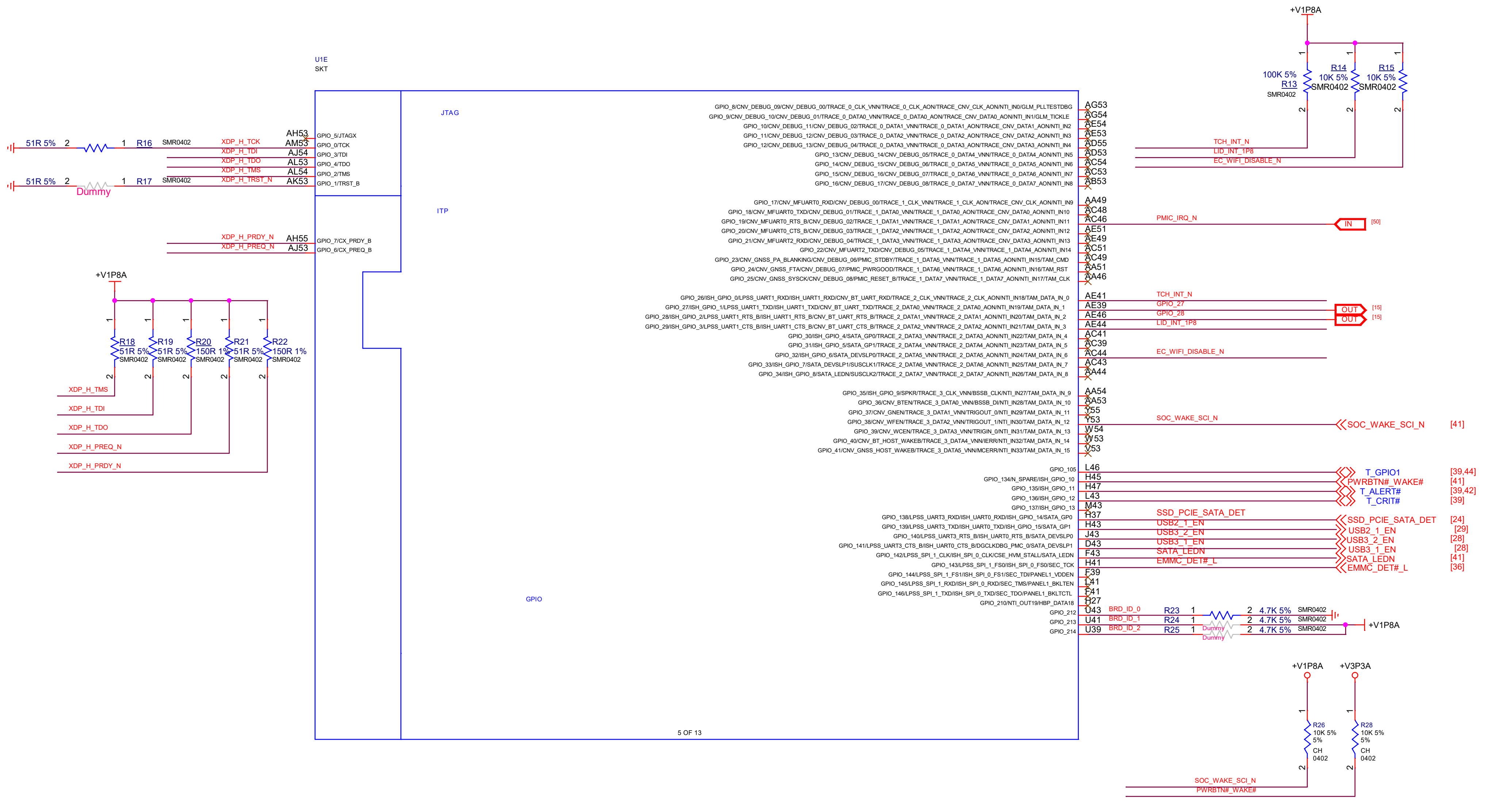
<XR_PAGE_TITLE>



Title
ODROID-H2

Size	Document Number	Rev
		A

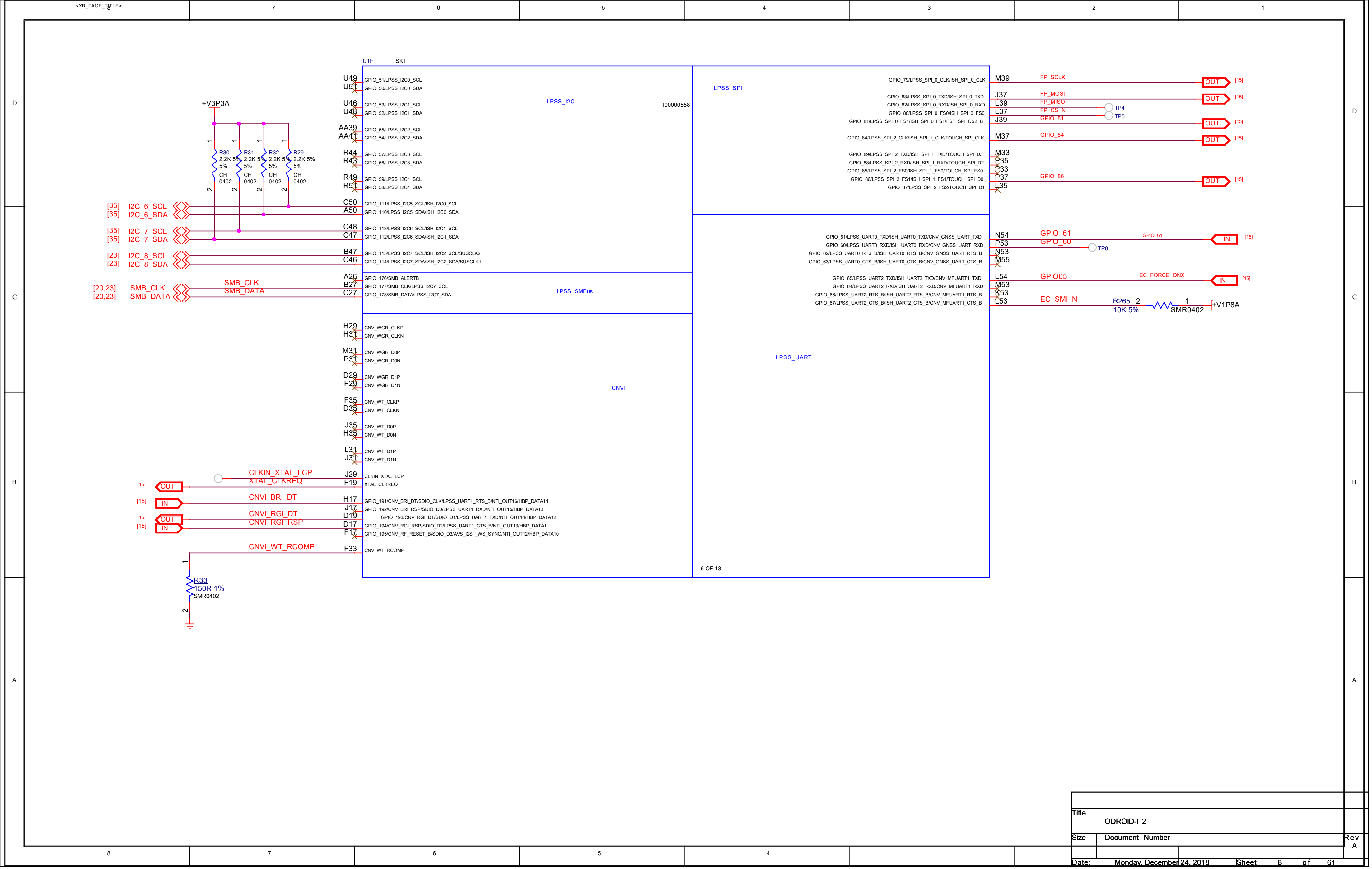
Date: Monday, December 24, 2018 Sheet 6 of 61



Title
ODROID-H2

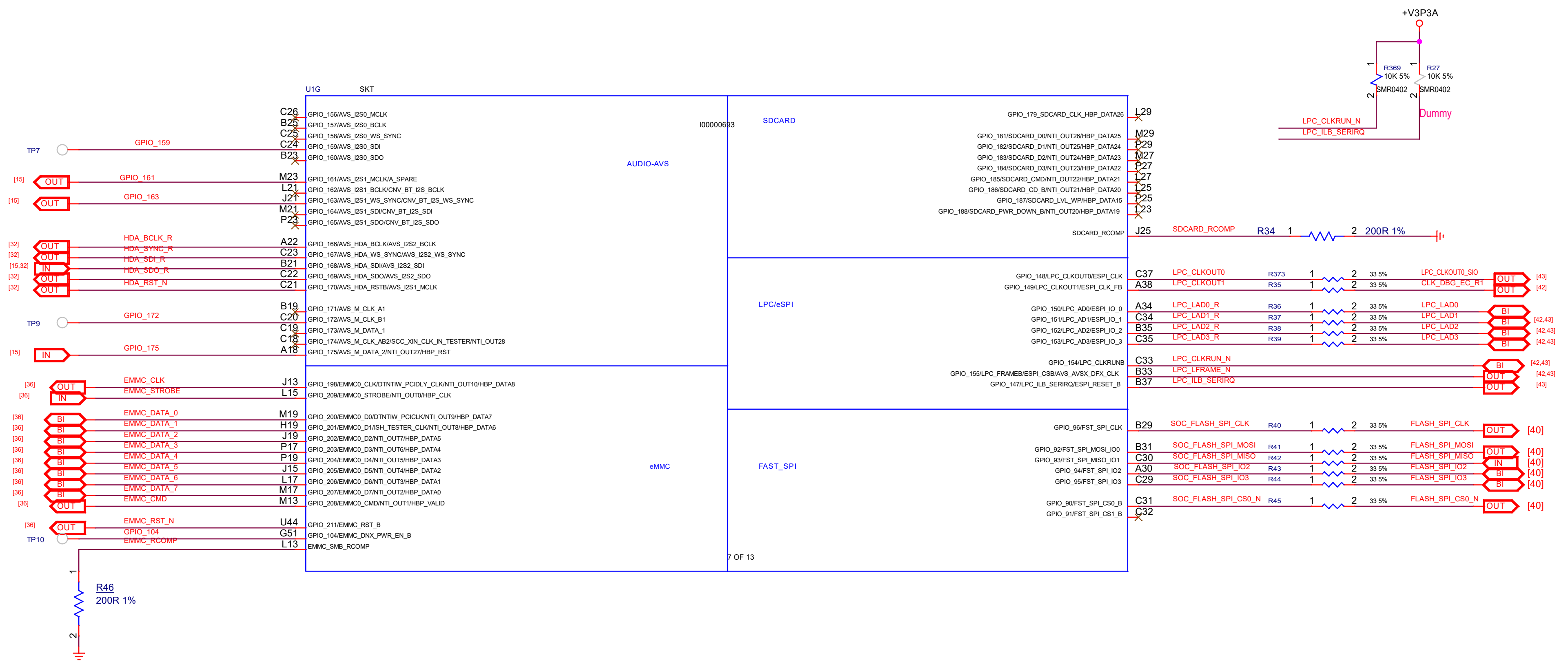
Size	Document Number	Rev
		A

Date: Monday, December 24, 2018 Sheet 7 of 61

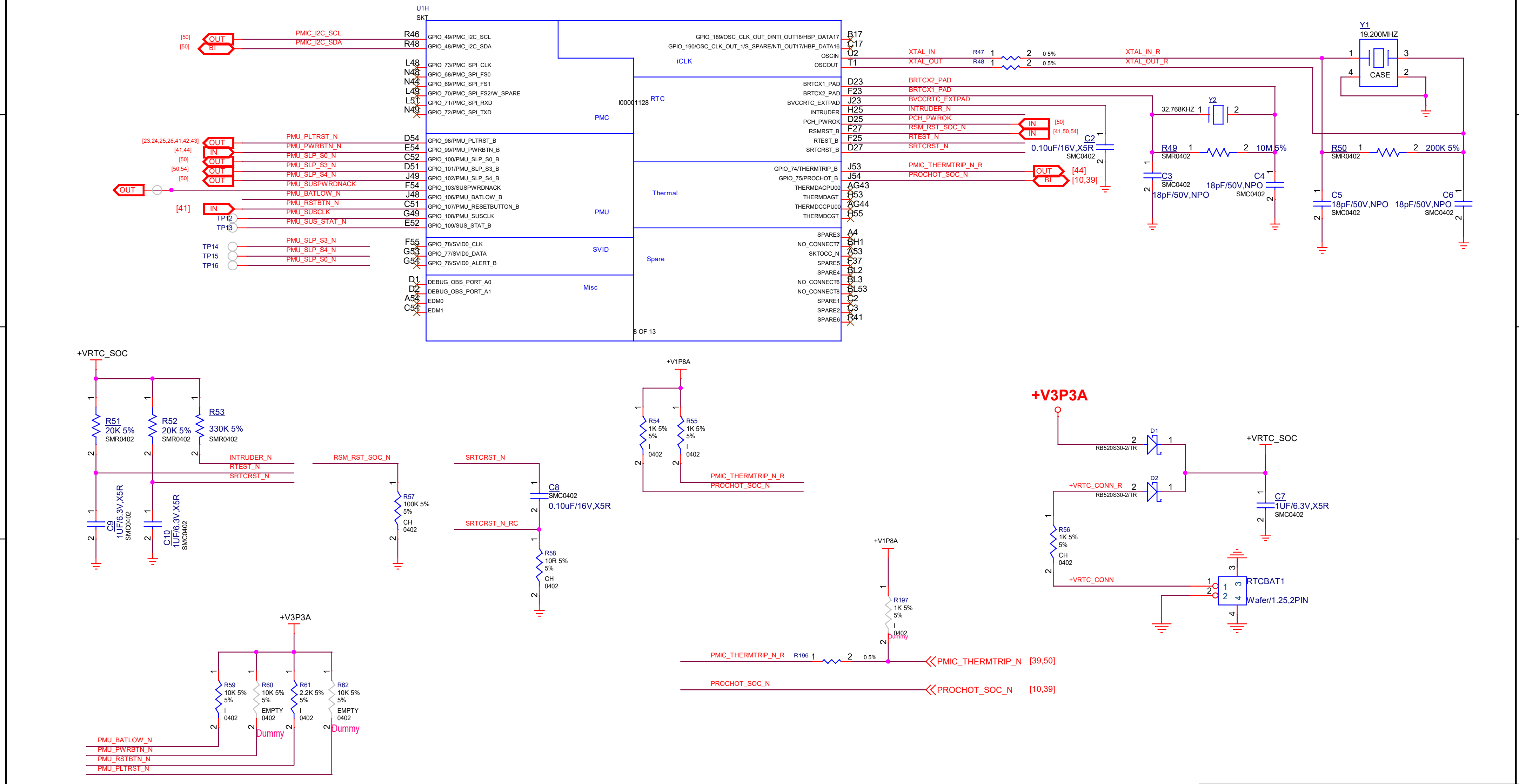


<XR_PAGE_TITLE>
U1F SKT
LPSS_I2C
I00000558
LPSS_SPI
LPSS_SMBus
CNVI
LPSS_UART
6 OF 13
+V3P3A
R30 2.2K 5% CH 0402
R31 2.2K 5% CH 0402
R32 2.2K 5% CH 0402
R29 2.2K 5% CH 0402
[35] I2C_6_SCL
[35] I2C_6_SDA
[35] I2C_7_SCL
[35] I2C_7_SDA
[23] I2C_8_SCL
[23] I2C_8_SDA
[20,23] SMB_CLK
[20,23] SMB_DATA
U49 GPIO_51/LPSS_I2C0_SCL
U51 GPIO_50/LPSS_I2C0_SDA
U46 GPIO_53/LPSS_I2C1_SCL
U48 GPIO_52/LPSS_I2C1_SDA
AA39 GPIO_55/LPSS_I2C2_SCL
AA41 GPIO_54/LPSS_I2C2_SDA
R44 GPIO_57/LPSS_I2C3_SCL
R43 GPIO_56/LPSS_I2C3_SDA
R49 GPIO_59/LPSS_I2C4_SCL
R51 GPIO_58/LPSS_I2C4_SDA
C50 GPIO_111/LPSS_I2C5_SCL/ISH_I2C0_SCL
A50 GPIO_110/LPSS_I2C5_SDA/ISH_I2C0_SDA
C48 GPIO_113/LPSS_I2C6_SCL/ISH_I2C1_SCL
C47 GPIO_112/LPSS_I2C6_SDA/ISH_I2C1_SDA
B47 GPIO_115/LPSS_I2C7_SCL/ISH_I2C2_SCL/SUSCLK2
C46 GPIO_114/LPSS_I2C7_SDA/ISH_I2C2_SDA/SUSCLK1
A26 GPIO_176/SMB_ALERTB
B27 GPIO_177/SMB_CLK/LPSS_I2C7_SCL
C27 GPIO_178/SMB_DATA/LPSS_I2C7_SDA
H29 CNV_WGR_CLKP
H31 CNV_WGR_CLKN
M31 CNV_WGR_D0P
P31 CNV_WGR_D0N
D29 CNV_WGR_D1P
F29 CNV_WGR_D1N
F35 CNV_WT_CLKP
D35 CNV_WT_CLKN
J35 CNV_WT_D0P
H35 CNV_WT_D0N
L31 CNV_WT_D1P
J31 CNV_WT_D1N
CLKIN_XTAL_LCP J29 CLKIN_XTAL_LCP
[15] OUT XTAL_CLKREQ F19 XTAL_CLKREQ
[15] IN CNVI_BRI_DT H17 GPIO_191/CNV_BRI_DT/SDIO_CLK/LPSS_UART1_RTS_B/NTI_OUT16/HBP_DATA14
J17 GPIO_192/CNV_BRI_RSP/SDIO_D0/LPSS_UART1_RXD/NTI_OUT15/HBP_DATA13
[15] OUT CNVI_RGI_DT D19 GPIO_193/CNV_RGI_DT/SDIO_D1/LPSS_UART1_TXD/NTI_OUT14/HBP_DATA12
[15] IN CNVI_RGI_RSP D17 GPIO_194/CNV_RGI_RSP/SDIO_D2/LPSS_UART1_CTS_B/NTI_OUT13/HBP_DATA11
F17 GPIO_195/CNV_RF_RESET_B/SDIO_D3/AVS_I2S1_WS_SYNC/NTI_OUT12/HBP_DATA10
CNVI_WT_RCOMP F33 CNV_WT_RCOMP
R33 150R 1% SMR0402
GPIO_79/LPSS_SPI_0_CLK/ISH_SPI_0_CLK M39 FP_SCLK OUT [15]
GPIO_83/LPSS_SPI_0_TXD/ISH_SPI_0_TXD J37 FP_MOSI OUT [15]
GPIO_82/LPSS_SPI_0_RXD/ISH_SPI_0_RXD L39 FP_MISO TP4
GPIO_80/LPSS_SPI_0_FS0/ISH_SPI_0_FS0 L37 FP_CS_N TP5
GPIO_81/LPSS_SPI_0_FS1/ISH_SPI_0_FS1/FST_SPI_CS2_B J39 GPIO_81 OUT [15]
GPIO_84/LPSS_SPI_2_CLK/ISH_SPI_1_CLK/TOUCH_SPI_CLK M37 GPIO_84 OUT [15]
GPIO_89/LPSS_SPI_2_TXD/ISH_SPI_1_TXD/TOUCH_SPI_D3 M33
GPIO_88/LPSS_SPI_2_RXD/ISH_SPI_1_RXD/TOUCH_SPI_D2 P35
GPIO_85/LPSS_SPI_2_FS0/ISH_SPI_1_FS0/TOUCH_SPI_FS0 P33
GPIO_86/LPSS_SPI_2_FS1/ISH_SPI_1_FS1/TOUCH_SPI_D0 P37 GPIO_86 OUT [15]
GPIO_87/LPSS_SPI_2_FS2/TOUCH_SPI_D1 L35
GPIO_61/LPSS_UART0_TXD/ISH_UART0_TXD/CNV_GNSS_UART_TXD N54 GPIO_61 GPIO_61 IN [15]
GPIO_60/LPSS_UART0_RXD/ISH_UART0_RXD/CNV_GNSS_UART_RXD P53 GPIO_60 TP8
GPIO_62/LPSS_UART0_RTS_B/ISH_UART0_RTS_B/CNV_GNSS_UART_RTS_B N53
GPIO_63/LPSS_UART0_CTS_B/ISH_UART0_CTS_B/CNV_GNSS_UART_CTS_B M55
GPIO_65/LPSS_UART2_TXD/ISH_UART2_TXD/CNV_MFUART1_TXD L54 GPIO65 EC_FORCE_DNX IN [15]
GPIO_64/LPSS_UART2_RXD/ISH_UART2_RXD/CNV_MFUART1_RXD M53
GPIO_66/LPSS_UART2_RTS_B/ISH_UART2_RTS_B/CNV_MFUART1_RTS_B K53
GPIO_67/LPSS_UART2_CTS_B/ISH_UART2_CTS_B/CNV_MFUART1_CTS_B L53 EC_SMI_N
R265 10K 5% SMR0402 +V1P8A
Title ODROID-H2
Size Document Number Rev A
Date: Monday, December 24, 2018 Sheet 8 of 61

<XR_PAGE_TITLE>



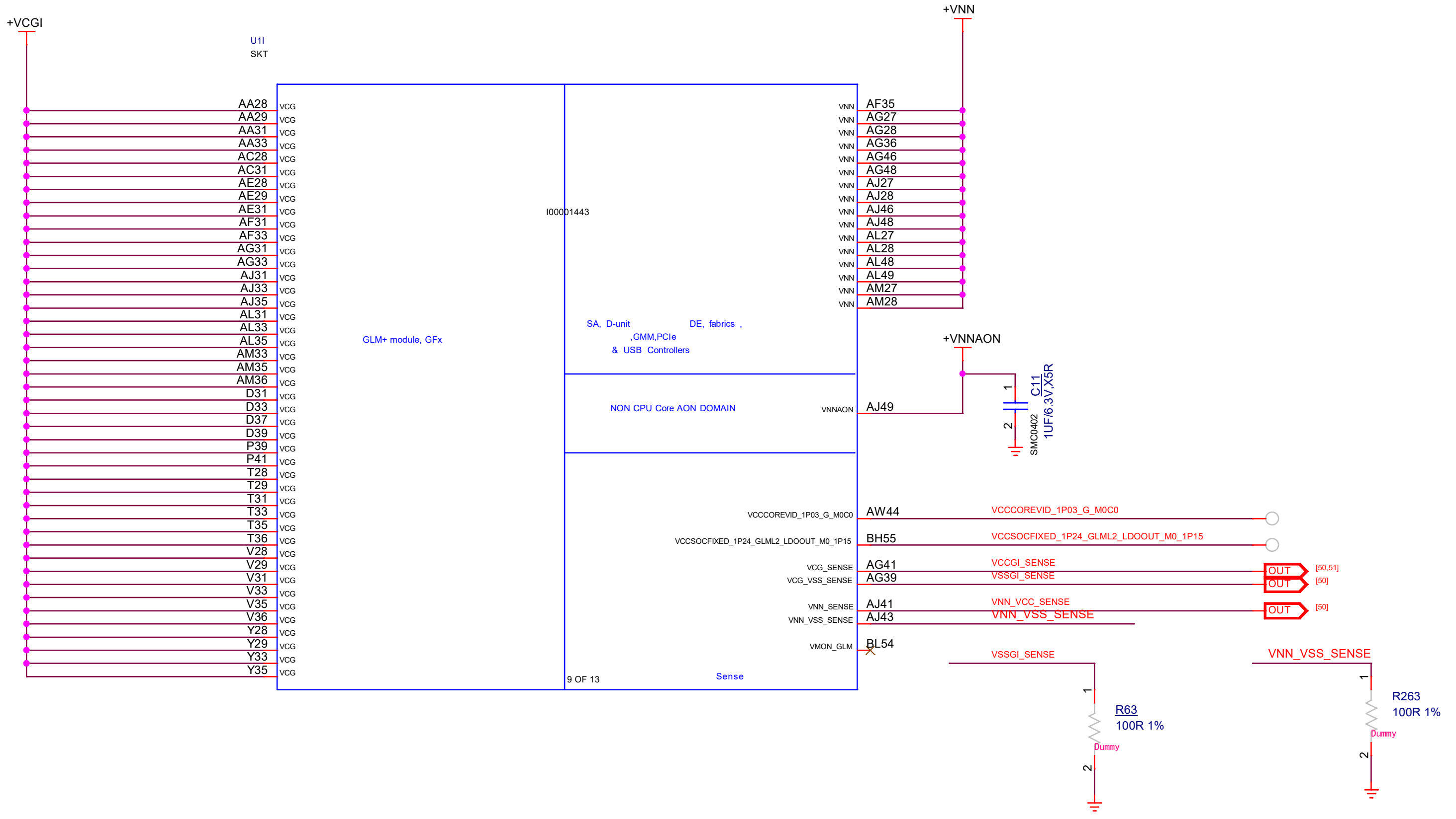
Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	9 of 61



Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	10 of 61

8 7 6 5 4 3 2 1

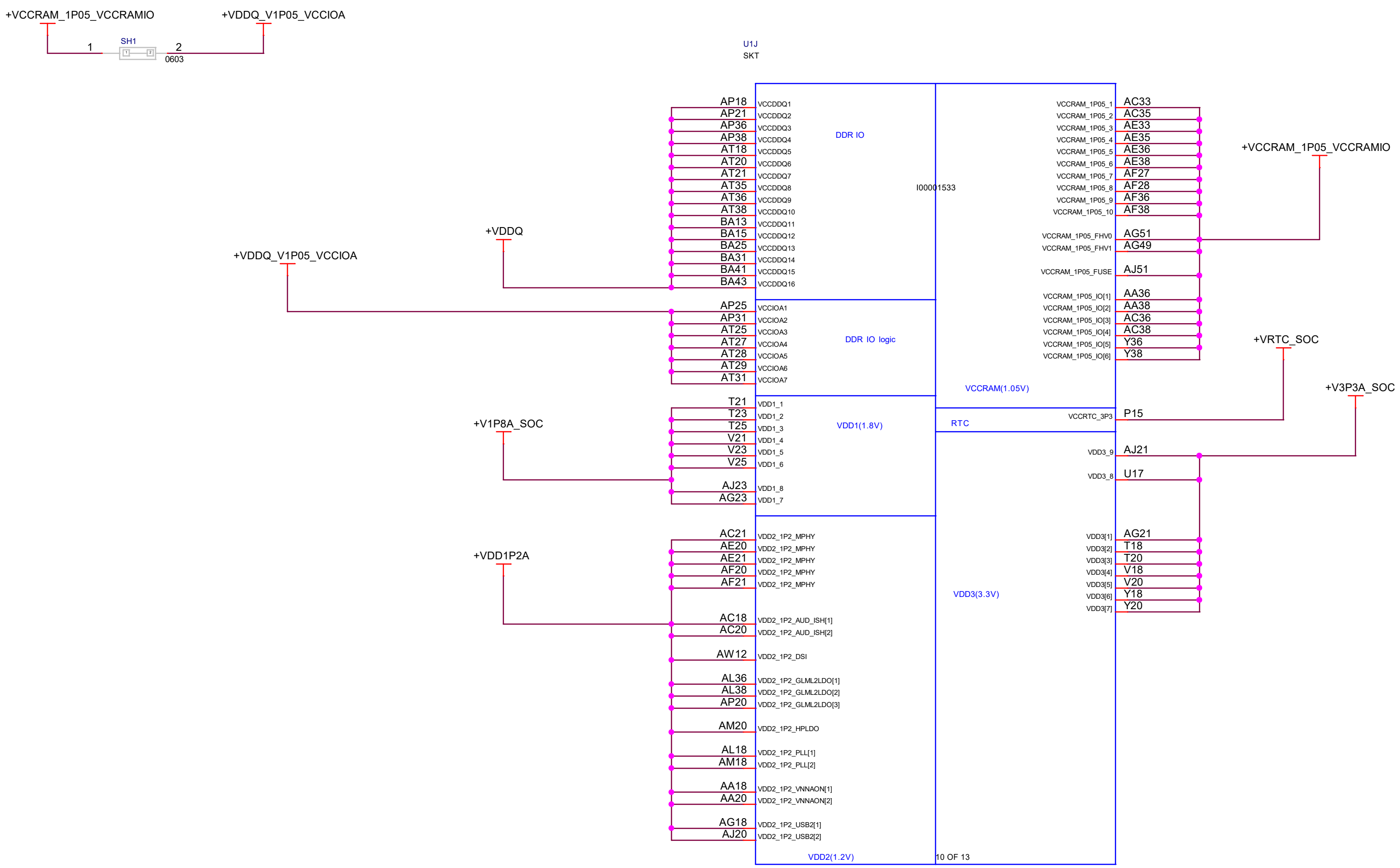
D C B A



Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	11 of 61

8 7 6 5

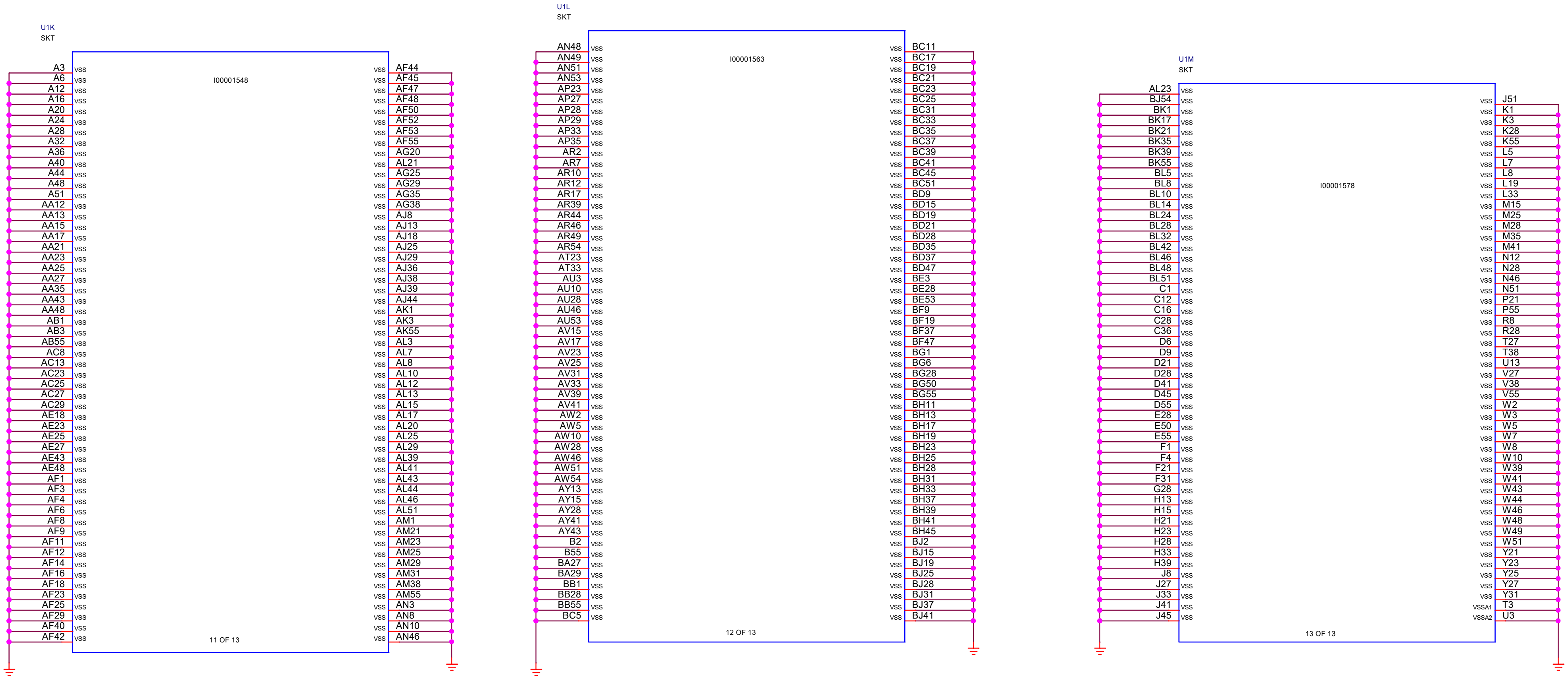
D C B A



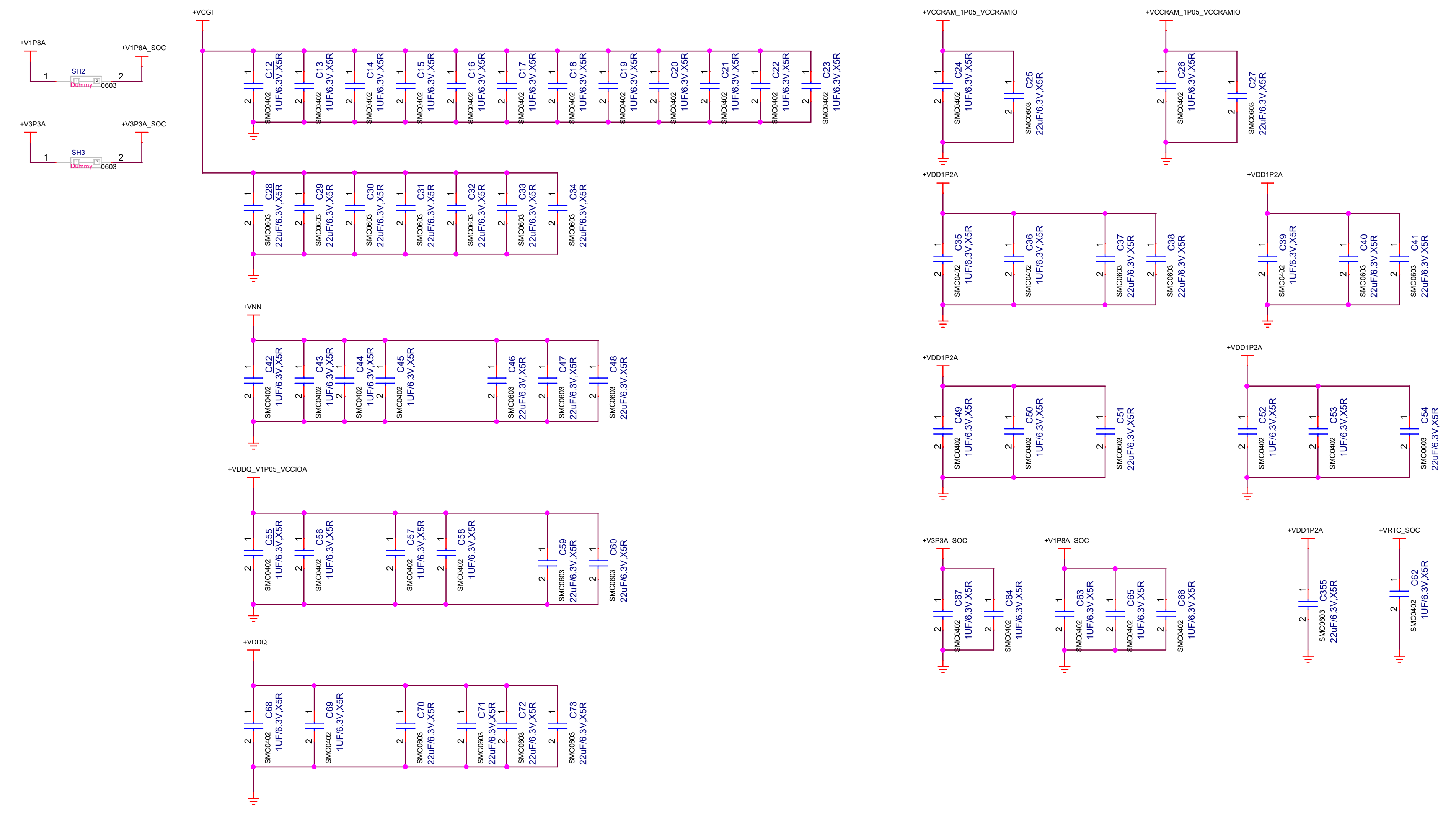
Title
ODROID-H2

Size | Document Number | Rev
A

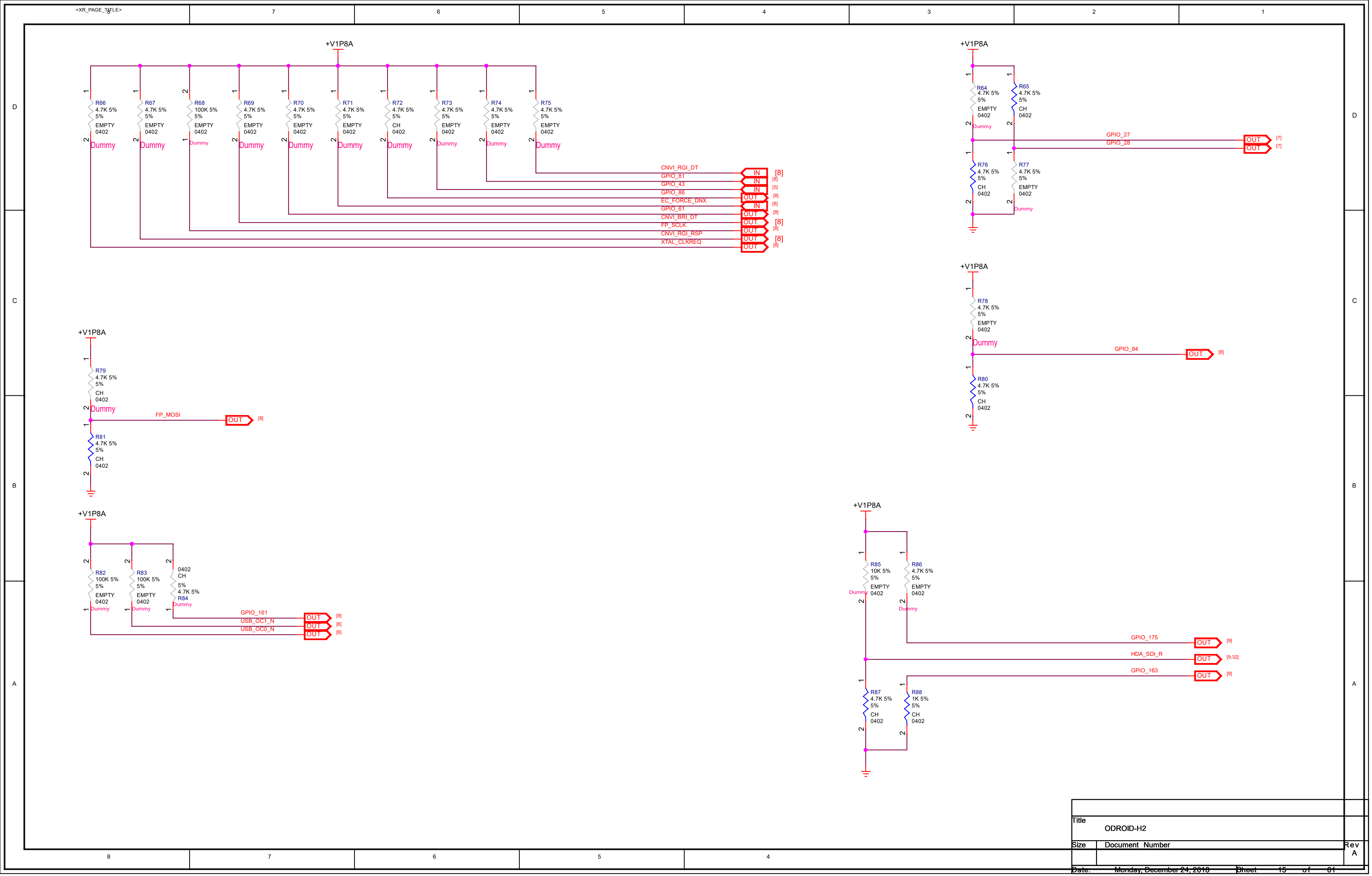
Date: Monday, December 24, 2018 Sheet 12 of 61



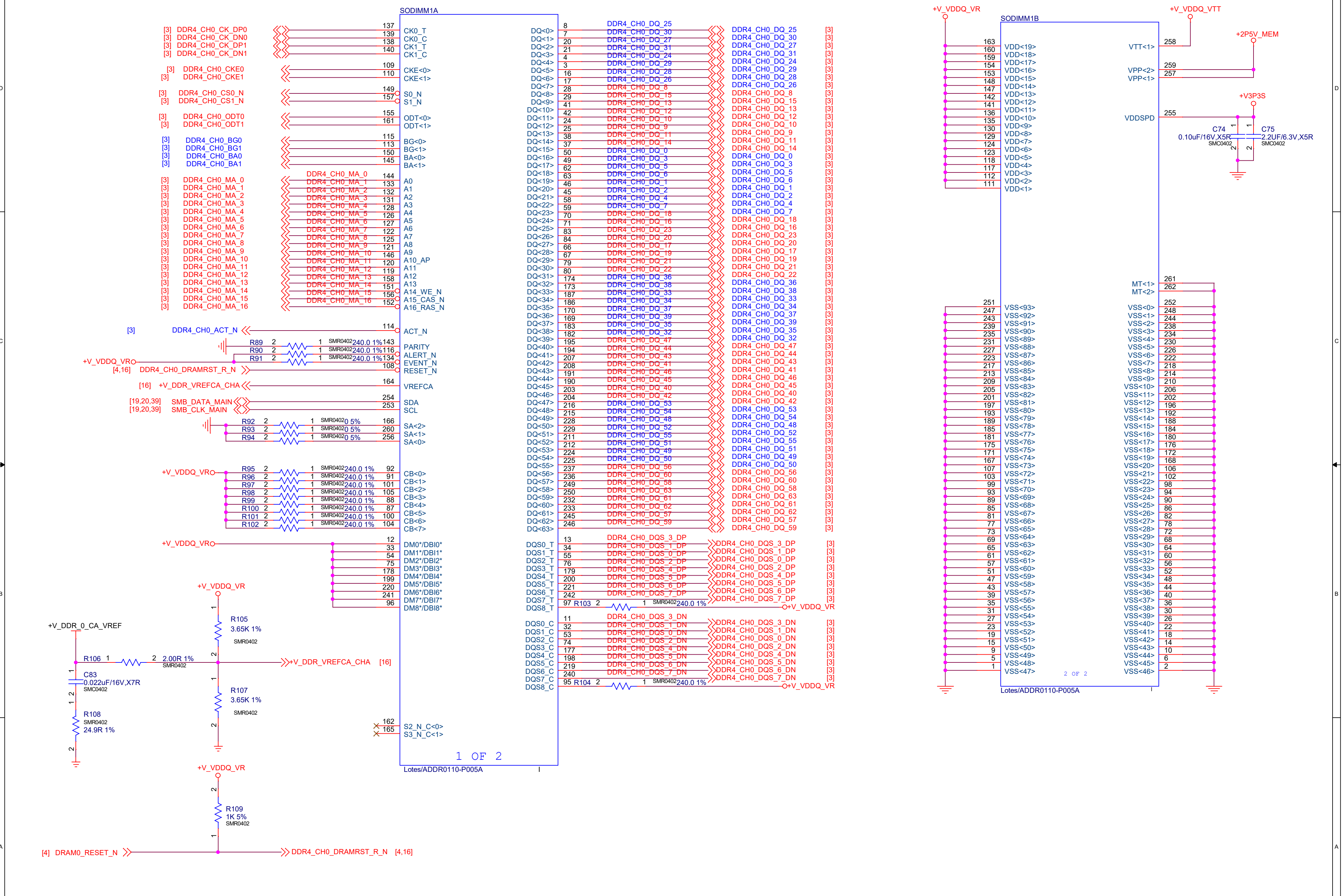
Title	ODROID-H2
Size	Document Number
Rev	A
Date: Monday, December 24, 2018	Sheet 13 of 81



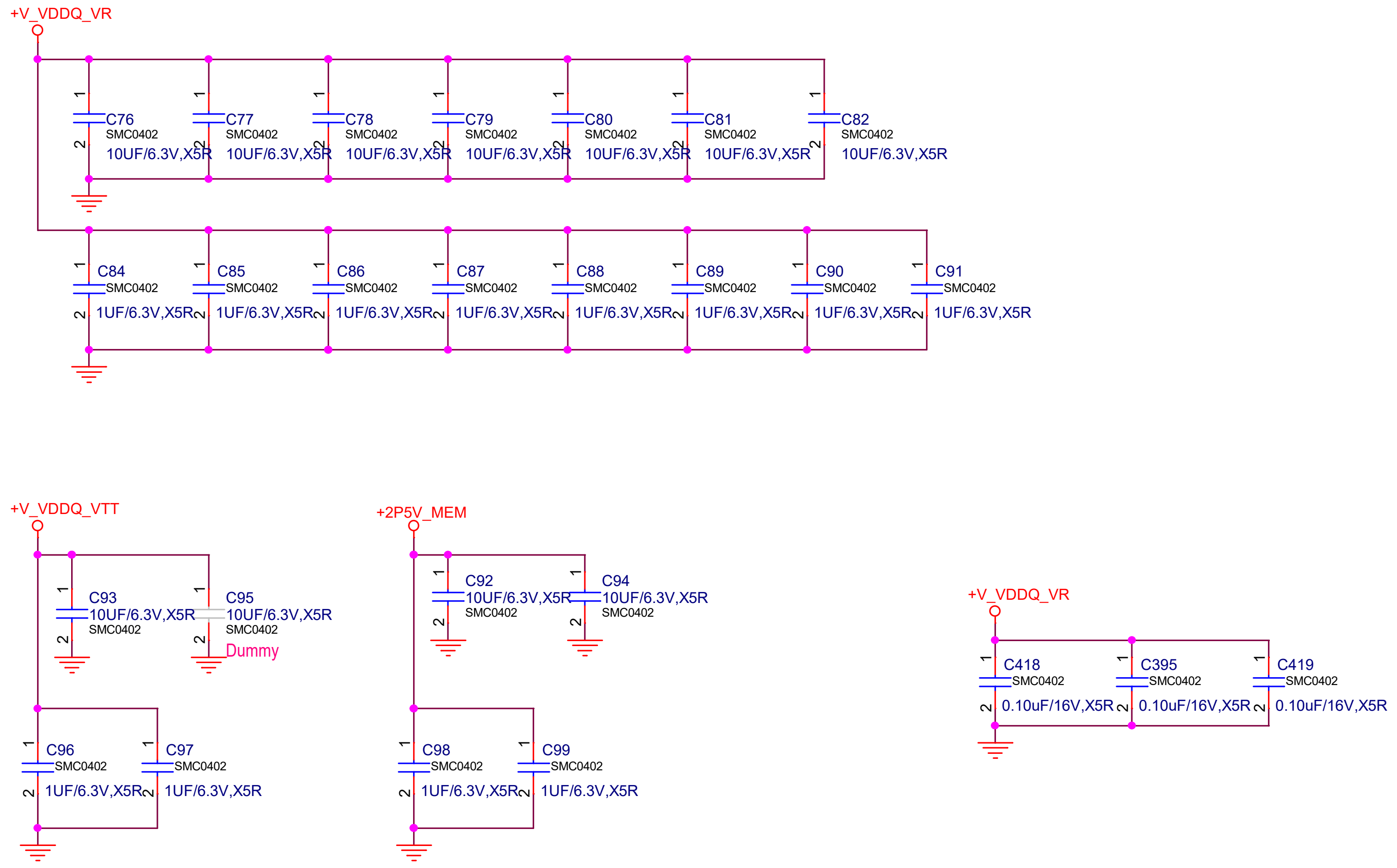
Title	ODROID-H2		
Size	Document Number		Rev A
Date:	Monday, December 24, 2018	Sheet 14	of 61



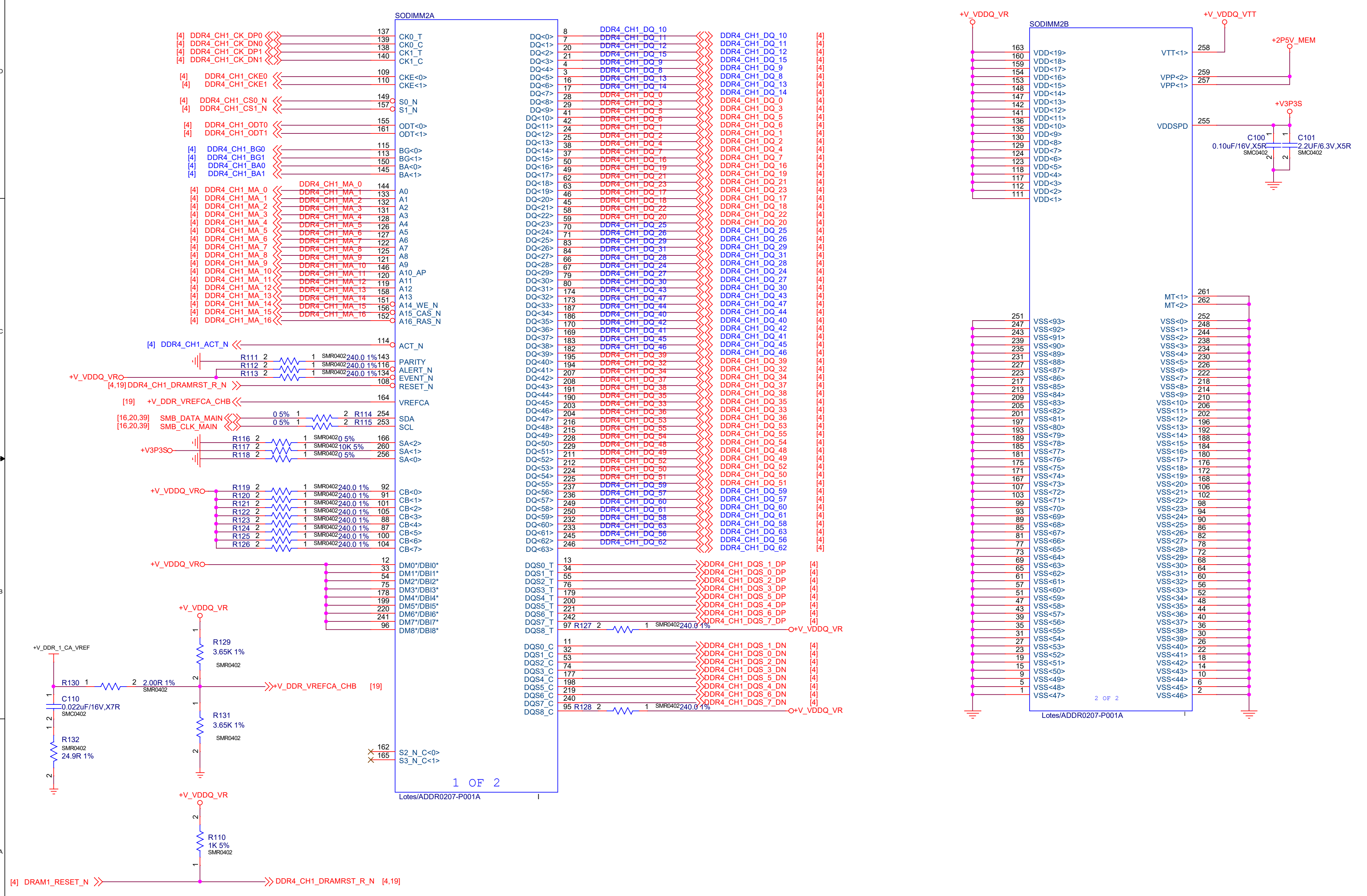
<XR_PAGE_TITLE>
+V1P8A
R66 4.7K 5% 5% EMPTY 0402 Dummy
R67 4.7K 5% 5% EMPTY 0402 Dummy
R68 100K 5% 5% EMPTY 0402 Dummy
R69 4.7K 5% 5% EMPTY 0402 Dummy
R70 4.7K 5% 5% EMPTY 0402 Dummy
R71 4.7K 5% 5% EMPTY 0402 Dummy
R72 4.7K 5% 5% CH 0402 Dummy
R73 4.7K 5% 5% EMPTY 0402 Dummy
R74 4.7K 5% 5% EMPTY 0402 Dummy
R75 4.7K 5% 5% EMPTY 0402 Dummy
CNVI_RGI_DT IN [8]
GPIO_81 IN [8]
GPIO_43 IN [5]
GPIO_86 OUT [8]
EC_FORCE_DNX IN [8]
GPIO_61 OUT [8]
CNVI_BRI_DT OUT [8]
FP_SCLK OUT [8]
CNVI_RGI_RSP OUT [8]
XTAL_CLKREQ OUT [8]
R64 4.7K 5% 5% EMPTY 0402 Dummy
R65 4.7K 5% 5% CH 0402
GPIO_27 OUT [7]
GPIO_28 OUT [7]
R76 4.7K 5% 5% CH 0402
R77 4.7K 5% 5% EMPTY 0402 Dummy
R78 4.7K 5% 5% EMPTY 0402 Dummy
GPIO_84 OUT [8]
R80 4.7K 5% 5% CH 0402
R79 4.7K 5% 5% CH 0402 Dummy
FP_MOSI OUT [8]
R81 4.7K 5% 5% CH 0402
R82 100K 5% 5% EMPTY 0402 Dummy
R83 100K 5% 5% EMPTY 0402 Dummy
R84 0402 CH 5% 4.7K 5% Dummy
GPIO_161 OUT [9]
USB_OC1_N OUT [6]
USB_OC0_N OUT [6]
R85 10K 5% 5% EMPTY 0402 Dummy
R86 4.7K 5% 5% EMPTY 0402 Dummy
GPIO_175 OUT [9]
HDA_SDI_R OUT [9,32]
GPIO_163 OUT [9]
R87 4.7K 5% 5% CH 0402
R88 1K 5% 5% CH 0402
Title ODROID-H2
Size Document Number
Rev A
Date: Monday, December 24, 2018 Sheet 15 of 61



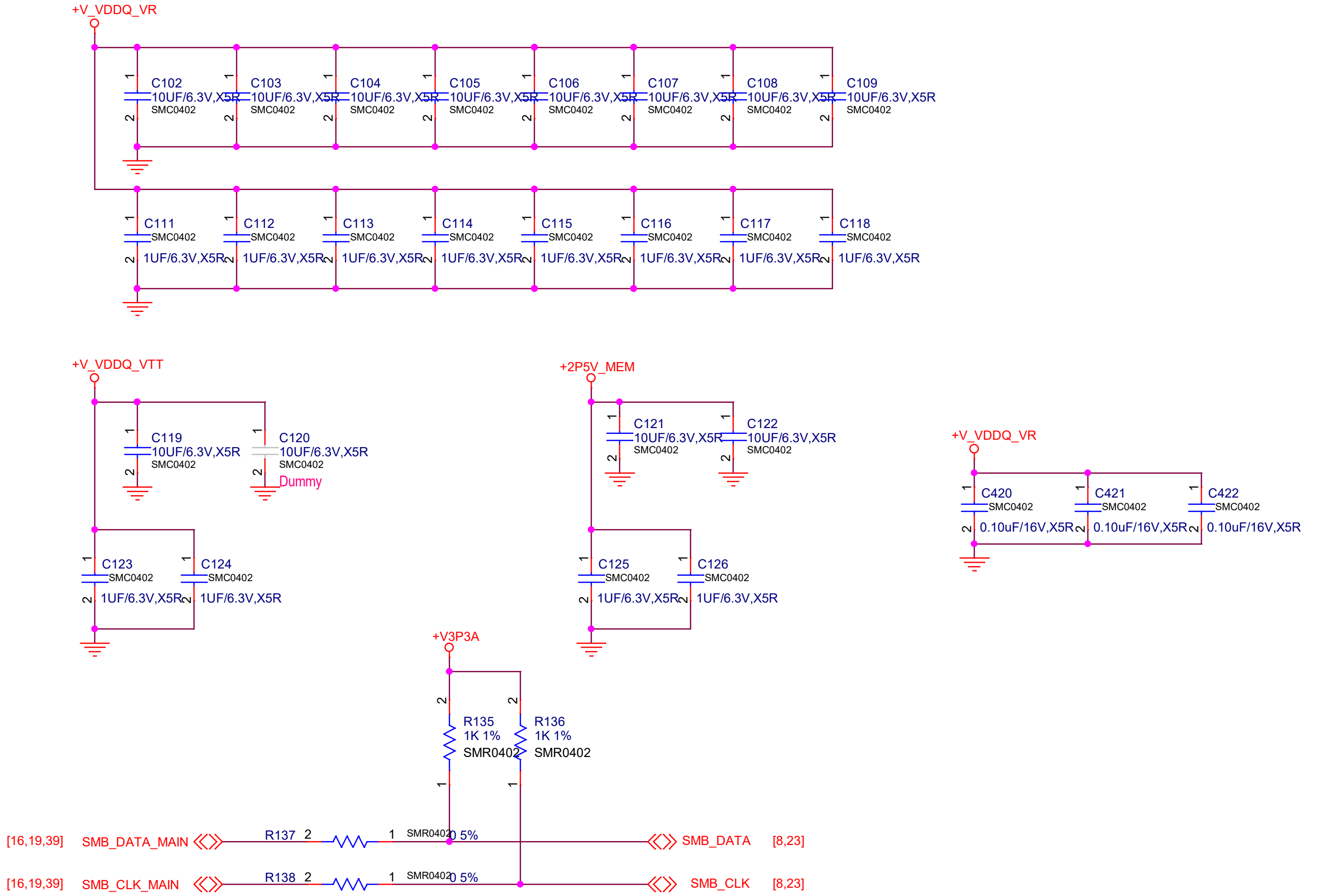
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 16 of 61	



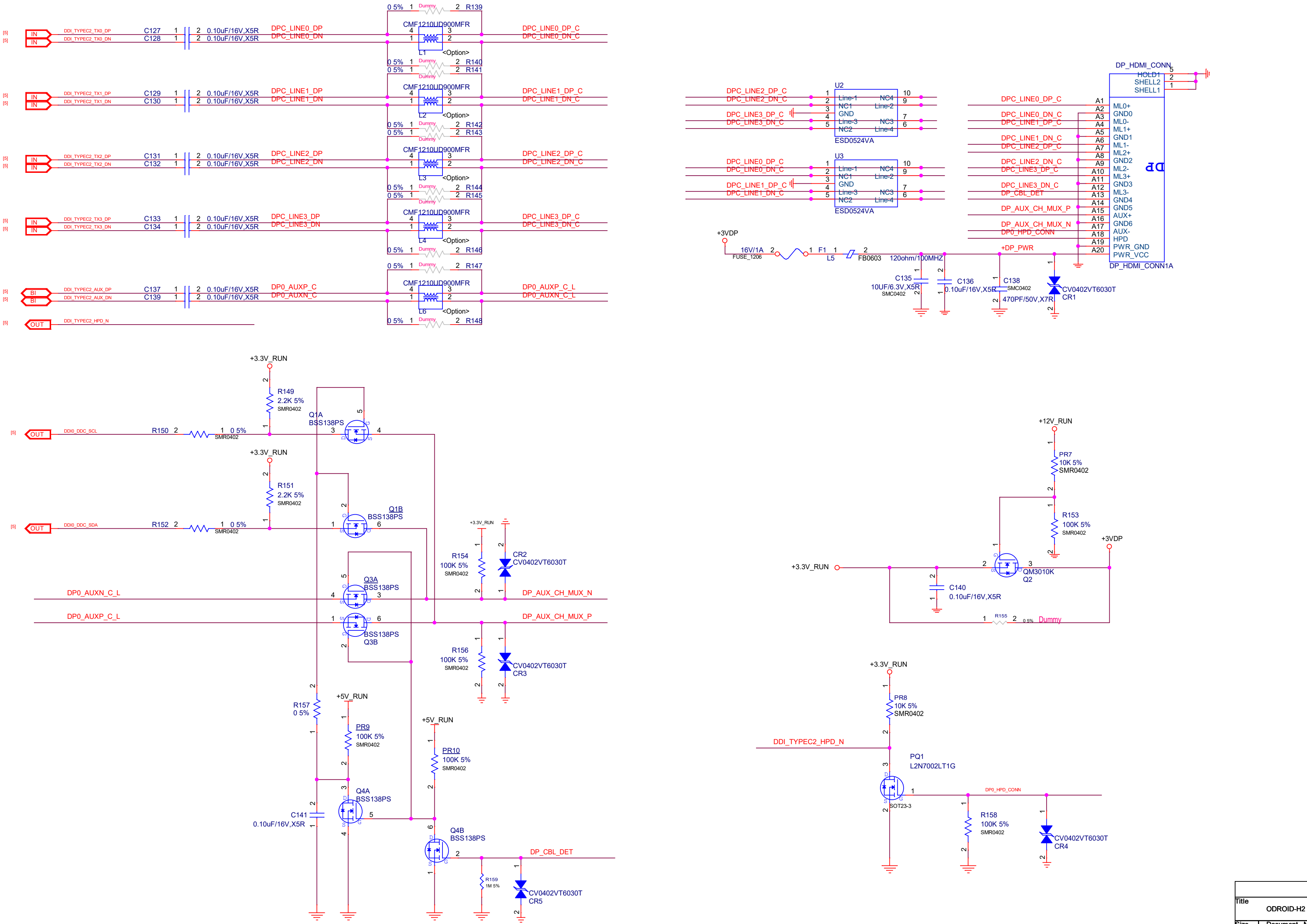
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 17 of 61	



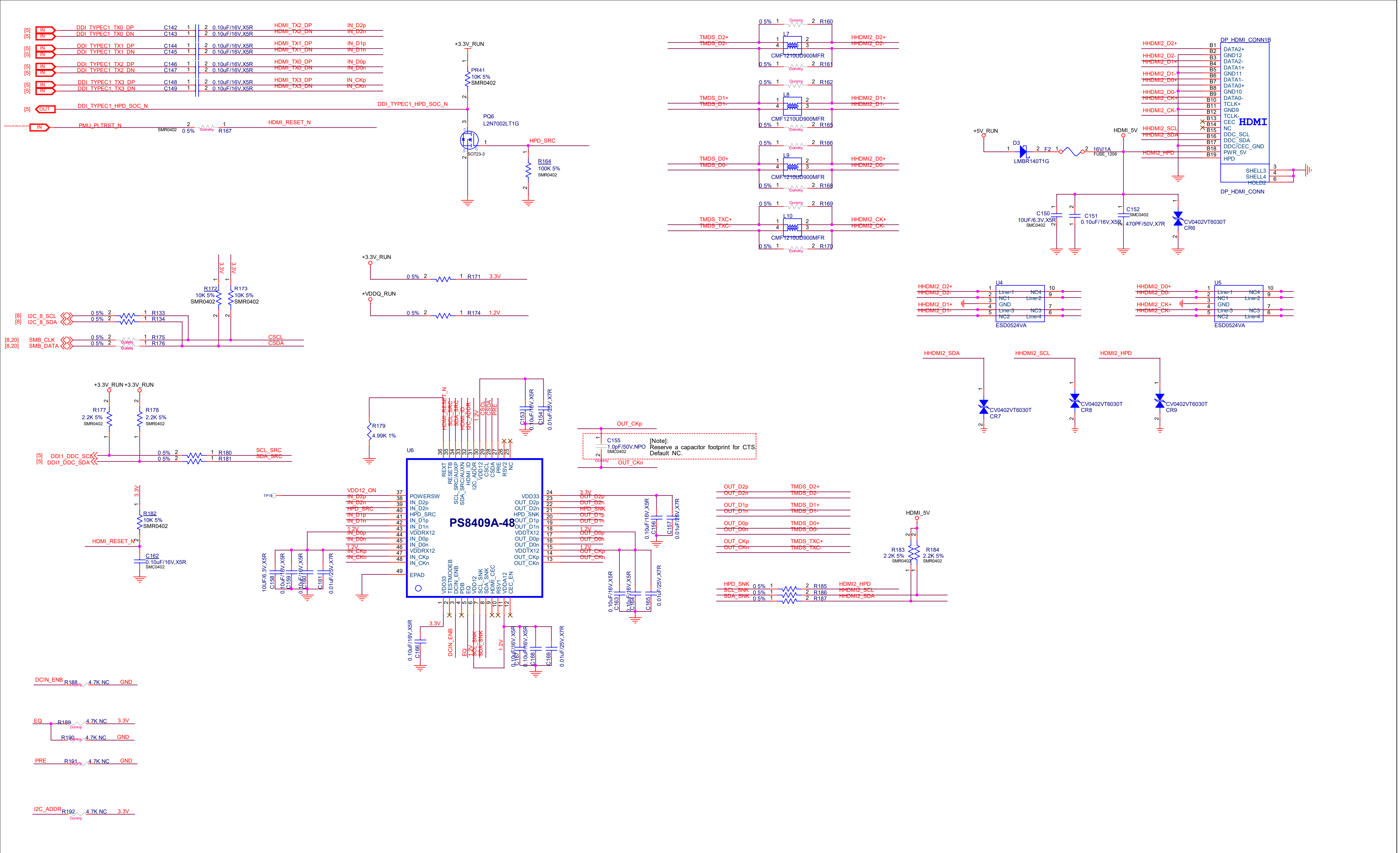
Title	ODROID-H2	
Size	Document Number	Rev A
Date:	Monday, December 24, 2018	Sheet 18 of 61



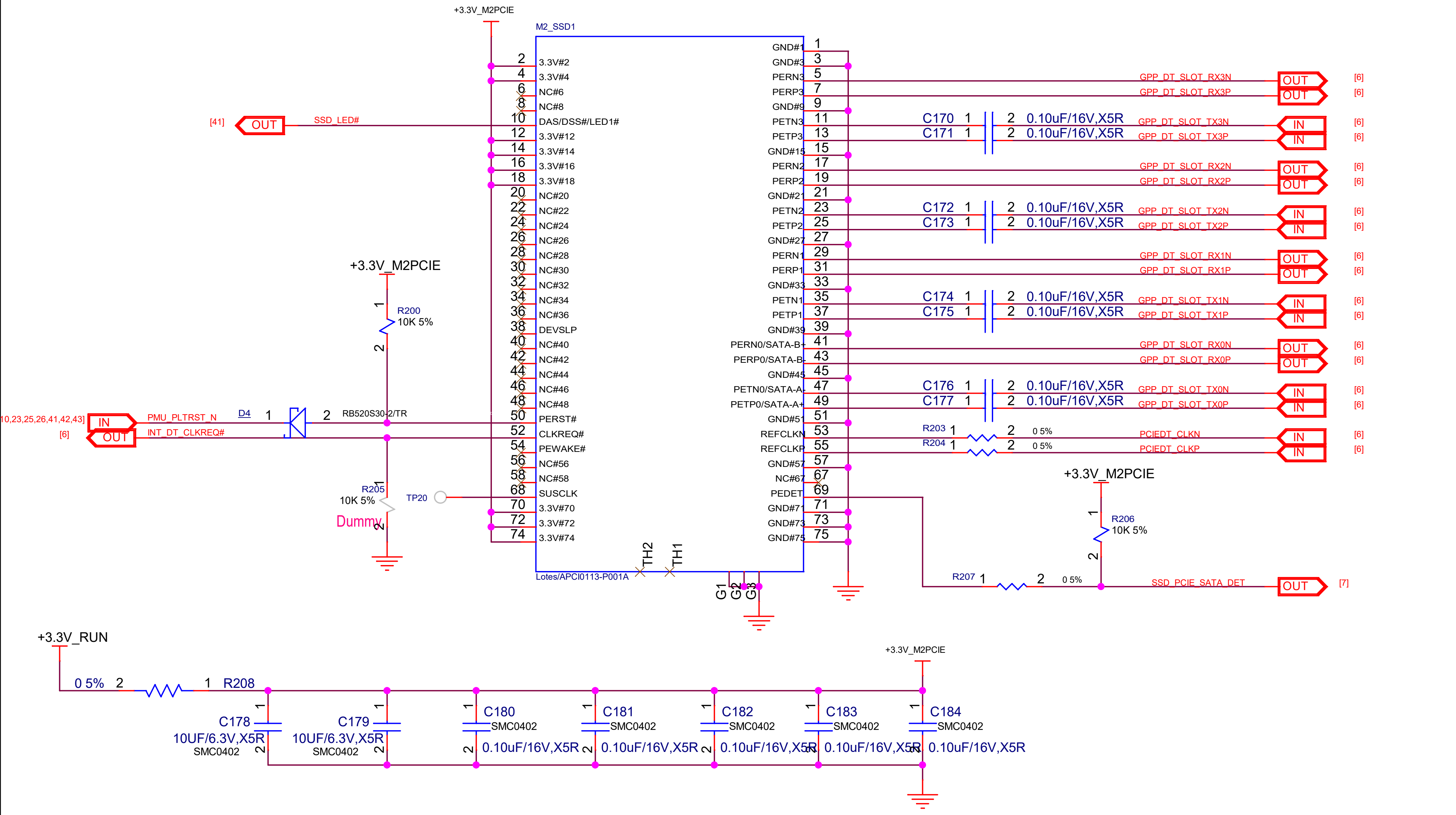
Title	ODROID-H2	
Size B	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 19 of 61	



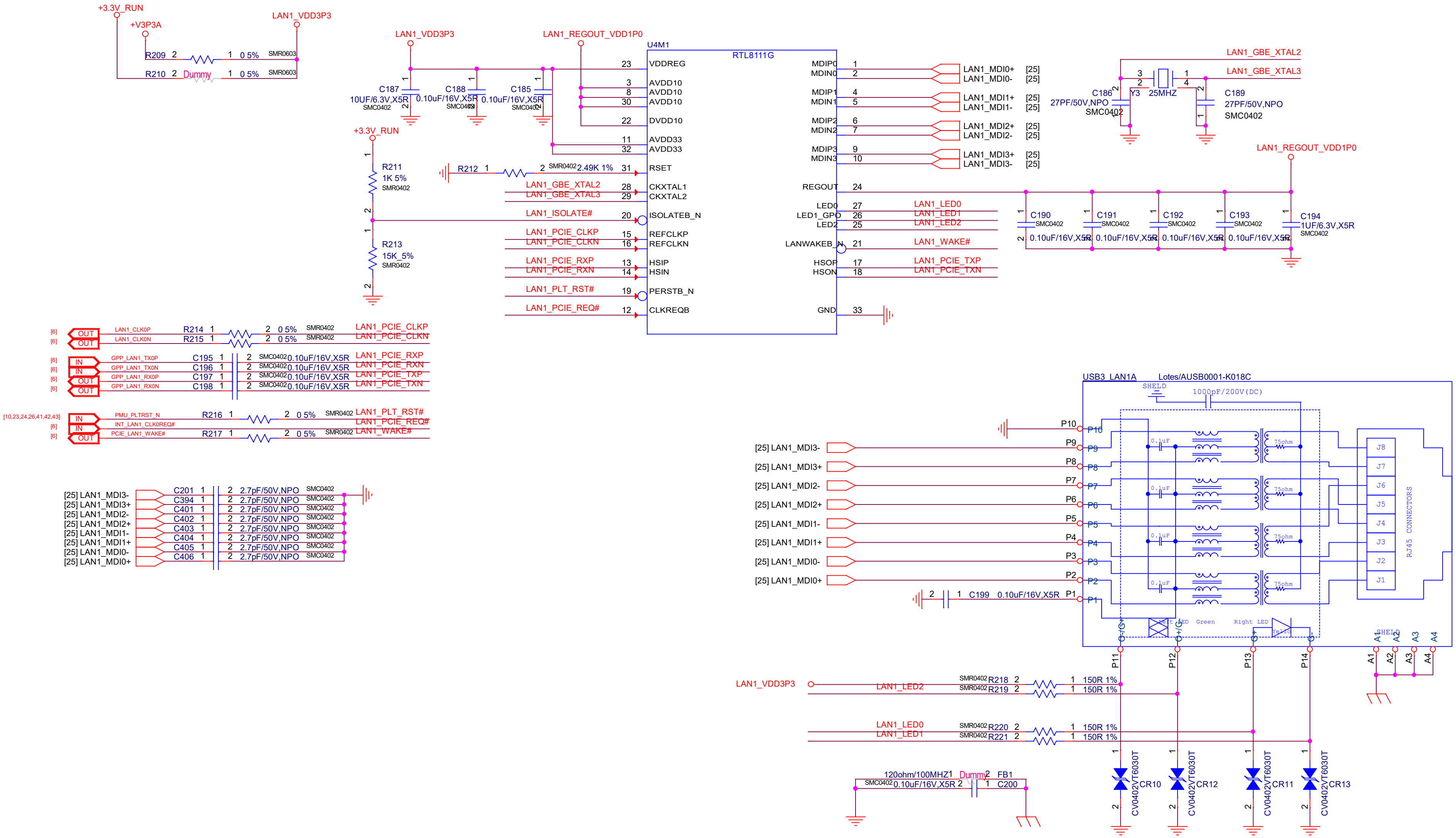
Title	ODROID-H2		
Size	Document Number		Rev A
Date:	Monday, December 24, 2018	Sheet 20 of 61	



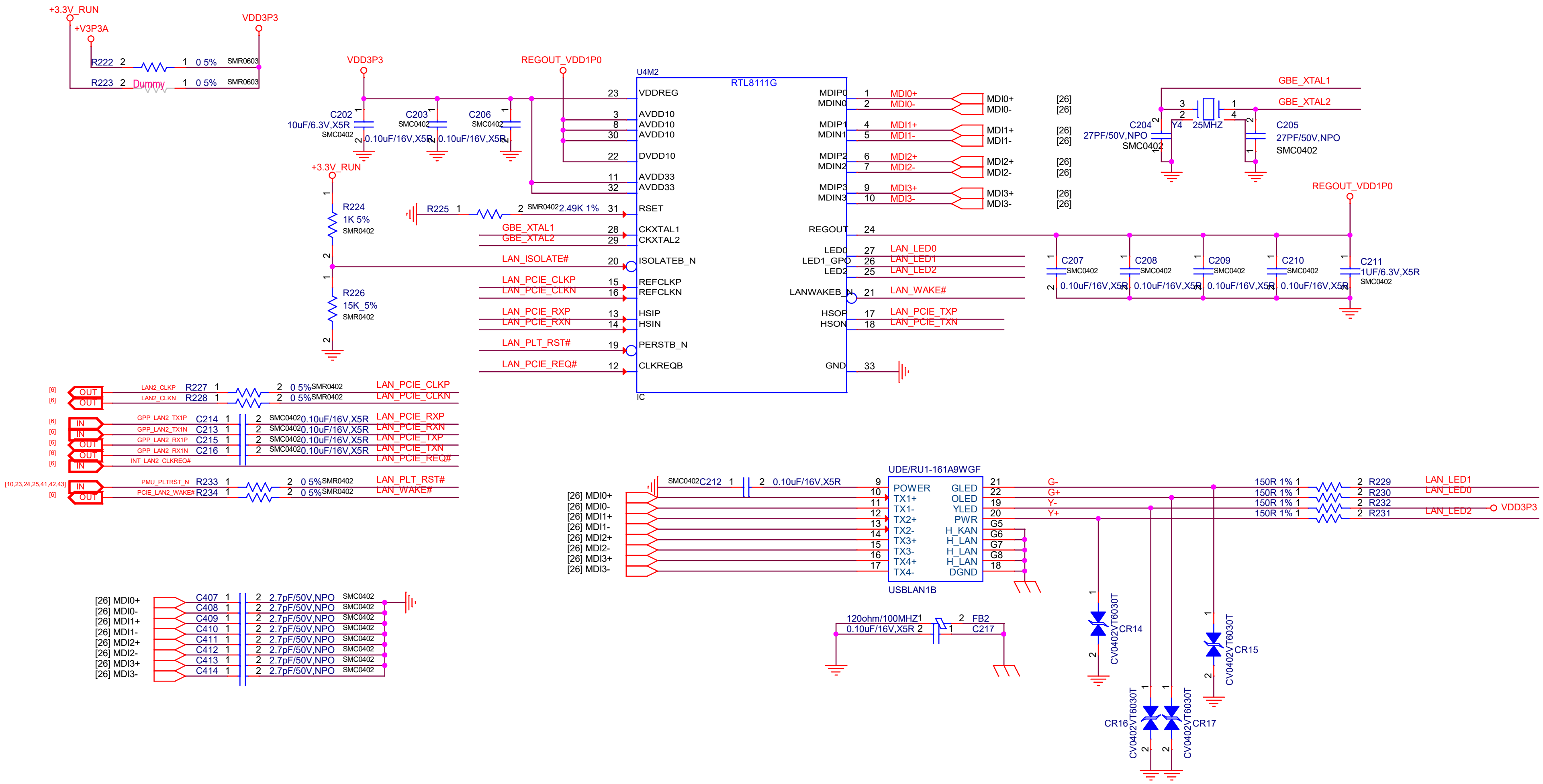
Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	21 of 61



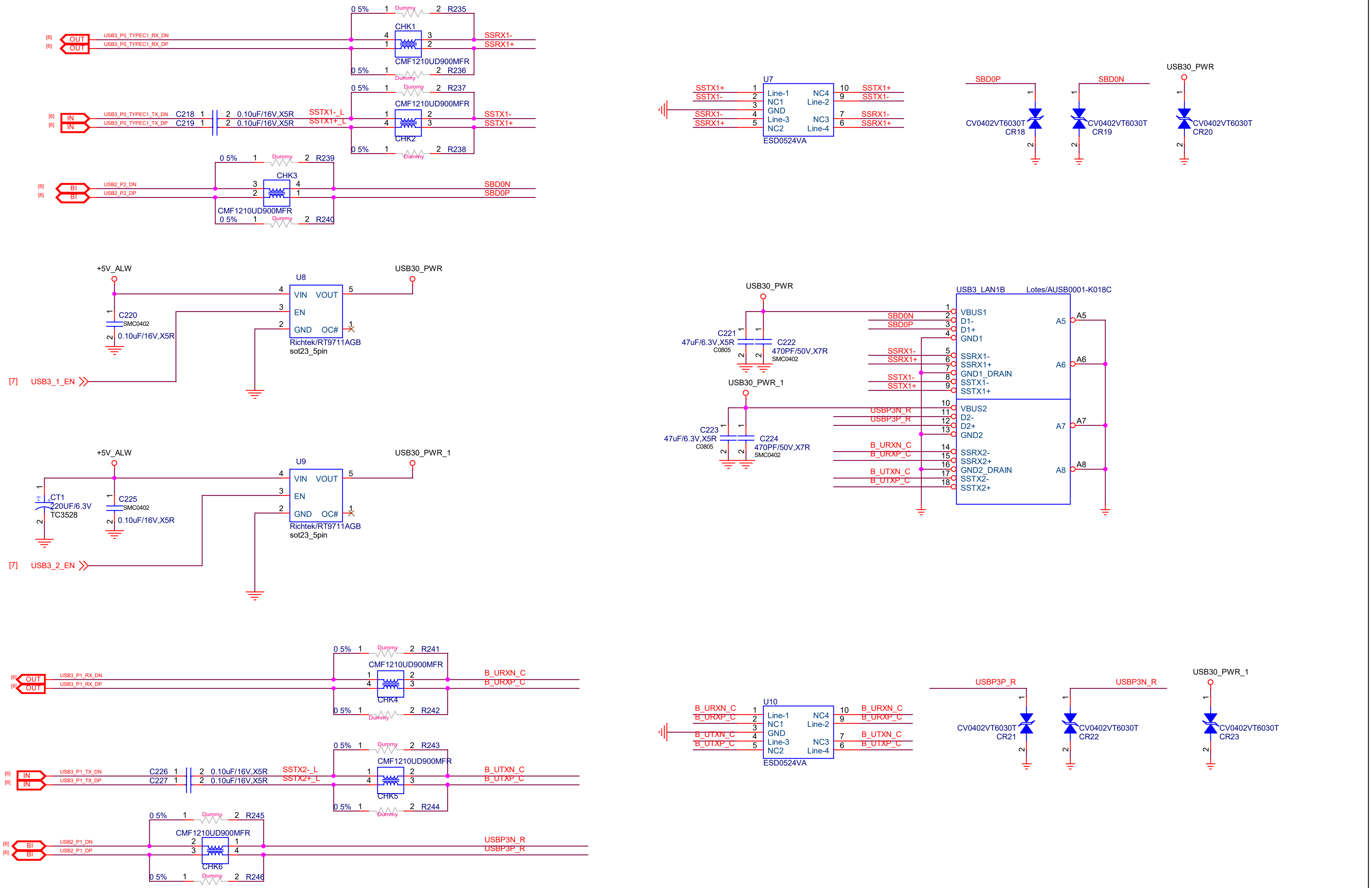
Title	ODROID-H2	
Size	Document Number	Rev A
Date:	Monday, December 24, 2018	Sheet 22 of 61



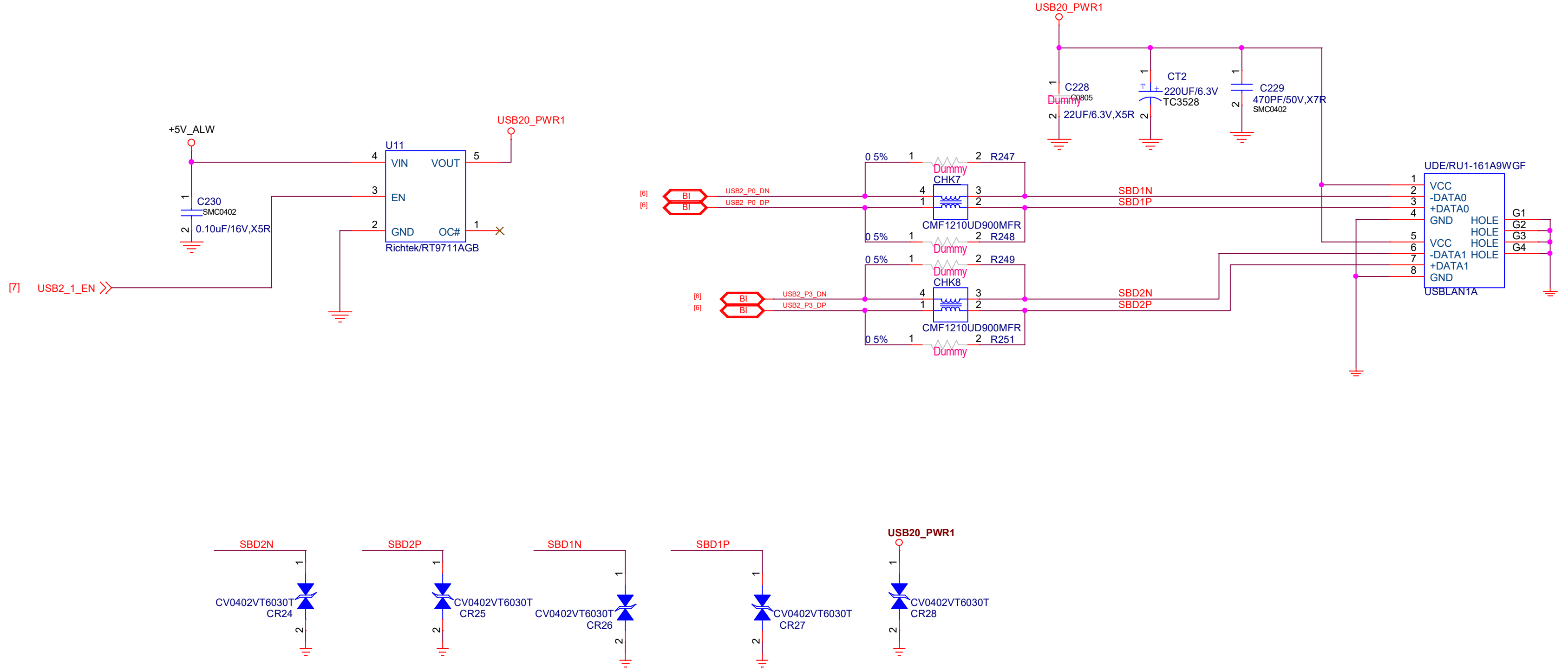
Title	ODROID-H2		
Size	Document Number		Rev A
Date:	Monday, December 24, 2018	Sheet 23 of 61	



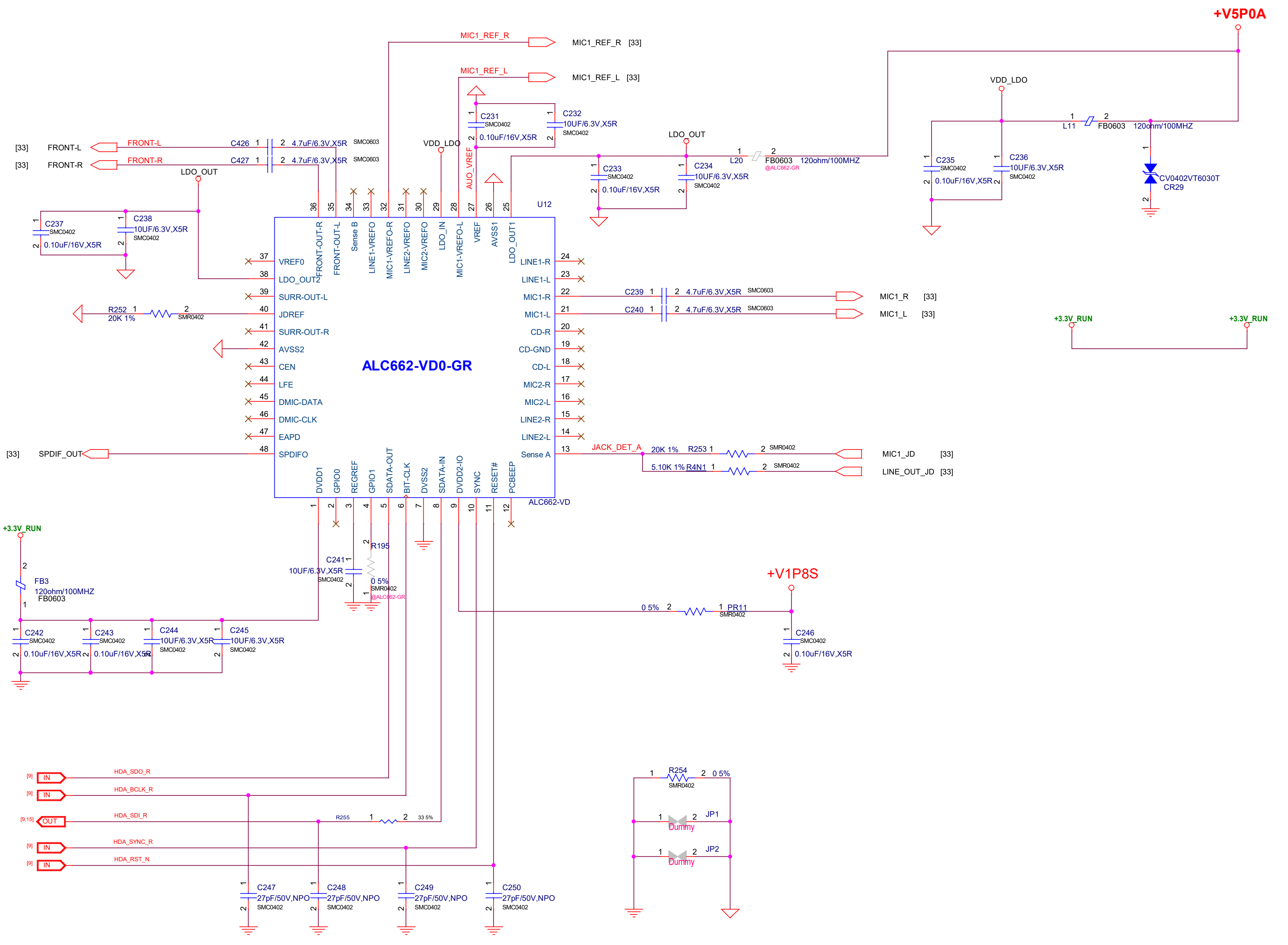
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 24 of 61	



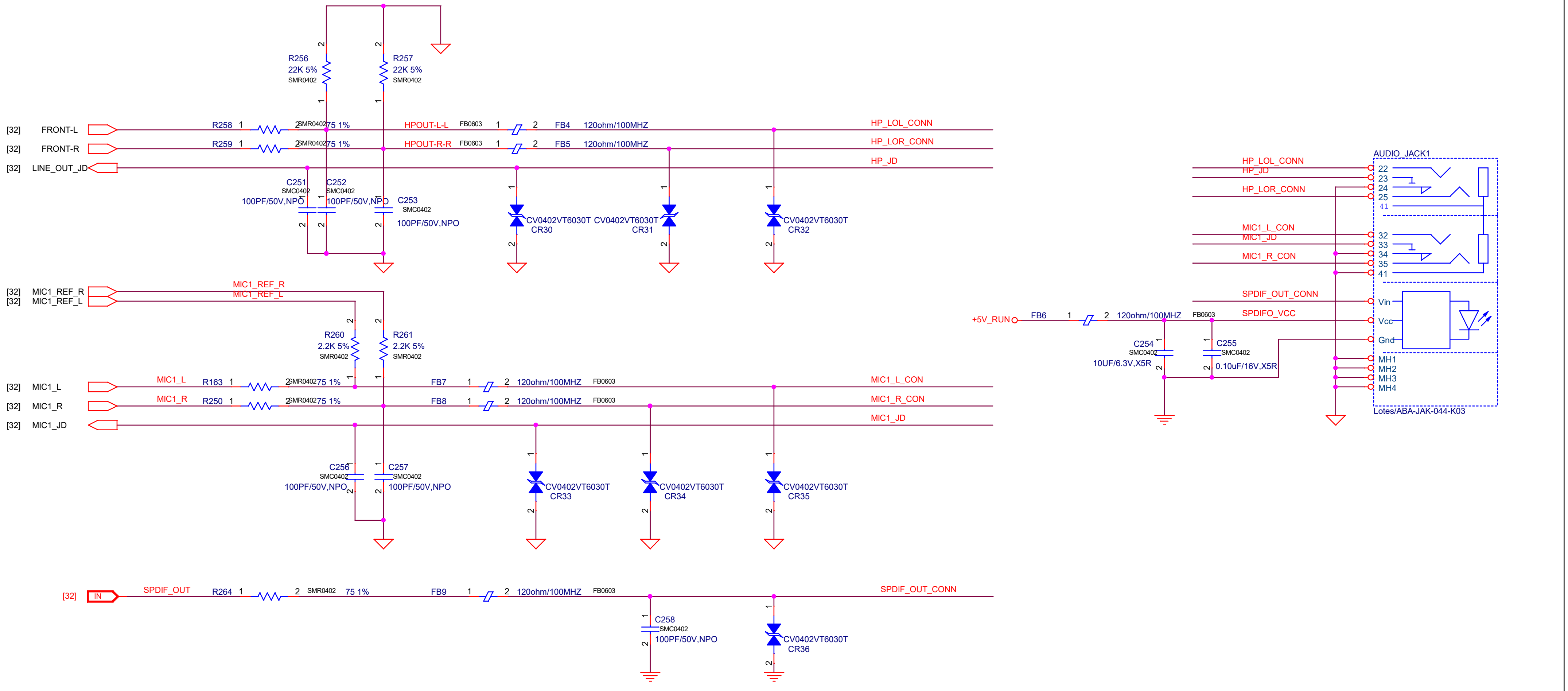
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 25 of 61	



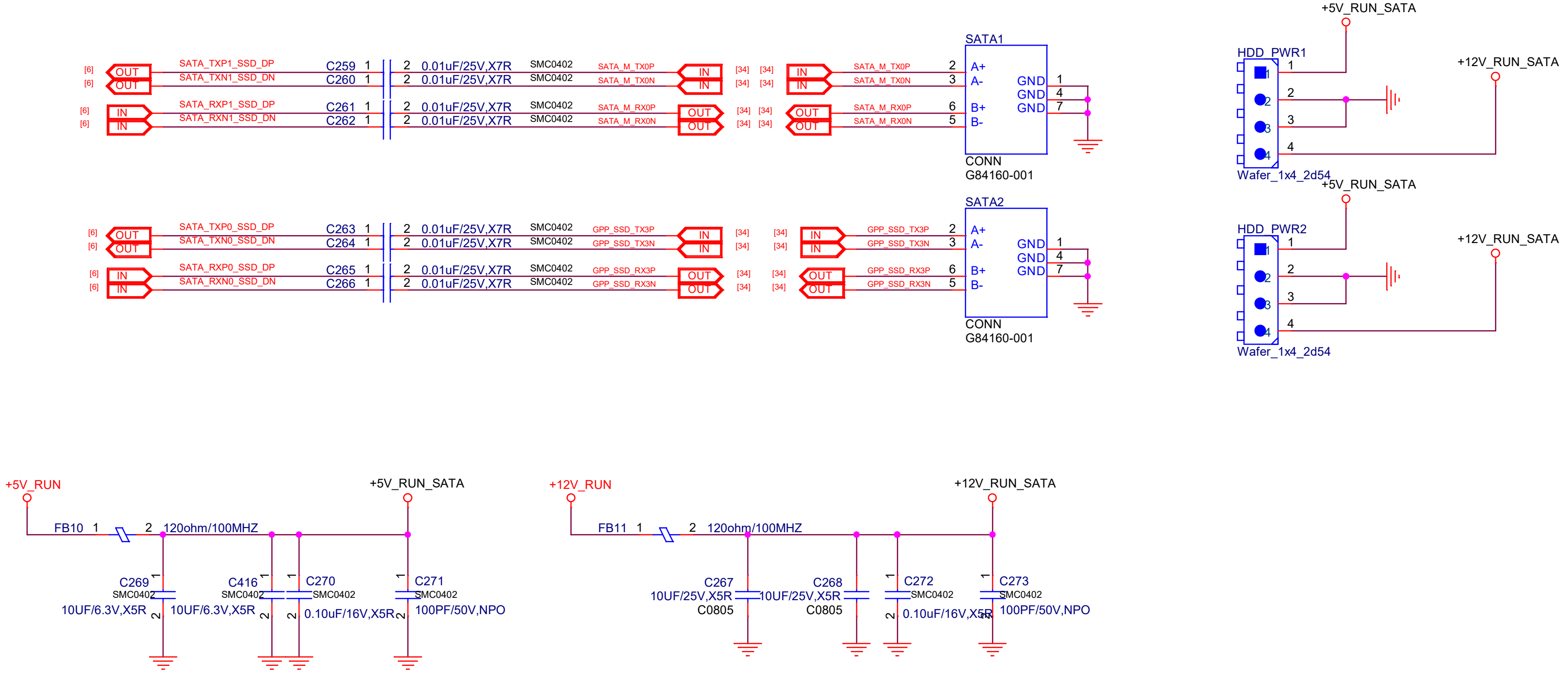
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 26 of 61	



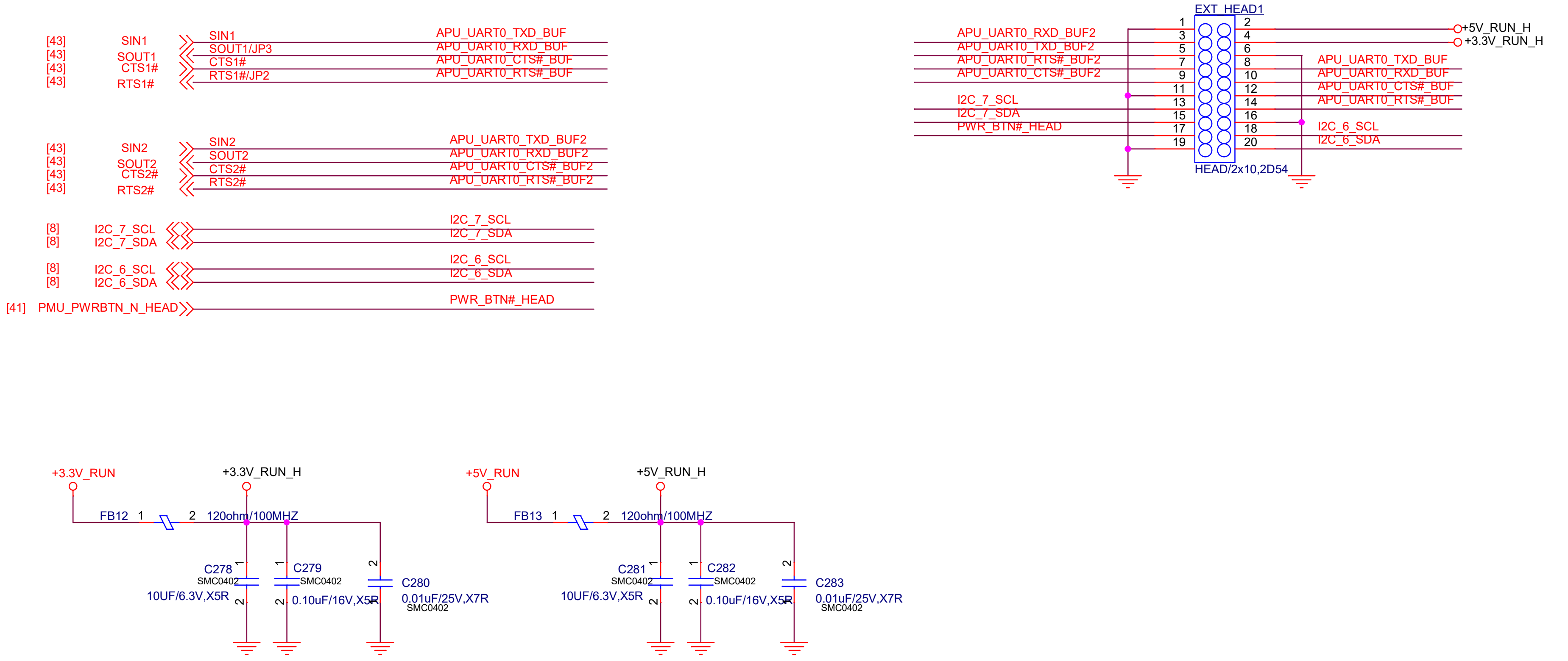
Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	27 of 61



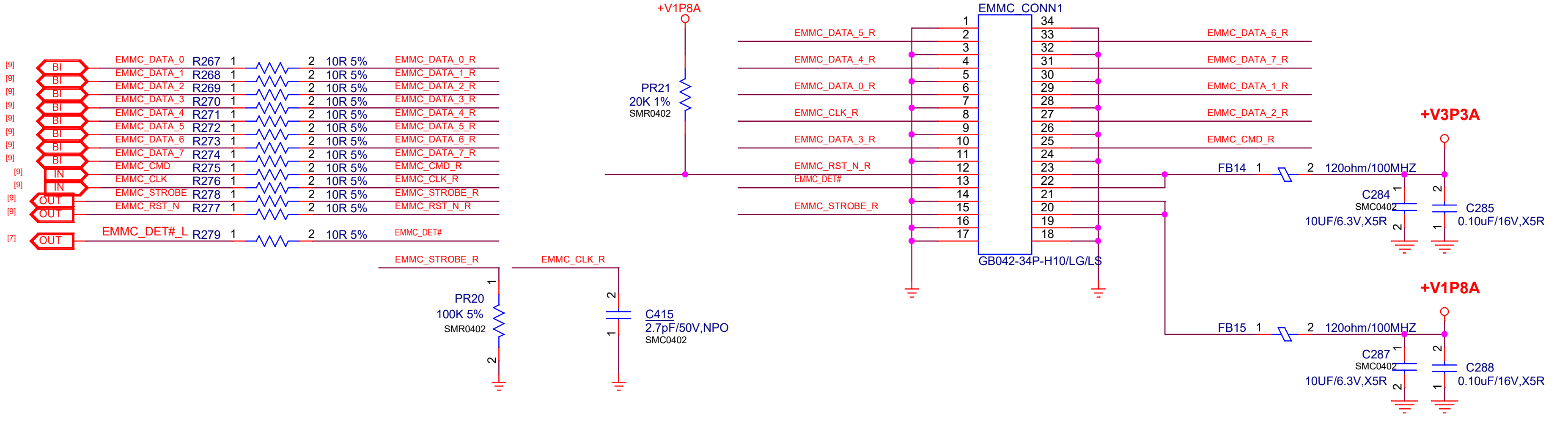
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 28 of 61	



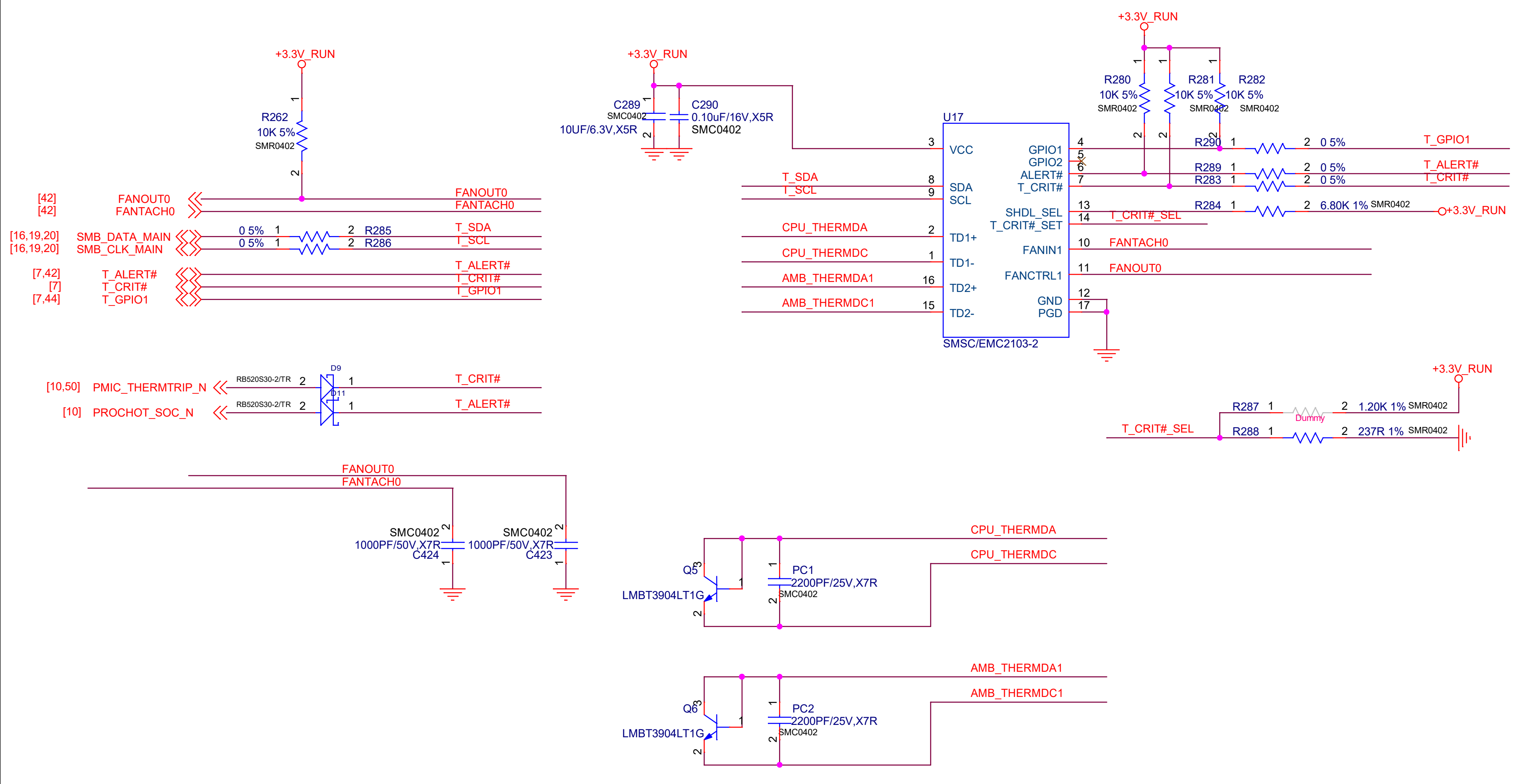
Title	ODROID-H2	
Size B	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 29 of 61	



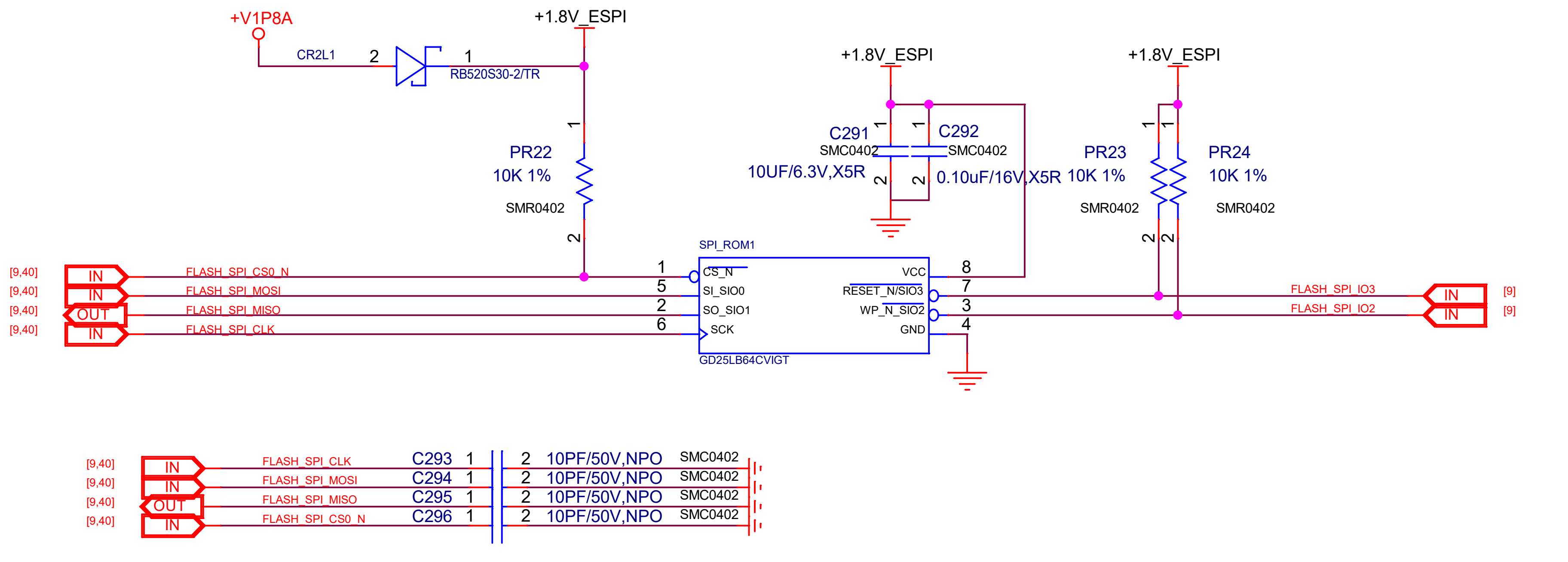
Title	ODROID-H2	
Size	Document Number	Rev A
Date:	Monday, December 24, 2018	Sheet 30 of 61



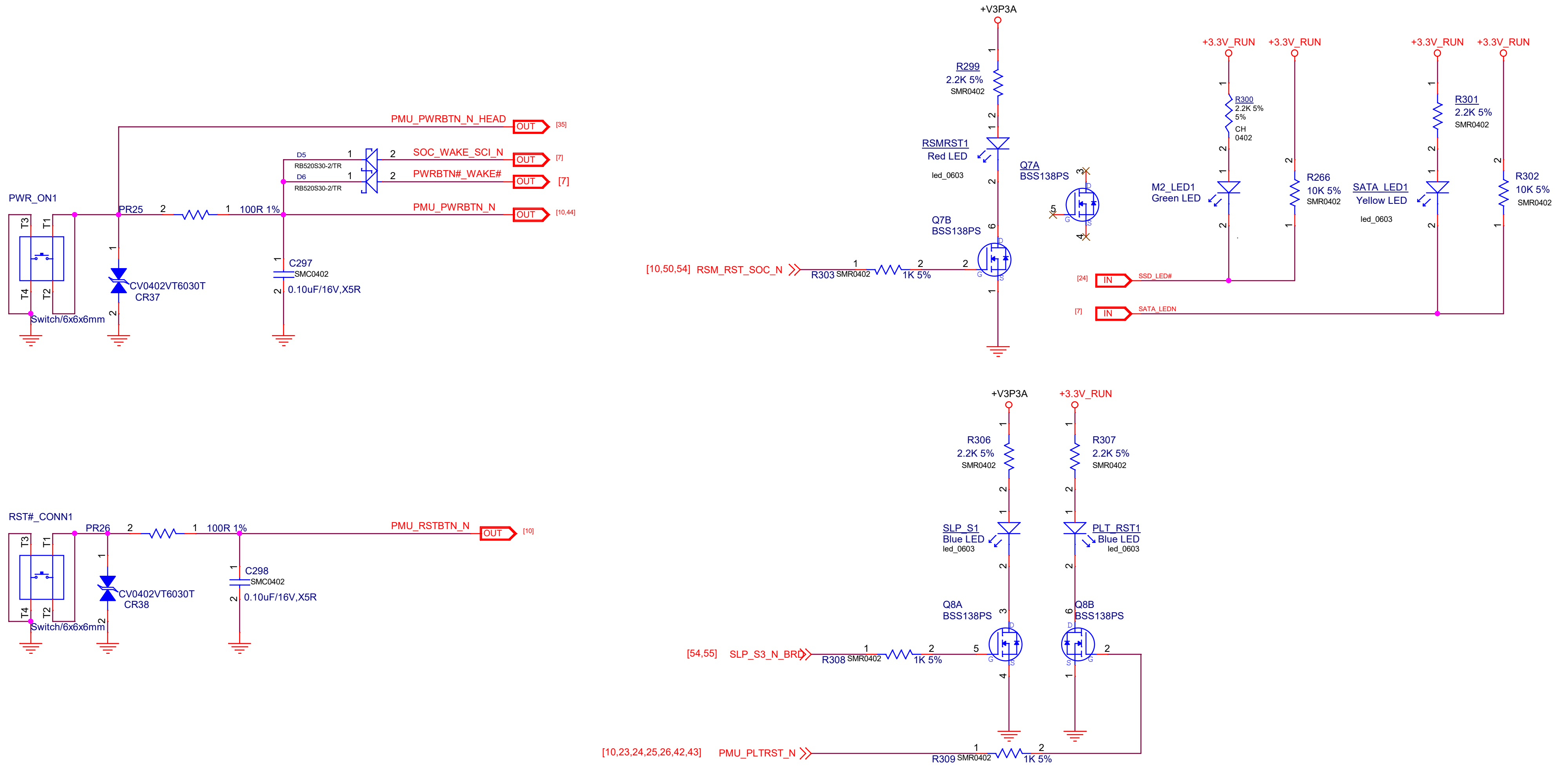
Title	ODROID-H2		
Size	Document Number		Rev A
Date:	Monday, December 24, 2018	Sheet 31	of 61



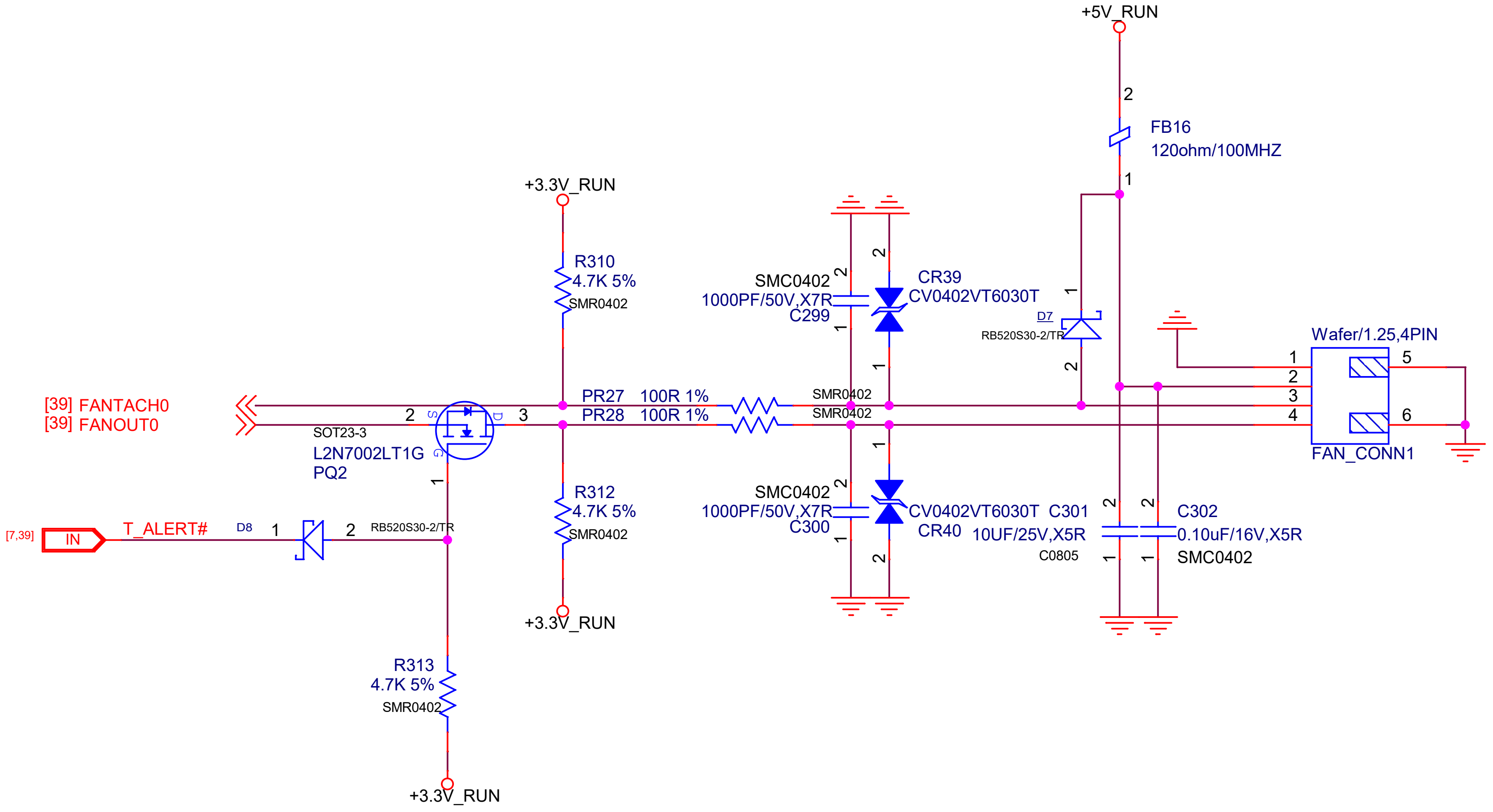
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 32 of 61	



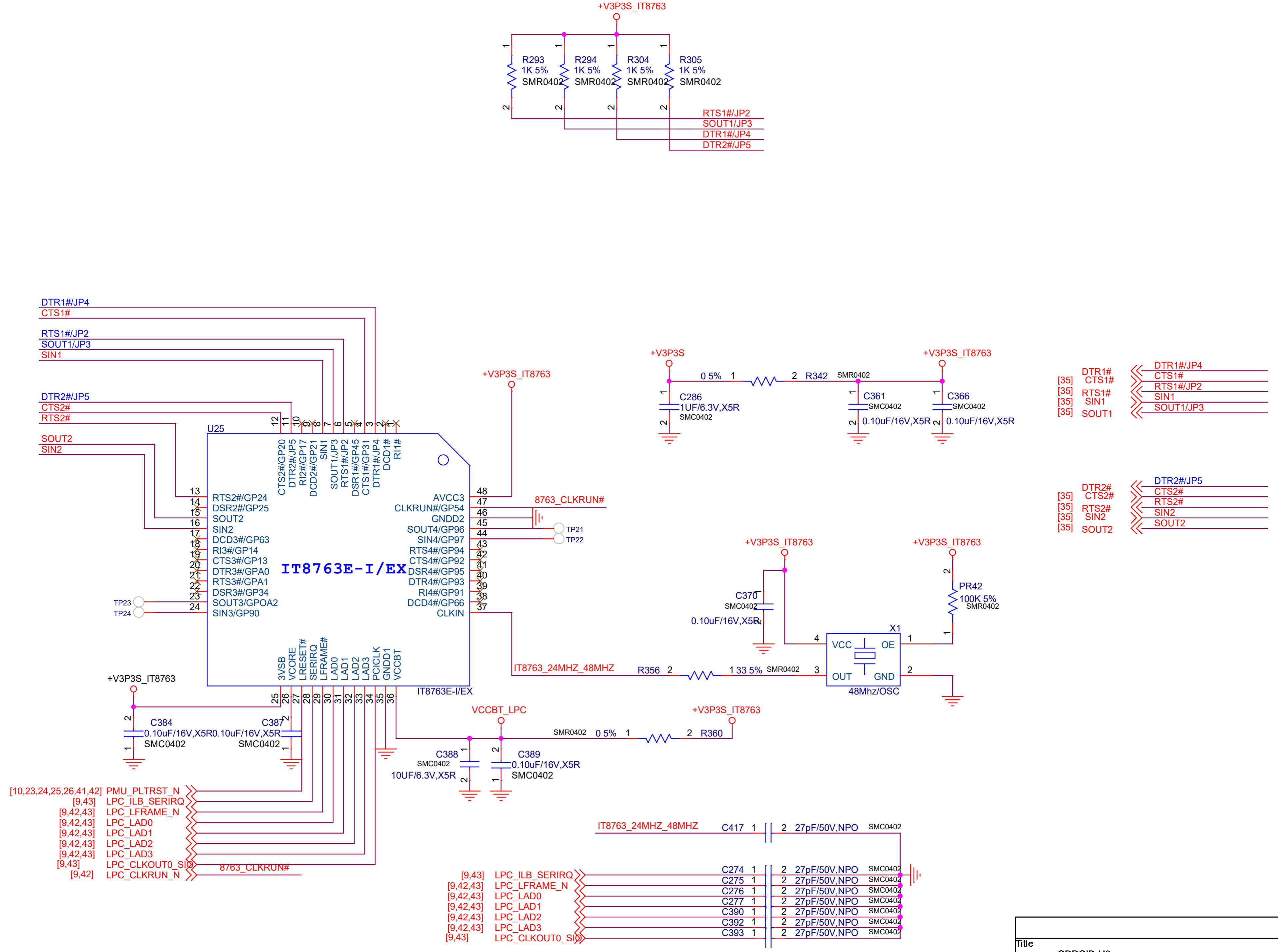
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 33 of 61	



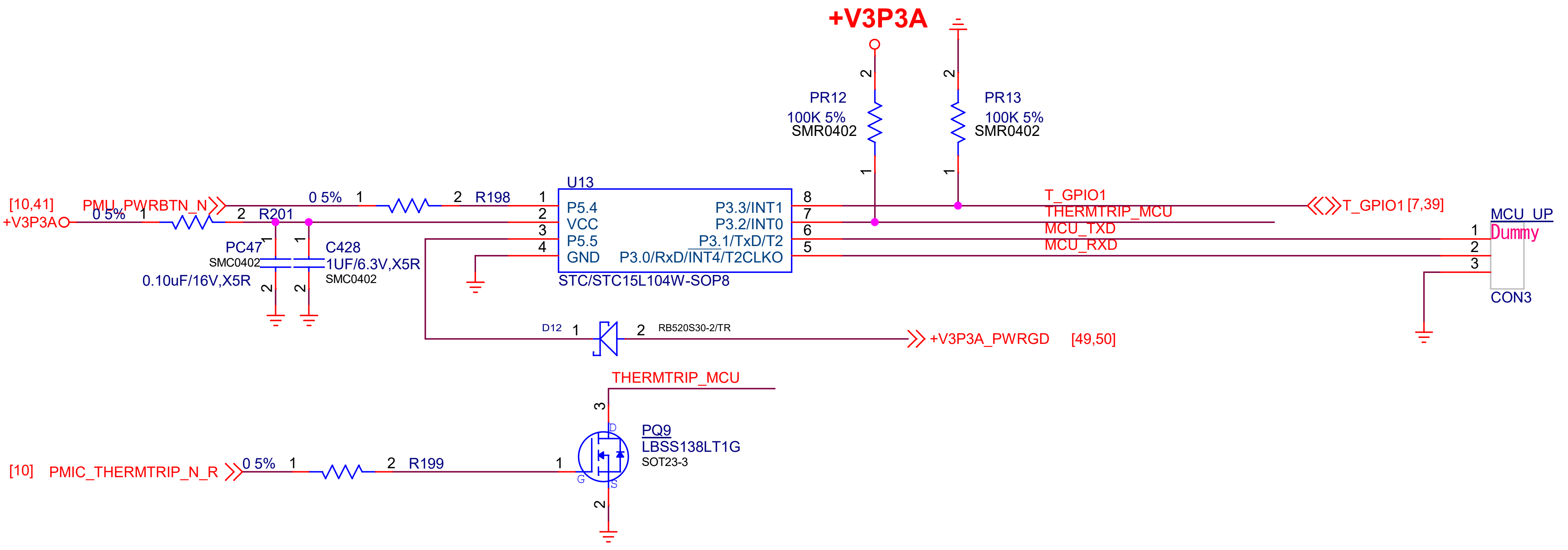
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 34 of 61	



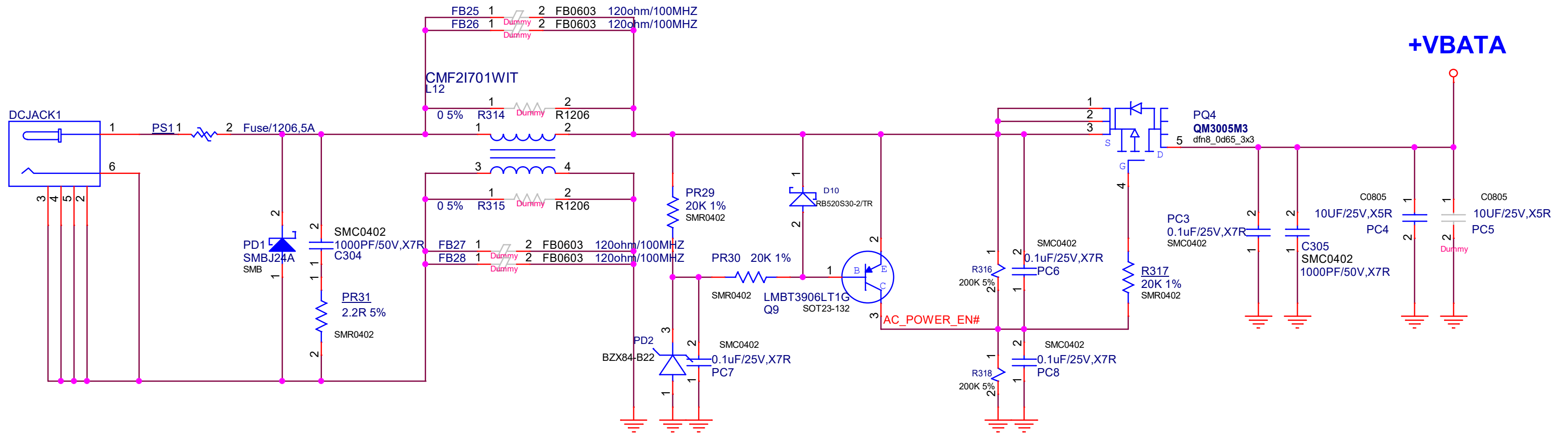
Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 35 of 61	



Title	ODROID-H2	
Size	Document Number	Rev A
Date:	Monday, December 24, 2018	Sheet 36 of 61



Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 37 of 61	

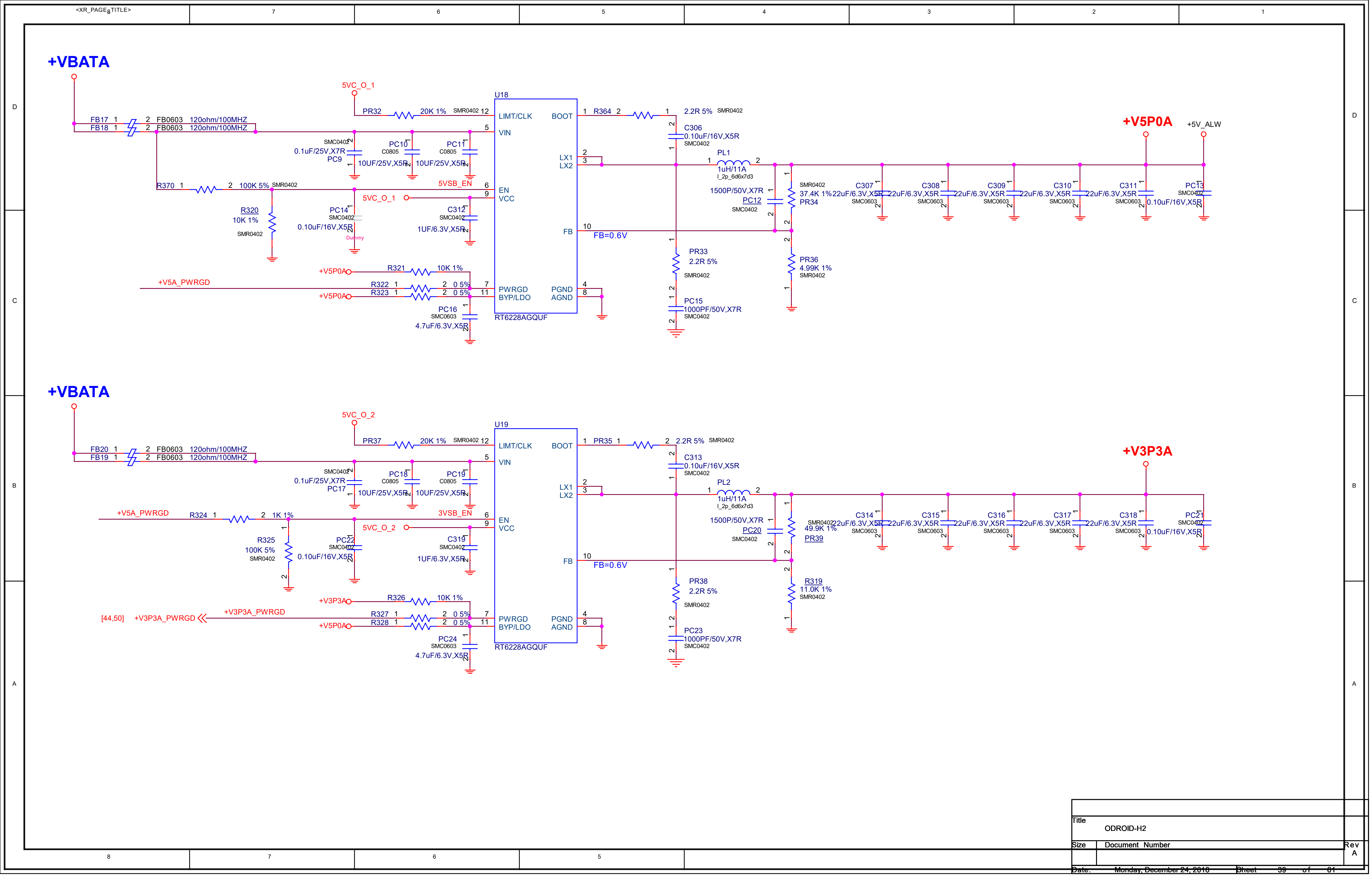


<XR_PAGE_TITLE>

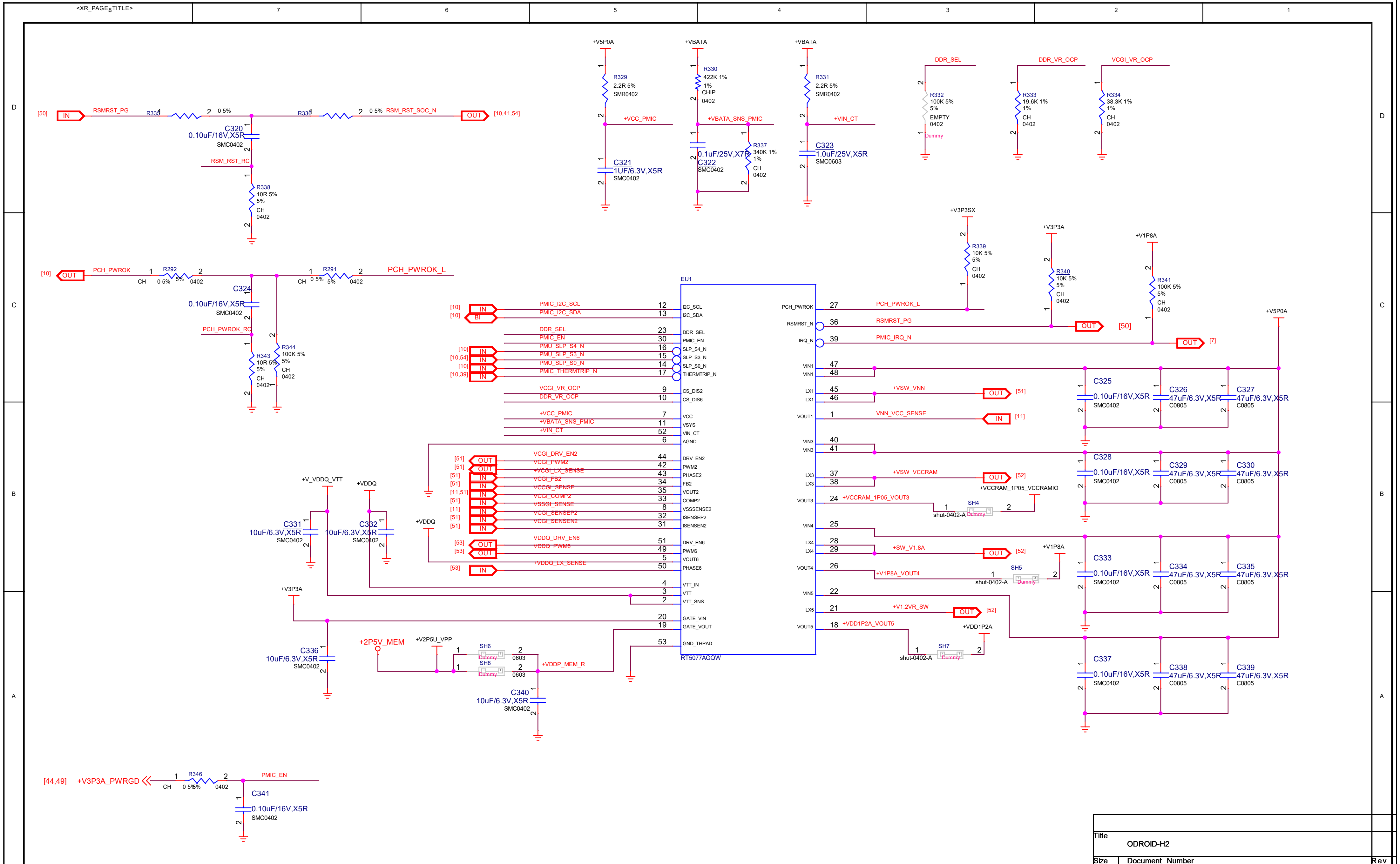
Title: ODROID-H2

Size | Document Number | Rev A

Date: Monday, December 24, 2018 | Sheet 38 of 61



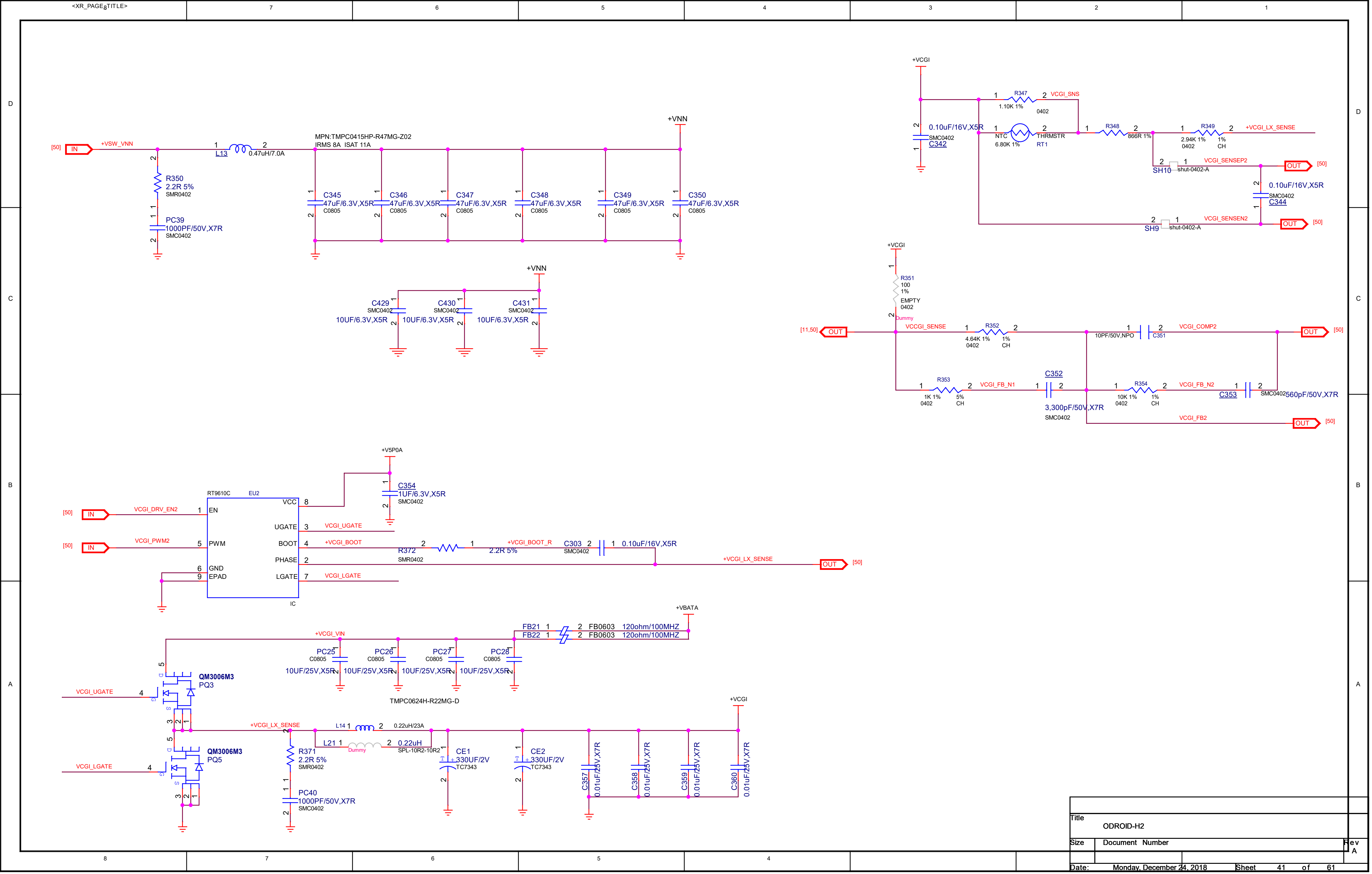
<XR_PAGE_TITLE>
+VBATA
5VC_O_1
U18
PR32
20K 1%
SMR0402
LIMT/CLK
BOOT
R364
2.2R 5%
VIN
FB17
FB18
FB0603
120ohm/100MHZ
C306
0.10uF/16V,X5R
SMC0402
+V5P0A
+5V_ALW
0.1uF/25V,X7R
PC9
PC10
PC11
C0805
10UF/25V,X5R
LX1
LX2
PL1
1uH/11A
l_2p_6d6x7d3
R370
100K 5%
5VSB_EN
EN
VCC
R320
10K 1%
PC14
0.10uF/16V,X5R
Dummy
C312
1UF/6.3V,X5R
1500P/50V,X7R
PC12
PR34
37.4K 1%
C307
C308
C309
C310
C311
PC13
22uF/6.3V,X5R
SMC0603
0.10uF/16V,X5R
FB
FB=0.6V
PR33
2.2R 5%
PR36
4.99K 1%
+V5A_PWRGD
R321
10K 1%
R322
R323
0 5%
PWRGD
BYP/LDO
PGND
AGND
PC15
1000PF/50V,X7R
PC16
4.7uF/6.3V,X5R
RT6228AGQUF
+VBATA
5VC_O_2
U19
PR37
20K 1%
PR35
2.2R 5%
FB20
FB19
C313
0.10uF/16V,X5R
+V3P3A
PC17
PC18
PC19
PL2
1uH/11A
+V5A_PWRGD
R324
1K 1%
3VSB_EN
R325
100K 5%
PC22
C319
1UF/6.3V,X5R
PC20
PR39
49.9K 1%
C314
C315
C316
C317
C318
PC21
PR38
2.2R 5%
R319
11.0K 1%
R326
10K 1%
+V3P3A
[44,50]
+V3P3A_PWRGD
R327
R328
PC23
1000PF/50V,X7R
PC24
4.7uF/6.3V,X5R
RT6228AGQUF
Title
ODROID-H2
Size
Document Number
Rev
A
Date: Monday, December 24, 2018
Sheet 39 of 61



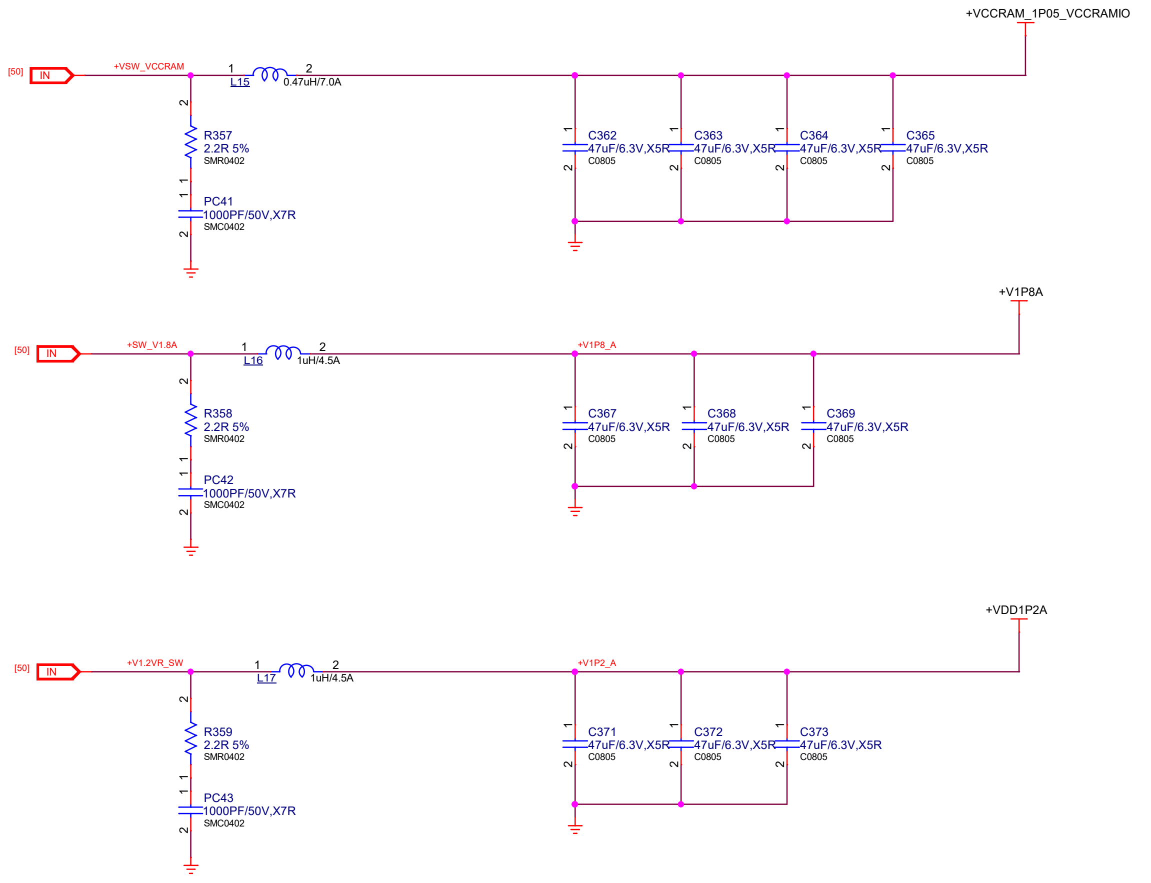
Title
ODROID-H2

Size	Document Number	Rev
		A

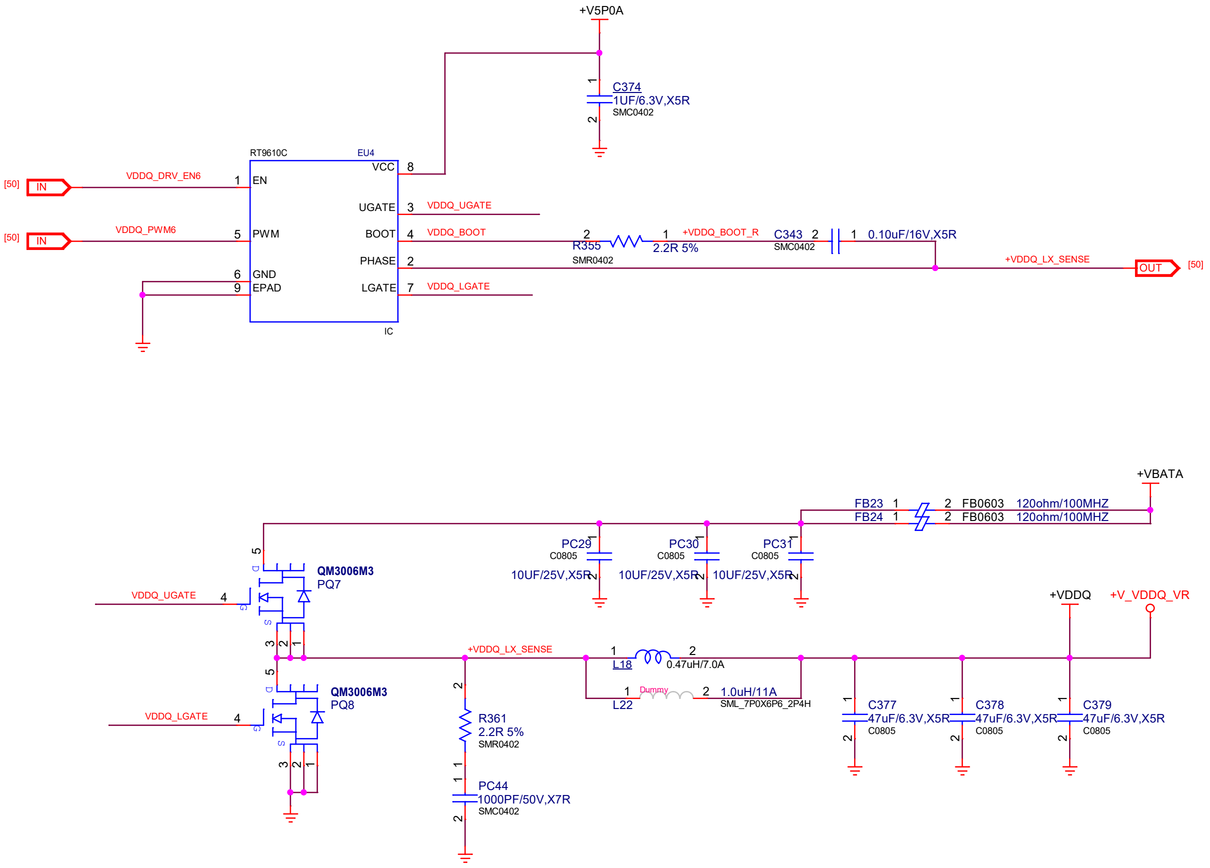
Date: Monday, December 24, 2018 Sheet 40 of 61



<XR_PAGE_TITLE>
8 7 6 5 4 3 2 1
D C B A
[50] IN +VSW_VNN
R350 2.2R 5% SMR0402
PC39 1000PF/50V,X7R SMC0402
L13 0.47uH/7.0A
MPN:TMPC0415HP-R47MG-Z02
IRMS 8A ISAT 11A
+VNN
C345 47uF/6.3V,X5R C0805
C346 47uF/6.3V,X5R C0805
C347 47uF/6.3V,X5R C0805
C348 47uF/6.3V,X5R C0805
C349 47uF/6.3V,X5R C0805
C350 47uF/6.3V,X5R C0805
+VNN
C429 SMC0402 10UF/6.3V,X5R
C430 SMC0402 10UF/6.3V,X5R
C431 SMC0402 10UF/6.3V,X5R
+VCGI
C342 0.10uF/16V,X5R SMC0402
R347 1.10K 1% 0402 VCGI_SNS
RT1 NTC 6.80K 1% THRMSTR
R348 866R 1%
R349 2.94K 1% 0402 1% CH +VCGI_LX_SENSE
SH10 shut-0402-A VCGI_SENSEP2 OUT [50]
C344 0.10uF/16V,X5R SMC0402
SH9 shut-0402-A VCGI_SENSEN2 OUT [50]
+VCGI
R351 100 1% EMPTY 0402 Dummy
[11,50] OUT VCCGI_SENSE
R352 4.64K 1% 0402 1% CH
C351 10PF/50V,NPO VCGI_COMP2 OUT [50]
R353 1K 1% 0402 5% CH VCGI_FB_N1
C352 3,300pF/50V,X7R SMC0402
R354 10K 1% 0402 1% CH VCGI_FB_N2
C353 SMC0402 560pF/50V,X7R
VCGI_FB2 OUT [50]
+V5P0A
C354 1UF/6.3V,X5R SMC0402
RT9610C EU2
VCC 8
[50] IN VCGI_DRV_EN2 1 EN
UGATE 3 VCGI_UGATE
[50] IN VCGI_PWM2 5 PWM
BOOT 4 +VCGI_BOOT
R372 2.2R 5% SMR0402 +VCGI_BOOT_R
C303 SMC0402 0.10uF/16V,X5R
PHASE 2 +VCGI_LX_SENSE OUT [50]
6 GND
9 EPAD
LGATE 7 VCGI_LGATE
IC
+VBATA
FB21 FB0603 120ohm/100MHZ
FB22 FB0603 120ohm/100MHZ
+VCGI_VIN
PC25 C0805 10UF/25V,X5R
PC26 C0805 10UF/25V,X5R
PC27 C0805 10UF/25V,X5R
PC28 C0805 10UF/25V,X5R
QM3006M3 PQ3
VCGI_UGATE
TMPC0624H-R22MG-D
+VCGI_LX_SENSE
L14 0.22uH/23A
L21 0.22uH SPL-10R2-10R2 Dummy
+VCGI
R371 2.2R 5% SMR0402
PC40 1000PF/50V,X7R SMC0402
QM3006M3 PQ5
VCGI_LGATE
CE1 330UF/2V TC7343
CE2 330UF/2V TC7343
C357 0.01uF/25V,X7R
C358 0.01uF/25V,X7R
C359 0.01uF/25V,X7R
C360 0.01uF/25V,X7R
Title ODROID-H2
Size Document Number Rev A
Date: Monday, December 24, 2018 Sheet 41 of 61



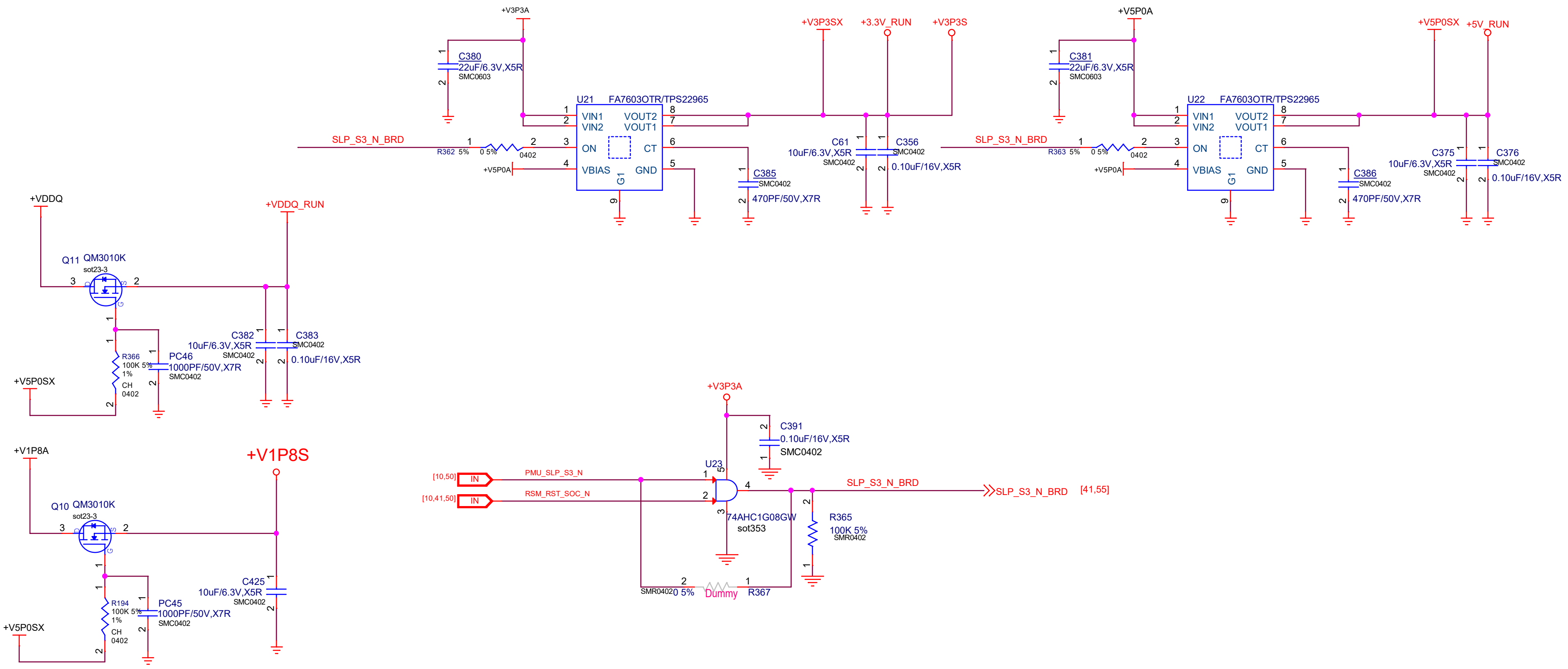
Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	42 of 61



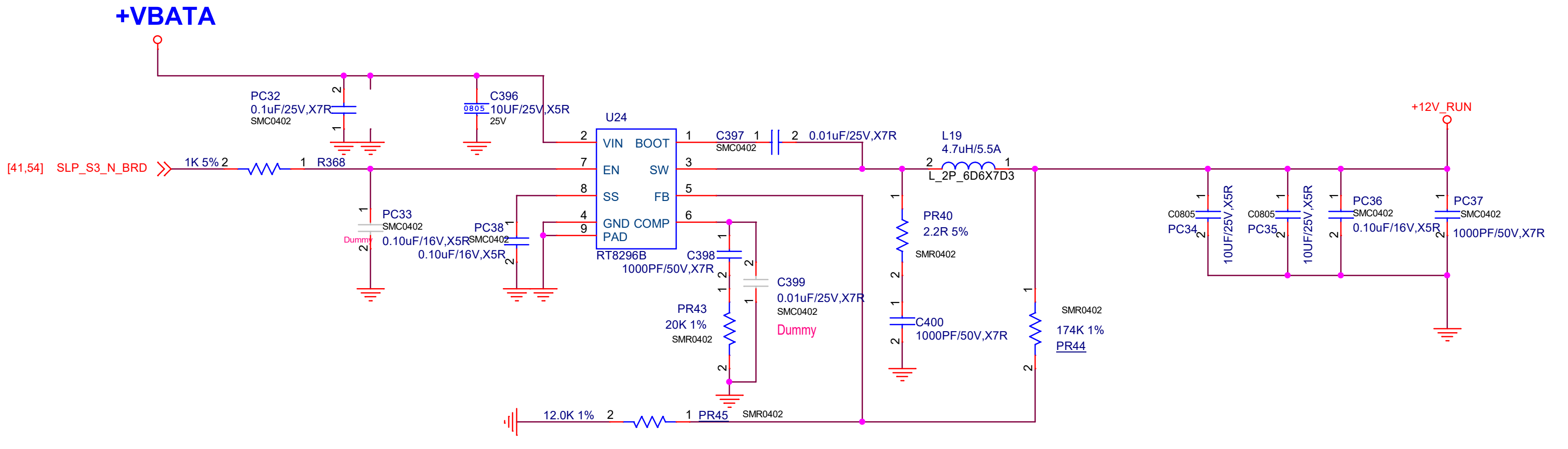
Title ODROID-H2

Size Document Number Rev A

Date: Monday, December 24, 2018 Sheet 43 of 61



Title	ODROID-H2	
Size	Document Number	Rev A
Date: Monday, December 24, 2018	Sheet 44 of 61	



Title	ODROID-H2
Size	Document Number
Rev	A
Date:	Monday, December 24, 2018
Sheet	45 of 61