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Title: Index		
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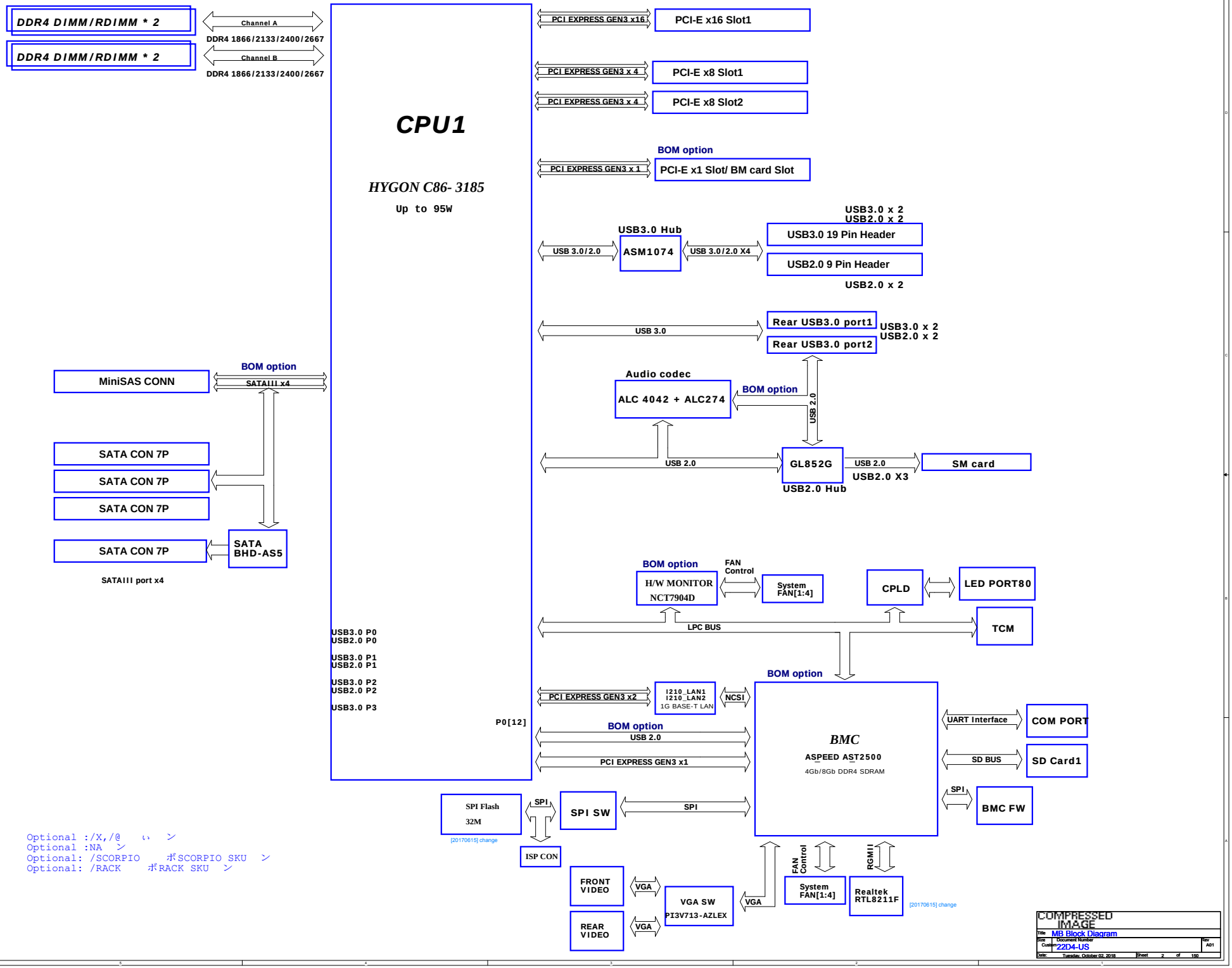
DDR4 DIMM/RDIMM * 2
DDR4 DIMM/RDIMM * 2
Channel A
DDR4 1866/2133/2400/2667
Channel B
DDR4 1866/2133/2400/2667
CPU1
HYGON C86- 3185
Up to 95W
PCI EXPRESS GEN3 x16
PCI-E x16 Slot1
PCI EXPRESS GEN3 x 4
PCI-E x8 Slot1
PCI EXPRESS GEN3 x 4
PCI-E x8 Slot2
BOM option
PCI EXPRESS GEN3 x 1
PCI-E x1 Slot/ BM card Slot
USB3.0 x 2
USB2.0 x 2
USB3.0 Hub
USB 3.0/2.0
ASM1074
USB 3.0/2.0 X4
USB3.0 19 Pin Header
USB2.0 9 Pin Header
USB2.0 x 2
USB 3.0
Rear USB3.0 port1
Rear USB3.0 port2
USB3.0 x 2
USB2.0 x 2
Audio codec
ALC 4042 + ALC274
BOM option
USB 2.0
USB 2.0
GL852G
USB 2.0
SM card
USB2.0 X3
USB2.0 Hub
BOM option
MiniSAS CONN
SATAIII x4
SATA CON 7P
SATA CON 7P
SATA CON 7P
SATA CON 7P
SATA
BHD-AS5
SATAIII port x4
BOM option
H/W MONITOR
NCT7904D
FAN
Control
System
FAN[1:4]
CPLD
LED PORT80
LPC BUS
TCM
USB3.0 P0
USB2.0 P0
USB3.0 P1
USB2.0 P1
USB3.0 P2
USB2.0 P2
USB3.0 P3
P0[12]
BOM option
PCI EXPRESS GEN3 x2
I210_LAN1
I210_LAN2
1G BASE-T LAN
NCSI
BOM option
USB 2.0
PCI EXPRESS GEN3 x1
BMC
ASPEED AST2500
4Gb/8Gb DDR4 SDRAM
UART Interface
COM PORT
SD BUS
SD Card1
SPI
BMC FW
SPI Flash
32M
SPI
SPI SW
SPI
[20170615] change
ISP CON
FRONT
VIDEO
REAR
VIDEO
VGA
VGA
VGA SW
PI3V713-AZLEX
VGA
FAN
Control
System
FAN[1:4]
RGMII
Realtek
RTL8211F
[20170615] change
Optional :/X,/@ い ン
Optional :NA ン
Optional: /SCORPIO ポSCORPIO SKU ン
Optional: /RACK ポRACK SKU ン
COMPRESSED
IMAGE
Title MB Block Diagram
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Schematics Change History

Version	Date / Author	Comments
V1.00		1. First Init.
V1.01		

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Title: Clock Distribution

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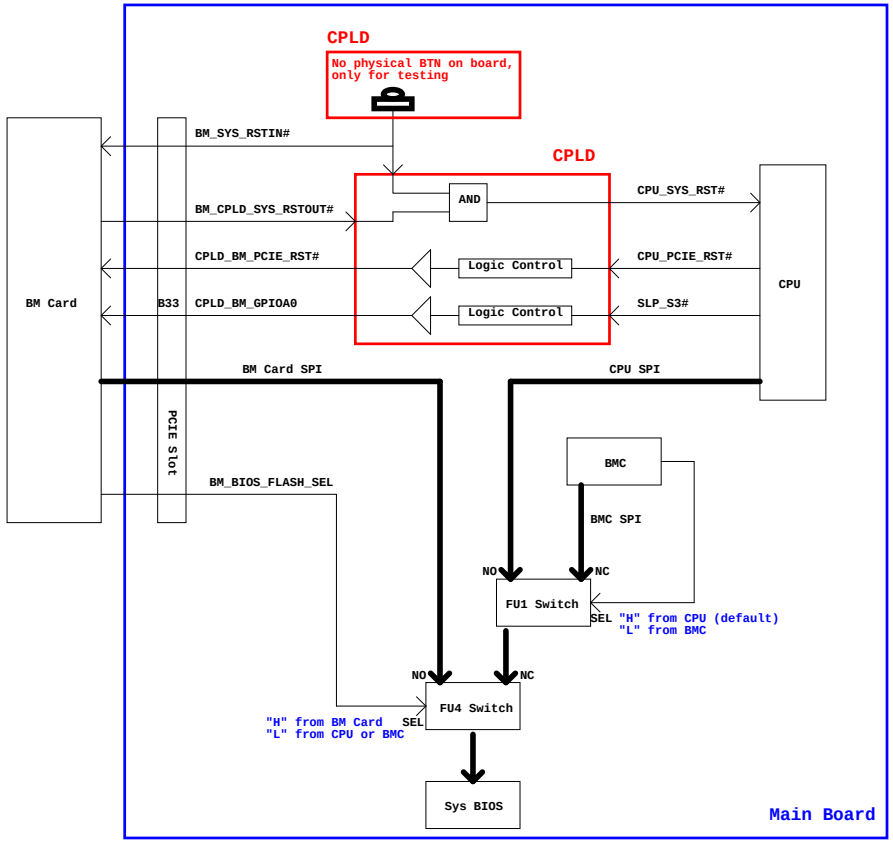

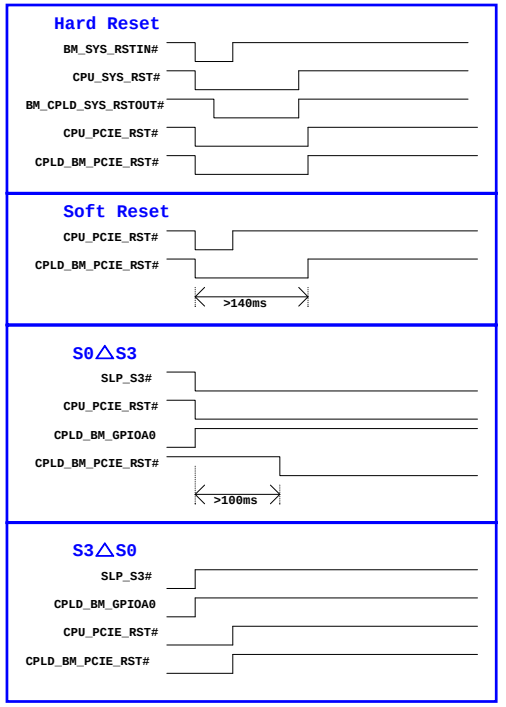

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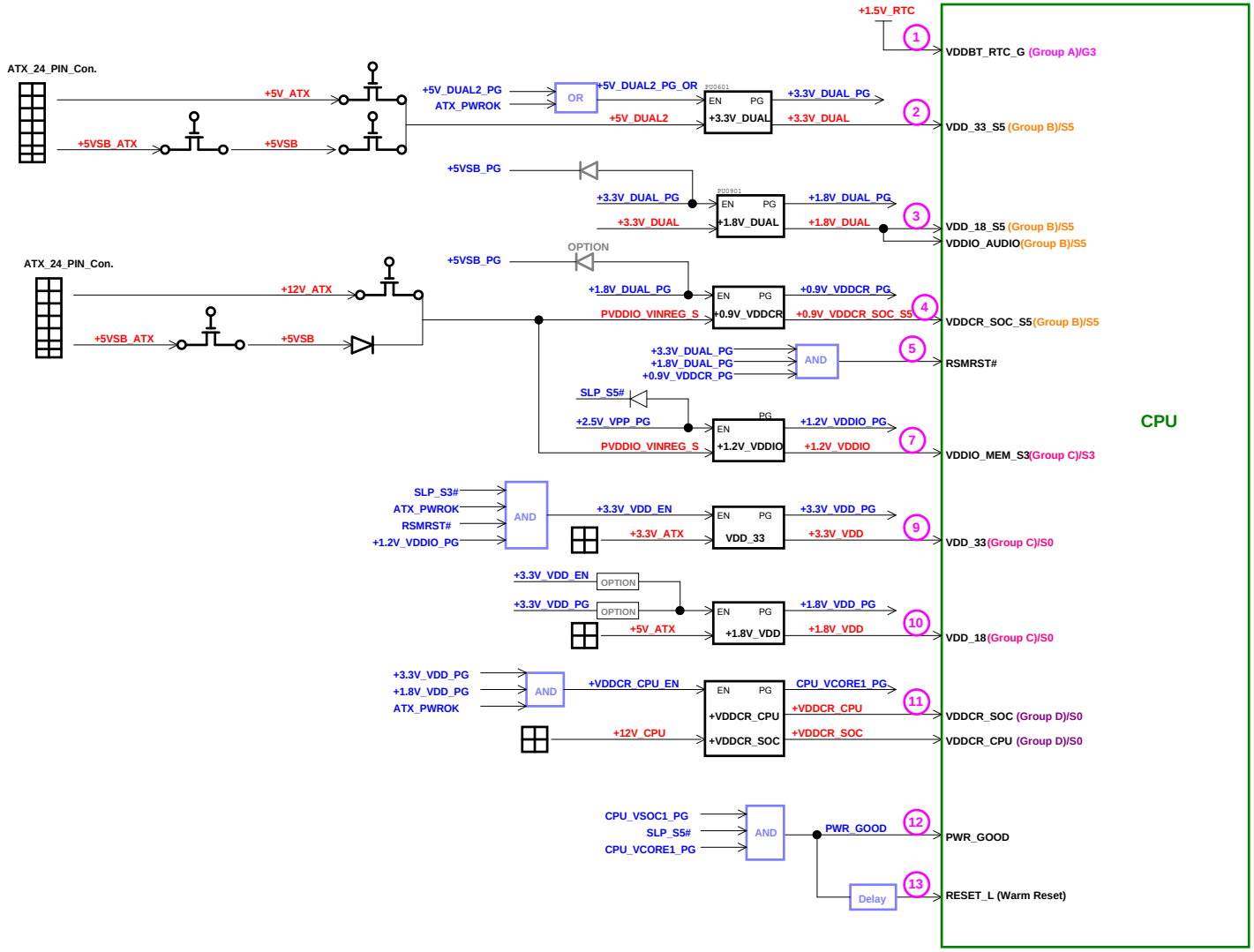

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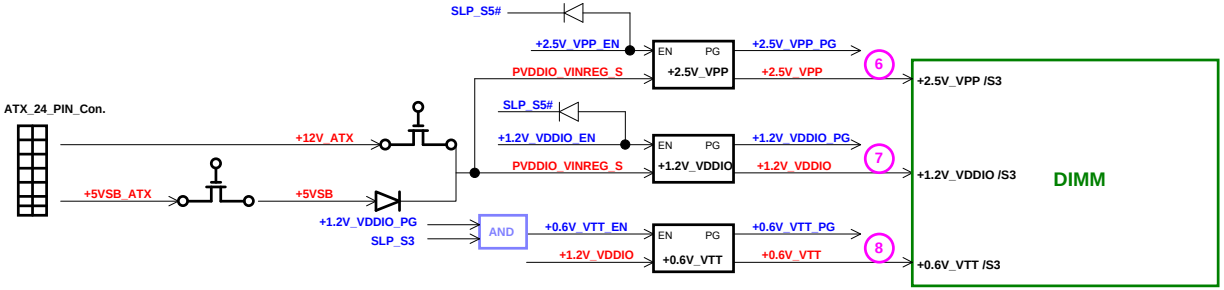

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IMAGE

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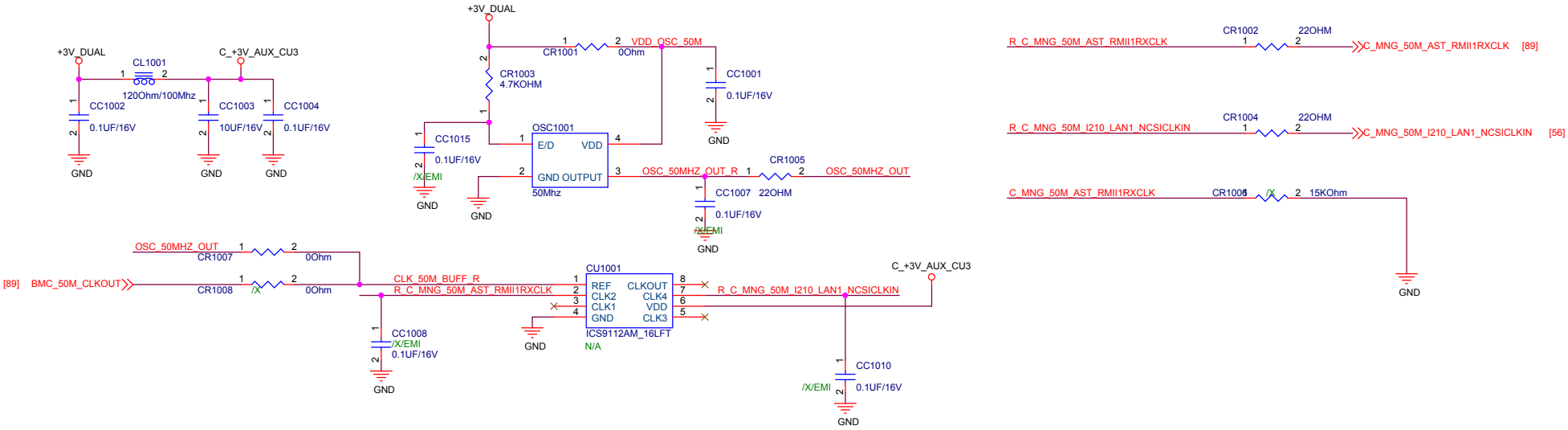
ICS9112AM CLK BUFFER(50Mhz)



5V2305PGGI CLK BUFFER(33Mhz)

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Title	CLK BUFF-1(33/50Mhz)	
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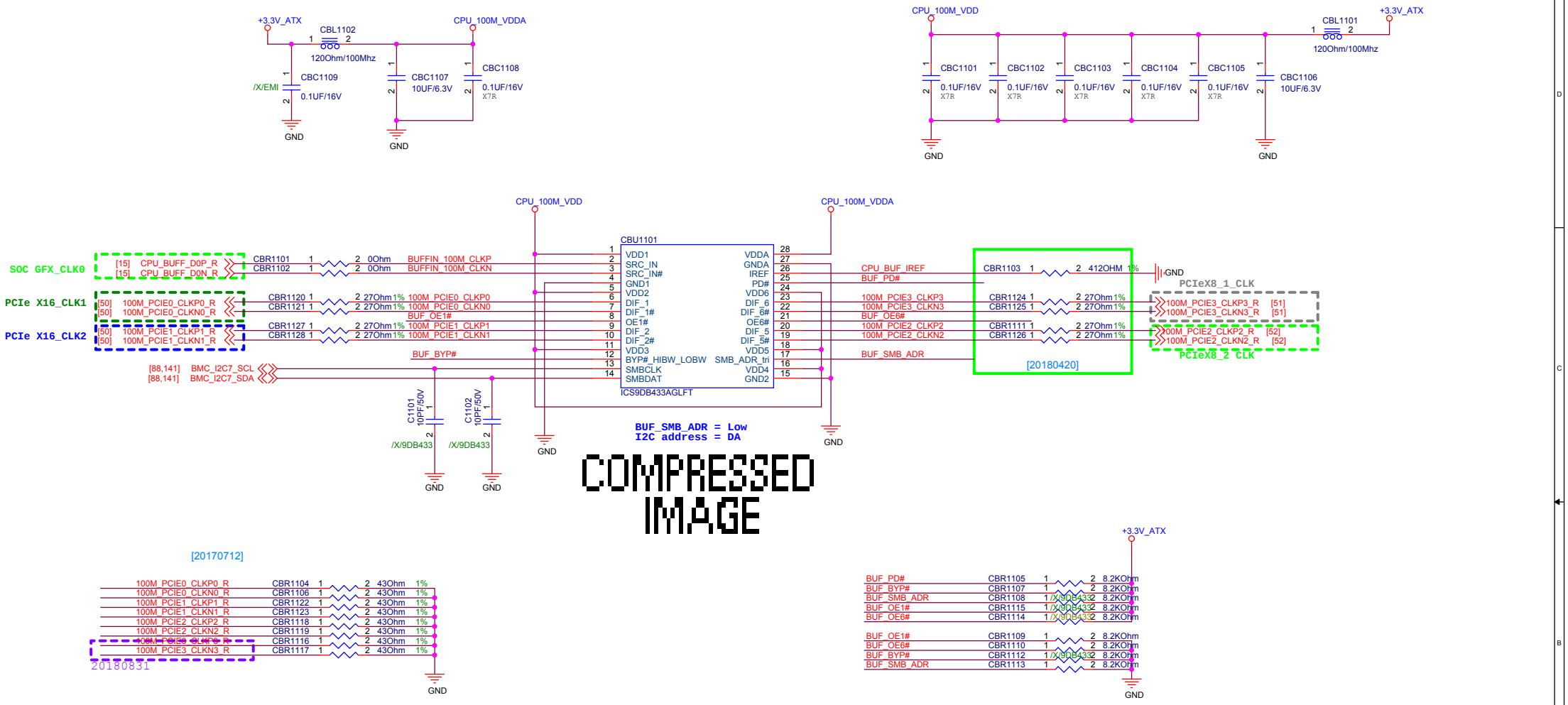

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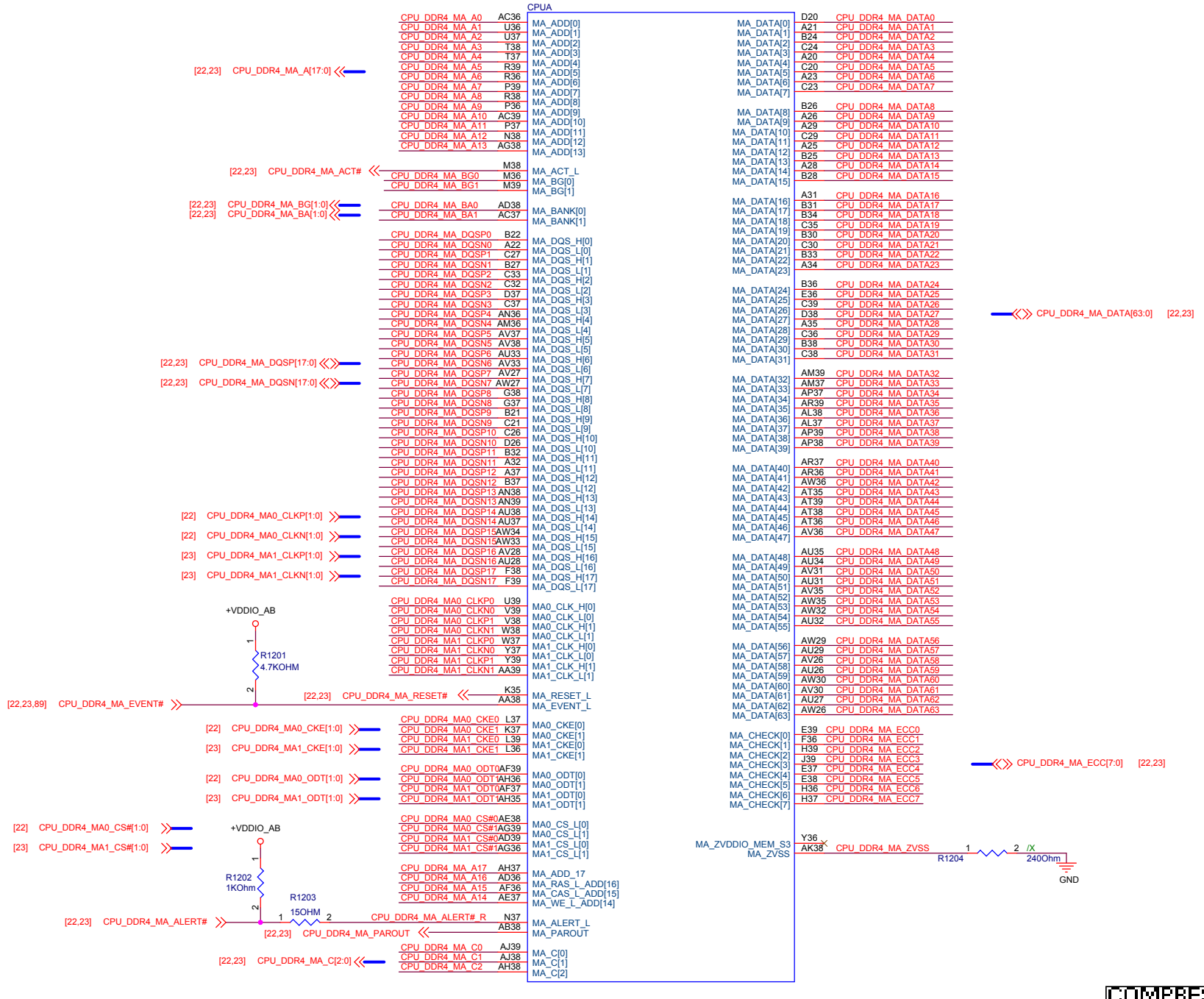

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Title	CPU_DDR4_CHA	
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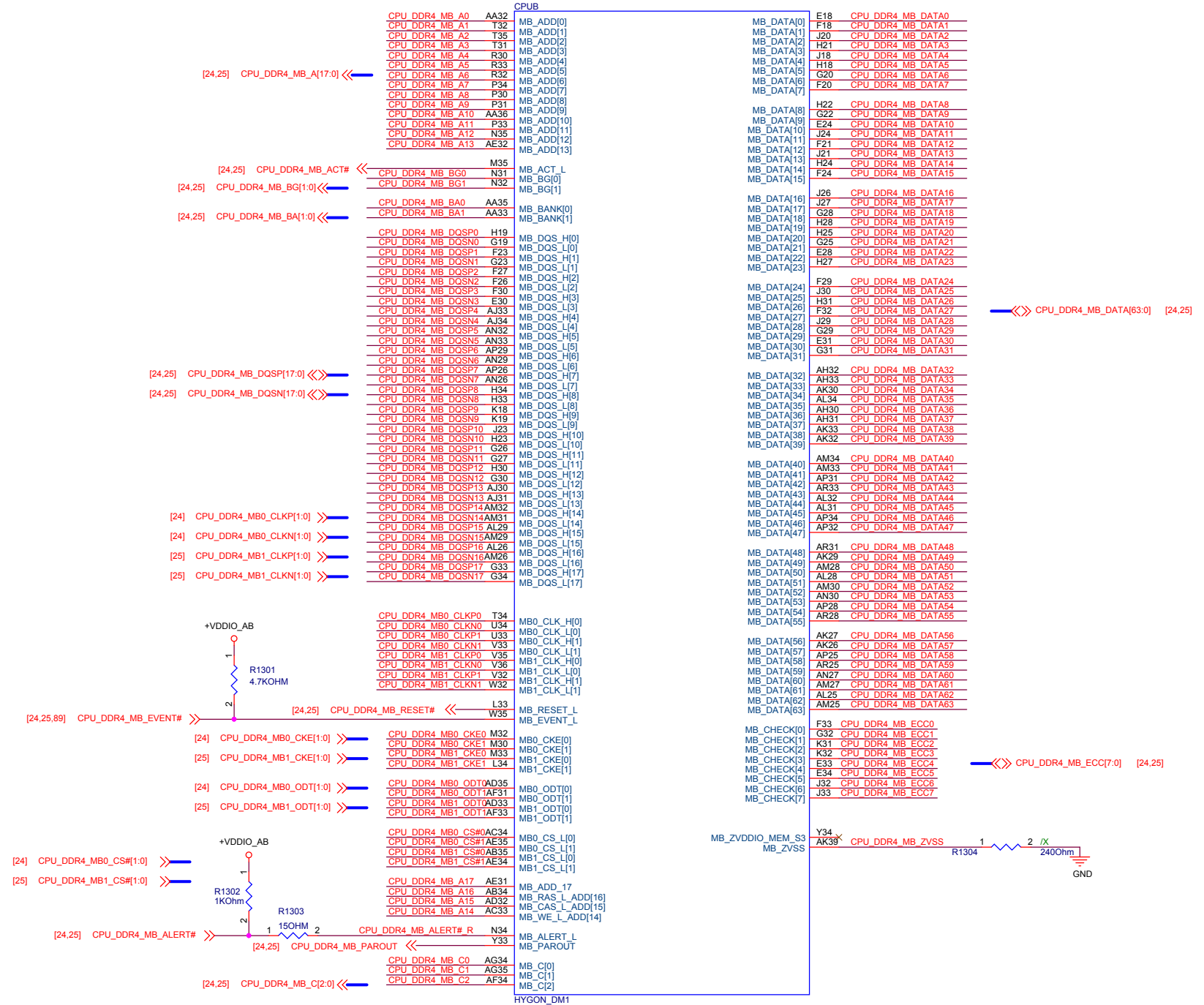

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Title	CPU_DDR4_CHB	
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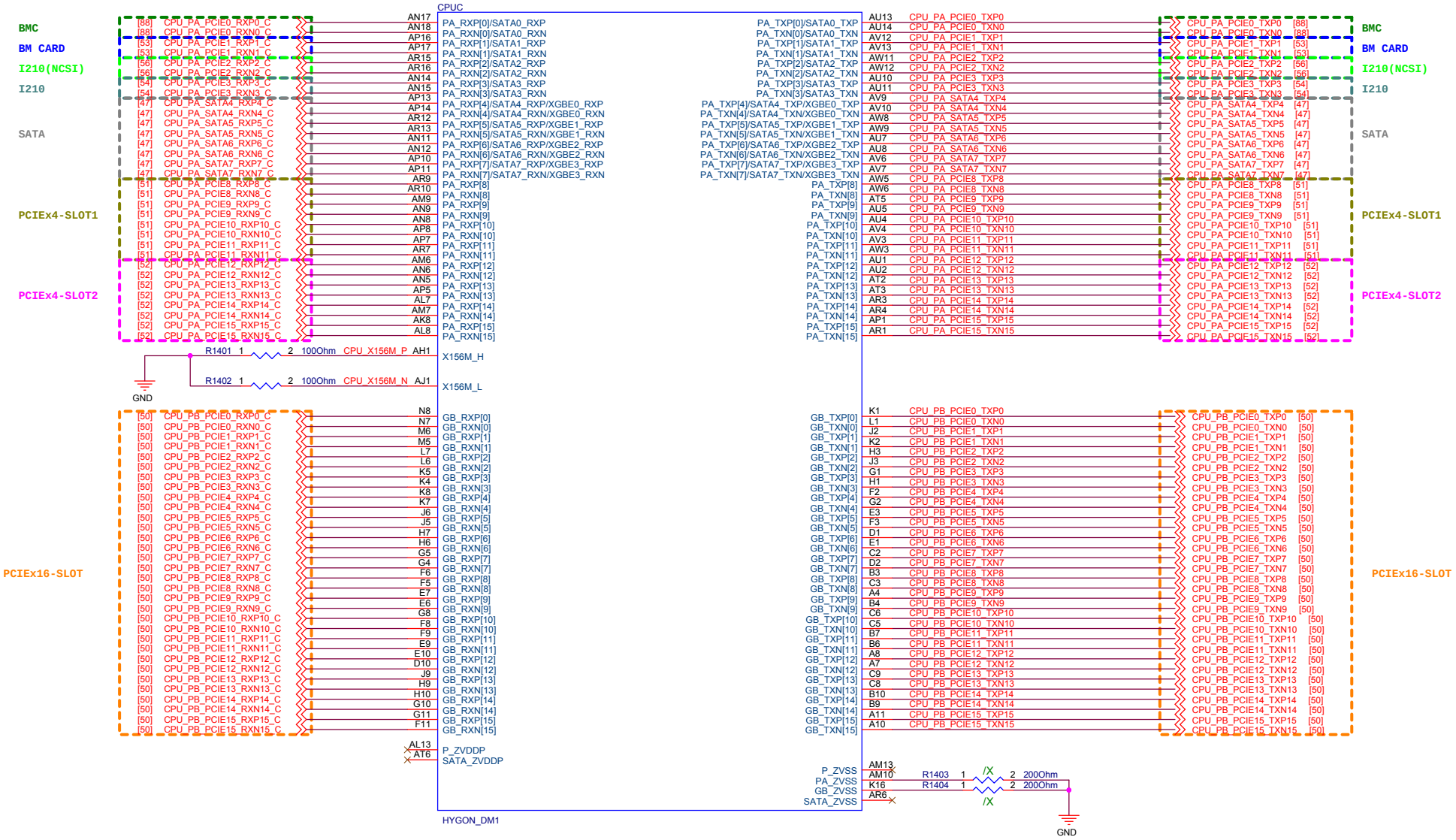

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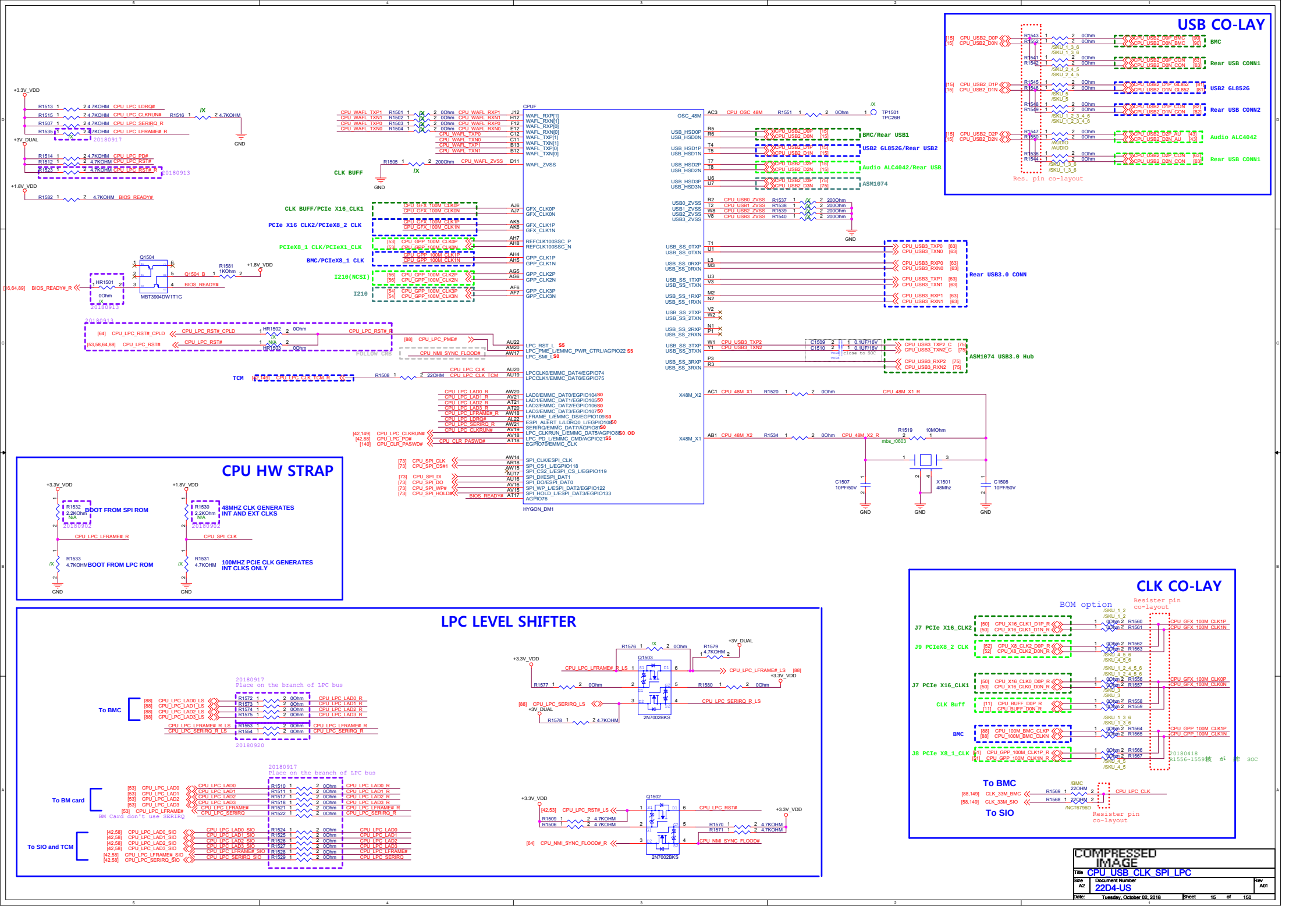
USB CO-LAY
BMC
Rear USB CONN1
USB2 GL852G
Rear USB CONN2
Audio ALC4042
Rear USB CONN1
Res. pin co-layout
BMC/Rear USB1
USB2 GL852G/Rear USB2
Audio ALC4042/Rear USB
ASM1074
Rear USB3.0 CONN
ASM1074 USB3.0 Hub
CPU HW STRAP
BOOT FROM SPI ROM
BOOT FROM LPC ROM
48MHZ CLK GENERATES INT AND EXT CLKS
100MHZ PCIE CLK GENERATES INT CLKS ONLY
LPC LEVEL SHIFTER
To BMC
To BM card
To SIO and TCM
BM Card don't use SERIRQ
CLK CO-LAY
BOM option
Resister pin co-layout
J7 PCIe X16_CLK2
J9 PCIeX8_2 CLK
J7 PCIe X16_CLK1
CLK Buff
BMC
J8 PCIe X8_1_CLK
To BMC
To SIO
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CPU_USB_CLK_SPI_LPC
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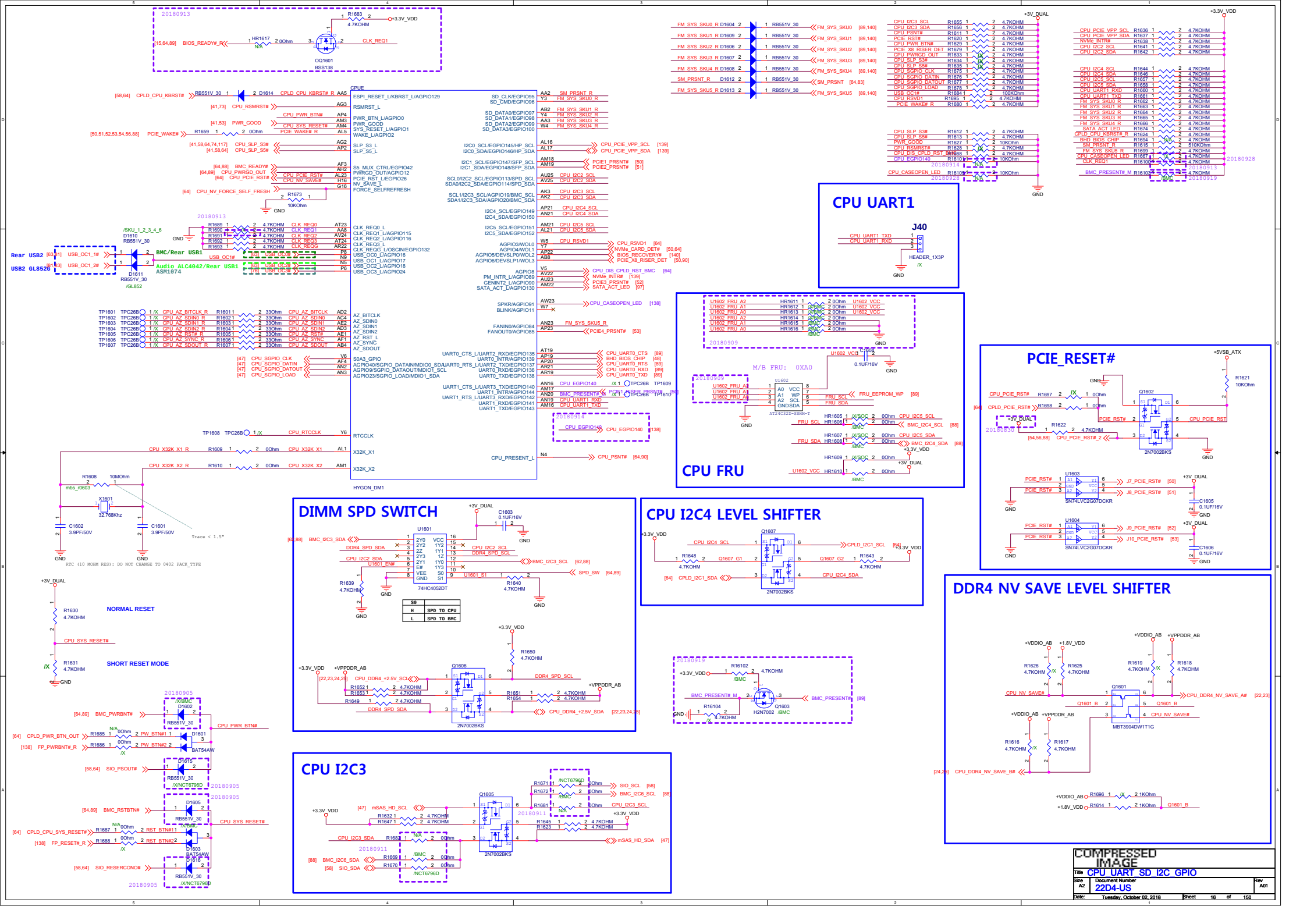
CPUE
ESPI_RESET_L/KBRST_L/AGPIO129
RSMRST_L
PWR_BTN_L/AGPIO0
PWR_GOOD
SYS_RESET_L/AGPIO1
WAKE_L/AGPIO2
SLP_S3_L
SLP_S5_L
S5_MUX_CTRL/GPIO42
PWRGD_OUT/AGPIO12
PCIE_RST_L/GPIO26
NV_SAVE_L
FORCE_SELFREFRESH
CLK_REQ0_L
CLK_REQ1_L/AGPIO115
CLK_REQ2_L/AGPIO116
CLK_REQ3_L
CLK_REQ5_L/OSCIN/GPIO132
USB_OC0_L/AGPIO16
USB_OC1_L/AGPIO17
USB_OC2_L/AGPIO18
USB_OC3_L/AGPIO24
SPKR/AGPIO91
BLINK/AGPIO11
FANIN0/AGPIOB4
FANOUT0/AGPIOB5
UART0_CTS_L/UART2_RXD/EGPIO135
UART0_INTR/AGPIO139
UART0_RTS_L/UART2_TXD/EGPIO137
UART0_RXD/EGPIO136
UART0_TXD/EGPIO138
UART1_CTS_L/UART3_TXD/EGPIO140
UART1_INTR/AGPIO144
UART1_RTS_L/UART3_RXD/EGPIO142
UART1_RXD/EGPIO141
UART1_TXD/EGPIO143
SD_CLK/EGPIO95
SD_CMD/EGPIO96
SD_DATA0/EGPIO97
SD_DATA1/EGPIO98
SD_DATA2/EGPIO99
SD_DATA3/EGPIO100
I2C0_SCL/EGPIO145/HP_SCL
I2C0_SDA/EGPIO146/HP_SDA
I2C1_SCL/EGPIO147/SFP_SCL
I2C1_SDA/EGPIO148/SFP_SDA
SCL0/I2C2_SCL/EGPIO113/SPD_SCL
SDA0/I2C2_SDA/EGPIO114/SPD_SDA
SCL1/I2C3_SCL/AGPIO19/BMC_SCL
SDA1/I2C3_SDA/AGPIO20/BMC_SDA
I2C4_SCL/EGPIO149
I2C4_SDA/EGPIO150
I2C5_SCL/EGPIO151
I2C5_SDA/EGPIO152
AGPIO3/WOL0
AGPIO4/WOL1
AGPIO5/DEVSLP0/WOL2
AGPIO6/DEVSLP1/WOL3
AGPIO8
PM_INTR_L/AGPIO89
GENINT2_L/AGPIO90
SATA_ACT_L/AGPIO130
S0A3_GPIO
AGPIO40/SGPIO_DATAIN/MDIO0_SDA
AGPIO9/SGPIO_DATAOUT/MDIO1_SCL
AGPIO23/SGPIO_LOAD/MDIO1_SDA
AZ_BITCLK
AZ_SDIN0
AZ_SDIN1
AZ_SDIN2
AZ_RST_L
AZ_SYNC
AZ_SDOUT
RTCCLK
X32K_X1
X32K_X2
HYGON_DM1
CPU_PRESENT_L
CPU_EGPIO140
CPU_CASEOPEN_LED
CPU_RSVD1
CPU_DIS_CPLD_RST_BMC
CPU_PSNT#
CPU_UART0_CTS
CPU_UART0_RTS
CPU_UART0_RXD
CPU_UART0_TXD
CPU_UART1_TXD
CPU_UART1_RXD
CPU_I2C2_SCL
CPU_I2C2_SDA
CPU_I2C3_SCL
CPU_I2C3_SDA
CPU_I2C4_SCL
CPU_I2C4_SDA
CPU_I2C5_SCL
CPU_I2C5_SDA
SM_PRSNT_R
FM_SYS_SKU1_R
FM_SYS_SKU2_R
FM_SYS_SKU3_R
FM_SYS_SKU4_R
FM_SYS_SKU5_R
PCIE1_PRSNT#
PCIE2_PRSNT#
PCIE3_PRSNT#
PCIE_X8_RISER_DET
BIOS_RECOVERY#
NVMe_CARD_DET#
SATA_ACT_LED
CPU_PCIE_VPP_SCL
CPU_PCIE_VPP_SDA
CPU_SLP_S3#
CPU_SLP_S5#
CPU_NV_FORCE_SELF_FRESH
CPU_PWRGD_OUT
CPU_PCIE_RST#
CPU_NV_SAVE#
BMC_READY#
CPU_SYS_RESET#
CPU_PWR_BTN#
PCIE_WAKE#
CPLD_CPU_KBRST#
BIOS_READY#_R
CLK_REQ1
OQ1601
BSS138
R1683 4.7KOHM
+3.3V_VDD
HR1617 N/A 2 0Ohm
[15,64,89]
FM_SYS_SKU0_R D1604
FM_SYS_SKU1_R D1609
FM_SYS_SKU2_R D1606
FM_SYS_SKU3_R D1607
FM_SYS_SKU4_R D1608
SM_PRSNT_R D1612
FM_SYS_SKU5_R D1613
RB551V_30
[89,140]
[64,83]
+3V_DUAL
+3.3V_VDD
4.7KOHM
10KOhm
100KOhm
N/A
/X
GND
20180913
20180914
20180928
20180919
20180905
20180911
20180909
20180830
CPU UART1
J40
CPU_UART1_TXD
CPU_UART1_RXD
HEADER_1X3P
CPU FRU
U1602_FRU_A2
U1602_FRU_A1
U1602_FRU_A0
HR1611
HR1612
HR1613
HR1614
HR1615
HR1616
U1602_VCC
/BMC
M/B FRU: 0XA0
U1602
A24C32D-BSHM-T
FRU_EEPROM_WP [89]
FRU_SCL
FRU_SDA
HR1605
HR1606
HR1607
HR1608
HR1609
HR1610
/SOC
BMC_I2C4_SCL [88]
BMC_I2C4_SDA [88]
CPU_I2C5_SCL
CPU_I2C5_SDA
PCIE_RST#
PCIE_RST
PCIE_RST#_2
CPU_PCIE_RST
2N7002BKS
SN74LVC2G07DCKR
J7_PCIE_RST# [50]
J8_PCIE_RST# [51]
J9_PCIE_RST# [52]
J10_PCIE_RST# [53]
+5VSB_ATX
R1621 10KOhm
DIMM SPD SWITCH
U1601
74HC4052DT
DDR4_SPD_SDA
DDR4_SPD_SCL
BMC_I2C3_SDA [62,88]
BMC_I2C3_SCL [62,88]
SPD_SW [64,89]
U1601_EN#
U1601_S1
S0
H SPD TO CPU
L SPD TO BMC
CPU I2C4 LEVEL SHIFTER
Q1607
CPLD_I2C1_SCL [64]
CPLD_I2C1_SDA [64]
CPU_I2C4_SCL
CPU_I2C4_SDA
Q1607_G1
Q1607_G2
DDR4 NV SAVE LEVEL SHIFTER
CPU_NV_SAVE#
CPU_DDR4_NV_SAVE_A# [22,23]
CPU_DDR4_NV_SAVE_B# [24,25]
Q1601
MBT3904DW1T1G
+VDDIO_AB
+VPPDDR_AB
+1.8V_VDD
CPU I2C3
Q1605
2N7002BKS
CPU_I2C3_SCL
CPU_I2C3_SDA
BMC_I2C6_SCL [88]
BMC_I2C6_SDA [88]
SIO_SCL [58]
SIO_SDA [58]
mSAS_HD_SCL [47]
mSAS_HD_SDA [47]
/NCT6796D
NORMAL RESET
SHORT RESET MODE
CPU_SYS_RESET#
CPU_PWR_BTN#
BMC_PWRBTN# [64,89]
BMC_RSTBTN# [64,89]
CPLD_PWR_BTN_OUT [64]
CPLD_CPU_SYS_RESET# [64]
FP_PWRBTN#_R [138]
FP_RESET#_R [138]
SIO_PSOUT# [58,64]
SIO_RESERCONO# [58,64]
D1602
D1601
D1615
D1605
D1603
D1616
BAT54AW
PW_BTN#1
PW_BTN#2
RST_BTN#1
RST_BTN#2
Rear USB2 [63,81]
USB2 GL852G [63,83]
BMC/Rear USB1
Audio ALC4042/Rear USB1
ASM1074
/SKU_1_2_3_4_6
/GL852
D1610
D1611
USB_OC1#
USB_OC0#
USB_OC2#
USB_OC3#
TP1601 TPC26B CPU_AZ_BITCLK_R R1601 1 /X 2 33Ohm CPU_AZ_BITCLK AD2
TP1602 TPC26B CPU_AZ_SDIN0_R R1602 1 /X 2 33Ohm CPU_AZ_SDIN0 AC4
TP1603 TPC26B CPU_AZ_SDIN1_R R1603 1 /X 2 33Ohm CPU_AZ_SDIN1 AE2
TP1604 TPC26B CPU_AZ_SDIN2_R R1604 1 /X 2 33Ohm CPU_AZ_SDIN2 AD3
TP1605 TPC26B CPU_AZ_RST#_R R1605 1 /X 2 33Ohm CPU_AZ_RST# AE1
TP1606 TPC26B CPU_AZ_SYNC_R R1606 1 /X 2 33Ohm CPU_AZ_SYNC AF1
TP1607 TPC26B CPU_AZ_SDOUT_R R1607 1 /X 2 33Ohm CPU_AZ_SDOUT AB4
TP1608 TPC26B 1 /X CPU_RTCCLK Y6
CPU_X32K_X1_R R1609 1 2 0Ohm CPU_X32K_X1 AL1
CPU_X32K_X2_R R1610 1 2 0Ohm CPU_X32K_X2 AM1
R1608 10MOhm
mbs_r0603
X1601 32.768Khz
C1602 3.9PF/50V
C1601 3.9PF/50V
Trace < 1.5"
RTC (10 MOHM RES): DO NOT CHANGE TO 0402 PACK_TYPE
C1603 0.1UF/16V
R1639 4.7KOHM
R1640 4.7KOHM
R1650 4.7KOHM
R1630 4.7KOHM
R1631 4.7KOHM
R1652 4.7KOHM
R1653 4.7KOHM
R1649 4.7KOHM
R1651 4.7KOHM
R1654 4.7KOHM
DDR4_SPD_SDA
DDR4_SPD_SCL
CPU_DDR4_+2.5V_SCL
CPU_DDR4_+2.5V_SDA [22,23,24,25]
R16102 4.7KOHM
R16104 4.7KOHM
Q1603 H2N7002
BMC_PRESENT# [89]
BMC_PRESENT# M
R1632 1 4.7KOHM
R1647 1 4.7KOHM
R1645 4.7KOHM
R1623 4.7KOHM
R1681 0Ohm
R1682 N/A 0Ohm
R1669 /BMC 0Ohm
R1670 /NCT6796D 0Ohm
R1671 /NCT6796D 0Ohm
R1672 /BMC 0Ohm
R1626 4.7KOHM
R1625 4.7KOHM
R1619 4.7KOHM
R1618 4.7KOHM
R1616 4.7KOHM
R1617 4.7KOHM
R1696 1 /X 2 1KOhm
R1614 1 2 1KOhm
Q1601_B
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Size A2
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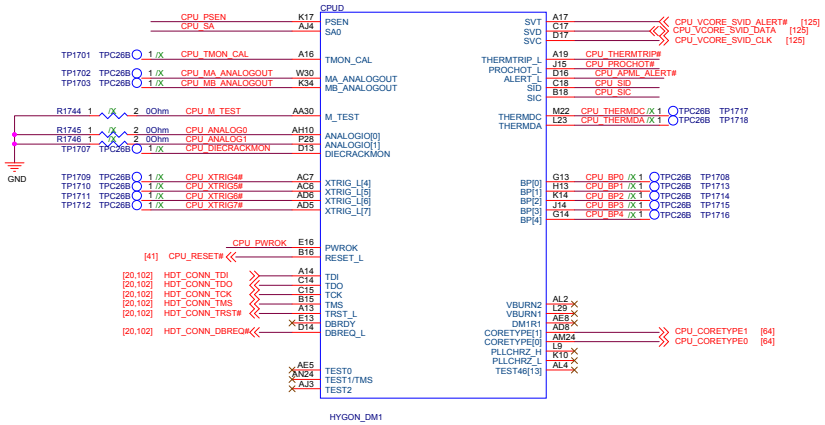

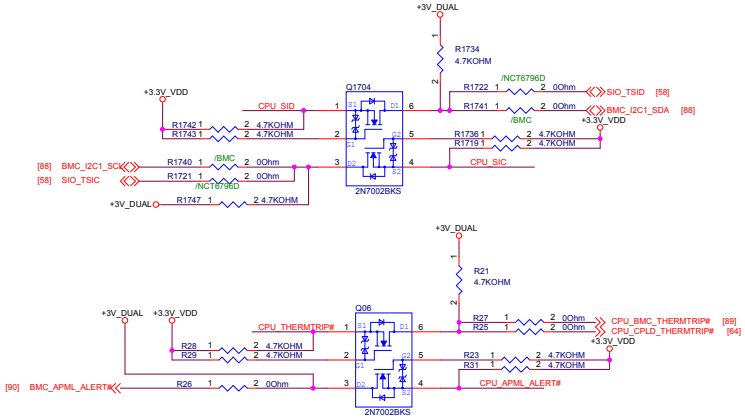

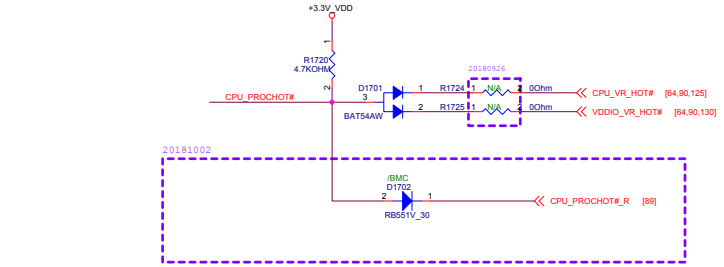

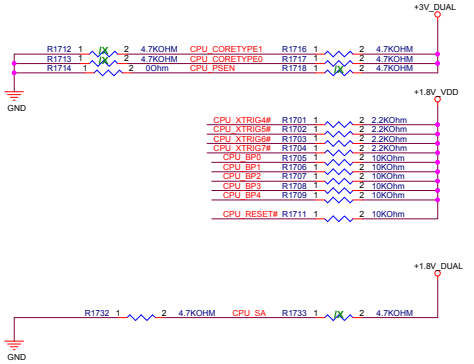

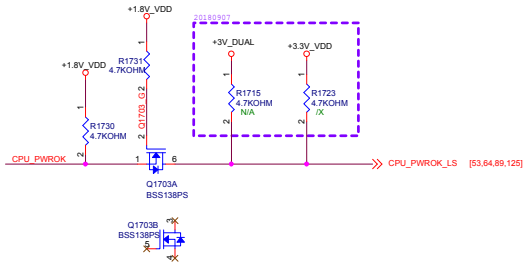

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Title	CPU_THERM_SVID_JTAG	
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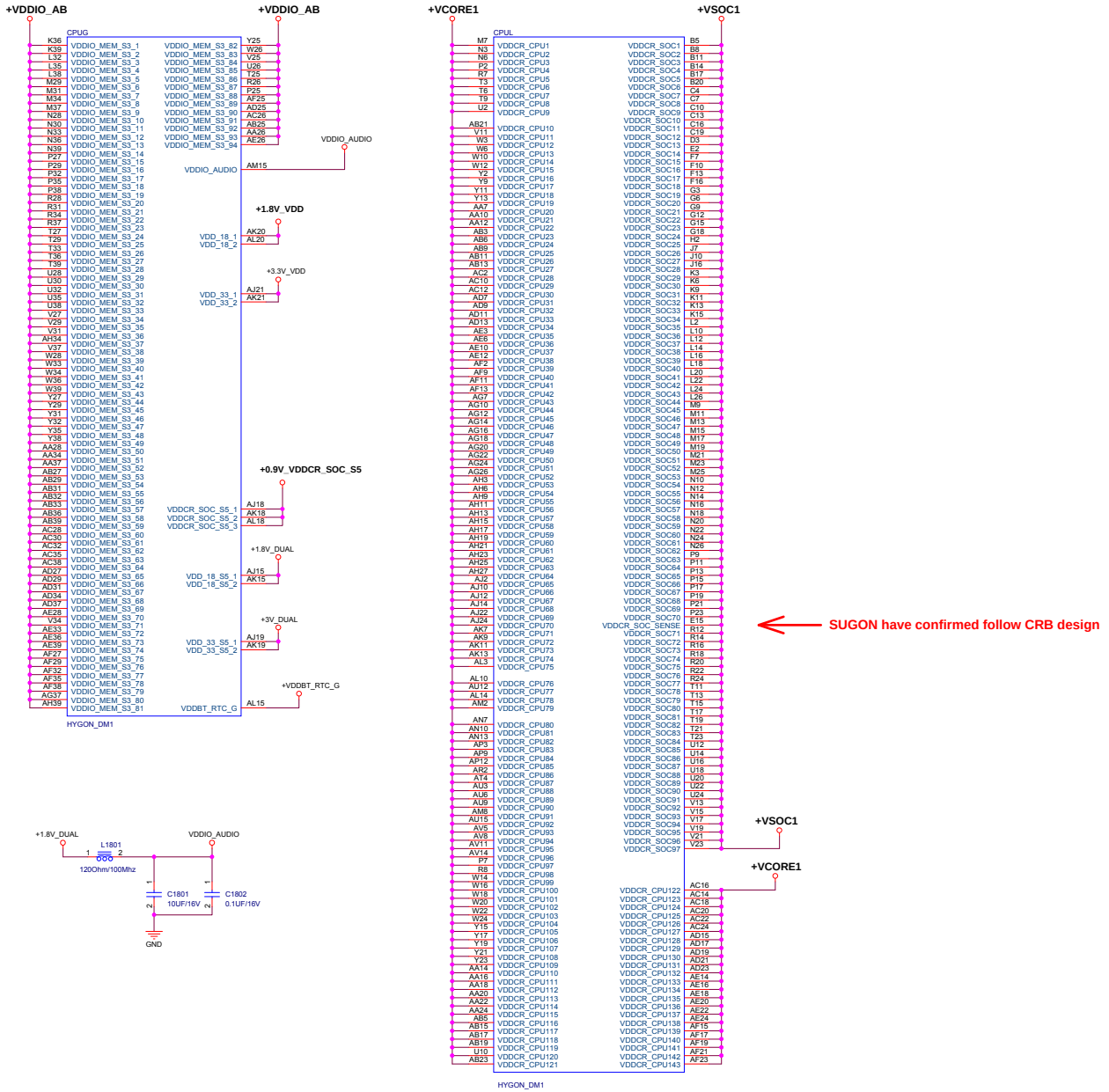

Title	CPU_POWER
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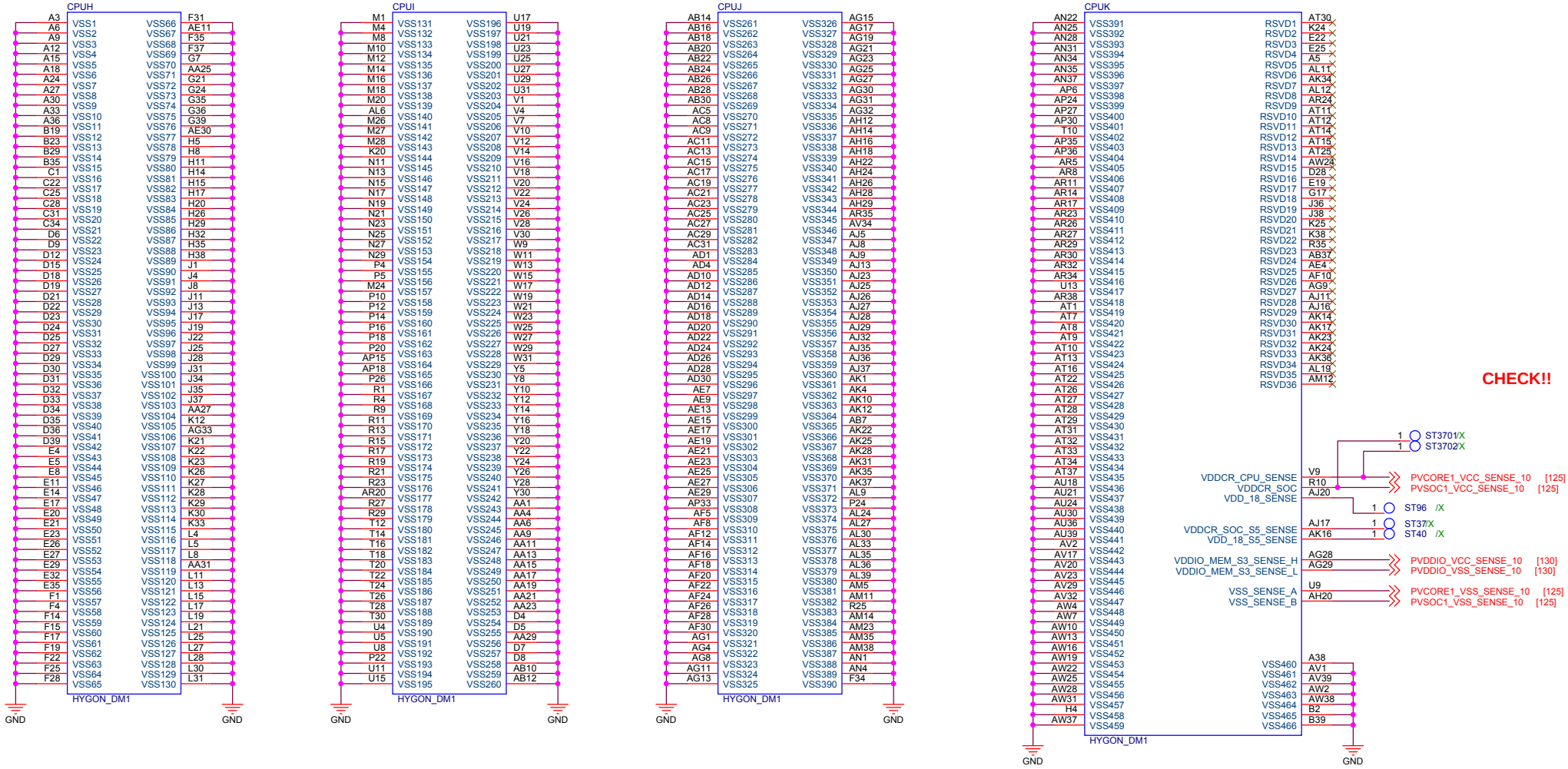

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Title	CPU_GND	
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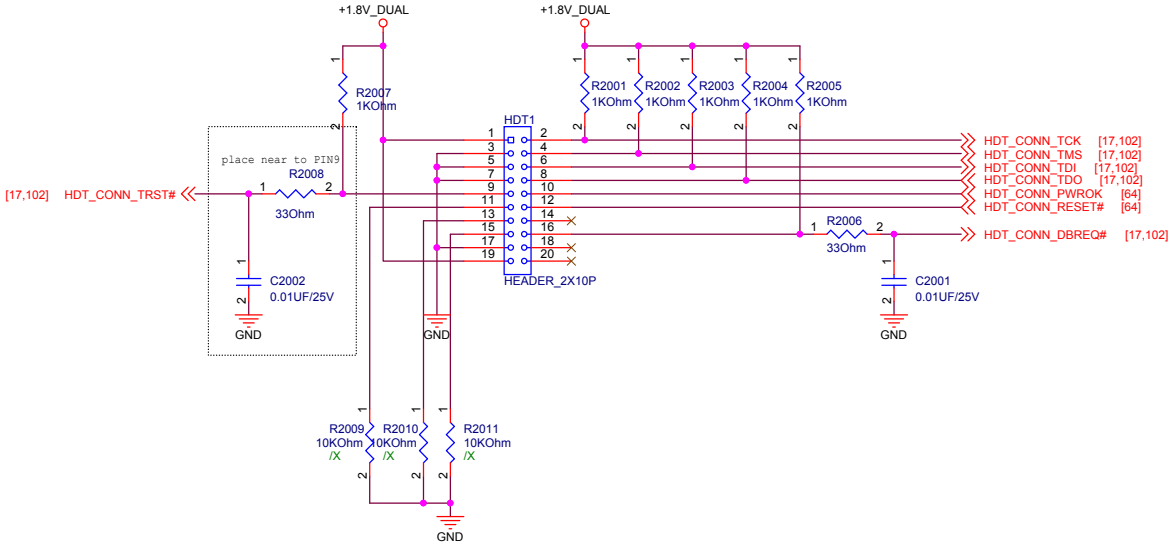
HDT CONNECTOR



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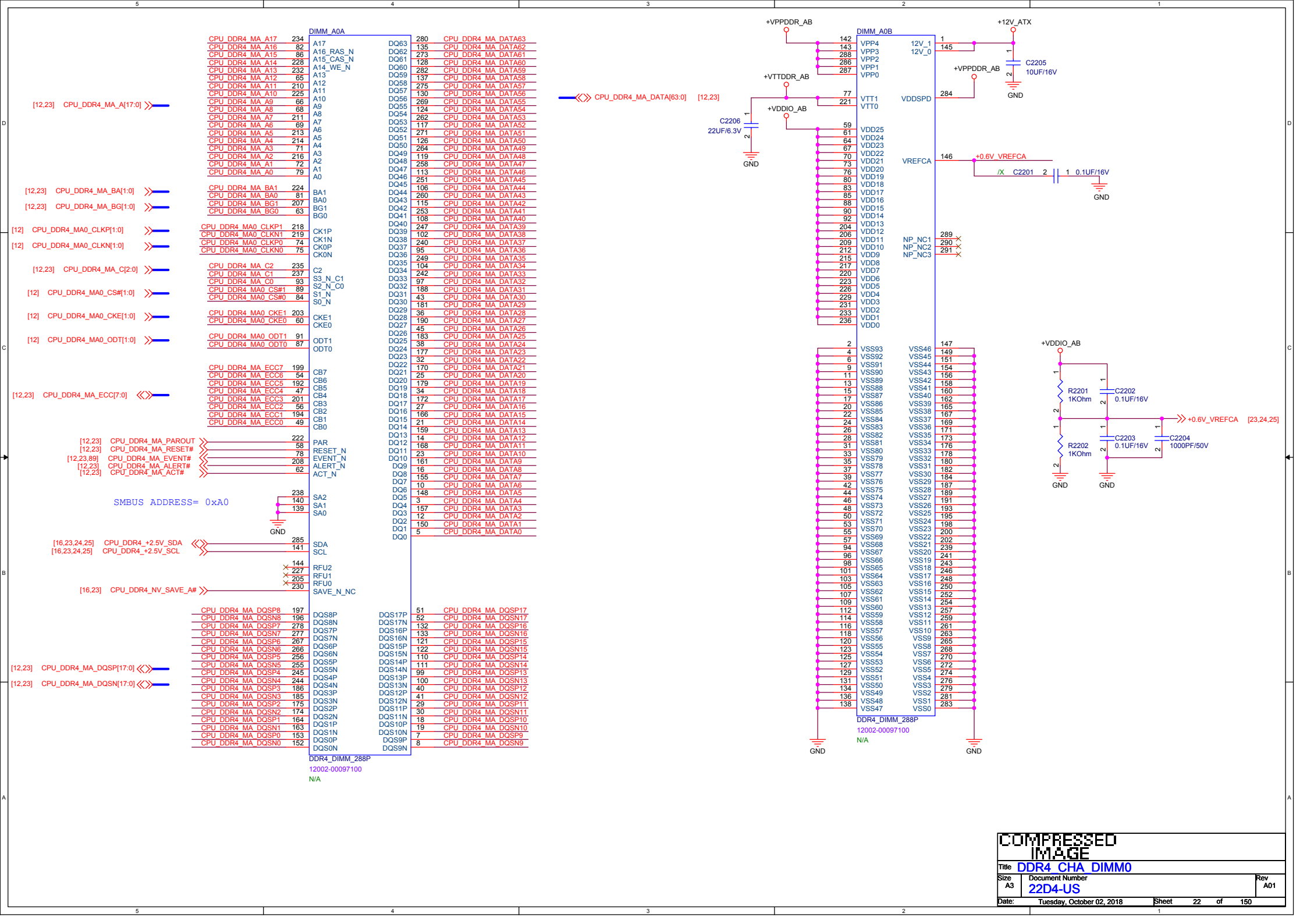

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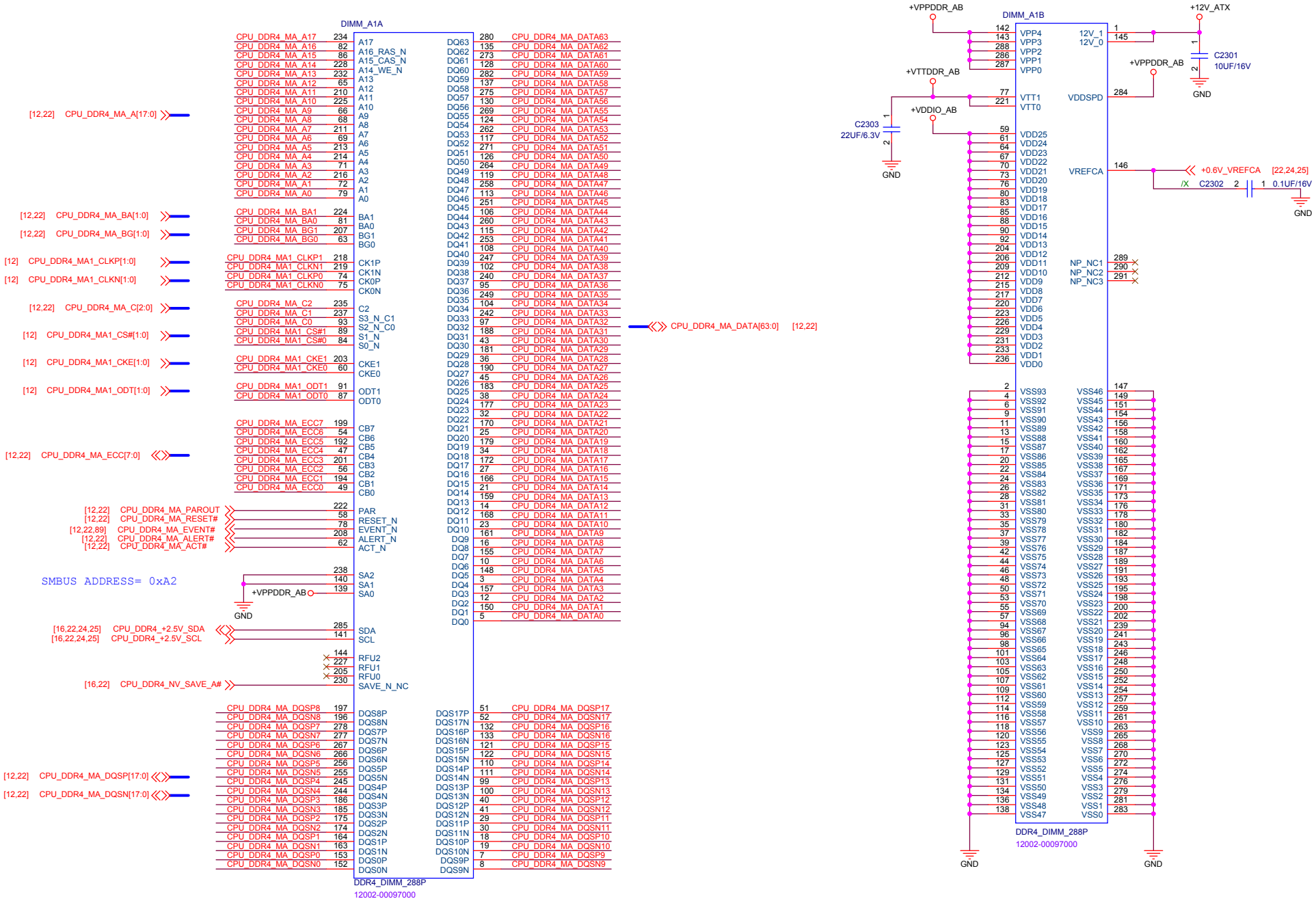

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Title	DDR4_CHA_DIMM1	
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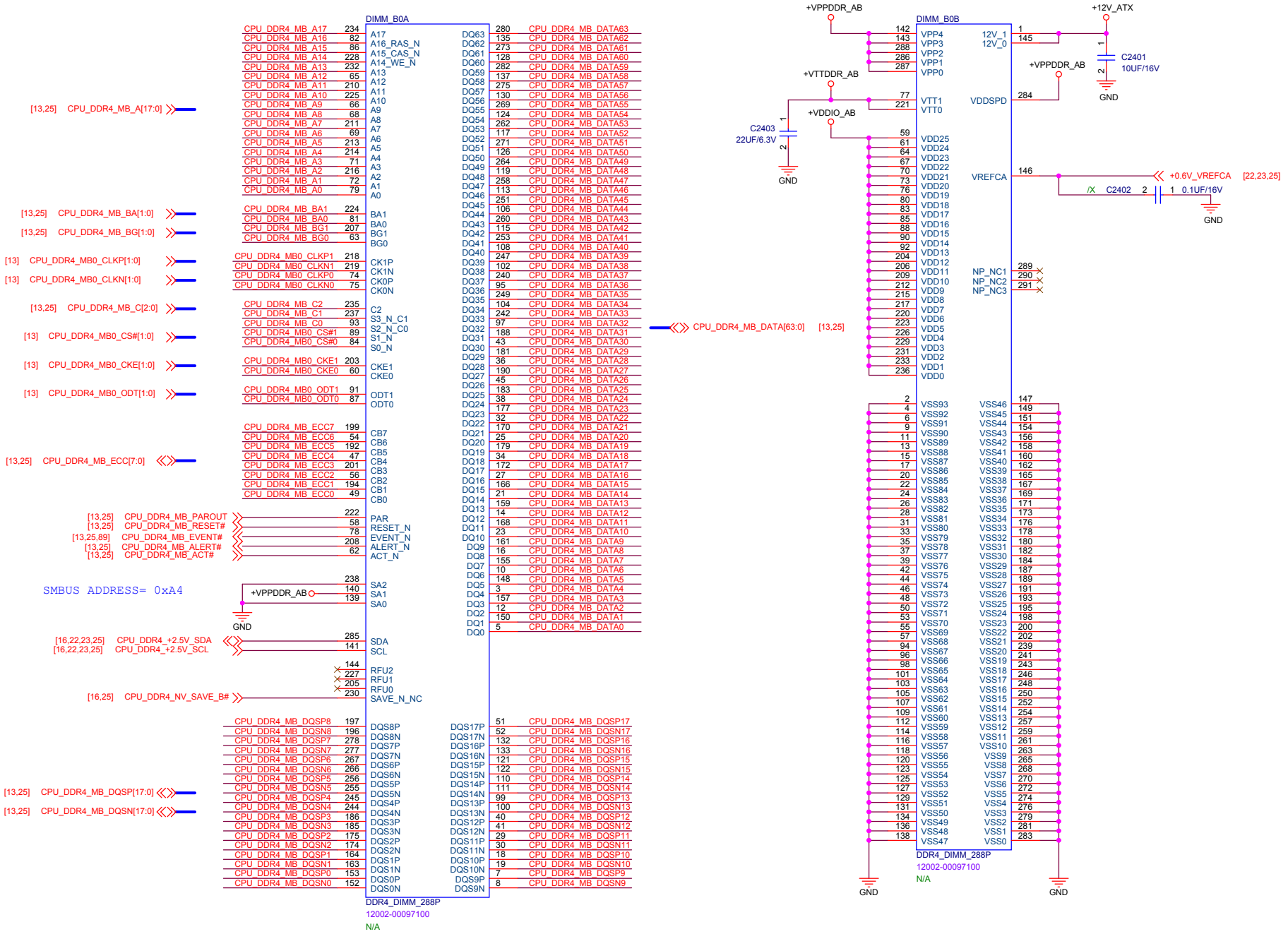

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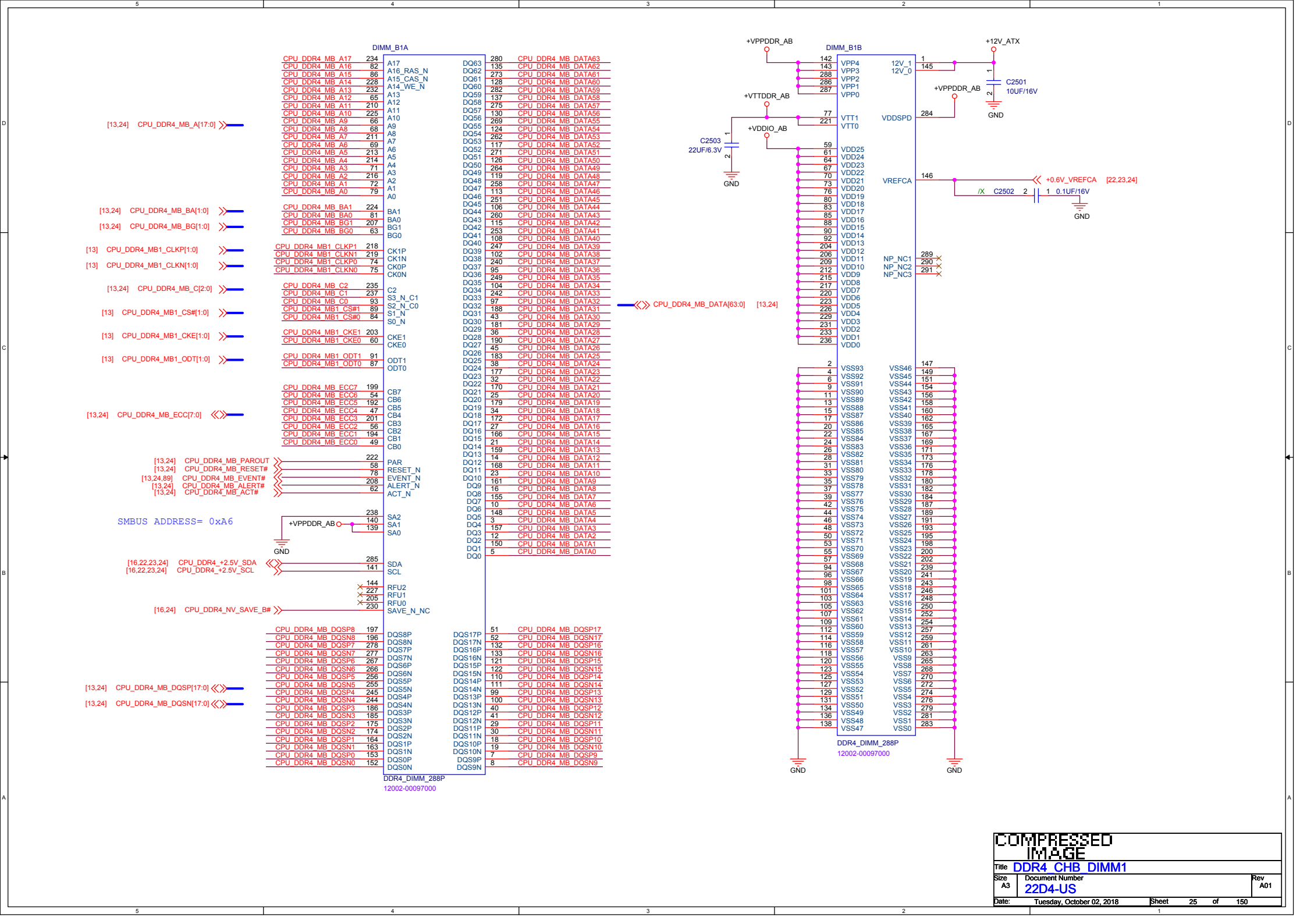

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Title	DDR4_CHB_DIMM1	
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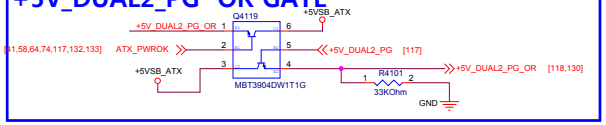
HW CPLD

+5V_DUAL2_PG OR GATE



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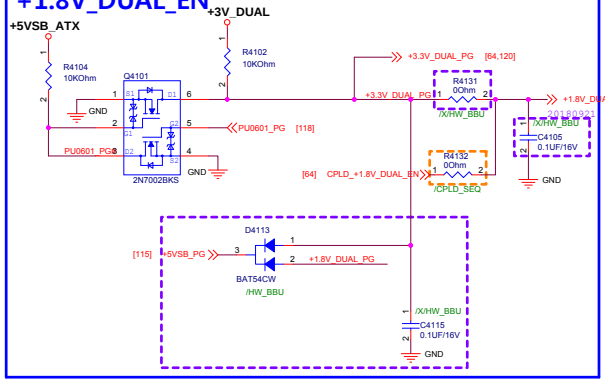

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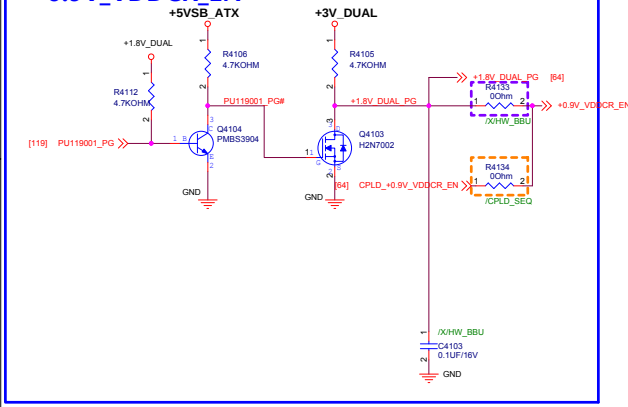

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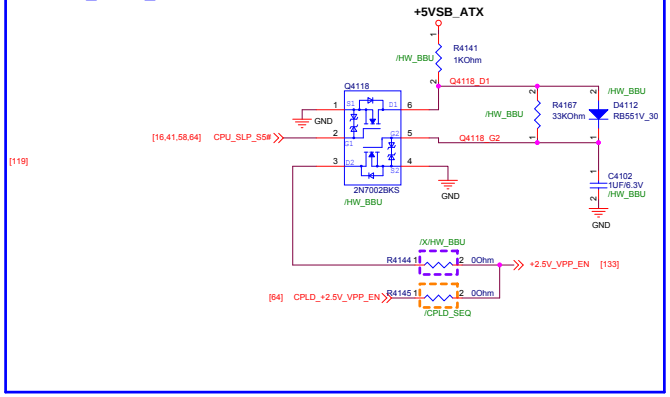

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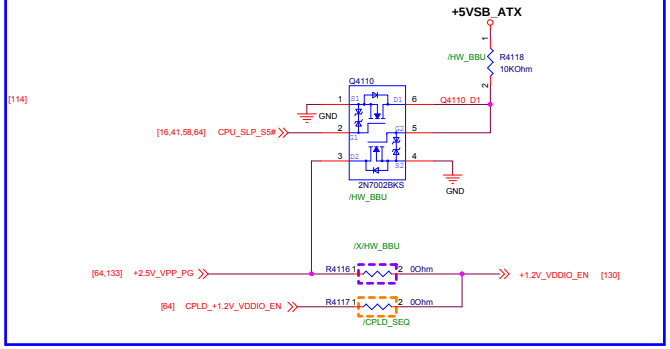

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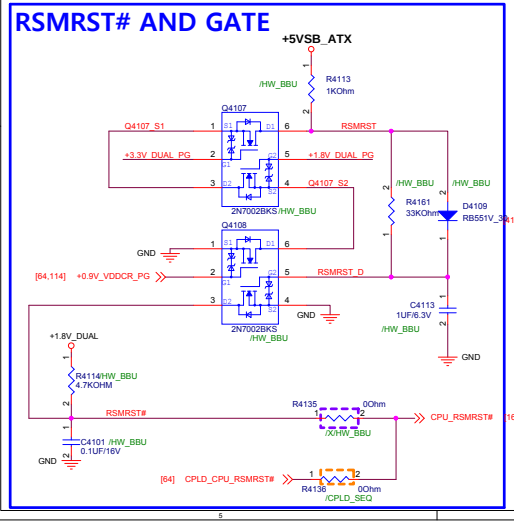
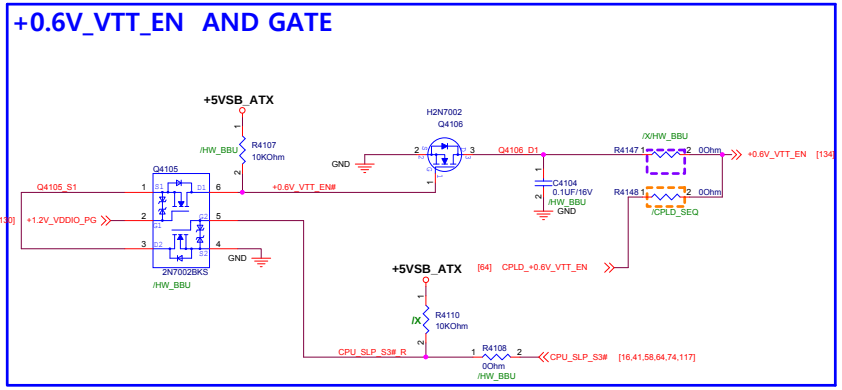
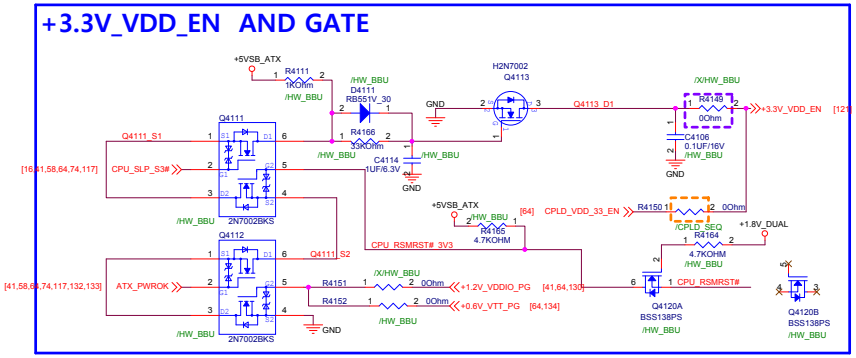


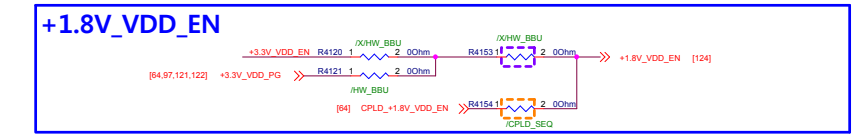
+0.6V_VTT_EN AND GATE



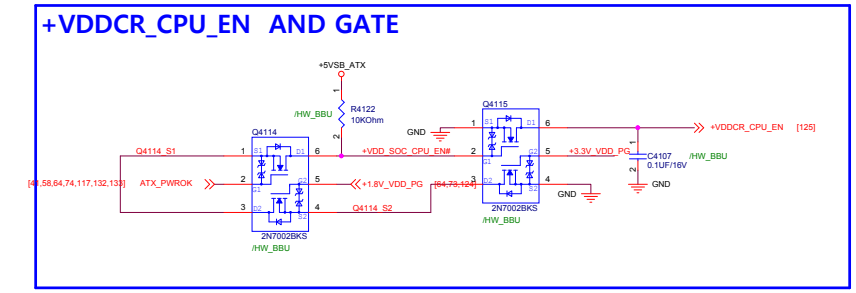
+3.3V_VDD_EN AND GATE



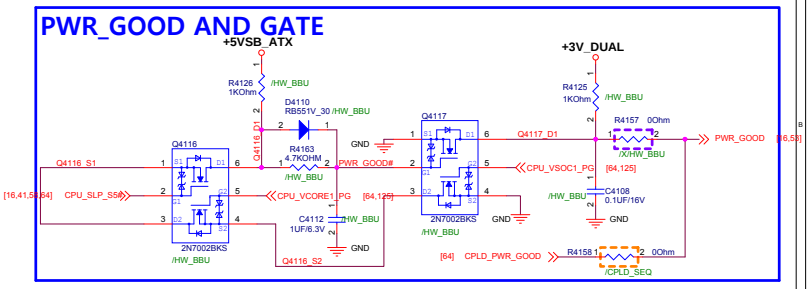
+1.8V_VDD_EN



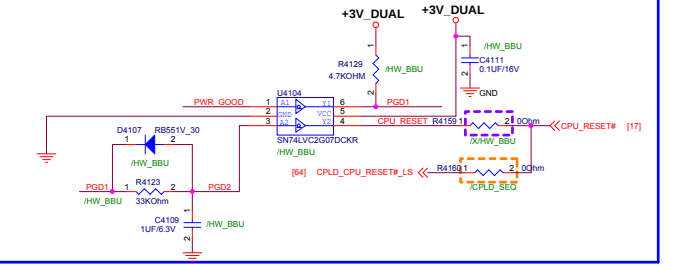
+VDDCR_CPU_EN AND GATE



PWR_GOOD AND GATE



RESET_L DELAY



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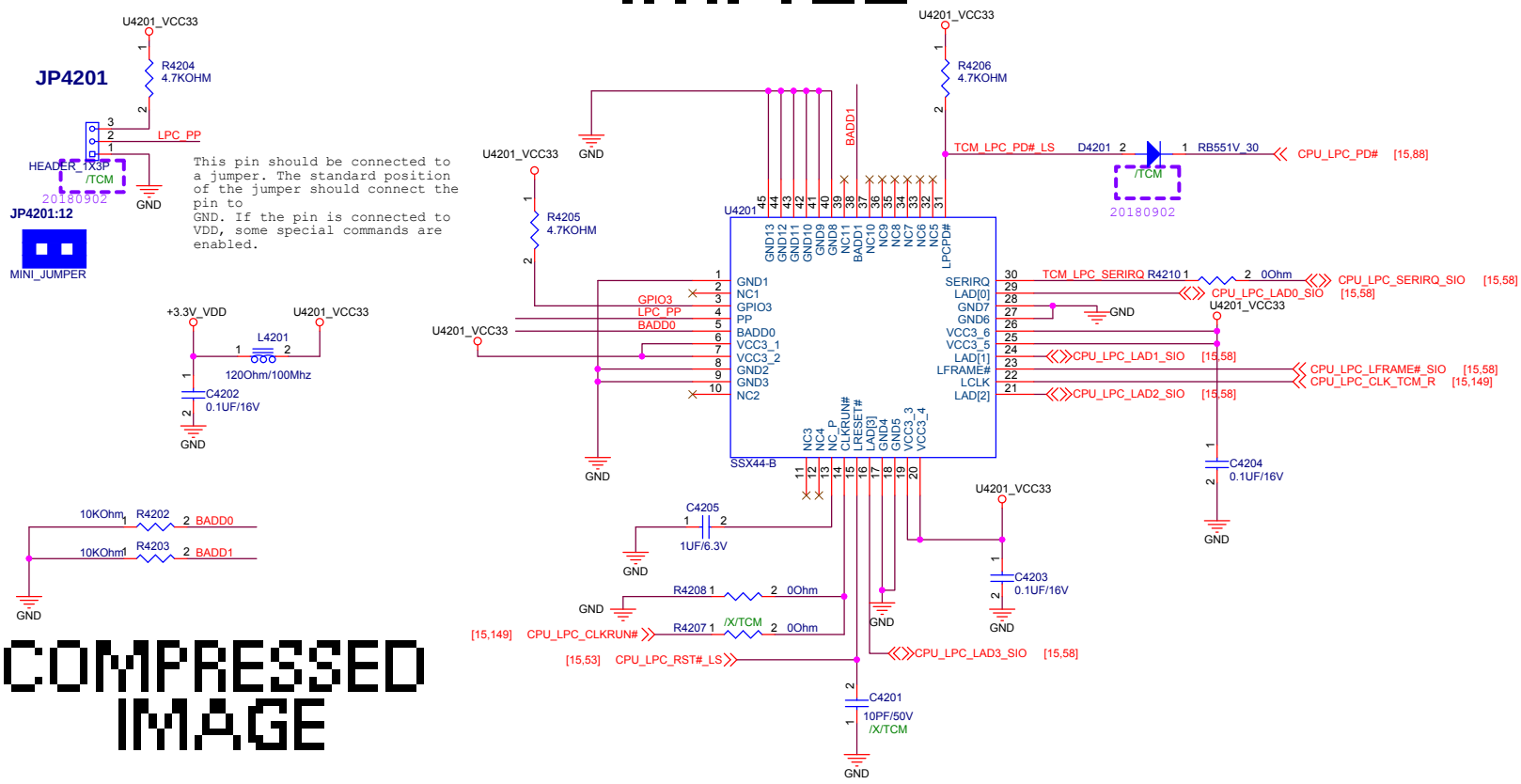

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Title	TCM SSX44-B	
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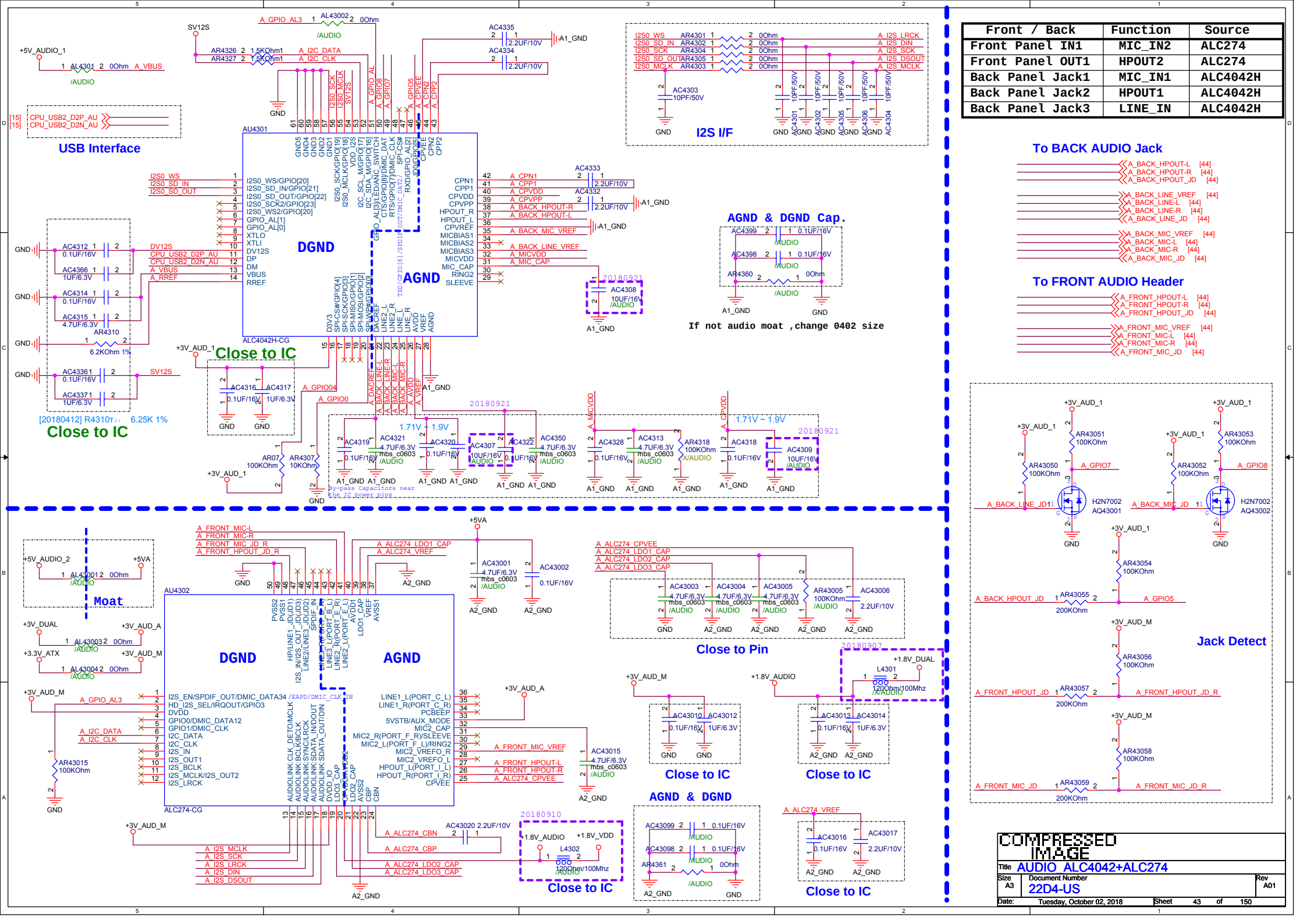
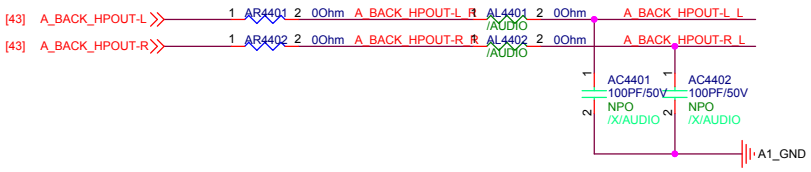
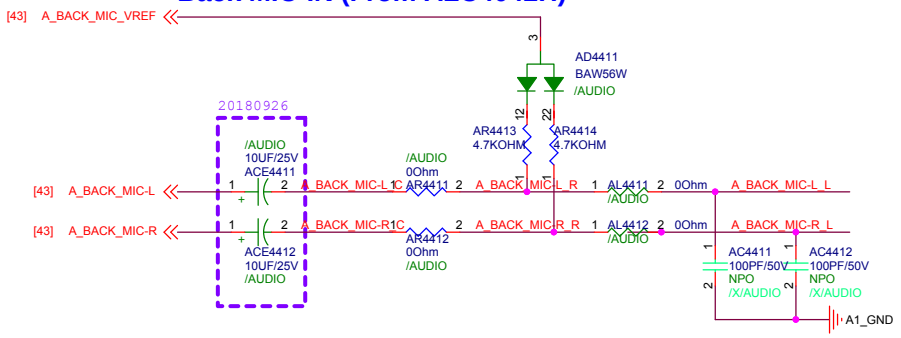


Front / Back	Function	Source
Front Panel IN1	MIC_IN2	ALC274
Front Panel OUT1	HPOUT2	ALC274
Back Panel Jack1	MIC_IN1	ALC4042H
Back Panel Jack2	HPOUT1	ALC4042H
Back Panel Jack3	LINE_IN	ALC4042H

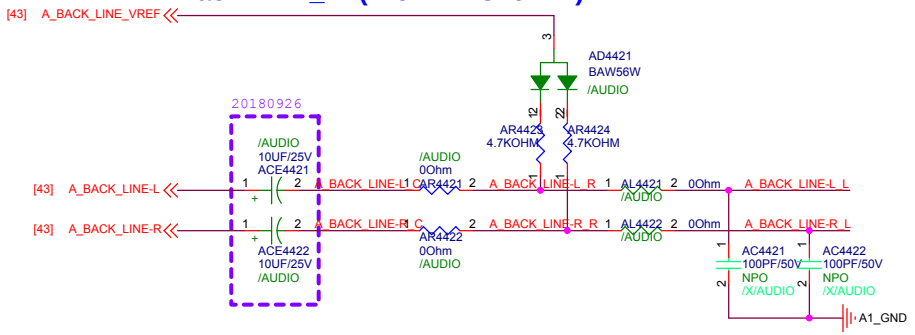
Back HPOUT (From ALC4042H)



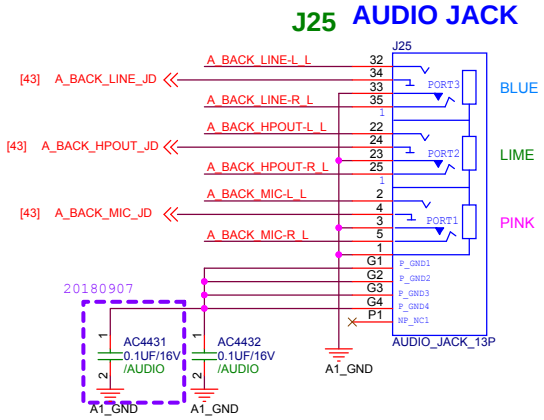
Back MIC-IN (From ALC4042H)



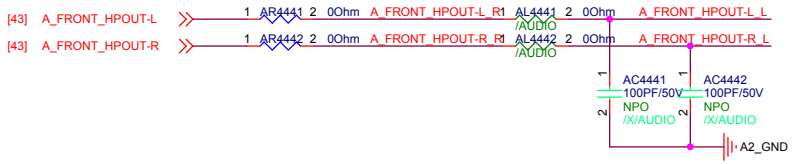
Back LINE_IN (From ALC4042H)



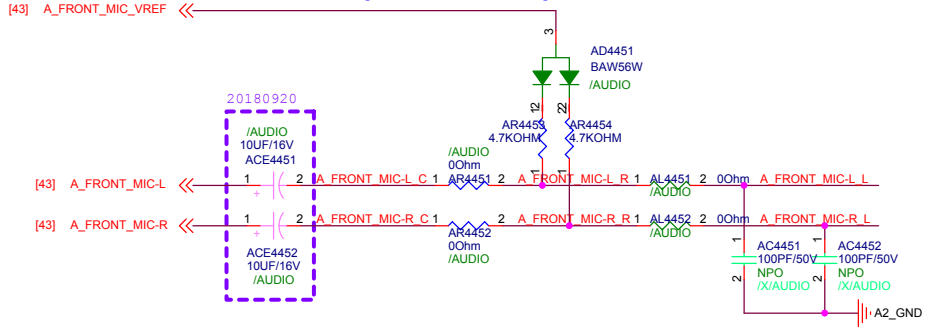
J25 AUDIO JACK



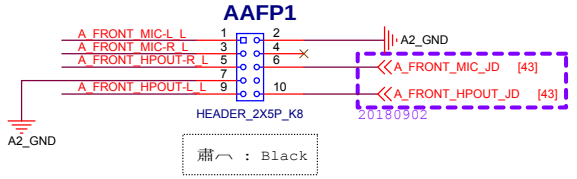
Front HPOUT (From ALC274)



Front MIC-IN (From ALC274)



AUDIO FRONT Panel (Header)



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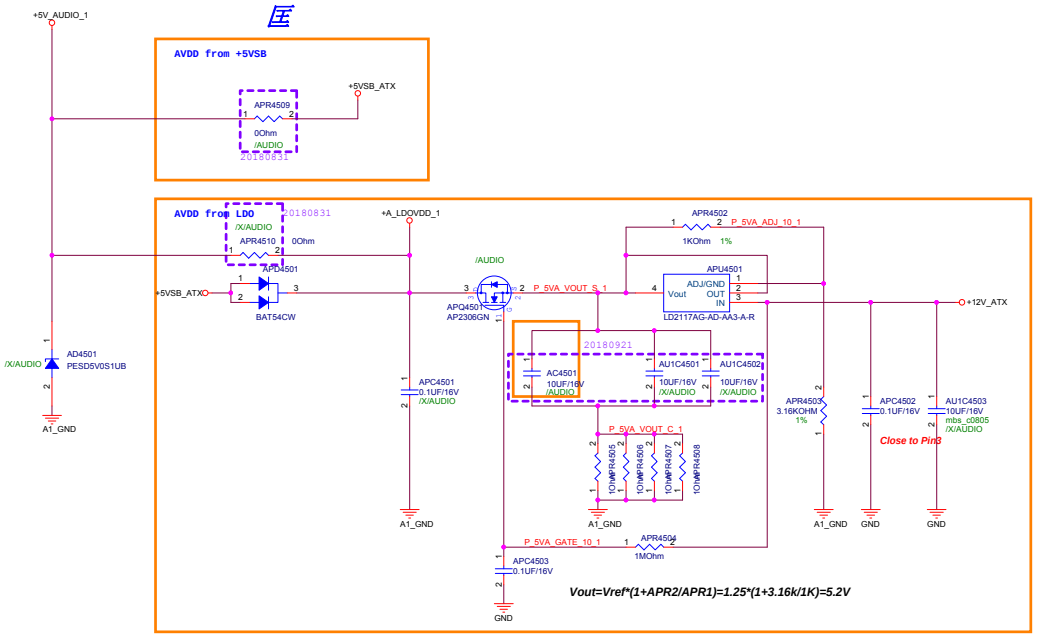

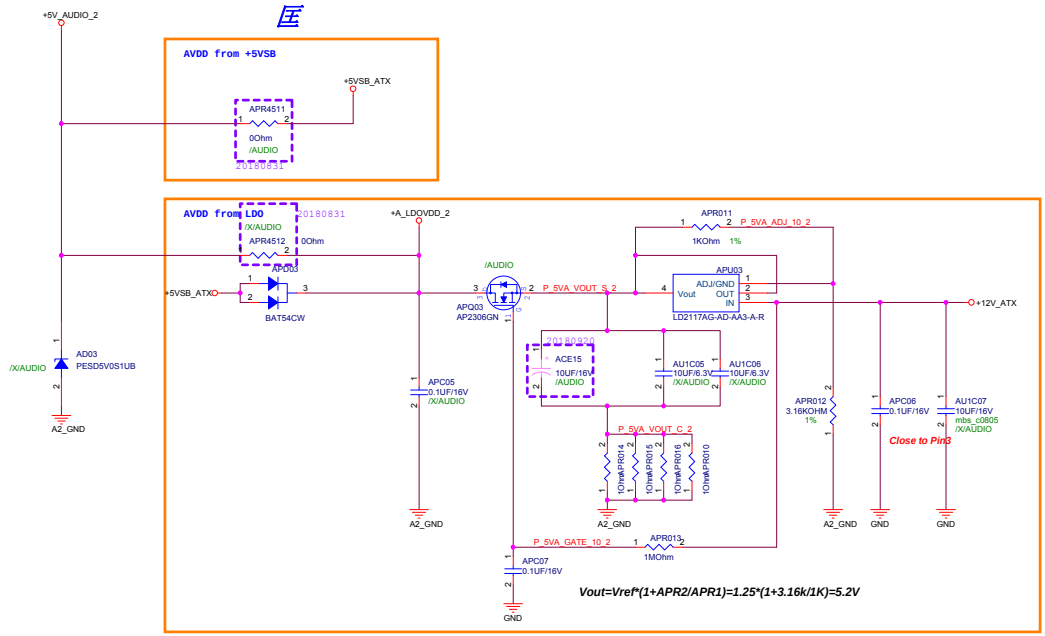

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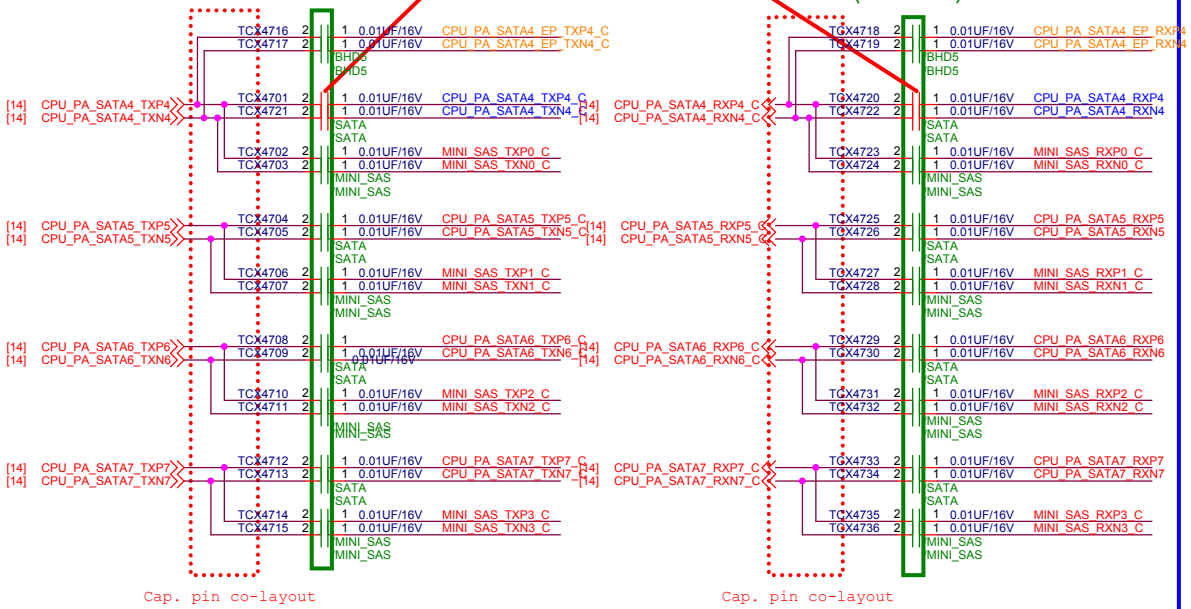
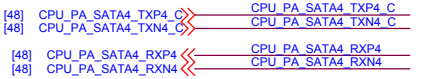
Part NO change to resistor

SATA & MINI SAS BOM Option

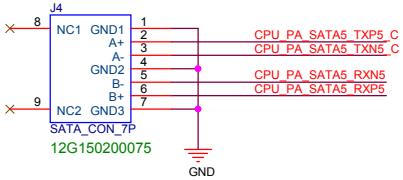
(viod)



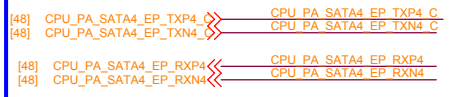
SATA PORT 0



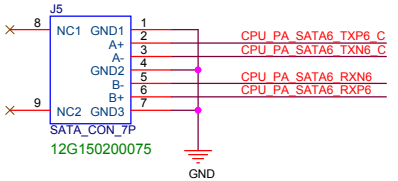
J4 SATA PORT 1



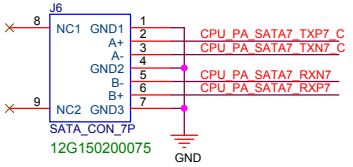
SATA PORT 0 to BHD5-AS5



J5 SATA PORT 2

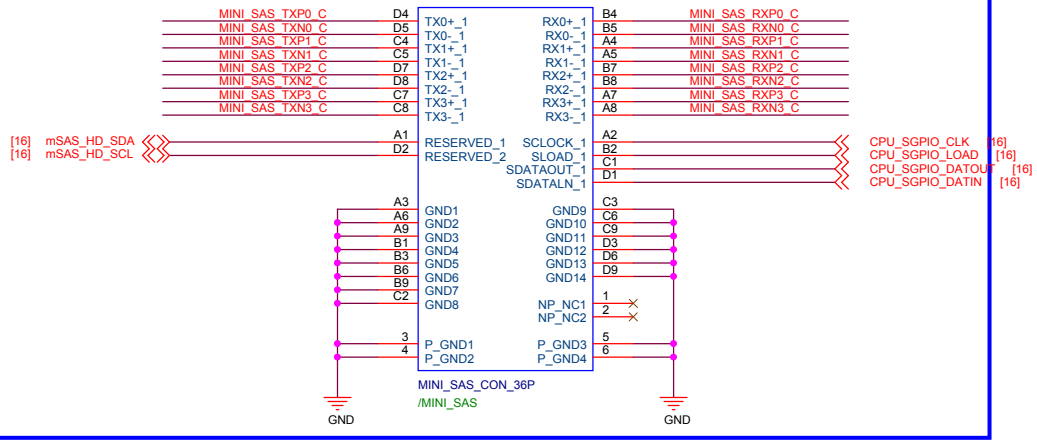


J6 SATA PORT 3



MiniAS HD (Vertical)

J2 J2



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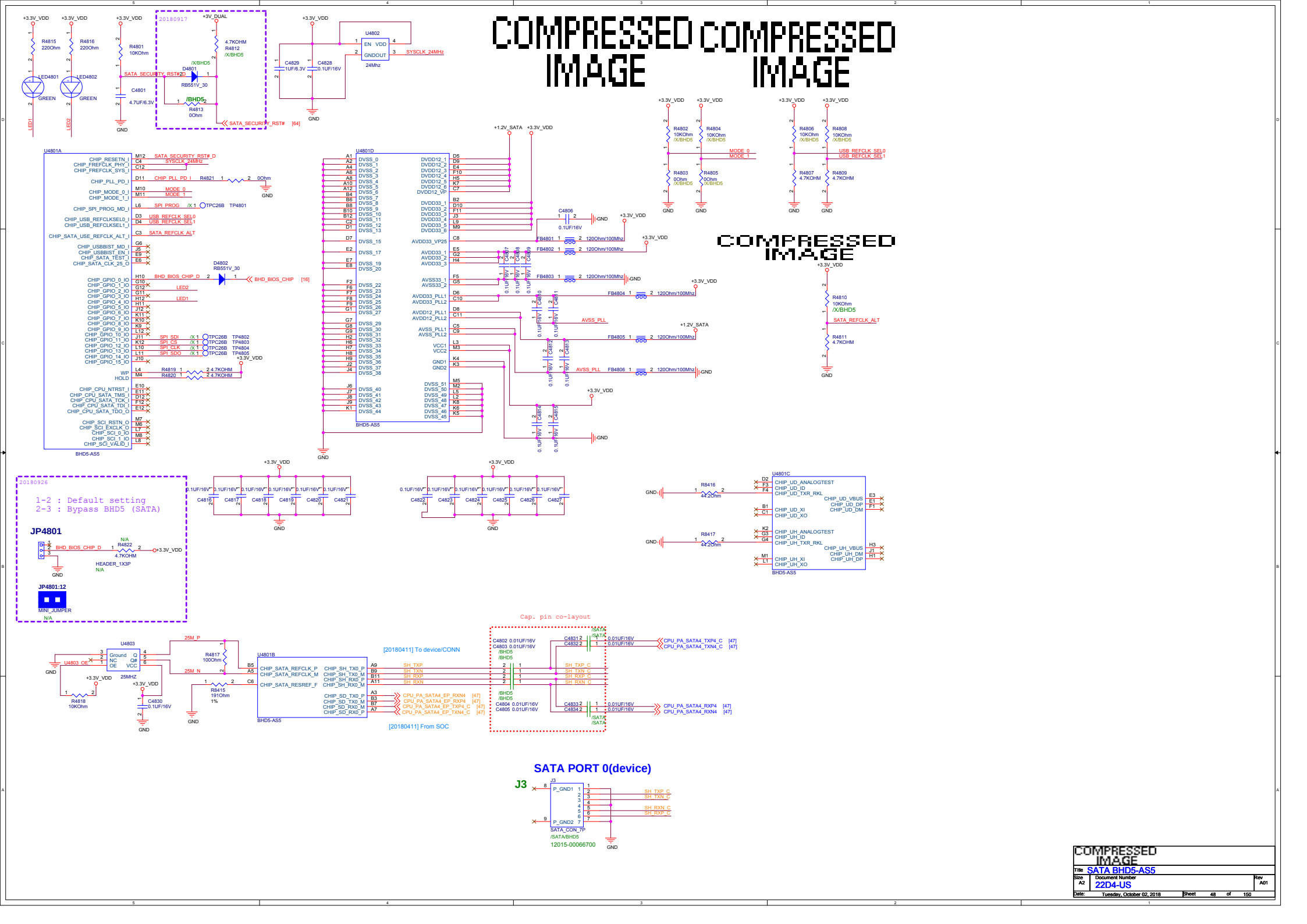
COMPRESSED IMAGE
COMPRESSED IMAGE
COMPRESSED IMAGE
20180917
20180926
1-2 : Default setting
2-3 : Bypass BHD5 (SATA)
JP4801
JP4801:12
Cap. pin co-layout
[20180411] To device/CONN
[20180411] From SOC
SATA PORT 0(device)
J3
12015-00066700
U4801A
U4801C
U4801D
U4801B
U4803
BHD5-AS5
SATA_CON_7P
HEADER_1X3P
MINI_JUMPER
Title SATA BHD5-AS5
Size A2
Document Number 22D4-US
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Title	N/A	
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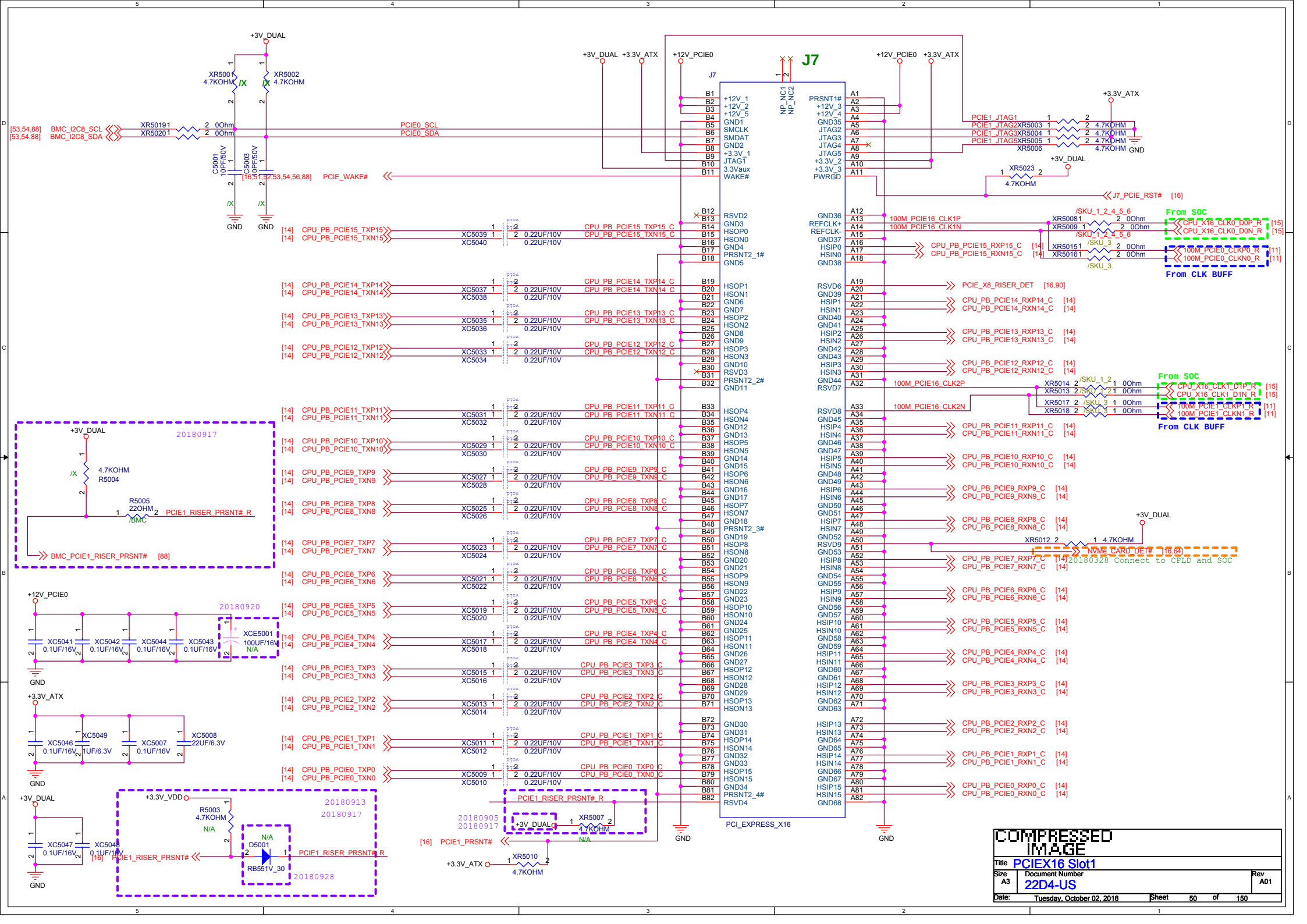
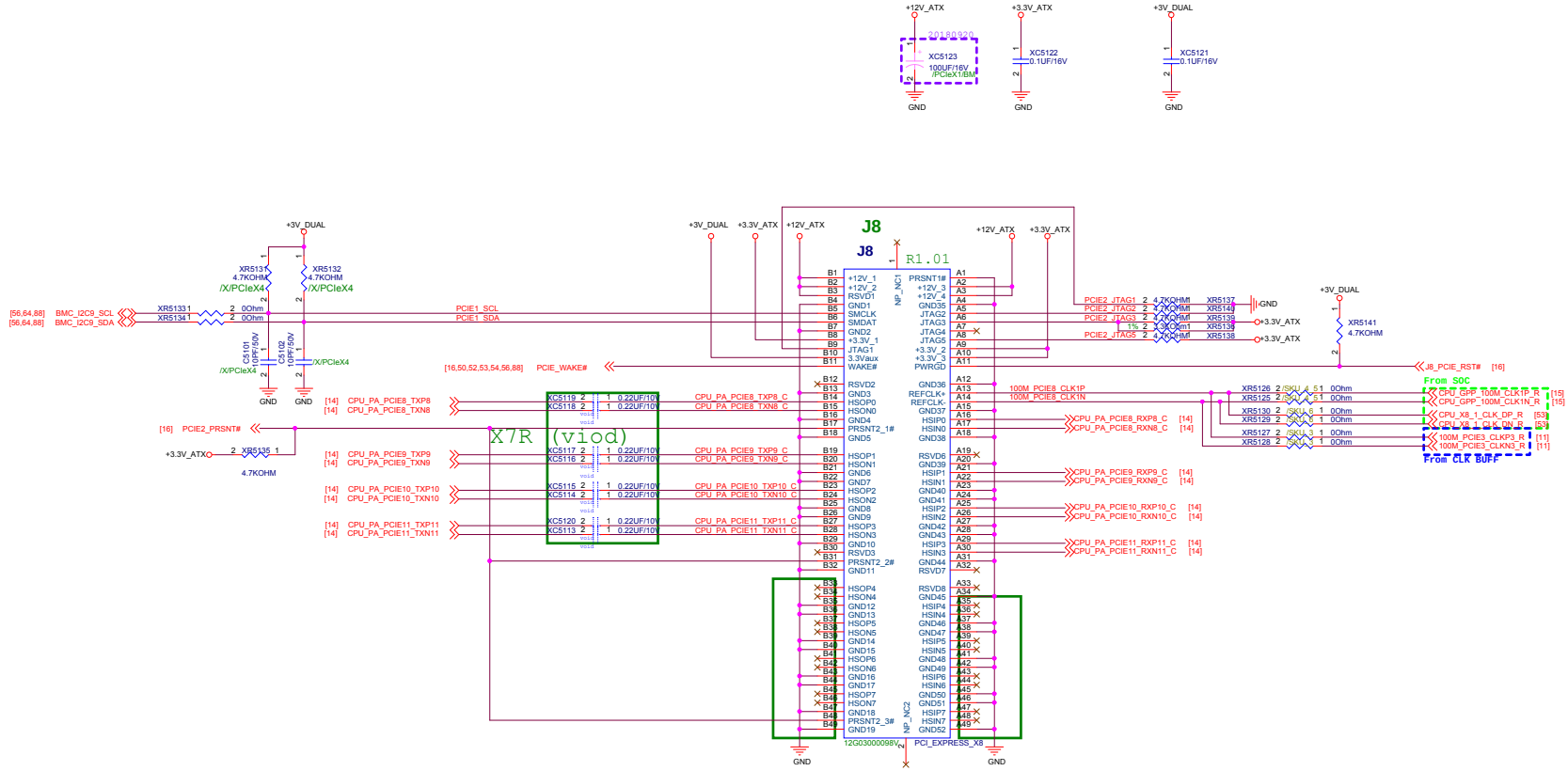

J7
PCI_EXPRESS_X16
+3V_DUAL
+3.3V_ATX
+12V_PCIE0
GND
PCIE1_RISER_PRSNT# R
PCIE1_RISER_PRSNT#
BMC_PCIE1_RISER_PRSNT#
PCIE_WAKE#
J7_PCIE_RST#
PCIE_X8_RISER_DET
NVME_CARD_DET#
From SOC
From CLK BUFF
COMPRESSED IMAGE
Title PCIEX16 Slot1
Size A3
Document Number 22D4-US
Rev A01
Date: Tuesday, October 02, 2018
Sheet 50 of 150


+12V_ATX
+3.3V_ATX
+3V_DUAL
20180920
XC5123
100UF/16V
/PCIeX16M
XC5122
0.1UF/16V
XC5121
0.1UF/16V
GND
J8
R1.01
PCIE1_SCL
PCIE1_SDA
PCIE_WAKE#
PCIE2_PRSNT#
CPU_PA_PCIE8_TXP8
CPU_PA_PCIE8_TXN8
CPU_PA_PCIE9_TXP9
CPU_PA_PCIE9_TXN9
CPU_PA_PCIE10_TXP10
CPU_PA_PCIE10_TXN10
CPU_PA_PCIE11_TXP11
CPU_PA_PCIE11_TXN11
X7R (viod)
PCI_EXPRESS_X8
100M_PCIE8_CLK1P
100M_PCIE8_CLK1N
From SOC
From CLK BUFF
J8_PCIE_RST#
COMPRESSED IMAGE
PCIEX 4 Slot1
22D4-US
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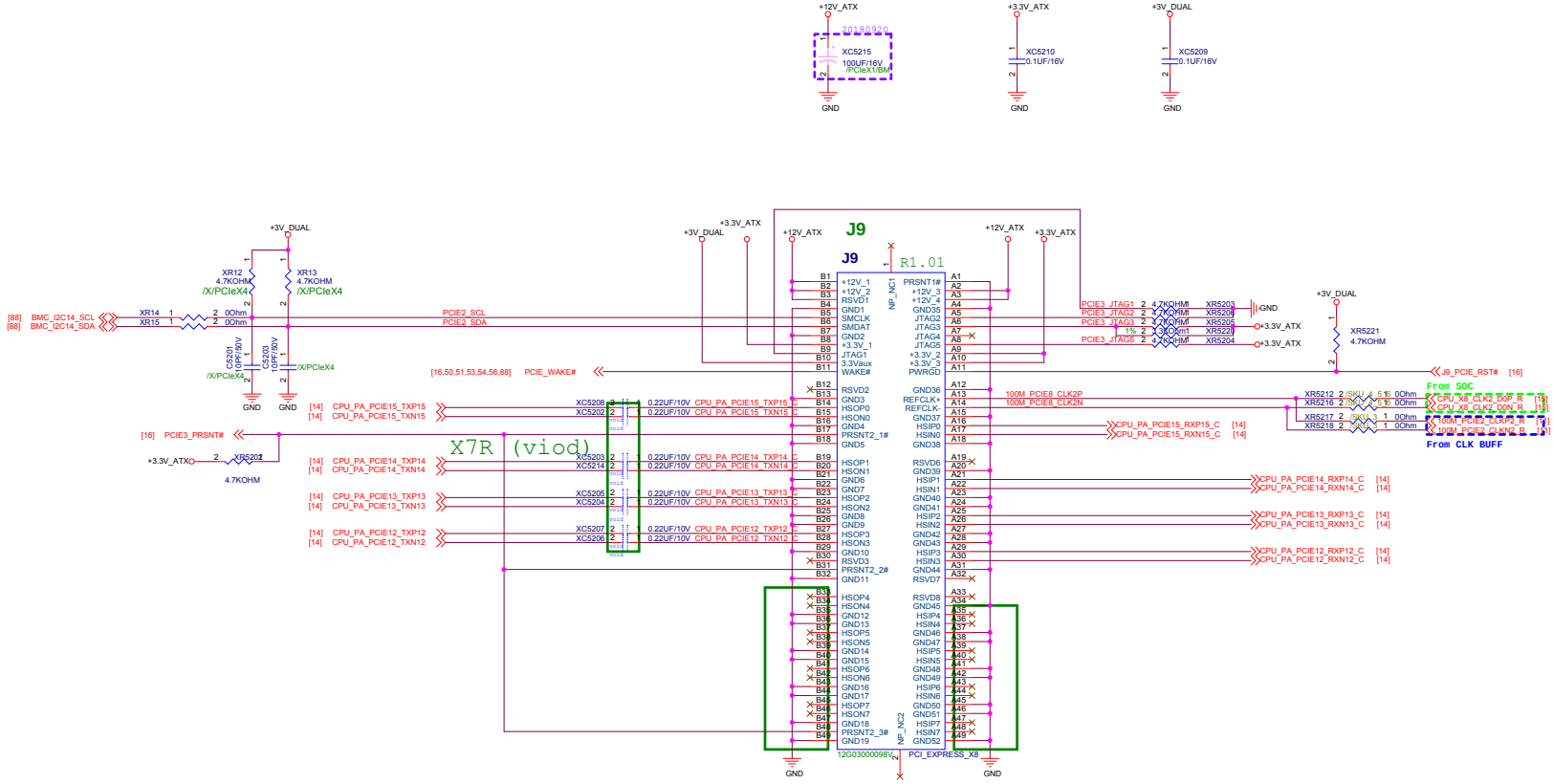

COMPRESSED IMAGE

Title	PCIEX 4 Slot2		
Size A2	Document Number 22D4-US		Rev A01
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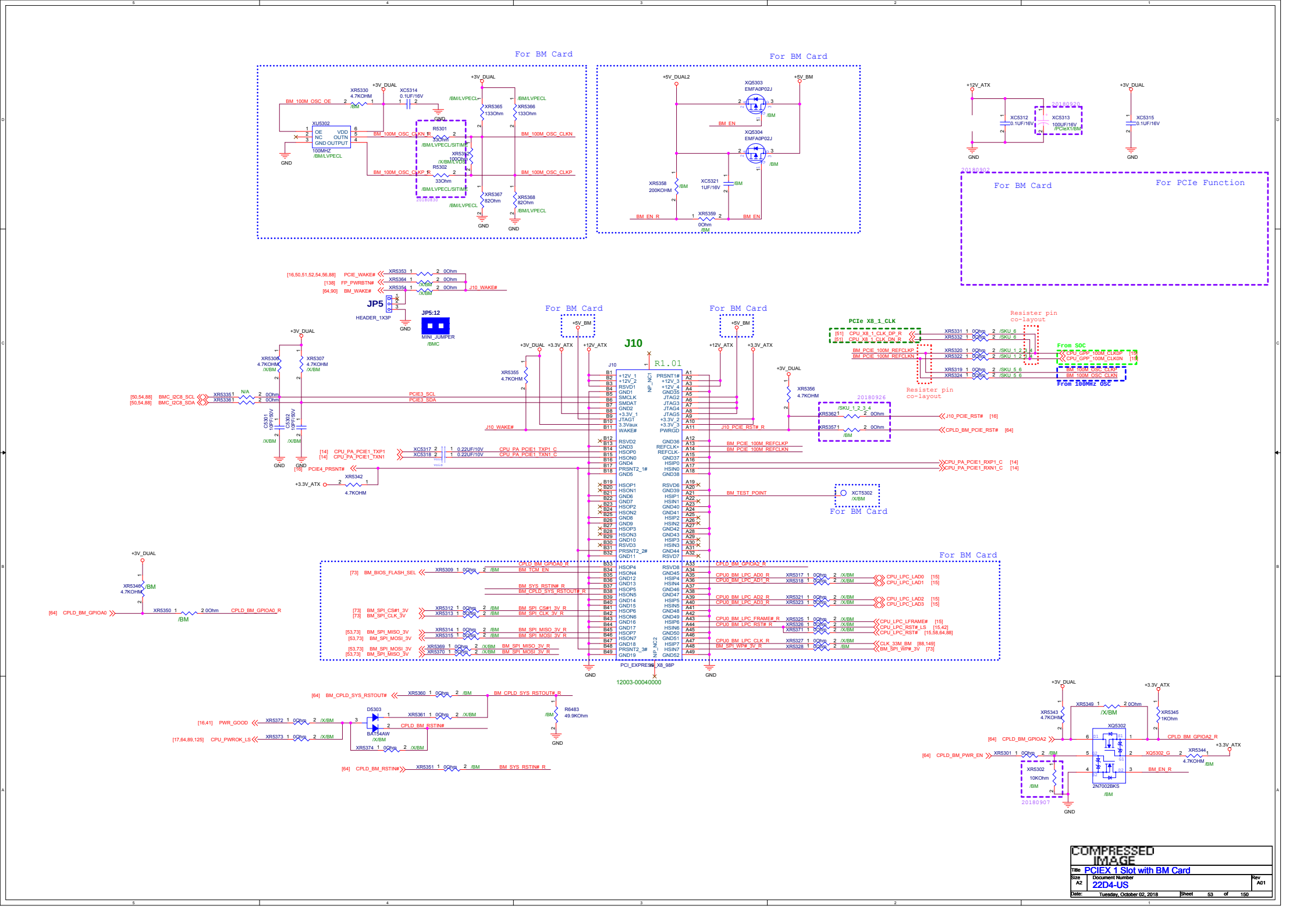
For BM Card
For BM Card
For BM Card
For PCIe Function
For BM Card
For BM Card
For BM Card
For BM Card
J10
R1.01
PCIe X8_1_CLK
Resister pin co-layout
From SOC
From 100MHz OSC
Resister pin co-layout
PCI_EXPRESS_X8_98P
12003-00040000
COMPRESSED IMAGE
Title PCIEX 1 Slot with BM Card
Size A2
Document Number 22D4-US
Rev A01
Date: Tuesday, October 02, 2018
Sheet 53 of 150

refer to Z10PA-U8_R101 schematic

20180327 Follow Intel I210 CRB design, No use NCSI need to PU 10KOhm

20180327 Follow Intel I210 CRB design, No use NCSI need to PD 10KOhm

Follow CRB A.B.

From SOC GPP_CLK3

I210:LAN1_SDP1(61)
X : Normal
0 : Disable PCIe Function

I210:LAN1_NVMSI(12)
1: Enable NVM Security

0: Disable NVM Security

Move L1C5419 and L1C5420 to L1U1 pin 38

Place Bottom side and close to L1U1 pin 11 and pin 59

20121024: support i210A2 1MB FW

COMPRESSED IMAGE

Title	LAN1-I210_NCSI	
Size A3	Document Number 22D4-US	Rev A01
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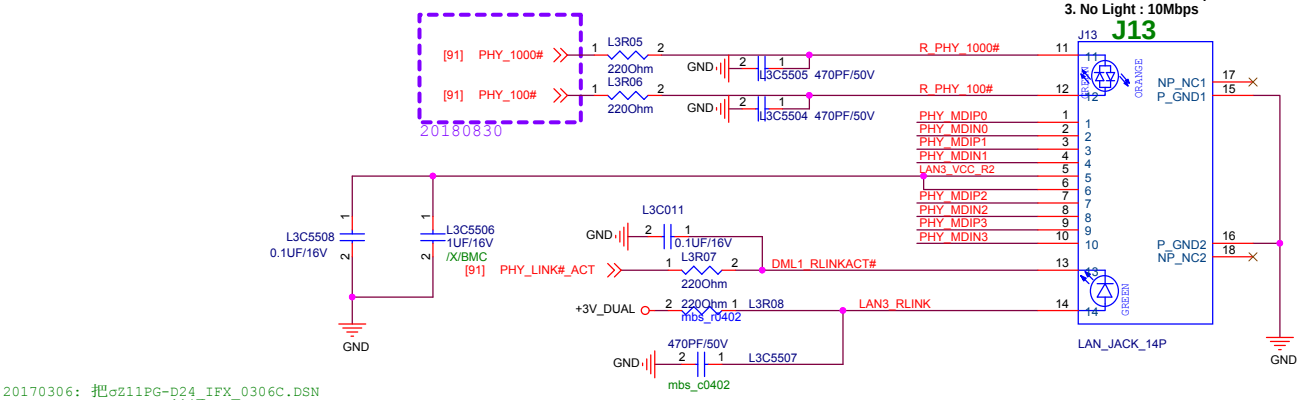
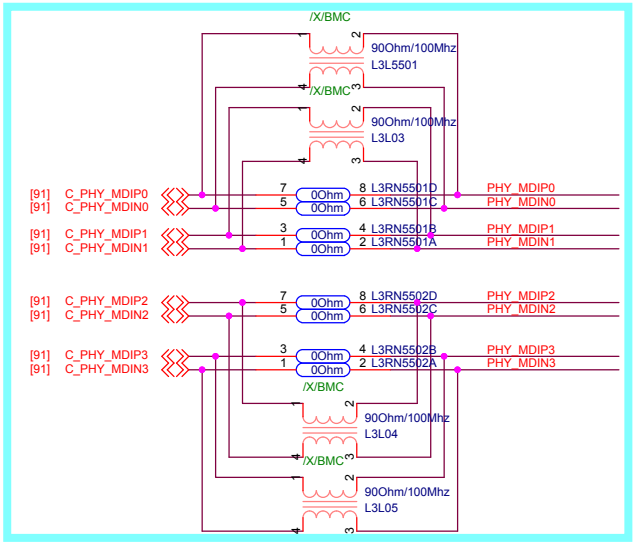
20180413 ɔDM_LAN1_USB3_12 腹

Lan dedicate Interface

SPEED LED:
1. GREEN : 100Mbps
2. ORANGE : 1000Mbps
3. No Light : 10Mbps



20170306: 把ɔZ11PG-D24_IFX_0306C.DSN
20170306: swap for 抖結



COMPRESSED IMAGE

Title	DM_LAN1_USB3_12	
Size A3	Document Number 22D4-US	Rev A01
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refer to Z10PA-U8_R101 schematic

20180327 Follow Intel I210 CRB design, No use NCSI need to PU 10KOhm

20180327 Follow Intel I210 CRB design, No use NCSI need to PD 10KOhm

20181001

20181002

20170822 SR805/SR807

I210:LAN2_SDP1(61)
X : Normal
0 : Disable PCIe Function

P=1/16-3.3*3.3/220=0.0625-0.0495=0.013 W

I210:LAN1_NVMSI(12)
1: Enable NVM Security
0: Disable NVM Security

Move L2C5613 and L2C5401 to L2U4 pin 38

Place Bottom side and close to L2U4 pin 11 and pin 59

Follow CRB A.B.

From SOC GPP_CLK2

20121024: support i210A2 1MB FW

Title	LAN2-I210
Size	A3
Document Number	22D4-US
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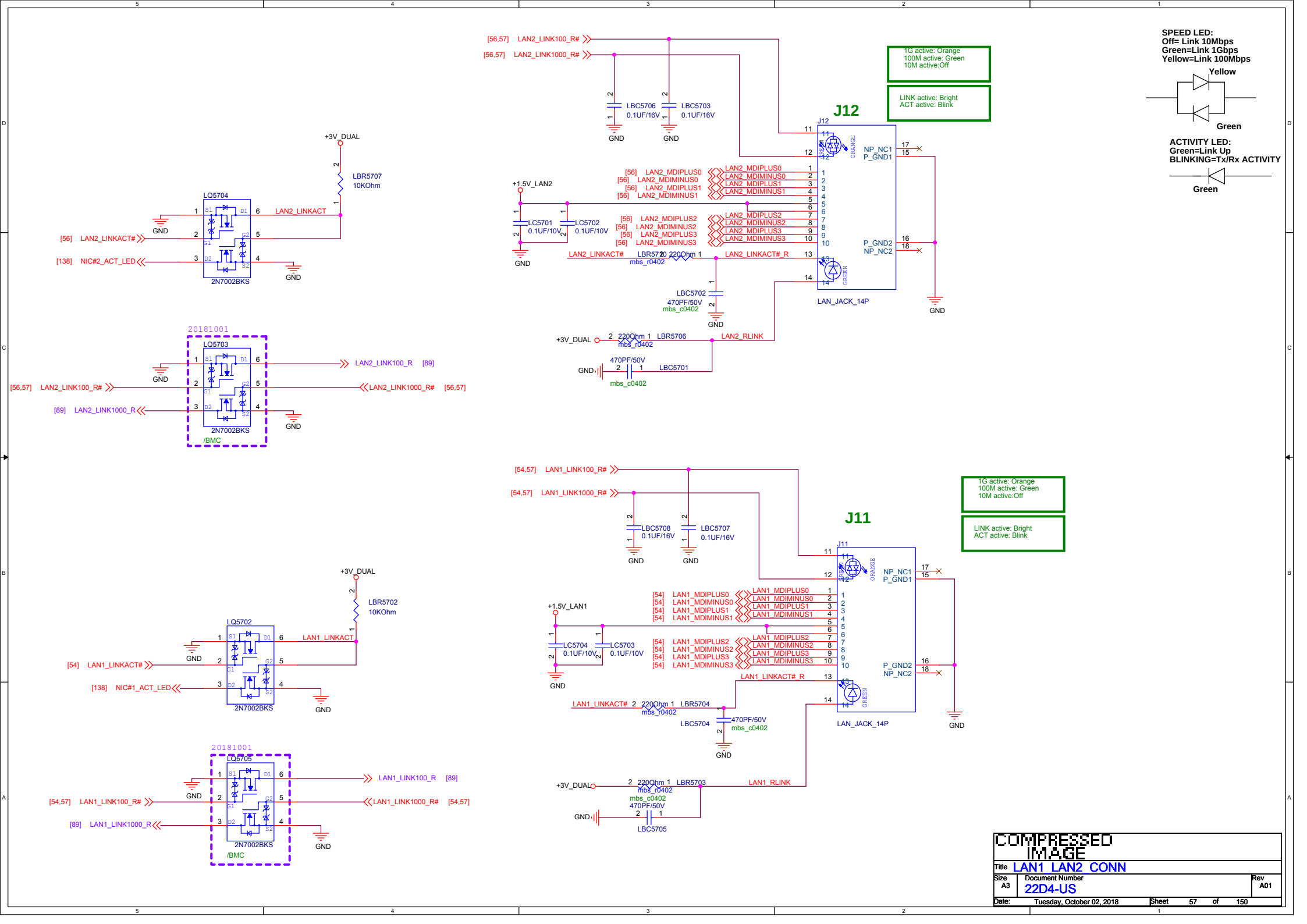
SPEED LED:
Off= Link 10Mbps
Green=Link 1Gbps
Yellow=Link 100Mbps
Yellow
Green
ACTIVITY LED:
Green=Link Up
BLINKING=Tx/Rx ACTIVITY
Green
J12
1G active: Orange
100M active: Green
10M active:Off
LINK active: Bright
ACT active: Blink
[56,57] LAN2_LINK100_R#
[56,57] LAN2_LINK1000_R#
LBC5706 0.1UF/16V
LBC5703 0.1UF/16V
GND
+3V_DUAL
LBR5707 10KOhm
LQ5704
2N7002BKS
LAN2_LINKACT
[56] LAN2_LINKACT#
[138] NIC#2_ACT_LED
+1.5V_LAN2
LC5701 0.1UF/10V
LC5702 0.1UF/10V
[56] LAN2_MDIPLUS0
[56] LAN2_MDIMINUS0
[56] LAN2_MDIPLUS1
[56] LAN2_MDIMINUS1
[56] LAN2_MDIPLUS2
[56] LAN2_MDIMINUS2
[56] LAN2_MDIPLUS3
[56] LAN2_MDIMINUS3
LAN2_MDIPLUS0
LAN2_MDIMINUS0
LAN2_MDIPLUS1
LAN2_MDIMINUS1
LAN2_MDIPLUS2
LAN2_MDIMINUS2
LAN2_MDIPLUS3
LAN2_MDIMINUS3
LAN2_LINKACT#
LBR5710 220Ohm 1
mbs_r0402
LAN2_LINKACT# R
LBC5702 470PF/50V mbs_c0402
LAN_JACK_14P
NP_NC1
P_GND1
P_GND2
NP_NC2
+3V_DUAL
LBR5706
LAN2_RLINK
LBC5701
470PF/50V
mbs_c0402
20181001
LQ5703
/BMC
LAN2_LINK100_R [89]
LAN2_LINK1000_R# [56,57]
[89] LAN2_LINK1000_R
[54,57] LAN1_LINK100_R#
[54,57] LAN1_LINK1000_R#
LBC5708 0.1UF/16V
LBC5707 0.1UF/16V
J11
1G active: Orange
100M active: Green
10M active:Off
LINK active: Bright
ACT active: Blink
+1.5V_LAN1
LC5704 0.1UF/10V
LC5703 0.1UF/10V
[54] LAN1_MDIPLUS0
[54] LAN1_MDIMINUS0
[54] LAN1_MDIPLUS1
[54] LAN1_MDIMINUS1
[54] LAN1_MDIPLUS2
[54] LAN1_MDIMINUS2
[54] LAN1_MDIPLUS3
[54] LAN1_MDIMINUS3
LAN1_MDIPLUS0
LAN1_MDIMINUS0
LAN1_MDIPLUS1
LAN1_MDIMINUS1
LAN1_MDIPLUS2
LAN1_MDIMINUS2
LAN1_MDIPLUS3
LAN1_MDIMINUS3
LAN1_LINKACT# R
LAN1_LINKACT# 2 220Ohm 1 LBR5704
mbs_r0402
LBC5704 470PF/50V mbs_c0402
LAN_JACK_14P
NP_NC1
P_GND1
P_GND2
NP_NC2
+3V_DUAL
LBR5703
LAN1_RLINK
LBC5705
470PF/50V
mbs_c0402
20181001
LQ5705
/BMC
LAN1_LINK100_R [89]
LAN1_LINK1000_R# [54,57]
[89] LAN1_LINK1000_R
LQ5702
2N7002BKS
LBR5702 10KOhm
LAN1_LINKACT
[54] LAN1_LINKACT#
[138] NIC#1_ACT_LED
COMPRESSED IMAGE
Title LAN1_LAN2_CONN
Size A3
Document Number 22D4-US
Rev A01
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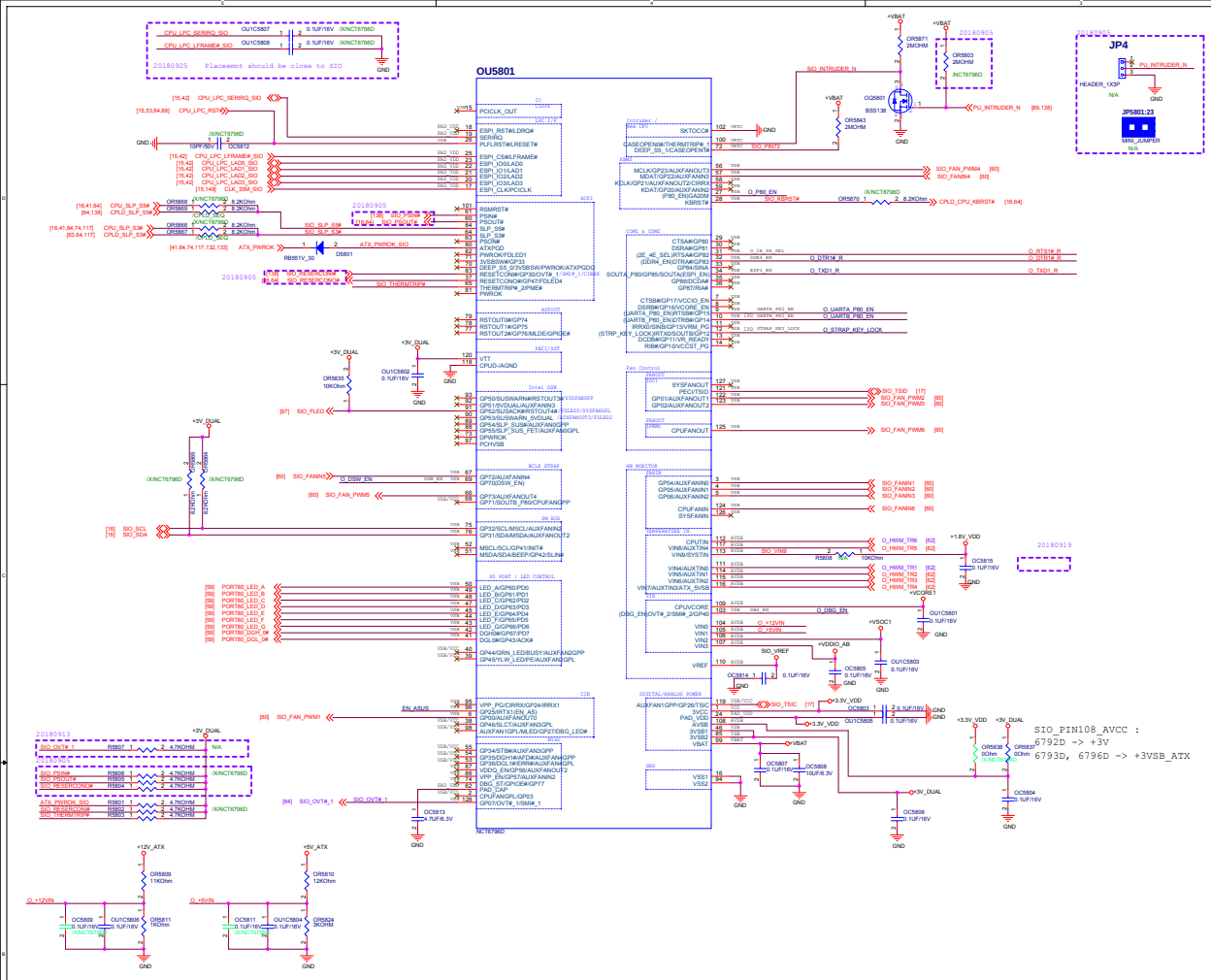

COMPRESSED IMAGE

COMPRESSED IMAGE

COMPRESSED IMAGE

COMPRESSED IMAGE

SIO_PIN9	B796: UARTAP80
	Strapped by UARTAP
Pull up	Enabled
pull down	Disabled

COMPRESSED IMAGE

SIO_PIN9	B796: UARTAP80
	Strapped by UARTAP
Pull up	Enabled
pull down	Disabled

COMPRESSED IMAGE

COMPRESSED IMAGE

COMPRESSED IMAGE

COMPRESSED IMAGE

COMPRESSED IMAGE

COMPRESSED IMAGE

COMPRESSED IMAGE

File	NCT6796D(MAIN,HW MONITOR)
Size	A1
Document Number	22D4-US
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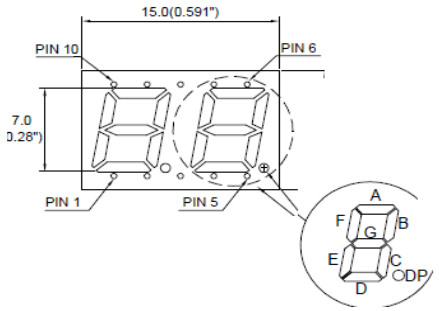
Port 80 (7 Segment). SIO is common athode.

Package Dimensions

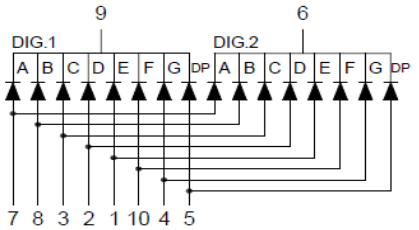


Electrical Connection

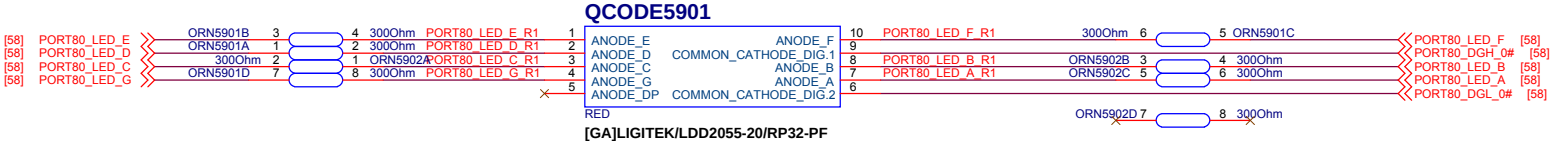
PIN NO.	LDD2055-20/RP32-PF
1	Anode E
2	Anode D
3	Anode C
4	Anode G
5	Anode DP
6	Common Cathode Dig.2
7	Anode A
8	Anode B
9	Common Cathode Dig.1
10	Anode F

Internal Circuit Diagram

LDD2055-20/RP32-PF



Q_CODE_low byte



[GA]LIGITEK/LDD2055-20/RP32-PF

COMPRESSED IMAGE

Title	NCT6796D(PORT 80 LED)	
Size A3	Document Number 22D4-US	Rev A01
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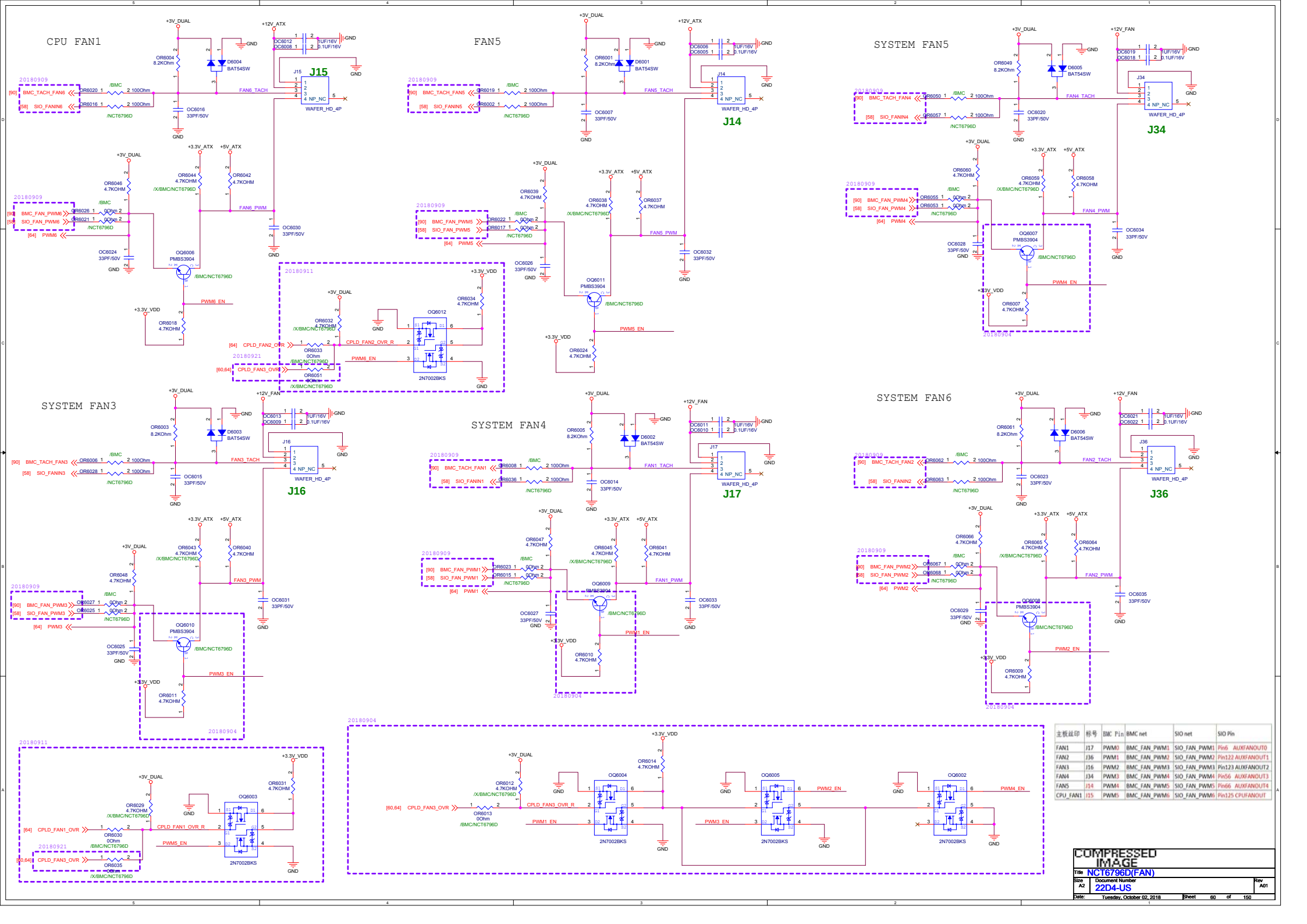
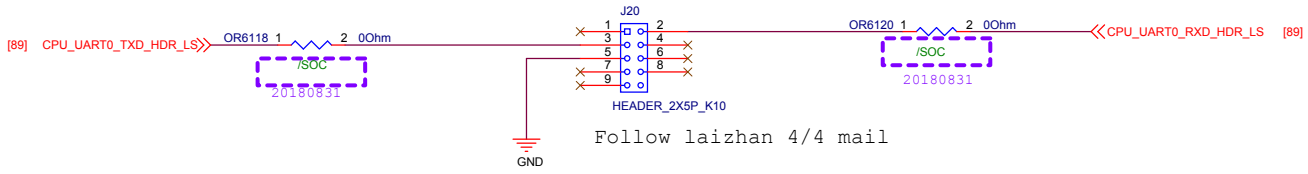


主板丝印	标号	BMC Pin	BMC net	SIO net	SIO Pin
FAN1	J17	PWM0	BMC_FAN_PWM1	SIO_FAN_PWM1	Pin6 AUXFANOUT0
FAN2	J36	PWM1	BMC_FAN_PWM2	SIO_FAN_PWM2	Pin122 AUXFANOUT1
FAN3	J16	PWM2	BMC_FAN_PWM3	SIO_FAN_PWM3	Pin123 AUXFANOUT2
FAN4	J34	PWM3	BMC_FAN_PWM4	SIO_FAN_PWM4	Pin56 AUXFANOUT3
FAN5	J14	PWM4	BMC_FAN_PWM5	SIO_FAN_PWM5	Pin66 AUXFANOUT4
CPU_FAN1	J15	PWM5	BMC_FAN_PWM6	SIO_FAN_PWM6	Pin125 CPUFANOUT

COM 1

COM
Box Header
J20



COMPRESSED IMAGE

Title	NCT6796D(COM)1CONN+1HEADER	
Size A3	Document Number 22D4-US	Rev A01
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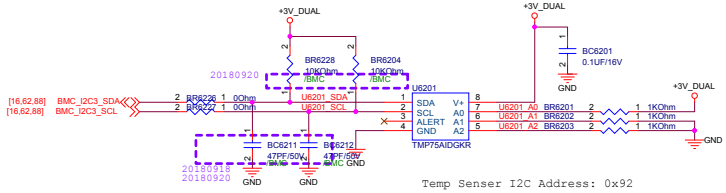
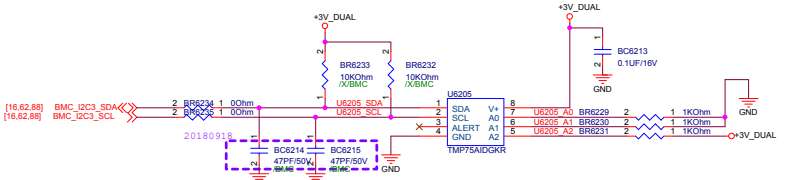
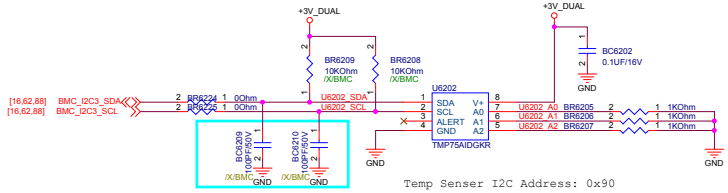


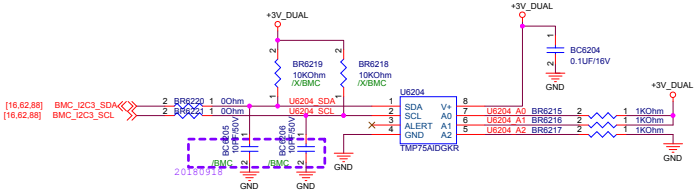
Temp Senser I2C Address: 0x92



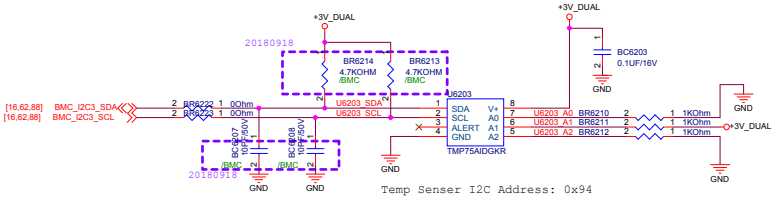
Temp Senser I2C Address: 0x98



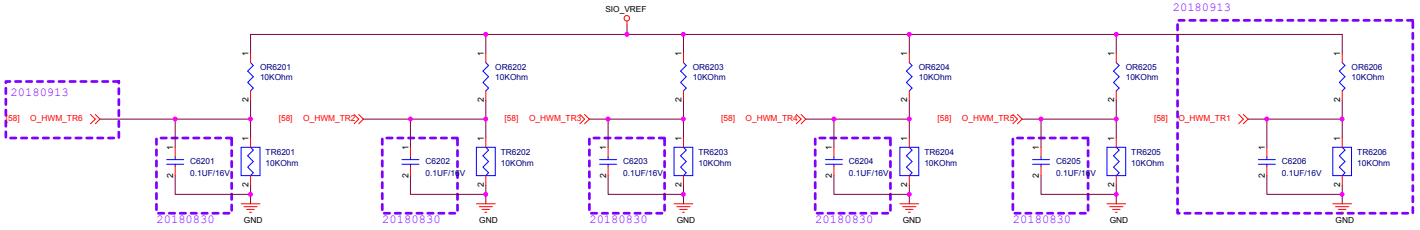
Temp Senser I2C Address: 0x90



Temp Senser I2C Address: 0x96



Temp Senser I2C Address: 0x94



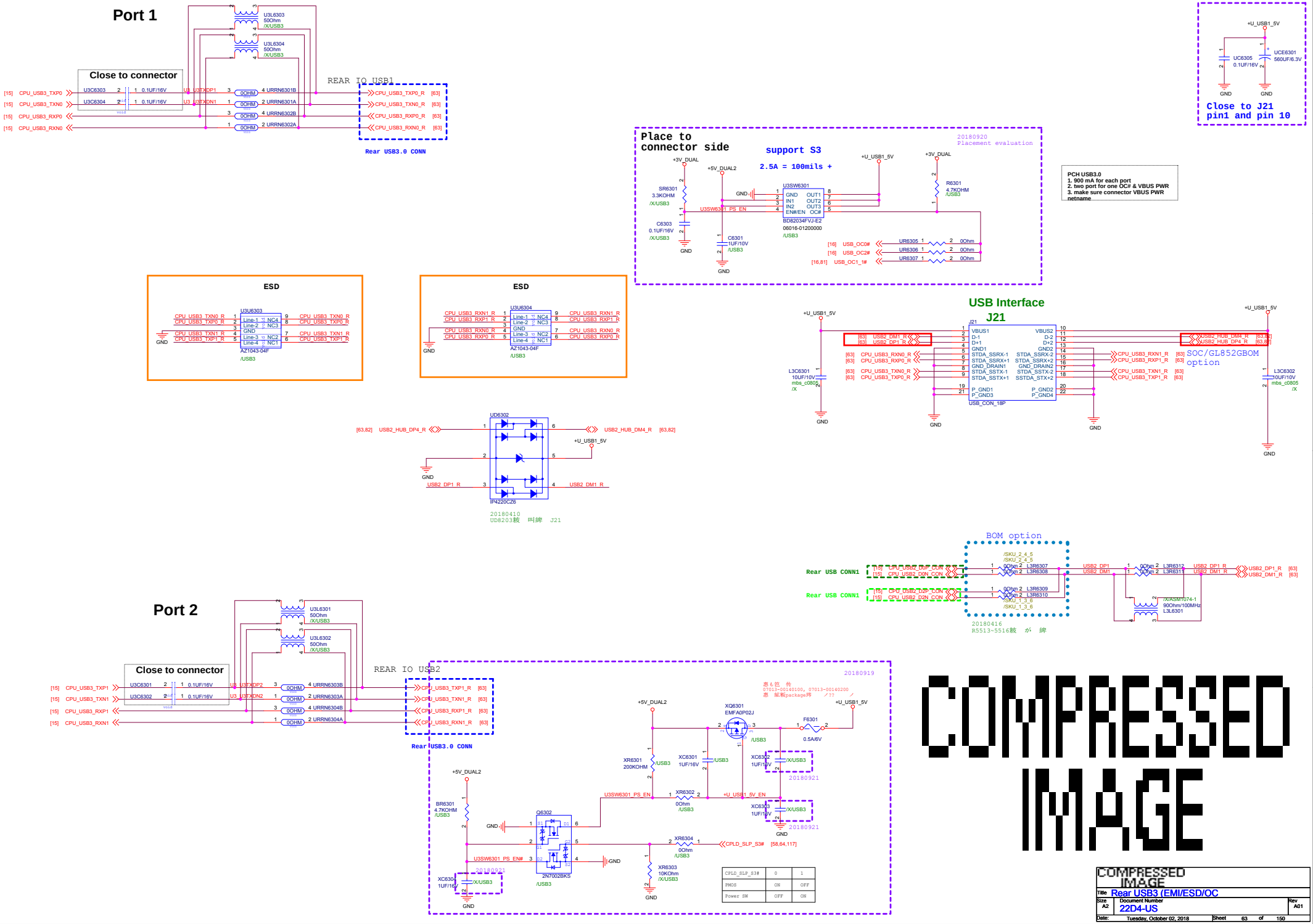
location5: address 0x98 change to 0x9E

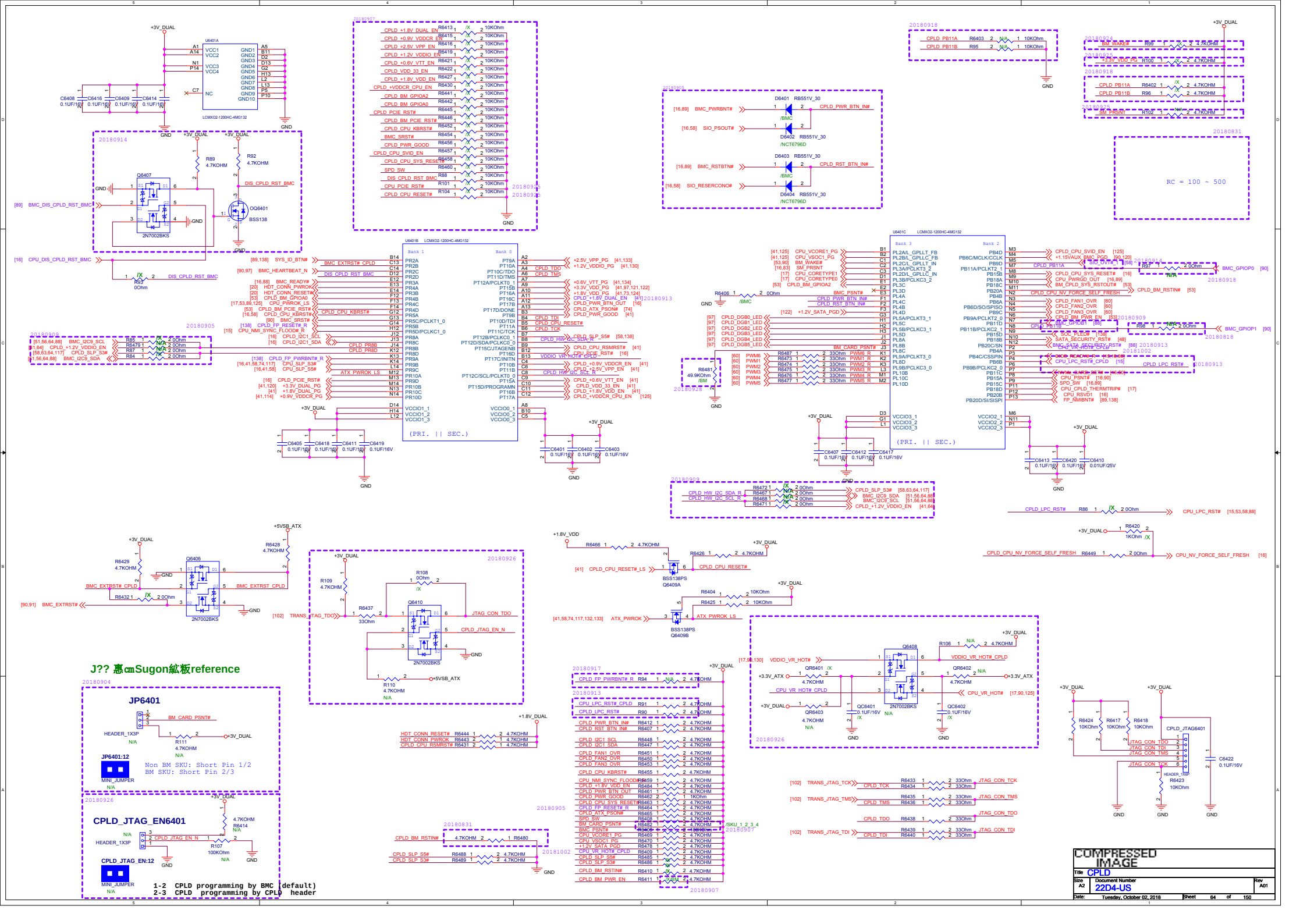
A2	A1	A0	SLAVE ADDRESS	
0	0	0	1001000	0x90
0	0	1	1001001	0x92
0	1	0	1001010	0x94
0	1	1	1001011	0x96
1	0	0	1001100	0x98
1	0	1	1001101	0x9A
1	1	0	1001110	0x9C
1	1	1	1001111	

Table 12. Address Pins and Slave Addresses for the TMP75

COMPRESSED IMAGE

Title	TEMP Sensor	
Size A2	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 62 of 150	


Port 1
Close to connector
REAR IO USB1
Rear USB3.0 CONN
Port 2
Close to connector
REAR IO USB2
Rear USB3.0 CONN
Place to connector side
support S3
2.5A = 100mils +
Placement evaluation
PCH USB3.0
1. 900 mA for each port
2. two port for one OC# & VBUS PWR
3. make sure connector VBUS PWR netname
Close to J21 pin1 and pin 10
ESD
ESD
USB Interface
J21
SOC/GL852GBOM option
BOM option
Rear USB CONN1
Rear USB CONN1
COMPRESSED IMAGE
COMPRESSED IMAGE
Title Rear USB3 (EMI/ESD/OC
Size A2
Document Number 22D4-US
Rev A01
Date: Tuesday, October 02, 2018
Sheet 63 of 150


J?? 惠cmSugon紘板reference
JP6401
HEADER_1X3P
BM_CARD_PSNT#
JP6401:12
MINI_JUMPER
Non BM SKU: Short Pin 1/2
BM SKU: Short Pin 2/3
CPLD_JTAG_EN6401
HEADER_1X3P
CPLD_JTAG_EN_N
CPLD_JTAG_EN:12
MINI_JUMPER
1-2 CPLD programming by BMC (default)
2-3 CPLD programming by CPLD header
COMPRESSED IMAGE
Title CPLD
Size A2
Document Number 22D4-US
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Sheet 64 of 150

COMPRESSED
IMAGE

Title	N/A	
Size A2	Document Number 22D4-US	Rev A01
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COMPRESSED
IMAGE

Title	N/A	
Size A2	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 66 of 150	

COMPRESSED IMAGE

Title	N/A	
Size A2	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 67 of 150	

COMPRESSED
IMAGE

Title	N/A	
Size A2	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 68 of 150	

COMPRESSED
IMAGE

Title	N/A	
Size: A2	Document Number: 22D4-US	Rev: A01
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COMPRESSED
IMAGE

Title N/A		
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COMPRESSED
IMAGE

Title	N/A	
Size A3	Document Number 22D4-US	Rev A01
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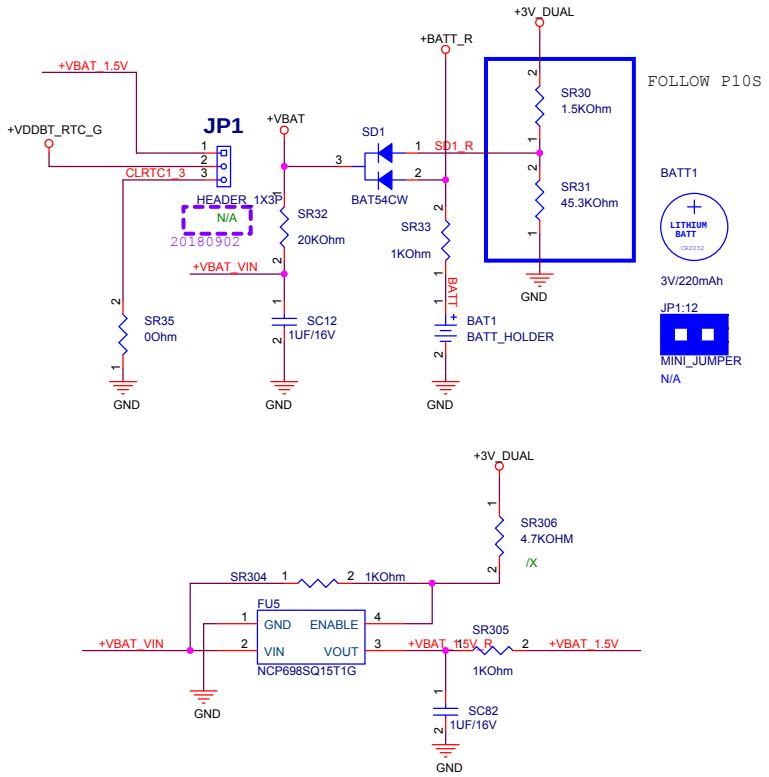

COMPRESSED IMAGE		
Title	RTC BATTERY	
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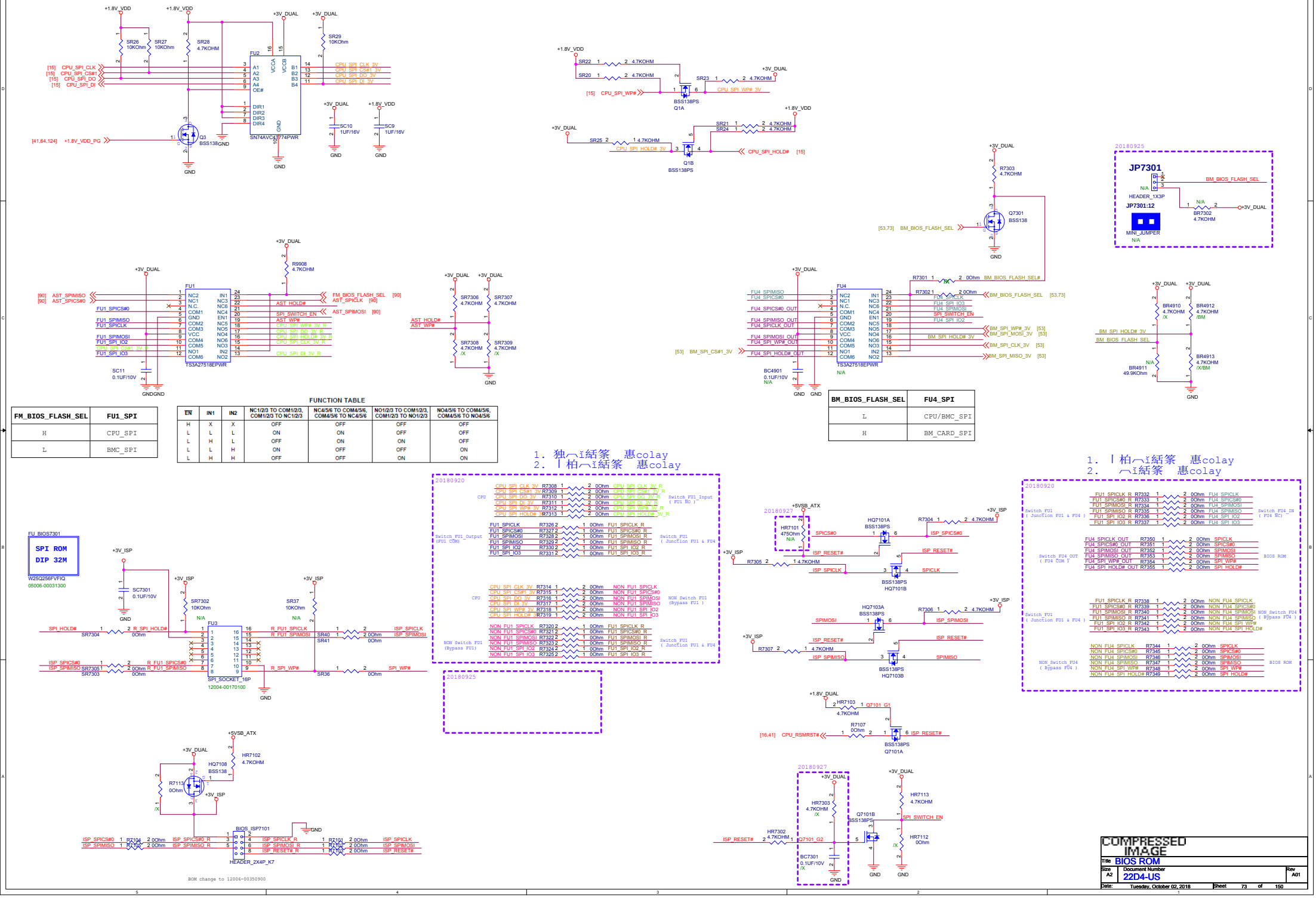

FM_BIOS_FLASH_SEL	FU1_SPI
H	CPU_SPI
L	BMC_SPI

FUNCTION TABLE

EN	IN1	IN2	NC1/2/3 TO COM1/2/3, COM1/2/3 TO NC1/2/3	NC4/5/6 TO COM4/5/6, COM4/5/6 TO NC4/5/6	NO1/2/3 TO COM1/2/3, COM1/2/3 TO NO1/2/3	NO4/5/6 TO COM4/5/6, COM4/5/6 TO NC4/5/6
H	X	X	OFF	OFF	OFF	OFF
L	L	L	ON	ON	OFF	OFF
L	H	L	OFF	ON	ON	OFF
L	L	H	ON	OFF	OFF	ON
L	H	H	OFF	OFF	ON	ON

BM_BIOS_FLASH_SEL	FU4_SPI
L	CPU/BMC_SPI
H	BM_CARD_SPI

1. 独ㄧi絽箊　惠colay
2. 丨柏ㄧi絽箊　惠colay

1. 丨柏ㄧi絽箊　惠colay
2. 　ㄧi絽箊　惠colay

COMPRESSED IMAGE

Title: BIOS ROM

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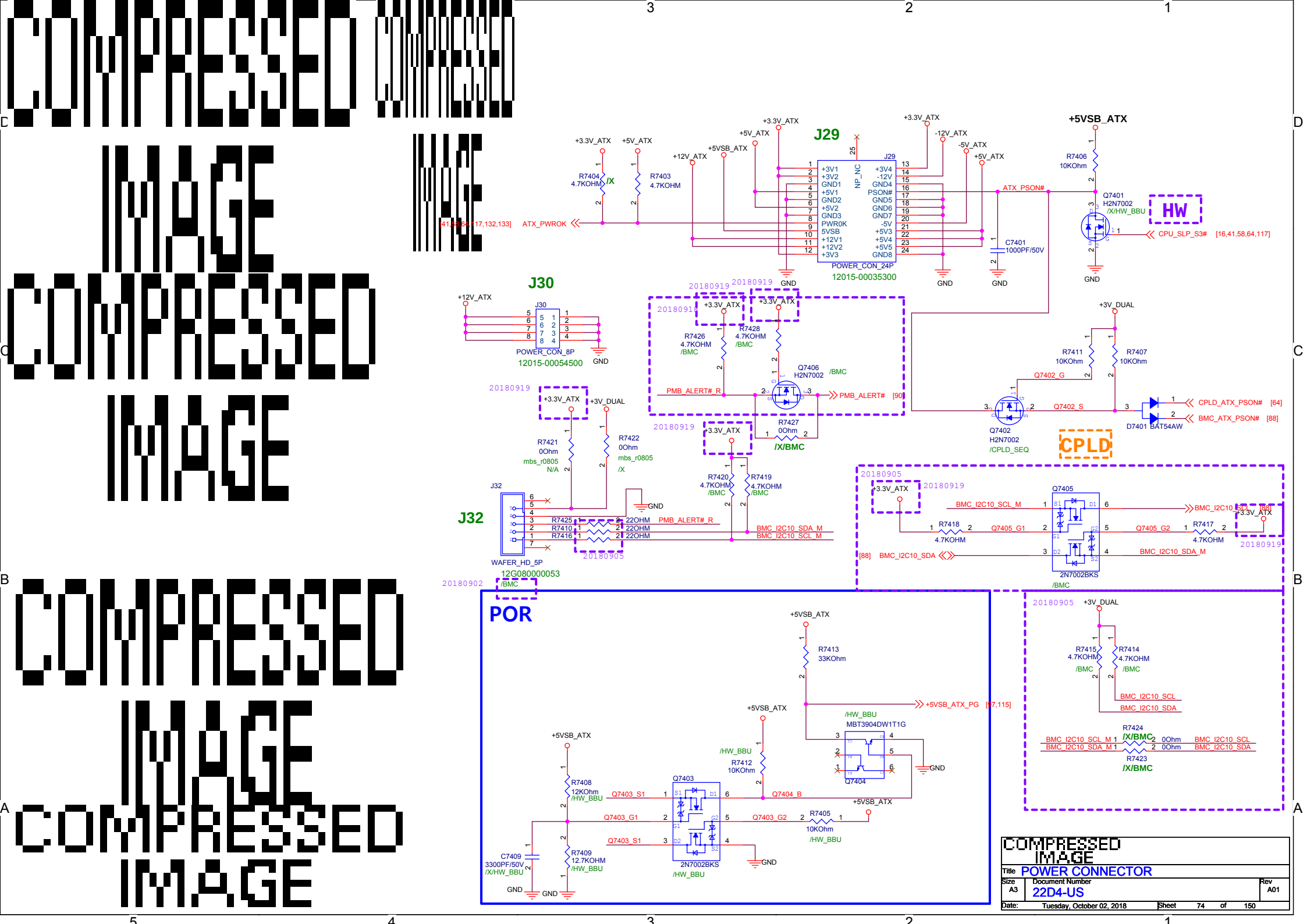

COMPRESSED IMAGE	
Title	POWER CONNECTOR
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Upstream port trace lenth:
No connector with 3 Meter cable < 12" ; ASAP

Downstream port trace lenth:
< 8" for back panel, ASAP (prefer 0.5~3")
< 4" for front panel, ASAP (prefer 0.5~3")

PWRON RESET

+3V_DUAL
R7501 100KOhm 1%
U3H_POR_N
C7530 1UF/16V 0603 X7R 10%
GND

SPI ROM

+3V_DUAL
U3H_SMB R7504 2.7KOhm
R7505 2.7KOhm
U7501 MX25L512MC-12G
U3H_SMB_DATA
U3H_SS_ACTIVE
U3H_WP#
CS# VCC HOLD# SCK GND SI
U3H_SMB
U3H_HS_ACTIVE
U3H_SMB_CLK
C7503 0.1UF/16V /X/ASM1074-1
GND

R7518 2.7KOhm U3H_EXPWR_DET /X/ASM1074-1

XTAL-25MHz

U3H_XI
C7504 12PF/50V NPO
U3H_XO
X7501 25Mhz
GND

U7502

U3H_SS_ACTIVE 4 — SS_ACTIVE
U3H_HS_ACTIVE Strapping 3 — HS_ACTIVE
[15] CPU_USB2_D3N — 69 DM_U
[15] CPU_USB2_D3P — 70 DP_U
[15] CPU_USB3_TXP2_C — 76 RXP_U
[15] CPU_USB3_TXN2_C — 75 RXN_U
[15] CPU_USB3_RXN2 — C7501 0.1UF/16V — CPU_USB3_RXN2_C — 72 TXN_U
[15] CPU_USB3_RXP2 — C7502 0.1UF/16V — CPU_USB3_RXP2_C — 73 TXP_U
U3/U2 Upstream Port
close to U3HU1
0.5G 璃Pin Name
for Pad reference糋

U3H_POR_N — 86 POR_N
U3H_SMB_CLK Strapping — 84 SMB_CLK
U3H_SMB_DATA — 85 SMB_DATA
+3V_DUAL
R7502 2.7KOhm — U3H_VBUS_DET — 87 VBUS
R7503 2.7KOhm — U3H_EXPWR_DET — 83 EX_PWRDET
U3HT1 TPC26b /X/ASM1074-1 — U3H_LPWR_EN# — 51 LPWR_EN#
U3HT2 TPC26b /X/ASM1074-1 — U3H_UART_RX — 41 UART_RX
U3H_UART_TX Strapping — 42 UART_TX
R7520 8.2KOhm — U3H_TEST_EN — 45 TEST_EN
GND
U3H_XI — 21 XI
U3H_XO — 22 XO

R7519 12.1KOHM 1% — U3H_REXT_10 — 24 REXT
GND
被 ㄇ釘のtrace叫叭ゲ板follow layout rule

Reserved for debug
Trace wide > 20mil

U3HT3 TPC26b /X/ASM1074-1 — U3H_VCCA5 — 66 VCCA5 5V Input
U3HT4 TPC26b /X/ASM1074-1 — U3H_VCCA6 — 65 VO33 3VOutput

+3V_DUAL
C7505 C7506 C7507 C7508 C7509 0.1UF/16V /X/ASM1074-1
GND
VCC33_1 VCC33_2 VCC33U_1 VCC33U_2 VCC33U_3 VCC33U_4 VCC33U_5 VCC33U_6 VCC33U_7

C7510 C7511 C7512 C7513 0.1UF/16V /X/ASM1074-1
C7514 4.7UF/10V /X/ASM1074-1
GND
筒痤for +U3H_+3V, 叫被绅 source狠

+1.05V_U3_HUB
C7515 C7516 C7517 C7518 C7519 0.1UF/16V /X/ASM1074-1
GND
VCC12 VDD12U_1 VDD12U_2 VDD12U_3 VDD12U_4 VDD12U_5 VDD12U_6

C7520 0.1UF/16V /X/ASM1074-1
C7521 0.1UF/16V
GND

ASM1074

GND1 GND2 GND3 GND4 GND5 GND6 GND7 GND8 GND9 GND10 GND11 GND12 GND13 GND14 GND15 GND16 GND17 GND18
GNDA1 GNDA2 GNDA3 GNDA4 GNDA5
GND

U3/U2 Downstream Port1

GRN_LED1 Strapping U3H_GRN_LED1 — 2
AMB_LED1 — 79
DM_1 — 62 — U3H_U2DN1 [78]
DP_1 — 61 — U3H_U2DP1 [78]
RXP_1 — 27 — U3H_U3RXDP1 [78]
RXN_1 — 26 — U3H_U3RXDN1 [78]
TXN_1 — 29 — U3H_U3TXDN1_C — C7531 0.1UF/16V — C7523 0.1UF/16V — U3H_U3TXDN1 [78]
TXP_1 — 30 — U3H_U3TXDP1_C — U3H_U3TXDP1 [78]
OC_N1 Strapping U3H_PRON1 — 40 — U3H_OC_N1# [75,76]
PRON1 — 5

U3/U2 Downstream Port2

GRN_LED2 Strapping U3H_GRN_LED2 — 52
AMB_LED2 — 48
DM_2 — 64 — U3H_U2DN2 [78]
DP_2 — 63 — U3H_U2DP2 [78]
RXP_2 — 36 — U3H_U3RXDP2 [78]
RXN_2 — 35 — U3H_U3RXDN2 [78]
TXN_2 — 32 — U3H_U3TXDN2_C — C7524 0.1UF/16V — C7525 0.1UF/16V — U3H_U3TXDN2 [78]
TXP_2 — 33 — U3H_U3TXDP2_C — U3H_U3TXDP2 [78]
OC_N2 Strapping U3H_PRON2 — 80 — U3H_OC_N1# [75,76]
PRON2 — 46

19 pin header USB3.0 CONN

for Pad reference糋

U3/U2 Downstream Port3

GRN_LED3 — 38
AMB_LED3 — 49
DM_3 — 55 — U3H_U2DN3 [78]
DP_3 — 54 — U3H_U2DP3 [78]
RXN_3 — 10
RXP_3 — 9
TXP_3 — 12
TXN_3 — 13
OC_N3 Strapping U3H_PRON3 — 81 — U3H_OC_N2# [75,76]
PRON3 — 6

9 Pin header USB2.0 CONN

U3/U2 Downstream Port4

GRN_LED4 Strapping U3H_GRN_LED4 — 39
AMB_LED4 — 47
DM_4 — 58 — U3H_U2DN4 [78]
DP_4 — 57 — U3H_U2DP4 [78]
RXN_4 — 19
RXP_4 — 18
TXP_4 — 15
TXN_4 — 16
OC_N4 Strapping U3H_PRON4 — 82 — U3H_OC_N2# [75,76]
PRON4 — 50

9 Pin header USB2.0 CONN

close to connector

HW Strapping Pins

+3V_DUAL
R7506 8.2KOhm /X/ASM1074-1 — U3H_GRN_LED1 (CLK_SEL0)
R7507 8.2KOhm /X/ASM1074-1 — U3H_GRN_LED2 (CLK_SEL1)
R7508 8.2KOhm /X/ASM1074-1 — U3H_GRN_LED4 (GANG_EN)
R7509 8.2KOhm /X/ASM1074-1 — U3H_PRON1 (BC_EN1)
R7510 8.2KOhm /X/ASM1074-1 — U3H_PRON2 (BC_EN2)
R7511 8.2KOhm /X/ASM1074-1 — U3H_PRON3 (BC_EN3)
R7512 8.2KOhm /X/ASM1074-1 — U3H_PRON4 (BC_EN3)

+3V_DUAL
R7513 8.2KOhm /X/ASM1074-1 — U3H_UART_TX (SPI_EN)
R7514 8.2KOhm /X/ASM1074-1 — U3H_HS_ACTIVE (SMB_ADDR_SEL)
R7515 8.2KOhm /X/ASM1074-1 — U3H_SMB_CLK (I2C_EN)
R7516 8.2KOhm
R7517 8.2KOhm
GND

COMPRESSED IMAGE

Title	ASM1074-1	
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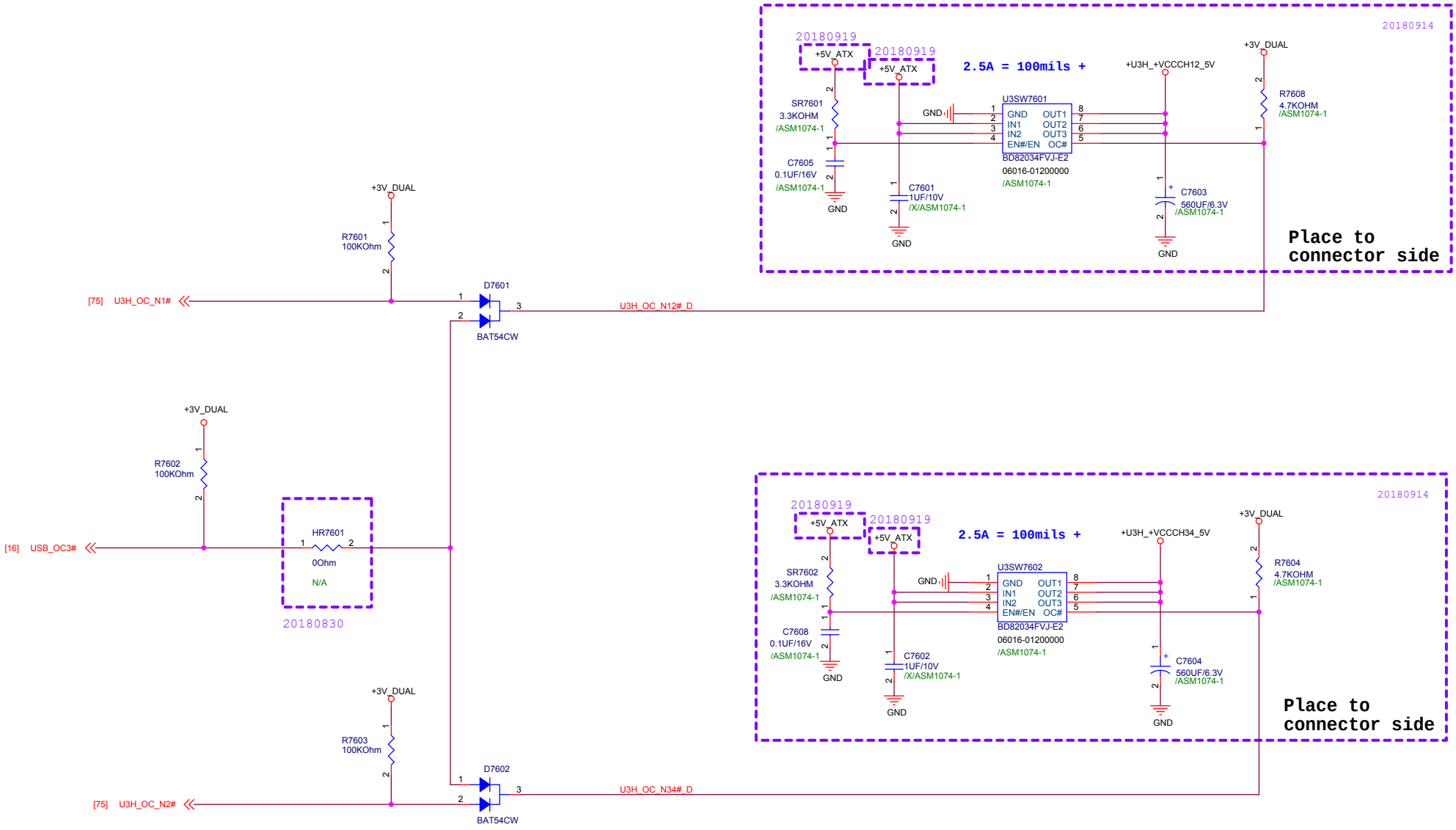
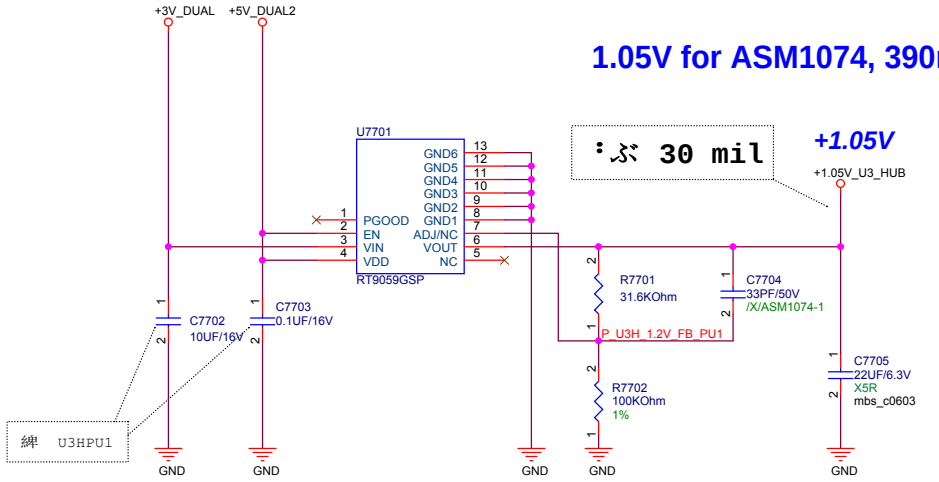


COMPRESSED IMAGE

Title	ASM1074-2(OC)	
Size A3	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 76 of 150	



7. Timing Diagram

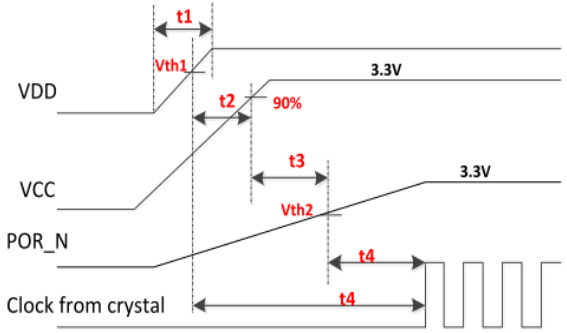


Figure 5: Power on Sequence for crystal mode

Power on Sequence Timing Specification for crystal mode

Symbols	Parameter	Min	Typ	Max	Unit	Remark
Vth1	The threshold of VDD internal power detect	0.49	0.7	0.92	V	
Vth2	The threshold of POR_N signal detect		0.5*VCC		V	
t1	Settling time of VDD stable power			6	ms	Measure from 10% to 90%
t2	The maximum delay timing of VCC power ready after the threshold of VDD	N/A		6	ms	Measure the timing between the point of Vth1 to 90% of VCC
t3	POR_N goes high after VCC power ready	0		N/A	ms	Measure the timing between the 90% of VCC to Vth2 of POR.# (If without external POR_N circuit, this rule could be skipped)
t4	Maximum delay of stable clock available after the latest available point of Vth1 or Vth2			26	ms	Measure the timing between the point of Vth to stable clock available (self-powered mode)
				151	ms	Measure the timing between the point of Vth to stable clock available (bus-powered mode)

COMPRESSED IMAGE

Title	ASM1074-3(PWR)	
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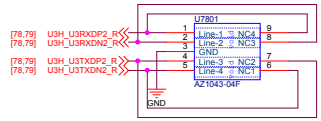
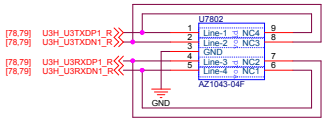
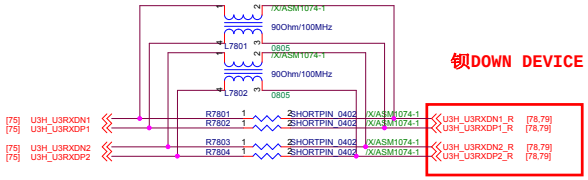
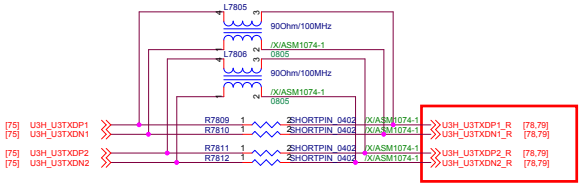
USB3.0





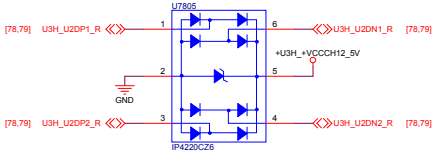


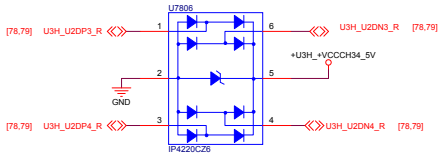
钡DOWN DEVICE

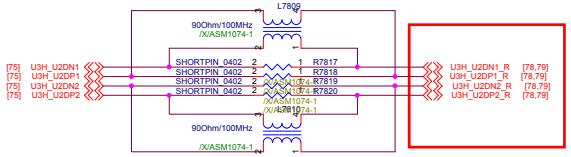


钡DOWN DEVICE

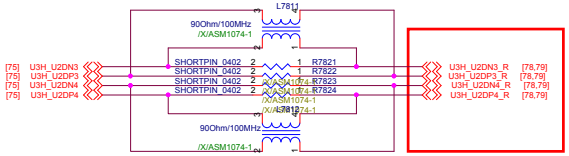
USB2.0







钡DOWN DEVICE



钡DOWN DEVICE

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Title: ASM1074-4(EMI/ESD)

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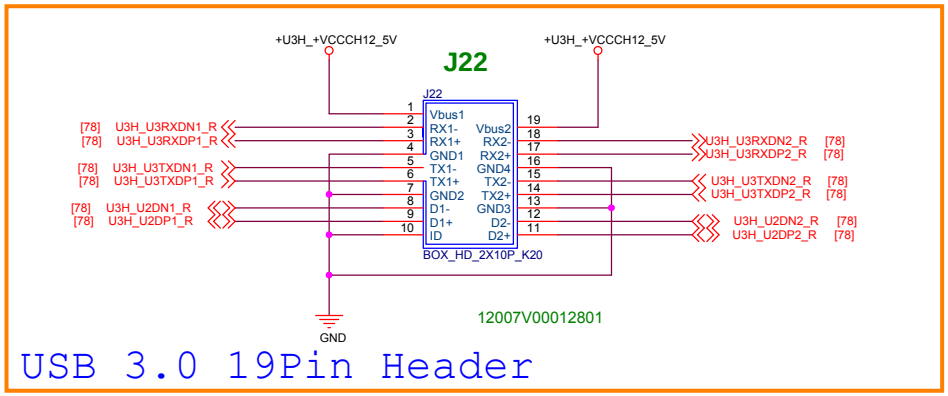

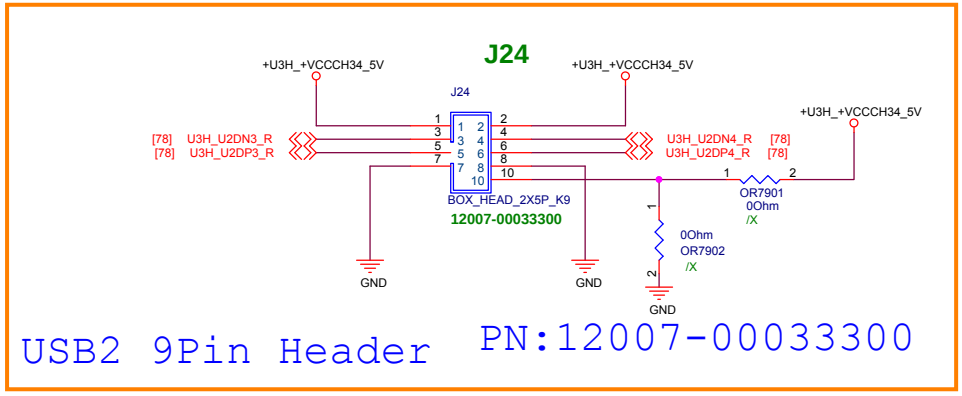

COMPRESSED IMAGE

Title	ASM1074-5(USB CONN)	
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Title N/A		
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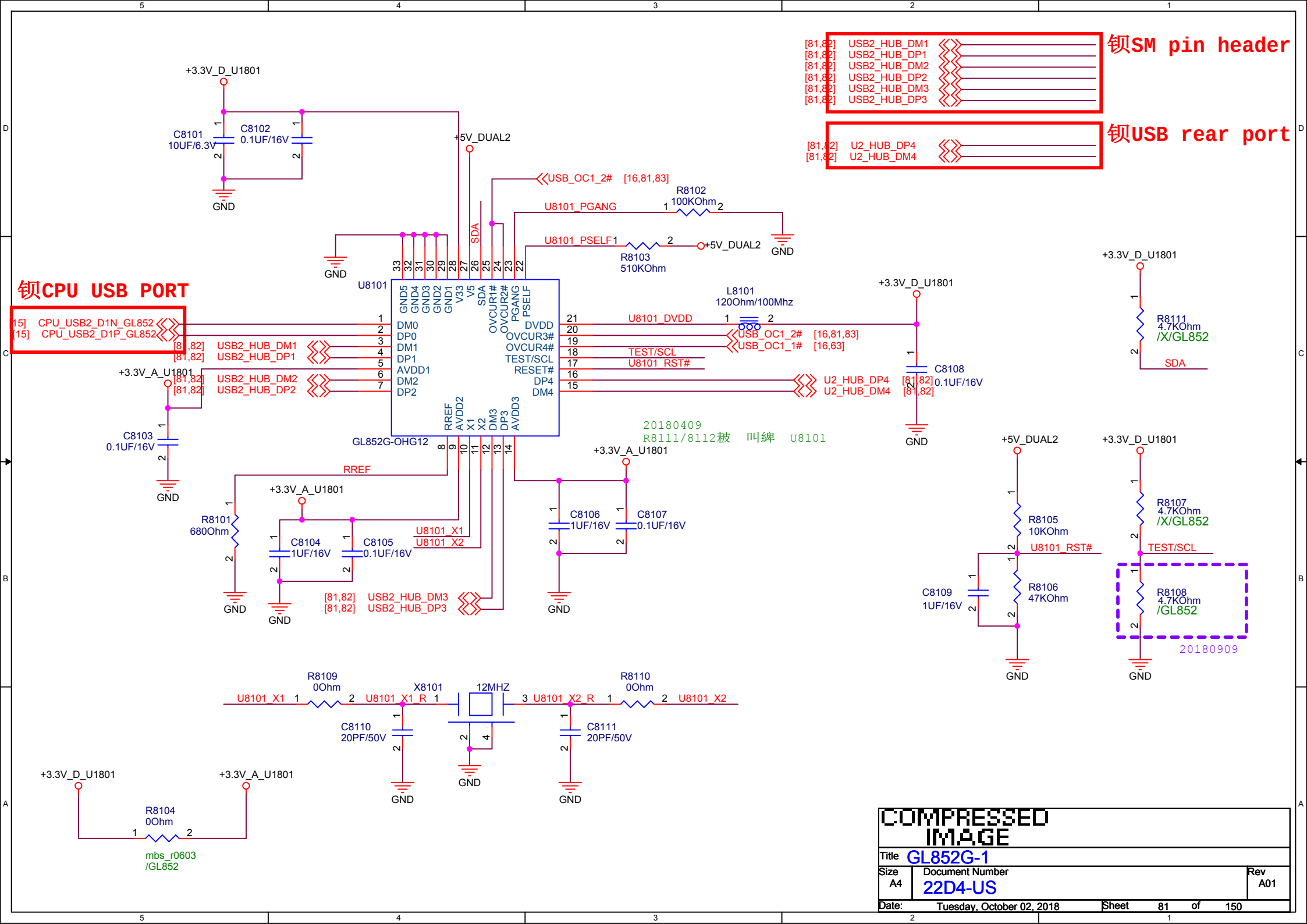
钡SM pin header
[81,82] USB2_HUB_DM1
[81,82] USB2_HUB_DP1
[81,82] USB2_HUB_DM2
[81,82] USB2_HUB_DP2
[81,82] USB2_HUB_DM3
[81,82] USB2_HUB_DP3
钡USB rear port
[81,82] U2_HUB_DP4
[81,82] U2_HUB_DM4
钡CPU USB PORT
[15] CPU_USB2_D1N_GL852
[15] CPU_USB2_D1P_GL852
U8101
GL852G-OHG12
DM0
DP0
DM1
DP1
AVDD1
DM2
DP2
DVDD
OVCUR3#
OVCUR4#
TEST/SCL
RESET#
DP4
DM4
RREF
AVDD2
X1
X2
DM3
DP3
AVDD3
+3.3V_D_U1801
+3.3V_A_U1801
+5V_DUAL2
GND
C8101 10UF/6.3V
C8102 0.1UF/16V
C8103 0.1UF/16V
C8104 1UF/16V
C8105 0.1UF/16V
C8106 1UF/16V
C8107 0.1UF/16V
C8108 0.1UF/16V
C8109 1UF/16V
R8101 680Ohm
R8102 100KOhm
R8103 510KOhm
R8104 0Ohm
R8105 10KOhm
R8106 47KOhm
R8107 4.7KOhm /X/GL852
R8108 4.7KOhm /GL852
R8109 0Ohm
R8110 0Ohm
R8111 4.7KOhm /X/GL852
L8101 120Ohm/100Mhz
X8101 12MHZ
C8110 20PF/50V
C8111 20PF/50V
USB_OC1_2# [16,81,83]
USB_OC1_1# [16,63]
U8101_PGANG
U8101_PSELF
U8101_DVDD
U8101_RST#
U8101_X1
U8101_X2
U8101_X1_R
U8101_X2_R
TEST/SCL
SDA
RREF
20180409
R8111/8112裁 叫綽 U8101
20180909
mbs_r0603 /GL852
COMPRESSED IMAGE
Title GL852G-1
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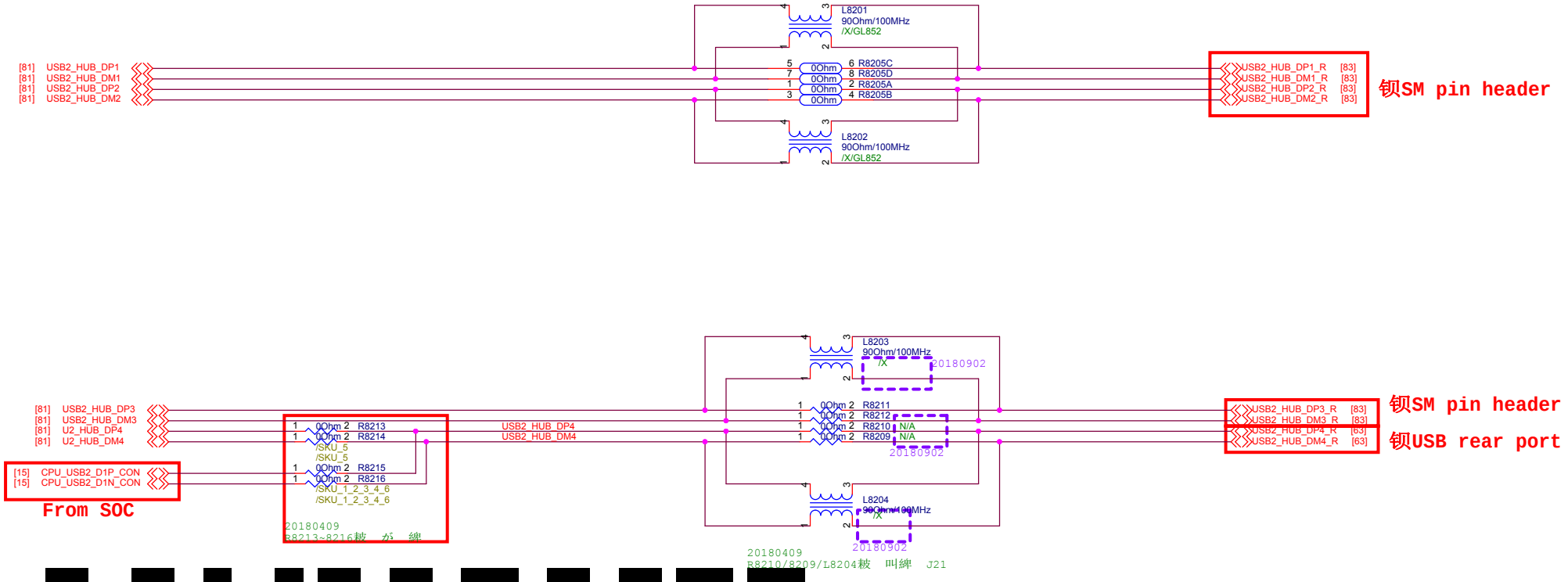

COMPRESSED IMAGE

COMPRESSED IMAGE		
Title	GL852G-2(EMI/ESD)	
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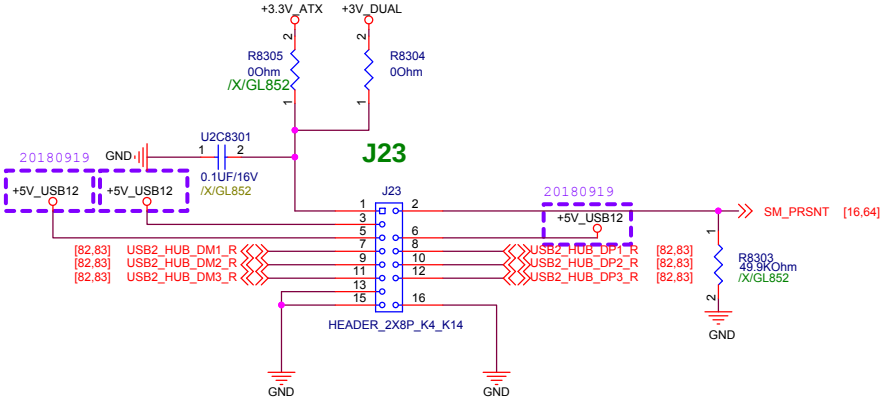

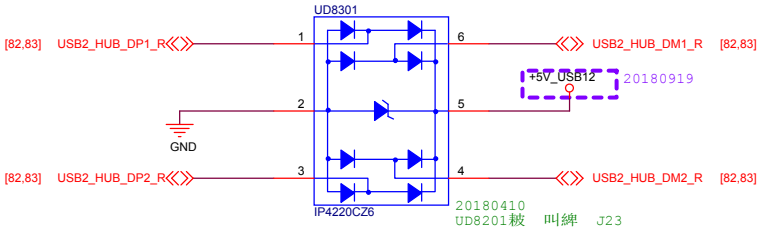

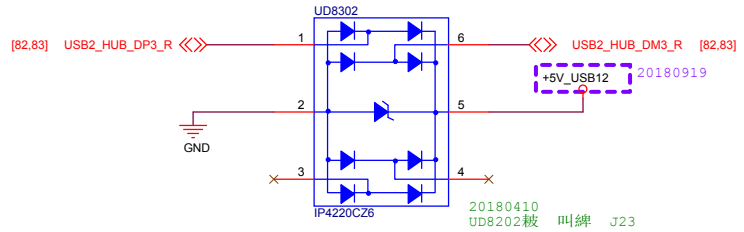

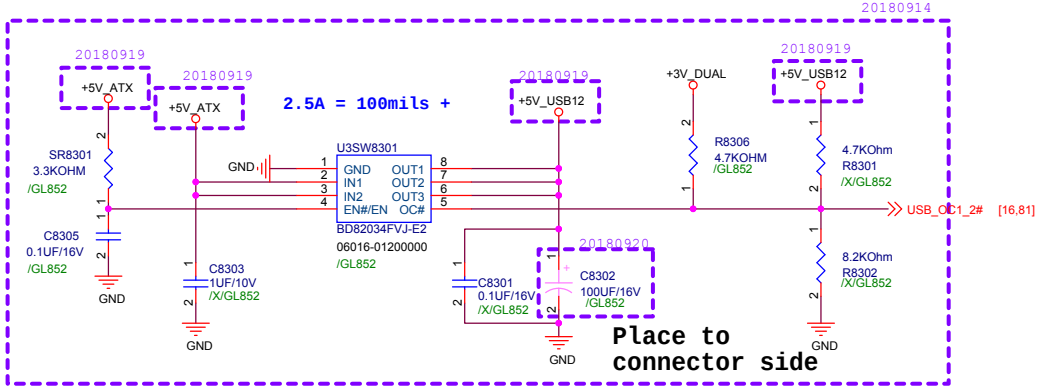

COMPRESSED IMAGE

Title	SM Pin header	
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COMPRESSED IMAGE

Title	N/A	
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COMPRESSED IMAGE

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5 4 3 2 1

D

C

B

A

COMPRESSED IMAGE

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5 4 3 2 1

D

C

B

A

COMPRESSED IMAGE

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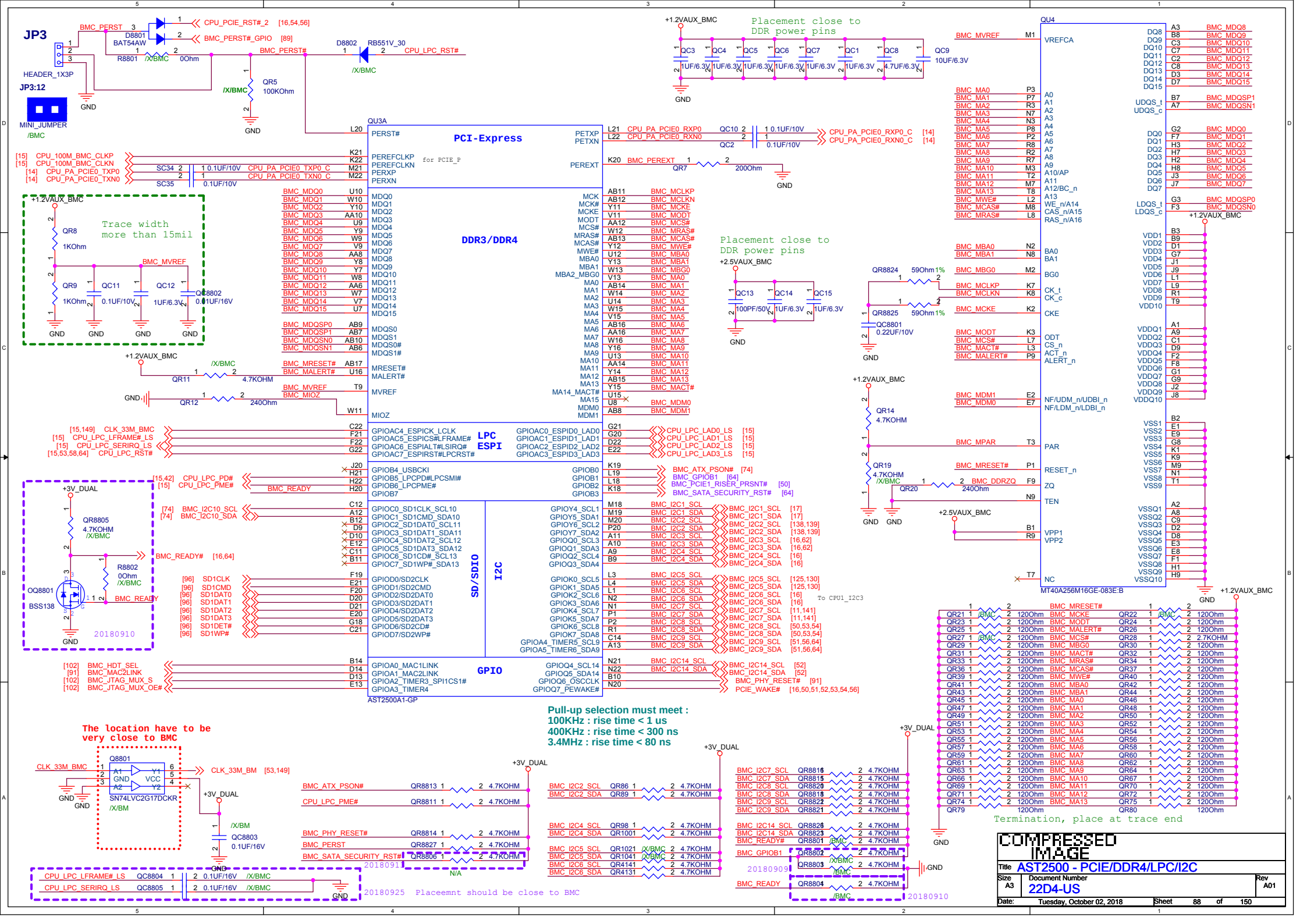
JP3
HEADER_1X3P
JP3:12
MINI_JUMPER
/BMC
BMC_PERST
D8801
BAT54AW
R8801 /X/BMC 0Ohm
CPU_PCIE_RST#_2 [16,54,56]
BMC_PERST#_GPIO [89]
BMC_PERST#
D8802
RB551V_30
CPU_LPC_RST#
/X/BMC
QR5
100KOhm
GND
QU3A
PCI-Express
PERST#
PEREFCLKP
PEREFCLKN
PERXP
PERXN
PETXP
PETXN
PEREXT
for PCIE_P
L20
K21
K22
M21
M22
K20
BMC_PEREXT
QR7
200Ohm
[15] CPU_100M_BMC_CLKP
[15] CPU_100M_BMC_CLKN
[14] CPU_PA_PCIE0_TXP0
[14] CPU_PA_PCIE0_TXN0
SC34
SC35
0.1UF/10V
CPU_PA_PCIE0_TXP0_C
CPU_PA_PCIE0_TXN0_C
L21 CPU_PA_PCIE0_RXP0
L22 CPU_PA_PCIE0_RXN0
QC10
QC2
0.1UF/10V
CPU_PA_PCIE0_RXP0_C [14]
CPU_PA_PCIE0_RXN0_C [14]
DDR3/DDR4
MDQ0
MDQ1
MDQ2
MDQ3
MDQ4
MDQ5
MDQ6
MDQ7
MDQ8
MDQ9
MDQ10
MDQ11
MDQ12
MDQ13
MDQ14
MDQ15
MDQS0
MDQS1
MDQS0#
MDQS1#
MRESET#
MALERT#
MVREF
MIOZ
MCK
MCK#
MCKE
MODT
MCS#
MRAS#
MCAS#
MWE#
MBA0
MBA1
MBA2_MBG0
MA0
MA1
MA2
MA3
MA4
MA5
MA6
MA7
MA8
MA9
MA10
MA11
MA12
MA13
MA14_MACT#
MA15
MDM0
MDM1
BMC_MDQ0 U10
BMC_MDQ1 W10
BMC_MDQ2 Y10
BMC_MDQ3 AA10
BMC_MDQ4 U9
BMC_MDQ5 Y9
BMC_MDQ6 W9
BMC_MDQ7 V9
BMC_MDQ8 AA8
BMC_MDQ9 Y8
BMC_MDQ10 Y7
BMC_MDQ11 W8
BMC_MDQ12 AA6
BMC_MDQ13 W7
BMC_MDQ14 V7
BMC_MDQ15 U7
BMC_MDQSP0 AB9
BMC_MDQSP1 AB7
BMC_MDQSN0 AB10
BMC_MDQSN1 AB6
BMC_MRESET# AB17
BMC_MALERT# U16
BMC_MVREF T9
BMC_MIOZ W11
AB11 BMC_MCLKP
AB12 BMC_MCLKN
Y11 BMC_MCKE
V11 BMC_MODT
AA12 BMC_MCS#
W12 BMC_MRAS#
AB13 BMC_MCAS#
Y12 BMC_MWE#
U12 BMC_MBA0
Y13 BMC_MBA1
W13 BMC_MBG0
V13 BMC_MA0
AB14 BMC_MA1
W14 BMC_MA2
U14 BMC_MA3
W15 BMC_MA4
V15 BMC_MA5
AB16 BMC_MA6
AA16 BMC_MA7
W16 BMC_MA8
Y16 BMC_MA9
U13 BMC_MA10
AA14 BMC_MA11
Y14 BMC_MA12
AB15 BMC_MA13
Y15 BMC_MACT#
U15
U8 BMC_MDM0
AB8 BMC_MDM1
Trace width
more than 15mil
+1.2VAUX_BMC
QR8
1KOhm
QR9
1KOhm
QC11
0.1UF/10V
QC12
1UF/6.3V
QC8802
0.01UF/16V
QR11
4.7KOHM
QR12
240Ohm
LPC
ESPI
GPIOAC4_ESPICK_LCLK
GPIOAC5_ESPICS#LFRAME#
GPIOAC6_ESPIALT#LSIRQ#
GPIOAC7_ESPIRST#LPCRST#
GPIOAC0_ESPID0_LAD0
GPIOAC1_ESPID1_LAD1
GPIOAC2_ESPID2_LAD2
GPIOAC3_ESPID3_LAD3
[15,149] CLK_33M_BMC
[15] CPU_LPC_LFRAME#_LS
[15] CPU_LPC_SERIRQ_LS
[15,53,58,64] CPU_LPC_RST#
C22
F21
F22
G22
G21 CPU_LPC_LAD0_LS [15]
G20 CPU_LPC_LAD1_LS [15]
D22 CPU_LPC_LAD2_LS [15]
E22 CPU_LPC_LAD3_LS [15]
GPIOB4_USBCKI
GPIOB5_LPCPD#LPCSMI#
GPIOB6_LPCPME#
GPIOB7
GPIOB0
GPIOB1
GPIOB2
GPIOB3
J20
H21
H22
H20
[15,42] CPU_LPC_PD#
[15] CPU_LPC_PME#
BMC_READY
K19 BMC_ATX_PSON# [74]
L19 BMC_GPIOB1 [64]
L18 BMC_PCIE1_RISER_PRSNT# [50]
K18 BMC_SATA_SECURITY_RST# [64]
SD/SDIO
I2C
GPIOC0_SD1CLK_SCL10
GPIOC1_SD1CMD_SDA10
GPIOC2_SD1DAT0_SCL11
GPIOC3_SD1DAT1_SDA11
GPIOC4_SD1DAT2_SCL12
GPIOC5_SD1DAT3_SDA12
GPIOC6_SD1CD#_SCL13
GPIOC7_SD1WP#_SDA13
GPIOD0/SD2CLK
GPIOD1/SD2CMD
GPIOD2/SD2DAT0
GPIOD3/SD2DAT1
GPIOD4/SD2DAT2
GPIOD5/SD2DAT3
GPIOD6/SD2CD#
GPIOD7/SD2WP#
GPIOY4_SCL1
GPIOY5_SDA1
GPIOY6_SCL2
GPIOY7_SDA2
GPIOQ0_SCL3
GPIOQ1_SDA3
GPIOQ2_SCL4
GPIOQ3_SDA4
GPIOK0_SCL5
GPIOK1_SDA5
GPIOK2_SCL6
GPIOK3_SDA6
GPIOK4_SCL7
GPIOK5_SDA7
GPIOK6_SCL8
GPIOK7_SDA8
GPIOA4_TIMER5_SCL9
GPIOA5_TIMER6_SDA9
[74] BMC_I2C10_SCL
[74] BMC_I2C10_SDA
C12
A12
B12
D9
D10
E12
C11
B11
M18 BMC_I2C1_SCL
M19 BMC_I2C1_SDA
M20 BMC_I2C2_SCL
P20 BMC_I2C2_SDA
A11 BMC_I2C3_SCL
A10 BMC_I2C3_SDA
A9 BMC_I2C4_SCL
B9 BMC_I2C4_SDA
L3 BMC_I2C5_SCL
L4 BMC_I2C5_SDA
L1 BMC_I2C6_SCL
N2 BMC_I2C6_SDA
N1 BMC_I2C7_SCL
P1 BMC_I2C7_SDA
P2 BMC_I2C8_SCL
R1 BMC_I2C8_SDA
C14 BMC_I2C9_SCL
A13 BMC_I2C9_SDA
BMC_I2C1_SCL [17]
BMC_I2C1_SDA [17]
BMC_I2C2_SCL [138,139]
BMC_I2C2_SDA [138,139]
BMC_I2C3_SCL [16,62]
BMC_I2C3_SDA [16,62]
BMC_I2C4_SCL [16]
BMC_I2C4_SDA [16]
BMC_I2C5_SCL [125,130]
BMC_I2C5_SDA [125,130]
BMC_I2C6_SCL [16]
BMC_I2C6_SDA [16]
BMC_I2C7_SCL [11,141]
BMC_I2C7_SDA [11,141]
BMC_I2C8_SCL [50,53,54]
BMC_I2C8_SDA [50,53,54]
BMC_I2C9_SCL [51,56,64]
BMC_I2C9_SDA [51,56,64]
To CPU1_I2C3
+3V_DUAL
QR8805
4.7KOHM
/X/BMC
R8802
0Ohm
/X/BMC
OQ8801
BSS138
BMC_READY#
BMC_READY
20180910
[96] SD1CLK
[96] SD1CMD
[96] SD1DAT0
[96] SD1DAT1
[96] SD1DAT2
[96] SD1DAT3
[96] SD1DET#
[96] SD1WP#
F19
E21
F20
D20
D21
E20
G18
C21
GPIO
GPIOA0_MAC1LINK
GPIOA1_MAC2LINK
GPIOA2_TIMER3_SPI1CS1#
GPIOA3_TIMER4
GPIOQ4_SCL14
GPIOQ5_SDA14
GPIOQ6_OSCCLK
GPIOQ7_PEWAKE#
[102] BMC_HDT_SEL
[91] BMC_MAC2LINK
[102] BMC_JTAG_MUX_S
[102] BMC_JTAG_MUX_OE#
B14
D14
D13
E13
N21 BMC_I2C14_SCL
N22 BMC_I2C14_SDA
B10
N20
BMC_I2C14_SCL [52]
BMC_I2C14_SDA [52]
BMC_PHY_RESET# [91]
PCIE_WAKE# [16,50,51,52,53,54,56]
AST2500A1-GP
Placement close to
DDR power pins
+1.2VAUX_BMC
QC3
QC4
QC5
QC6
QC7
QC1
QC8
QC9
1UF/6.3V
4.7UF/6.3V
10UF/6.3V
GND
Placement close to
DDR power pins
+2.5VAUX_BMC
QC13
QC14
QC15
100PF/50V
1UF/6.3V
GND
QU4
MT40A256M16GE-083E:B
VREFCA
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10/AP
A11
A12/BC_n
A13
WE_n/A14
CAS_n/A15
RAS_n/A16
BA0
BA1
BG0
CK_t
CK_c
CKE
ODT
CS_n
ACT_n
ALERT_n
NF/UDM_n/UDBI_n
NF/LDM_n/LDBI_n
PAR
RESET_n
ZQ
TEN
VPP1
VPP2
NC
DQ0
DQ1
DQ2
DQ3
DQ4
DQ5
DQ6
DQ7
DQ8
DQ9
DQ10
DQ11
DQ12
DQ13
DQ14
DQ15
UDQS_t
UDQS_c
LDQS_t
LDQS_c
VDD1
VDD2
VDD3
VDD4
VDD5
VDD6
VDD7
VDD8
VDD9
VDD10
VDDQ1
VDDQ2
VDDQ3
VDDQ4
VDDQ5
VDDQ6
VDDQ7
VDDQ8
VDDQ9
VDDQ10
VSS1
VSS2
VSS3
VSS4
VSS5
VSS6
VSS7
VSS8
VSS9
VSSQ1
VSSQ2
VSSQ3
VSSQ4
VSSQ5
VSSQ6
VSSQ7
VSSQ8
VSSQ9
VSSQ10
BMC_MVREF M1
BMC_MA0 P3
BMC_MA1 P7
BMC_MA2 R3
BMC_MA3 N7
BMC_MA4 N3
BMC_MA5 P8
BMC_MA6 P2
BMC_MA7 R8
BMC_MA8 R2
BMC_MA9 R7
BMC_MA10 M3
BMC_MA11 T2
BMC_MA12 M7
BMC_MA13 T8
BMC_MWE# L2
BMC_MCAS# M8
BMC_MRAS# L8
BMC_MBA0 N2
BMC_MBA1 N8
BMC_MBG0 M2
BMC_MCLKP K7
BMC_MCLKN K8
BMC_MCKE K2
BMC_MODT K3
BMC_MCS# L7
BMC_MACT# L3
BMC_MALERT# P9
BMC_MDM1 E2
BMC_MDM0 E7
BMC_MPAR T3
BMC_MRESET# P1
BMC_DDRZQ F9
T7
A3 BMC_MDQ8
B8 BMC_MDQ9
C3 BMC_MDQ10
C7 BMC_MDQ11
C2 BMC_MDQ12
C8 BMC_MDQ13
D3 BMC_MDQ14
D7 BMC_MDQ15
B7 BMC_MDQSP1
A7 BMC_MDQSN1
G2 BMC_MDQ0
F7 BMC_MDQ1
H3 BMC_MDQ2
H7 BMC_MDQ3
H2 BMC_MDQ4
H8 BMC_MDQ5
J3 BMC_MDQ6
J7 BMC_MDQ7
G3 BMC_MDQSP0
F3 BMC_MDQSN0
QR8824 59Ohm 1%
QR8825 59Ohm 1%
QC8801
0.22UF/10V
QR14
4.7KOHM
QR19
4.7KOHM
/X/BMC
QR20
240Ohm
+2.5VAUX_BMC
Pull-up selection must meet :
100KHz : rise time < 1 us
400KHz : rise time < 300 ns
3.4MHz : rise time < 80 ns
The location have to be
very close to BMC
Q8801
SN74LVC2G17DCKR
/X/BM
CLK_33M_BMC
CLK_33M_BM [53,149]
QC8803
0.1UF/16V
CPU_LPC_LFRAME#_LS QC8804
CPU_LPC_SERIRQ_LS QC8805
0.1UF/16V
20180925 Placeemnt should be close to BMC
BMC_ATX_PSON# QR8813
CPU_LPC_PME# QR8811
BMC_PHY_RESET# QR8814
BMC_PERST QR8827
BMC_SATA_SECURITY_RST# QR8806
4.7KOHM
N/A
20180911
BMC_I2C2_SCL QR86
BMC_I2C2_SDA QR89
BMC_I2C4_SCL QR98
BMC_I2C4_SDA QR1001
BMC_I2C5_SCL QR1021
BMC_I2C5_SDA QR1041
BMC_I2C6_SCL QR4141
BMC_I2C6_SDA QR4131
BMC_I2C7_SCL QR8816
BMC_I2C7_SDA QR8815
BMC_I2C8_SCL QR8820
BMC_I2C8_SDA QR8819
BMC_I2C9_SCL QR8822
BMC_I2C9_SDA QR8821
BMC_I2C14_SCL QR8826
BMC_I2C14_SDA QR8823
BMC_READY# QR8801
BMC_GPIOB1 QR8802
QR8803
QR8804
20180909
20180910
Termination, place at trace end
BMC_MRESET# QR21
BMC_MCKE QR22
BMC_MODT QR24
BMC_MALERT# QR26
BMC_MCS# QR28
BMC_MBG0 QR30
BMC_MACT# QR32
BMC_MRAS# QR34
BMC_MCAS# QR37
BMC_MWE# QR40
BMC_MBA0 QR42
BMC_MBA1 QR44
BMC_MA0 QR46
BMC_MA1 QR48
BMC_MA2 QR50
BMC_MA3 QR52
BMC_MA4 QR54
BMC_MA5 QR56
BMC_MA6 QR58
BMC_MA7 QR60
BMC_MA8 QR62
BMC_MA9 QR64
BMC_MA10 QR67
BMC_MA11 QR70
BMC_MA12 QR72
BMC_MA13 QR75
QR79
QR80
120Ohm
2.7KOHM
COMPRESSED IMAGE
Title AST2500 - PCIE/DDR4/LPC/I2C
Size A3
Document Number 22D4-US
Rev A01
Date: Tuesday, October 02, 2018
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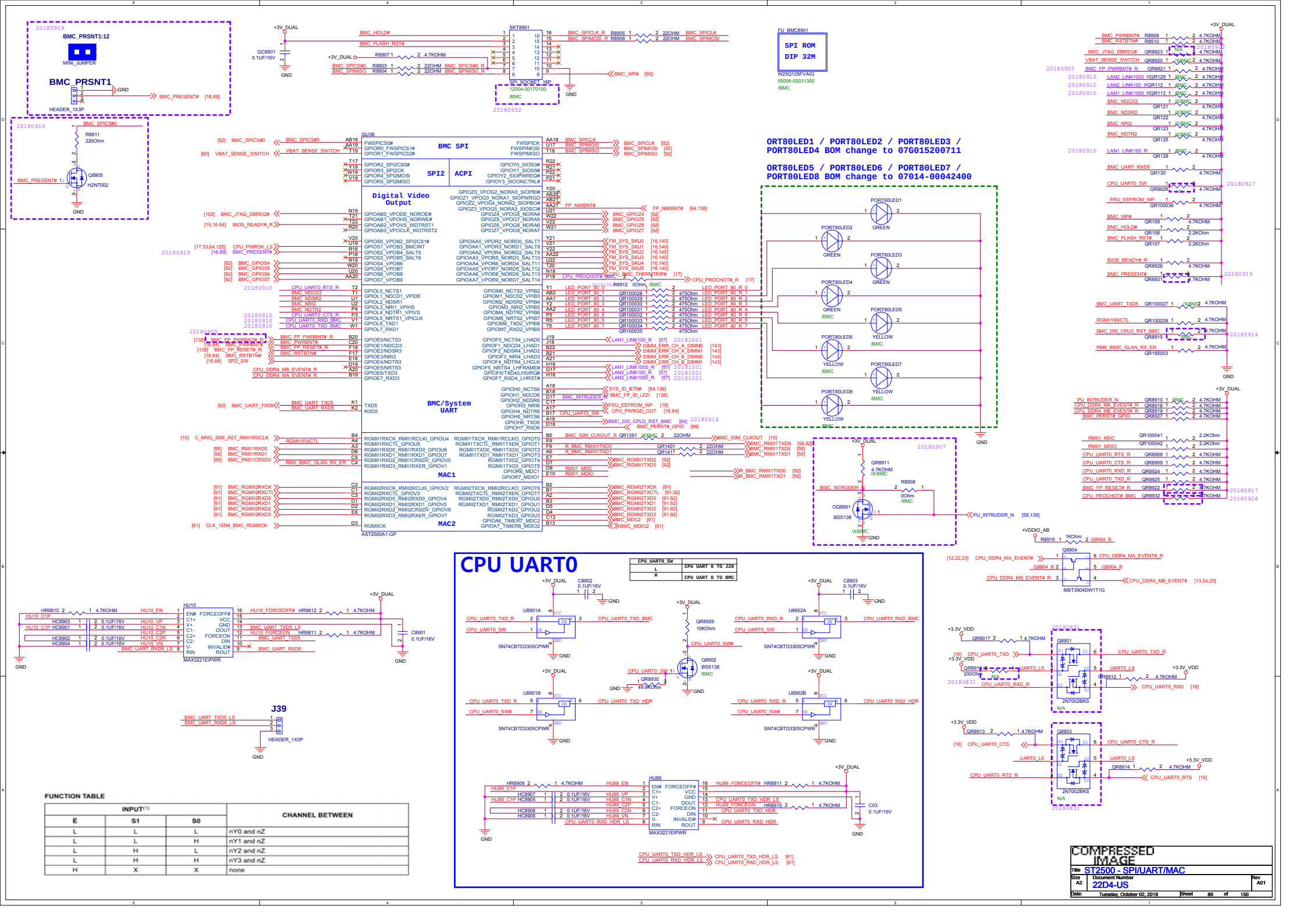
BMC_PRSNT1:12
MINI_JUMPER
BMC_PRSNT1
HEADER_1X3P
BMC_PRESENT# [16,89]
BMC_SPICS#0
R8911 220Ohm
Q8905 H2N7002
SPI ROM DIP 32M
W25Q128FVAIQ
05008-00031300
/BMC
SKT8901
SPI_SOCKET_16P
12004-00170100
/BMC
BMC_HOLD#
BMC_FLASH_RST#
BMC_SPICS#0 R8903 22OHM
BMC_SPIMISO R8904 22OHM
BMC_SPICLK R8905 22OHM
BMC_SPIMOSI R8906 22OHM
BMC_WP# [90]
QC8901 0.1UF/16V
+3V_DUAL
GND
QU3B
BMC SPI
SPI2
ACPI
Digital Video Output
BMC/System UART
MAC1
MAC2
AST2500A1-GP
FWSPICS0#
FWSPIMOSI
FWSPIMISO
FWSPICLK
GPIOR0_FWSPICS1#
GPIOR1_FWSPICS2#
GPIOR2_SPI2CS0#
GPIOR3_SPI2CK
GPIOR4_SPI2MOSI
GPIOR5_SPI2MISO
GPIOY0_SIOS3#
GPIOY1_SIOS5#
GPIOY2_SIOPWREQ#
GPIOY3_SIOONCTRL#
GPIOZ0_VPOG2_NORA0_SIOPBI#
GPIOZ1_VPOG3_NORA1_SIOPWRGD
GPIOZ2_VPOG4_NORA2_SIOPBO#
GPIOZ3_VPOG5_NORA3_SIOSCI#
GPIOAB0_VPODE_NOROE#
GPIOAB1_VPOHS_NORWE#
GPIOAB2_VPOVS_WDTRST1
GPIOAB3_VPOCLK_WDTRST2
GPIOS0_VPOB2_SPI2CS1#
GPIOS1_VPOB3_BMCINT
GPIOS2_VPOB4_SALT5
GPIOS3_VPOB5_SALT6
GPIOS4_VPOB6
GPIOS5_VPOB7
GPIOS6_VPOB8
GPIOS7_VPOB9
GPIOA0_VPOR2_NORD0_SALT7
GPIOAA1_VPOR3_NORD1_SALT8
GPIOAA2_VPOR4_NORD2_SALT9
GPIOAA3_VPOR5_NORD3_SALT10
GPIOAA4_VPOR6_NORD4_SALT11
GPIOAA5_VPOR7_NORD5_SALT12
GPIOAA6_VPOR8_NORD6_SALT13
GPIOAA7_VPOR9_NORD7_SALT14
GPIOL0_NCTS1
GPIOL1_NDCD1_VPIDE
GPIOL2_NDSR1
GPIOL3_NRI1_VPIHS
GPIOL4_NDTR1_VPIVS
GPIOL5_NRTS1_VPICLK
GPIOL6_TXD1
GPIOL7_RXD1
GPIOM0_NCTS2_VPIB2
GPIOM1_NDCD2_VPIB3
GPIOM2_NDSR2_VPIB4
GPIOM3_NRI2_VPIB5
GPIOM4_NDTR2_VPIB6
GPIOM5_NRTS2_VPIB7
GPIOM6_TXD2_VPIB8
GPIOM7_RXD2_VPIB9
GPIOE0_NCTS3
GPIOE1_NDCD3
GPIOE2_NDSR3
GPIOE3_NRI3
GPIOE4_NDTR3
GPIOE5_NRTS3
GPIOE6_TXD3
GPIOE7_RXD3
GPIOF0_NCTS4_LHAD0
GPIOF1_NDCD4_LHAD1
GPIOF2_NDSR4_LHAD2
GPIOF3_NRI4_LHAD3
GPIOF4_NDTR4_LHCLK
GPIOF5_NRTS4_LHFRAME#
GPIOF6/TXD4/LHSIRQ#
GPIOF7_RXD4_LHRST#
GPIOH0_NCTS6
GPIOH1_NDCD6
GPIOH2_NDSR6
GPIOH3_NRI6
GPIOH4_NDTR6
GPIOH5_NRTS6
GPIOH6_TXD6
GPIOH7_RXD6
RGMII1RXCK_RMII1RCLKI_GPIOU4
RGMII1RXCTL_GPIOU5
RGMII1RXD0_RMII1RXD0_GPIOU6
RGMII1RXD1_RMII1RXD1_GPIOU7
RGMII1RXD2_RMII1CRSDV_GPIOV0
RGMII1RXD3_RMII1RXER_GPIOV1
RGMII1TXCK_RMII1RCLKO_GPIOT0
RGMII1TXCTL_RMII1TXEN_GPIOT1
RGMII1TXD0_RMII1TXD0_GPIOT2
RGMII1TXD1_RMII1TXD1_GPIOT3
RGMII1TXD2_GPIOT4
RGMII1TXD3_GPIOT5
GPIOR6_MDC1
GPIOR7_MDIO1
RGMII2RXCK_RMII2RCLKI_GPIOV2
RGMII2RXCTL_GPIOV3
RGMII2RXD0_RMII2RXD0_GPIOV4
RGMII2RXD1_RMII2RXD1_GPIOV5
RGMII2RXD2_RMII2CRSDV_GPIOV6
RGMII2RXD3_RMII2RXER_GPIOV7
RGMII2TXCK_RMII2RCLKO_GPIOT8
RGMII2TXCTL_RMII2TXEN_GPIOT7
RGMII2TXD0_RMII2TXD0_GPIOU0
RGMII2TXD1_RMII2TXD1_GPIOU1
RGMII2TXD2_GPIOU2
RGMII2TXD3_GPIOU3
GPIOA6_TIMER7_MDC2
GPIOA7_TIMER8_MDIO2
RGMIIICK
BMC_SPICLK [92]
BMC_SPIMOSI [92]
BMC_SPIMISO [92]
FP_NMIBNT# [64,138]
BMC_GPIOZ4 [92]
BMC_GPIOZ5 [92]
BMC_GPIOZ6 [92]
BMC_GPIOZ7 [92]
FM_SYS_SKU0 [16,140]
FM_SYS_SKU1 [16,140]
FM_SYS_SKU2 [16,140]
FM_SYS_SKU3 [16,140]
FM_SYS_SKU4 [16,140]
FM_SYS_SKU5 [16,140]
CPU_BMC_THERMTRIP# [17]
CPU_PROCHOT#_R [17]
LED_PORT_80_1 R8912 0Ohm /BMC
LED_PORT_80_0 QR100028
LED_PORT_80_1 QR100029
LED_PORT_80_2 QR100030
LED_PORT_80_3 QR100031
LED_PORT_80_4 QR100032
LED_PORT_80_5 QR100033
LED_PORT_80_6 QR100034
LED_PORT_80_7 QR100035
4750hm
LAN1_LINK100_R [57] 20181001
LAN2_LINK100_R [57] 20181001
DIMM_ERR_CH_A_DIMM0 [143]
DIMM_ERR_CH_A_DIMM1 [143]
DIMM_ERR_CH_B_DIMM0 [143]
DIMM_ERR_CH_B_DIMM1 [143]
SYS_ID_BTN# [64,138]
BMC_FP_ID_LED [138]
FRU_EEPROM_WP [16]
CPU_PWRGD_OUT [16,64]
BMC_DIS_CPLD_RST_BMC [64] 20180914
BMC_PERST#_GPIO [88]
BMC_50M_CLKOUT_R QR1391 /X/BMC 22OHM
R_BMC_RMII1TXD0 QR1401 22OHM
R_BMC_RMII1TXD1 QR1411 22OHM
BMC_RMII1TXEN [56,92]
BMC_RMII1TXD0 [56]
BMC_RMII1TXD1 [56]
BMC_RGMII1TXD2 [92]
BMC_RGMII1TXD3 [92]
RMII1_MDC
RMII1_MDIO
R_BMC_RMII1TXD0 [92]
R_BMC_RMII1TXD1 [92]
BMC_RGMII2TXCK [91]
BMC_RGMII2TXCTL [91,92]
BMC_RGMII2TXD0 [91,92]
BMC_RGMII2TXD1 [91,92]
BMC_RGMII2TXD2 [91,92]
BMC_RGMII2TXD3 [91,92]
BMC_MDC2 [91]
BMC_MDIO2 [91]
C_MNG_50M_AST_RMII1RXCLK
RGMII1RXCTL
BMC_RMII1RXD0 [56]
BMC_RMII1RXD1 [56]
BMC_RMII1CRSDV [56]
RMII_IBMC_GLAN_RX_ER
BMC_RGMII2RXCK [91]
BMC_RGMII2RXCTL [91]
BMC_RGMII2RXD0 [91]
BMC_RGMII2RXD1 [91]
BMC_RGMII2RXD2 [91]
BMC_RGMII2RXD3 [91]
CLK_125M_BMC_RGMIICK [91]
BMC_UART_TXD5 [92]
BMC_UART_RXD5
CPU_UART0_RTS_R
BMC_NDCD2
BMC_NDSR2
BMC_NRI2
BMC_NDTR2
CPU_UART0_CTS_R
CPU_UART0_RXD_BMC
CPU_UART0_TXD_BMC
BMC_FP_PWRBNT# R
BMC_PWRBNT#
BMC_FP_RESET# R
BMC_RSTBTN#
SPD_SW
CPU_DDR4_MB_EVENT# R
CPU_DDR4_MA_EVENT# R
BIOS_READY# R [15,16,64]
VBAT_SENSE_SWITCH [90]
CPU_PWROK_LS [17,53,64,125]
BMC_PRESENT# [16,89]
BMC_GPIOS4 [92]
BMC_GPIOS5 [92]
BMC_GPIOS6 [92]
BMC_GPIOS7 [92]
BMC_JTAG_DBREQ# [102]
ORT80LED1 / PORT80LED2 / PORT80LED3 / PORT80LED4 BOM change to 076015200711
ORT80LED5 / PORT80LED6 / PORT80LED7 / PORT80LED8 BOM change to 07014-00042400
PORT80LED1 GREEN
PORT80LED2 GREEN
PORT80LED3 GREEN
PORT80LED4 GREEN /BMC
PORT80LED5 YELLOW /BMC
PORT80LED6 YELLOW /BMC
PORT80LED7 YELLOW /BMC
PORT80LED8 YELLOW /BMC
BMC_PWRBNT# R8909
BMC_RSTBTN# R8910
BMC_JTAG_DBREQ# QR8923
VBAT_SENSE_SWITCH QR8920
BMC_FP_PWRBNT# R QR8921
LAN2_LINK1000 RQR129
LAN2_LINK100 RQR112
LAN1_LINK1000 RQR113
BMC_NDCD2 QR121
BMC_NDSR2 QR122
BMC_NRI2 QR123
BMC_NDTR2 QR125
LAN1_LINK100 R QR128
BMC_UART_RXD5 QR130
CPU_UART0_SW QR8928
FRU_EEPROM_WP QR100036
BMC_WP# QR109
BMC_HOLD# QR106
BMC_FLASH_RST# QR107
BIOS_READY# R QR8926
BMC_PRESENT# QR8931
BMC_UART_TXD5 QR100027
RGMII1RXCTL QR100039
BMC_DIS_CPLD_RST_BMC QR8915
RMII_IBMC_GLAN_RX_ER QR185003
PU_INTRUDER_N QR8910
CPU_DDR4_MA_EVENT# R QR8918
CPU_DDR4_MB_EVENT# R QR8919
BMC_PERST# GPIO QR8927
RMII1_MDC QR100041
RMII1_MDIO QR100042
CPU_UART0_RTS_R QR8908
CPU_UART0_CTS_R QR8909
CPU_UART0_RXD_R QR8924
CPU_UART0_TXD_R QR8925
BMC_FP_RESET# R QR8922
CPU_PROCHOT# BMC QR8932
PU_INTRUDER_N [58,138]
QR8911 4.7KOHM /X/BMC
R8908 0Ohm /BMC
OQ8901 BSS138
+VDDIO_AB
R8915 1KOhm
Q8904_B
Q8904
CPU_DDR4_MA_EVENT# R
CPU_DDR4_MB_EVENT# R
MBT3904DW1T1G
CPU UART0
CPU_UART0_SW
L CPU UART 0 TO J20
H CPU UART 0 TO BMC
U8901A SN74CBTD3305CPWR
U8901B SN74CBTD3305CPWR
U8902A SN74CBTD3305CPWR
U8902B SN74CBTD3305CPWR
C8902 0.1UF/16V
C8903 0.1UF/16V
QR8929 10KOhm
Q8902 BSS138 /BMC
QR8930 49.9KOhm
CPU_UART0_TXD_R
CPU_UART0_TXD_BMC
CPU_UART0_TXD_HDR
CPU_UART0_SW#
CPU_UART0_RXD_R
CPU_UART0_RXD_BMC
CPU_UART0_RXD_HDR
CPU_UART0_SW# 1
CPU_UART0_TXD_HDR_LS
CPU_UART0_RXD_HDR_LS
HU10
MAX3221EIPWR
HU10_EN
HU10_FORCEOFF# HR9812 2
HU10_C1P
HU10_VP
HU10_C1N
HU10_C2P
HU10_C2N
HU10_VN
HU10_FORCEON HR9811 2
BMC_UART_TXD5_LS
BMC_UART_RXD5_LS
C8901 0.1UF/16V
HU89
MAX3221EIPWR
HU89_EN
HU89_FORCEOFF# HR8911 2
HU89_C1P
HU89_VP
HU89_C1N
HU89_C2P
HU89_C2N
HU89_VN
HU89_FORCEON HR8910 2
CPU_UART0_TXD_HDR_LS
CPU_UART0_RXD_HDR_LS
C03 0.1UF/16V
J39
HEADER_1X3P
+3.3V_VDD
QR8917 2 4.7KOHM
QR8916 200Ohm N/A
QR8912 4.7KOHM
QR8913 4.7KOHM
QR8914 4.7KOHM
Q8901
Q8903
2N7002BKS
UART0_LS
CPU_UART0_TXD_R
CPU_UART0_RXD
CPU_UART0_CTS_R
CPU_UART0_RTS
CPU_UART0_RXD_R
CPU_UART0_TXD [16]
CPU_UART0_CTS [16]
CPU_UART0_RTS [16]
FUNCTION TABLE
INPUT(1)
E S1 S0 CHANNEL BETWEEN
L L L nY0 and nZ
L L H nY1 and nZ
L H L nY2 and nZ
L H H nY3 and nZ
H X X none
COMPRESSED IMAGE
Title ST2500 - SPI/UART/MAC
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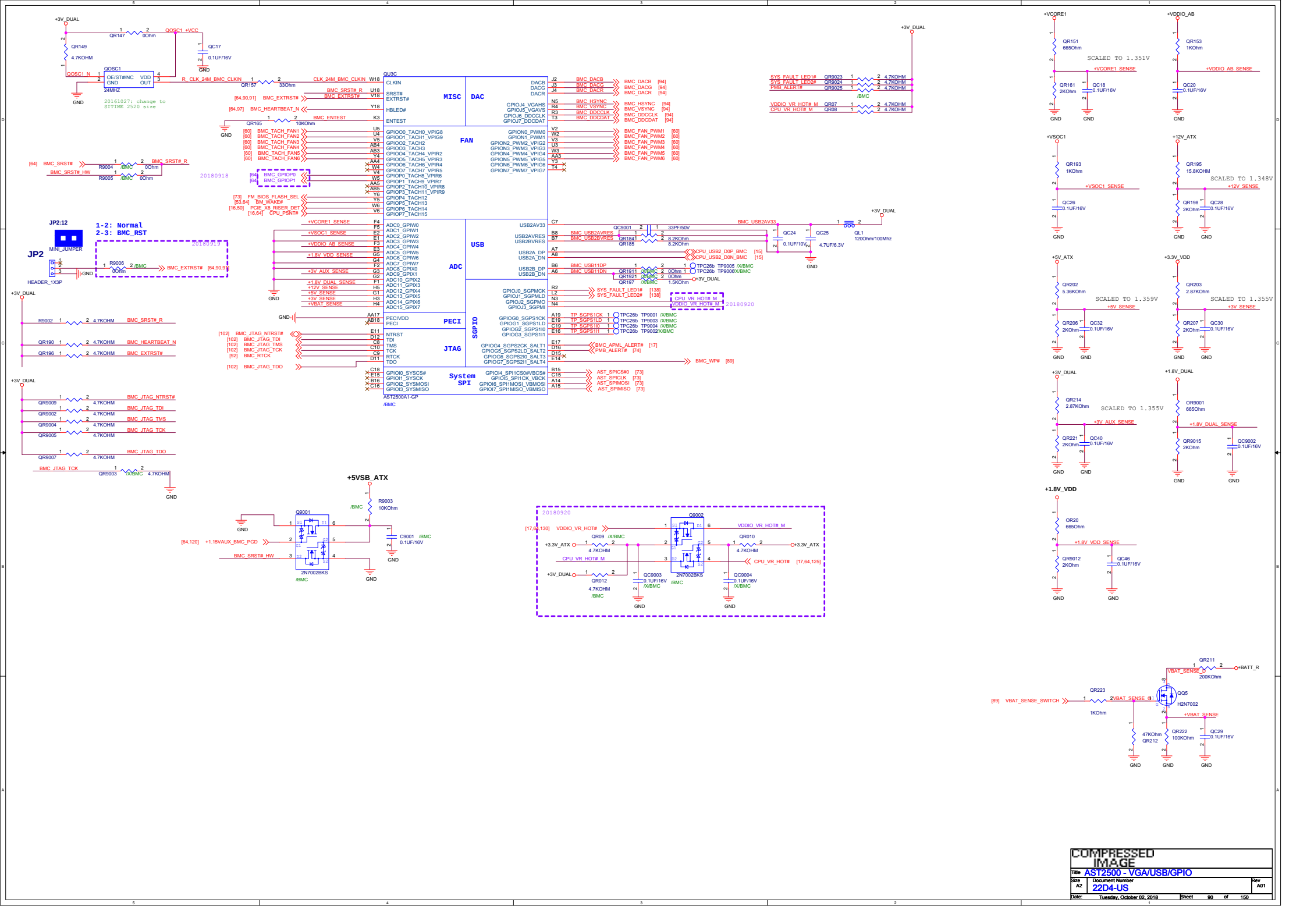
QU3C
MISC
DAC
FAN
USB
ADC
PECI
JTAG
SGPIO
System SPI
AST2500A1-GP
/BMC
JP2:12
1-2: Normal
2-3: BMC_RST
JP2
MINI_JUMPER
HEADER_1X3P
20180918
20180919
20180920
20161027: change to SITIME 2520 size
+5VSB_ATX
Q9001
2N7002BKS
Q9002
QQ5
H2N7002
SCALED TO 1.351V
SCALED TO 1.348V
SCALED TO 1.359V
SCALED TO 1.355V
COMPRESSED IMAGE
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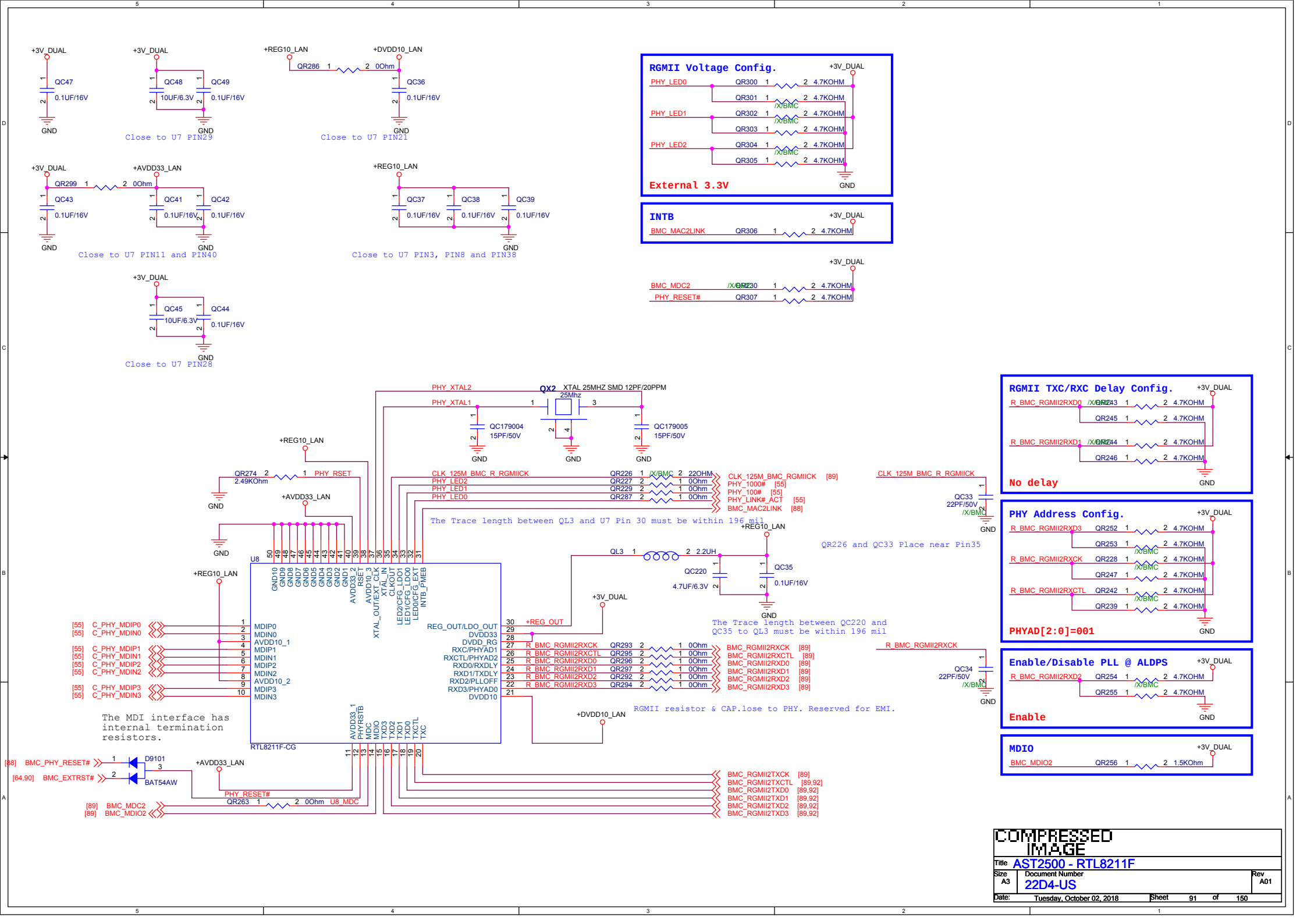
+3V_DUAL
QC47
0.1UF/16V
GND
+3V_DUAL
QC48
10UF/6.3V
QC49
0.1UF/16V
GND
Close to U7 PIN29
+REG10_LAN
QR286 1 2 0Ohm
+DVDD10_LAN
QC36
0.1UF/16V
GND
Close to U7 PIN21
+3V_DUAL
QR299 1 2 0Ohm
+AVDD33_LAN
QC43
0.1UF/16V
QC41
0.1UF/16V
QC42
0.1UF/16V
GND
Close to U7 PIN11 and PIN40
+REG10_LAN
QC37
0.1UF/16V
QC38
0.1UF/16V
QC39
0.1UF/16V
GND
Close to U7 PIN3, PIN8 and PIN38
+3V_DUAL
QC45
10UF/6.3V
QC44
0.1UF/16V
GND
Close to U7 PIN28
RGMII Voltage Config.
+3V_DUAL
PHY_LED0
QR300 1 2 4.7KOHM
QR301 1 2 4.7KOHM /X/BMC
PHY_LED1
QR302 1 2 4.7KOHM /X/BMC
QR303 1 2 4.7KOHM
PHY_LED2
QR304 1 2 4.7KOHM /X/BMC
QR305 1 2 4.7KOHM
External 3.3V
GND
INTB
+3V_DUAL
BMC_MAC2LINK
QR306 1 2 4.7KOHM
+3V_DUAL
BMC_MDC2
QR230 1 2 4.7KOHM /X/BMC
PHY_RESET#
QR307 1 2 4.7KOHM
PHY_XTAL2
PHY_XTAL1
QX2 XTAL 25MHZ SMD 12PF/20PPM
25Mhz
QC179004
15PF/50V
QC179005
15PF/50V
GND
+REG10_LAN
QR274 2 1 PHY_RSET
2.49KOhm
+AVDD33_LAN
CLK_125M_BMC_R_RGMIICK
PHY_LED2
PHY_LED1
PHY_LED0
QR226 1 /X/BMC 2 22OHM
QR227 2 1 0Ohm
QR229 2 1 0Ohm
QR287 2 1 0Ohm
CLK_125M_BMC_RGMIICK [89]
PHY_1000# [55]
PHY_100# [55]
PHY_LINK#_ACT [55]
BMC_MAC2LINK [88]
The Trace length between QL3 and U7 Pin 30 must be within 196 mil
CLK_125M_BMC_R_RGMIICK
QC33
22PF/50V
/X/BMC
GND
QR226 and QC33 Place near Pin35
+REG10_LAN
QL3 1 2 2.2UH
QC220
4.7UF/6.3V
QC35
0.1UF/16V
GND
+3V_DUAL
The Trace length between QC220 and QC35 to QL3 must be within 196 mil
U8
GND10 GND9 GND8 GND7 GND6 GND5 GND4 GND3 GND2 GND1 AVDD33_2 RSET AVDD10_3 XTAL_IN CLKOUT LED2/CFG_LDO1 LED1/CFG_LDO0 LED0/CFG_LEXT INTB_PMEB
XTAL_OUT/EXT_CLK
REG_OUT/LDO_OUT
DVDD33
DVDD_RG
RXC/PHYAD1
RXCTL/PHYAD2
RXD0/RXDLY
RXD1/TXDLY
RXD2/PLLOFF
RXD3/PHYAD0
DVDD10
+REG_OUT
R_BMC_RGMII2RXCK QR293 2 1 0Ohm
R_BMC_RGMII2RXCTL QR295 2 1 0Ohm
R_BMC_RGMII2RXD0 QR296 2 1 0Ohm
R_BMC_RGMII2RXD1 QR297 2 1 0Ohm
R_BMC_RGMII2RXD2 QR292 2 1 0Ohm
R_BMC_RGMII2RXD3 QR294 2 1 0Ohm
BMC_RGMII2RXCK [89]
BMC_RGMII2RXCTL [89]
BMC_RGMII2RXD0 [89]
BMC_RGMII2RXD1 [89]
BMC_RGMII2RXD2 [89]
BMC_RGMII2RXD3 [89]
RGMII resistor & CAP.lose to PHY. Reserved for EMI.
R_BMC_RGMII2RXCK
QC34
22PF/50V
/X/BMC
GND
+3V_DUAL
+DVDD10_LAN
[55] C_PHY_MDIP0
[55] C_PHY_MDIN0
[55] C_PHY_MDIP1
[55] C_PHY_MDIN1
[55] C_PHY_MDIP2
[55] C_PHY_MDIN2
[55] C_PHY_MDIP3
[55] C_PHY_MDIN3
MDIP0 MDIN0 AVDD10_1 MDIP1 MDIN1 MDIP2 MDIN2 AVDD10_2 MDIP3 MDIN3
The MDI interface has internal termination resistors.
RTL8211F-CG
AVDD33_1 PHYRSTB MDC MDIO TXD3 TXD2 TXD1 TXD0 TXCTL TXC
[88] BMC_PHY_RESET#
[64,90] BMC_EXTRST#
D9101
BAT54AW
+AVDD33_LAN
PHY_RESET#
QR263 1 2 0Ohm U8_MDC
[89] BMC_MDC2
[89] BMC_MDIO2
BMC_RGMII2TXCK [89]
BMC_RGMII2TXCTL [89,92]
BMC_RGMII2TXD0 [89,92]
BMC_RGMII2TXD1 [89,92]
BMC_RGMII2TXD2 [89,92]
BMC_RGMII2TXD3 [89,92]
RGMII TXC/RXC Delay Config.
+3V_DUAL
R_BMC_RGMII2RXD0
QR243 1 2 4.7KOHM /X/BMC
QR245 1 2 4.7KOHM
R_BMC_RGMII2RXD1
QR244 1 2 4.7KOHM /X/BMC
QR246 1 2 4.7KOHM
No delay
GND
PHY Address Config.
+3V_DUAL
R_BMC_RGMII2RXD3 QR252 1 2 4.7KOHM
QR253 1 2 4.7KOHM /X/BMC
R_BMC_RGMII2RXCK QR228 1 2 4.7KOHM /X/BMC
QR247 1 2 4.7KOHM
R_BMC_RGMII2RXCTL QR242 1 2 4.7KOHM /X/BMC
QR239 1 2 4.7KOHM
PHYAD[2:0]=001
GND
Enable/Disable PLL @ ALDPS
+3V_DUAL
R_BMC_RGMII2RXD2 QR254 1 2 4.7KOHM /X/BMC
QR255 1 2 4.7KOHM
Enable
GND
MDIO
+3V_DUAL
BMC_MDIO2 QR256 1 2 1.5KOhm
COMPRESSED IMAGE
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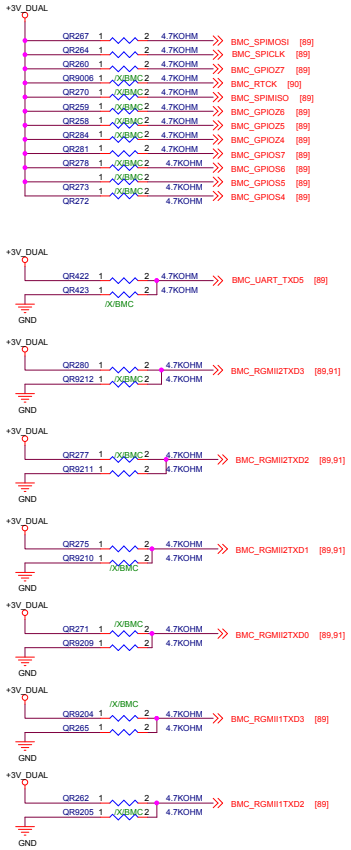
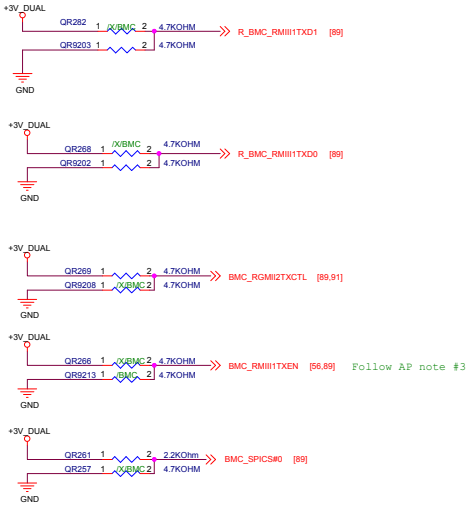
0x1E6E2070 Bit#	BALL NUM	BALL NAME	DESCRIPTION
31	U17	FWSPIMOSI	ENABLE SPI FLASH STRAP AUTO FETCH MODE 0: DISABLE 1: ENABLE (DFLT)
30	AA18	FWSPICK	ENABLE GPIO STRAP MODE 0: DISABLE 1: ENABLE (DFLT)
29	K1	TXD5	SELECT UART DEBUG PORT (IT CAN SUPPORT FIRMWARE UPDATE CAPABILITY) 0: SELECT UART1 AS BMC CONSOLE PORT 1: SELECT UART5 AS BMC CONSOLE PORT (DFLT)
27	W21	GPIOZ7	ENABLE FAST RESET MODE FOR ARM ICE DEBUGGER 0: LONG RESET MODE, NORMAL OPERATION (DFLT)1: FAST RESET MODE, FOR ICE DEBUGGER CONNECTION
26	C9	RTCK	ENABLE ESPI FLASH MODE (BIT VALID ONLY WHEN ESPI MODE IS ENABLE) 0: ESPI RESPOND WITH NO FLASH ATTACHED (DFLT)1: ESPI RESPOND WITH FLASH ATTACHED
25	T18	FWSPIMISO	ENABLE ESPI MODE 0: LPC MODE 1: ESPI MODE (DFLT)
24	D4	RGMII2TXD3	SELECT DDR4 SDRAM 0: DDR3 SDRAM 1: DDR4 SDRAM (DFLT)
23	D5	RGMII2TXD2	SELECT 25MHZ REFERENCE CLOCK INPUT MODE 0: CLKIN IS 24MHZ AND USBCKI NOT USED 1: CLKIN IS 25MHZ AND USBCKI = 24/48MHZ (DFLT)
22	B3	RGMII2TXD1	ENABLE GPIOE PASS-THROUGH MODE 0: DISABLE 1: ENABLE PASS-THRU AT POWER ON (DFLT)
21	A2	RGMII2TXD0	ENABLE GPIOD PASS-THROUGH MODE 0: DISABLE 1: ENABLE PASS-THRU AT POWER ON (DFLT)
20	A2	GPIOZ6	Disable LPC to decode SuperIO0x2E/0x4E address 0: Enable address decoding(DFLT) 1: Disable address decoding
19	D7	RGMII1TXD3	ENABLE ACPI FUNCTION 0: DISABLE ACPI 1: ENABLE ACPI (DFLT)
18	W22	GPIOZ5	SELECT USBCKI INPUT FREQUENCY 0: 24MHZ 1: 48MHZ (DFLT)
17	U21	GPIOZ4	ENABLE BMC 2ND BOOT WATCHDOG TIMER 0: DISABLE (DFLT 1: ENABLE TIMER START COUNTING AT POWER UP
16	E7	RGMII1TXD2	SUPER-IO CONFIGURATION ADDRESS SELECTION 0: DECODE 0X2E (DFLT) 1: DECODE 0X4E
15	AA20	GPIOS7	VGA CLASS CODE SELECTION 0: SELECT THE CLASS CODE FOR VIDEO DEVICE 1: SELECT THE CLASS CODE FOR VGA DEVICE (DFLT)
13	A5	RGMII1TXD1	SPI MODE SELECTION [13:12] (RELATED TO GPIOI[7:4]) 00: DISABLE SPI INTERFACE (DFLT) 01: ENABLE SPI MASTER
12	F9	RGMII1TXD0	10: ENABLE SPI MASTER AND SPI SLAVE TO AHB BRIDGE 11: ENABLE SPI PASS-THROUGH
07	B1	RGMII2TXCTL	DEFINE MAC2 INTERFACE 0: RMII/NCSI 1: RGMII (DFLT)
06	E9	RGMII1TXCTL	DFINE MAC1 INTERFACE 0: RMII/NCSI (DFLT) 1: RGMII
05	U20	GPIOS6	ENABLE DEICATED VGA BIOS ROM 0: NO VGA BIOS ROM, VGA BIOS IS MERGED IN THE SYSTEM BIOS (DFLT) 1: ENABLE DEDICATED VGA BIOS ROM
04	W20	GPIOS5	RESERVED (0)
03	R19	GPIOS4	VGA MEMORY SIZE [3:2] (ALONG WITH SOFT STRAP 2) 00: SELECT 8MB VGA MEMORY 01: SELECT 16MB VGA MEMORY (DFLT) 10: SELECT 32MB VGA MEMORY 11: SELECT 64MB VGA MEMORY
00	AB19	FWSPICS0#	DISABLE CPU BOOT O: ENABLE BOOT (DFLT) 1: DISABLE CPU OPERATION, WHEN NO FIRMWARE EXIST





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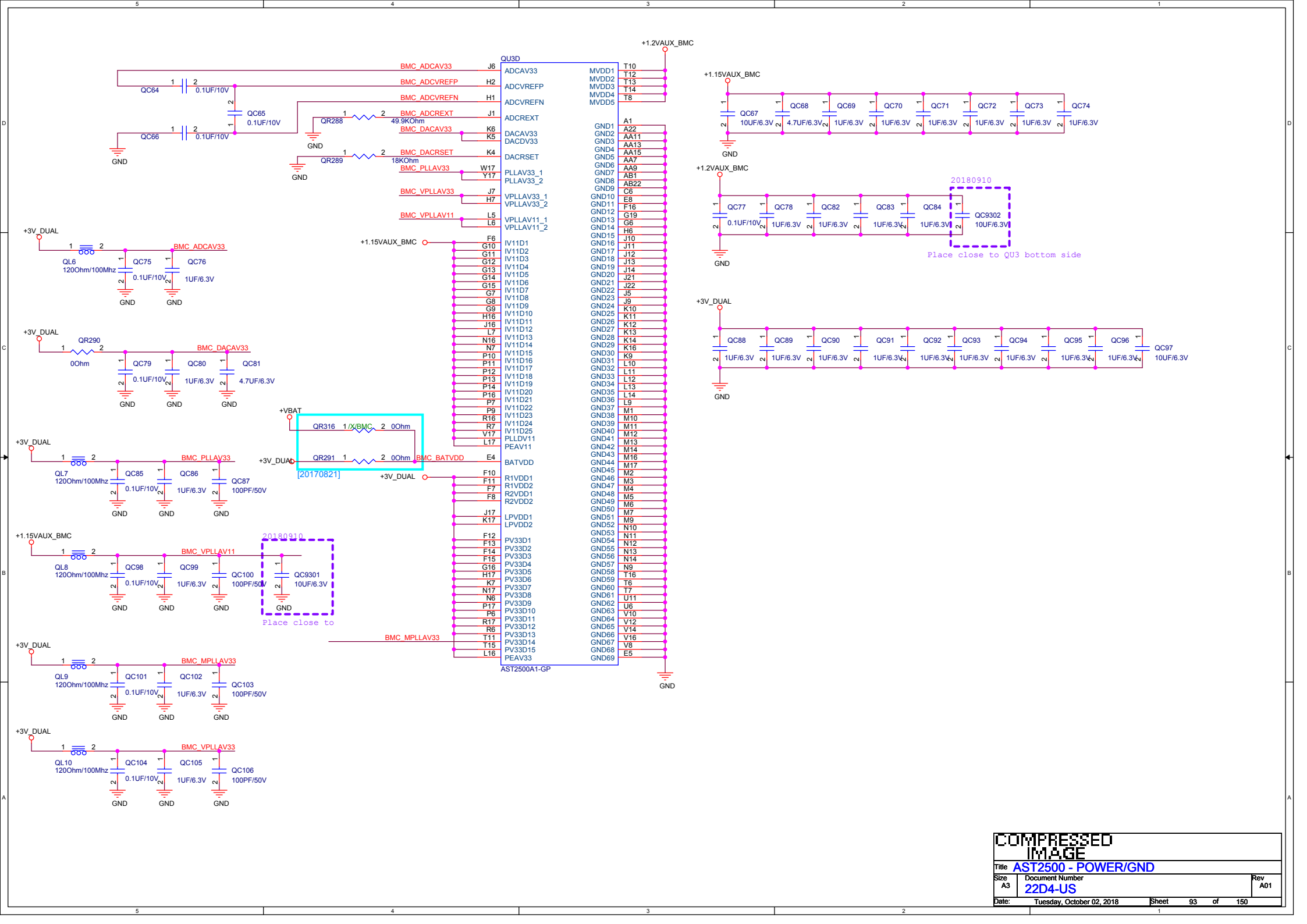

COMPRESSED IMAGE

Title	AST2500 - POWER/GND	
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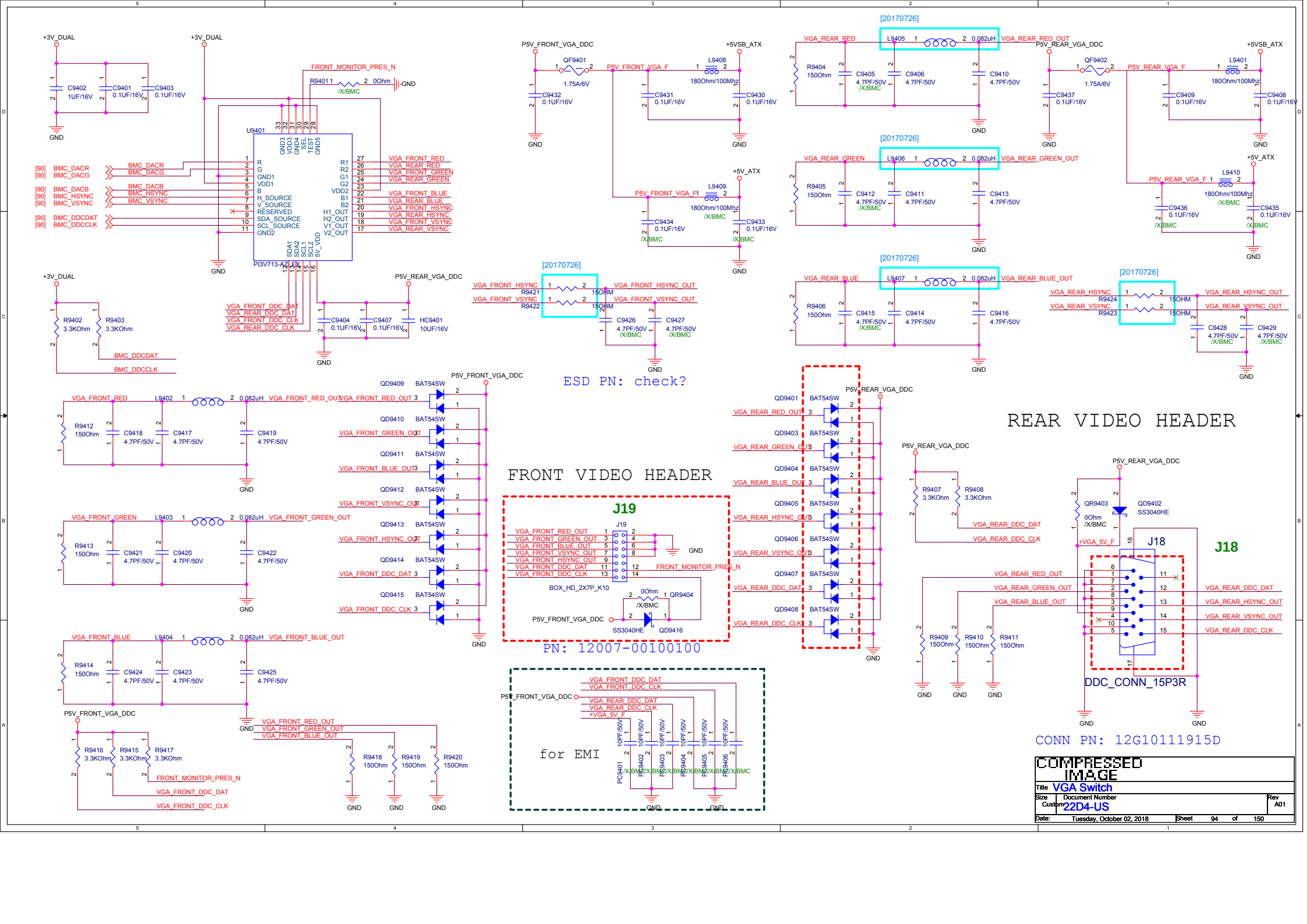
FRONT VIDEO HEADER
REAR VIDEO HEADER
ESD PN: check?
PN: 12007-00100100
CONN PN: 12G10111915D
for EMI
DDC_CONN_15P3R
J19
J18
U9401
PI3V713-AZLEX
FRONT_MONITOR_PRES_N
BMC_DACR
BMC_DACG
BMC_DACB
BMC_HSYNC
BMC_VSYNC
BMC_DDCDAT
BMC_DDCCLK
VGA_FRONT_RED
VGA_FRONT_GREEN
VGA_FRONT_BLUE
VGA_FRONT_HSYNC
VGA_FRONT_VSYNC
VGA_REAR_RED
VGA_REAR_GREEN
VGA_REAR_BLUE
VGA_REAR_HSYNC
VGA_REAR_VSYNC
VGA_FRONT_DDC_DAT
VGA_FRONT_DDC_CLK
VGA_REAR_DDC_DAT
VGA_REAR_DDC_CLK
P5V_FRONT_VGA_DDC
P5V_REAR_VGA_DDC
+3V_DUAL
+5VSB_ATX
+5V_ATX
GND
[20170726]
COMPRESSED IMAGE
Title VGA Switch
Size Custom
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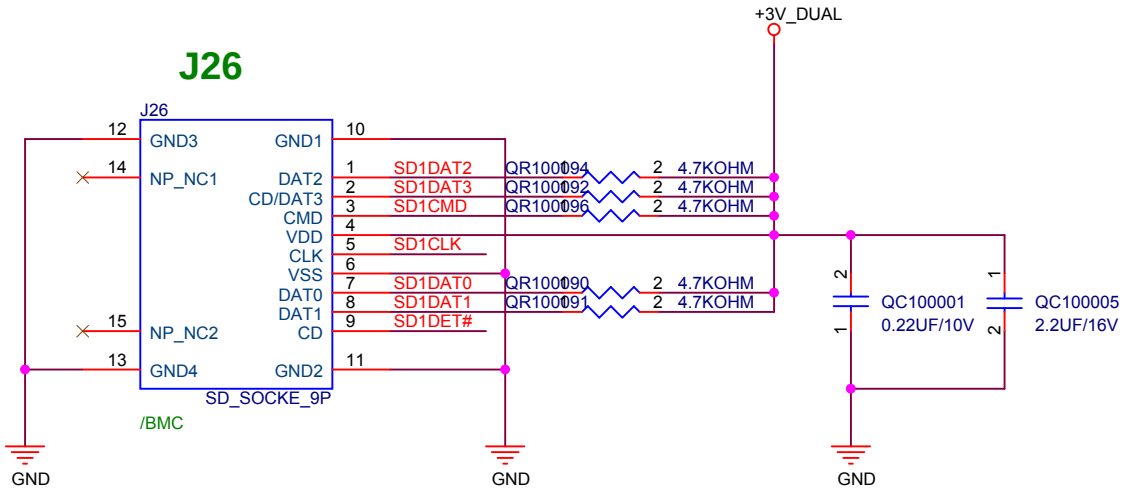

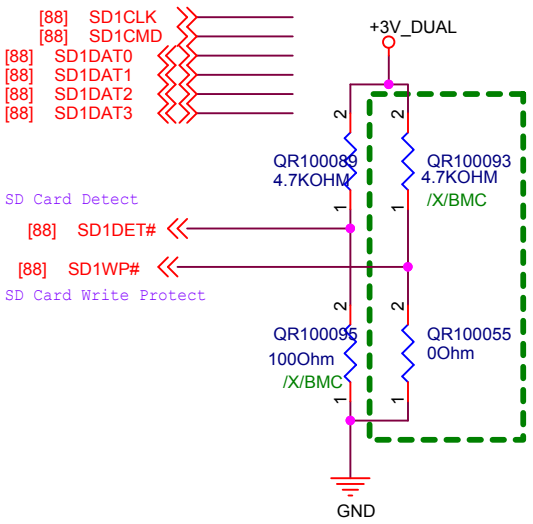

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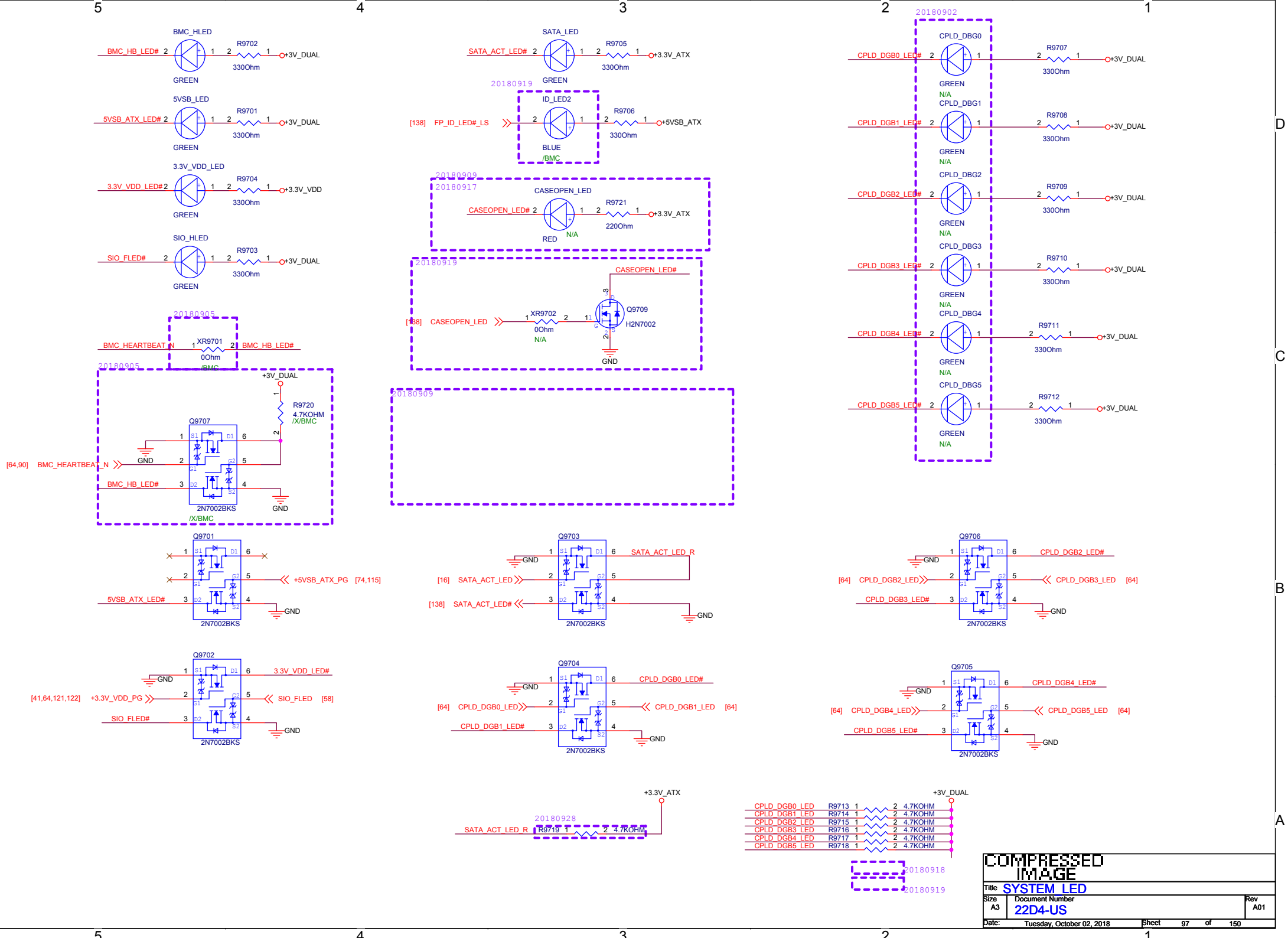

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5 4 3 2 1

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COMPRESSED
IMAGE

Title N/A		
Size A4	Document Number 22D4-US	Rev A01
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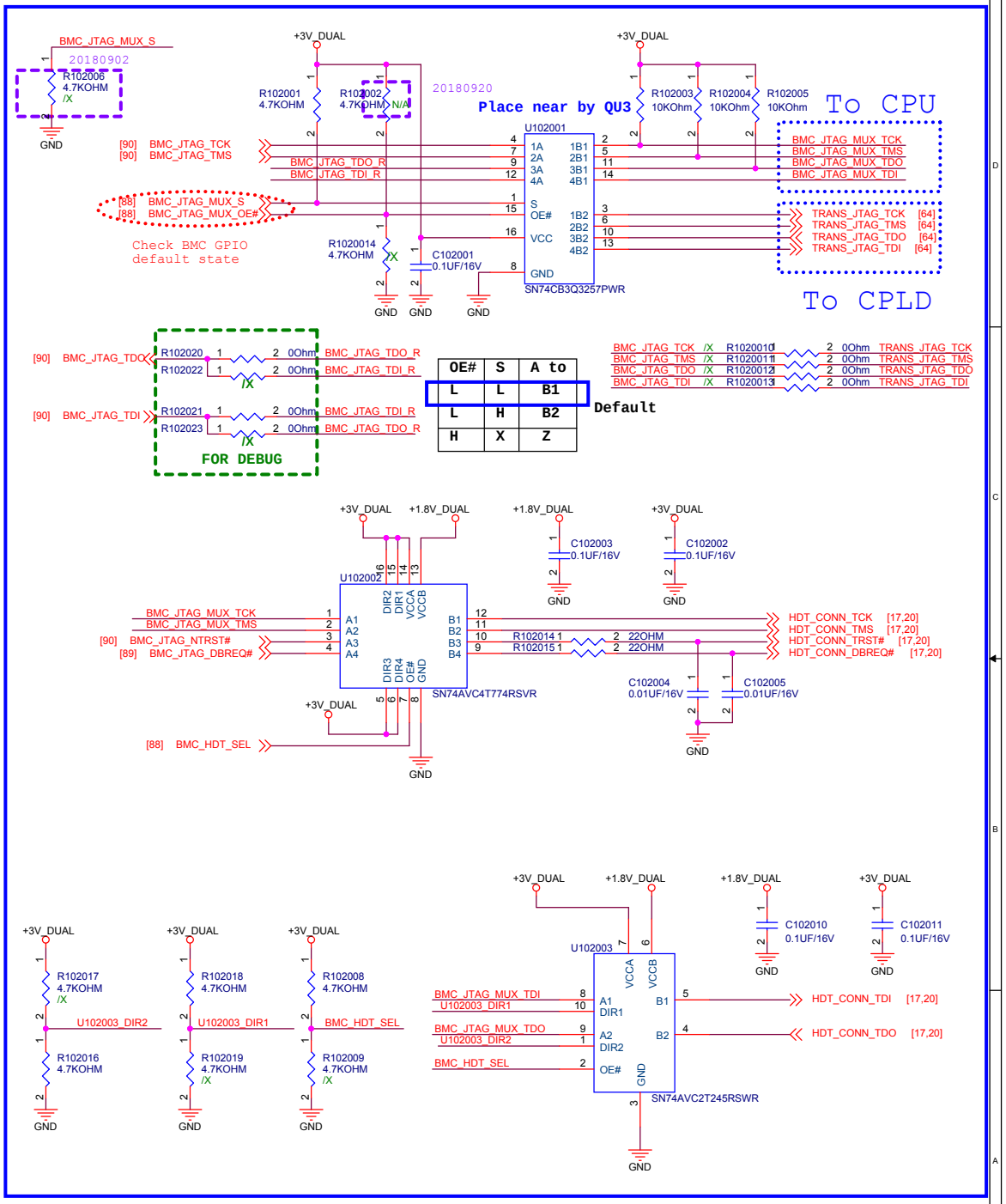
COMPRESSED IMAGE



COMPRESSED IMAGE			
Title	CPU/BMC/CPLD/JTAG		
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COMPRESSED IMAGE

Title N/A		
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COMPRESSED IMAGE

Title	N/A	
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COMPRESSED
IMAGE

Title	N/A	
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5 4 3 2 1

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COMPRESSED IMAGE

Title N/A		
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5 4 3 2 1

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Title	N/A	
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COMPRESSED IMAGE

Title N/A		
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COMPRESSED IMAGE

Title	N/A	
Size A3	Document Number 22D4-US	Rev A01
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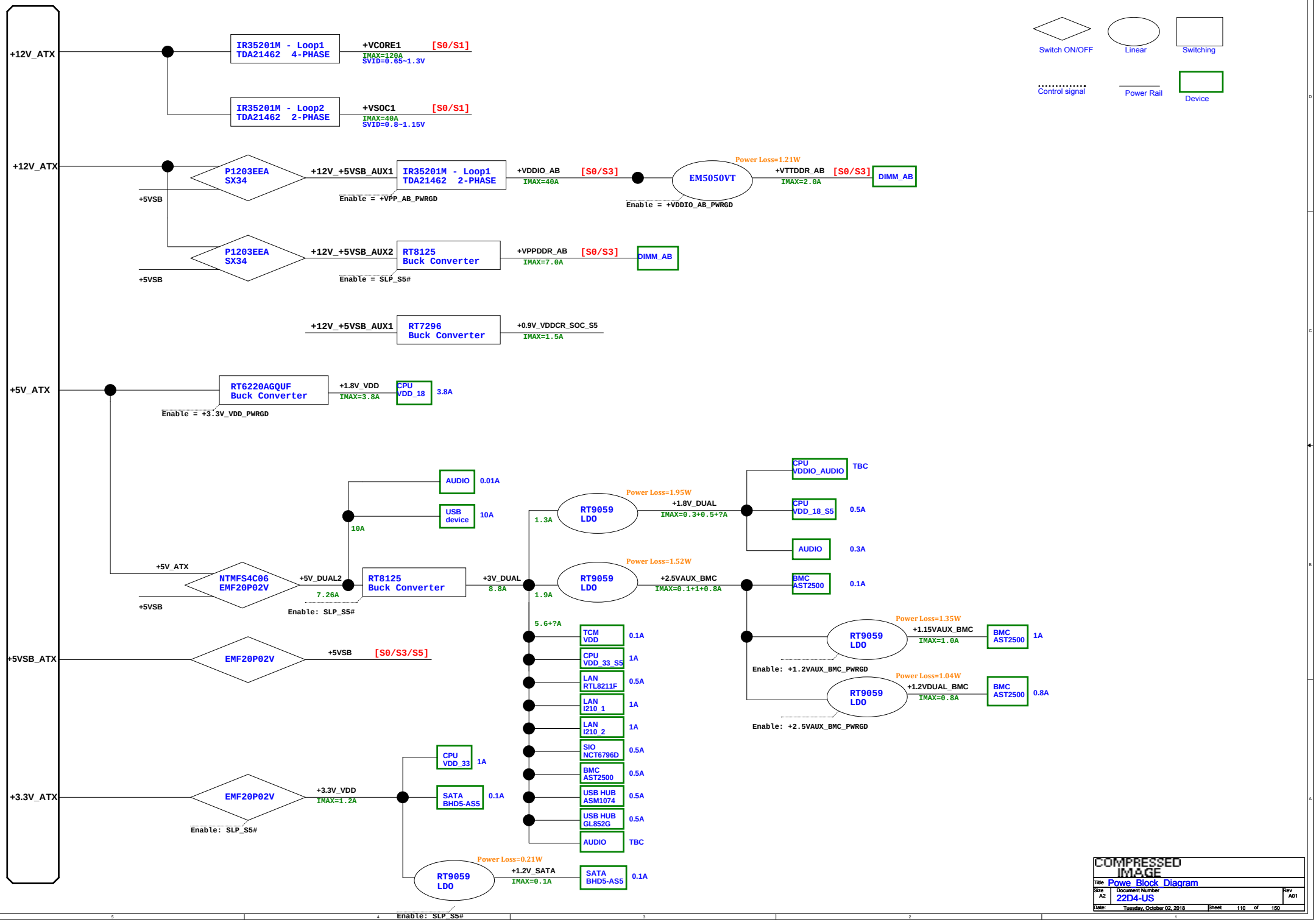
+12V_ATX
IR35201M - Loop1
TDA21462 4-PHASE
+VCORE1 [S0/S1]
IMAX=120A
SVID=0.65~1.3V
IR35201M - Loop2
TDA21462 2-PHASE
+VSOC1 [S0/S1]
IMAX=40A
SVID=0.8~1.15V
+12V_ATX
P1203EEA
SX34
+5VSB
+12V_+5VSB_AUX1
IR35201M - Loop1
TDA21462 2-PHASE
Enable = +VPP_AB_PWRGD
+VDDIO_AB [S0/S3]
IMAX=40A
EM5050VT
Power Loss=1.21W
+VTTDDR_AB [S0/S3]
IMAX=2.0A
DIMM_AB
Enable = +VDDIO_AB_PWRGD
P1203EEA
SX34
+5VSB
+12V_+5VSB_AUX2
RT8125
Buck Converter
Enable = SLP_S5#
+VPPDDR_AB [S0/S3]
IMAX=7.0A
DIMM_AB
+12V_+5VSB_AUX1
RT7296
Buck Converter
+0.9V_VDDCR_SOC_S5
IMAX=1.5A
+5V_ATX
RT6220AGQUF
Buck Converter
Enable = +3.3V_VDD_PWRGD
+1.8V_VDD
IMAX=3.8A
CPU
VDD_18
3.8A
AUDIO 0.01A
USB device 10A
10A
+5V_ATX
NTMFS4C06
EMF20P02V
+5VSB
+5V_DUAL2
7.26A
Enable: SLP_S5#
RT8125
Buck Converter
+3V_DUAL
8.8A
1.3A
RT9059
LDO
Power Loss=1.95W
+1.8V_DUAL
IMAX=0.3+0.5+?A
CPU
VDDIO_AUDIO
TBC
CPU
VDD_18_S5
0.5A
AUDIO
0.3A
1.9A
RT9059
LDO
Power Loss=1.52W
+2.5VAUX_BMC
IMAX=0.1+1+0.8A
BMC
AST2500
0.1A
5.6+?A
TCM
VDD
0.1A
CPU
VDD_33_S5
1A
LAN
RTL8211F
0.5A
LAN
I210_1
1A
LAN
I210_2
1A
SIO
NCT6796D
0.5A
BMC
AST2500
0.5A
USB HUB
ASM1074
0.5A
USB HUB
GL852G
0.5A
AUDIO
TBC
RT9059
LDO
Power Loss=1.35W
+1.15VAUX_BMC
IMAX=1.0A
BMC
AST2500
1A
Enable: +1.2VAUX_BMC_PWRGD
RT9059
LDO
Power Loss=1.04W
+1.2VDUAL_BMC
IMAX=0.8A
BMC
AST2500
0.8A
Enable: +2.5VAUX_BMC_PWRGD
+5VSB_ATX
EMF20P02V
+5VSB [S0/S3/S5]
+3.3V_ATX
EMF20P02V
Enable: SLP_S5#
+3.3V_VDD
IMAX=1.2A
CPU
VDD_33
1A
SATA
BHD5-AS5
0.1A
RT9059
LDO
Power Loss=0.21W
+1.2V_SATA
IMAX=0.1A
SATA
BHD5-AS5
0.1A
Enable: SLP_S5#
Switch ON/OFF
Linear
Switching
Control signal
Power Rail
Device
COMPRESSED IMAGE
Title Powe_Block_Diagram
Size A2
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COMPRESSED IMAGE

Title	N/A	
Size A3	Document Number 22D4-US	Rev A01
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5 4 3 2 1

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COMPRESSED IMAGE

Title	N/A	
Size A4	Document Number 22D4-US	Rev A01
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5 4 3 2 1

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COMPRESSED
IMAGE

Title N/A		
Size A4	Document Number 22D4-US	Rev A01
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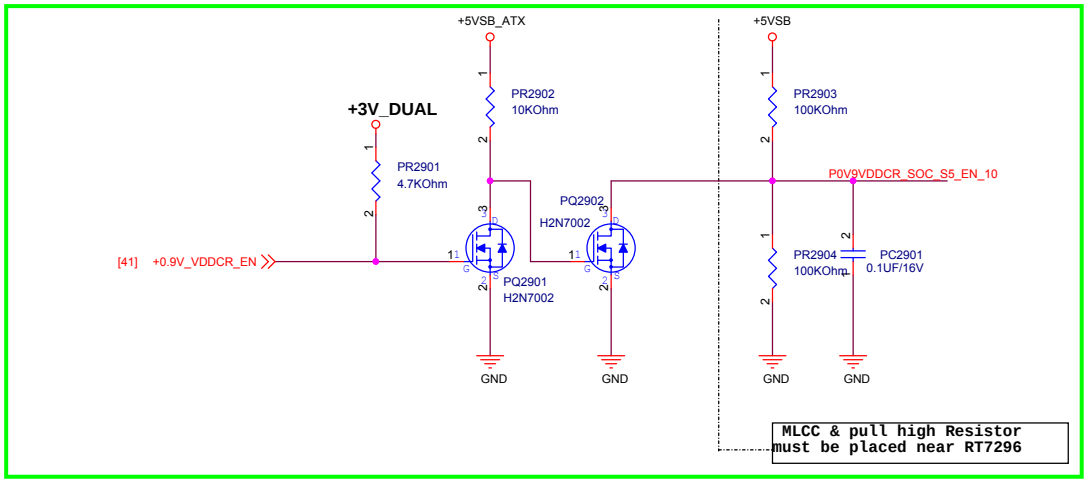
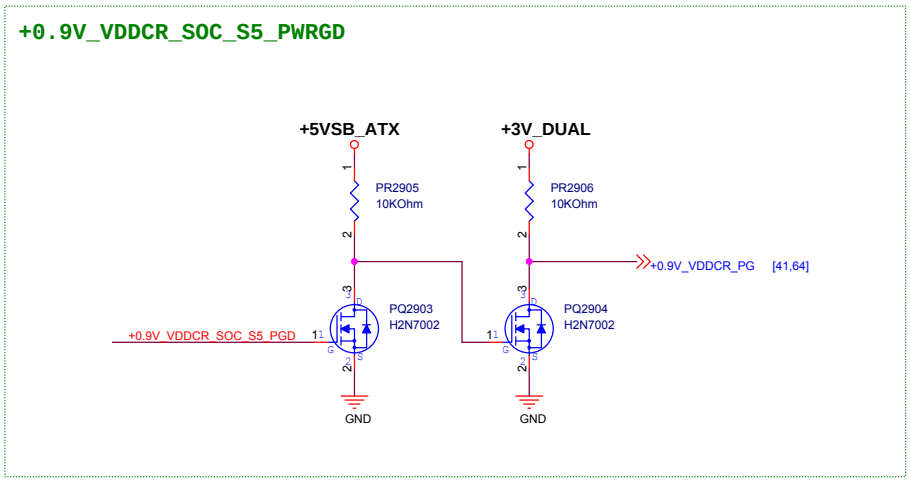




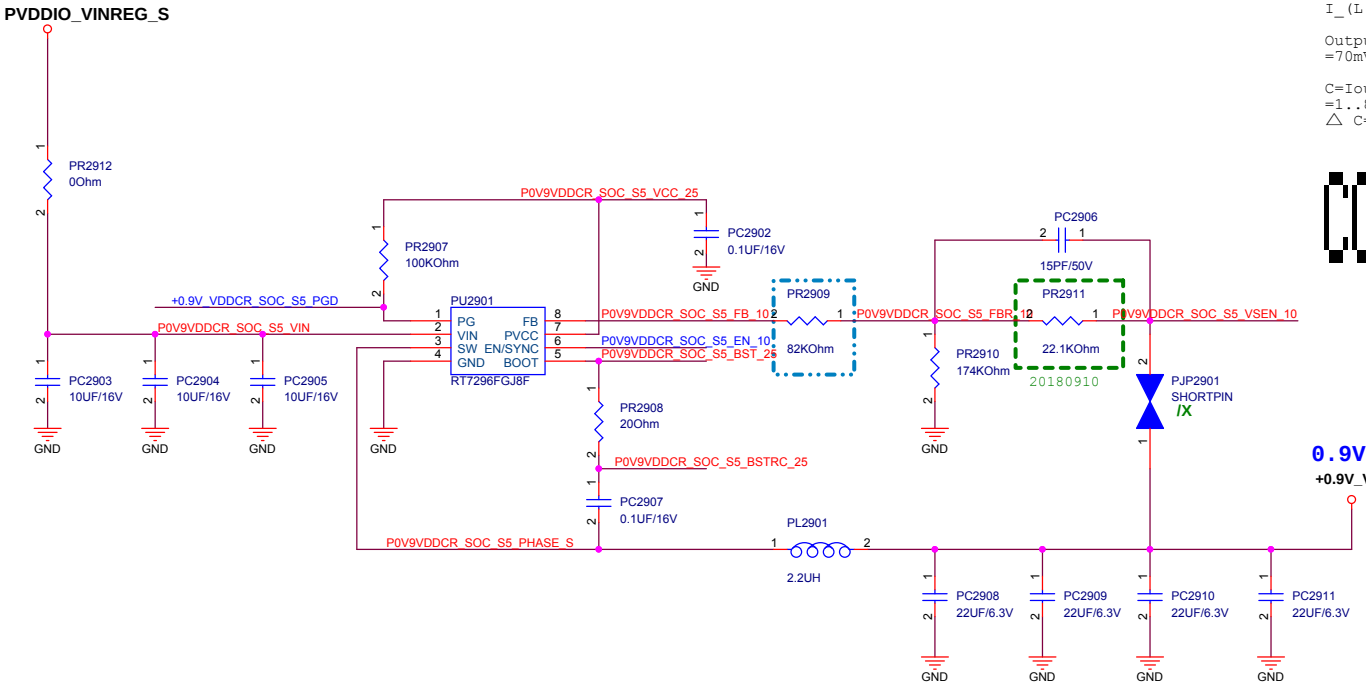
D = Vout/Vin = 0.9/12 = 0.075
Iripple =1.5*≡(D*1-D) = 1.5*≡((0.075)*(0.925)) = 0.395A

〉 I= ((Vin-Vout)⊙Duty)/(Lout⊙Fsw)
=((12V-0.9V)*(0.9V/12V))/(2.2 H⊙500KHz)=0.756A

I_(L(peak)=Io(rms)+〉 I/2=1.5A+0.378A=1.878A

Output ESR<Vo(ripple)/〉 I
=70mV/0.758A=92.6m

C=Iout * t.off / 〉 V
=1..878*[(1/500kHz)*((12-0.9)/12)] / 50mV
△ C=69.49uF



COMPRESSED IMAGE

Title	+0.9V_VDDCR_SOC_S5	
Size A3	Document Number 22D4-US	Rev A01
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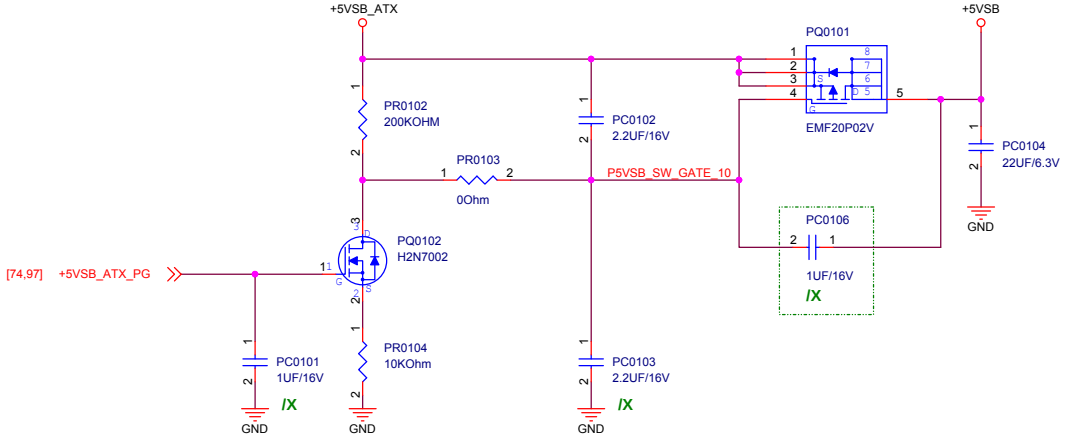

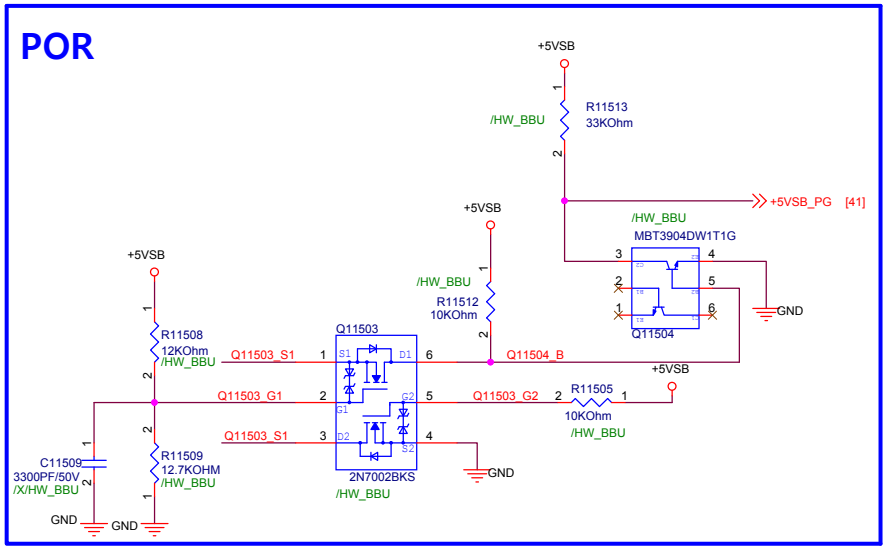

COMPRESSED IMAGE		
Title +5VSB		
Size A3	Document Number 22D4-US	Rev A01
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COMPRESSED
IMAGE

Title N/A		
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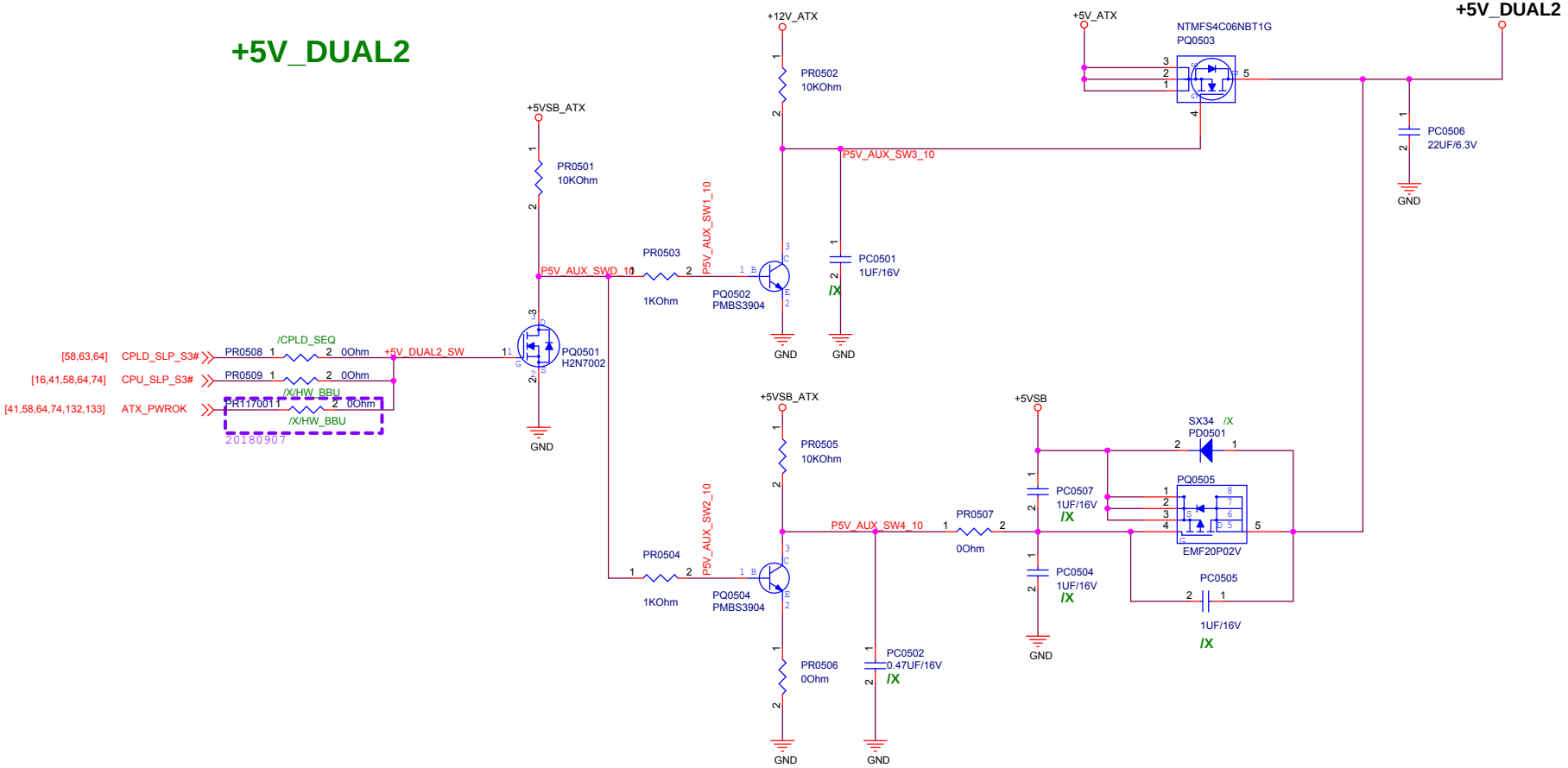
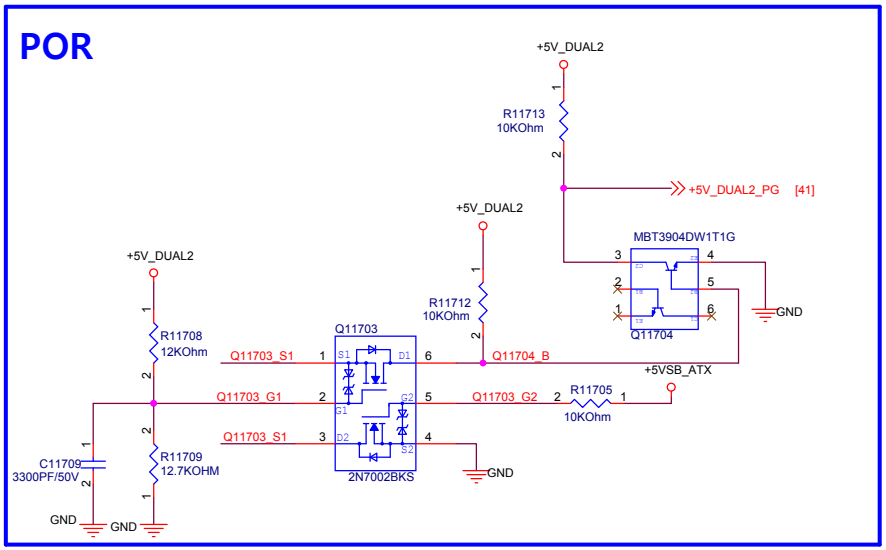
+5V_DUAL2



POR



COMPRESSED IMAGE

Title	+5V_DUAL2	
Size A3	Document Number 22D4-US	Rev A01
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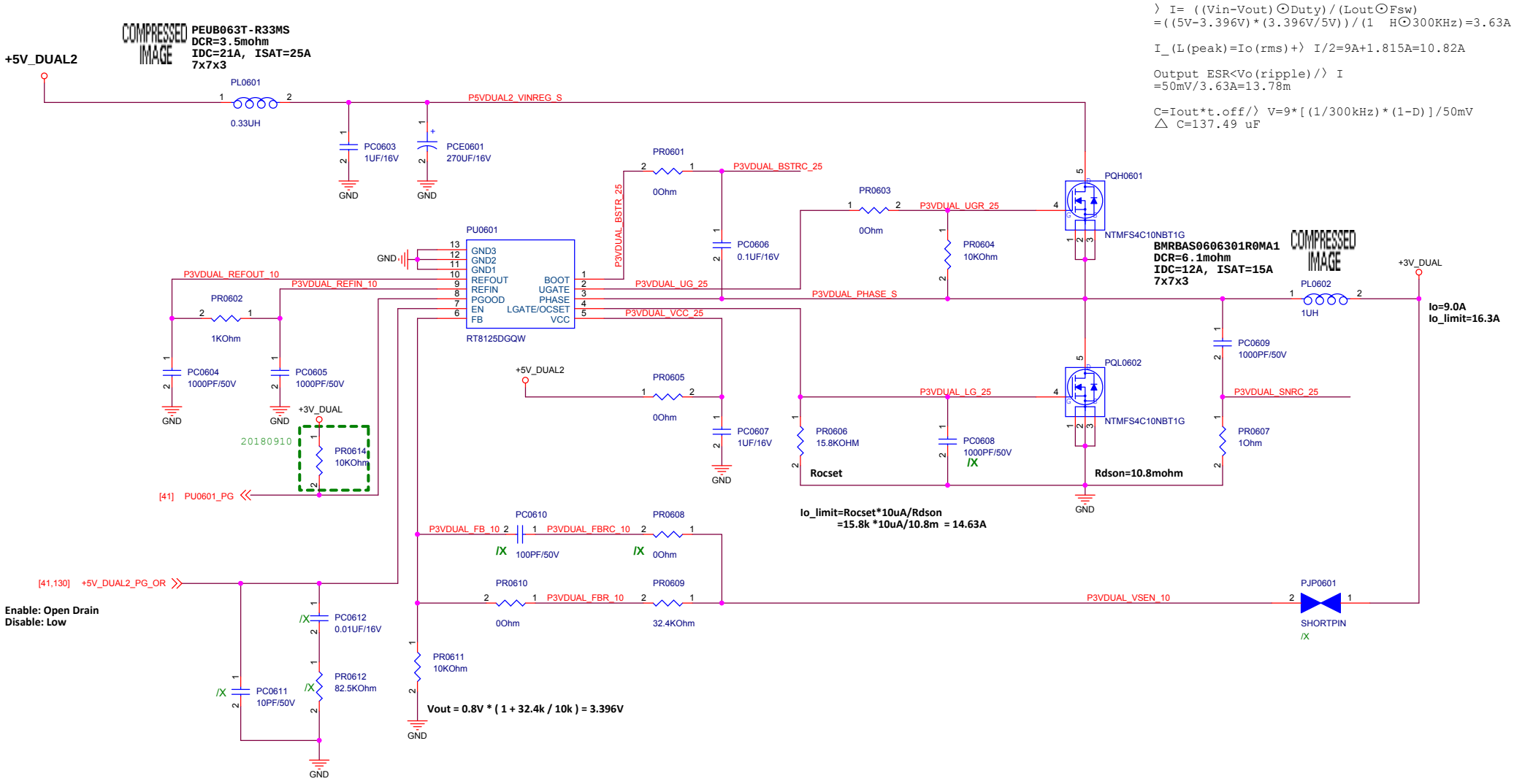
D = Vout/Vin = 3.3/5 = 0.66
Iripple =Io*≡(D*1-D) = 9≡((0.66)*(0.34)) =4.27A
〉 I= ((Vin-Vout)⊙Duty)/(Lout⊙Fsw)
=((5V-3.396V)*(3.396V/5V))/(1 H⊙300KHz)=3.63A
I_(L(peak)=Io(rms)+〉 I/2=9A+1.815A=10.82A
Output ESR<Vo(ripple)/〉 I
=50mV/3.63A=13.78m
C=Iout*t.off/〉 V=9*[(1/300kHz)*(1-D)]/50mV
△ C=137.49 uF
COMPRESSED IMAGE
PEUB063T-R33MS
DCR=3.5mohm
IDC=21A, ISAT=25A
7x7x3
+5V_DUAL2
PL0601
0.33UH
P5VDUAL2_VINREG_S
PC0603
1UF/16V
PCE0601
270UF/16V
GND
PR0601
0Ohm
P3VDUAL_BSTR_25
PC0606
0.1UF/16V
PR0603
0Ohm
P3VDUAL_UGR_25
PQH0601
NTMFS4C10NBT1G
PR0604
10KOhm
PU0601
GND3
GND2
GND1
REFOUT
REFIN
PGOOD
EN
FB
BOOT
UGATE
PHASE
LGATE/OCSET
VCC
RT8125DGQW
P3VDUAL_REFOUT_10
P3VDUAL_REFIN_10
P3VDUAL_UG_25
P3VDUAL_PHASE_S
P3VDUAL_VCC_25
PR0602
1KOhm
PC0604
1000PF/50V
PC0605
1000PF/50V
+3V_DUAL
20180910
PR0614
10KOhm
[41] PU0601_PG
BMRBAS0606301R0MA1
DCR=6.1mohm
IDC=12A, ISAT=15A
7x7x3
PL0602
1UH
Io=9.0A
Io_limit=16.3A
PC0609
1000PF/50V
PQL0602
NTMFS4C10NBT1G
P3VDUAL_SNRC_25
PR0607
1Ohm
PR0605
0Ohm
PC0607
1UF/16V
P3VDUAL_LG_25
PR0606
15.8KOHM
Rocset
PC0608
1000PF/50V
/X
Rdson=10.8mohm
Io_limit=Rocset*10uA/Rdson
=15.8k *10uA/10.8m = 14.63A
PC0610
P3VDUAL_FB_10
P3VDUAL_FBRC_10
100PF/50V
PR0608
0Ohm
[41,130] +5V_DUAL2_PG_OR
Enable: Open Drain
Disable: Low
PR0610
0Ohm
P3VDUAL_FBR_10
PR0609
32.4KOhm
P3VDUAL_VSEN_10
PJP0601
SHORTPIN
PC0612
0.01UF/16V
PC0611
10PF/50V
PR0612
82.5KOhm
PR0611
10KOhm
Vout = 0.8V * (1 + 32.4k / 10k) = 3.396V
+3V_DUAL Power rail - Output MLCC
(close to CPU Power Rail)
PC0613
22UF/6.3V
N/A
PC0614
22UF/6.3V
N/A
PC0615
22UF/6.3V
N/A
PC0616
22UF/6.3V
N/A
Output capacitors
(Place at the VR output)
Output capacitors
(Close to I/O)
PCE4504
560UF/6.3V
COMPRESSED IMAGE
Title +3V_DUAL
Size A3
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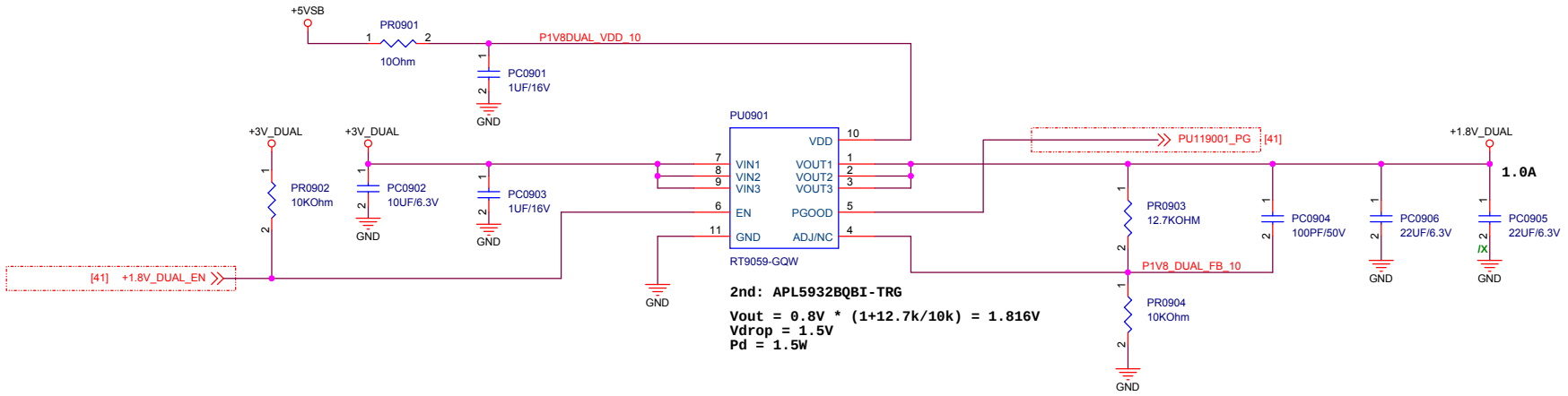

COMPRESSED IMAGE

Title	+1.8V_DUAL	
Size A3	Document Number 22D4-US	Rev A01
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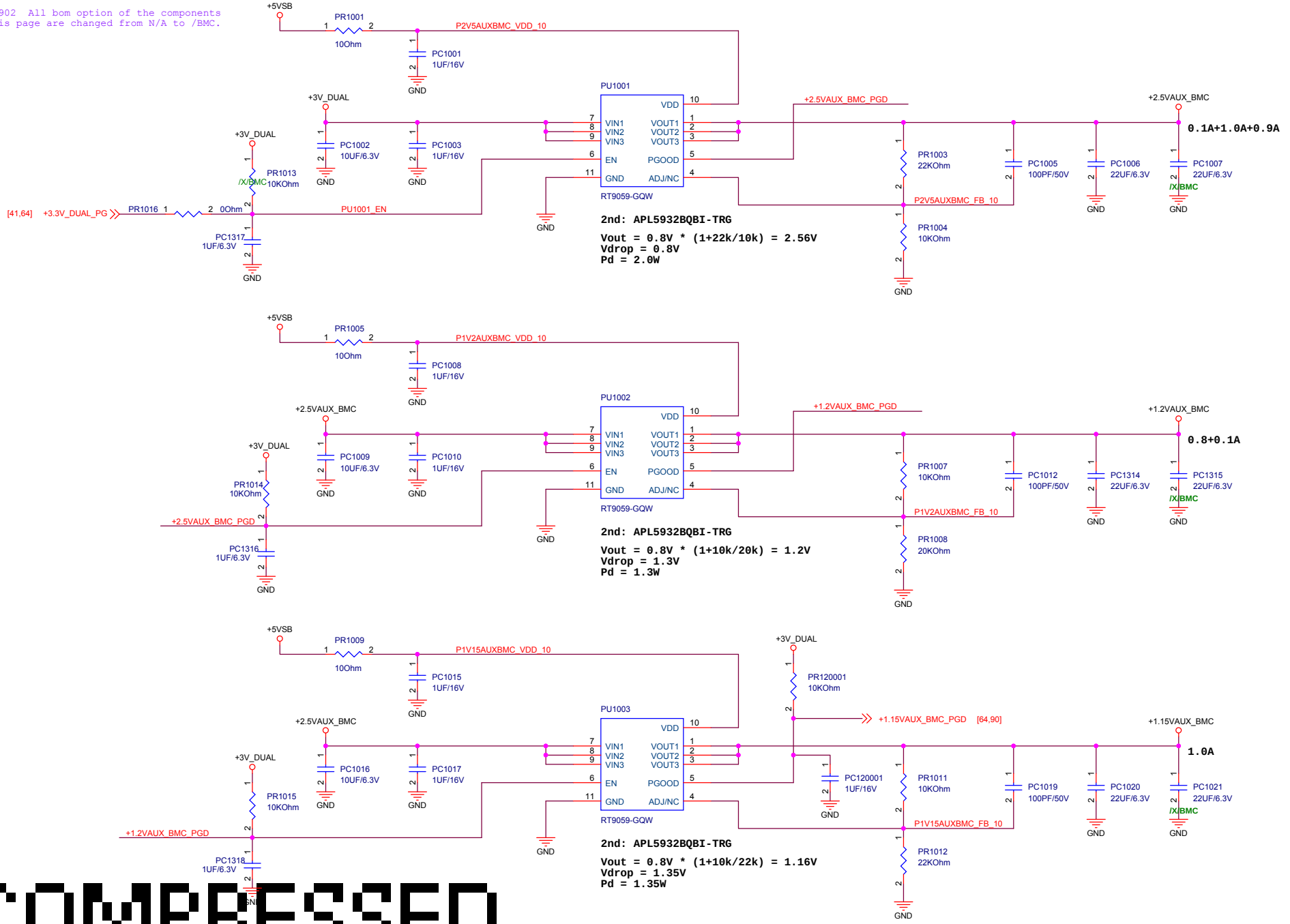
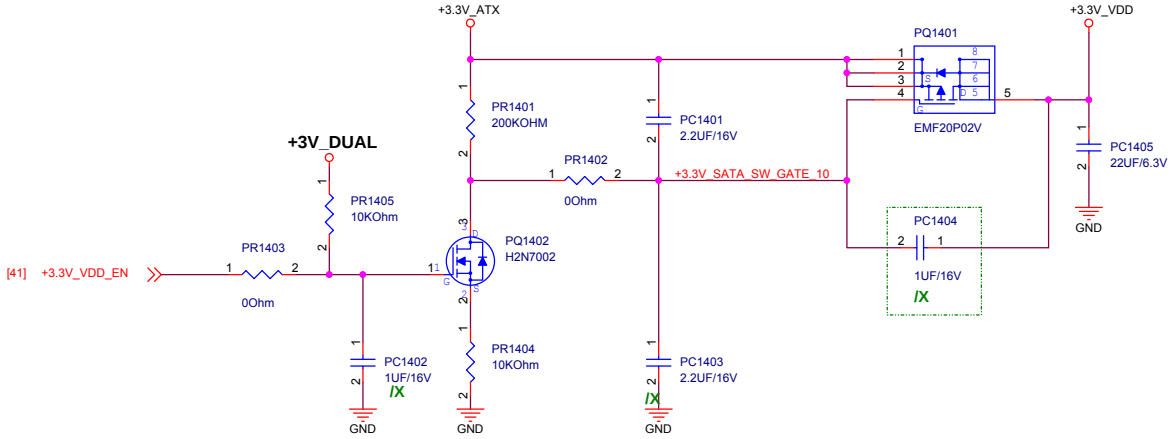
20180902 All bom option of the components in this page are changed from N/A to /BMC.



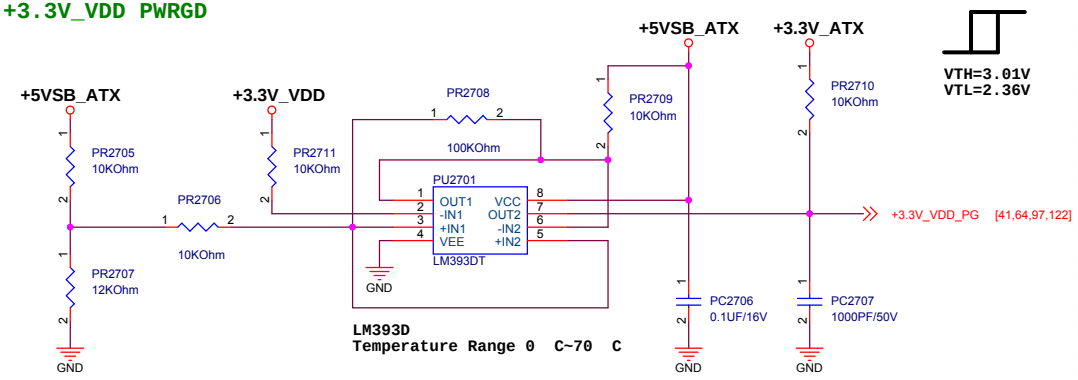
COMPRESSED IMAGE

COMPRESSED IMAGE		
Title	PWR_AST2500	
Size A3	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 120 of 150	



ROOM: +3.3V_VDD
Ref. Schematic: N/A

+3.3V_VDD PWRGD



LM393D
Temperature Range 0 C~70 C

COMPRESSED IMAGE

Title	+3.3V_VDD	
Size A3	Document Number 22D4-US	Rev A01
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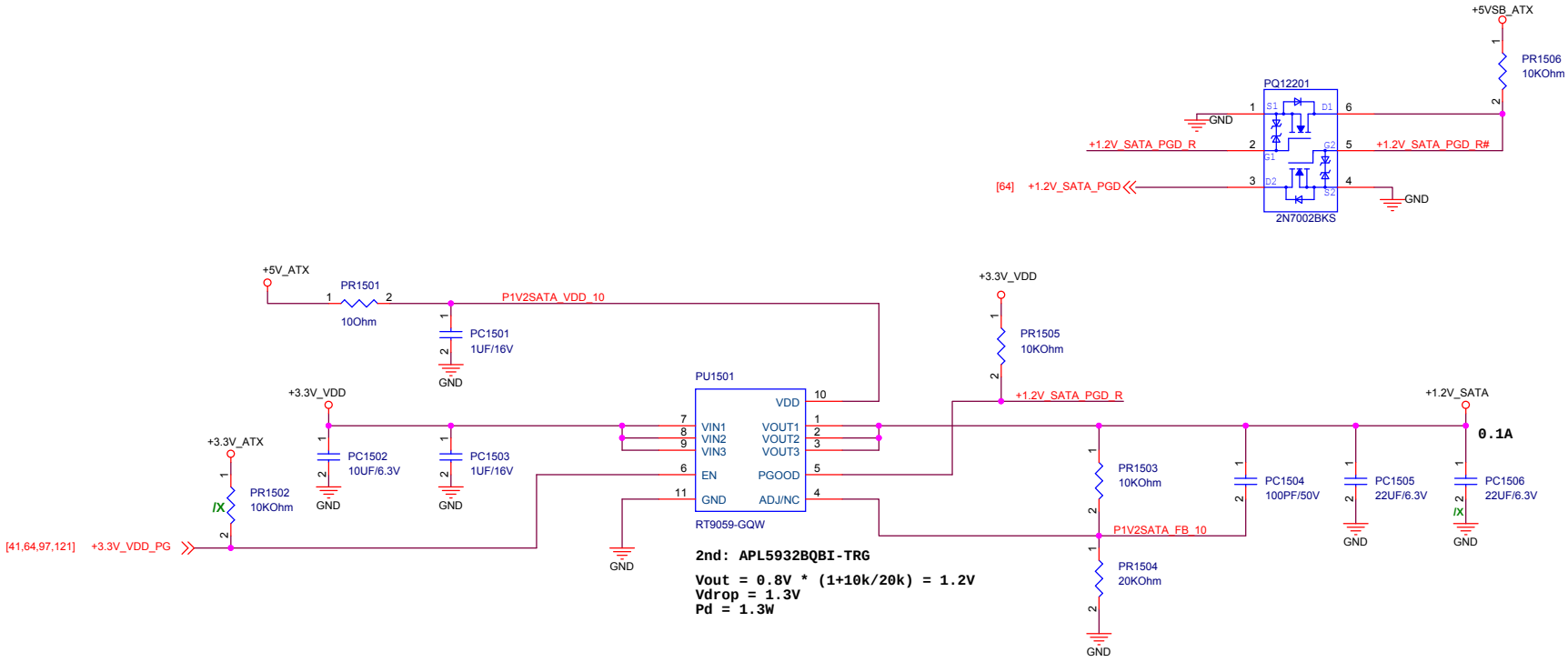

COMPRESSED IMAGE		
Title	+1.2V_SATA	
Size A3	Document Number 22D4-US	Rev A01
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COMPRESSED IMAGE

Title	N/A	
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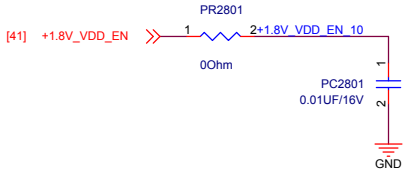
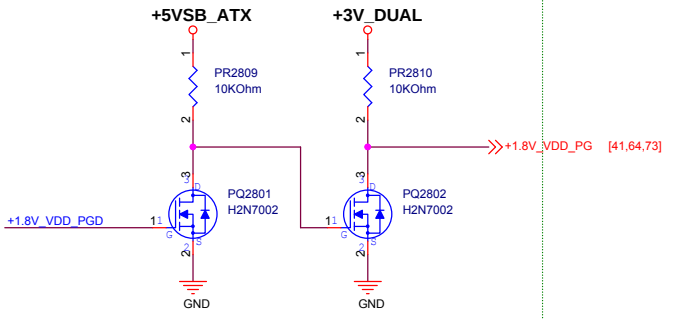
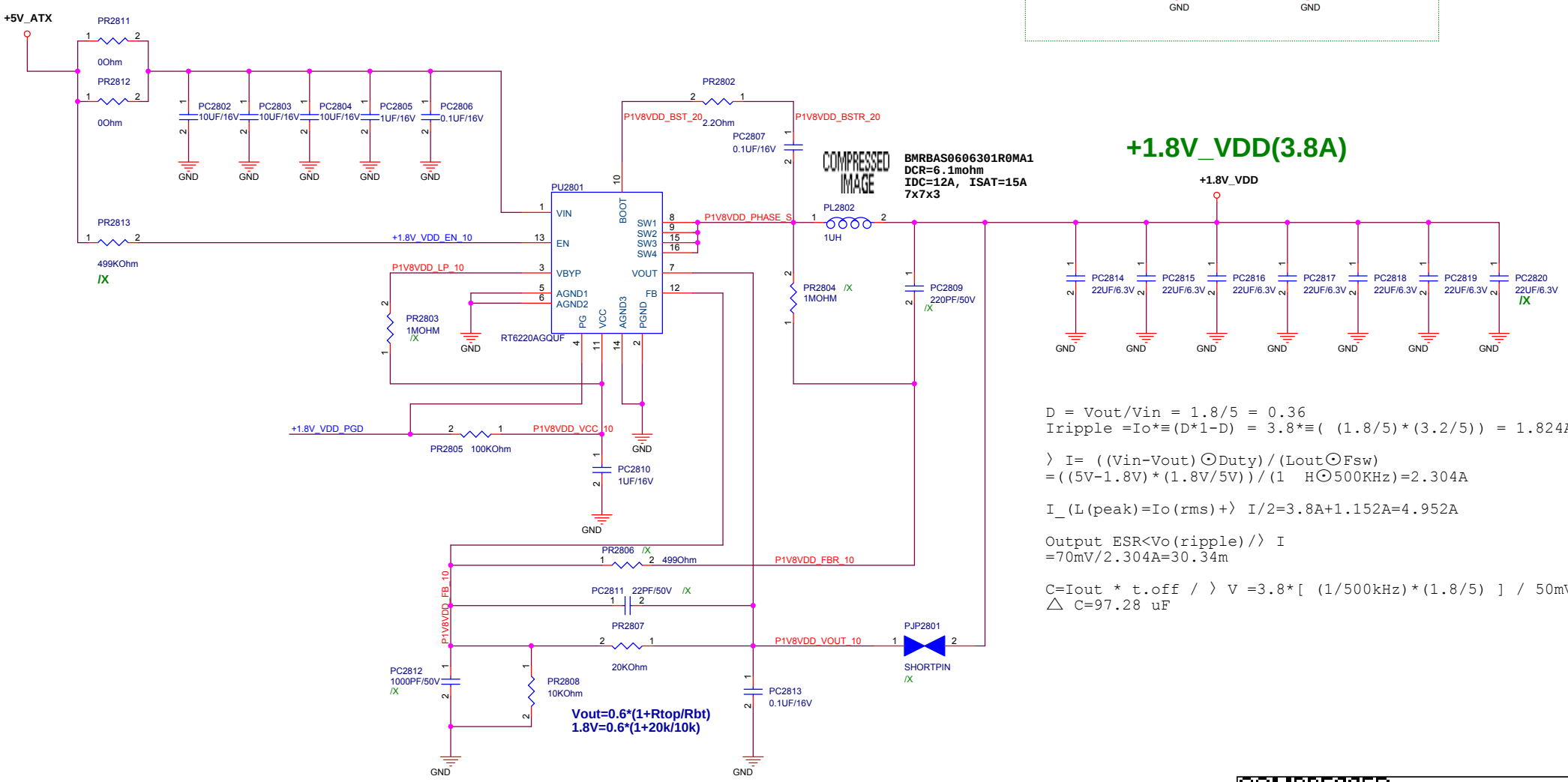
ENABLE



+1.8V_VDD PGD





D = Vout/Vin = 1.8/5 = 0.36
Iripple =Io*≡(D*1-D) = 3.8*≡((1.8/5)*(3.2/5)) = 1.824A

〉 I= ((Vin-Vout)⊙Duty)/(Lout⊙Fsw)
=((5V-1.8V)*(1.8V/5V))/(1 H⊙500KHz)=2.304A

I_(L(peak)=Io(rms)+〉 I/2=3.8A+1.152A=4.952A

Output ESR<Vo(ripple)/〉 I
=70mV/2.304A=30.34m

C=Iout * t.off / 〉 V =3.8*[(1/500kHz)*(1.8/5)] / 50mV
△ C=97.28 uF

COMPRESSED IMAGE

Title +1.8V_VDD

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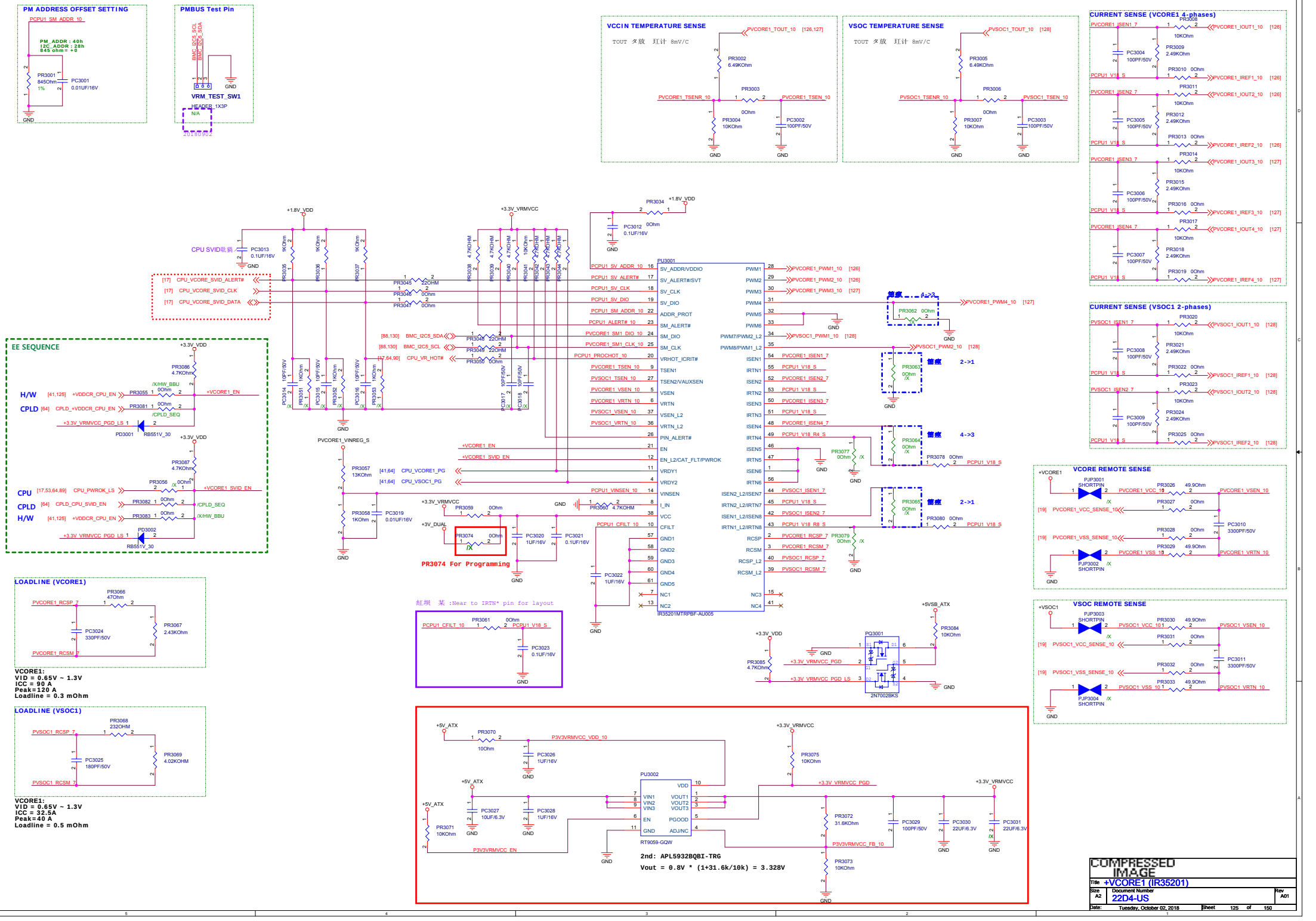
PM ADDRESS OFFSET SETTING
PCPU1_SM_ADDR_10
PM_ADDR : 40h
I2C_ADDR : 28h
845 ohm= +0
PR3001 845Ohm 1%
PC3001 0.01UF/16V
GND
PMBUS Test Pin
BMC_I2C5_SCL
BMC_I2C5_SDA
GND
VRM_TEST_SW1
HEADER_1X3P
N/A
VCCIN TEMPERATURE SENSE
TOUT 斜率 -8mV/C
PVCORE1_TOUT_10 [126,127]
PR3002 6.49KOhm
PR3003 0Ohm
PVCORE1_TSENR_10
PVCORE1_TSEN_10
PR3004 10KOhm
PC3002 100PF/50V
VSOC TEMPERATURE SENSE
TOUT 斜率 -8mV/C
PVSOC1_TOUT_10 [128]
PR3005 6.49KOhm
PR3006 0Ohm
PVSOC1_TSENR_10
PVSOC1_TSEN_10
PR3007 10KOhm
PC3003 100PF/50V
CURRENT SENSE (VCORE1 4-phases)
PVCORE1_ISEN1_7
PVCORE1_IOUT1_10 [126]
PVCORE1_IREF1_10 [126]
PVCORE1_ISEN2_7
PVCORE1_IOUT2_10 [126]
PVCORE1_IREF2_10 [126]
PVCORE1_ISEN3_7
PVCORE1_IOUT3_10 [127]
PVCORE1_IREF3_10 [127]
PVCORE1_ISEN4_7
PVCORE1_IOUT4_10 [127]
PVCORE1_IREF4_10 [127]
PCPU1_V18_S
CURRENT SENSE (VSOC1 2-phases)
PVSOC1_ISEN1_7
PVSOC1_IOUT1_10 [128]
PVSOC1_IREF1_10 [128]
PVSOC1_ISEN2_7
PVSOC1_IOUT2_10 [128]
PVSOC1_IREF2_10 [128]
+1.8V_VDD
+3.3V_VRMVCC
CPU SVID联调
PC3013 0.1UF/16V
[17] CPU_VCORE_SVID_ALERT#
[17] CPU_VCORE_SVID_CLK
[17] CPU_VCORE_SVID_DATA
PR3045 22OHM
PR3046 0Ohm
PR3047 0Ohm
[88,130] BMC_I2C5_SDA
[88,130] BMC_I2C5_SCL
[17,64,90] CPU_VR_HOT#
PR3048 22OHM
PR3049 22OHM
PR3050 0Ohm
PR3034 0Ohm
PC3012 0.1UF/16V
PU3001
IR35201MTRPBF-AU005
PCPU1_SV_ADDR_10
PCPU1_SV_ALERT#
PCPU1_SV_CLK
PCPU1_SV_DIO
PCPU1_SM_ADDR_10
PCPU1_ALERT#_10
PCVORE1_SM1_DIO_10
PCVORE1_SM1_CLK_10
PCPU1_PROCHOT_10
PCVORE1_TSEN_10
PVSOC1_TSEN_10
PCVORE1_VSEN_10
PCVORE1_VRTN_10
PVSOC1_VSEN_10
PVSOC1_VRTN_10
+VCORE1_EN
+VCORE1_SVID_EN
PCPU1_VINSEN_10
PCPU1_CFILT_10
PWM1 PWM2 PWM3 PWM4 PWM5 PWM6 PWM7/PWM2_L2 PWM8/PWM1_L2
ISEN1 IRTN1 ISEN2 IRTN2 ISEN3 IRTN3 ISEN4 IRTN4 ISEN5 IRTN5 ISEN6 IRTN6
ISEN2_L2/ISEN7 IRTN2_L2/IRTN7 ISEN1_L2/ISEN8 IRTN1_L2/IRTN8
RCSP RCSM RCSP_L2 RCSM_L2
NC3 NC4
PVCORE1_PWM1_10 [126]
PVCORE1_PWM2_10 [126]
PVCORE1_PWM3_10 [127]
PVCORE1_PWM4_10 [127]
PVSOC1_PWM1_10 [128]
PVSOC1_PWM2_10 [128]
PVCORE1_ISEN1_7
PCPU1_V18_S
PVCORE1_ISEN2_7
PVCORE1_ISEN3_7
PVCORE1_ISEN4_7
PCPU1_V18_R4_S
PVSOC1_ISEN1_7
PVSOC1_ISEN2_7
PCPU1_V18_R8_S
PVCORE1_RCSP_7
PVCORE1_RCSM_7
PVSOC1_RCSP_7
PVSOC1_RCSM_7
PCVORE1_PWM4_10 [127]
PR3062 0Ohm
PR3063 0Ohm /X
PR3064 0Ohm /X
PR3065 0Ohm /X
PR3077 0Ohm /X
PR3078 0Ohm
PR3079 0Ohm /X
PR3080 0Ohm
PCPU1_V18_S
相位 4->3
相位 2->1
相位 2->1
EE SEQUENCE
H/W [41,125] +VDDCR_CPU_EN
CPLD [64] CPLD_+VDDCR_CPU_EN
+3.3V_VRMVCC_PGD_LS
PD3001 RB551V_30
+VCORE1_EN
/X/HW_BBU
/CPLD_SEQ
CPU [17,53,64,89] CPU_PWROK_LS
CPLD [64] CPLD_CPU_SVID_EN
H/W [41,125] +VDDCR_CPU_EN
+3.3V_VRMVCC_PGD_LS
PD3002 RB551V_30
+VCORE1_SVID_EN
/CPLD_SEQ
/X/HW_BBU
PVCORE1_VINREG_S
PR3057 13KOhm
PR3058 1KOhm
PC3019 0.01UF/16V
[41,64] CPU_VCORE1_PG
[41,64] CPU_VSOC1_PG
+3V_DUAL
PR3059 0Ohm
PR3074 0Ohm /X
PR3060 4.7KOHM
PC3020 1UF/16V
PC3021 0.1UF/16V
PC3022 1UF/16V
PR3074 For Programming
缸坝 某 :Near to IRTN* pin for layout
PR3061 0Ohm
PC3023 0.1UF/16V
LOADLINE (VCORE1)
PR3066 47Ohm
PC3024 330PF/50V
PR3067 2.43KOhm
PVCORE1_RCSP_7
PVCORE1_RCSM_7
VCORE1:
VID = 0.65V ~ 1.3V
ICC = 90 A
Peak=120 A
Loadline = 0.3 mOhm
LOADLINE (VSOC1)
PR3068 232OHM
PC3025 180PF/50V
PR3069 4.02KOHM
PVSOC1_RCSP_7
PVSOC1_RCSM_7
VCORE1:
VID = 0.65V ~ 1.3V
ICC = 32.5A
Peak=40 A
Loadline = 0.5 mOhm
+5VSB_ATX
PR3084 10KOhm
PQ3001
2N7002BKS
PR3085 4.7KOhm
+3.3V_VRMVCC_PGD
+3.3V_VRMVCC_PGD_LS
+5V_ATX
PR3070 10Ohm
P3V3VRMVCC_VDD_10
PC3026 1UF/16V
PR3071 10KOhm
P3V3VRMVCC_EN
PU3002
RT9059-GQW
PC3027 10UF/6.3V
PC3028 1UF/16V
PR3075 10KOhm
PR3072 31.6KOhm
PR3073 10KOhm
P3V3VRMVCC_FB_10
PC3029 100PF/50V
PC3030 22UF/6.3V
PC3031 22UF/6.3V
2nd: APL5932BQBI-TRG
Vout = 0.8V * (1+31.6k/10k) = 3.328V
+VCORE1
VCORE REMOTE SENSE
PJP3001 SHORTPIN
PJP3002 SHORTPIN
PR3026 49.9Ohm
PR3027 0Ohm
PR3028 0Ohm
PR3029 49.9Ohm
PC3010 3300PF/50V
PCVORE1_VCC_SENSE_10
PCVORE1_VSS_SENSE_10
PCVORE1_VSEN_10
PCVORE1_VRTN_10
+VSOC1
VSOC REMOTE SENSE
PJP3003 SHORTPIN
PJP3004 SHORTPIN
PR3030 49.9Ohm
PR3031 0Ohm
PR3032 0Ohm
PR3033 49.9Ohm
PC3011 3300PF/50V
PVSOC1_VCC_SENSE_10
PVSOC1_VSS_SENSE_10
PVSOC1_VSEN_10
PVSOC1_VRTN_10
COMPRESSED IMAGE
Title +VCORE1 (IR35201)
Size A2
Document Number 22D4-US
Rev A01
Date: Tuesday, October 02, 2018
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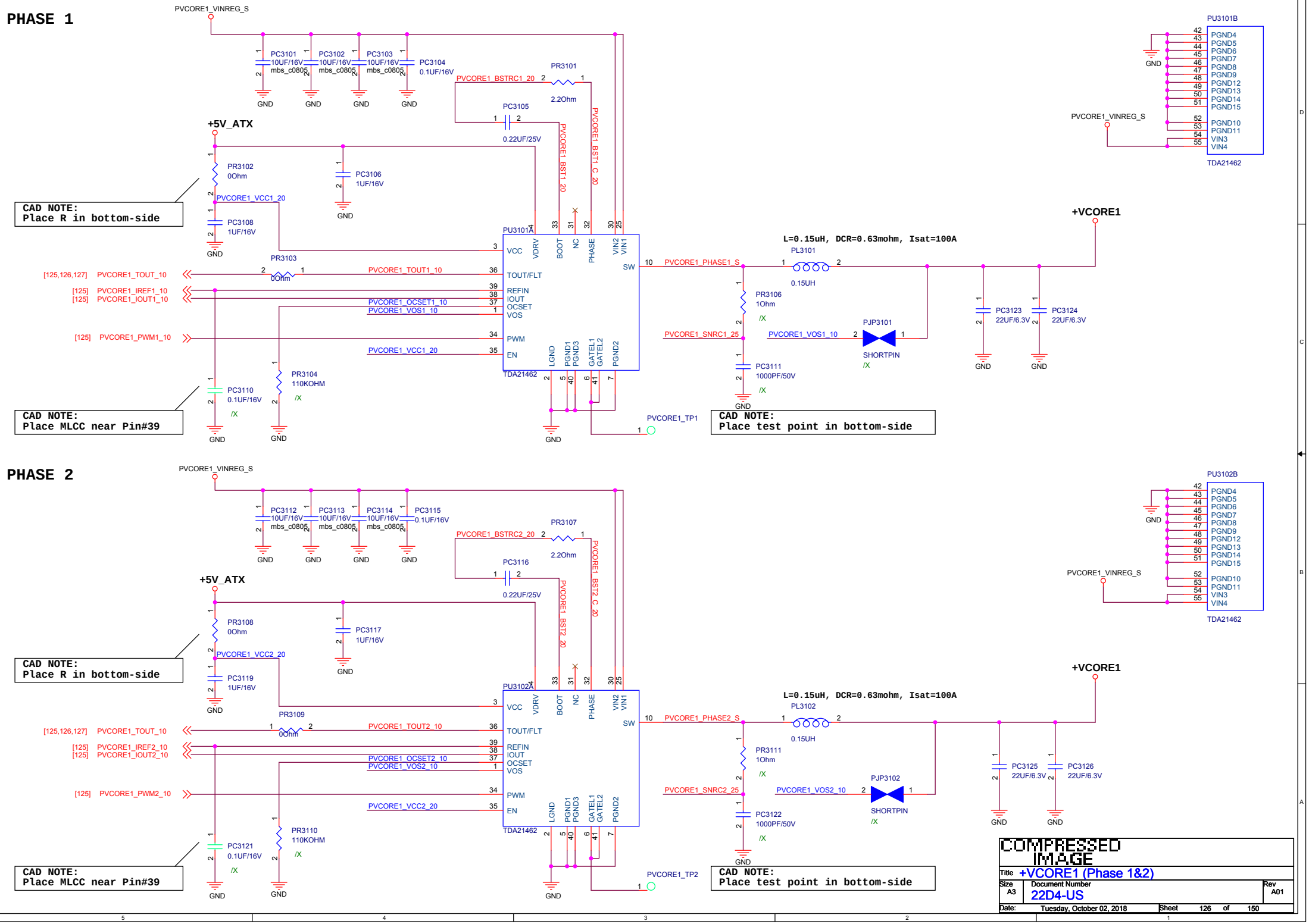
PHASE 1
PVCORE1_VINREG_S
PC3101 10UF/16V mbs_c0805
PC3102 10UF/16V mbs_c0805
PC3103 10UF/16V mbs_c0805
PC3104 0.1UF/16V
GND
PR3101 2.2Ohm
PVCORE1_BSTRC1_20
PC3105 0.22UF/25V
PVCORE1_BST1_20
PVCORE1_BST1_C_20
+5V_ATX
PR3102 0Ohm
PC3106 1UF/16V
PVCORE1_VCC1_20
PC3108 1UF/16V
CAD NOTE: Place R in bottom-side
PU3101A
VCC VDRV BOOT NC PHASE VIN2 VIN1
SW
TOUT/FLT
REFIN IOUT OCSET VOS
PWM EN
LGND PGND1 PGND3 GATEL1 GATEL2 PGND2
TDA21462
PR3103 0Ohm
[125,126,127] PVCORE1_TOUT_10
PVCORE1_TOUT1_10
[125] PVCORE1_IREF1_10
[125] PVCORE1_IOUT1_10
PVCORE1_OCSET1_10
PVCORE1_VOS1_10
[125] PVCORE1_PWM1_10
PVCORE1_VCC1_20
PR3104 110KOHM /X
PC3110 0.1UF/16V /X
CAD NOTE: Place MLCC near Pin#39
PVCORE1_TP1
L=0.15uH, DCR=0.63mohm, Isat=100A
PL3101 0.15UH
PVCORE1_PHASE1_S
PR3106 1Ohm /X
PVCORE1_SNRC1_25
PJP3101 SHORTPIN /X
PC3111 1000PF/50V /X
PC3123 22UF/6.3V
PC3124 22UF/6.3V
+VCORE1
CAD NOTE: Place test point in bottom-side
PU3101B
PGND4 PGND5 PGND6 PGND7 PGND8 PGND9 PGND12 PGND13 PGND14 PGND15
PGND10 PGND11 VIN3 VIN4
TDA21462
PHASE 2
PVCORE1_VINREG_S
PC3112 10UF/16V mbs_c0805
PC3113 10UF/16V mbs_c0805
PC3114 10UF/16V mbs_c0805
PC3115 0.1UF/16V
PR3107 2.2Ohm
PVCORE1_BSTRC2_20
PC3116 0.22UF/25V
PVCORE1_BST2_20
PVCORE1_BST2_C_20
+5V_ATX
PR3108 0Ohm
PC3117 1UF/16V
PVCORE1_VCC2_20
PC3119 1UF/16V
CAD NOTE: Place R in bottom-side
PU3102A
PR3109 0Ohm
[125,126,127] PVCORE1_TOUT_10
PVCORE1_TOUT2_10
[125] PVCORE1_IREF2_10
[125] PVCORE1_IOUT2_10
PVCORE1_OCSET2_10
PVCORE1_VOS2_10
[125] PVCORE1_PWM2_10
PVCORE1_VCC2_20
PR3110 110KOHM /X
PC3121 0.1UF/16V /X
CAD NOTE: Place MLCC near Pin#39
PVCORE1_TP2
L=0.15uH, DCR=0.63mohm, Isat=100A
PL3102 0.15UH
PVCORE1_PHASE2_S
PR3111 1Ohm /X
PVCORE1_SNRC2_25
PJP3102 SHORTPIN /X
PC3122 1000PF/50V /X
PC3125 22UF/6.3V
PC3126 22UF/6.3V
+VCORE1
CAD NOTE: Place test point in bottom-side
PU3102B
PGND4 PGND5 PGND6 PGND7 PGND8 PGND9 PGND12 PGND13 PGND14 PGND15
PGND10 PGND11 VIN3 VIN4
TDA21462
COMPRESSED IMAGE
Title +VCORE1 (Phase 1&2)
Size A3
Document Number 22D4-US
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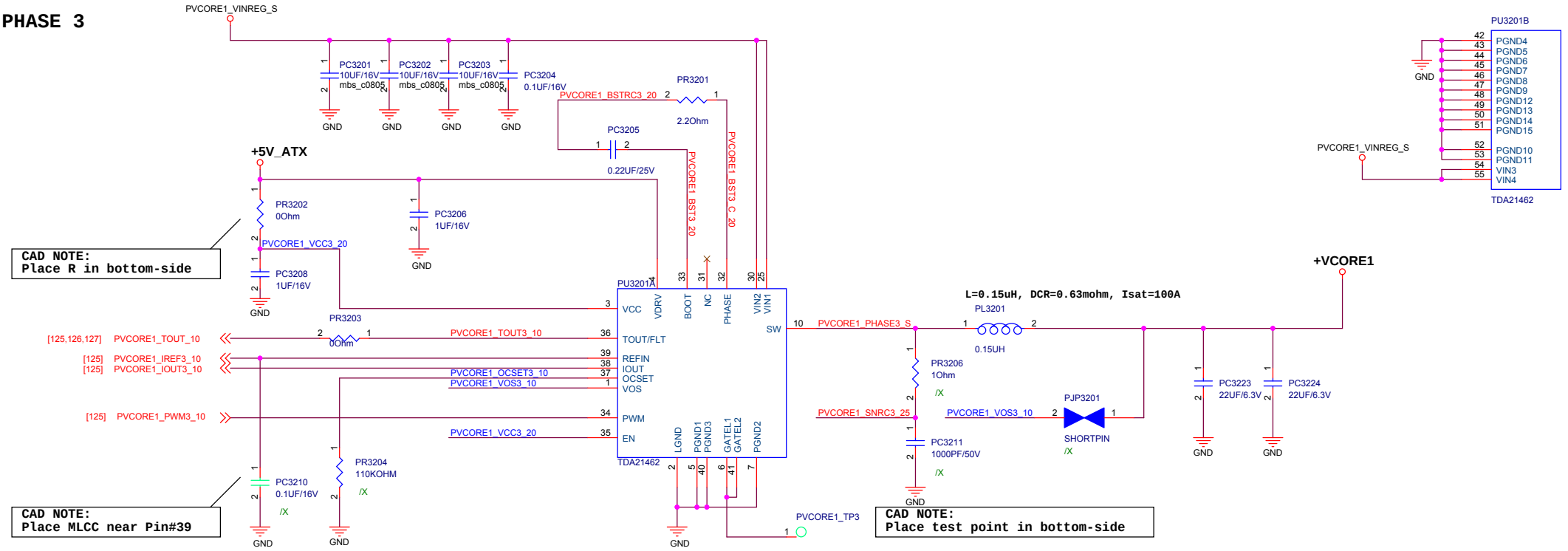
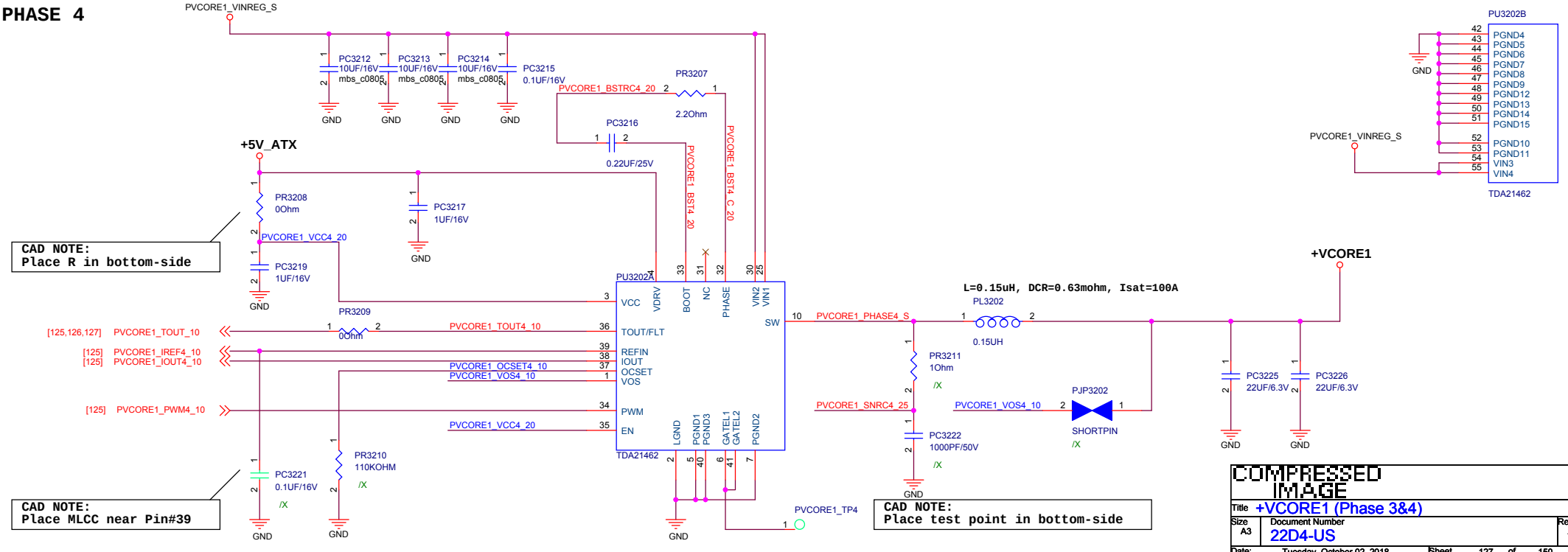
PHASE 3

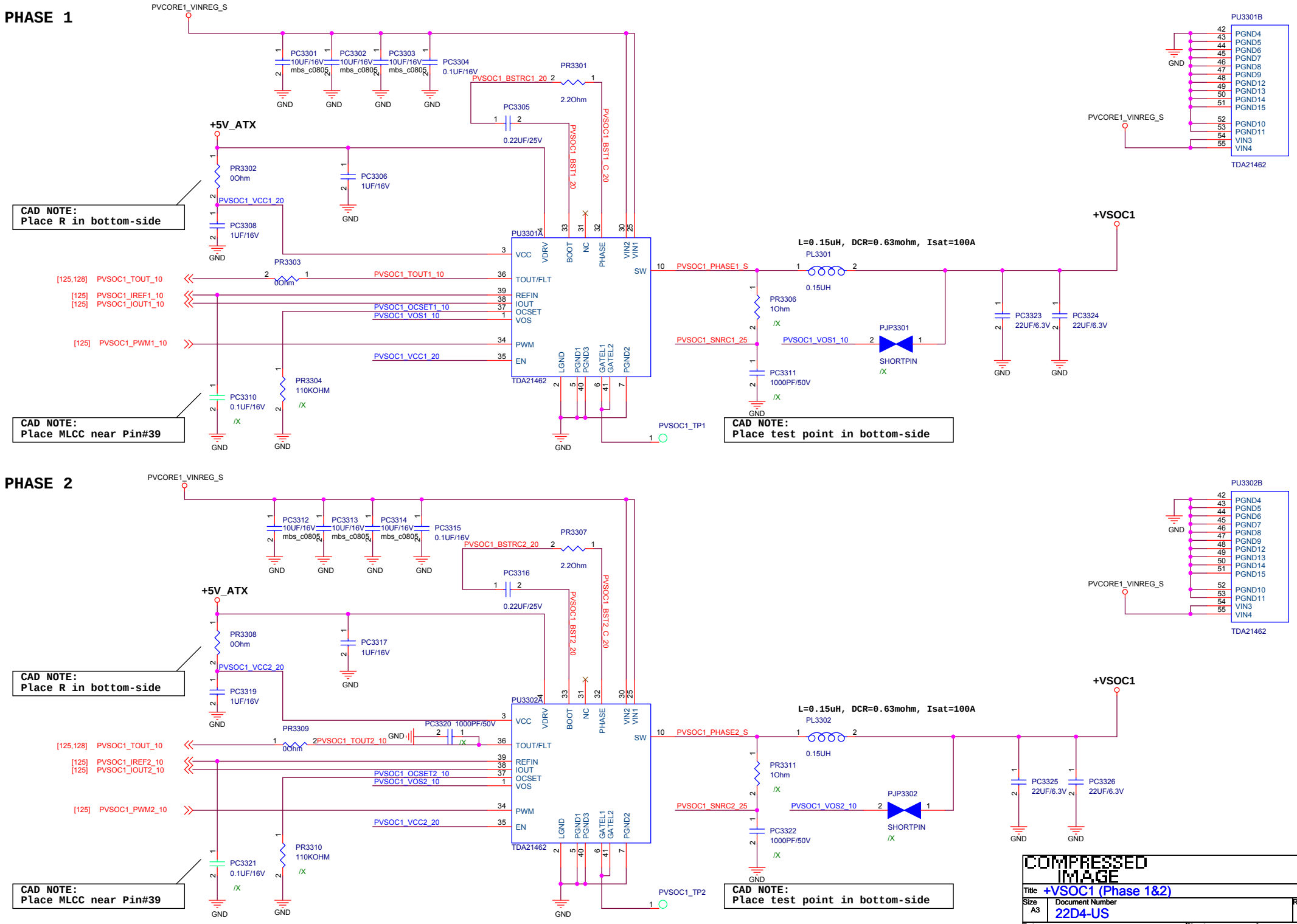


PHASE 4



COMPRESSED IMAGE

Title	+VCORE1 (Phase 3&4)	
Size A3	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 127 of 150	


PHASE 1
PVCORE1_VINREG_S
PC3301 10UF/16V mbs_c0805
PC3302 10UF/16V mbs_c0805
PC3303 10UF/16V mbs_c0805
PC3304 0.1UF/16V
GND
PR3301 2.2Ohm
PVSOC1_BSTRC1_20
PC3305 0.22UF/25V
PVSOC1_BST1_20
PVSOC1_BST1_C_20
+5V_ATX
PR3302 0Ohm
PC3306 1UF/16V
PVSOC1_VCC1_20
PC3308 1UF/16V
CAD NOTE: Place R in bottom-side
PU3301A
VCC
VDRV
BOOT
NC
PHASE
VIN2
VIN1
SW
TOUT/FLT
REFIN
IOUT
OCSET
VOS
PWM
EN
LGND
PGND1
PGND3
GATEL1
GATEL2
PGND2
TDA21462
PR3303 0Ohm
[125,128] PVSOC1_TOUT_10
PVSOC1_TOUT1_10
[125] PVSOC1_IREF1_10
[125] PVSOC1_IOUT1_10
PVSOC1_OCSET1_10
PVSOC1_VOS1_10
[125] PVSOC1_PWM1_10
PVSOC1_VCC1_20
PC3310 0.1UF/16V /X
PR3304 110KOHM /X
CAD NOTE: Place MLCC near Pin#39
PVSOC1_TP1
CAD NOTE: Place test point in bottom-side
L=0.15uH, DCR=0.63mohm, Isat=100A
PL3301 0.15UH
PVSOC1_PHASE1_S
PR3306 1Ohm /X
PVSOC1_SNRC1_25
PJP3301 SHORTPIN /X
PVSOC1_VOS1_10
PC3311 1000PF/50V /X
PC3323 22UF/6.3V
PC3324 22UF/6.3V
+VSOC1
PU3301B
PGND4
PGND5
PGND6
PGND7
PGND8
PGND9
PGND12
PGND13
PGND14
PGND15
PGND10
PGND11
VIN3
VIN4
TDA21462
PHASE 2
PVCORE1_VINREG_S
PC3312 10UF/16V mbs_c0805
PC3313 10UF/16V mbs_c0805
PC3314 10UF/16V mbs_c0805
PC3315 0.1UF/16V
PR3307 2.2Ohm
PVSOC1_BSTRC2_20
PC3316 0.22UF/25V
PVSOC1_BST2_20
PVSOC1_BST2_C_20
+5V_ATX
PR3308 0Ohm
PC3317 1UF/16V
PVSOC1_VCC2_20
PC3319 1UF/16V
CAD NOTE: Place R in bottom-side
PU3302A
PR3309 0Ohm
PC3320 1000PF/50V /X
[125,128] PVSOC1_TOUT_10
PVSOC1_TOUT2_10
[125] PVSOC1_IREF2_10
[125] PVSOC1_IOUT2_10
PVSOC1_OCSET2_10
PVSOC1_VOS2_10
[125] PVSOC1_PWM2_10
PVSOC1_VCC2_20
PC3321 0.1UF/16V /X
PR3310 110KOHM /X
CAD NOTE: Place MLCC near Pin#39
PVSOC1_TP2
CAD NOTE: Place test point in bottom-side
L=0.15uH, DCR=0.63mohm, Isat=100A
PL3302 0.15UH
PVSOC1_PHASE2_S
PR3311 1Ohm /X
PVSOC1_SNRC2_25
PJP3302 SHORTPIN /X
PVSOC1_VOS2_10
PC3322 1000PF/50V /X
PC3325 22UF/6.3V
PC3326 22UF/6.3V
+VSOC1
PU3302B
TDA21462
COMPRESSED IMAGE
Title +VSOC1 (Phase 1&2)
Size A3
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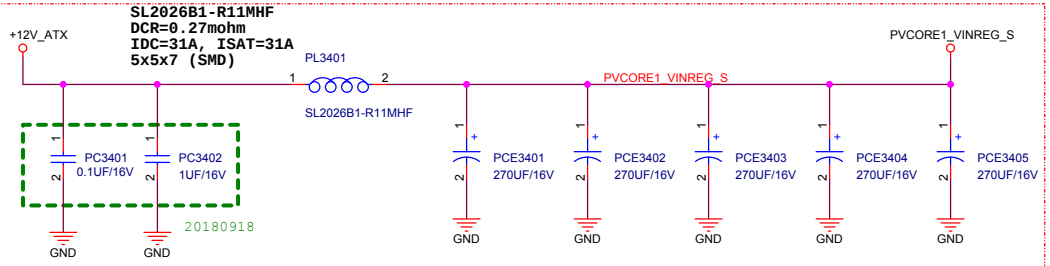
+VCORE & +VSOC Power rail - Input Filter



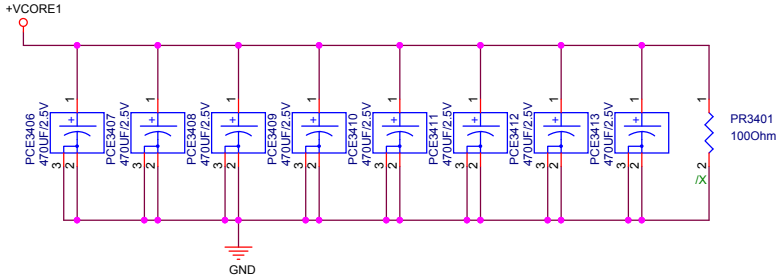
+VCORE
Iout = 120 A
n = 4 phase
D = 1.225/12
Iin_ripple = 14.75A

+VSOC
Iout = 40 A
n = 2 phase
D = 0.95/12
Iin_ripple = 7.3A

VCORE Output Caps

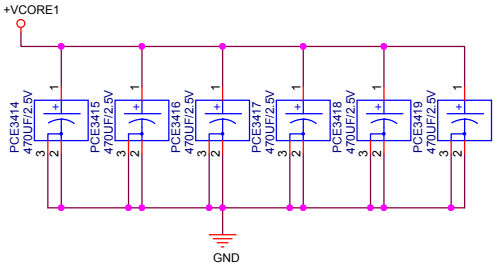
Output capacitors
(Placed at the BOT of VR output)

8 x 470uF (SP-CAP) replaced by 3 mOhm



Output capacitors
(Placed at the TOP of VR output)

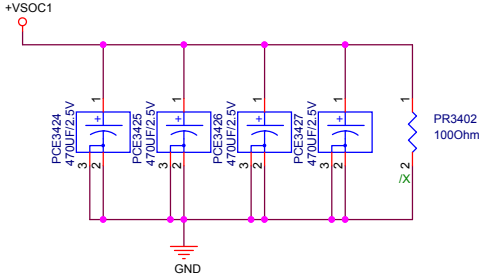
6 x 470uF (SP-CAP) replaced by 3 mOhm



VSOC Output Caps

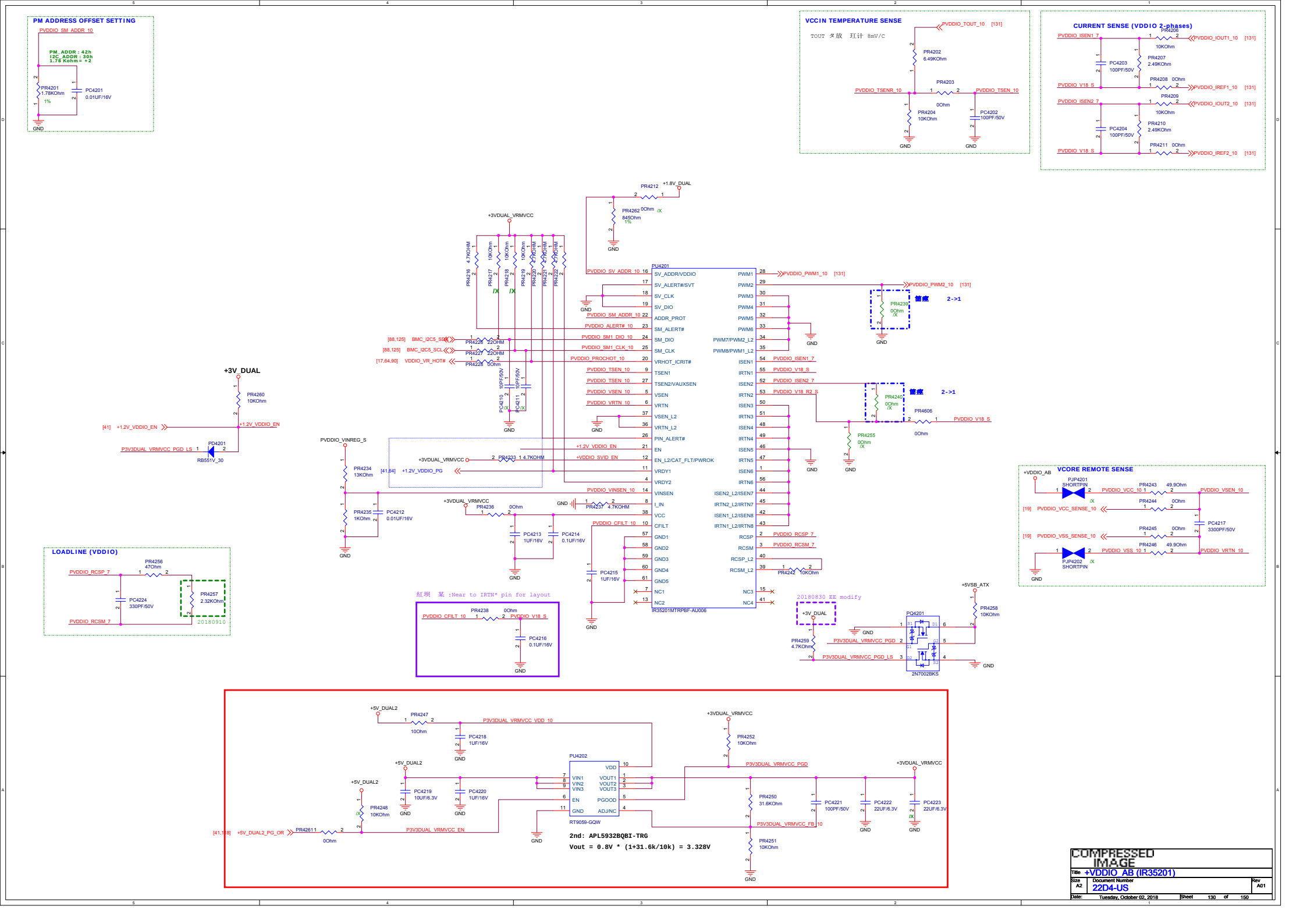
Output capacitors
(Placed at the BOT of VR output)

4 x 470uF (SP-CAP) replaced by 3 mOhm



COMPRESSED IMAGE

Title	+VCORE1\VSOC1_Caps	
Size A3	Document Number 22D4-US	Rev A01
Date: Tuesday, October 02, 2018	Sheet 129 of 150	


PM ADDRESS OFFSET SETTING
PVDDIO_SM_ADDR_10
PM_ADDR : 42h
I2C_ADDR : 30h
1.78 Kohm = +2
PR4201 1.78KOhm 1%
PC4201 0.01UF/16V
GND
VCCIN TEMPERATURE SENSE
TOUT 斜放 耳计 8mV/C
PVDDIO_TOUT_10 [131]
PR4202 6.49KOhm
PR4203 0Ohm
PR4204 10KOhm
PC4202 100PF/50V
PVDDIO_TSENR_10
PVDDIO_TSEN_10
CURRENT SENSE (VDDIO 2-phases)
PVDDIO_ISEN1_7
PVDDIO_IOUT1_10 [131]
PVDDIO_V18_S
PVDDIO_IREF1_10 [131]
PVDDIO_ISEN2_7
PVDDIO_IOUT2_10 [131]
PVDDIO_IREF2_10 [131]
10KOhm
2.49KOhm
PC4203 100PF/50V
PC4204 100PF/50V
PR4208 0Ohm
PR4211 0Ohm
+3V_DUAL
PR4260 10KOhm
[41] +1.2V_VDDIO_EN
+1.2V_VDDIO_EN
P3V3DUAL_VRMVCC_PGD_LS
PD4201 RB551V_30
+3VDUAL_VRMVCC
PR4212 +1.8V_DUAL
PR4262 0Ohm /X
845Ohm 1%
PR4216 4.7KOHM
PR4217 10KOhm
PR4218 10KOhm
PR4219 10KOhm
PR4220 4.7KOHM
PR4221 4.7KOHM
PR4222 4.7KOHM
PU4201
PVDDIO_SV_ADDR_10
PVDDIO_ALERT#_10
PVDDIO_SM1_DIO_10
PVDDIO_SM1_CLK_10
PVDDIO_PROCHOT_10
PVDDIO_TSEN_10
PVDDIO_VSEN_10
PVDDIO_VRTN_10
+1.2V_VDDIO_EN
+VDDIO_SVID_EN
[41,84] +1.2V_VDDIO_PG
PVDDIO_VINSEN_10
PVDDIO_CFILT_10
PWM1
PWM2
PWM3
PWM4
PWM5
PWM6
PWM7/PWM2_L2
PWM8/PWM1_L2
ISEN1
IRTN1
ISEN2
IRTN2
ISEN3
IRTN3
ISEN4
IRTN4
ISEN5
IRTN5
ISEN6
IRTN6
ISEN2_L2/ISEN7
IRTN2_L2/IRTN7
ISEN1_L2/ISEN8
IRTN1_L2/IRTN8
RCSP
RCSM
RCSP_L2
RCSM_L2
NC3
NC4
IR35201MTRPBF-AU006
PVDDIO_PWM1_10 [131]
PVDDIO_PWM2_10 [131]
PVDDIO_ISEN1_7
PVDDIO_V18_S
PVDDIO_ISEN2_7
PVDDIO_V18_R2_S
PVDDIO_RCSP_7
PVDDIO_RCSM_7
筒座 2->1
PR4239 0Ohm /X
PR4240 0Ohm /X
PR4255 0Ohm /X
PR4606 0Ohm
PR4242 10KOhm
PVDDIO_V18_S
PVDDIO_VINREG_S
PR4234 13KOhm
PR4235 1KOhm
PC4212 0.01UF/16V
PR4233 4.7KOHM
PR4236 0Ohm
PR4237 4.7KOHM
PC4213 1UF/16V
PC4214 0.1UF/16V
PC4215 1UF/16V
紅圳 某 :Near to IRTN* pin for layout
PR4238 0Ohm
PVDDIO_V18_S
PC4216 0.1UF/16V
LOADLINE (VDDIO)
PR4256 47Ohm
PC4224 330PF/50V
PR4257 2.32KOhm
20180910
20180830 EE modify
+3V_DUAL
+5VSB_ATX
PR4258 10KOhm
PR4259 4.7KOhm
PQ4201
P3V3DUAL_VRMVCC_PGD_2
P3V3DUAL_VRMVCC_PGD_LS_3
2N7002BKS
VCORE REMOTE SENSE
+VDDIO_AB
PJP4201 SHORTPIN
PJP4202 SHORTPIN
PR4243 49.9Ohm
PR4244 0Ohm
PR4245 0Ohm
PR4246 49.9Ohm
PVDDIO_VCC_10_1
PVDDIO_VSEN_10
PVDDIO_VCC_SENSE_10 [19]
PVDDIO_VSS_SENSE_10 [19]
PVDDIO_VSS_10_1
PVDDIO_VRTN_10
PC4217 3300PF/50V
+5V_DUAL2
PR4247 10Ohm
P3V3DUAL_VRMVCC_VDD_10
PC4218 1UF/16V
PU4202
VDD
VIN1
VIN2
VIN3
EN
GND
VOUT1
VOUT2
VOUT3
PGOOD
ADJ/NC
RT9059-GQW
PC4219 10UF/6.3V
PC4220 1UF/16V
PR4248 10KOhm
PR4261 0Ohm
[41,118] +5V_DUAL2_PG_OR
P3V3DUAL_VRMVCC_EN
PR4252 10KOhm
P3V3DUAL_VRMVCC_PGD
PR4250 31.6KOhm
PR4251 10KOhm
P3V3DUAL_VRMVCC_FB
PC4221 100PF/50V
PC4222 22UF/6.3V
PC4223 22UF/6.3V
2nd: APL5932BQBI-TRG
Vout = 0.8V * (1+31.6k/10k) = 3.328V
COMPRESSED IMAGE
Title +VDDIO_AB (IR35201)
Size A2
Document Number 22D4-US
Rev A01
Date: Tuesday, October 02, 2018
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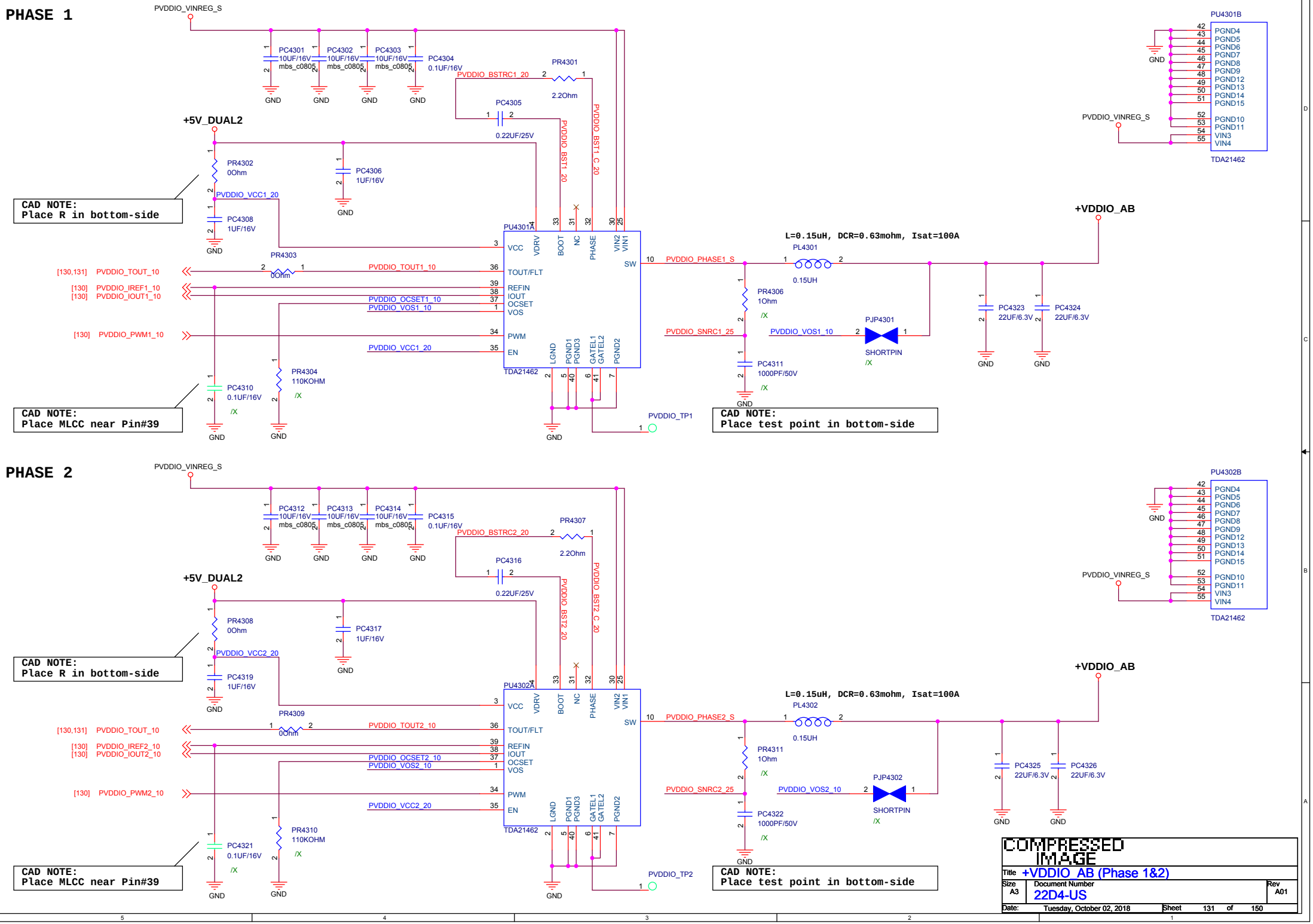
PHASE 1
PVDDIO_VINREG_S
PC4301 10UF/16V mbs_c0805
PC4302 10UF/16V mbs_c0805
PC4303 10UF/16V mbs_c0805
PC4304 0.1UF/16V
GND
PVDDIO_BSTRC1_20
PR4301 2.2Ohm
PC4305 0.22UF/25V
PVDDIO_BST1_20
PVDDIO_BST1_C_20
+5V_DUAL2
PR4302 0Ohm
PC4306 1UF/16V
PC4308 1UF/16V
CAD NOTE: Place R in bottom-side
PU4301A
VCC
VDRV
BOOT
NC
PHASE
VIN2
VIN1
SW
TOUT/FLT
REFIN
IOUT
OCSET
VOS
PWM
EN
LGND
PGND1
PGND3
GATEL1
GATEL2
PGND2
TDA21462
PR4303 0Ohm
[130,131] PVDDIO_TOUT_10
PVDDIO_TOUT1_10
[130] PVDDIO_IREF1_10
[130] PVDDIO_IOUT1_10
PVDDIO_OCSET1_10
PVDDIO_VOS1_10
[130] PVDDIO_PWM1_10
PVDDIO_VCC1_20
PR4304 110KOHM /X
PC4310 0.1UF/16V /X
CAD NOTE: Place MLCC near Pin#39
PVDDIO_TP1
L=0.15uH, DCR=0.63mohm, Isat=100A
PL4301 0.15UH
PVDDIO_PHASE1_S
PR4306 1Ohm /X
PVDDIO_SNRC1_25
PJP4301 SHORTPIN /X
PC4311 1000PF/50V /X
PC4323 22UF/6.3V
PC4324 22UF/6.3V
+VDDIO_AB
CAD NOTE: Place test point in bottom-side
PU4301B
PGND4
PGND5
PGND6
PGND7
PGND8
PGND9
PGND12
PGND13
PGND14
PGND15
PGND10
PGND11
VIN3
VIN4
TDA21462
PHASE 2
PC4312 10UF/16V mbs_c0805
PC4313 10UF/16V mbs_c0805
PC4314 10UF/16V mbs_c0805
PC4315 0.1UF/16V
PVDDIO_BSTRC2_20
PR4307 2.2Ohm
PC4316 0.22UF/25V
PVDDIO_BST2_20
PVDDIO_BST2_C_20
PR4308 0Ohm
PC4317 1UF/16V
PC4319 1UF/16V
PU4302A
PR4309 0Ohm
PVDDIO_TOUT2_10
PVDDIO_IREF2_10
PVDDIO_IOUT2_10
PVDDIO_OCSET2_10
PVDDIO_VOS2_10
PVDDIO_PWM2_10
PVDDIO_VCC2_20
PR4310 110KOHM /X
PC4321 0.1UF/16V /X
PVDDIO_TP2
L=0.15uH, DCR=0.63mohm, Isat=100A
PL4302 0.15UH
PVDDIO_PHASE2_S
PR4311 1Ohm /X
PVDDIO_SNRC2_25
PJP4302 SHORTPIN /X
PC4322 1000PF/50V /X
PC4325 22UF/6.3V
PC4326 22UF/6.3V
PU4302B
COMPRESSED IMAGE
Title +VDDIO_AB (Phase 1&2)
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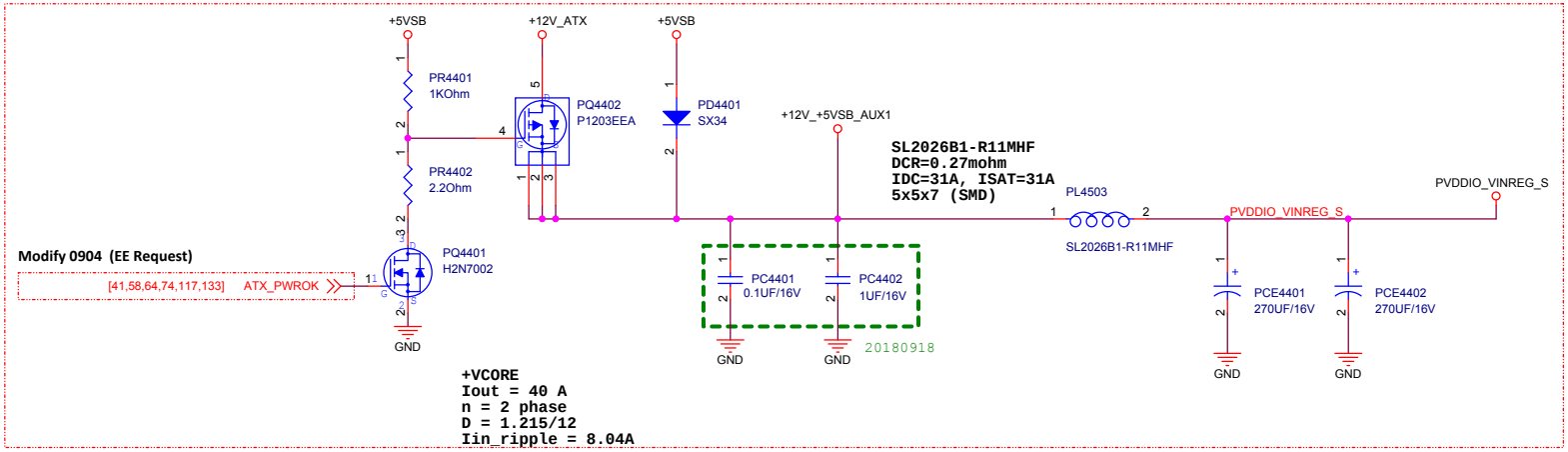
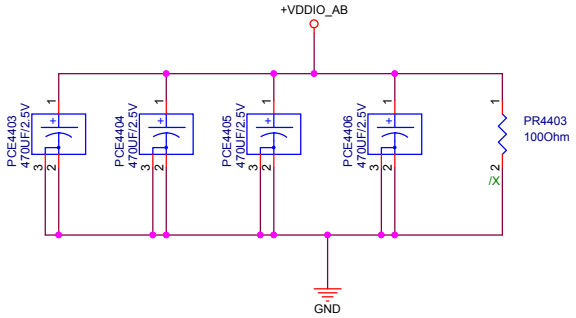
+VDDIO_AB Power rail - Input Filter

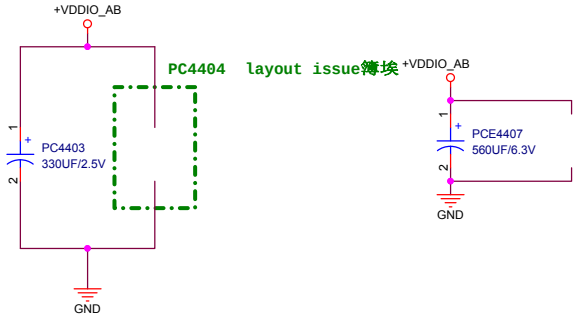


VDDIO Output Caps

Output capacitors
(Placed at the BOT of VR output)

4 x 470uF (SP-CAP) replaced by 3 mOhm





COMPRESSED IMAGE		
Title +VDDIO_Caps		
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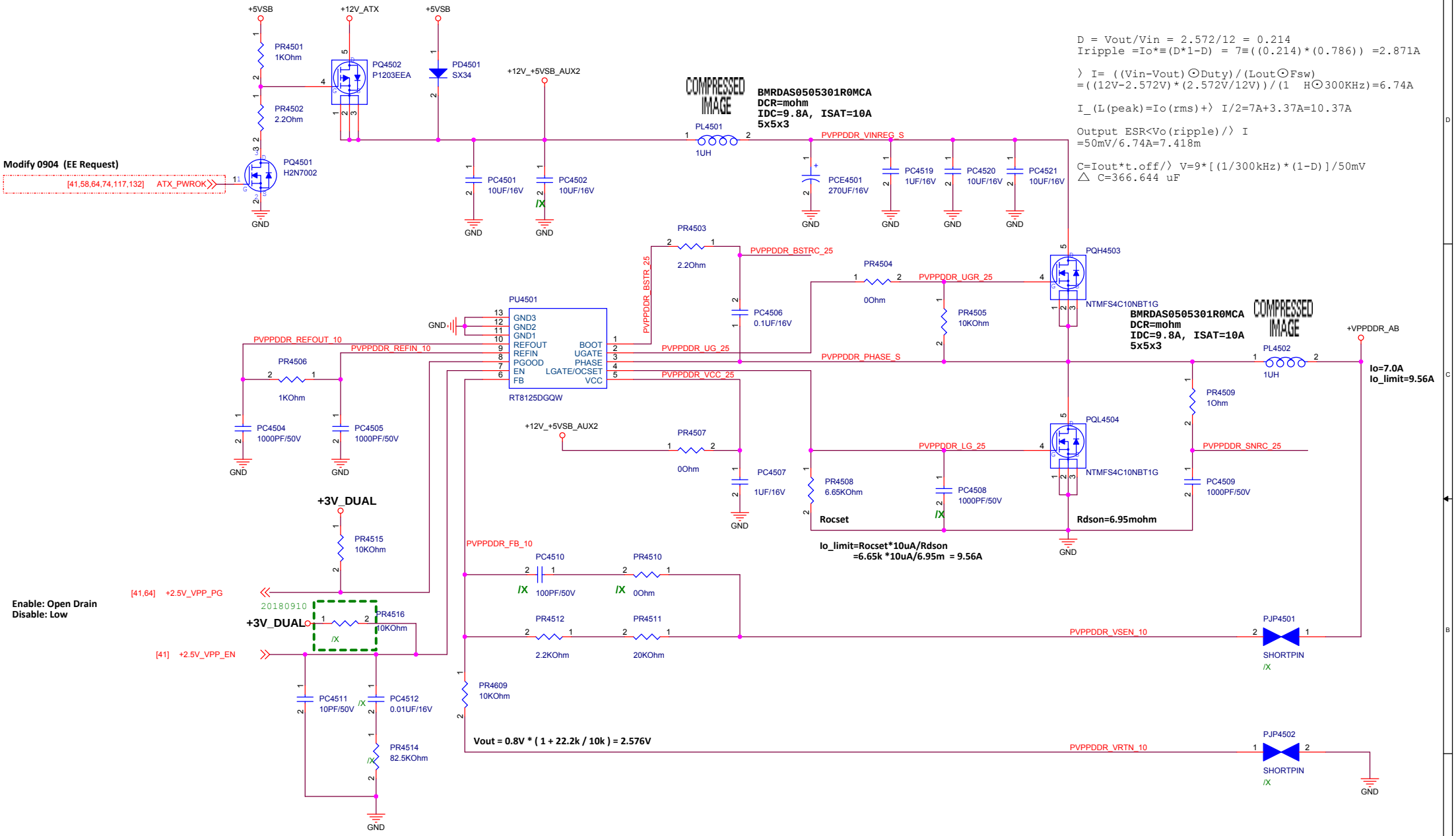
+5VSB
+12V_ATX
+5VSB
PR4501 1KOhm
PQ4502 P1203EEA
PD4501 SX34
PR4502 2.2Ohm
+12V_+5VSB_AUX2
PQ4501 H2N7002
Modify 0904 (EE Request)
[41,58,64,74,117,132] ATX_PWROK
GND
PC4501 10UF/16V
PC4502 10UF/16V
/X
COMPRESSED IMAGE
BMRDAS0505301R0MCA
DCR=mohm
IDC=9.8A, ISAT=10A
5x5x3
PL4501
1UH
PVPPDDR_VINREG_S
PCE4501 270UF/16V
PC4519 1UF/16V
PC4520 10UF/16V
PC4521 10UF/16V
D = Vout/Vin = 2.572/12 = 0.214
Iripple =Io*≡(D*1-D) = 7≡((0.214)*(0.786)) =2.871A
〉 I= ((Vin-Vout)⊙Duty)/(Lout⊙Fsw)
=((12V-2.572V)*(2.572V/12V))/(1 H⊙300KHz)=6.74A
I_(L(peak)=Io(rms)+〉 I/2=7A+3.37A=10.37A
Output ESR<Vo(ripple)/〉 I
=50mV/6.74A=7.418m
C=Iout*t.off/〉 V=9*[(1/300kHz)*(1-D)]/50mV
△ C=366.644 uF
PR4503 2.2Ohm
PVPPDDR_BSTRC_25
PR4504 0Ohm
PVPPDDR_UGR_25
PQH4503
NTMFS4C10NBT1G
PC4506 0.1UF/16V
PU4501
GND3
GND2
GND1
REFOUT
REFIN
PGOOD
EN
FB
BOOT
UGATE
PHASE
LGATE/OCSET
VCC
RT8125DGQW
PVPPDDR_BSTR_25
PVPPDDR_UG_25
PVPPDDR_PHASE_S
PVPPDDR_VCC_25
PVPPDDR_REFOUT_10
PVPPDDR_REFIN_10
PR4505 10KOhm
BMRDAS0505301R0MCA
DCR=mohm
IDC=9.8A, ISAT=10A
5x5x3
PL4502
1UH
+VPPDDR_AB
Io=7.0A
Io_limit=9.56A
PR4506 1KOhm
PC4504 1000PF/50V
PC4505 1000PF/50V
PR4509 1Ohm
PQL4504
PVPPDDR_SNRC_25
PC4509 1000PF/50V
+12V_+5VSB_AUX2
PR4507 0Ohm
PC4507 1UF/16V
PVPPDDR_LG_25
PR4508 6.65KOhm
PC4508 1000PF/50V
Rocset
Rdson=6.95mohm
Io_limit=Rocset*10uA/Rdson
=6.65k *10uA/6.95m = 9.56A
+3V_DUAL
PR4515 10KOhm
PVPPDDR_FB_10
PC4510 100PF/50V
PR4510 0Ohm
[41,64] +2.5V_VPP_PG
20180910
PR4516 10KOhm
Enable: Open Drain
Disable: Low
[41] +2.5V_VPP_EN
PR4512 2.2KOhm
PR4511 20KOhm
PVPPDDR_VSEN_10
PJP4501
SHORTPIN
PC4511 10PF/50V
PC4512 0.01UF/16V
PR4609 10KOhm
PR4514 82.5KOhm
Vout = 0.8V * (1 + 22.2k / 10k) = 2.576V
PVPPDDR_VRTN_10
PJP4502
SHORTPIN
+VPPDDR Power rail - Output MLCC
22uF (06.3) 6pcs@VR
Output capacitors
(Place at the VR output)
PC4513 22UF/6.3V
PC4514 22UF/6.3V
PC4515 22UF/6.3V
PC4516 22UF/6.3V
PC4517 22UF/6.3V
PC4518 22UF/6.3V
PCE4502 270UF/16V
COMPRESSED IMAGE
Title +VPPDDR_AB
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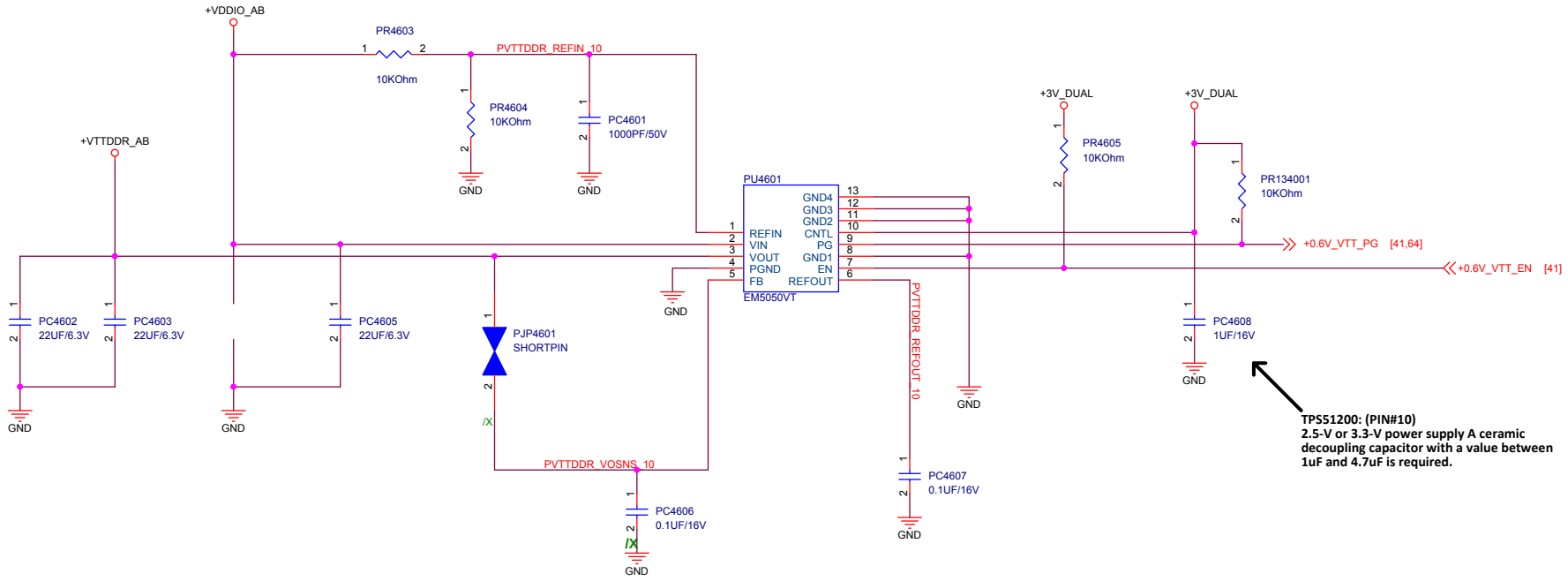

COMPRESSED IMAGE

Title	+VTTDDR_AB	
Size A3	Document Number 22D4-US	Rev A01
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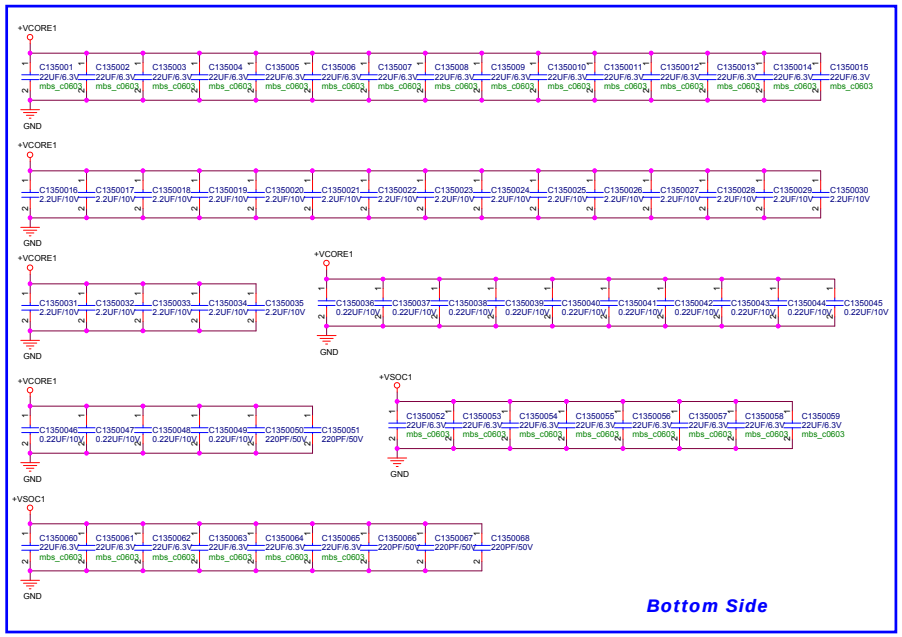

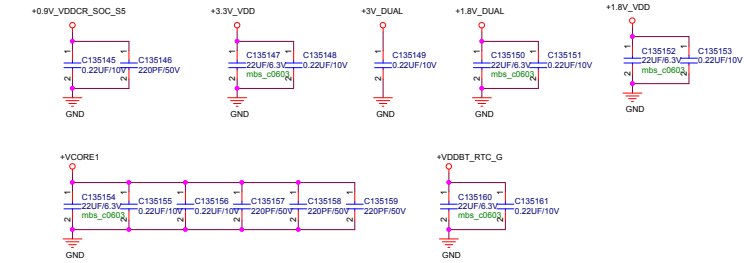

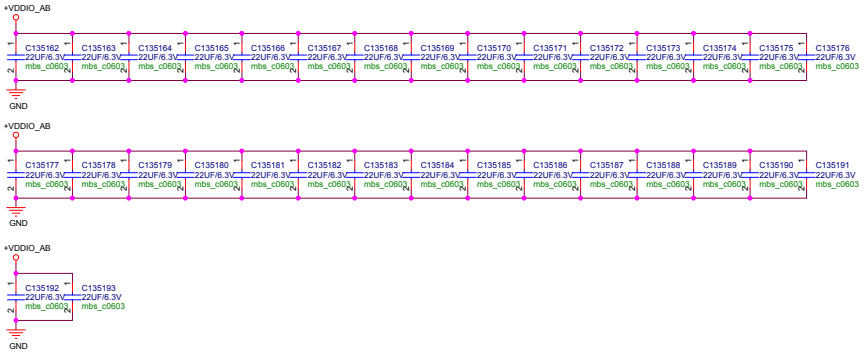

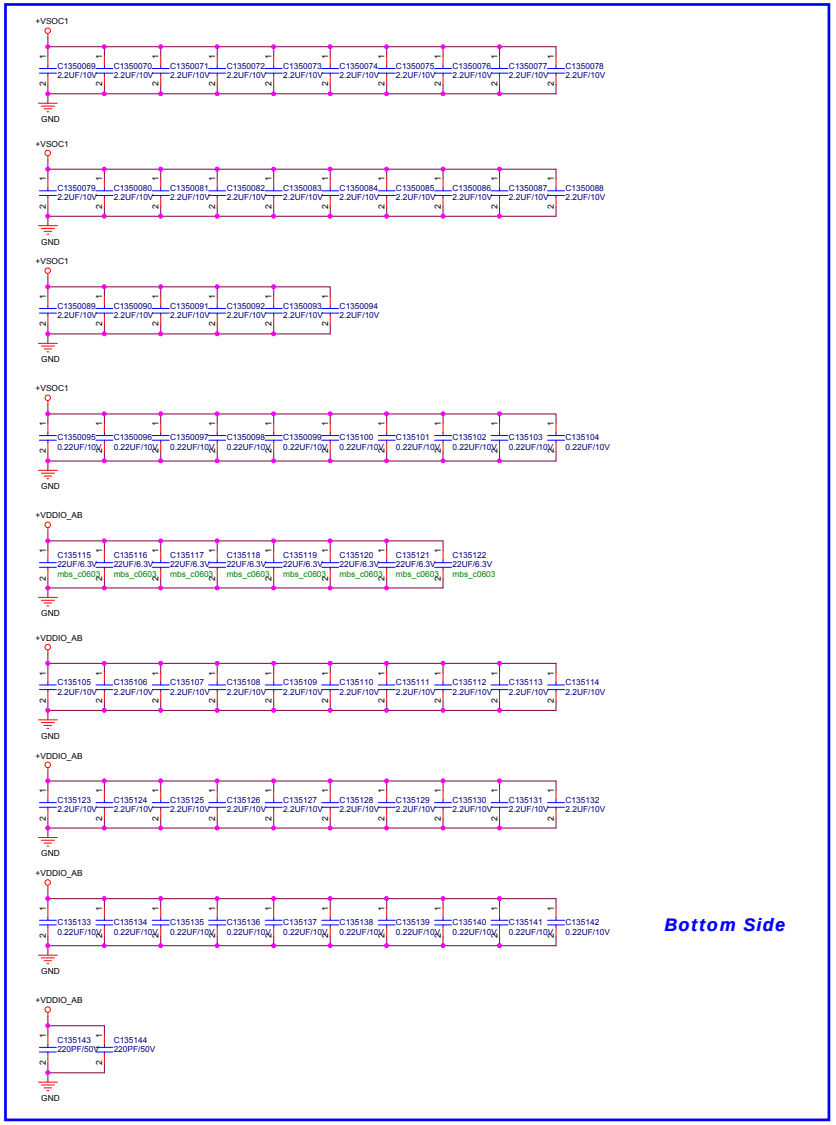

COMPRESSED IMAGE

Title	DECOUPLING CAP	
Size A2	Document Number 22D4-US	Rev A01
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COMPRESSED IMAGE

Title	N/A	
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COMPRESSED
IMAGE

Title	N/A	
Size A3	Document Number 22D4-US	Rev A01
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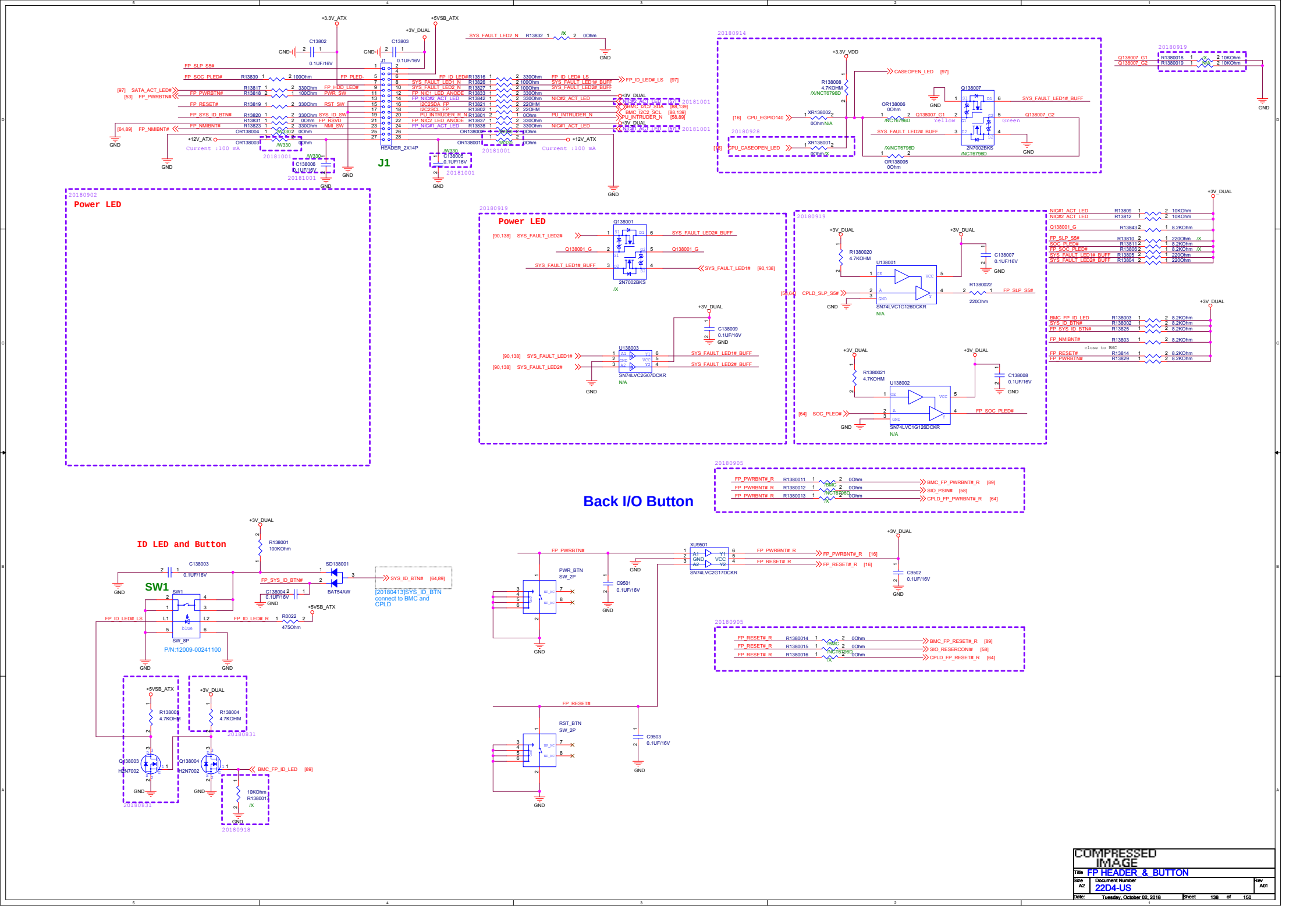
Power LED
Back I/O Button
ID LED and Button
SW1
J1
HEADER_2X14P
P/N:12009-00241100
COMPRESSED IMAGE
Title FP HEADER & BUTTON
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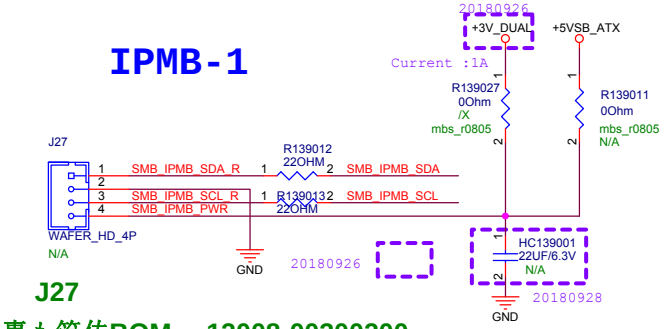
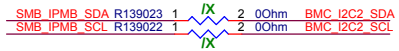
W330 : +12V_ATX (R139027,C139001　ン / R139011, HC139001ゝ　ン)
others　+5VSB_ATX　(R139027,C139001 ゝ　ン / R139011,HC139001　ン)

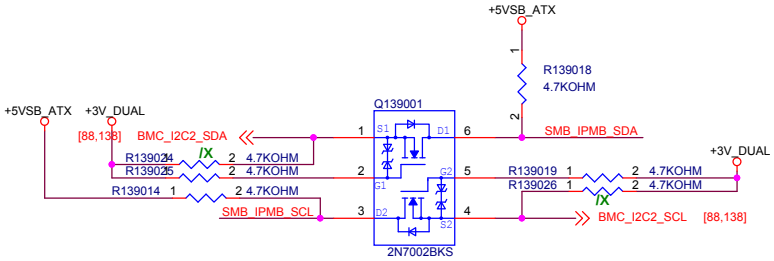
IPMB-1



J27

惠も笆传BOM　12008-00300200

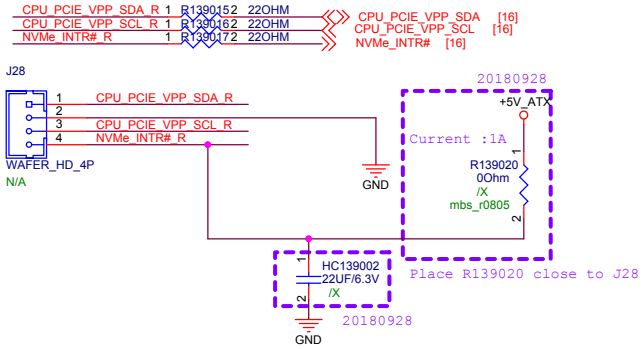




IPMB-2

J28

惠も笆传BOM　12008-00300200



Title	BMC_System_BTN_FRU&_IPMB	
Size A3	Document Number 22D4-US	Rev A01
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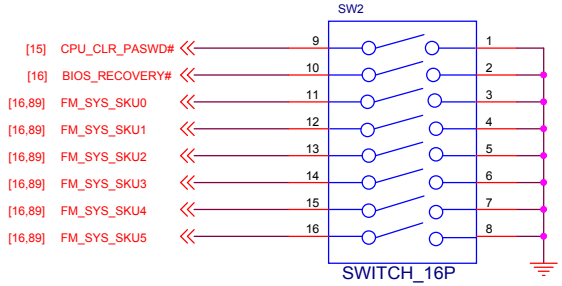

GND

+3.3V_VDD

CPU_CLR_PASWD# R140003 1 2 4.7KOHM

+3V_DUAL

BIOS_RECOVERY#	R140004	1	2	4.7KOHM
FM_SYS_SKU0	R140001	1	2	4.7KOHM
FM_SYS_SKU1	R140005	1	2	4.7KOHM
FM_SYS_SKU2	R140006	1	2	4.7KOHM
FM_SYS_SKU3	R140007	1	2	4.7KOHM
FM_SYS_SKU4	R140008	1	2	4.7KOHM
FM_SYS_SKU5	R140009	1	2	4.7KOHM

COMPRESSED IMAGE

Title SYS_SKU_ID

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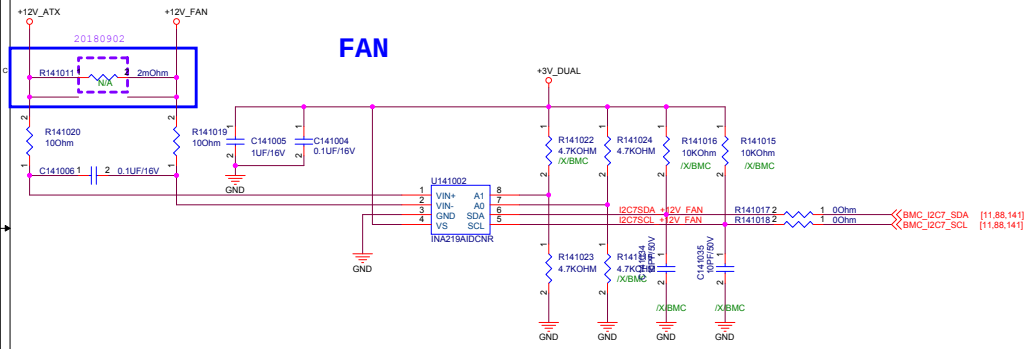

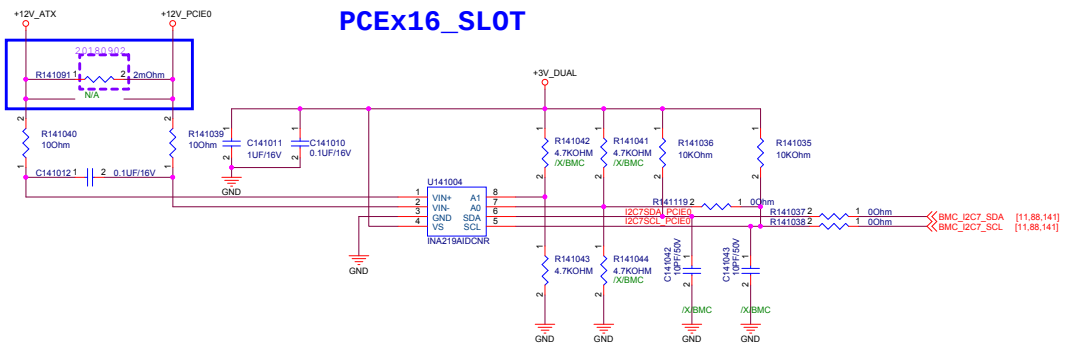

Table 1. INA219 Address Pins and Slave Addresses

A1	A0	SLAVE ADDRESS
GND	GND	1000000
GND	V_{S+}	1000001
GND	SDA	1000010
GND	SCL	1000011
V_{S+}	GND	1000100
V_{S+}	V_{S+}	1000101
V_{S+}	SDA	1000110
V_{S+}	SCL	1000111
SDA	GND	1001000
SDA	V_{S+}	1001001
SDA	SDA	1001010
SDA	SCL	1001011
SCL	GND	1001100
SCL	V_{S+}	1001101
SCL	SDA	1001110
SCL	SCL	1001111

COMPRESSED IMAGE

Title	CURRENTMONITOR-1	
Size: Custom	Document Number: 22D4-US	Rev: A01
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COMPRESSED
IMAGE

Title	N/A	
Size: Custom	Document Number: 22D4-US	Rev: A01
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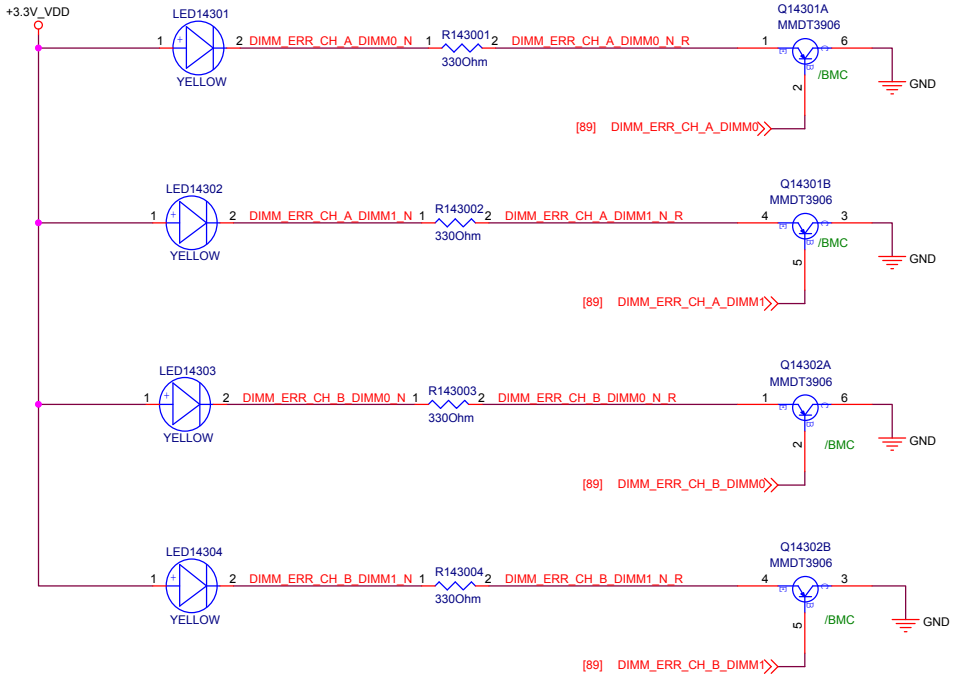

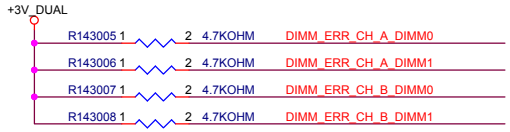

COMPRESSED IMAGE

Title	DIMM ERROR LED	
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5 4 3 2 1

D

C

B

A

COMPRESSED IMAGE

Title	N/A	
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5 4 3 2 1

D

C

B

A

COMPRESSED IMAGE

Title N/A		
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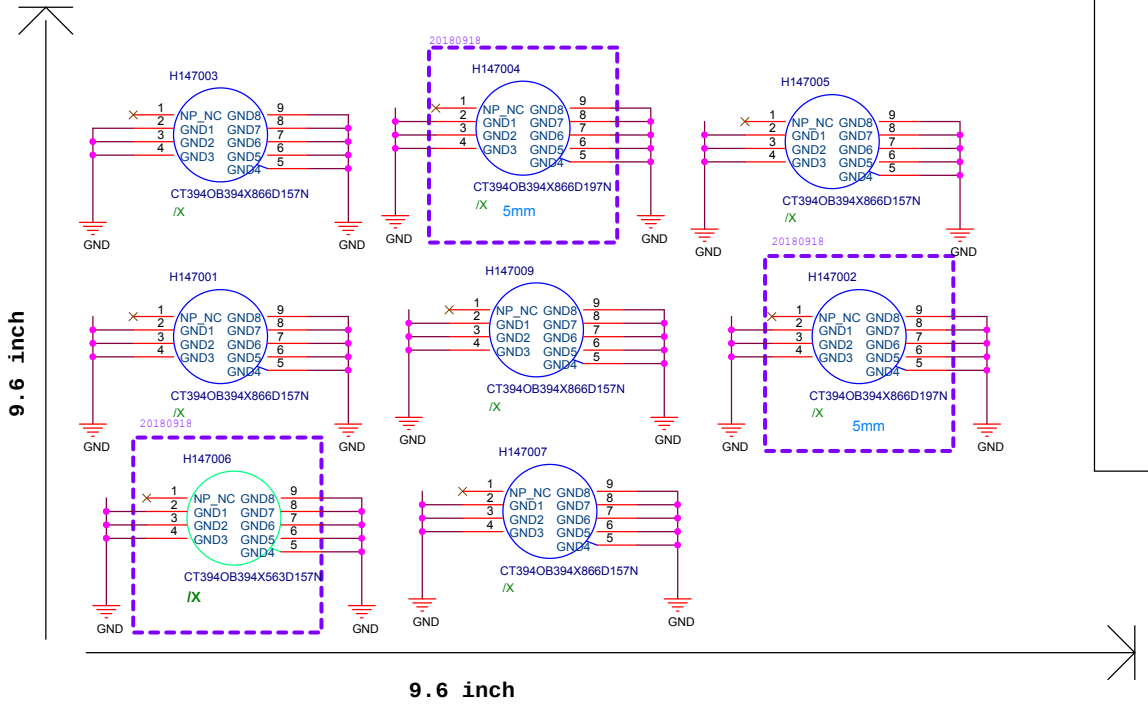
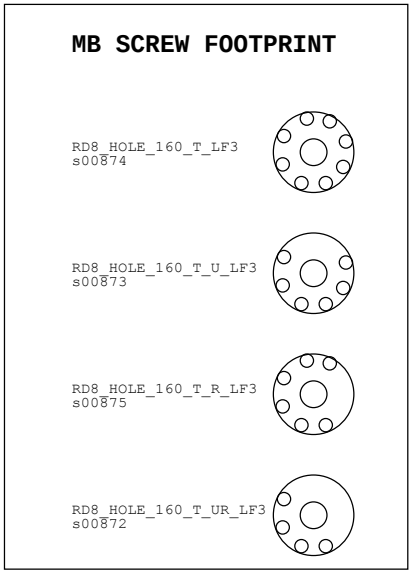
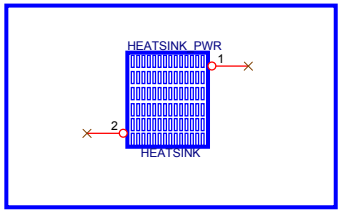
uATX Screw Hole



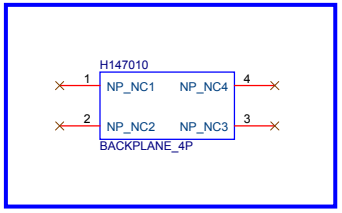
MB SCREW FOOTPRINT



POWER HEATSINK

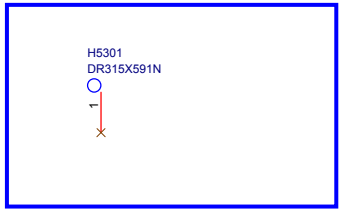


CPU HOLE

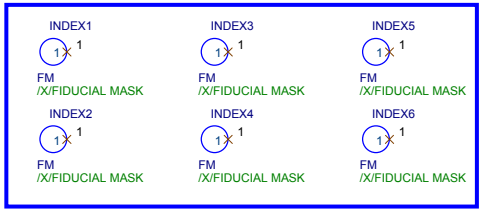


PCIEx16 HOLE

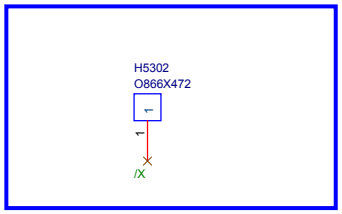
BM CARD hole



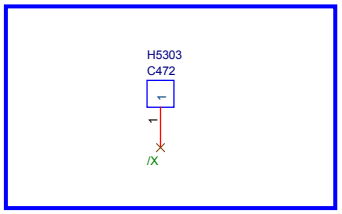
Fiducial Mask



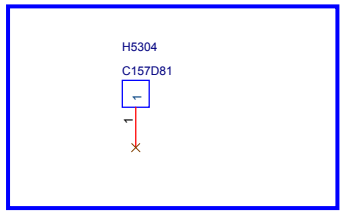
CPU PAD



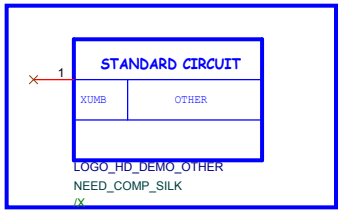
Board PAD



Guide pin



Text Frame



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PCB1

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承(TTL)
R1.0

Fake part
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PCB2

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(TRUSTECH)
R1.0

Fake part
08001-12030100

PCB3

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秤山
(VICTORY)
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Fake part
08001-12030200

COMPRESSED IMAGE

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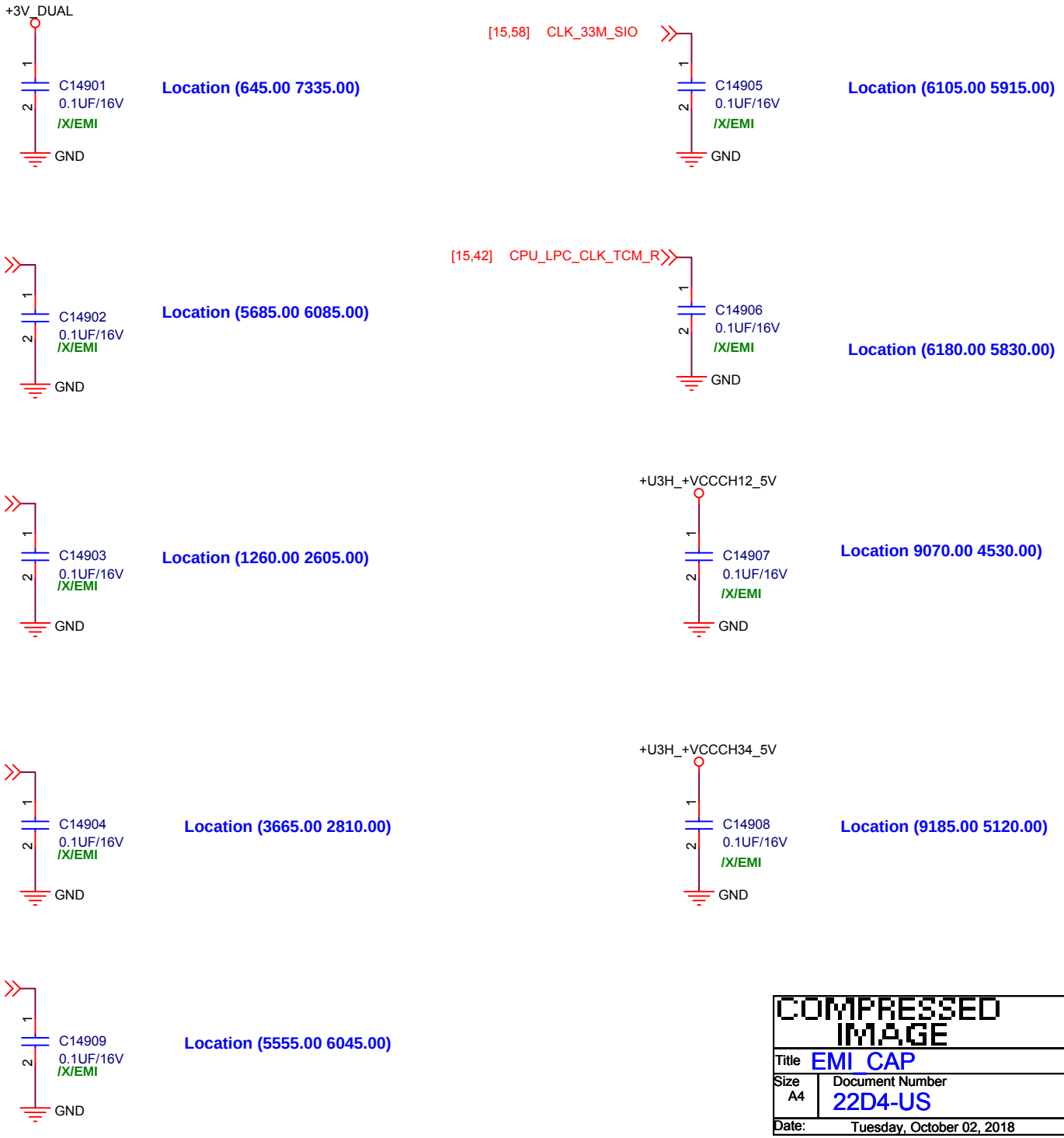

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