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| 50 | GPU_Weston_Pro_TMDP | 1.0 | |
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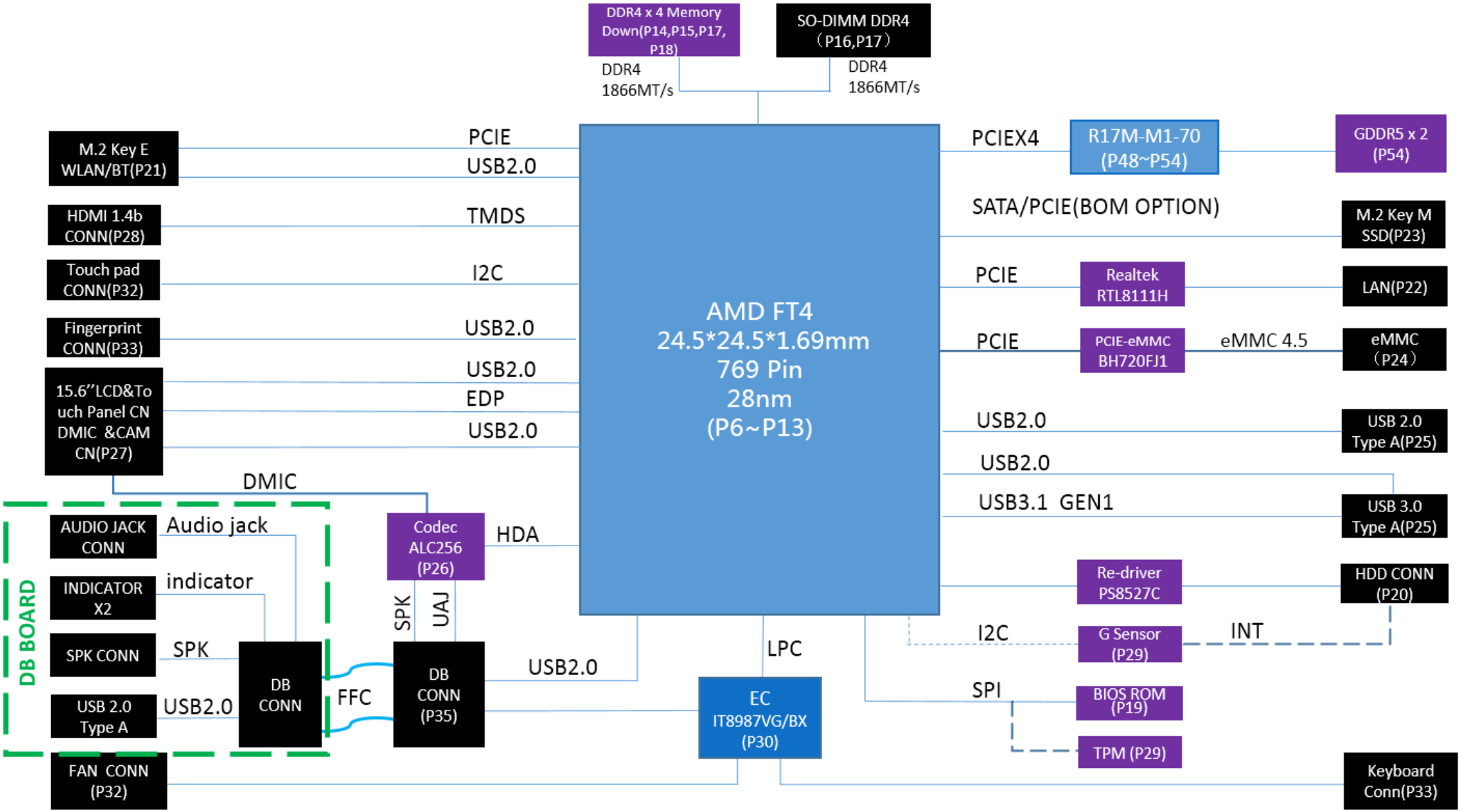
# MB Block Diagram

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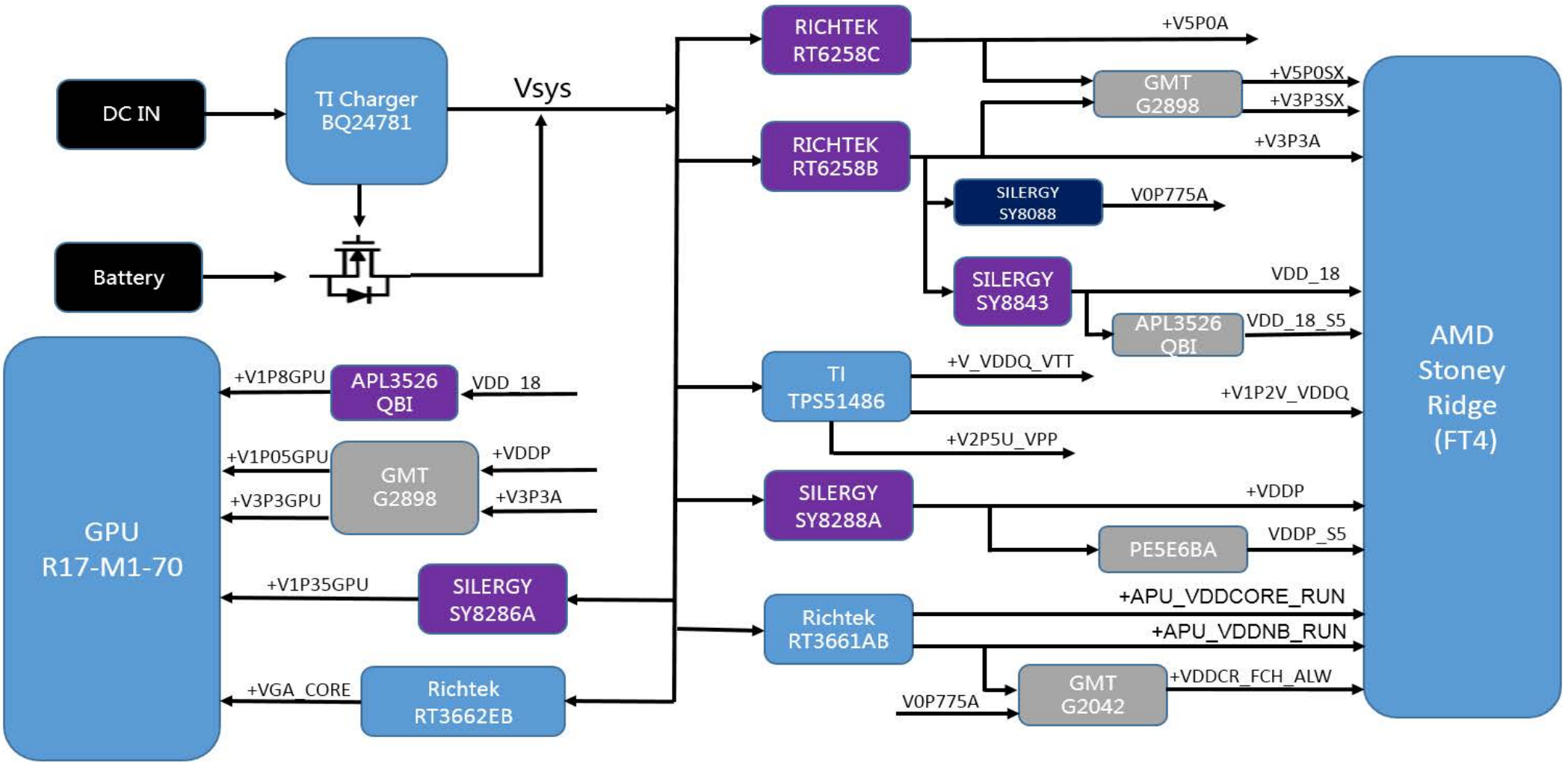
# MB Power Map

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## Power States(Adapter)

| Signal | +VCCSP3_LDO_OUT | +V5P0A | +V3P3A | +V1P8A | +V0P95A | +V0P775A | +VDDCR_PCH_ALW | +V1P2V_VDDQ | +V5P0SX | +V3P3SX | +V1P8SX | +VDDP_S0 | +V_VDDQ_VTT | +APU_VDDCORE_RUN | +APU_VDDNB_RUN | +V3P3GPU | +V1P8GPU | +V0P95GPU | +V1P35GPU | +VGA_CORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S0(Full On) | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON |
| S3(STM) | ON | ON | ON | ON | ON | ON | ON | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| S5(SoftOff) | ON | ON | ON | ON | ON | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |

## Power States(Battery)

| Signal | +VCCSP3_LDO_OUT | +V5P0A | +V3P3A | +V1P8A | +V0P95A | +V0P775A | +VDDCR_PCH_ALW | +V1P2V_VDDQ | +V5P0SX | +V3P3SX | +V1P8SX | +VDDP_S0 | +V_VDDQ_VTT | +APU_VDDCORE_RUN | +APU_VDDNB_RUN | +V3P3GPU | +V1P8GPU | +V0P95GPU | +V1P35GPU | +VGA_CORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S0(Full On) | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON |
| S3(STM) | ON | ON | ON | ON | ON | ON | ON | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| S5(SoftOff) | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |

## BOARD ID

| BOARD_ID5<br>1--RU183<br>0--RU191 | BOARD_ID4<br>1--RU182<br>0--RU190 | BOARD_ID3<br>1--RU181<br>0--RU189 | BOARD_ID2<br>1--RU180<br>0--RU188 | BOARD_ID1<br>1--RU179<br>0--RU187 | BOARD_ID0<br>1--RU178<br>0--RU186 |
|---|---|---|---|---|---|
| 1--DGPU<br>0--UMA | 1--SATA SSD<br>0--PCIE SSD | RESERVE | MEMORY ID | | |

## SMBUS/I2C Control Table

| | SOURCE | GPU | BATT | IT8987E | SODIMM | Touch Pad | Thermal Sensor | APU | Charger | G-SENSOR Sensor |
|---|---|---|---|---|---|---|---|---|---|---|
| SM_BAT_CLK<br>SM_BAT_DATA | IT8987E<br>+V3P3A_EC | X | V | | X | X | X | X | V | X |
| SM_THRM_SCL<br>SM_THRM_SDA | IT8987E<br>+V3P3SX_EC | V<br>+V3P3GPU | X | | X | X | V | V<br>APU_SIC<br>APU_SID<br>+V1P8SX | X | X |
| APU_SMB_CLK<br>APU_SMB_DATA | APU<br>+V3P3SX | X | X | X | V | X | X | | X | X |
| GSEN_I2C0_SCL<br>GSEN_I2C0_SDA | APU<br>+V1P8_GSENSOR | X | X | X | X | X | X | | X | V |
| TOUCHPAD_I2C_CLK<br>TOUCHPAD_I2C_SDA | APU<br>+V3P3A_CP | X | X | X | X | V | X | | X | X |

## PCIe/GFX Port

| PCIE | Device |
|---|---|
| 0 | LAN |
| 1 | WLAN |
| 2 | eMMC |
| 3 | SSD |
| GFX | Device |
| 0-3 | DGPU |

## USB2.0 Port

| Port | Device |
|---|---|
| 0 | Blue Tooth |
| 1 | DB USB2.0 |
| 2 | Finger print |
| 4 | USB 3.0 Port |
| 5 | USB2.0 |
| 6 | Touch Panel |
| 7 | Camera |

## SATA Port

| Port | Device |
|---|---|
| 0 | HDD |
| 1 | SSD |
| | |
| | |
| | |
| | |

## USB3.0 Port

| Port | Device |
|---|---|
| 0 | USB3.0 Type-A |
| 1 | NA |
| | |
| | |
| | |
| | |

| | |
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| Page name: | I2C Table and Notes |
| Size: A4 | Project Name: NB8607 |
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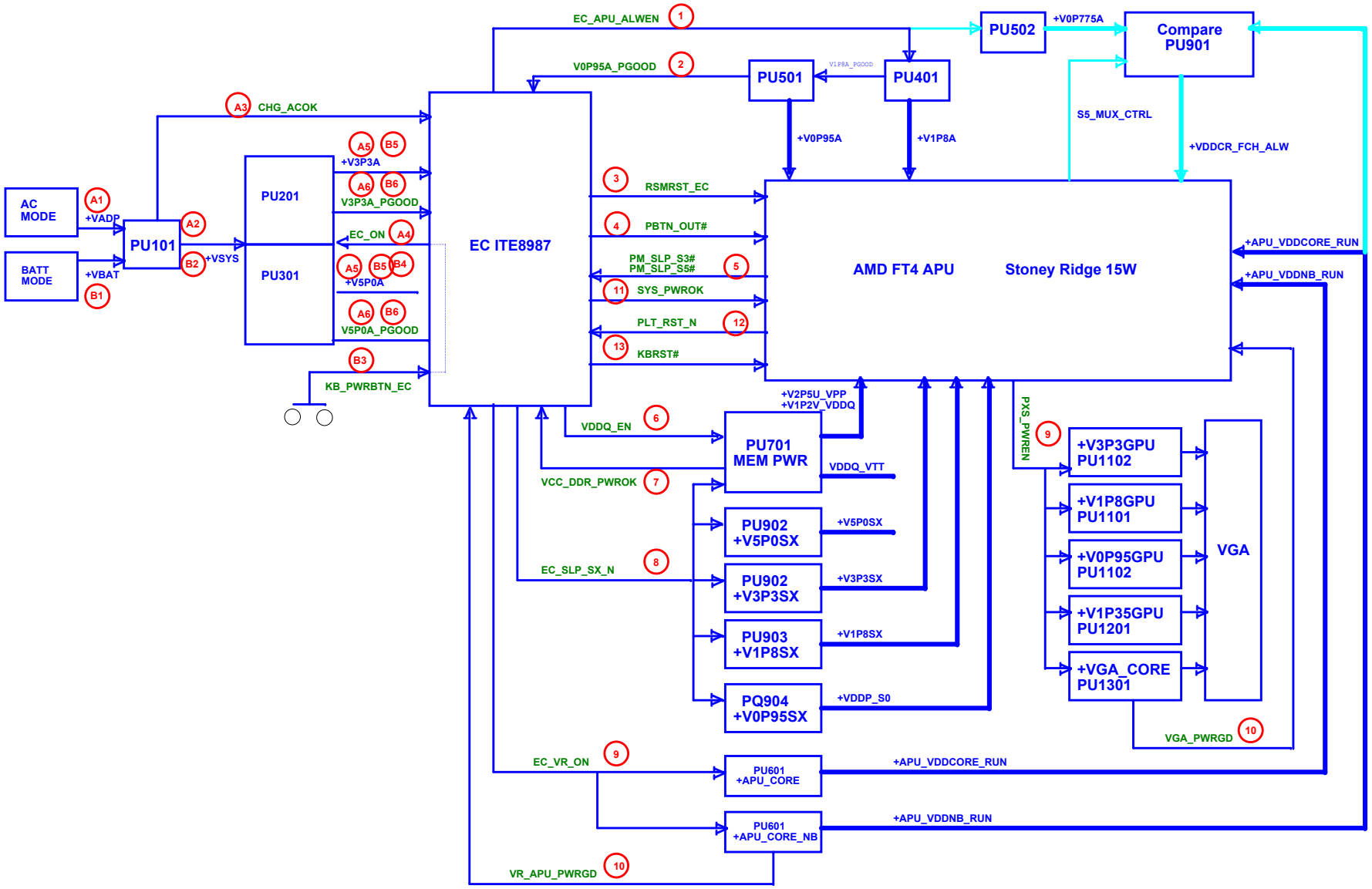


| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | Power Sequence Block | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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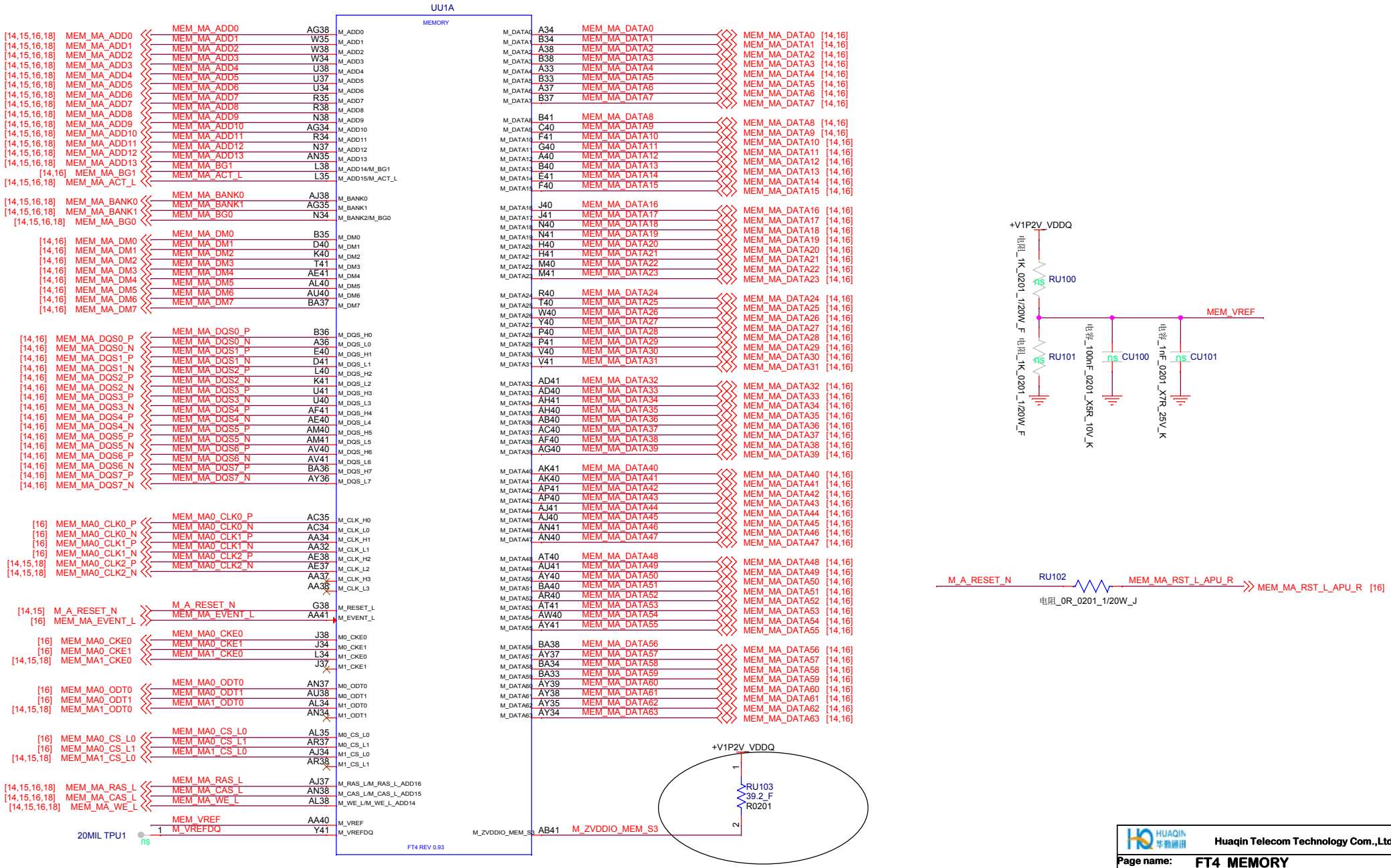
UU1A
MEMORY
MEM_MA_ADD0 AG38
MEM_MA_ADD1 W35
MEM_MA_ADD2 W38
MEM_MA_ADD3 W34
MEM_MA_ADD4 U38
MEM_MA_ADD5 U37
MEM_MA_ADD6 U34
MEM_MA_ADD7 R35
MEM_MA_ADD8 R38
MEM_MA_ADD9 N38
MEM_MA_ADD10 AG34
MEM_MA_ADD11 R34
MEM_MA_ADD12 N37
MEM_MA_ADD13 AN35
MEM_MA_BG1 L38
MEM_MA_ACT_L L35
MEM_MA_BANK0 AJ38
MEM_MA_BANK1 AG35
MEM_MA_BG0 N34
MEM_MA_DM0 B35
MEM_MA_DM1 D40
MEM_MA_DM2 K40
MEM_MA_DM3 T41
MEM_MA_DM4 AE41
MEM_MA_DM5 AL40
MEM_MA_DM6 AU40
MEM_MA_DM7 BA37
MEM_MA_DQS0_P B36
MEM_MA_DQS0_N A36
MEM_MA_DQS1_P E40
MEM_MA_DQS1_N D41
MEM_MA_DQS2_P L40
MEM_MA_DQS2_N K41
MEM_MA_DQS3_P U41
MEM_MA_DQS3_N U40
MEM_MA_DQS4_P AF41
MEM_MA_DQS4_N AE40
MEM_MA_DQS5_P AM40
MEM_MA_DQS5_N AM41
MEM_MA_DQS6_P AV40
MEM_MA_DQS6_N AV41
MEM_MA_DQS7_P BA36
MEM_MA_DQS7_N AY36
MEM_MA0_CLK0_P AC35
MEM_MA0_CLK0_N AC34
MEM_MA0_CLK1_P AA34
MEM_MA0_CLK1_N AA32
MEM_MA0_CLK2_P AE38
MEM_MA0_CLK2_N AE37
M_A_RESET_N G38
MEM_MA_EVENT_L AA41
MEM_MA0_CKE0 J38
MEM_MA0_CKE1 J34
MEM_MA1_CKE0 L34
MEM_MA0_ODT0 AN37
MEM_MA0_ODT1 AU38
MEM_MA1_ODT0 AL34
MEM_MA0_CS_L0 AL35
MEM_MA0_CS_L1 AR37
MEM_MA1_CS_L0 AJ34
MEM_MA_RAS_L AJ37
MEM_MA_CAS_L AN38
MEM_MA_WE_L AL38
MEM_VREF AA40
MEM_MA_DATA0 A34
MEM_MA_DATA1 B34
MEM_MA_DATA2 A38
MEM_MA_DATA3 B38
MEM_MA_DATA4 A33
MEM_MA_DATA5 B33
MEM_MA_DATA6 A37
MEM_MA_DATA7 B37
MEM_MA_DATA8 B41
MEM_MA_DATA9 C40
MEM_MA_DATA10 F41
MEM_MA_DATA11 G40
MEM_MA_DATA12 A40
MEM_MA_DATA13 B40
MEM_MA_DATA14 E41
MEM_MA_DATA15 F40
MEM_MA_DATA16 J40
MEM_MA_DATA17 J41
MEM_MA_DATA18 N40
MEM_MA_DATA19 N41
MEM_MA_DATA20 H40
MEM_MA_DATA21 H41
MEM_MA_DATA22 M40
MEM_MA_DATA23 M41
MEM_MA_DATA24 R40
MEM_MA_DATA25 T40
MEM_MA_DATA26 W40
MEM_MA_DATA27 Y40
MEM_MA_DATA28 P40
MEM_MA_DATA29 P41
MEM_MA_DATA30 V40
MEM_MA_DATA31 V41
MEM_MA_DATA32 AD41
MEM_MA_DATA33 AD40
MEM_MA_DATA34 AH41
MEM_MA_DATA35 AH40
MEM_MA_DATA36 AB40
MEM_MA_DATA37 AC40
MEM_MA_DATA38 AF40
MEM_MA_DATA39 AG40
MEM_MA_DATA40 AK41
MEM_MA_DATA41 AK40
MEM_MA_DATA42 AP41
MEM_MA_DATA43 AP40
MEM_MA_DATA44 AJ41
MEM_MA_DATA45 AJ40
MEM_MA_DATA46 AN41
MEM_MA_DATA47 AN40
MEM_MA_DATA48 AT40
MEM_MA_DATA49 AU41
MEM_MA_DATA50 AY40
MEM_MA_DATA51 BA40
MEM_MA_DATA52 AR40
MEM_MA_DATA53 AT41
MEM_MA_DATA54 AW40
MEM_MA_DATA55 AY41
MEM_MA_DATA56 BA38
MEM_MA_DATA57 AY37
MEM_MA_DATA58 BA34
MEM_MA_DATA59 BA33
MEM_MA_DATA60 AY39
MEM_MA_DATA61 AY38
MEM_MA_DATA62 AY35
MEM_MA_DATA63 AY34
M_ZVDDIO_MEM_S3 AB41
20MIL TPU1
FT4 REV 0.93
+V1P2V_VDDQ
RU100
RU101
MEM_VREF
CU100
CU101
M_A_RESET_N
RU102
MEM_MA_RST_L_APU_R
RU103
39.2_F
R0201
M_ZVDDIO_MEM_S3
KC.91202.A4E
Huaqin Telecom Technology Com.,Ltd.
Page name: FT4_MEMORY
Size: A4
Project Name: NB8607
REV: V1.0
Date: Friday, March 29, 2019
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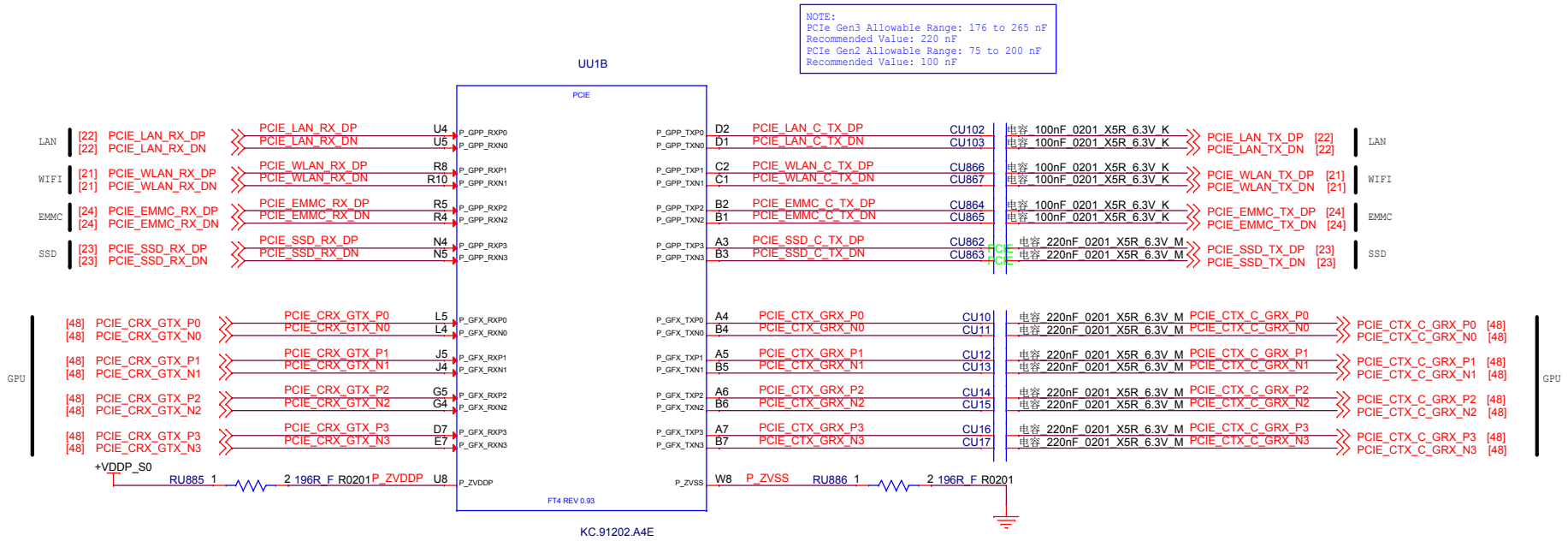


| | | | |
|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | FT4_PCIE | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
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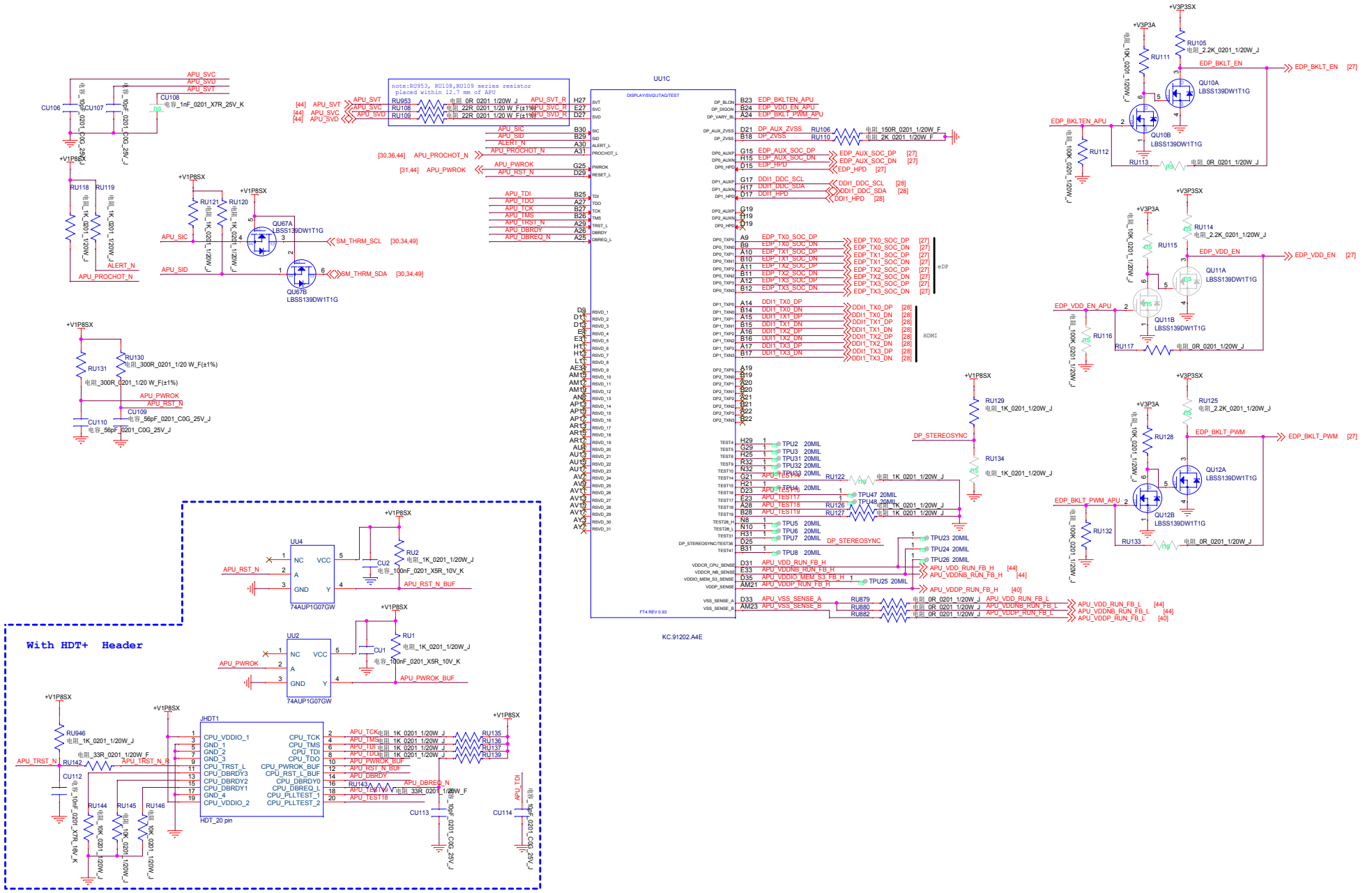
With HDT+ Header
UU1C
DISPLAY/SVI2/JTAG/TEST
note:RU953, RU108,RU109 series resistor placed within 12.7 mm of APU
KC.91202.A4E
Huaqin Telecom Technology Com.,Ltd.
Page name: FT4_DISPLAY/SVI2/JTAG/TEST
Size: A4
Project Name: NB8607
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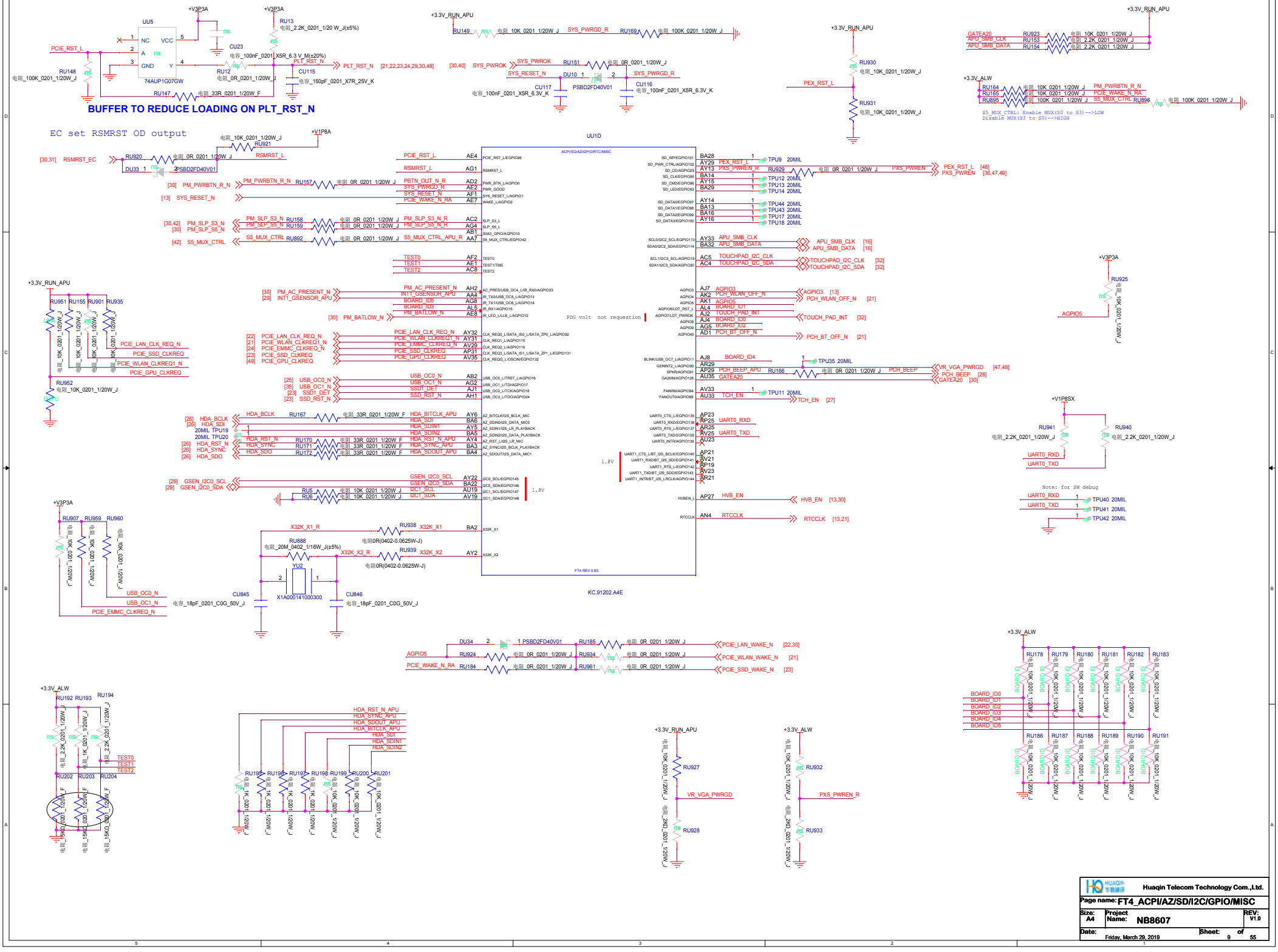
BUFFER TO REDUCE LOADING ON PLT_RST_N
EC set RSMRST OD output
UU1D
ACPI/SD/AZ/GPIO/RTC/MISC
FT4 REV 0.93
KC.91202.A4E
PDG volt not requestion
S5_MUX_CTRL: Enable MUX(S0 to S3)-->LOW
Disable MUX(S3 to S0)-->HIGH
Note: for SW debug
Huaqin Telecom Technology Com.,Ltd.
Page name: FT4_ACPI/AZ/SD/I2C/GPIO/MISC
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| | | | |
|---|---|---|---|
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| Page name: | FT4_CLK/LPC/STAT/SPI/USB | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
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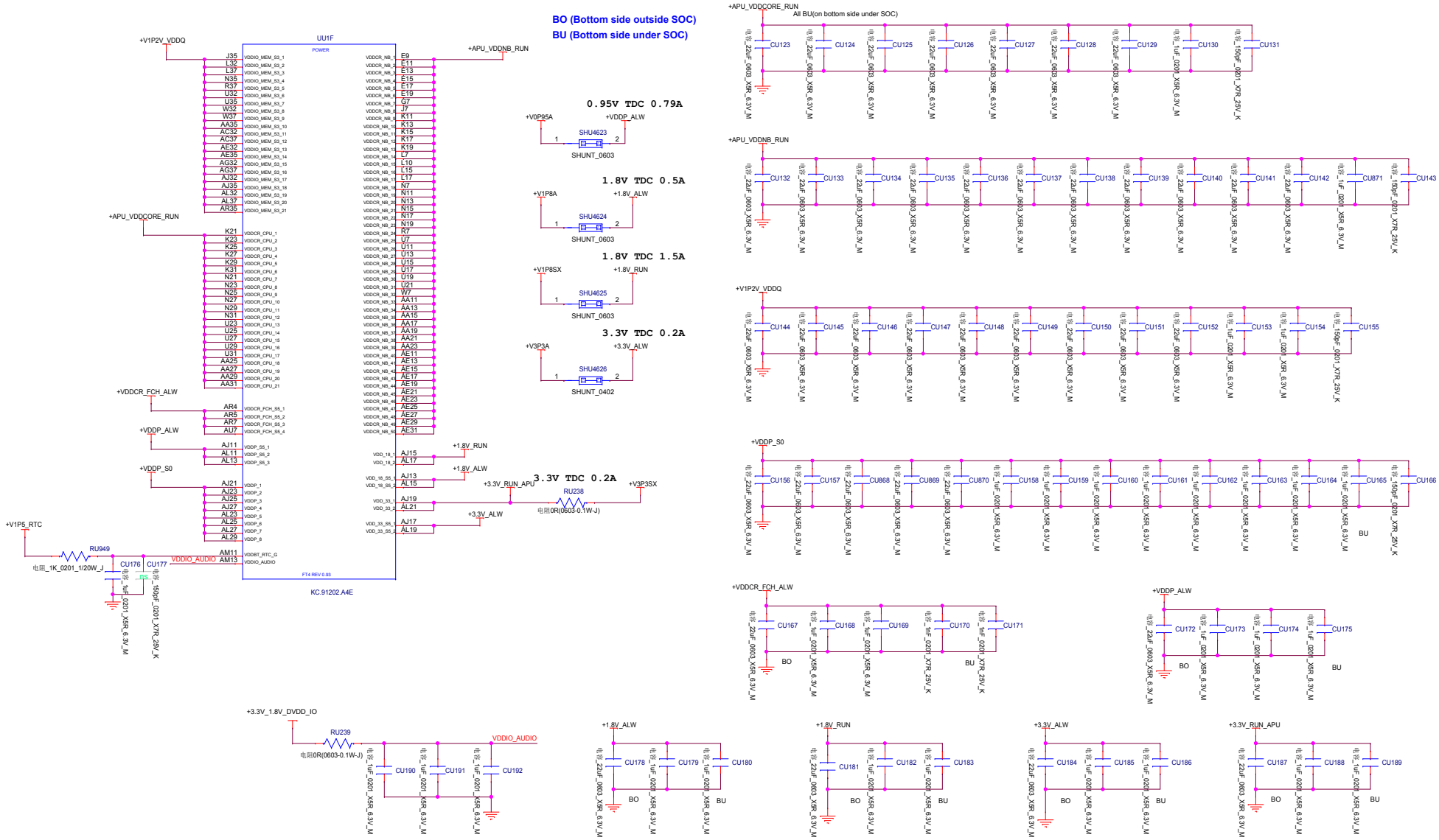


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|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
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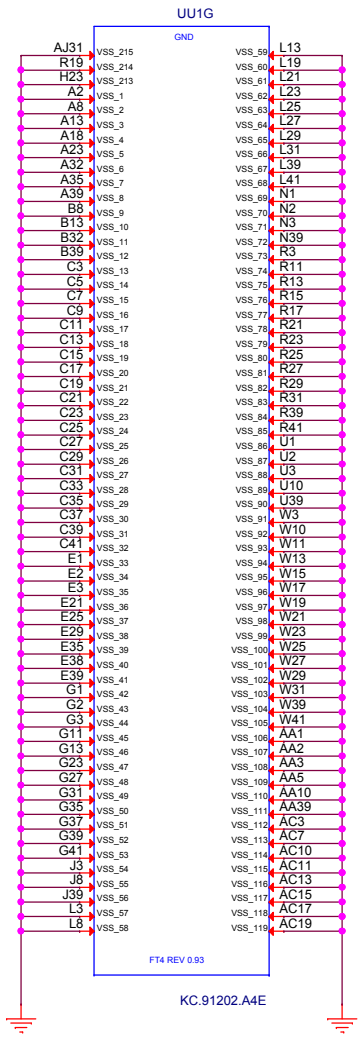


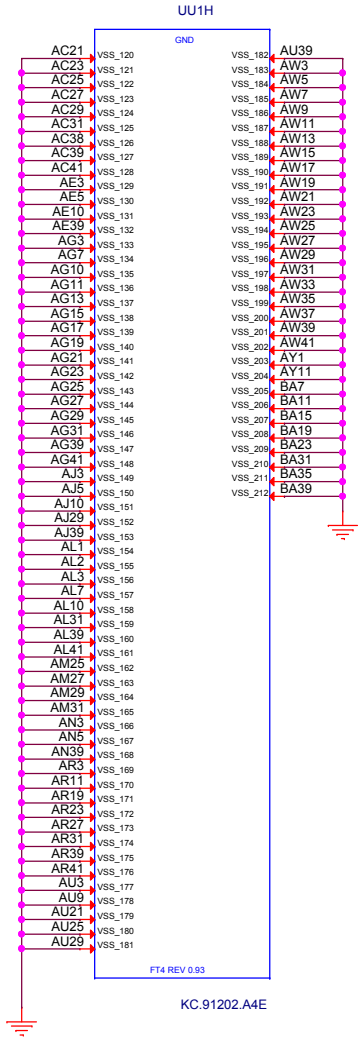


| | | |
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| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | FT4_VSS | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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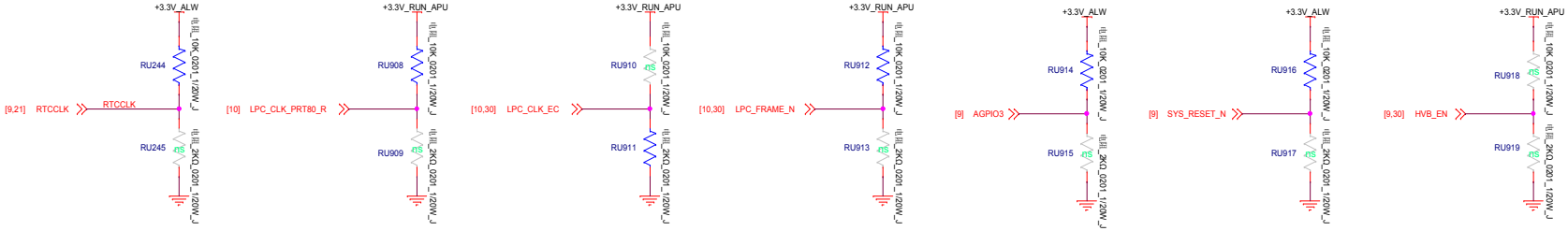


| | LPC_CLK0 (LPC_CLK_EC) | LPC_CLK1 (LPC_CLK_PRT80_R) | LFRAME_L | AGPIO3 Int pull-up | RTC_CLK Int pull-up | SYS_RST# Int pull-up | HVB_EN |
|---|---|---|---|---|---|---|---|
| PULL HIGH | BOOT FAIL TIMER ENABLED | Use 48Mhz crystal clock and generate both internal and external clocks (DEFAULT) | SPI ROM (DEFAULT) | Enhanced reset (for quicker S5 (DEFAULT) | Coin battery is on board. (DEFAULT) | normal reset mode (DEFAULT) | floating Disable HVB |
| PULL LOW | BOOT FAIL TIMER DISABLED (DEFAULT) | Use 100Mhz PCIE clock as reference clock and generate internal clocks only | LPC ROM | Default to traditional reset logic | Coin battery is not on board. | short reset mode | connected to VSS Enable HVB |

| | | |
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| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | STRAP | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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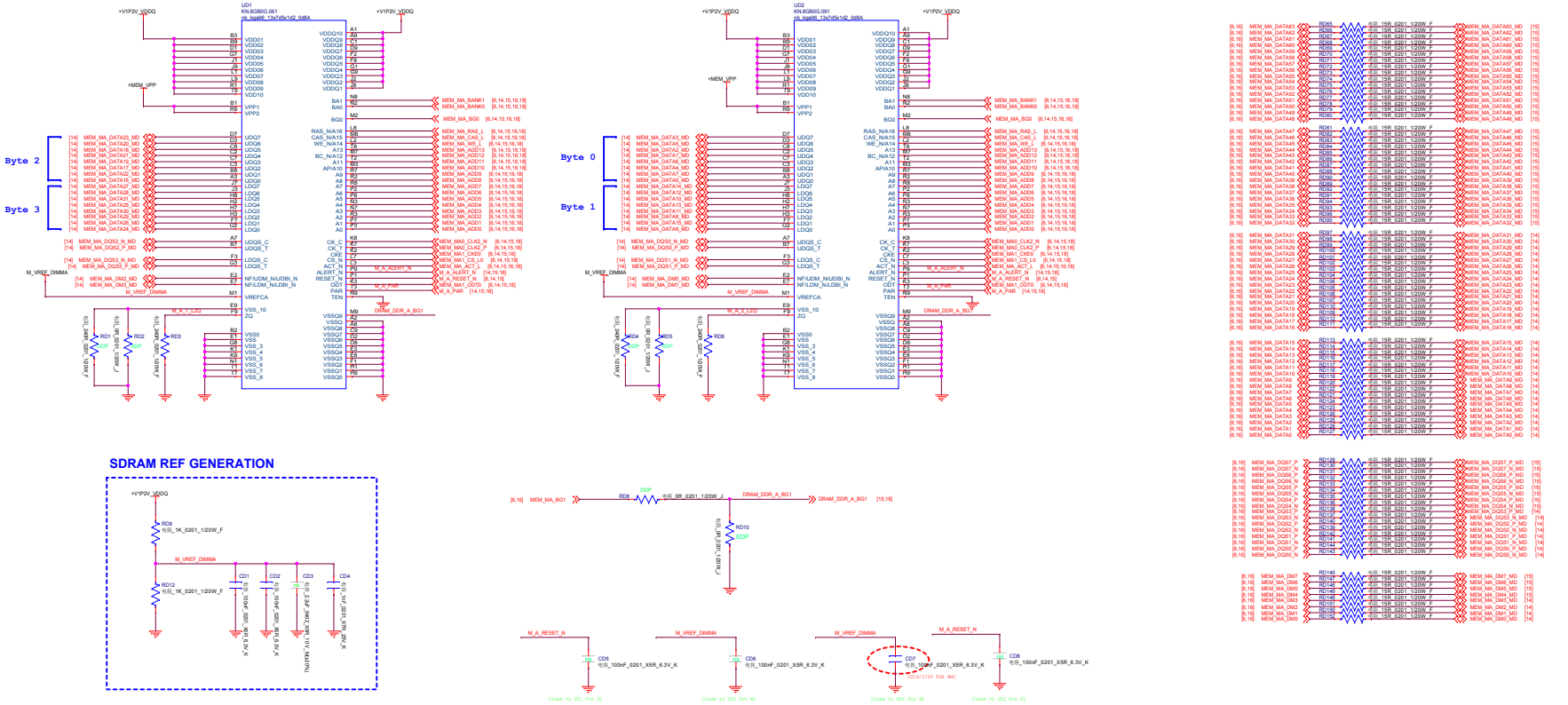



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| | |
|---|---|
| Page name: | DDR4 CH-A(DEVICE0) |
| Size: A4 | Project Name: NB8607 |
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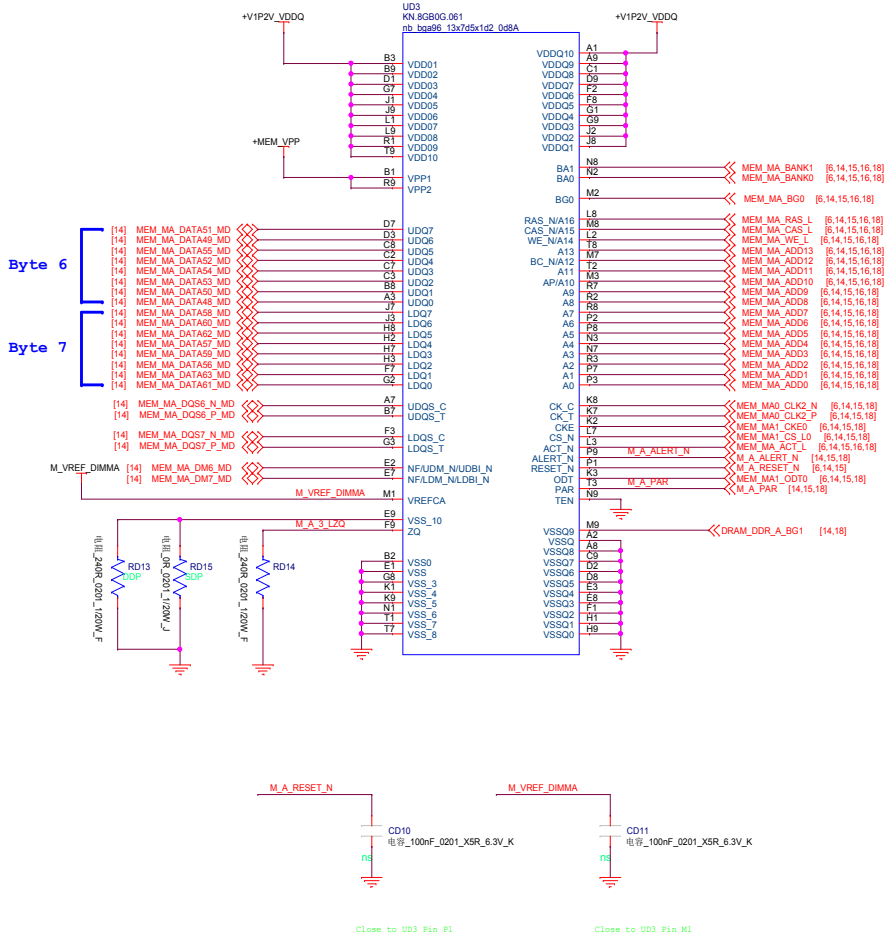
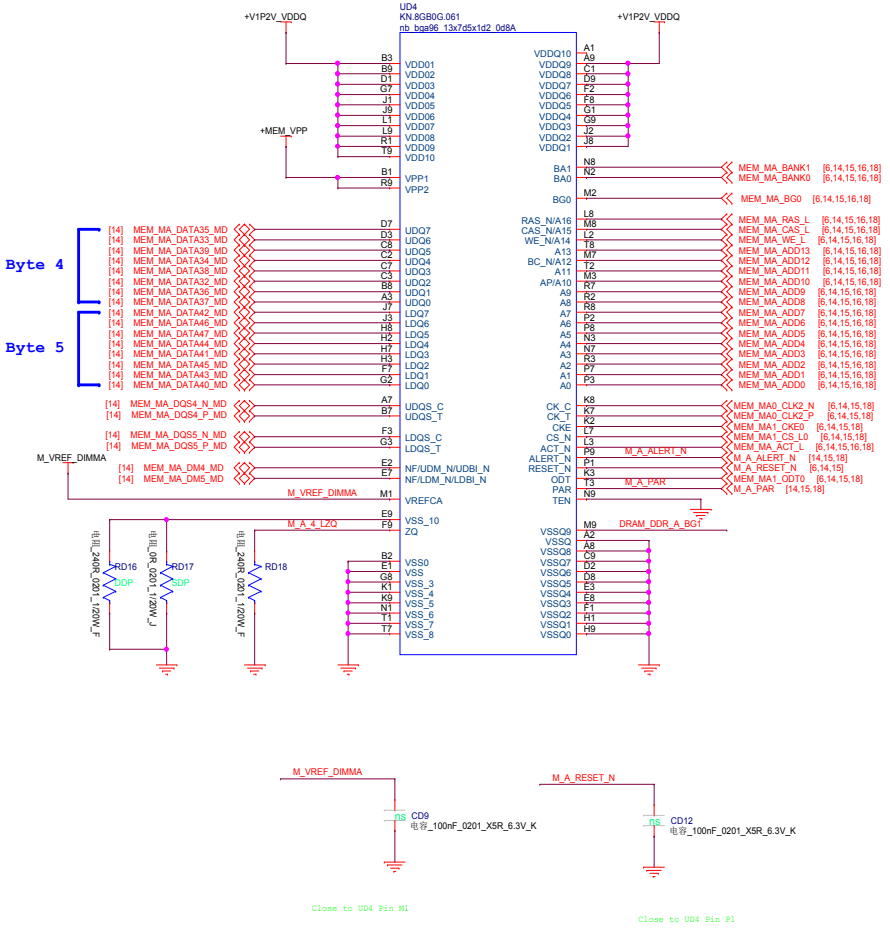
| | REV: V1.0 |




| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | DDR4 CH-A(DEVICE0) | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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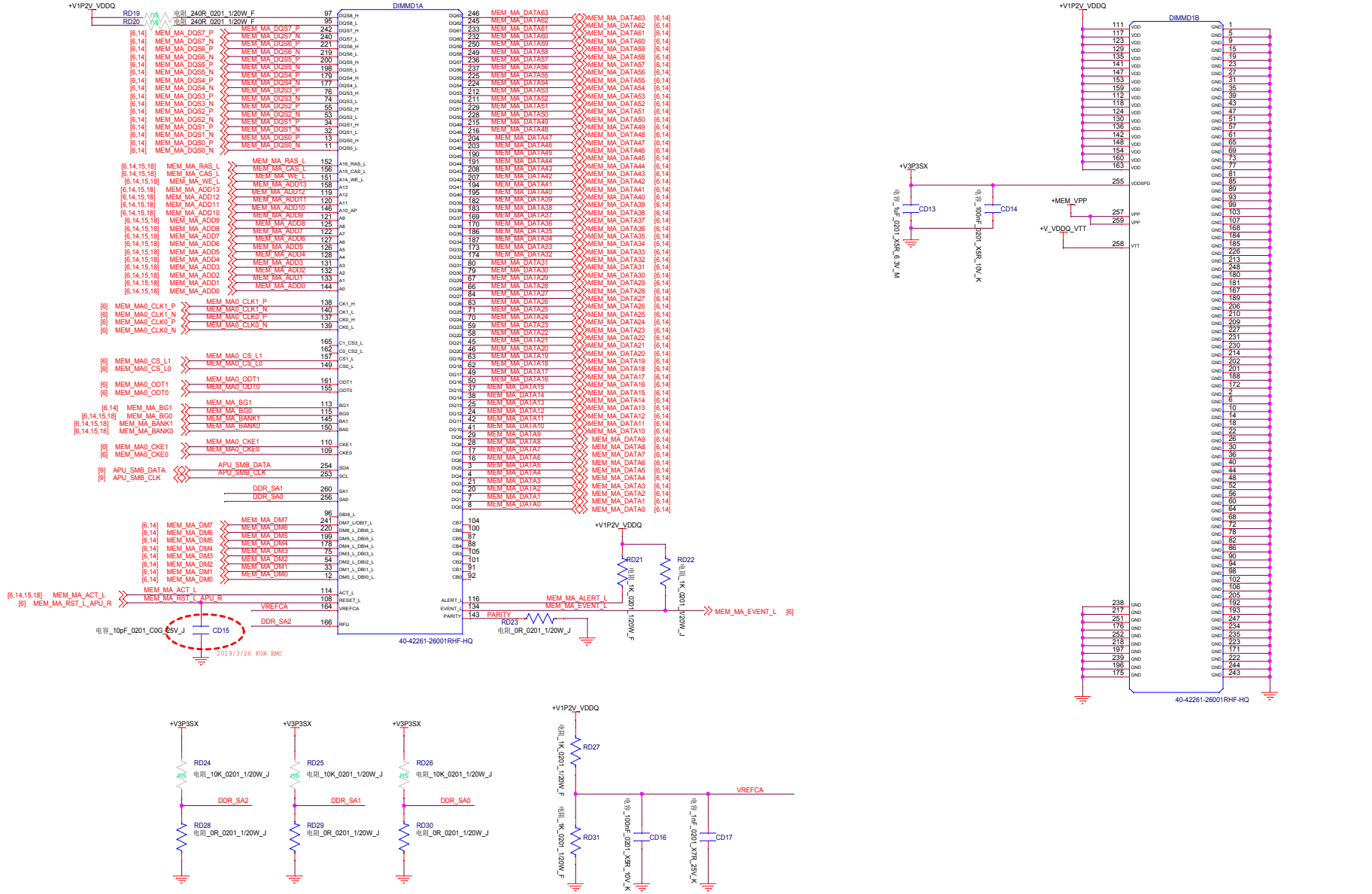


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|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | MEM_SODIMM | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
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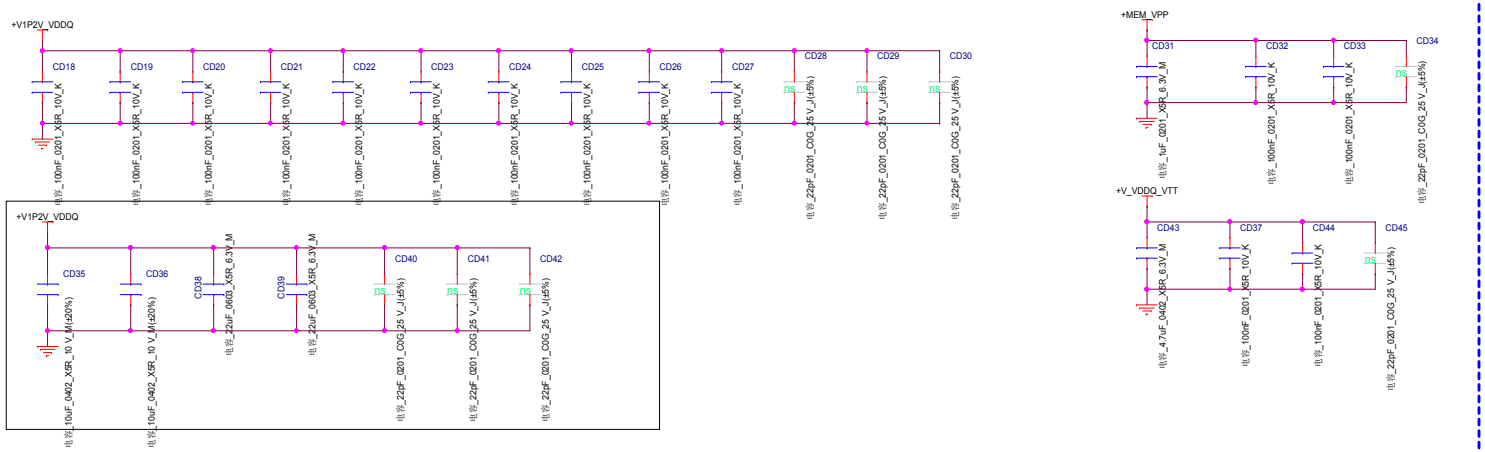
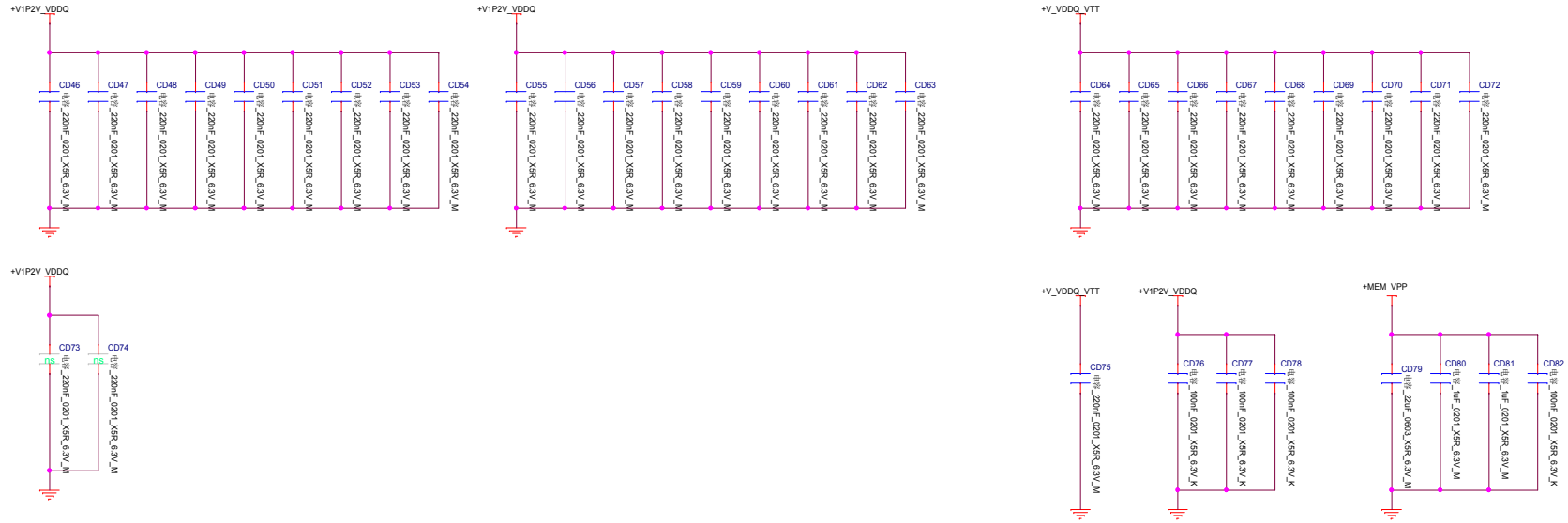
## Layout Note: Place near SODIMM




## DECOUPLING CAPACITORS FOR MEMORY DOWN

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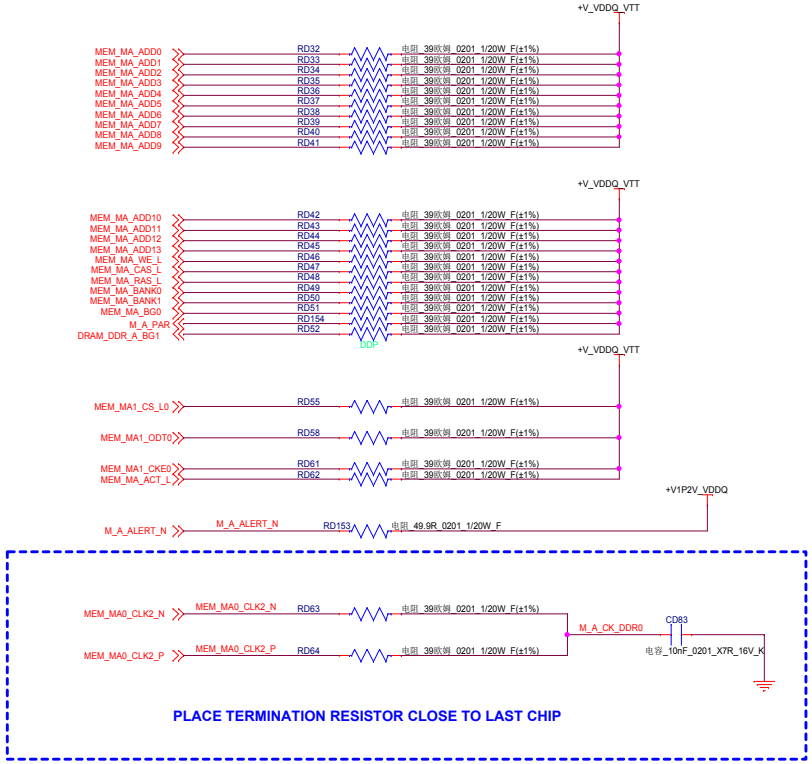
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | MEM_DECAPS | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Monday, April 01, 2019 | Sheet: 17 of 55 | |

# MEMORY TERMINATIONS FOR MEMORY DOWN

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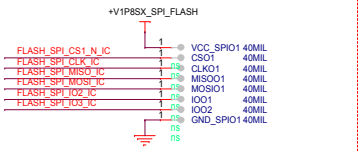
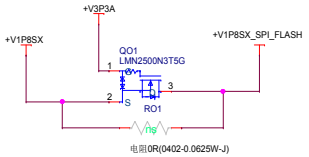
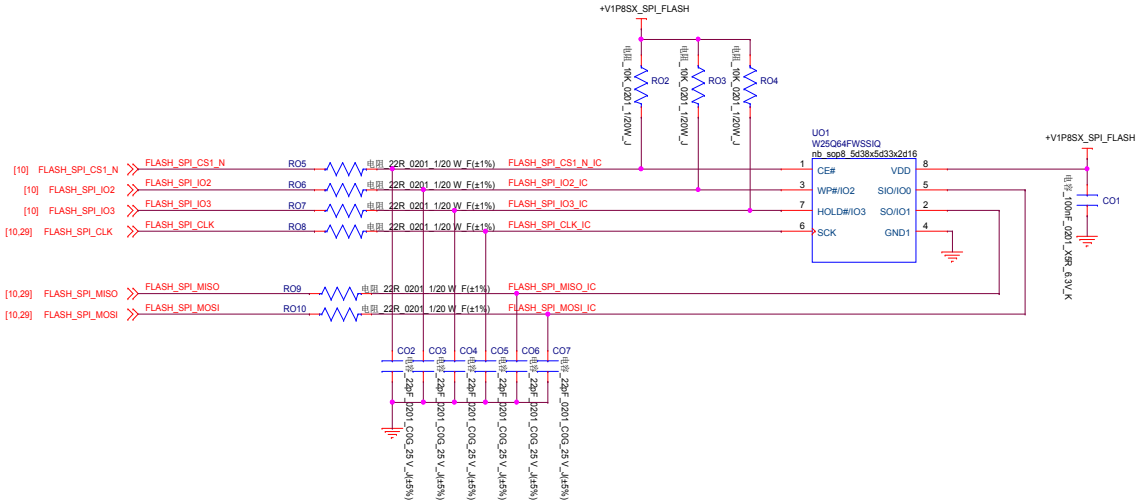
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | MEM_DECAPS | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 18 of 55 | |

## FOR product line

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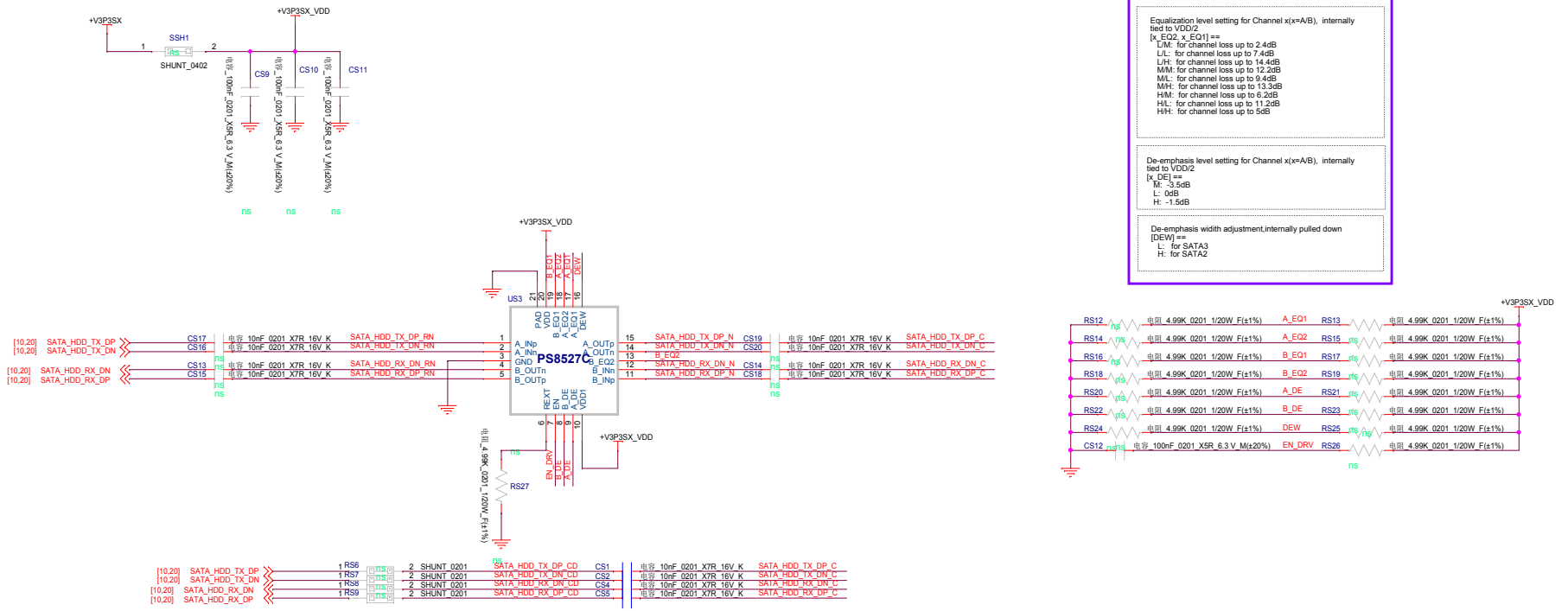
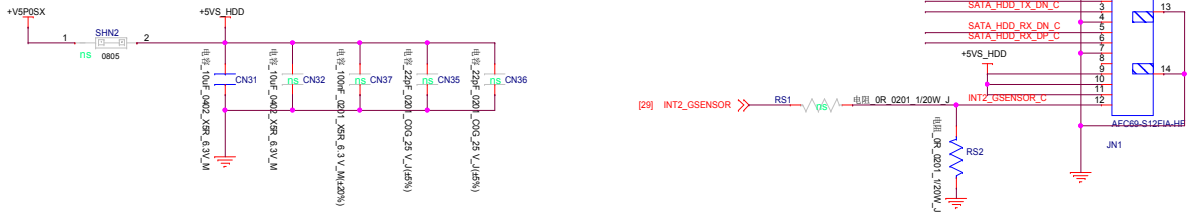
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | SYSTEM_FLASH | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 19 of 55 | |

# SATA Redriver IC




# SATA HDD CONN

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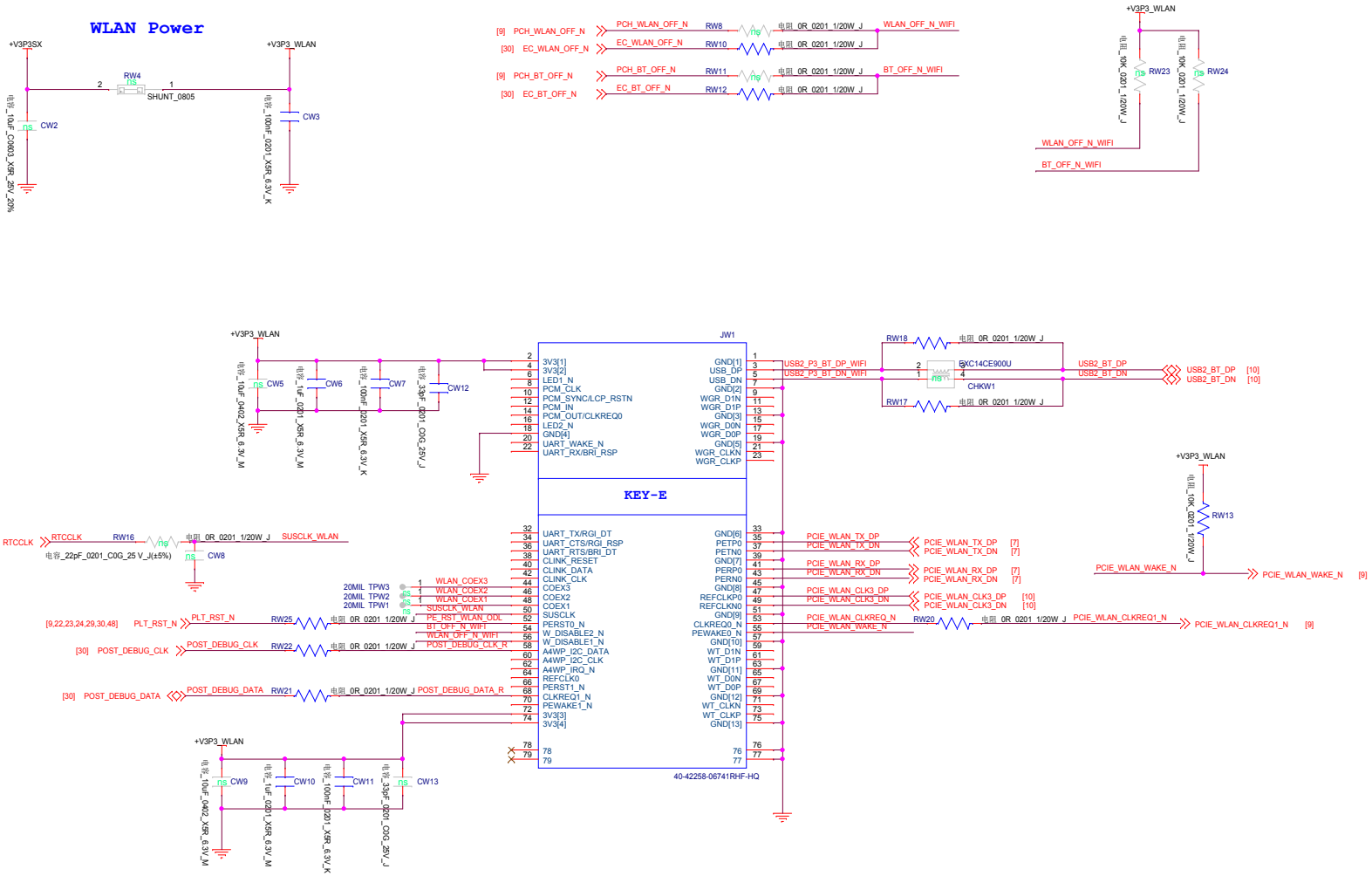
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | HDD | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Saturday, March 30, 2019 | Sheet: 20 of 55 | |

# WLAN

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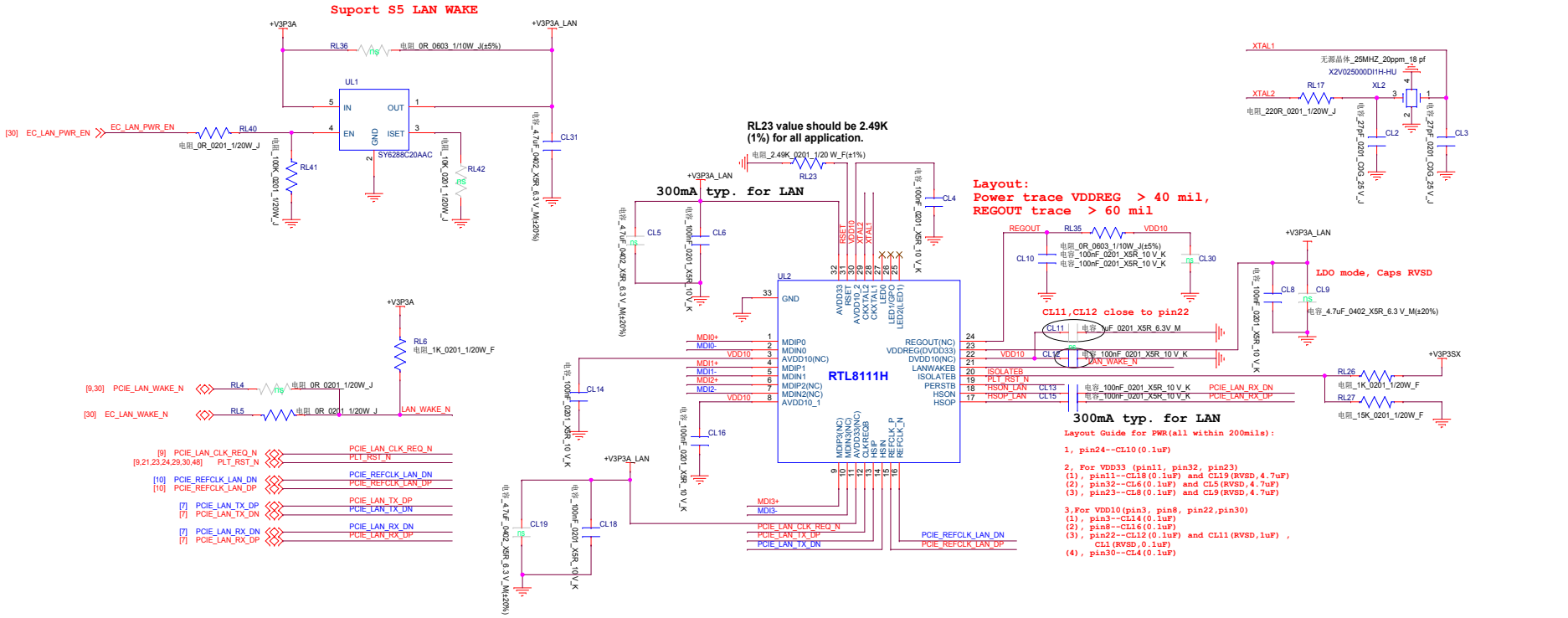
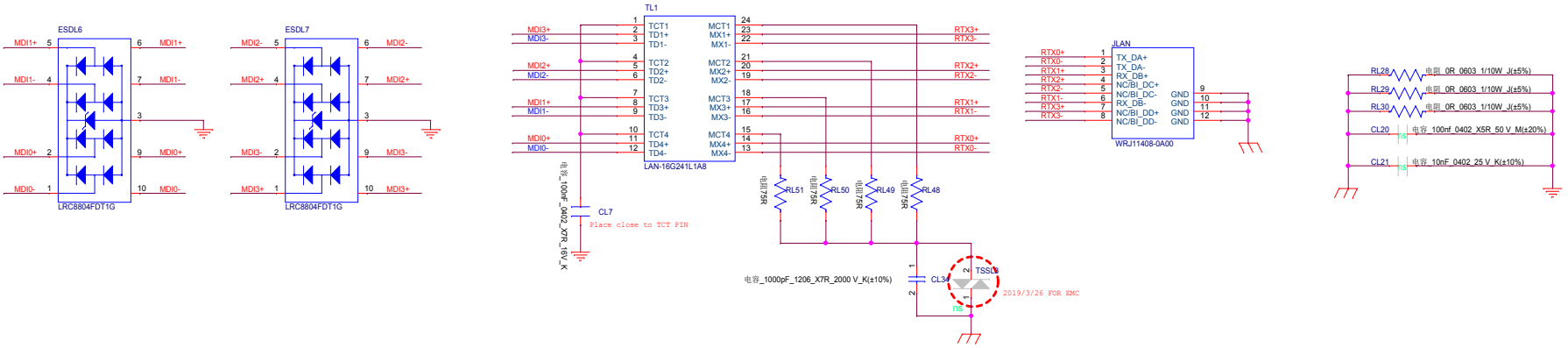
|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | WLAN | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
| Date: Saturday, March 30, 2019 | | Sheet: 21 | of 55 |

# LAN IC RTL8111H




# LAN CONN

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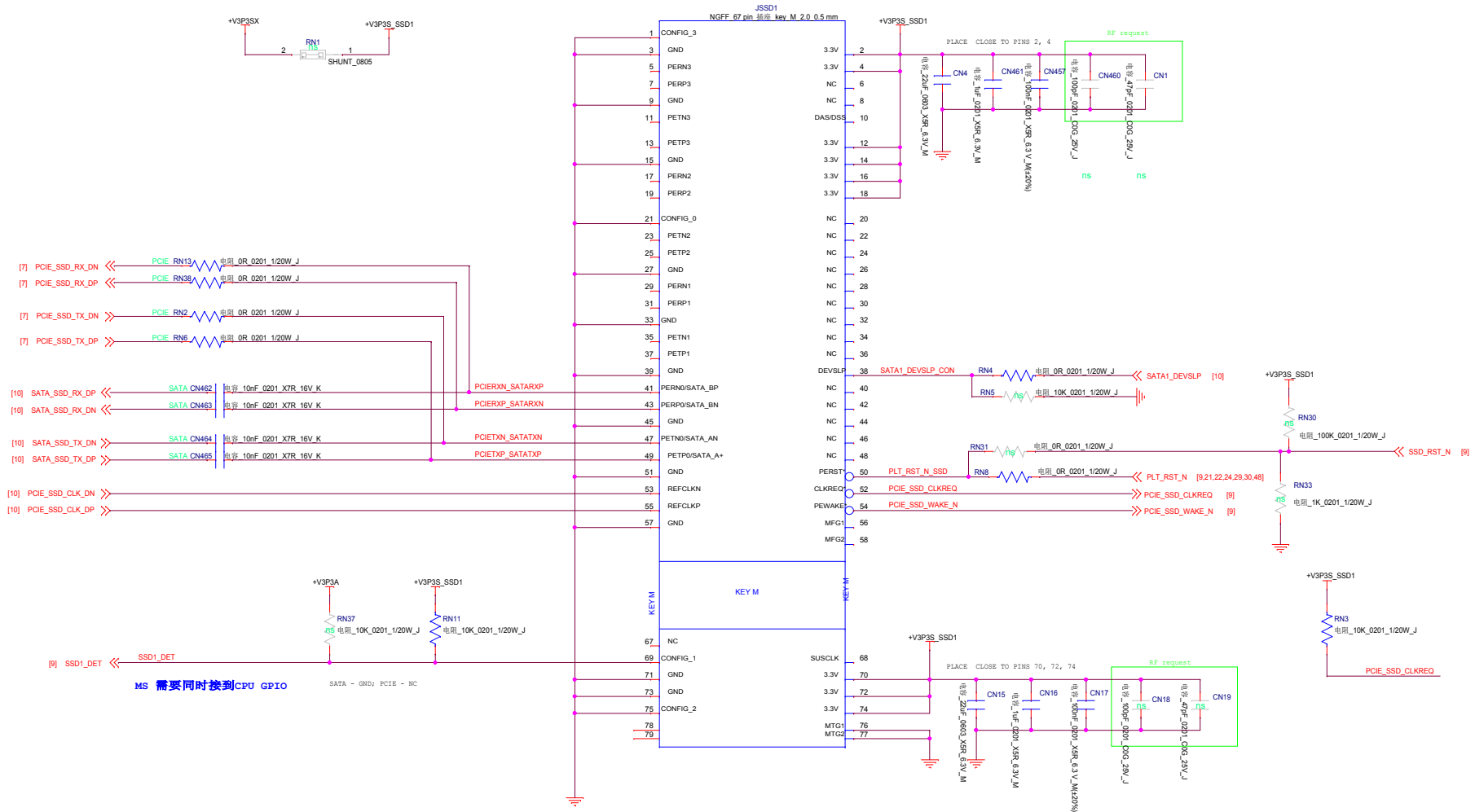
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | LAN | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 22 of 55 | | |

# SSD CONN

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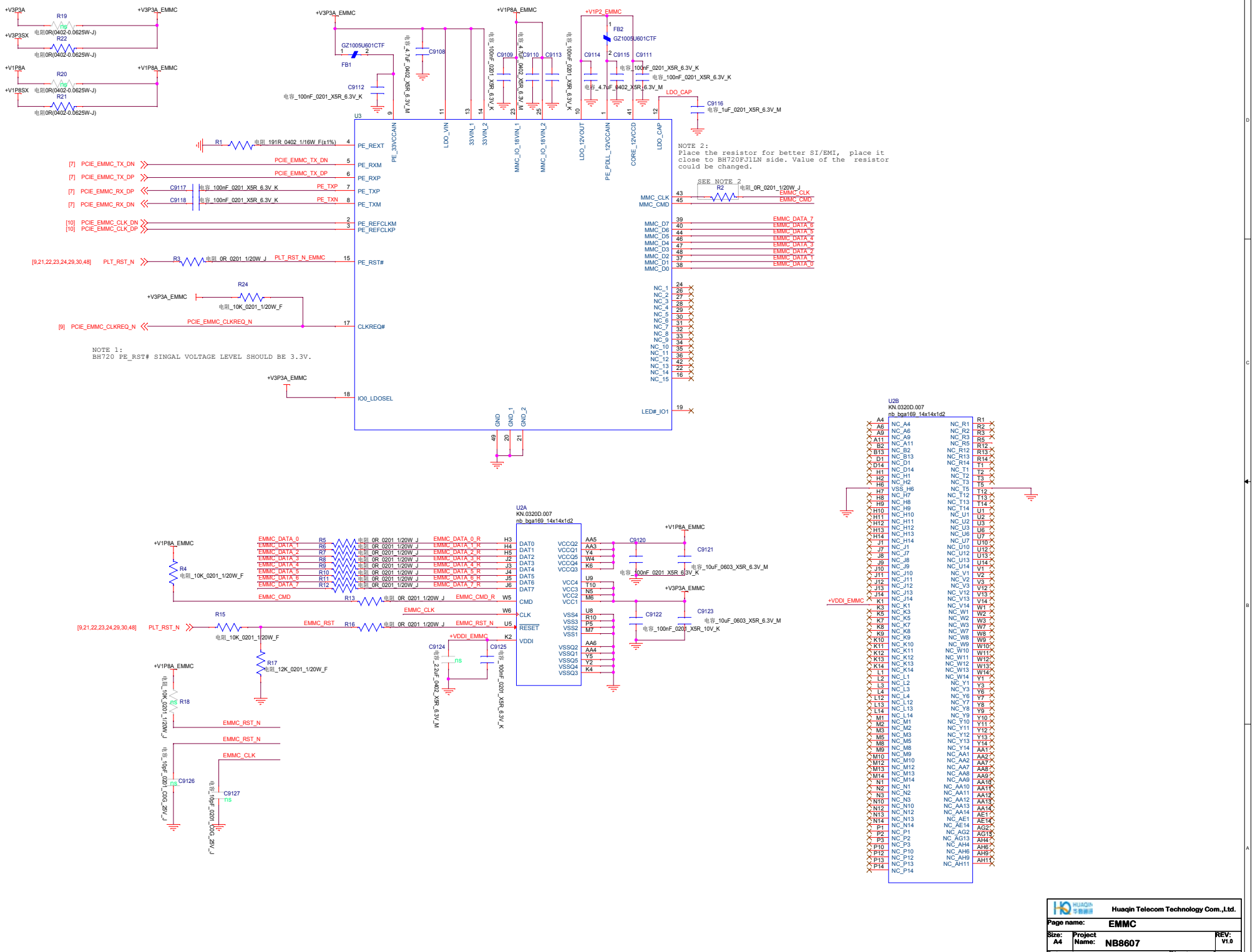
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | SSD | | |
| Size: A4 | Project Name: | NB8607 | REV: V1.0 |
| Date: Saturday, March 30, 2019 | Sheet: 23 | of 55 | |

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| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | EMMC | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
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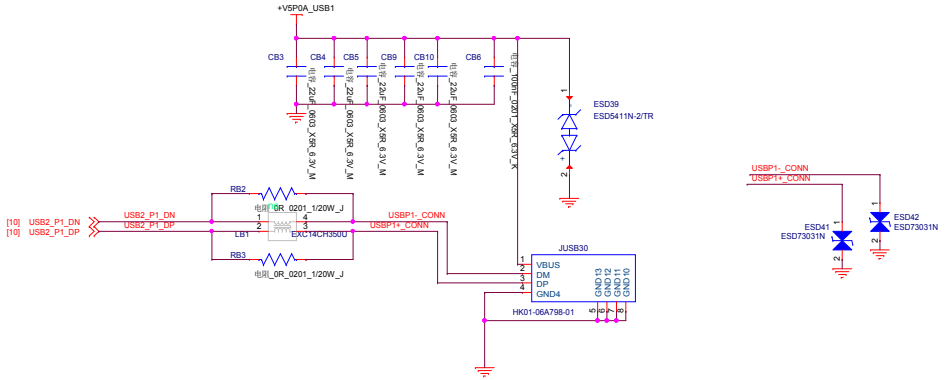
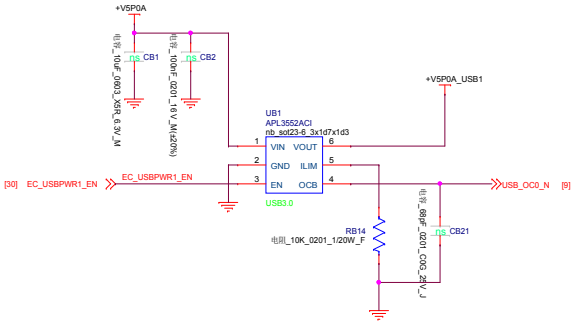
# USB2.0 CONN

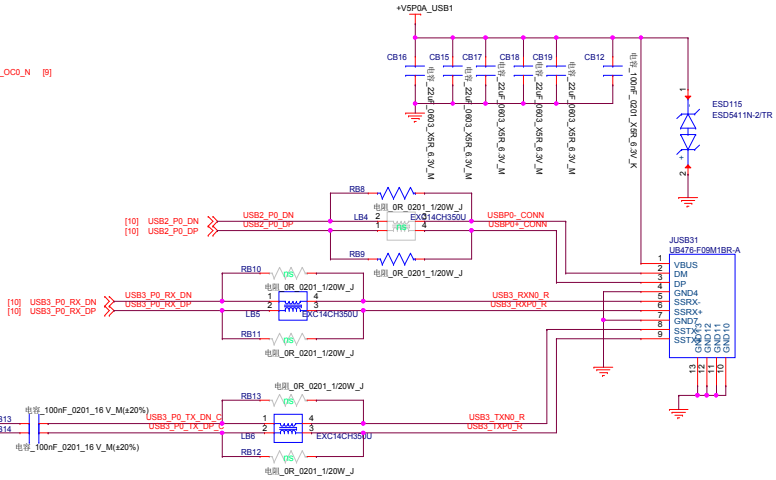


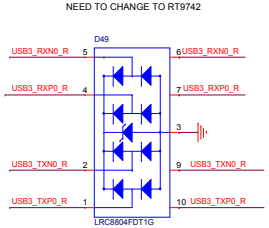


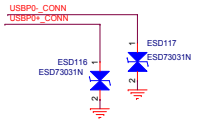


# USB3.0 CONN

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|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | USB3.0 | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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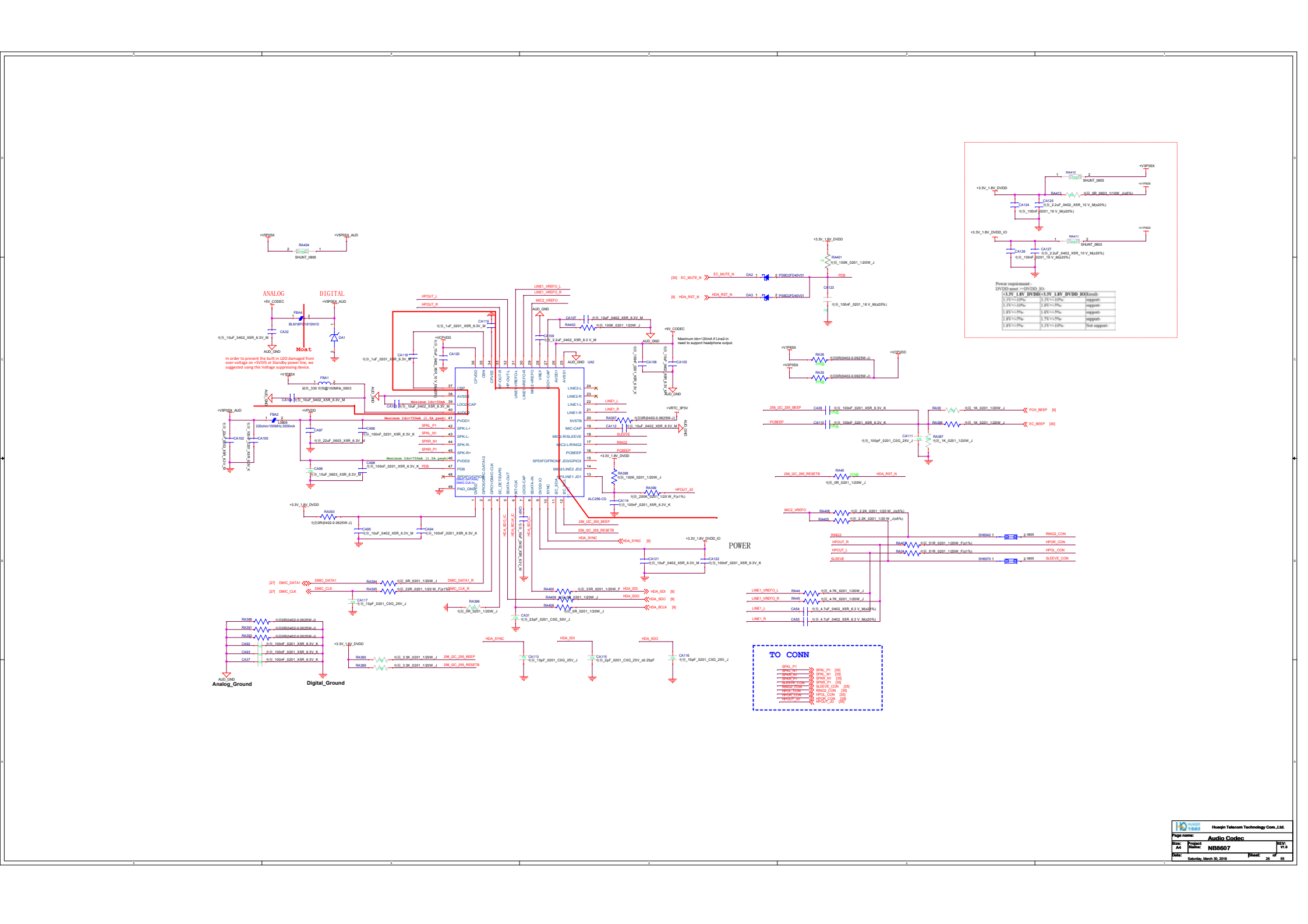
ANALOG
DIGITAL
POWER
Moat
In order to prevent the built-in LDO damaged from over-voltage on +5V/3V5 or Standby power line, we suggested using this Voltage suppressing device.
Maximum Idc=120mA if Line2-in need to support headphone output.
Analog_Ground
Digital_Ground
TO CONN
Power requirement:
DVDD must >=DVDD_IO;
+3.3V_1.8V_DVDD
+3.3V_1.8V_DVDD_IO
Husqin Telecom Technology Com.,Ltd.
Page name:
Audio Codec
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N88607
REV:
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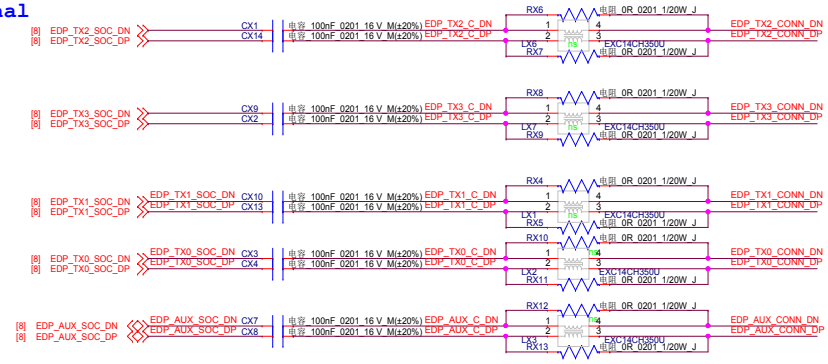
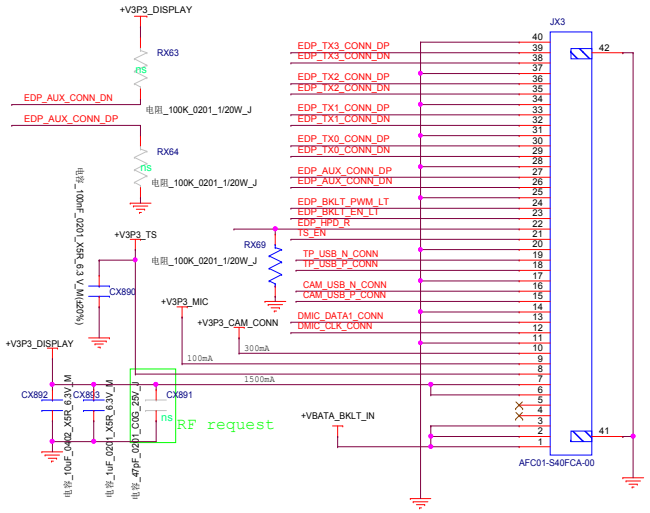
55

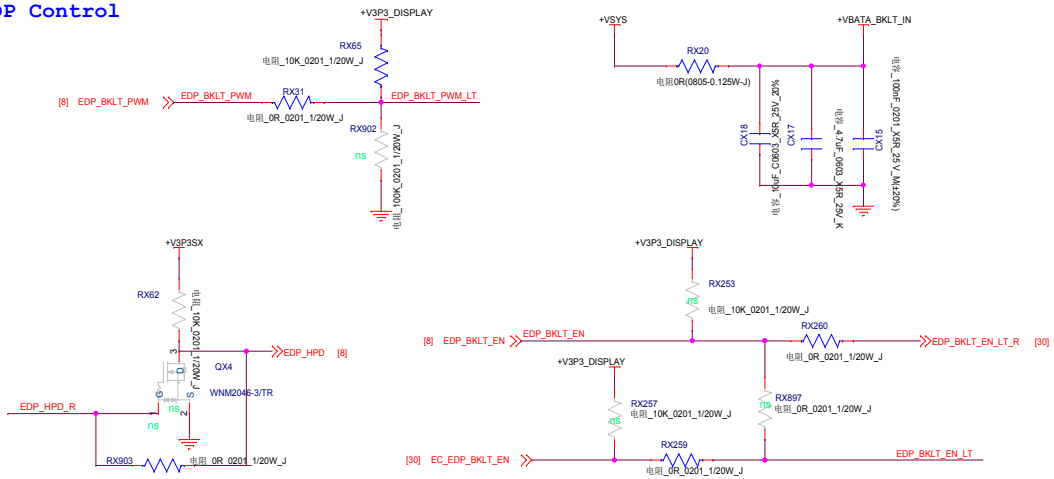
## eDP Signal



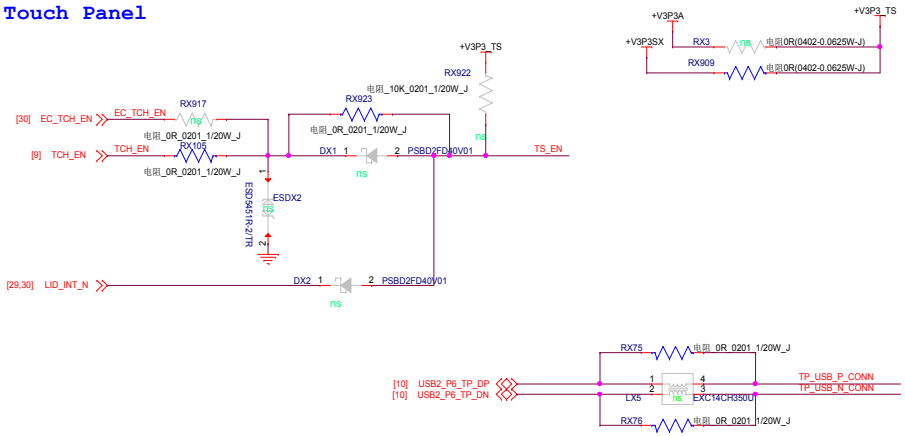

## eDP & CAM & DMIC & Touch Panel CONN



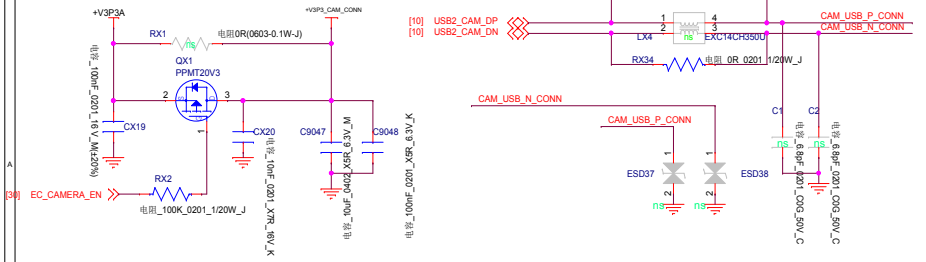

## eDP Control



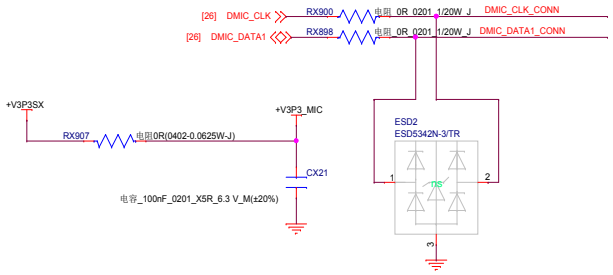

## Touch Panel




## CAM Power




## MIC

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|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | EDP &CAM&MIC | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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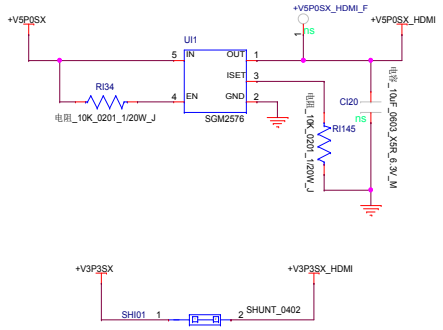
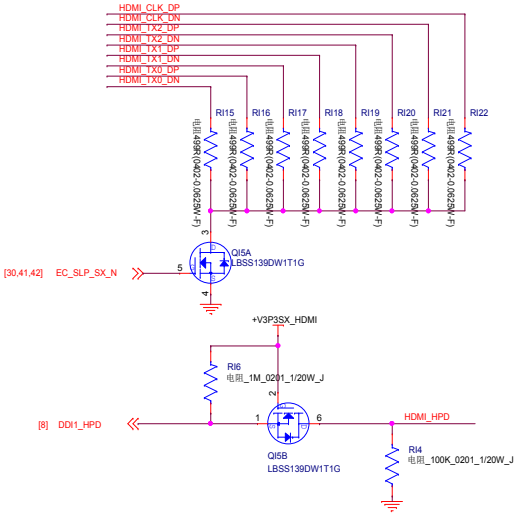
## HDMI power

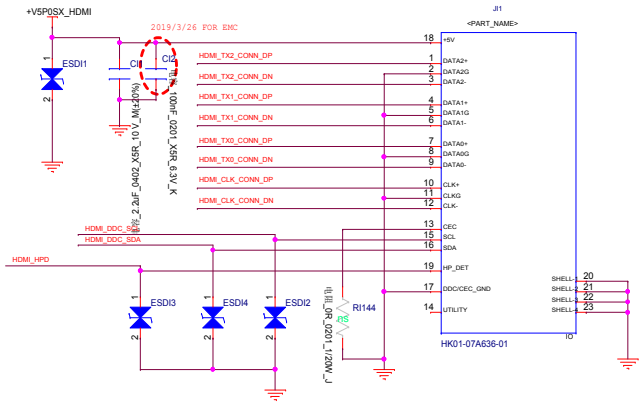




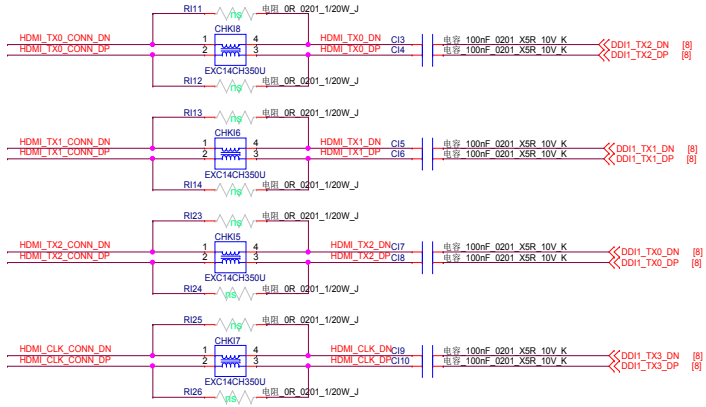




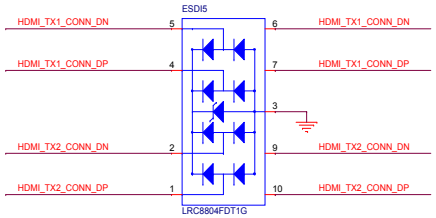

## HDMI CONN

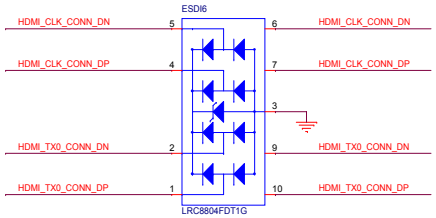


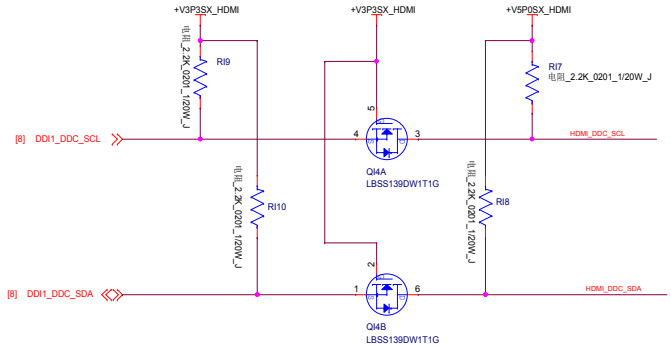

## Signal




## ESD

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| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | HDMI CONTROLLER | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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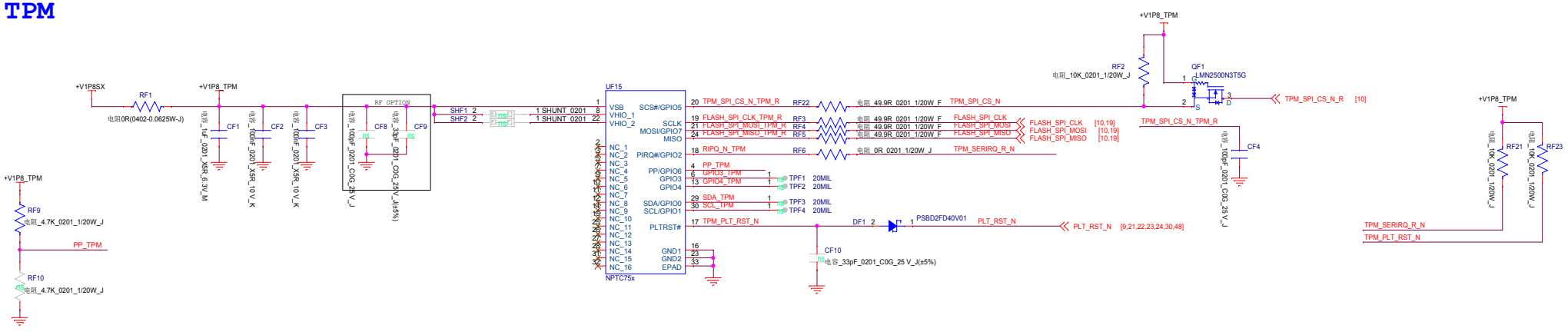
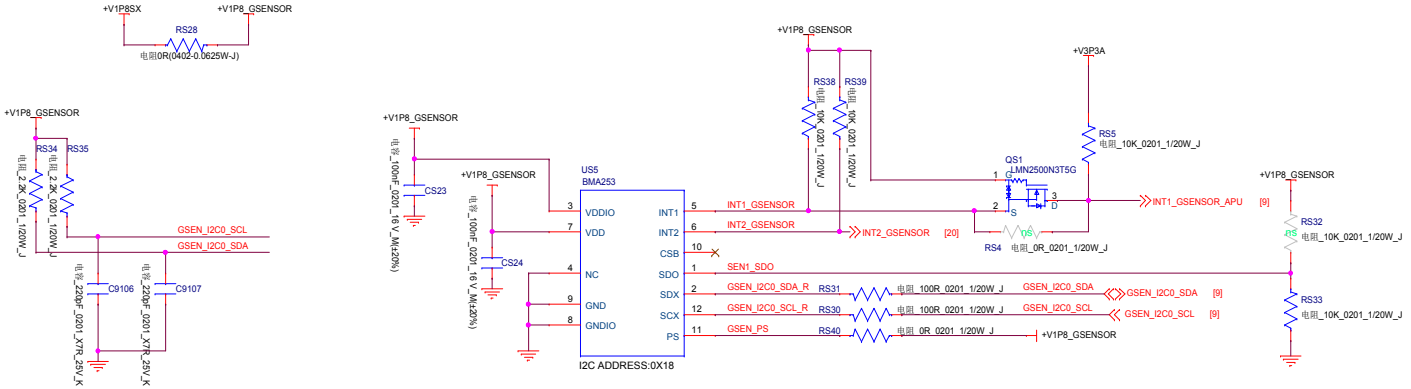
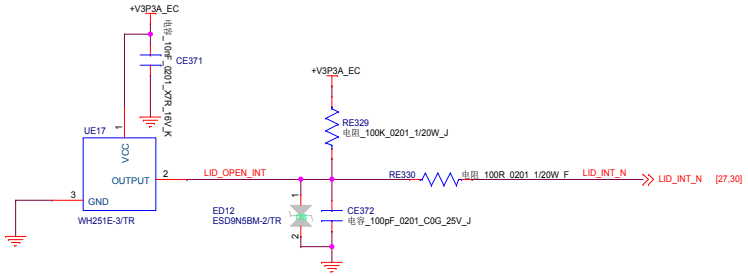
# TPM




# G-SENSOR




# Hall-SENSOR

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|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | TPM&G_SENSORS&HALL | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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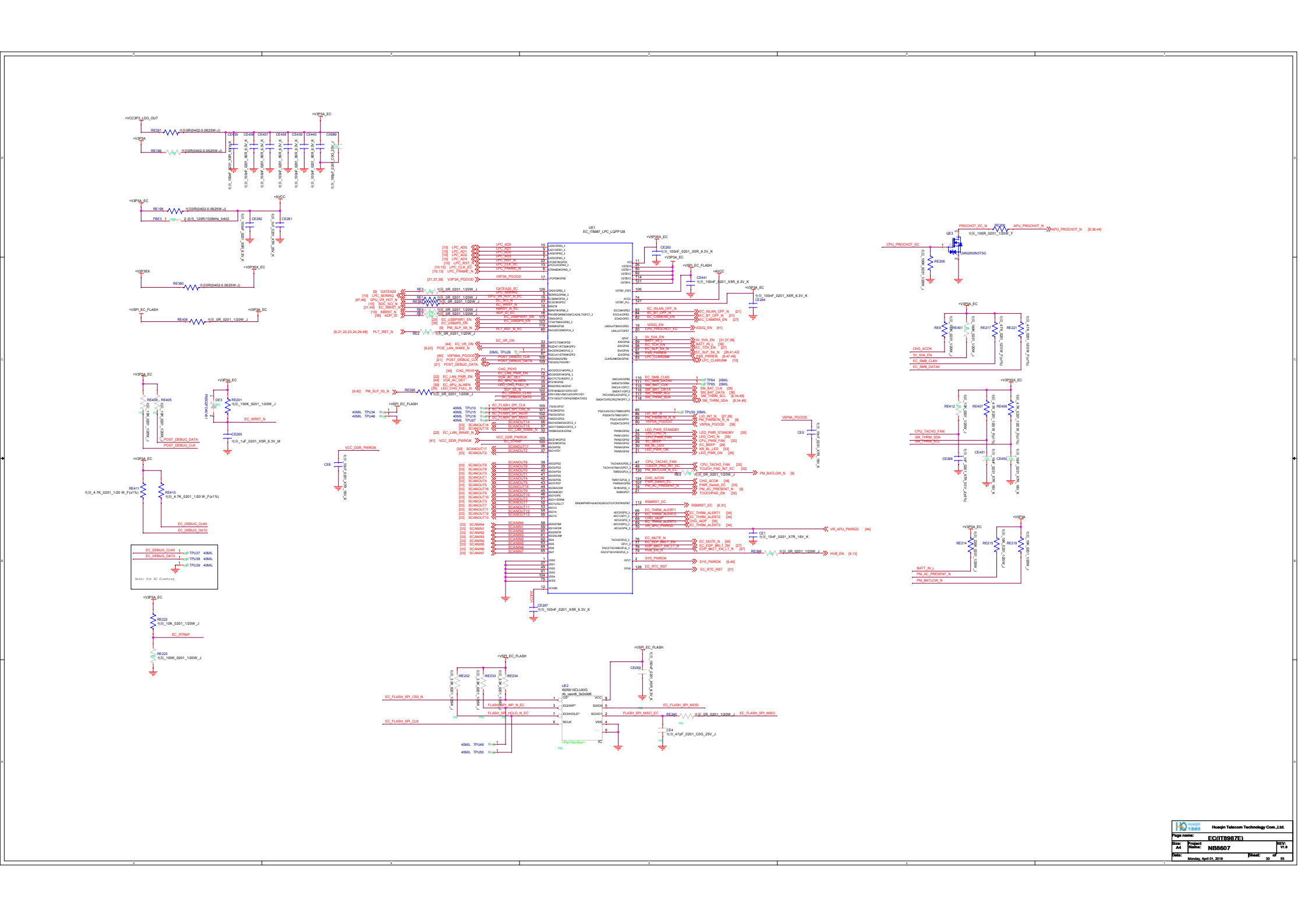
+VCC3P3_LDO_OUT
+V3P3A_EC
+V3P3A
+V3P3SX_EC
+V3P3SX
+AVCC
+VSPI_EC_FLASH
UE1
EC_IT8987_LPC_LQFP128
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC_RST_N
LPC_CLK_EC
LPC_FRAME_N
V3P3A_PGOOD
GATEA20_EC
LPC_SERIRQ
GPU_VR_HOT_N_EC
EC_SCI_N
EC_WRST_N
KBRST_N_EC
ADP_ID_EC
EC_USBPWR1_EN
EC_USB2PD_EN
PLT_RST_N_EC
EC_VR_ON
EC_FLASH_SPI_CLK
EC_FLASH_SPI_CS0_N
EC_FLASH_SPI_MOSI
EC_FLASH_SPI_MISO
SCANOUT0
SCANOUT1
SCANOUT2
SCANOUT3
SCANOUT4
SCANOUT5
SCANOUT6
SCANOUT7
SCANOUT8
SCANOUT9
SCANOUT10
SCANOUT11
SCANOUT12
SCANOUT13
SCANIN0
SCANIN1
SCANIN2
SCANIN3
SCANIN4
SCANIN5
SCANIN6
SCANIN7
EC_WLAN_OFF_N
EC_BT_OFF_N
EC_CAMERA_EN
VDDQ_EN
CPU_PROCHOT_EC
3V_5VA_EN
BATT_VR_L
EC_TCH_EN
EC_SLP_SX_N
FAN_PWREN
LPC_CLKRUN#
EC_SMB_CLK0
EC_SMB_DAT0
SM_BAT_CLK
SM_BAT_DATA
SM_THRM_SCL
SM_THRM_SDA
LED_INT_N
PM_PWRBTN_R_N
VSPI0A_PGOOD
LED_PWR_STANDBY
LED_CHG_N
CPU_PWM_FAN
EC_BEEP
KB_BL_LED
LED_PWR_ON
CPU_TACHO_FAN
TOUCH_PAD_INT_EC
PM_BATLOW_N_EC
CHG_ACOK
PWR_Switch_EC
PM_AC_PRESENT_N
TOUCHPAD_EN
RSMRST_EC
EC_THRM_ALERT1
EC_THRM_ALERT2
FAN_IADP
EC_THRM_ALERT3
VR_APU_PWRGD
EC_MUTE_N
EC_EDP_BKLT_EN
EDP_BKLT_EN_LT_R
EC_RTC_RST
SYS_PWROK
VCC_DDR_PWROK
PM_SLP_S3_N
PM_SLP_S5_N
PLT_RST_N
HVB_EN
PROCHOT_EC_N
APU_PROCHOT_N
CPU_PROCHOT_EC
CHG_ACOK
3V_5VA_EN
EC_SMB_CLK0
EC_SMB_DAT0
CPU_TACHO_FAN
SM_THRM_SDA
SM_THRM_SCL
BATT_IN_L
PM_AC_PRESENT_N
PM_BATLOW_N
EC_STRAP
EC_DEBUG_CLK0
EC_DEBUG_DAT0
POST_DEBUG_DATA
POST_DEBUG_CLK
EC_WRST_N
Note: For EC flashing
Husqin Telecom Technology Com.,Ltd.
Page name:
EC(IT8987E)
Size: A4
Project Name:
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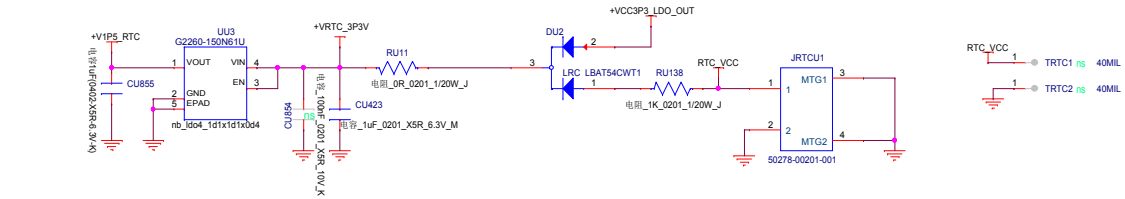


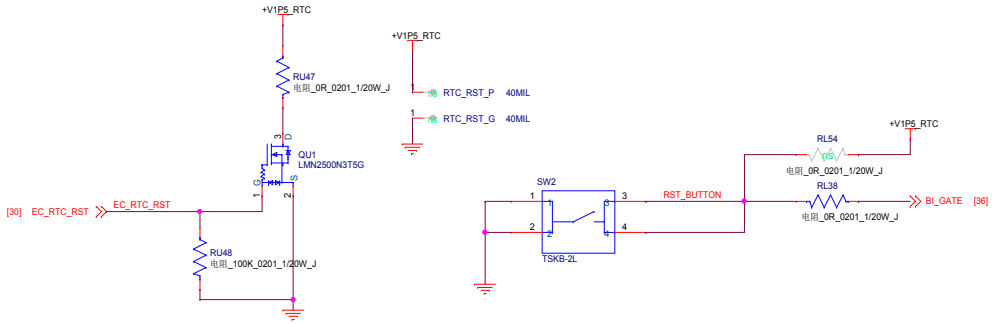


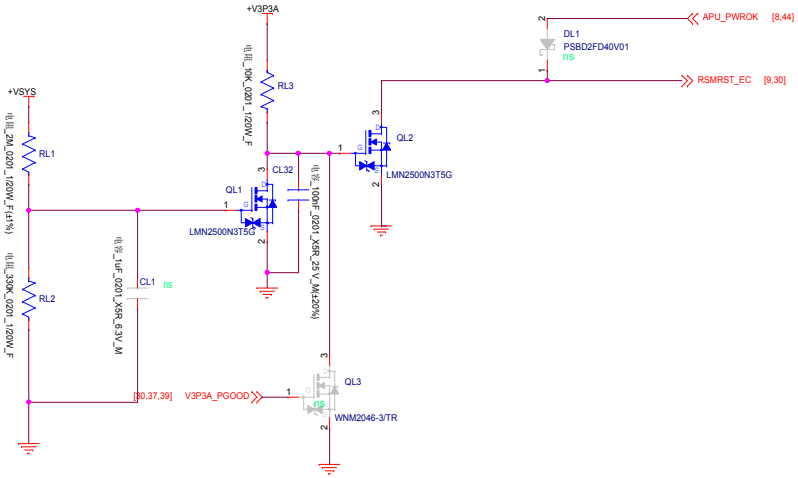


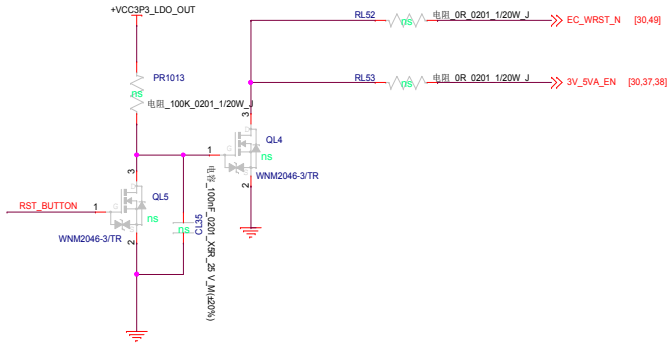


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|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | RTC | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
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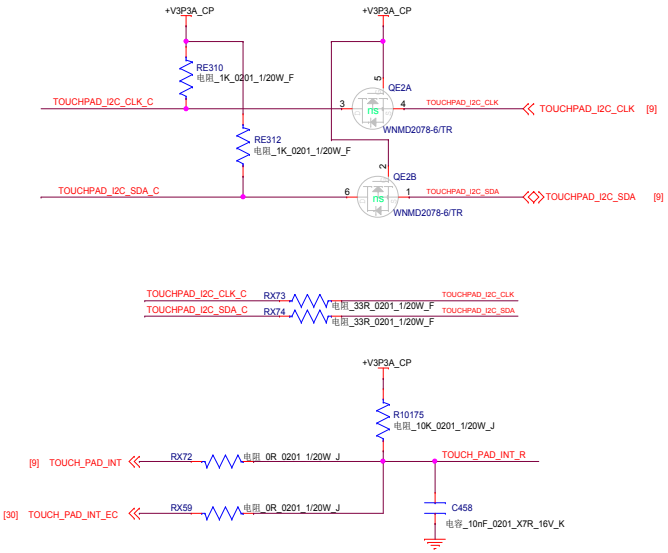
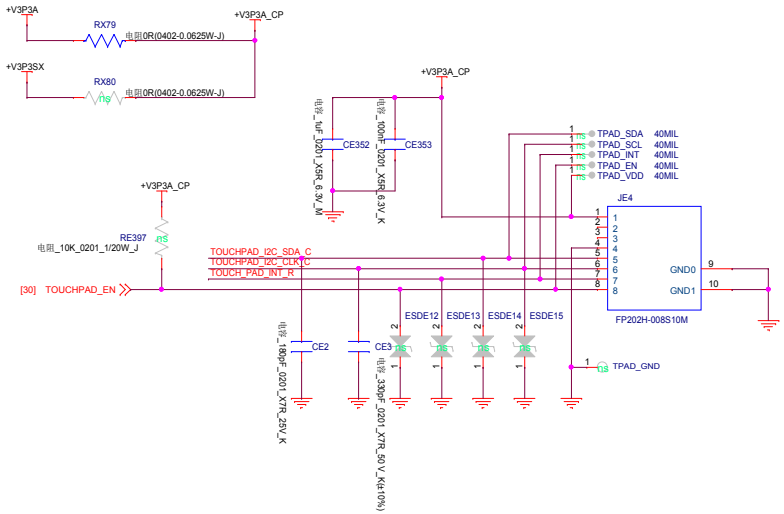
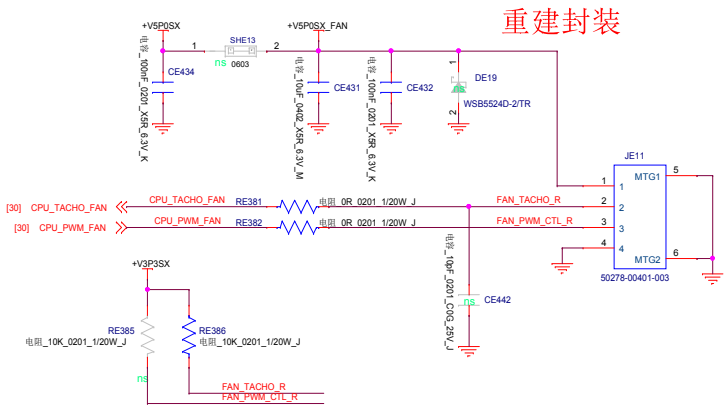
# TOUCH PAD

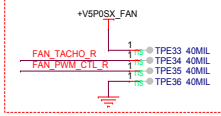



# FAN CONN




**FOR product line**

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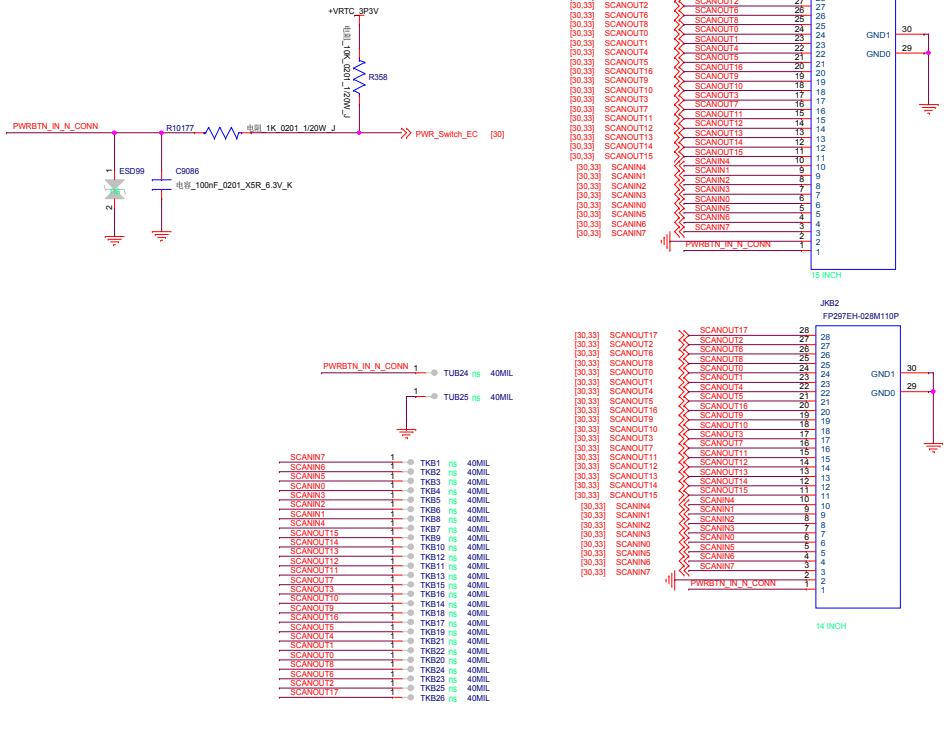
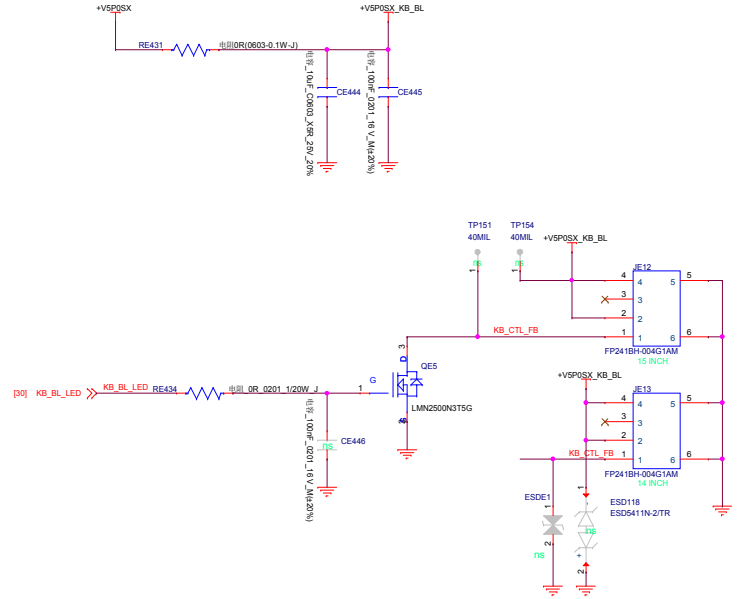
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | TouchPad&FAN | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 32 of 55 | |

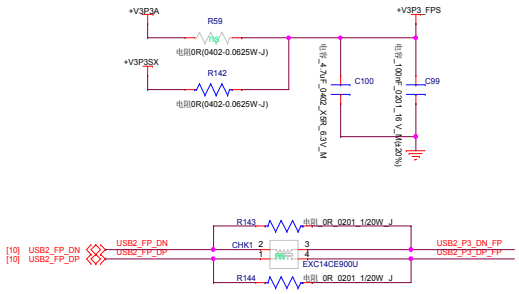
## KB CONN



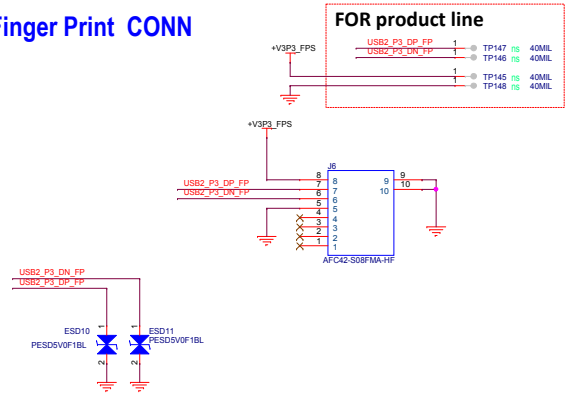

## KB Backlight




## Finger Print

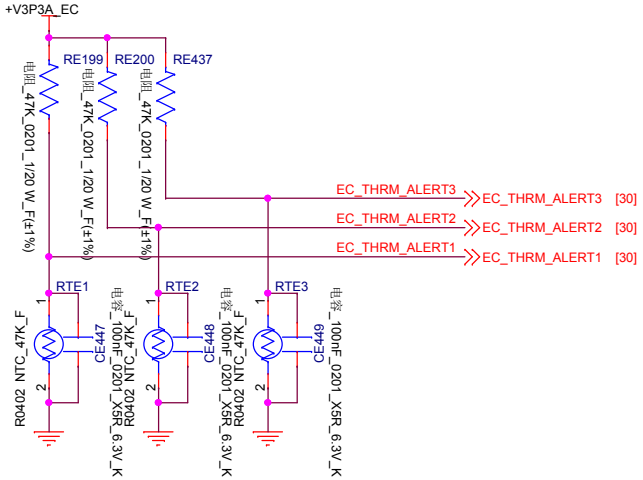


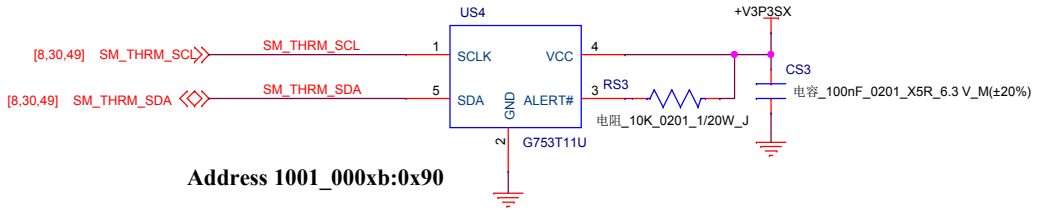

## Finger Print CONN




| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | KB CON&KB BLt&FP | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Saturday, March 30, 2019 | Sheet: 33 of 55 | |

# Thermal sensor

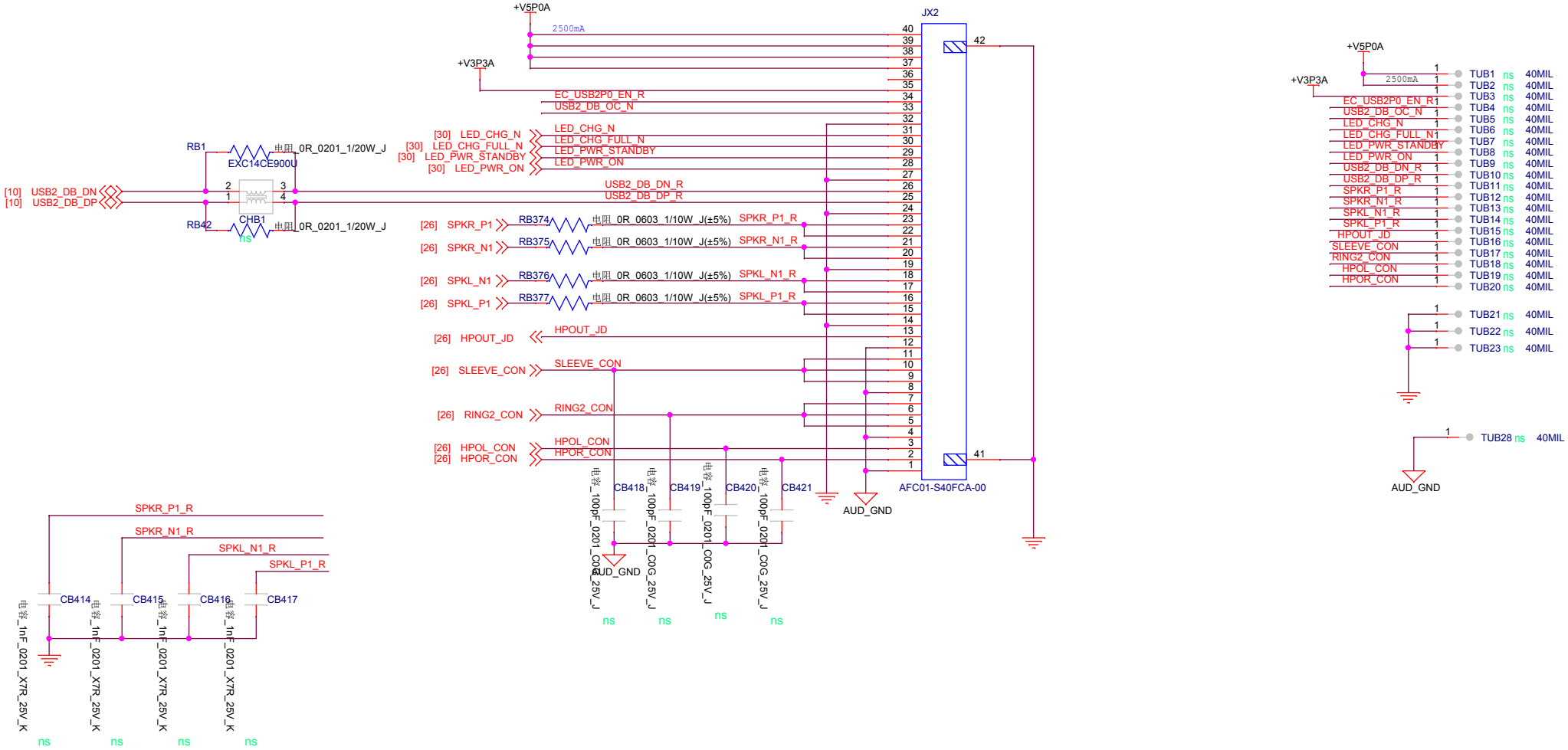


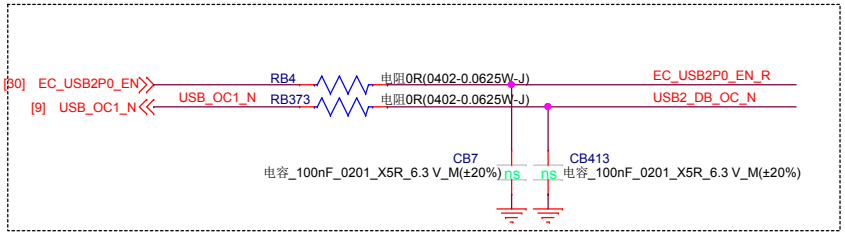




**Address 1001_000xb:0x90**

| | | | |
|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | Thermal sensor | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
| Date: Saturday, March 30, 2019 | | Sheet: 34 | of 55 |

# IO Board Conn

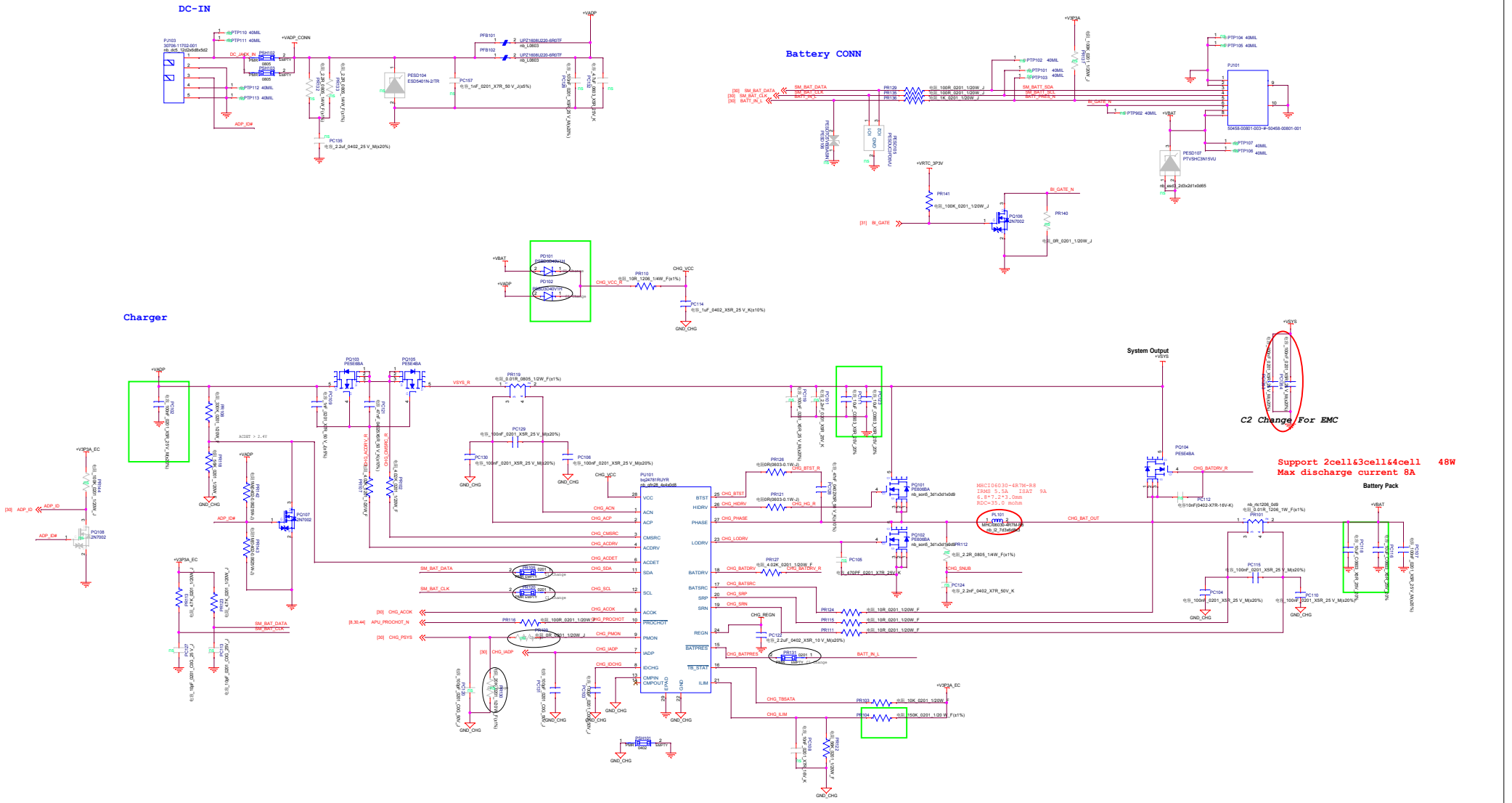


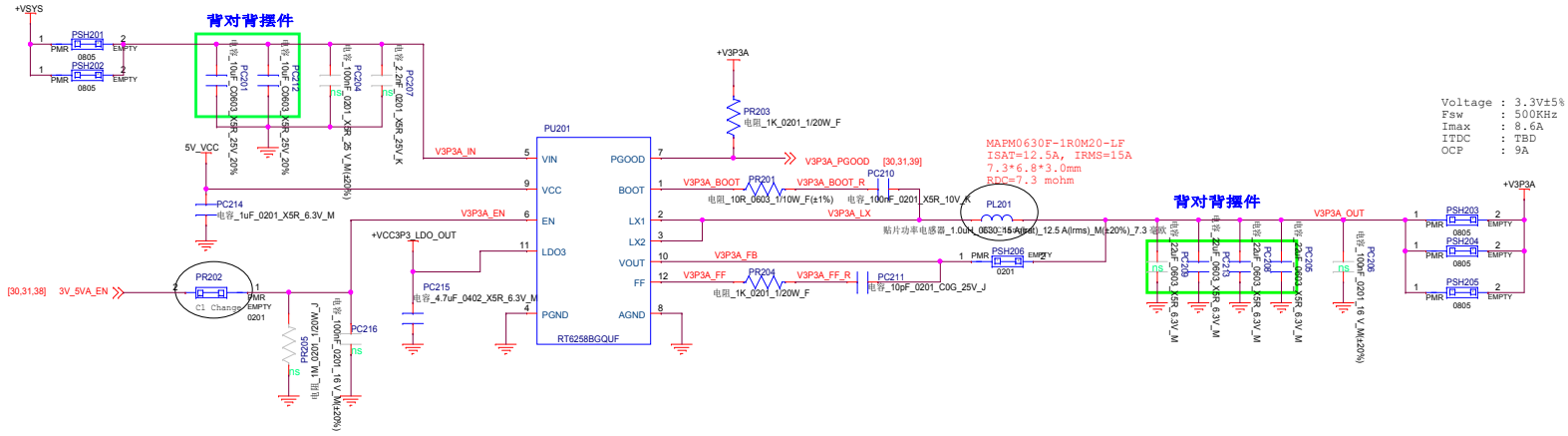




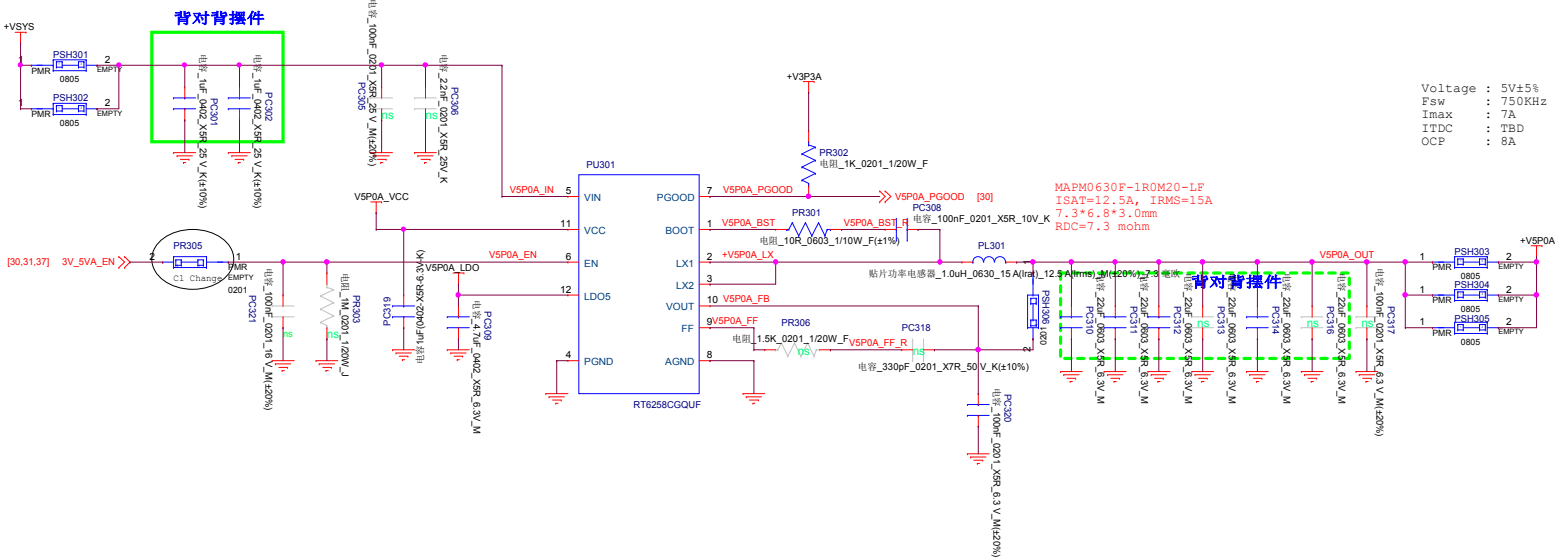
| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | IO Board Conn | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 35 of 55 | |


DC-IN
Battery CONN
Charger
System Output
Battery Pack
C2 Change For EMC
Support 2cell&3cell&4cell 48W
Max discharge current 8A
MRCID6030-4R7M-R8
IRMS 5.5A ISAT 9A
6.8*7.2*3.0mm
RDC=35.0 mohm
Huaqin Telecom Technology Com.,Ltd.
Page name: BATTERY CHARGER
Size: A4
Project Name: NB8607
REV: V1.0
Date: Friday, March 29, 2019
Sheet: 38 of 55

## +V3P3A

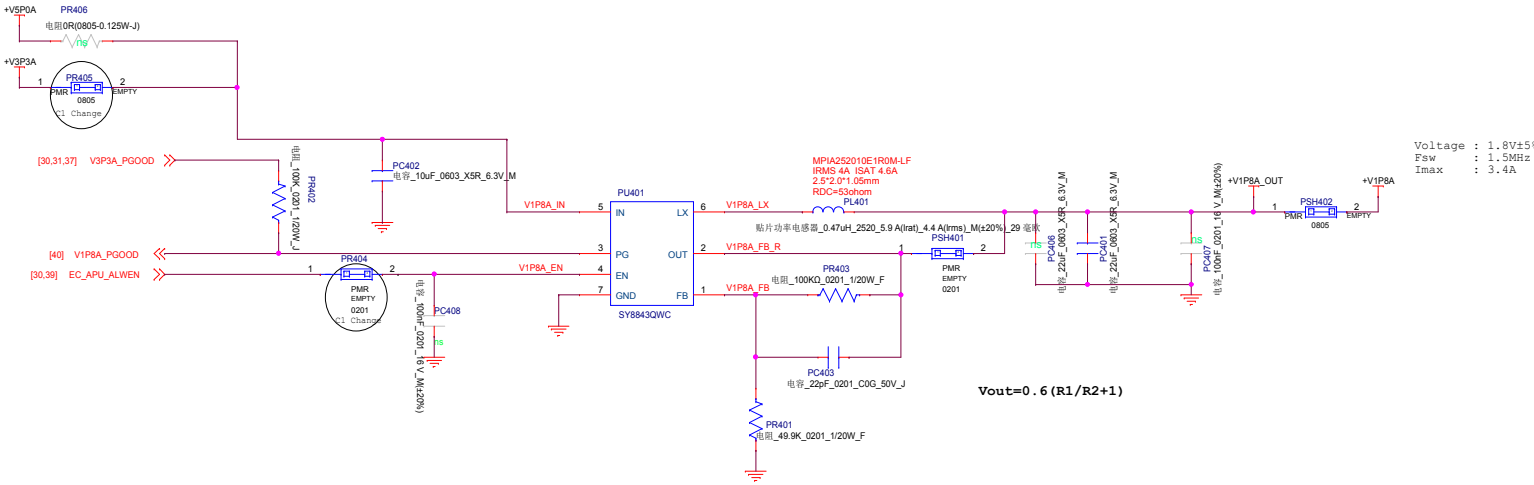



| | |
|---|---|
| Huaqin Telecom Technology Com.,Ltd. | |
| Page name: | POWER DELIVERY 3.3V |
| Size: A4 | Project Name: NB8607 |
| REV: V1.0 | |
| Date: Friday, March 29, 2019 | Sheet: 37 of 55 |

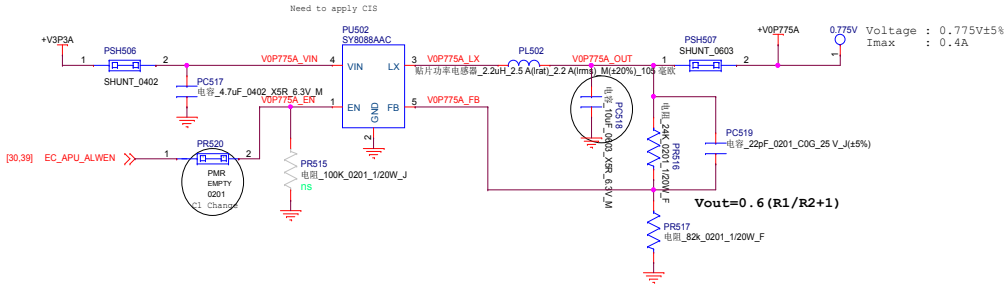



| | | | |
|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | POWER DELIVERY 5V | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
| Date: Friday, March 29, 2019 | | Sheet: 38 | of 55 |

## +V1P8A

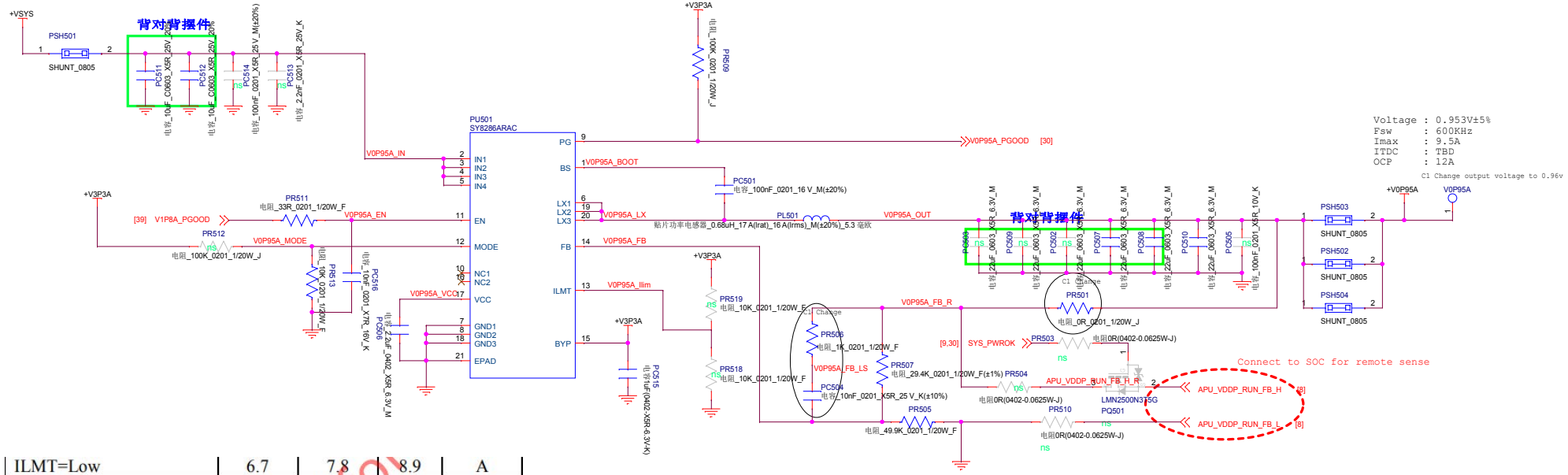



## +V0P775A



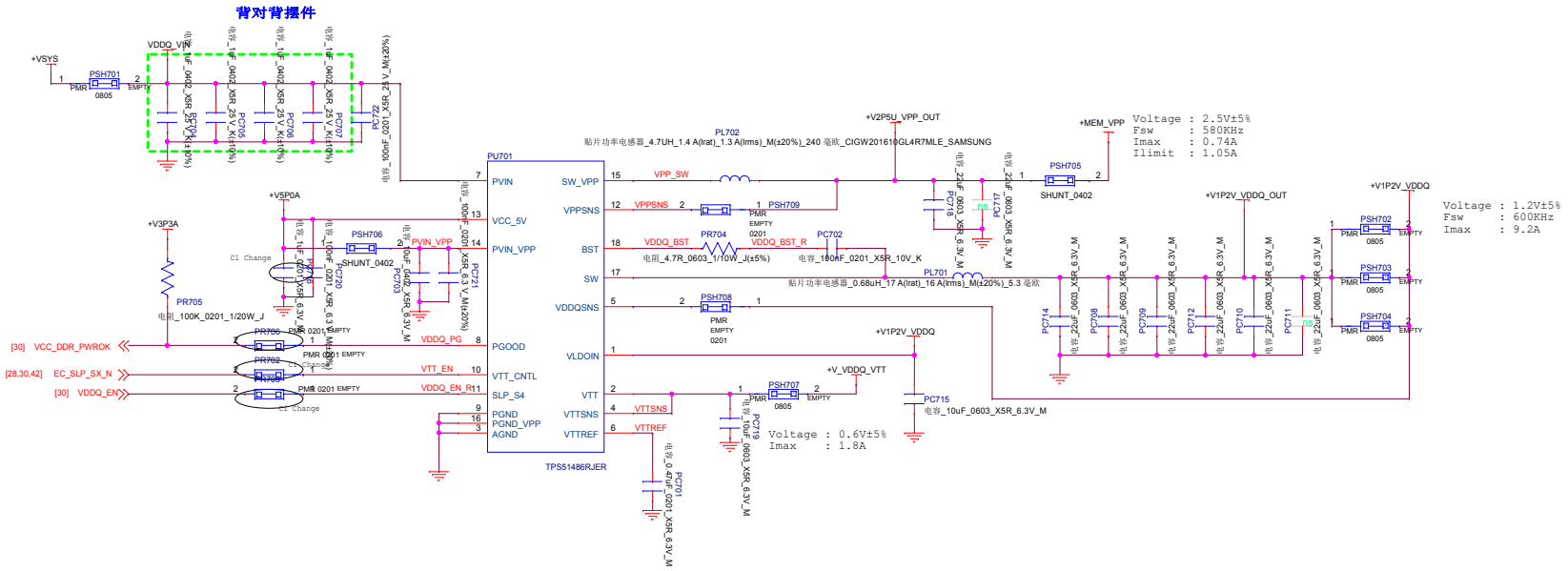

| | | | |
|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | POWER DELIVERY 1.8V/0.775A | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 39 | of | 55 |

# +V0P95A

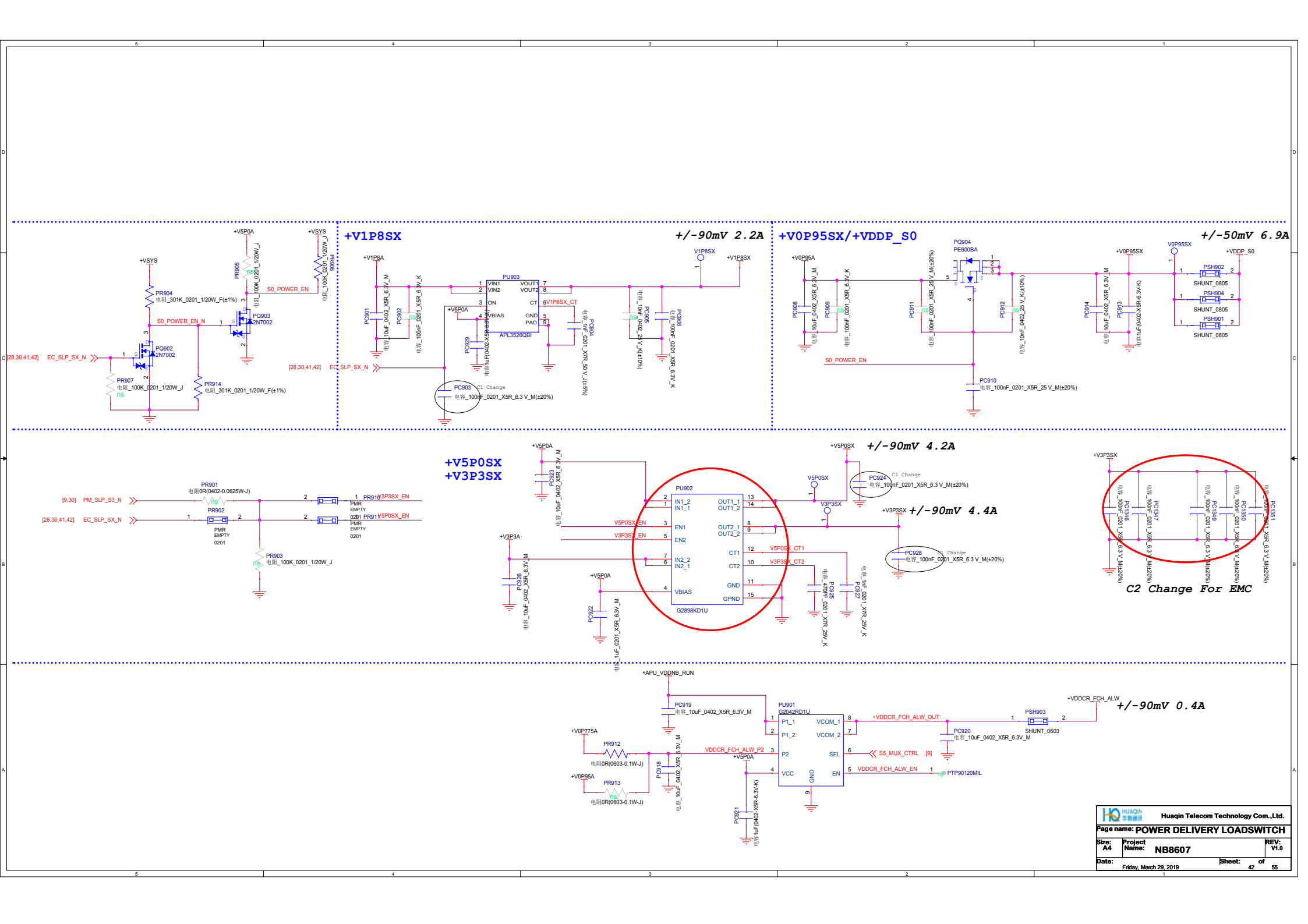



| | | | | |
|---|---|---|---|---|
| ILMT=Low | 6.7 | 7.8 | 8.9 | A |
| ILMT=Floating | 9.3 | 10.6 | 11.9 | A |
| ILMT=High | 12 | 13.3 | 14.8 | A |

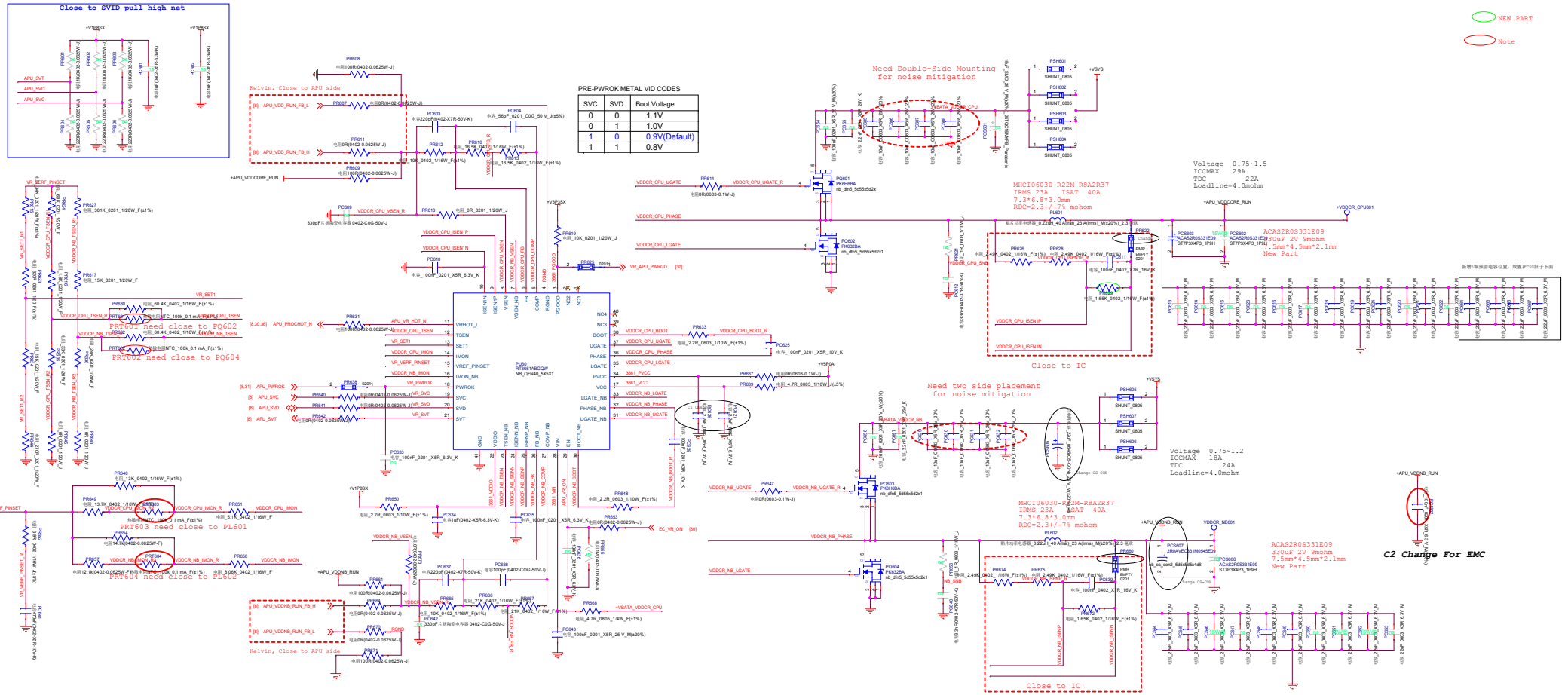
| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: POWER DELIVERY 0.95V | | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 40 of 55 | |




| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: POWER DELIVERY 1.2V & 2.5V | | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 41 of 55 | |


+V1P8SX
+/-90mV 2.2A
+V0P95SX/+VDDP_S0
+/-50mV 6.9A
+V5P0SX
+V3P3SX
+/-90mV 4.2A
+/-90mV 4.4A
C2 Change For EMC
+/-90mV 0.4A
S0_POWER_EN
EC_SLP_SX_N
PM_SLP_S3_N
+APU_VDDNB_RUN
+VDDCR_FCH_ALW
Huaqin Telecom Technology Com.,Ltd.
Page name: POWER DELIVERY LOADSWITCH
Size: A4
Project Name: NB8607
REV: V1.0
Date: Friday, March 29, 2019
Sheet: 42 of 55

| | |
|---|---|
| Huaqin Telecom Technology Com.,Ltd. | |
| Page name: | POWER DELIVERY backlight |
| Size: A4 | Project Name: NB8607 |
| REV: V1.0 | |
| Date: Friday, March 29, 2019 | Sheet: 43 of 55 |

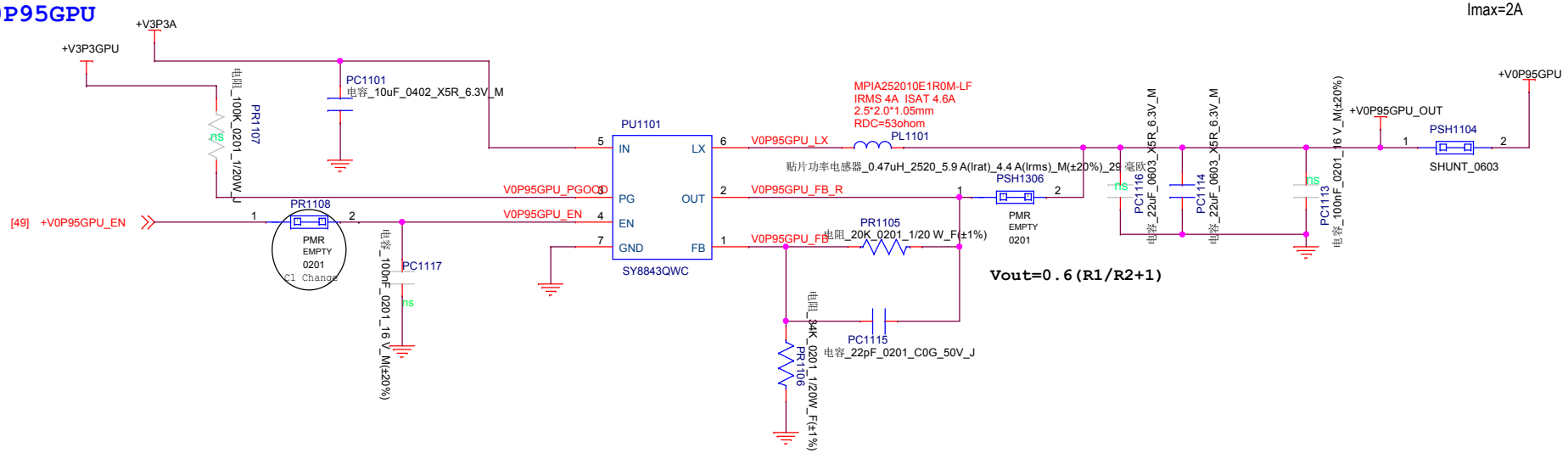



| Supply [1] | Nominal Voltage (V) [2] | Condition | SYSTEM_CONFIGURATION 10 (25W) | 9 (15W) | 11 (10W) | 12 (6W) |
|---|---|---|---|---|---|---|
| VDDCR_CPU | Variable (0.75–1.5) [13] | TDC [3] | 24 | 22 | 18 | 11 |
| | | EDC | 32 | 29 | 24 | 15 |
| | | Max Loadstep [4] | 21 | 20 | 18 | 11 |
| VDDCR_NB | Variable (0.75–1.2) [13] | TDC [3] | 22 | 18 | 15 | 11 |
| | | EDC | 29 | 24 | 20 | 15 |
| | | Max Loadstep [4] | 19 | 16 | 13 | 10 |
| VDDCR_FCH_S5 | 0.775 [11] | TDC | 0.1 | | | |
| | Variable [12] | TDC | 0.4 | | | |

| | |
|---|---|
| Husqin Telecom Technology Com.,Ltd. | |
| Page name: | CORE & NB |
| Size: A4 | Project Name: NB8607 REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 44 of 55 |

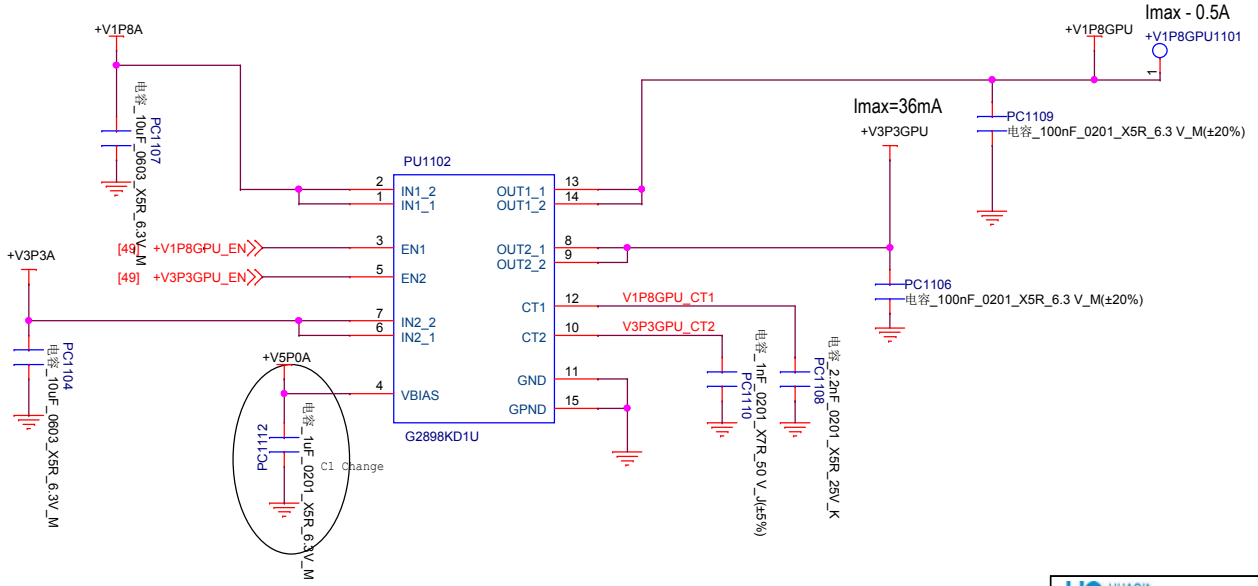
## +V0P95GPU

Imax=2A




## +V1P8GPU
## +V3P3GPU

Imax - 0.5A

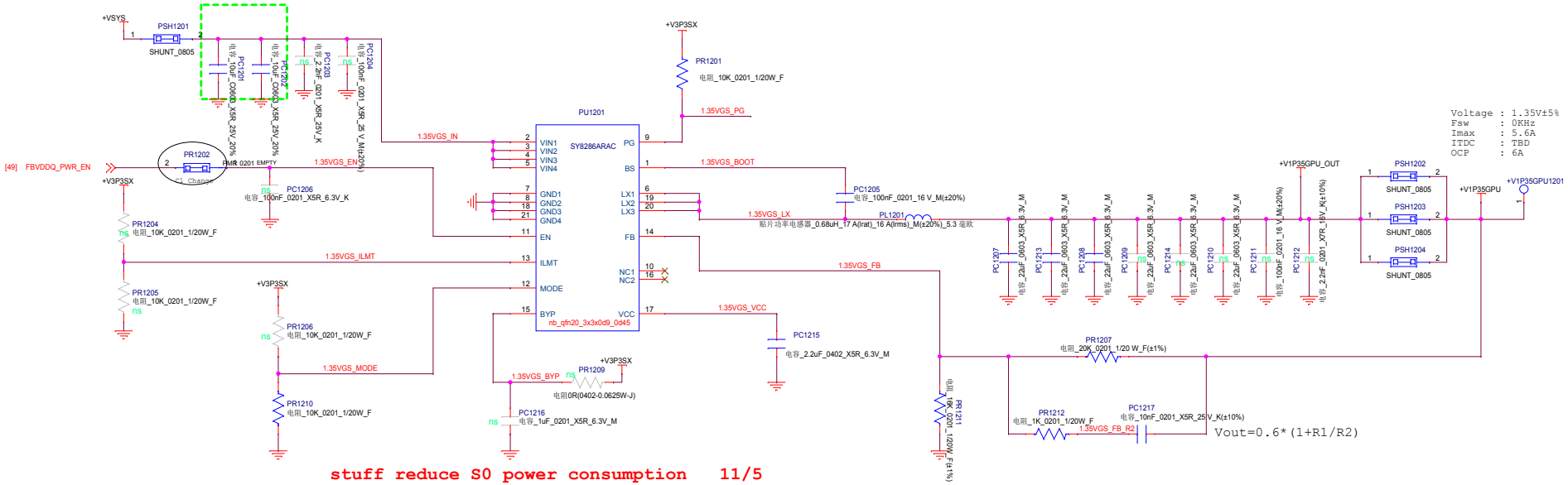



| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | GPU_LOADSWITCH | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Tuesday, April 02, 2019 | Sheet: 45 of 55 | |

| | | | | |
|---|---|---|---|---|
| ILMT=Low | 6.7 | 7.8 | 8.9 | A |
| ILMT=Floating | 9.3 | 10.6 | 11.9 | A |
| ILMT=High | 12 | 13.3 | 14.8 | A |

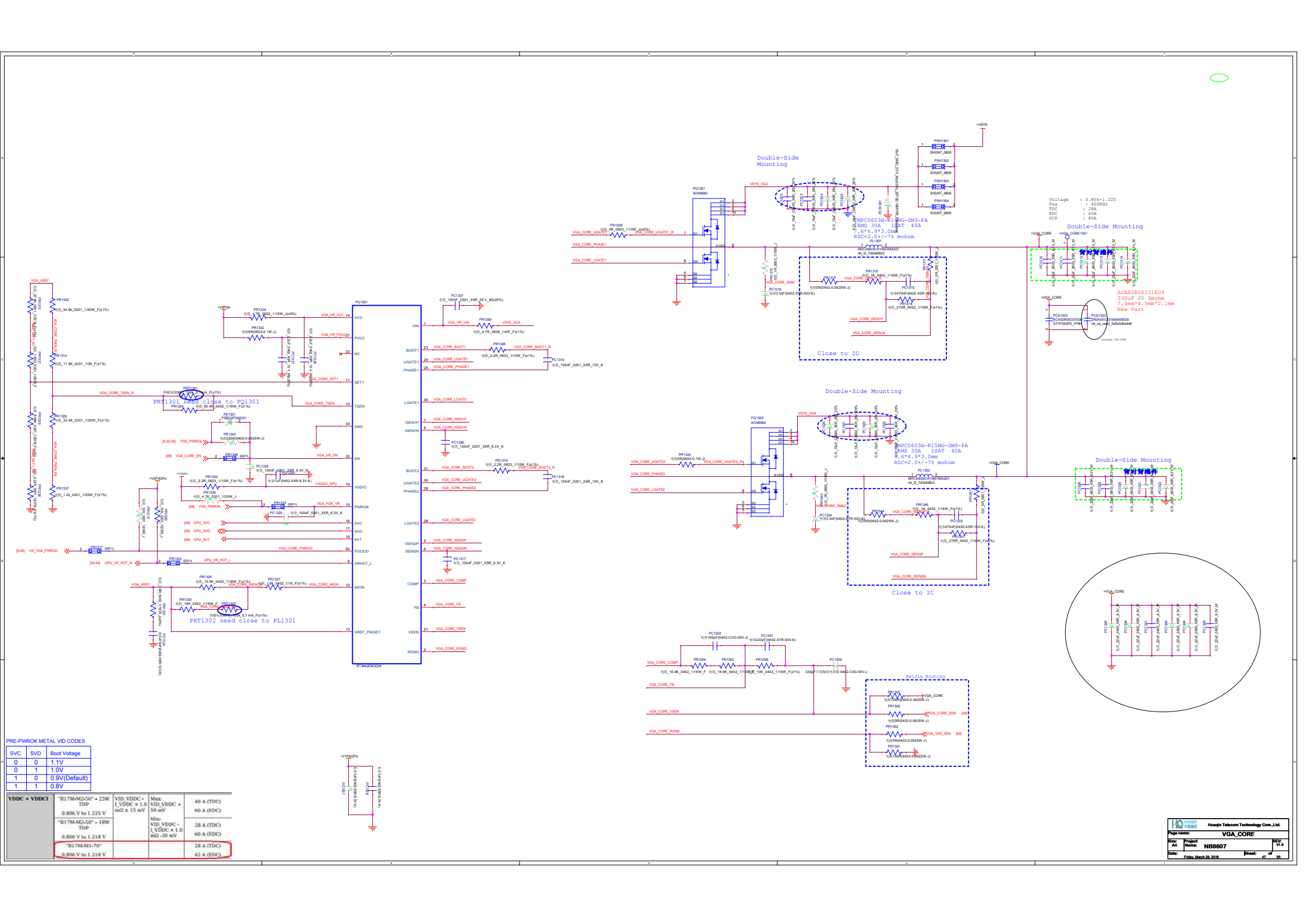
Update according to vendor--2018/9/19

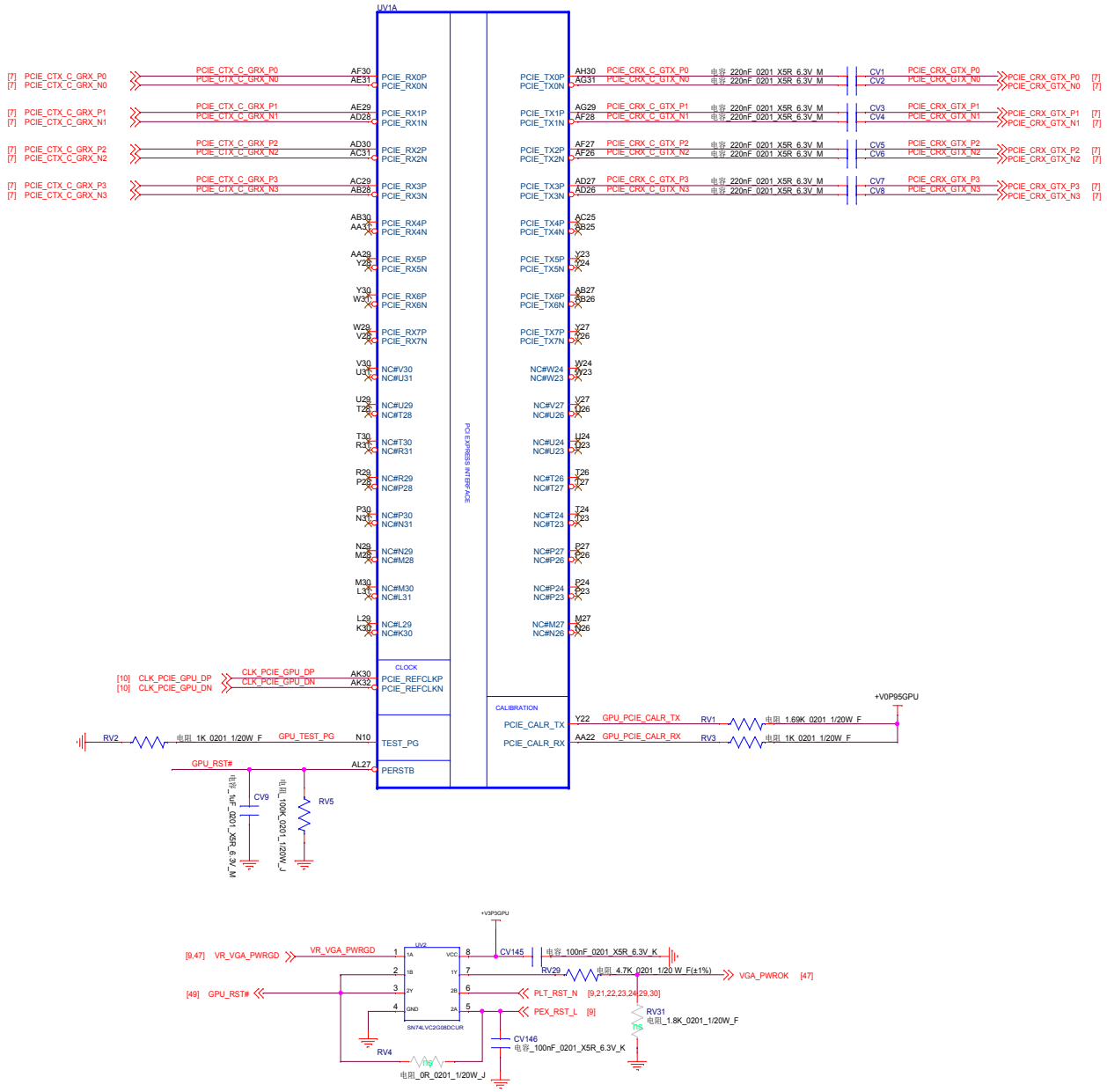
背对背摆件



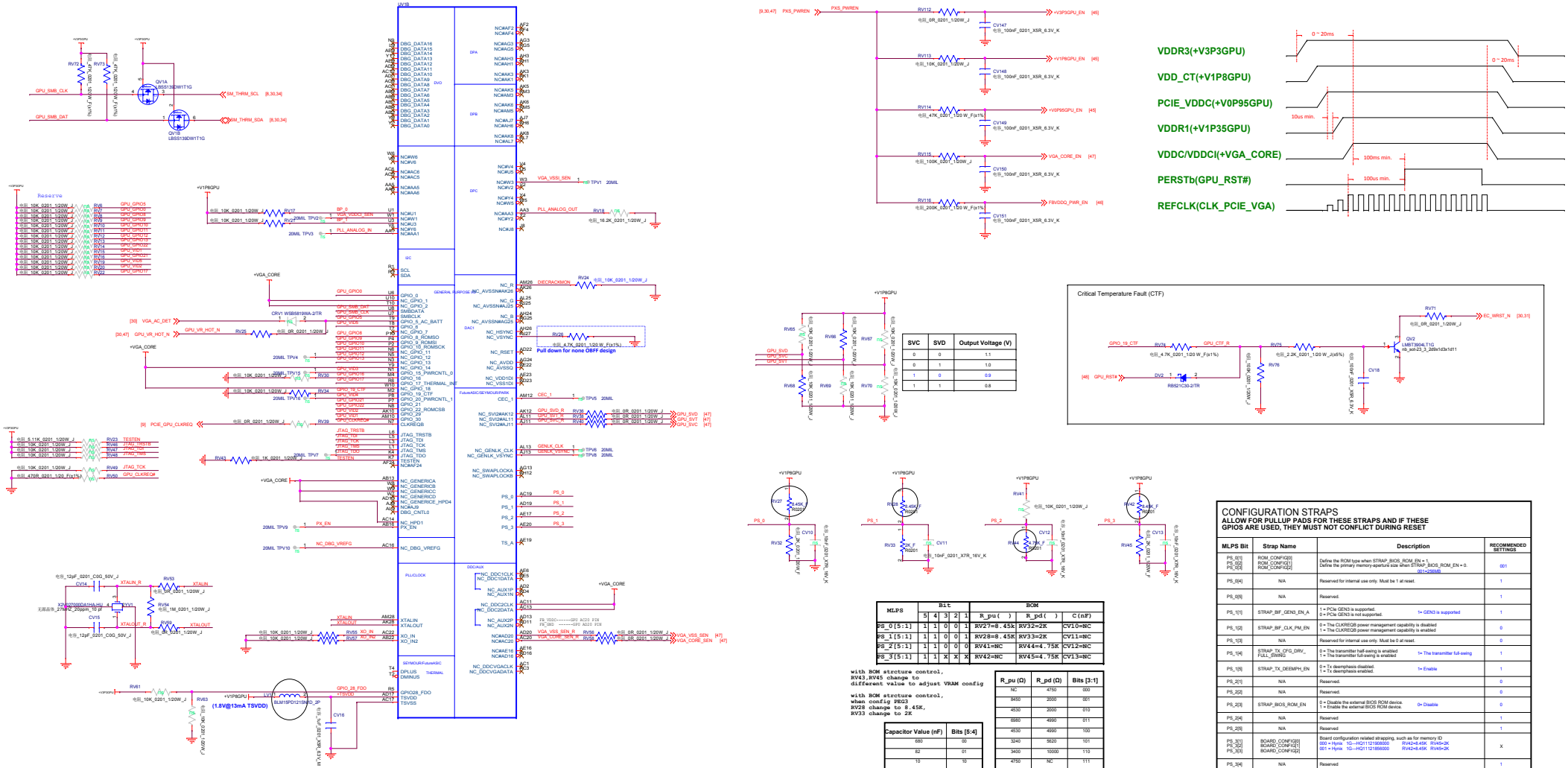

stuff reduce S0 power consumption 11/5

| | | | |
|---|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | | |
| Page name: | V1P35GPU | | |
| Size: A4 | Project Name: NB8607 | | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 46 | of 55 | |


Double-Side Mounting
Close to IC
PRT1301 need close to PQ1301
PRT1302 need close to PL1301
Kelvin Routing
Voltage : 0.806-1.225
Fsw : 400KHz
TDC : 28A
EDC : 60A
OCP : 80A
ACAS2R0S331E09
330uF 2V 9mohm
7.5mm*4.5mm*2.1mm
New Part
PRE-PWROK METAL VID CODES
SVC SVD Boot Voltage
0 0 1.1V
0 1 1.0V
1 0 0.9V(Default)
1 1 0.8V
VDDC + VDDCI
"R17M-M2-50" - 25W TDP
0.806 V to 1.225 V
VID_VDDC - I_VDDC x 1.0 mΩ ± 15 mV
Max: VID_VDDC + 50 mV
40 A (TDC)
60 A (EDC)
"R17M-M2-50" - 18W TDP
0.806 V to 1.218 V
Min: VID_VDDC - I_VDDC x 1.0 mΩ -30 mV
28 A (TDC)
60 A (EDC)
"R17M-M1-70"
0.806 V to 1.218 V
28 A (TDC)
42 A (EDC)
Huaqin Telecom Technology Com.,Ltd.
Page name: VGA_CORE
Size: A4
Project Name: NB8607
REV: V1.0
Date: Friday, March 29, 2019
Sheet: 47 of 55




| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | FT4_PCIE | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 48 of 55 | |




| MLPS | Bit | | | | | BOM | | |
|---|---|---|---|---|---|---|---|---|
| | 5 | 4 | 3 | 2 | 1 | R_pu( ) | R_pd( ) | C(nF) |
| PS_0[5:1] | 1 | 1 | 0 | 0 | 1 | RV27=8.45k | RV32=2K | CV10=NC |
| PS_1[5:1] | 1 | 1 | 0 | 0 | 1 | RV28=8.45K | RV33=2K | CV11=NC |
| PS_2[5:1] | 1 | 1 | 0 | 0 | 0 | RV41=NC | RV44=4.75K | CV12=NC |
| PS_3[5:1] | 1 | 1 | X | X | X | RV42=NC | RV45=4.75K | CV13=NC |

with BOM structure control,
RV43,RV45 change to
different value to adjust VRAM config

with BOM structure control,
when config PEG3
RV28 change to 8.45K,
RV33 change to 2K

| Capacitor Value (nF) | Bits [5:4] |
|---|---|
| 680 | 00 |
| 82 | 01 |
| 10 | 10 |
| NC | 11 |

| R_pu (Ω) | R_pd (Ω) | Bits [3:1] |
|---|---|---|
| NC | 4750 | 000 |
| 8450 | 2000 | 001 |
| 4530 | 2000 | 010 |
| 6980 | 4990 | 011 |
| 4530 | 4990 | 100 |
| 3240 | 5620 | 101 |
| 3400 | 10000 | 110 |
| 4750 | NC | 111 |

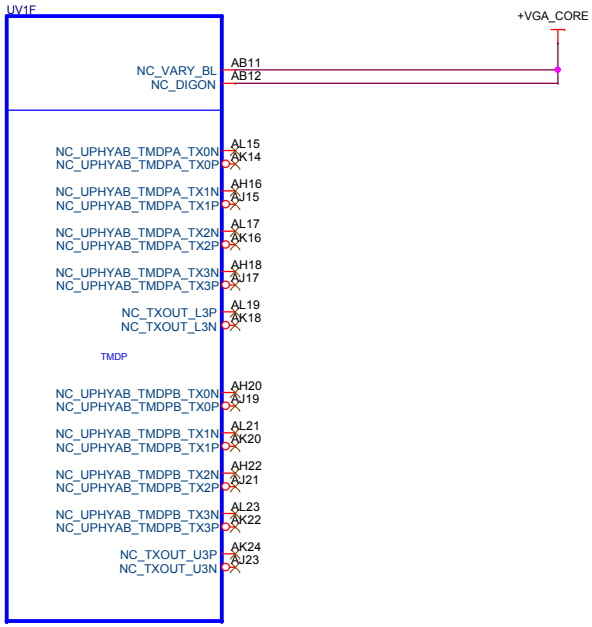
Note: 0402 1% resistors are required.

## CONFIGURATION STRAPS

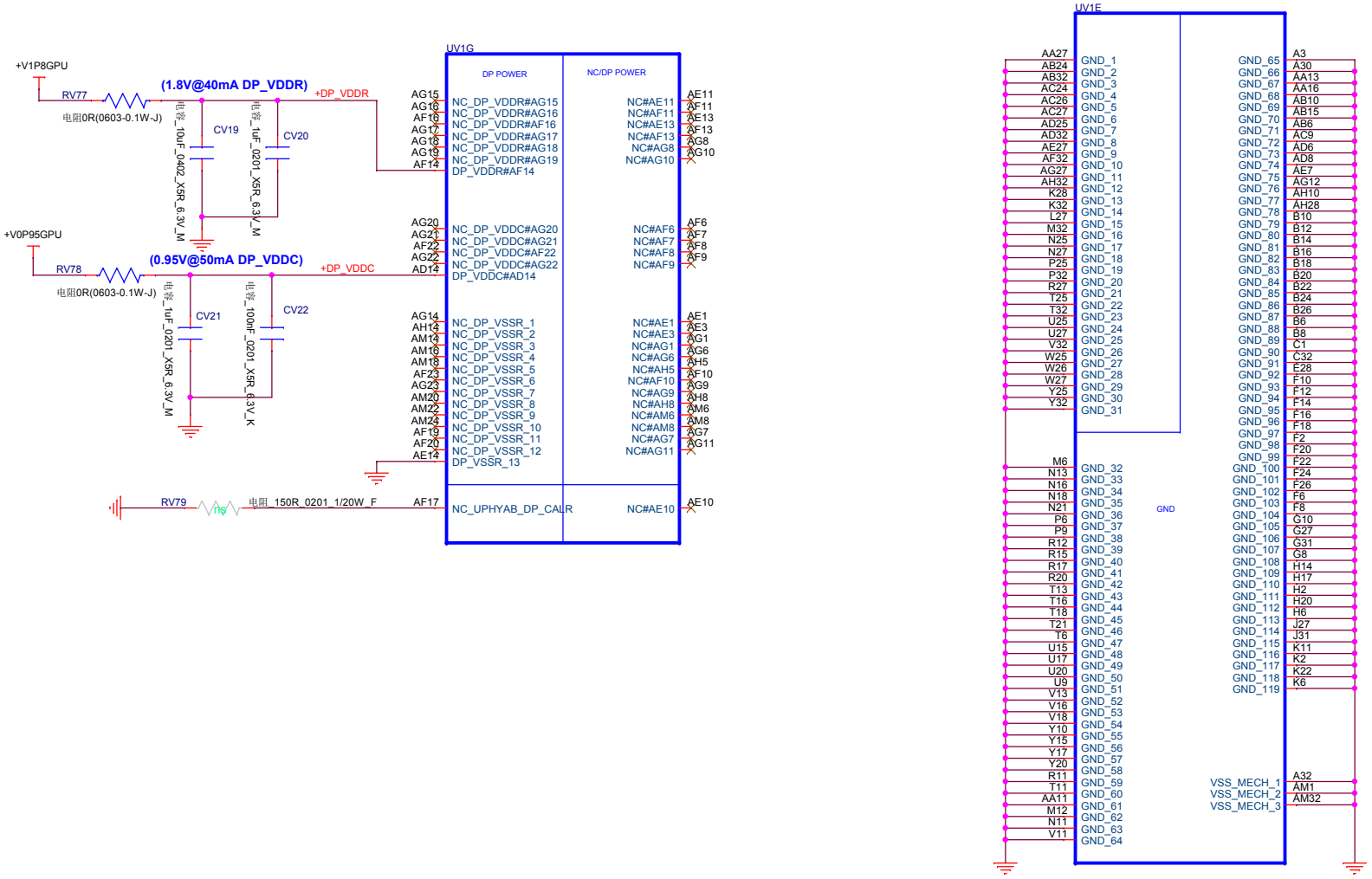
**ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET**

| MLPS Bit | Strap Name | Description | RECOMMENDED SETTINGS |
|---|---|---|---|
| PS_0[1]<br>PS_0[2]<br>PS_0[3] | ROM_CONFIG[0]<br>ROM_CONFIG[1]<br>ROM_CONFIG[2] | Define the ROM type when STRAP_BIOS_ROM_EN = 1.<br>Define the primary memory-aperture size when STRAP_BIOS_ROM_EN = 0. 001=256MB | 001 |
| PS_0[4] | N/A | Reserved for internal use only. Must be 1 at reset. | 1 |
| PS_0[5] | N/A | Reserved. | 1 |
| PS_1[1] | STRAP_BIF_GEN3_EN_A | 1 = PCIe GEN3 is supported. 1= GEN3 is supported<br>0 = PCIe GEN3 is not supported. | 1 |
| PS_1[2] | STRAP_BIF_CLK_PM_EN | 0 = The CLKREQB power management capability is disabled<br>1 = The CLKREQB power management capability is enabled | 0 |
| PS_1[3] | N/A | Reserved for internal use only. Must be 0 at reset. | 0 |
| PS_1[4] | STRAP_TX_CFG_DRV_FULL_SWING | 0 = The transmitter half-swing is enabled 1= The transmitter full-swing<br>1 = The transmitter full-swing is enabled | 1 |
| PS_1[5] | STRAP_TX_DEEMPH_EN | 0 = Tx deemphasis disabled. 1= Enable<br>1 = Tx deemphasis enabled. | 1 |
| PS_2[1] | N/A | Reserved. | 0 |
| PS_2[2] | N/A | Reserved. | 0 |
| PS_2[3] | STRAP_BIOS_ROM_EN | 0 = Disable the external BIOS ROM device. 0= Disable<br>1 = Enable the external BIOS ROM device. | 0 |
| PS_2[4] | N/A | Reserved | 1 |
| PS_2[5] | N/A | Reserved | 1 |
| PS_3[1]<br>PS_3[2]<br>PS_3[3] | BOARD_CONFIG[0]<br>BOARD_CONFIG[1]<br>BOARD_CONFIG[2] | Board configuration related strapping, such as for memory ID<br>000 = Hynix 1G---H5112198B000 RV42=8.45K RV45=2K<br>001 = Hynix 1G---H5112198B000 RV42=8.45K RV45=2K | X |
| PS_3[4] | N/A | Reserved | 1 |
| PS_3[5] | N/A | Reserved | 1 |

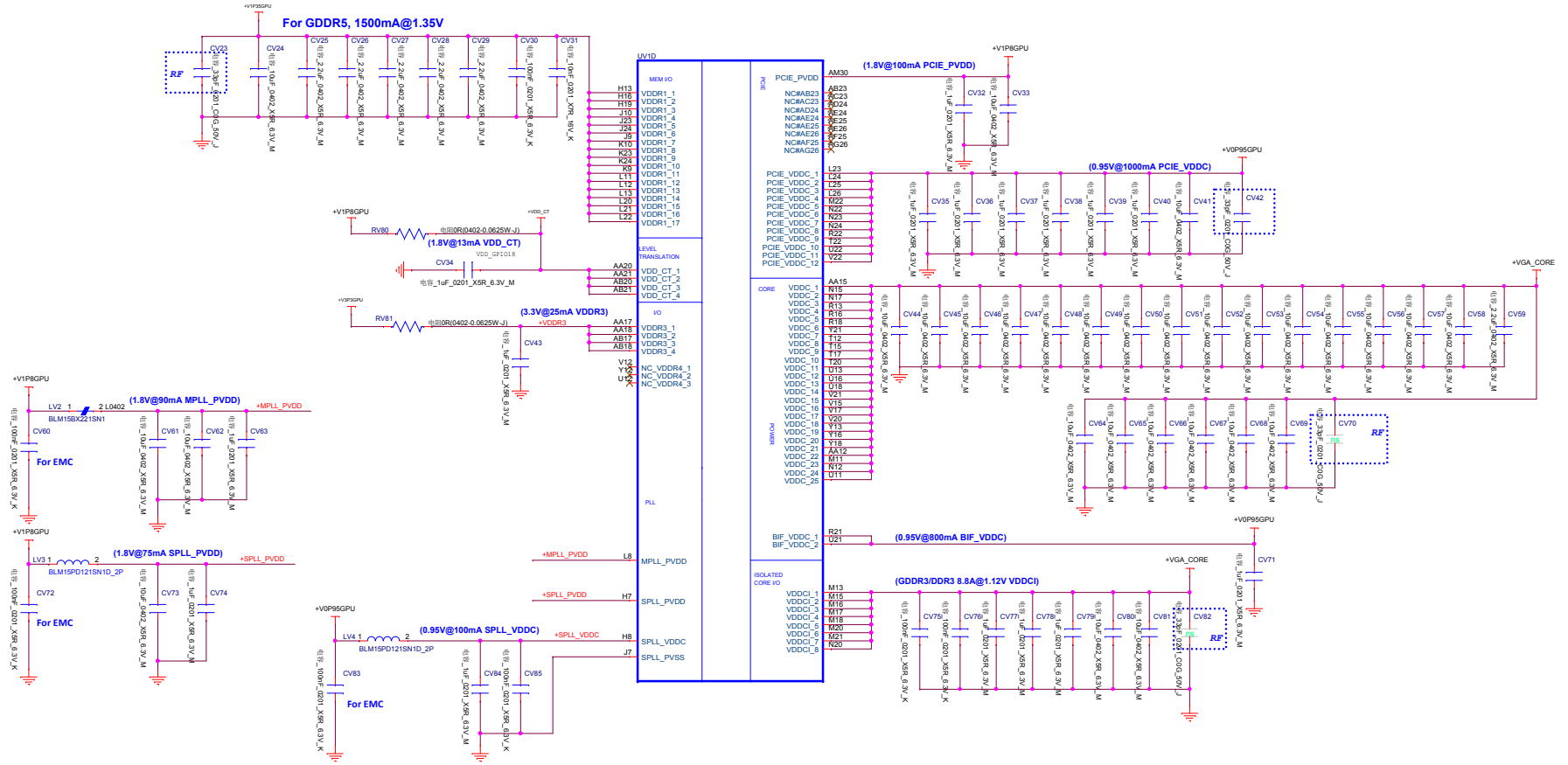
| | |
|---|---|
| Husqin Telecom Technology Com.,Ltd. | |
| Page name: | FT4_PCIE |
| Size: A4 | Project Name: N88607 REV: V1.0 |
| Date: Sunday, March 31, 2019 | Sheet: 49 of 55 |

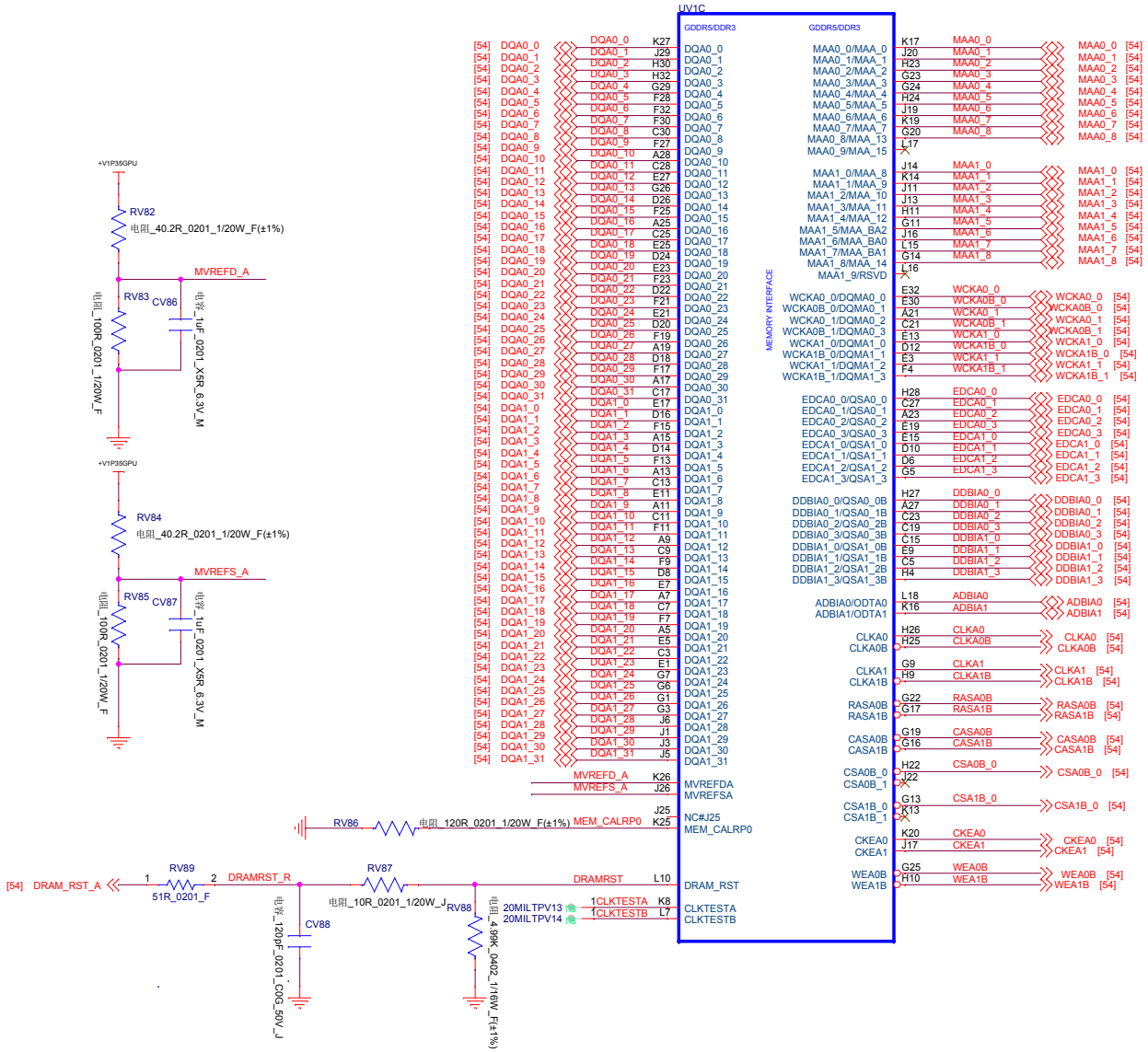



| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: FT4_PCIE | | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 50 of 55 | |

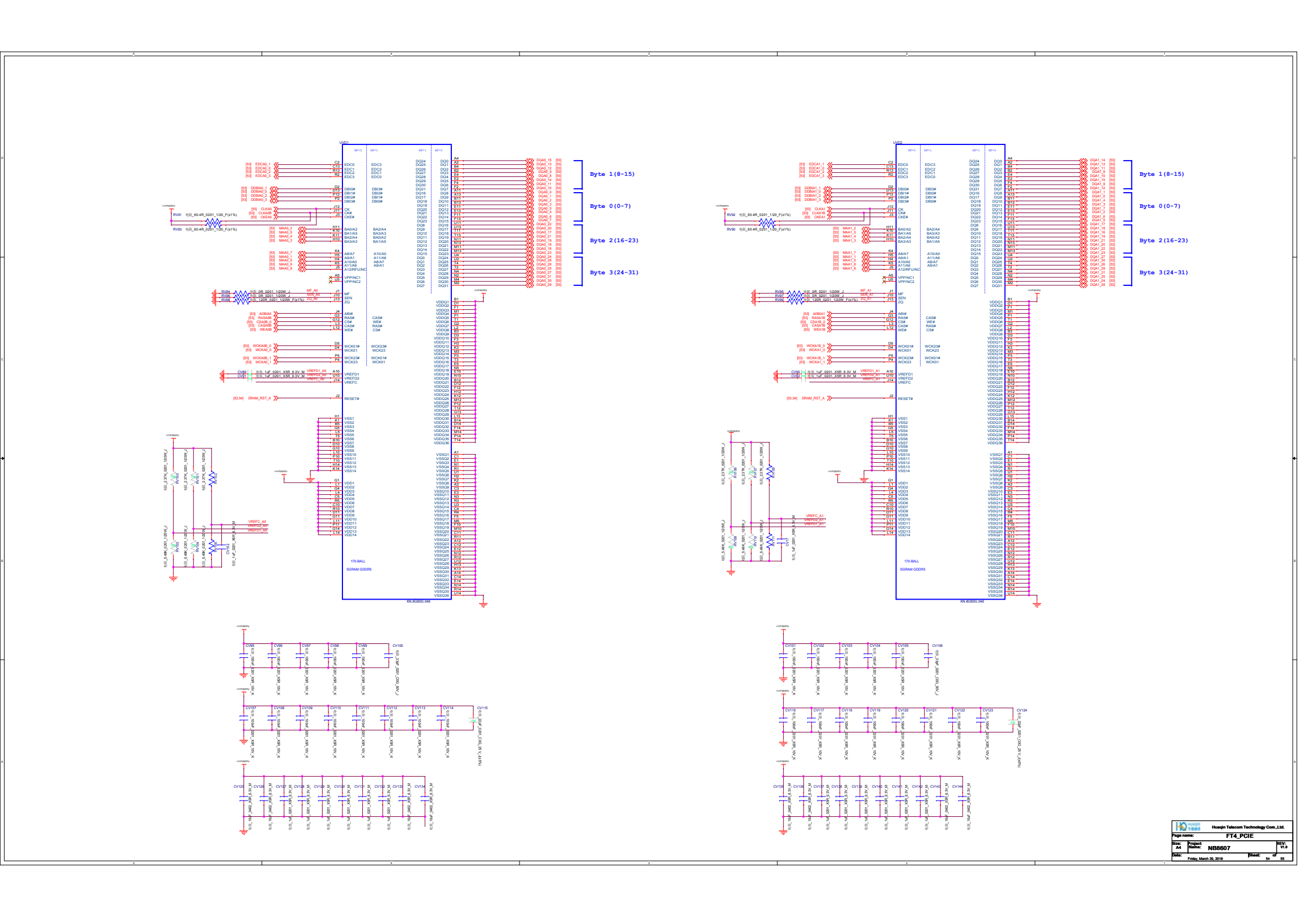



| | | |
|---|---|---|
| Huaqin Telecom Technology Com.,Ltd. | | |
| Page name: | FT4_PCIE | |
| Size: A4 | Project Name: NB8607 | REV: V1.0 |
| Date: Friday, March 29, 2019 | Sheet: 51 of 55 | |

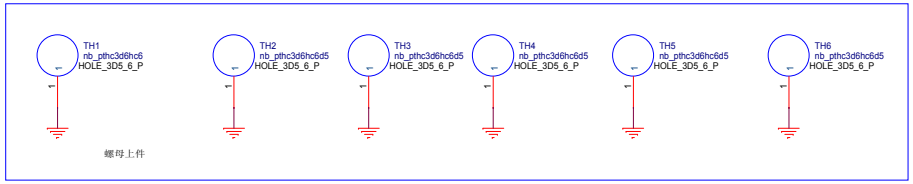

For GDDR5, 1500mA@1.35V
UV1D
(1.8V@100mA PCIE_PVDD)
(0.95V@1000mA PCIE_VDDC)
(1.8V@13mA VDD_CT)
(3.3V@25mA VDDR3)
(1.8V@90mA MPLL_PVDD)
(1.8V@75mA SPLL_PVDD)
(0.95V@100mA SPLL_VDDC)
(0.95V@800mA BIF_VDDC)
(GDDR3/DDR3 8.8A@1.12V VDDCI)
For EMC
RF
+VGA_CORE
Huaqin Telecom Technology Com.,Ltd.
Page name: FT4_PCIE
Size: A4
Project Name: NB8607
REV: V1.0
Date: Friday, March 29, 2019
Sheet: 52 of 55



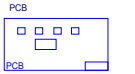

| | |
|---|---|
| Huaqin Telecom Technology Com.,Ltd. | |
| Page name: | FT4_PCIE |
| Size: A4 | Project Name: NB8607 |
| REV: V1.0 | |
| Date: Friday, March 29, 2019 | Sheet: 53 of 55 |




| | |
|---|---|
| Husqin Telecom Technology Com.,Ltd. | |
| Page name: | FT4_PCIE |
| Size: A4 | Project Name: N88607 |
| Date: Friday, March 29, 2019 | Sheet: of 54 55 |





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