

# Index

01.Index  
02.Revision History  
04.I2C MAP  
05.Power diagram and Sequence  
10.RK1808 Power  
11.RK1808 OSC/PMUIO1/PMUIO2  
12.RK1808 DDR Controller  
13.RK1808 EMMC/SPI Controller  
14.RK1808 USB/PCIE CONTROLLER  
15.RK1808 SADC/KEY  
16.RK1808 SDMMC0/SDMMC1  
17.RK1808 MIPI DSI/CSI  
18.RK1808 I2S0/I2S1  
19.RK1808 GMII/LCDC/CIF  
20.POWER-DC IN  
21.POWER\_PMIC RK809-2  
38.RAM ddr4 4x16bit  
41.EMMC  
99.GOLD FINGER CONNECTION

## Note

### NOTE 1:

#### Component parameter description

1. DNP stands for component not mounted temporarily
2. If Value or option is DNP, which means the area is reserved without being mounted
3. If Flash is compatible, please notice when eMMC is used, the option is that @eMMC is mounted, @Nand is not mounted when Nand is used, the option is that @Nand is mounted, @eMMC is not mounted

### NOTE 2:

Please use our recommended components to avoid too many changes.For more informations about the second source,please refer to our AVL.

Note

Option

Description

Remind

### Bill of Materials

#### Header:

Item\tPart\tDescription\tPCB Footprint\tReference\tQuantity\tOption

#### Combined property string:

{Item}\t{Value}\t{Description}\t{PCB Footprint}\t{Reference}\t{Quantity}\t{Option}



PINE64

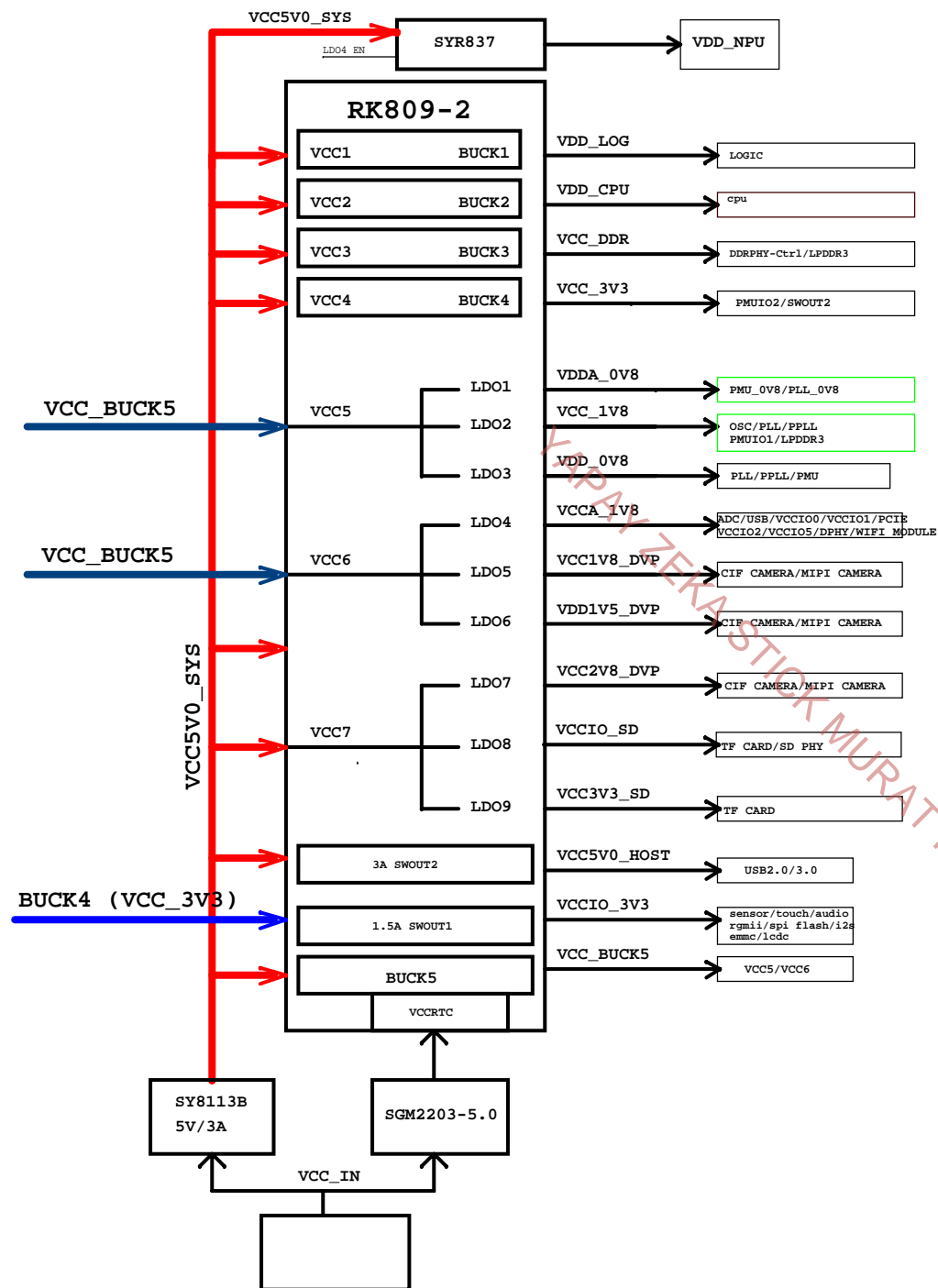
|              |                                   |        |   |       |
|--------------|-----------------------------------|--------|---|-------|
| Project:     | SOEdge Schematic 20190919 ver 2.0 |        |   |       |
| File:        | 01.Index                          |        |   |       |
| Date:        | Thursday, September 19, 2019      | Rev:   |   |       |
| Designed by: | Rzf                               | Sheet: | 1 | of 99 |



I2C MAP

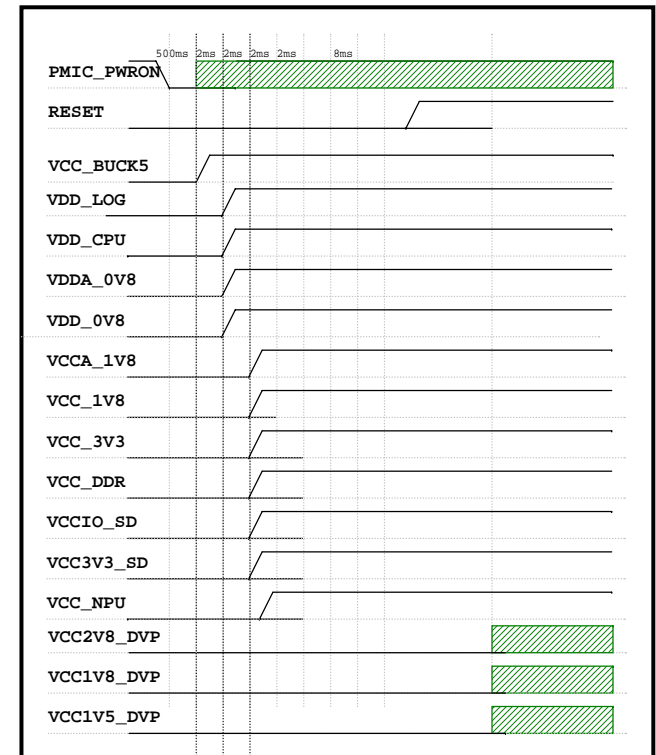
| Port | Pin name                                   | Domain    | Bus name                       | Pull-up voltage | Slave Device   | Slave Addr (MS 7Bits) | Note     | Slave Bus Capability |
|------|--|-----------|--------------------------------|-----------------|----------------|-----------------------|----------|----------------------|
| I2C0 | I2C0_SCL/GPIO0_B0_u<br>I2C0_SDA/GPIO0_B1_u | PMUIO2    | I2C0_SCL_PMIC<br>I2C0_SDA_PMIC | VCC_3V3         | Rockchip RK809 | 0x20                  | PMIC     | 100kHz, 400kHz       |
|      |  |           |                                |                 | SY837          |                       | BUCK     | 100kHz, 400kHz       |
| I2C1 | I2C1_SCL/GPIO0_C0_u<br>I2C1_SDA/GPIO0_C1_u | PMUIO2    | I2C1_SCL<br>I2C1_SDA           | VCC_3V3         | GSL1680        |                       | Touch IC | 100kHz, 400kHz       |
|      |  |           |                                |                 |                |                       |          | 100kHz, 400kHz       |
| I2C2 | I2C1_SCL/GPIO1_B4_U<br>I2C1_SDA/GPIO1_B5_U | VCCIO_3V3 |                                |                 | NC             |                       |          | 100kHz, 400kHz       |
| I2C3 | GPIO2_D0/I2C3_SCL_U<br>GPIO2_D1/I2C3_SDA_U | VCCA_1V8  |                                | VCCA_1V8        | MIPI CAMERA    |                       |          |                      |
|      |  |           |                                |                 | CIF CAMERA     |                       |          |                      |
|      |  |           |                                |                 | BT1120         |                       |          |                      |
| I2C4 | GPIO3_C2/I2C4_SCL_U<br>GPIO3_C3/I2C4_SDA_U | VCCIO_3V3 |                                | VCCIO_3V3       | DIGITAL MIC    |                       |          |                      |
|      |  |           |                                |                 | RGB LCD        |                       |          |                      |
|      |  |           |                                |                 | PCIEX4         |                       |          |                      |
|      |  |           |                                |                 | SENSOR         |                       |          |                      |

## POWER DIAGRAM



## RK809-2 Power-on Sequence

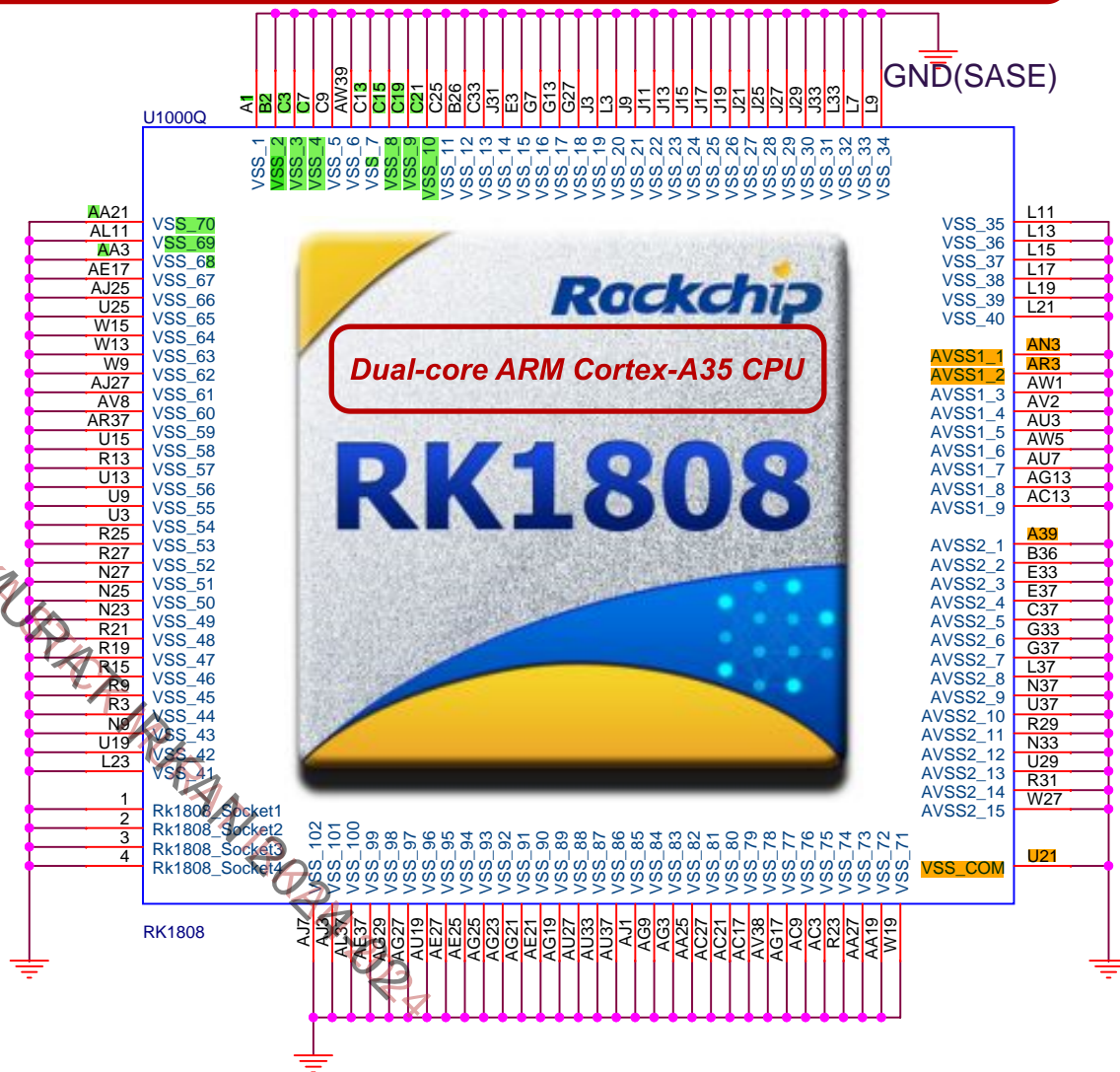
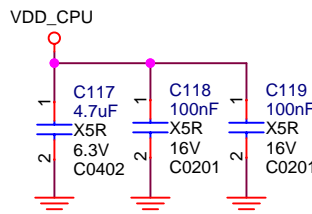
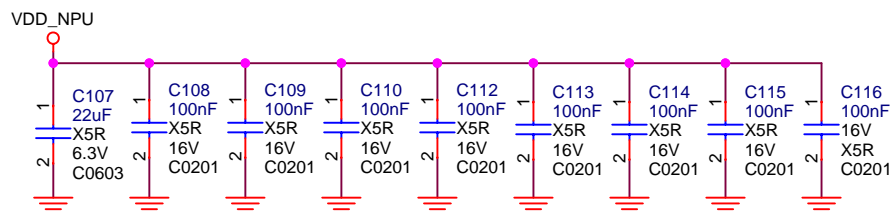
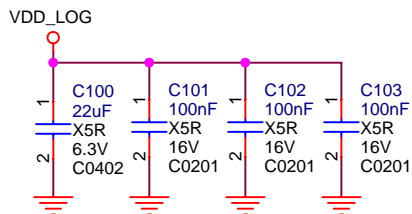
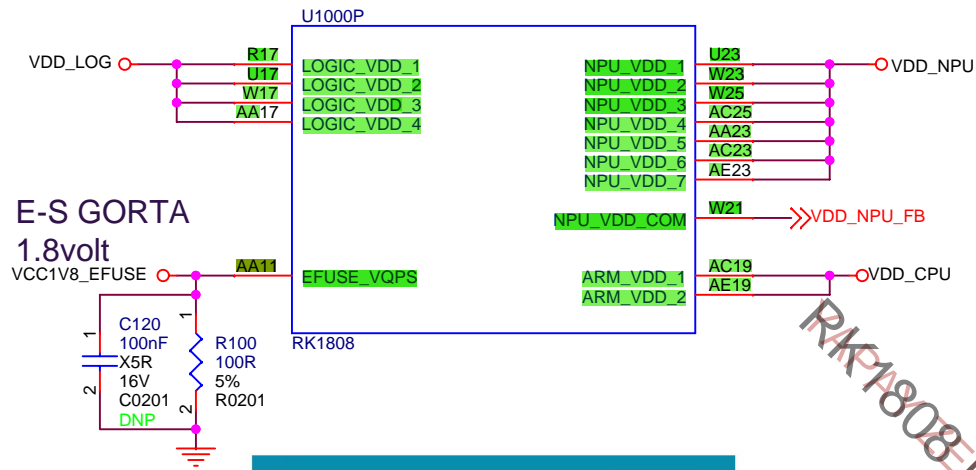
| PowerName   | PMIC Channel    | Time Slot (step 2mS) | Default voltage | Supply Limit | Default ON/OFF | Sleep ON/OFF | Peak Current |
|-------------|-----------------|----------------------|-----------------|--------------|----------------|--------------|--------------|
| VDD_NPU     | EXTERNAL(S9317) | Slot:3A              | 1V              | 6A           | ON             | OFF          | 4A           |
| VDD_LOG     | BUCK1           | Slot:2               | 0.85V           | 2.5A         | ON             | OFF          | 1.25A        |
| VDD_CPU     | BUCK2           | Slot:2               | 0.85V           | 2.5A         | ON             | OFF          | 750mA        |
| VCC_DDR     | BUCK3           | Slot:3               | FB06.6V         | 1.5A         | ON             | ON           |              |
| VCC_IP3     | BUCK4           | Slot:4               | 3.3V            | 1.5A         | ON             | ON           |              |
| VCC_BUCK5   | BUCK5           | Slot:1               | 2.5V            | 2.5A         | ON             | ON           |              |
| VDDA_OVR8   | LD01            | Slot:2               | 0.8V            | 400mA        | ON             | OFF          |              |
| VCC_VI8     | LD02            | Slot:3               | 1.8V            | 400mA        | ON             | ON           |              |
| VDD_OV8     | LD03            | Slot:2               | 0.8V            | 100mA        | ON             | ON           |              |
| VCCA_VI8    | LD04            | Slot:3               | 1.8V            | 400mA        | ON             | OFF          |              |
| VCCIV8_DVP  | LD05            |                      | 1.8V            | 400mA        | OFF            | OFF          |              |
| VDDIV8_DVP  | LD06            |                      | 1.5V            | 400mA        | OFF            | OFF          |              |
| VCC2V8_DVP  | LD07            |                      | 2.8V            | 400mA        | OFF            | OFF          |              |
| VCCIO_SD    | LD08            | Slot:4               | 3.3V            | 400mA        | ON             | OFF          |              |
| VCCV3A_SD   | LD08            | Slot:4               | 3.3V            | 400mA        | ON             | OFF          |              |
| VCCIO_IP3   | SK00T2          | Slot:4               | 3.3V            | 3A           | ON             | OFF          |              |
| VCC5V0_B0ST | SK00T1          |                      | 5V              | 1.5A         | OFF            | OFF          |              |
| RESET       | RESETB          | Slot:10              | OD              |              |                |              |              |



# RK1808 Power

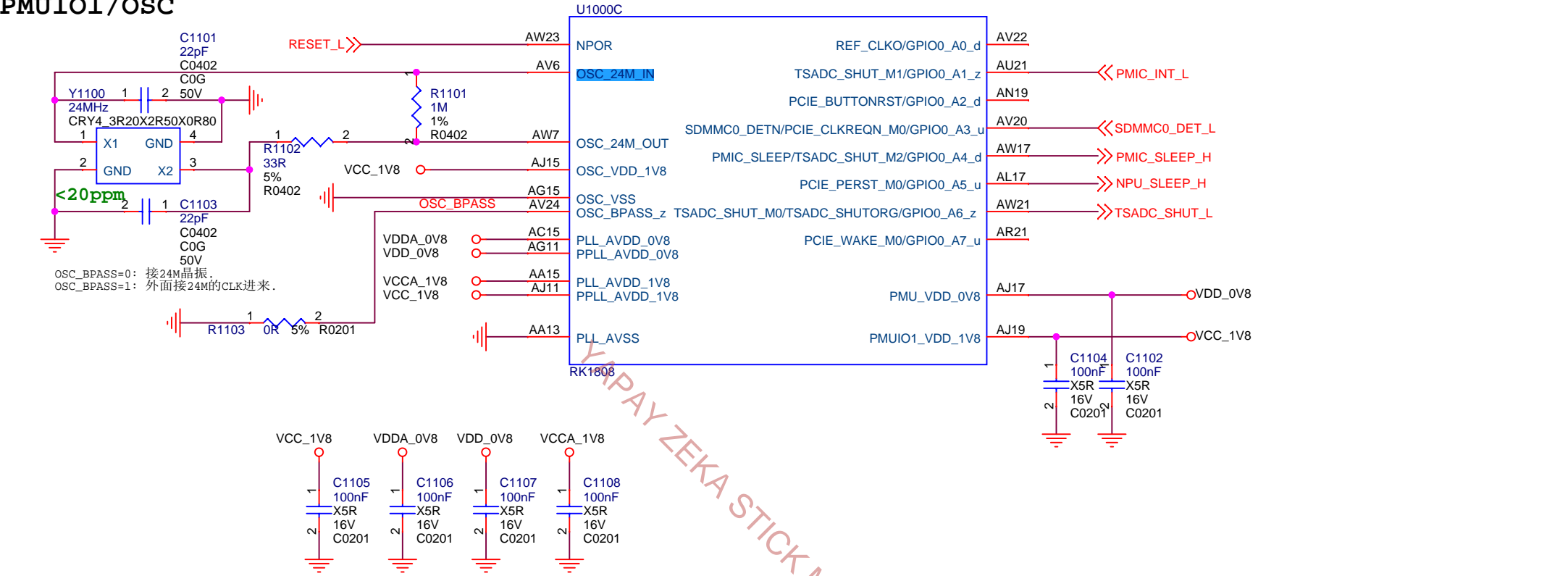
## RK1808 GÜÇ / SASE (TOPRAK)

# ROCKCHIP RK1808 ARM YAPAY ZEKA USB STICK

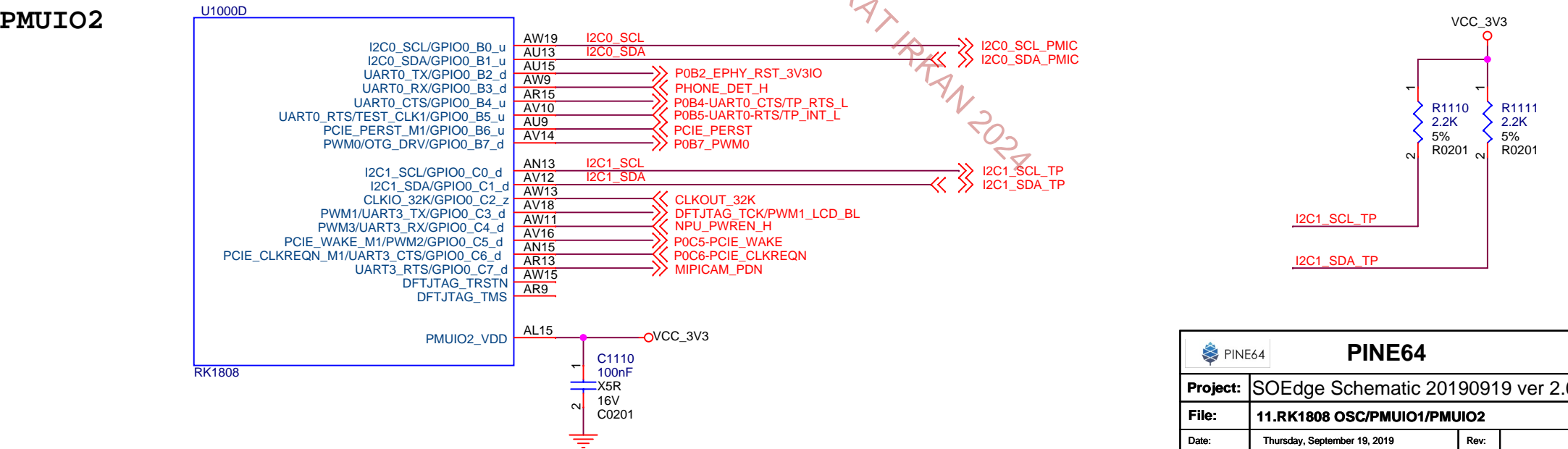



|              |                                   |
|--------------|-----------------------------------|
| PINE64       |                                   |
| Project:     | SOEdge Schematic 20190919 ver 2.0 |
| File:        | 10.RK1808 Power                   |
| Date:        | Thursday, September 19, 2019      |
| Designed by: | Rzf                               |
| Rev:         |                                   |
| Sheet:       | 10 of 99                          |

PMUIO1/OSC

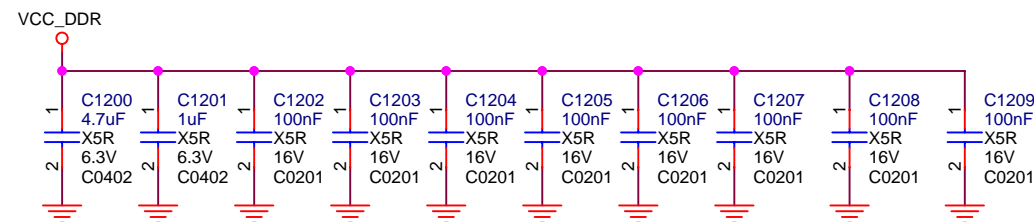


PMUIO2



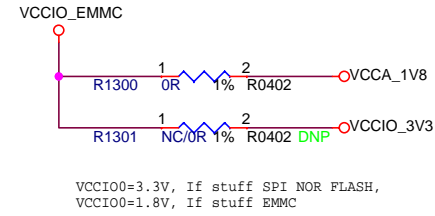
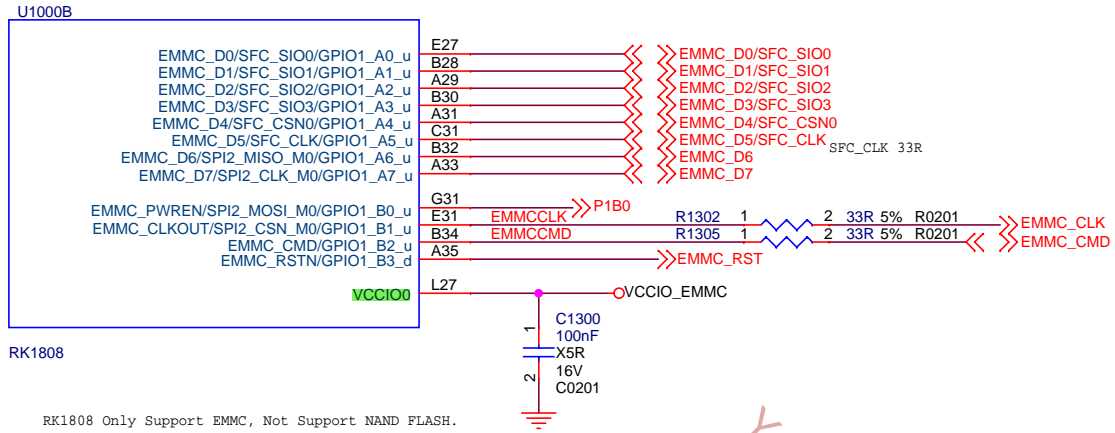
|  |                                   |        |          |
|--|-----------------------------------|--------|----------|
|  PINE64 |                                   | PINE64 |          |
| Project:   | SOEdge Schematic 20190919 ver 2.0 |        |          |
| File:  | 11.RK1808 OSC/PMUIO1/PMUIO2       |        |          |
| Date:  | Thursday, September 19, 2019      | Rev:   |          |
| Designed by:   | Rzf                               | Sheet: | 11 of 99 |

ROCKCHIP  
YAPAY ZEKA

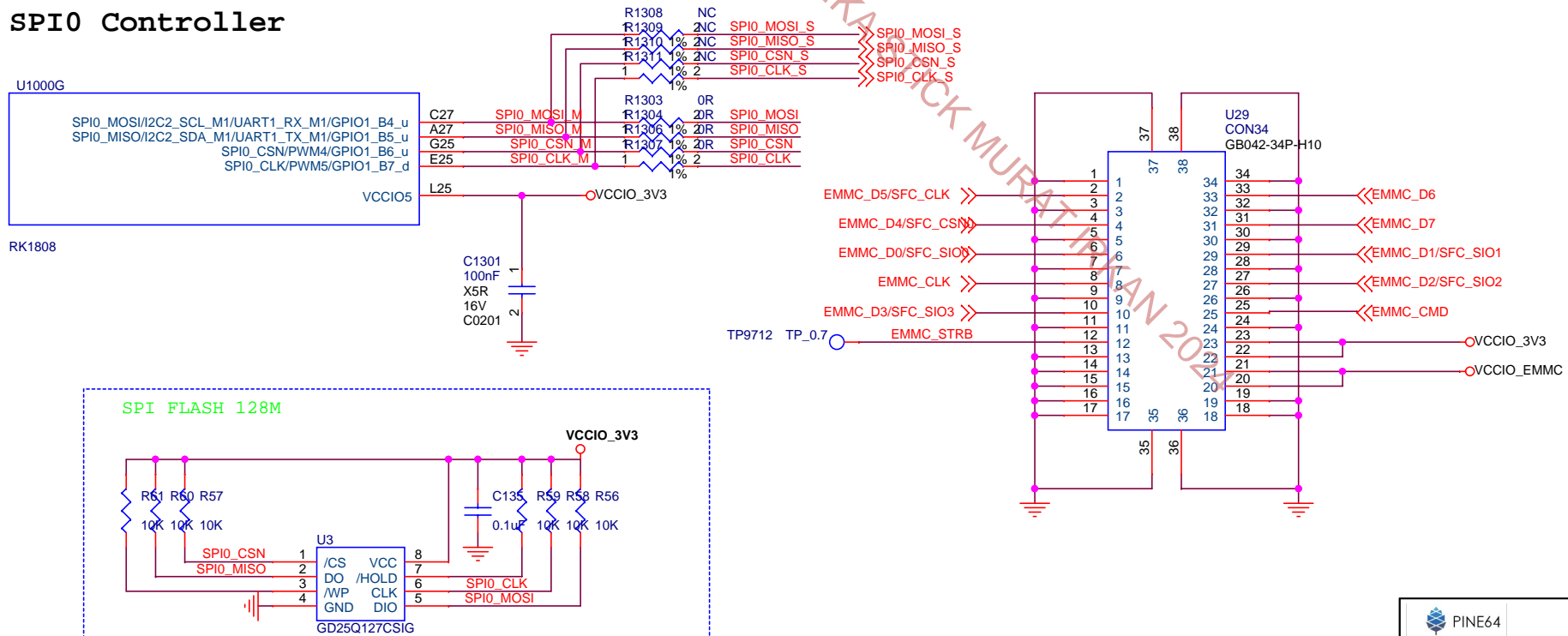


| LPDDR3/LPDDR2 | DDR3   |
|---------------|--------|
| A0            | A9     |
| A1            | A14    |
| A2            | A13    |
| A3            | A11    |
| A4            | A2     |
| A5            | A4     |
| A6            | A3     |
| A7            | A6     |
| A8            | A5     |
| A9            | A1     |
|               | A0     |
|               | A7     |
|               | CASB   |
|               | A8     |
|               | ODT0   |
|               | BA1    |
|               | RASB   |
|               |        |
|               | CSB0   |
|               | BA2    |
|               | A12    |
|               | BA0    |
|               | WEB    |
| CK            | CK     |
| CKB           | CKB    |
| CKE           | CKE    |
| CSB0          | A10    |
| CSB1          | CSB1   |
| ODT0          | A15    |
| ODT1          | ODT1   |
|               | RESETN |

## EMMC/SFC Controller

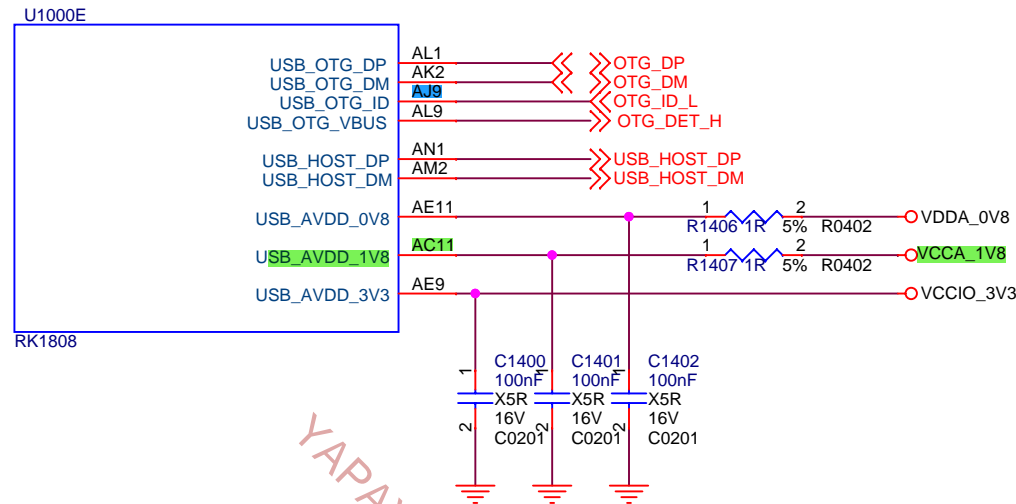


## SPI0 Controller

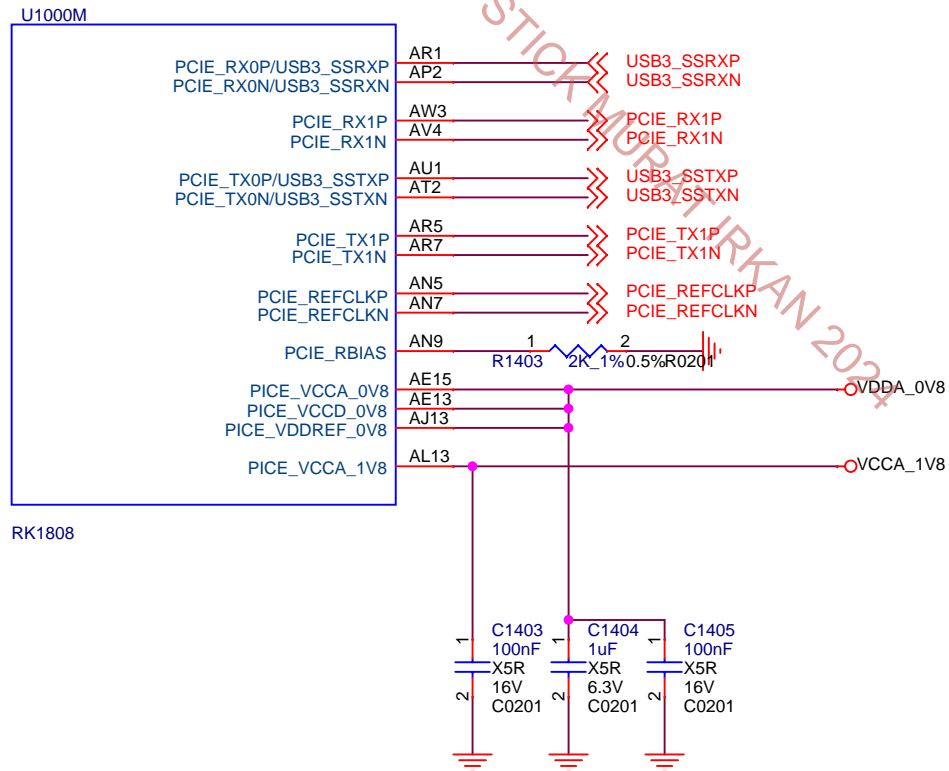





## USB Controller

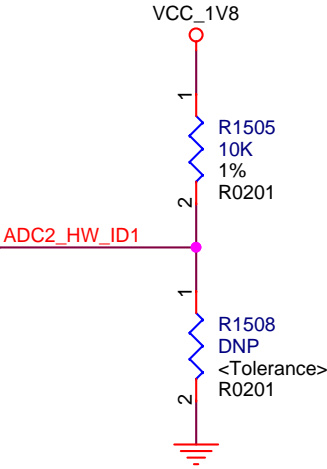
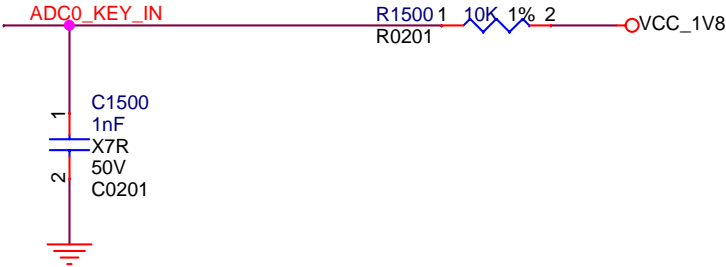
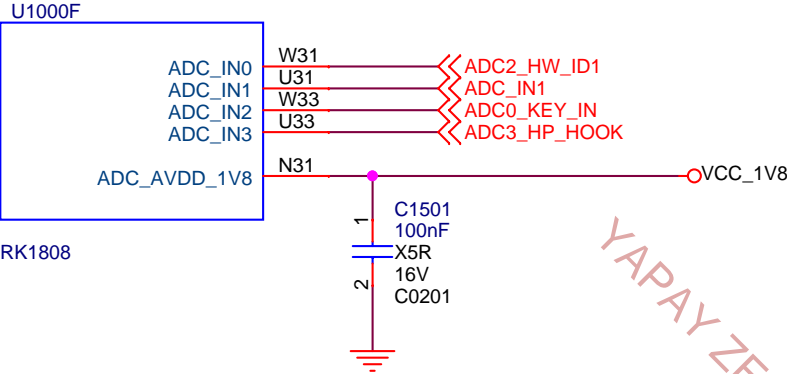


## PCIE Controller




|  |                                      |               |          |
|--|--------------------------------------|---------------|----------|
|  PINE64 |                                      | <b>PINE64</b> |          |
| <b>Project:</b>  | SOEdge Schematic 20190919 ver 2.0    |               |          |
| <b>File:</b>   | <b>14.RK1808 USB/PCIE Controller</b> |               |          |
| <b>Date:</b>   | Thursday, September 19, 2019         | <b>Rev:</b>   |          |
| <b>Designed by:</b>  | Rzf                                  | <b>Sheet:</b> | 14 of 99 |

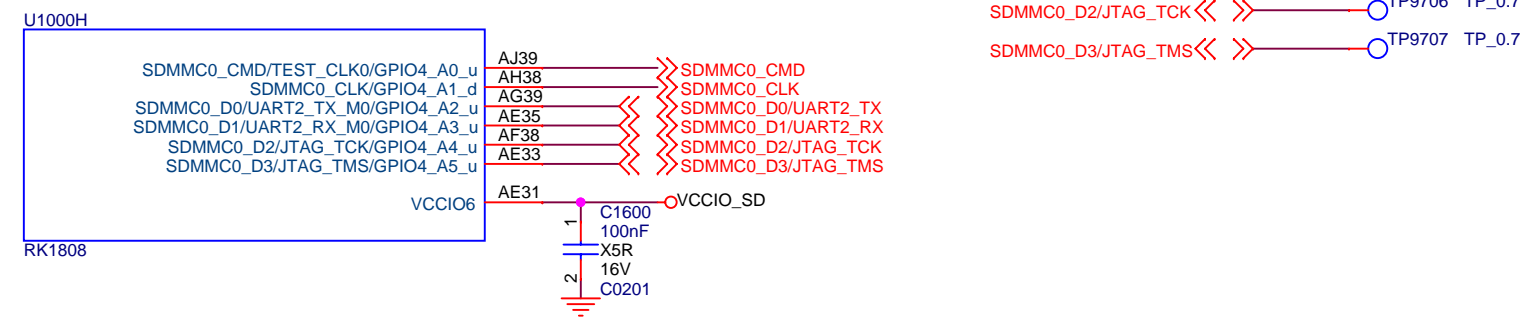
SARADC/KEY



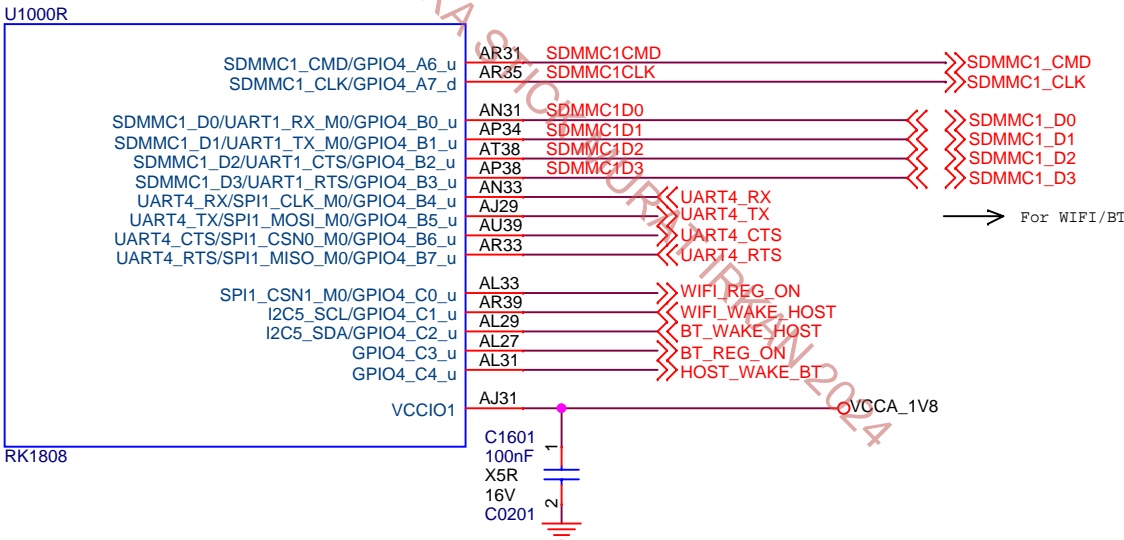
|                |        |
|----------------|--------|
| Key Name       | SARADC |
| VOL+ /RECOVERY | 10     |
| VOL-           | 170    |
|                |        |


|  |                                   |        |          |
|--|-----------------------------------|--------|----------|
|  PINE64 |                                   | PINE64 |          |
| Project:   | SOEdge Schematic 20190919 ver 2.0 |        |          |
| File:  | 15.RK1808 SARADC/KEY              |        |          |
| Date:  | Thursday, September 19, 2019      | Rev:   |          |
| Designed by:   | Rzf                               | Sheet: | 15 of 99 |

SDMMC0 Controller

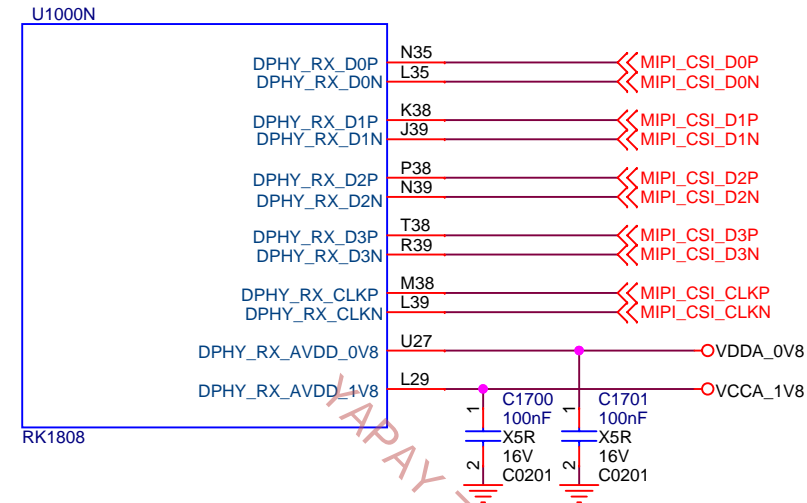


SDMMC1 Controller

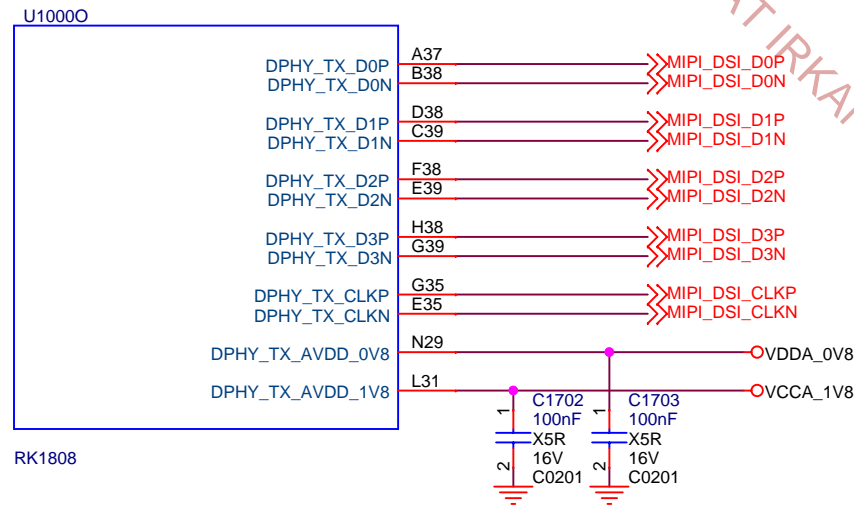



|  |                                   |        |          |
|--|-----------------------------------|--------|----------|
|  PINE64 |                                   | PINE64 |          |
| Project:   | SOEdge Schematic 20190919 ver 2.0 |        |          |
| File:  | 16.RK1808 SDMMC0/SDMMC1           |        |          |
| Date:  | Thursday, September 19, 2019      | Rev:   |          |
| Designed by:   | Rzf                               | Sheet: | 16 of 99 |

MIPI CSI Controller

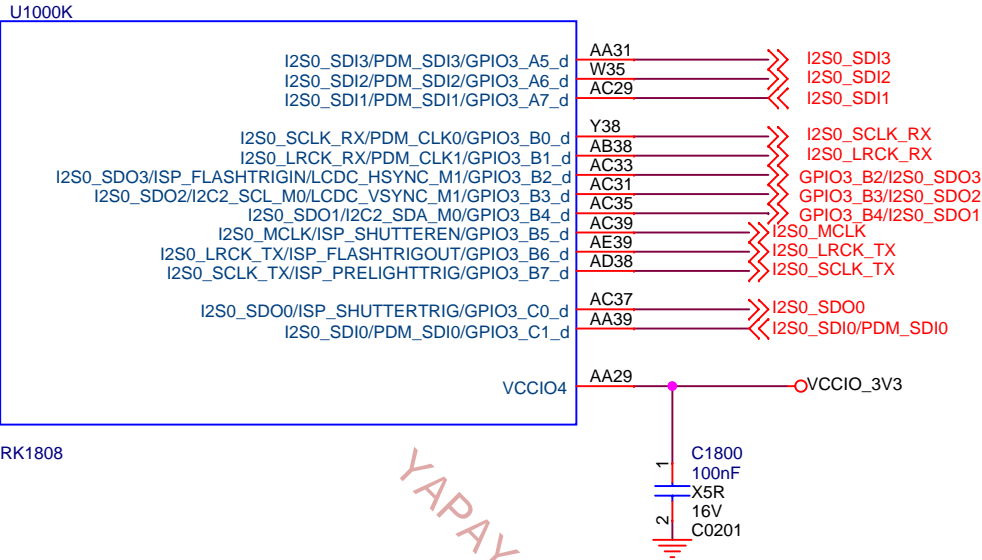


MIPI DSI Controller

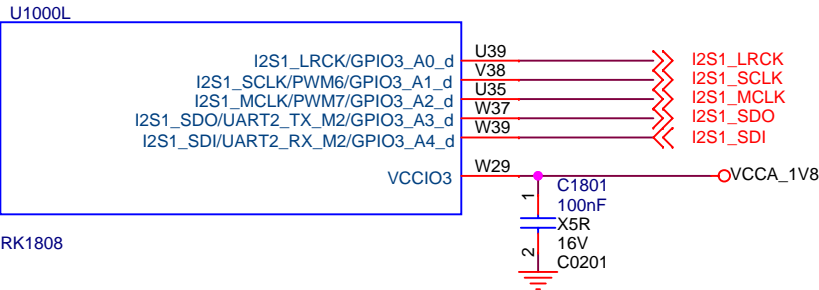



|  |                                   |        |          |
|--|-----------------------------------|--------|----------|
|  PINE64 |                                   | PINE64 |          |
| Project:   | SOEdge Schematic 20190919 ver 2.0 |        |          |
| File:  | 17.RK1808 MIPI DSI/CSI            |        |          |
| Date:  | Thursday, September 19, 2019      | Rev:   |          |
| Designed by:   | Rzf                               | Sheet: | 17 of 99 |

I2S0 Controller



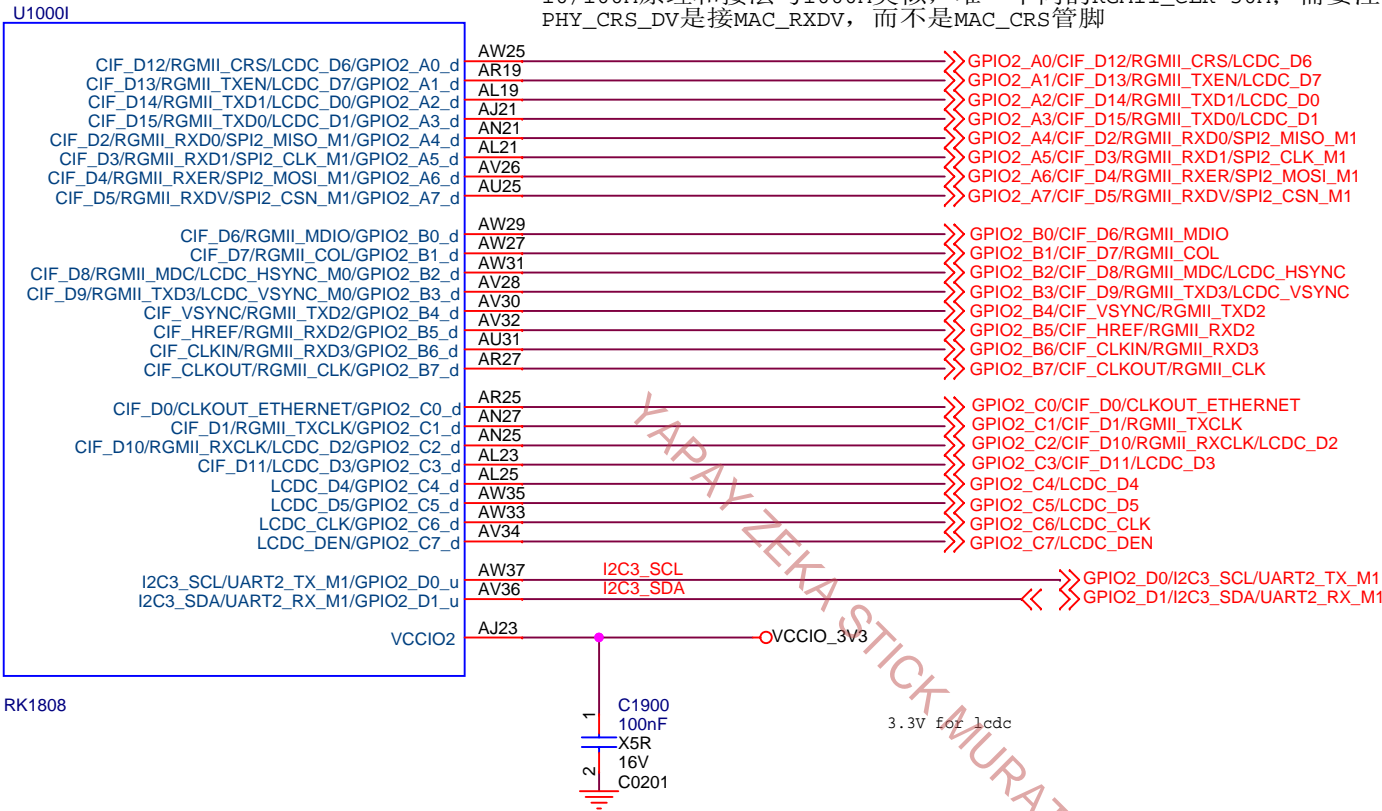
I2S1 Controller



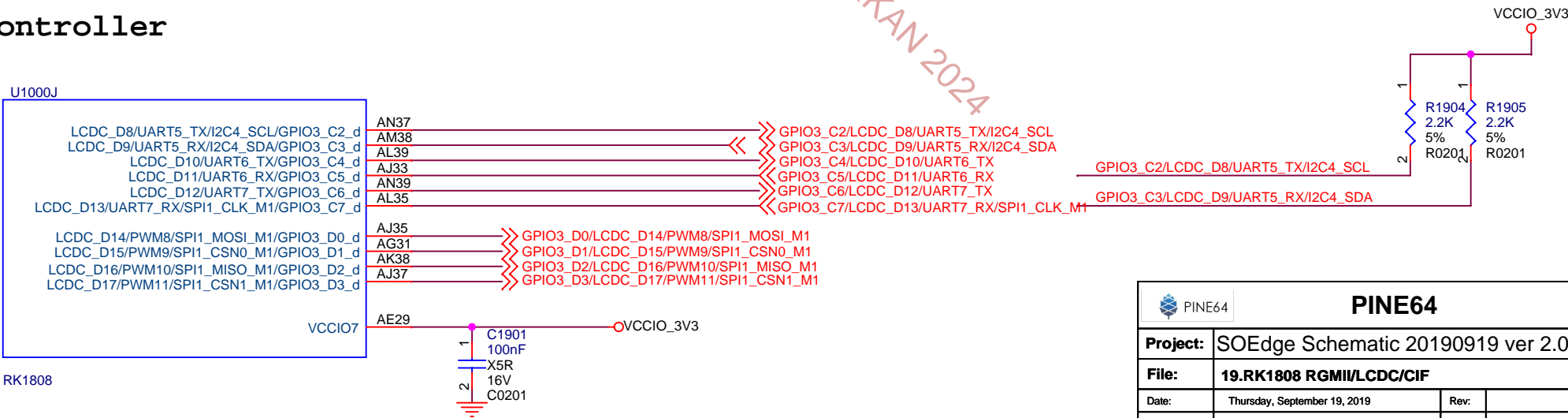
|  |                                   |        |          |
|--|-----------------------------------|--------|----------|
|  PINE64 |                                   | PINE64 |          |
| Project:   | SOEdge Schematic 20190919 ver 2.0 |        |          |
| File:  | 18.RK1808 I2S0/I2S1               |        |          |
| Date:  | Thursday, September 19, 2019      | Rev:   |          |
| Designed by:   | Rzf                               | Sheet: | 18 of 99 |


CIF/RGMII/LCDC Controller

10/100M原理和接法与1000M类似，唯一不同的RGMII\_CLK=50M；需要注意的是10/100M的PHY\_CRS\_DV是接MAC\_RXDV，而不是MAC\_CRS管脚

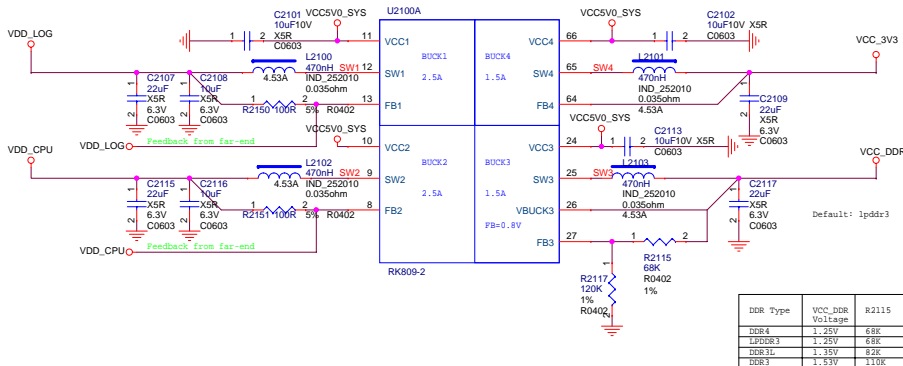


LCDC Controller

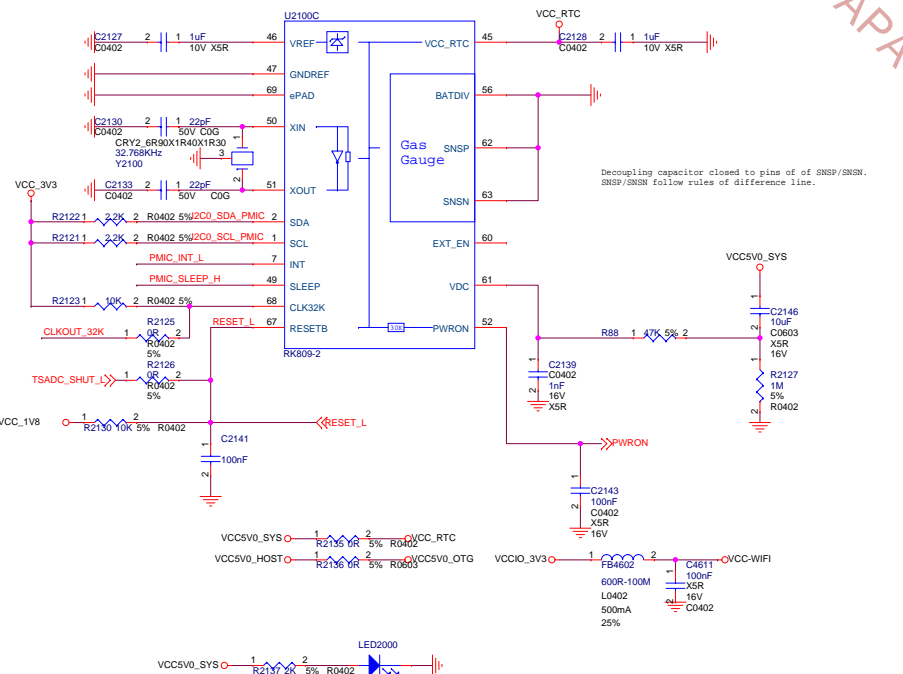


|  |                                   |        |          |
|--|-----------------------------------|--------|----------|
|  PINE64 |                                   | PINE64 |          |
| Project:   | SOEdge Schematic 20190919 ver 2.0 |        |          |
| File:  | 19.RK1808 RGMII/LCDC/CIF          |        |          |
| Date:  | Thursday, September 19, 2019      | Rev:   |          |
| Designed by:   | Rzf                               | Sheet: | 19 of 99 |

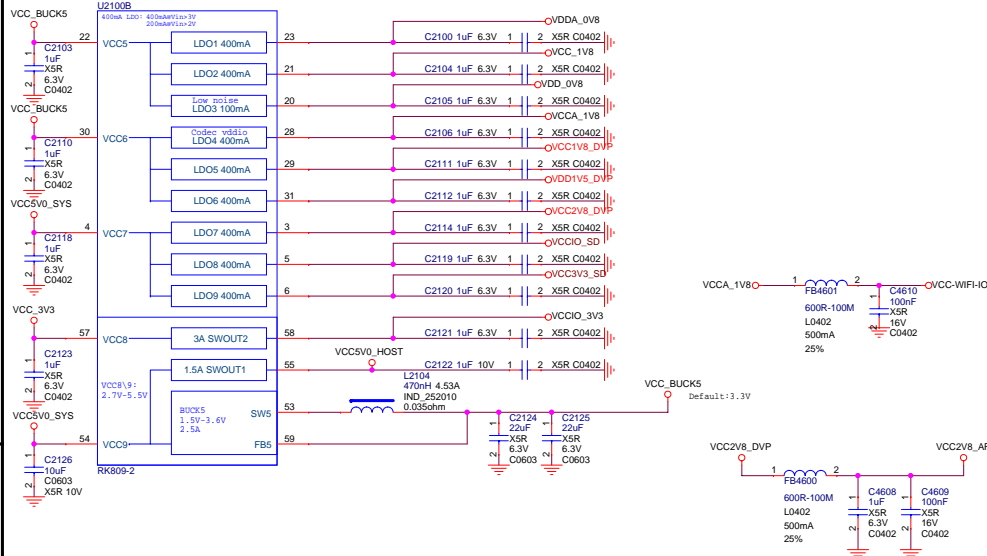
## PMIC RK809-1 DCDC



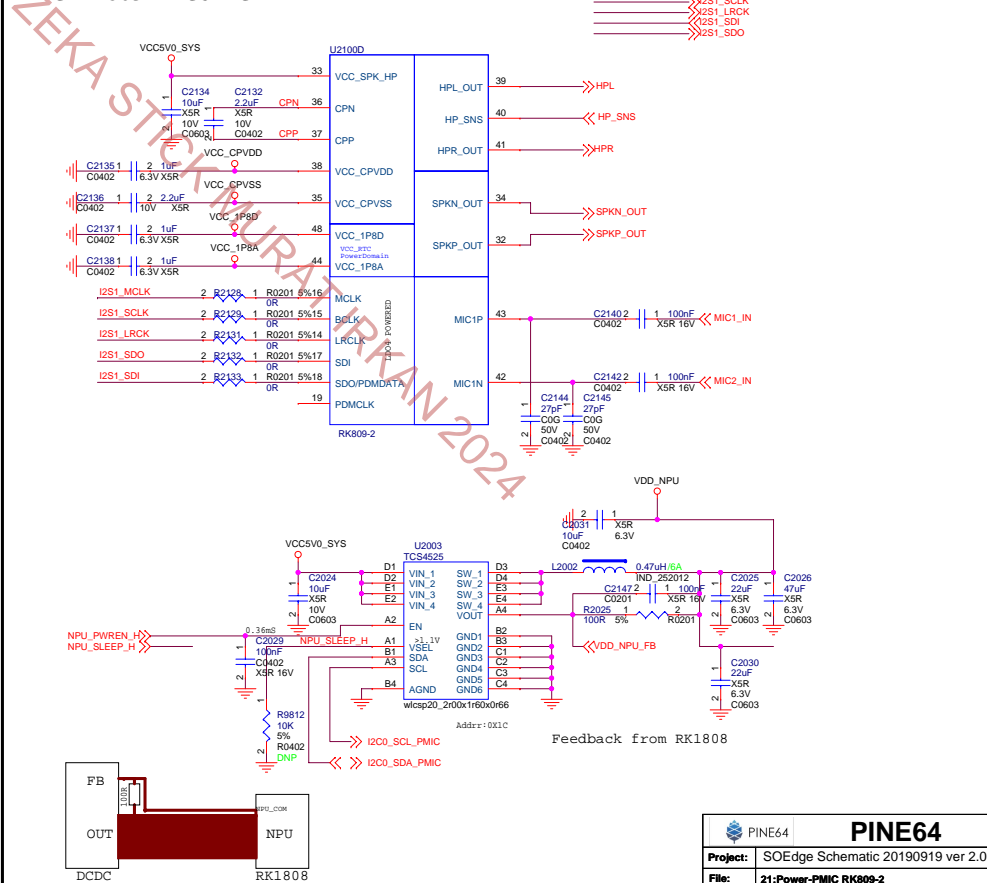
## PMIC RK809-1 Managerment



## PMIC RK809-1 LDO



## PMIC RK809-1 CODEC



DDR4-A2R98132 56R 1 DDR4 A2  
DDR4-A6R98142 56R 1 DDR4 A6  
DDR4-A1R98152 56R 1 DDR4 A1  
DDR4-A8R98162 56R 1 DDR4 A8

DDR4-BG98172 56R 1 DDR4 BG0  
DDR4-A4R98182 56R 1 DDR4 A4  
DDR4-A5R98192 56R 1 DDR4 A5  
DDR4-BAR98202 56R 1 DDR4 BA0

DDR4-A1R98212 56R 1 DDR4 A13  
DDR4-A7R98222 56R 1 DDR4 A7  
DDR4-A0R98232 56R 1 DDR4 A0  
DDR4-A9R98242 56R 1 DDR4 A9

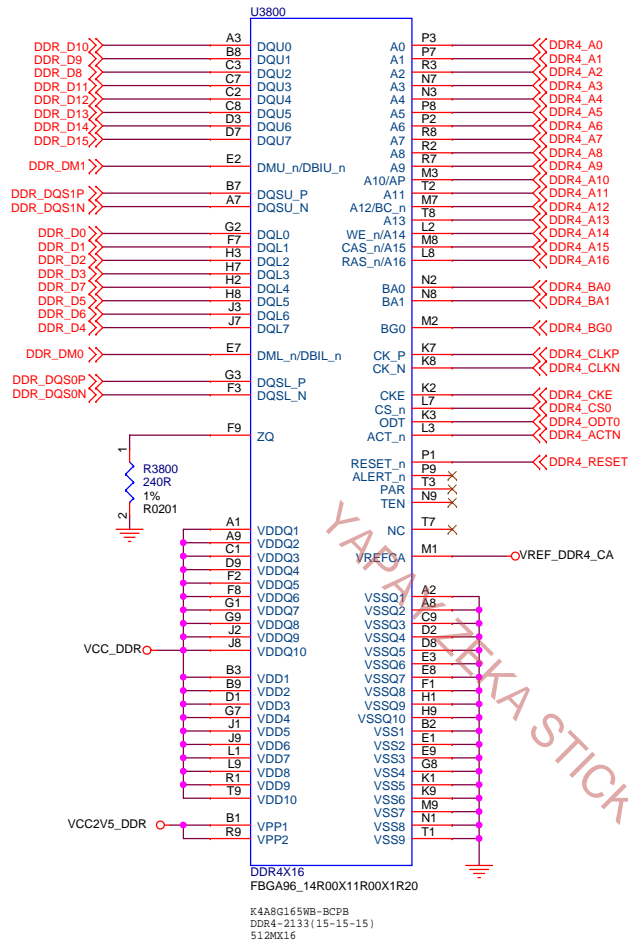
DDR4-A1R98252 56R 1 DDR4 A1  
DDR4-BAR98262 56R 1 DDR4 A1  
DDR4-A1R98272 56R 1 DDR4 A10  
DDR4-A1R98282 56R 1 DDR4 A14

DDR4-CKE R98292 56R 1 DDR4 CKE  
DDR4-A12 R98302 56R 1 DDR4 A12  
DDR4-ACTN R98312 56R 1 DDR4 ACTN  
DDR4-A3 R98322 56R 1 DDR4 A3

DDR4-A15 R98332 56R 1 DDR4 A15  
DDR4-A16 R98342 56R 1 DDR4 A16  
DDR4-ODT R98352 56R 1 DDR4 ODT0  
DDR4-CS0 R98362 56R 1 DDR4 CS0

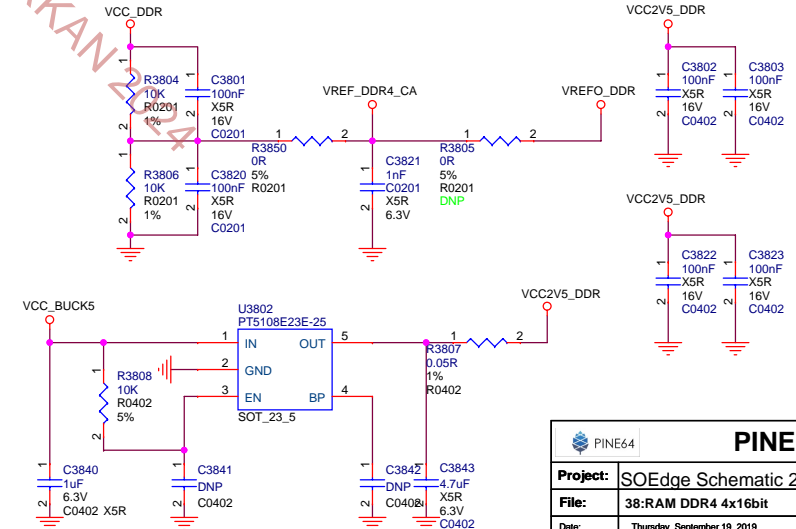
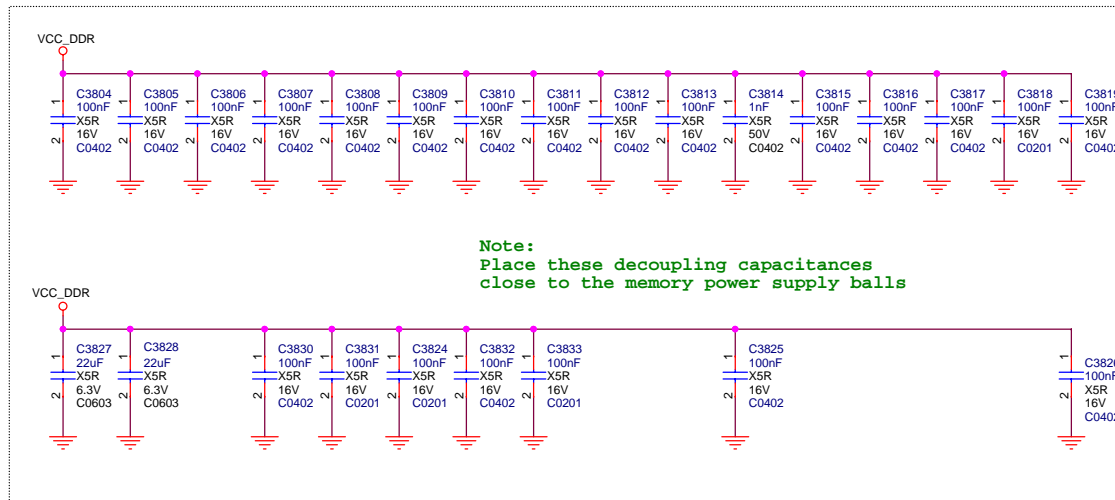
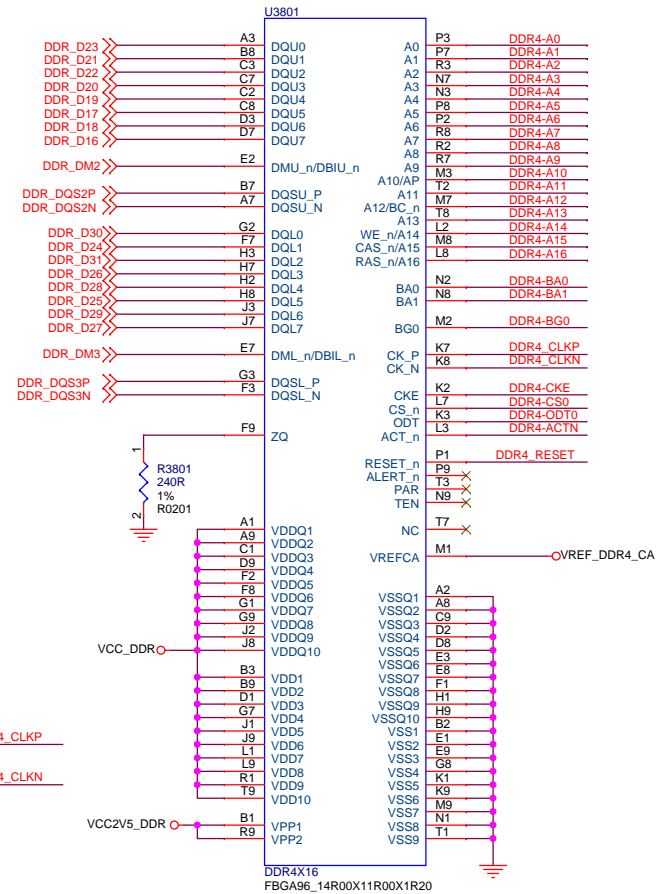
For Daisy Chain Scheduling

## 2X16bit DDR4



Date can be switched in group.

VDD(1.25V): Supply Voltage  
VDDQ(1.25V): Supply Voltage for output  
VPP(2.5V): Peak to Peak Voltage  
VPP must be equal or greater than  
VDD/VDDQ at all times.

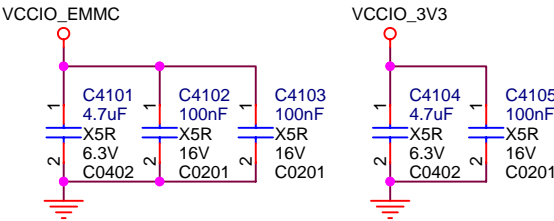
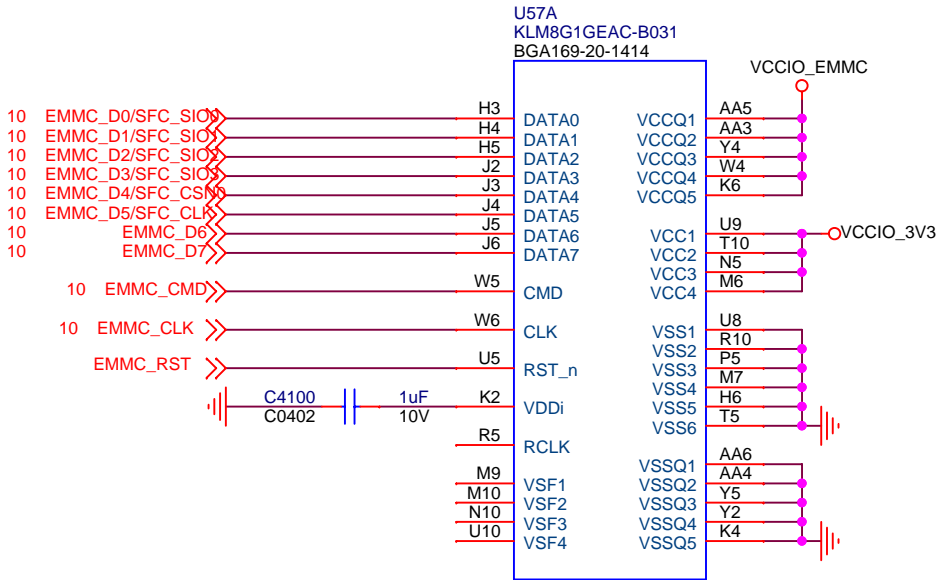


| PINE64       |                                   |        |          |
|--------------|-----------------------------------|--------|----------|
| Project:     | SOEdge Schematic 20190919 ver 2.0 |        |          |
| File:        | 38-RAM DDR4 4x16bit               |        |          |
| Date:        | Thursday, September 19, 2019      | Rev:   |          |
| Designed by: | XIAOHF                            | Sheet: | 22 of 40 |


Remind: Refer to the latest AVL for parts selection.



eMMC



Remind: Refer to the latest AVL for parts selection.

|  |                                   |               |          |
|--|-----------------------------------|---------------|----------|
|  PINE64 |                                   | <b>PINE64</b> |          |
| <b>Project:</b>  | SOEdge Schematic 20190919 ver 2.0 |               |          |
| <b>File:</b>   | <b>41.EMMC</b>                    |               |          |
| <b>Date:</b>   | Thursday, September 19, 2019      | <b>Rev:</b>   |          |
| <b>Designed by:</b>  | Rzf                               | <b>Sheet:</b> | 41 of 99 |

