

RV1126_RV1109_USB_AI_Camera_DEMO_DDR3P216DD6_V15

Main Functions Introduction

- 01) Power: Discrete power supply
- 02) DRAM: DDR3 4Gb x 2
- 03) ROM: eMMC 8GB/SPI nand 512MB
- 04) Support USB2.0 OTG
- 05) Support MIPI CSI RX
- 06) Support Motor Dricer Control
- 07) Support Option MIC Array
- 08) Support Debug

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Index and Notes

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

NOTE 2:

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

Generate Bill of Materials

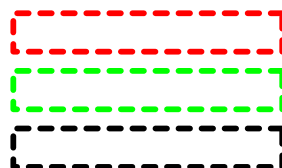
Header:

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}

Graphic Description



Note

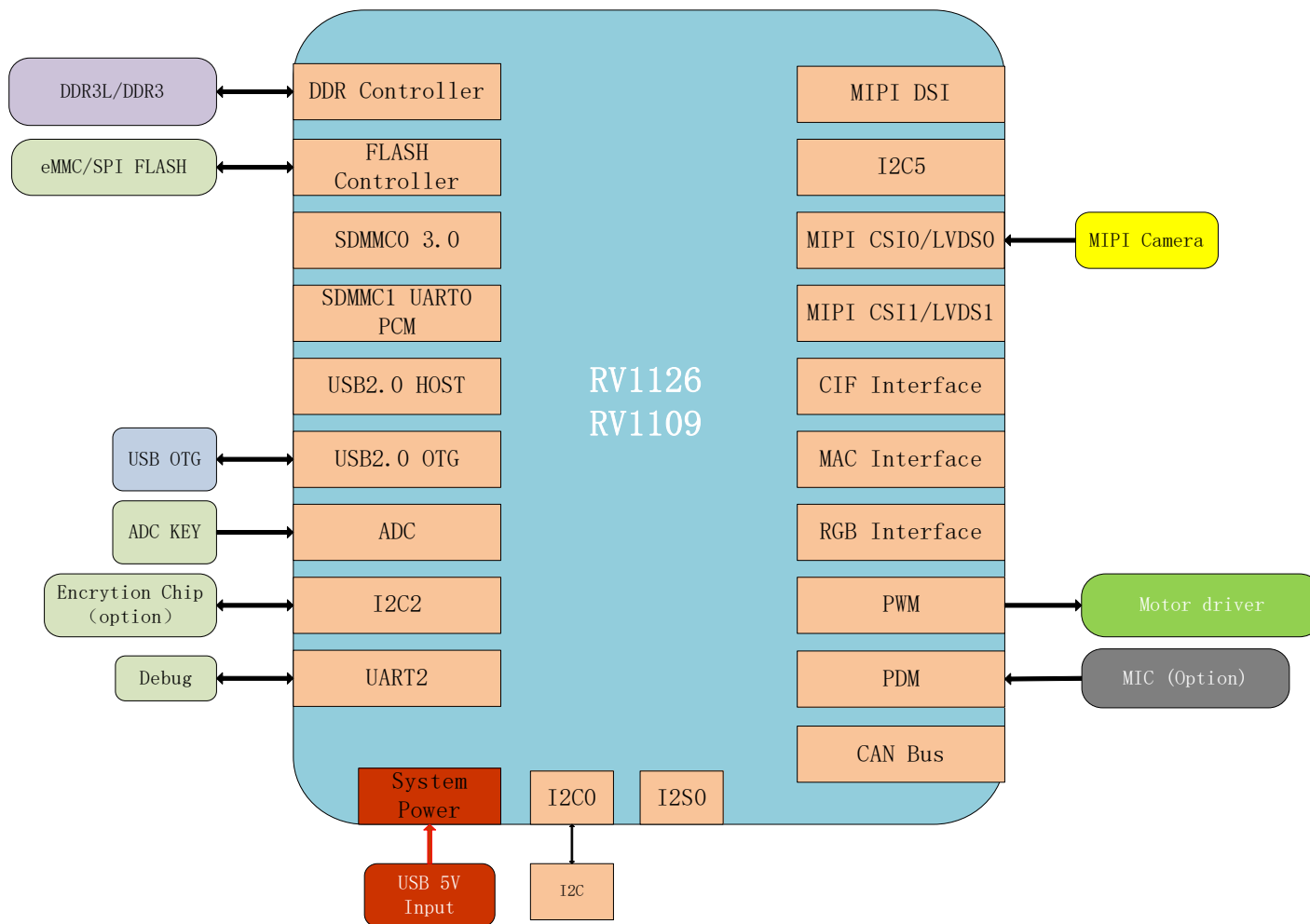
Option

Description

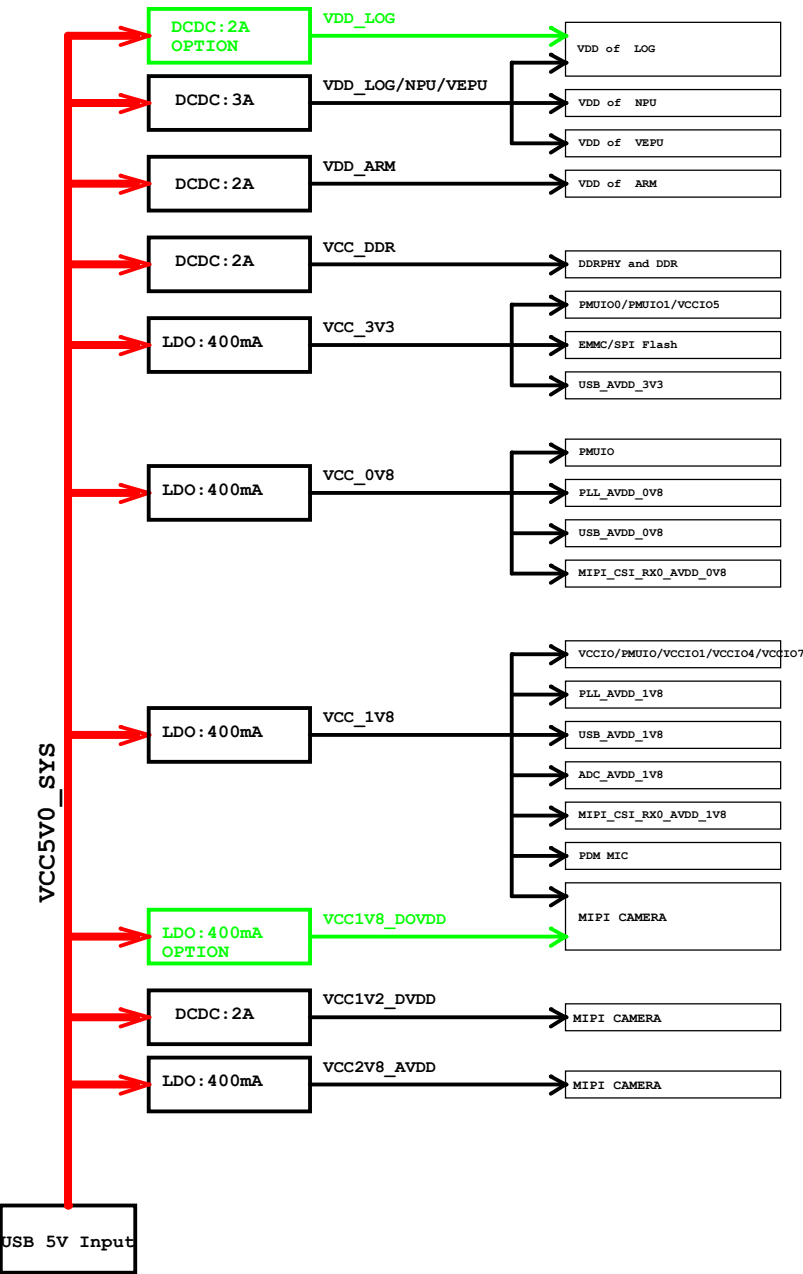
Revision History

Version	Date	Author	Change Note	Approved
V1.0	2020.03.30	whb	First edition AI Camera for RV1126/1109	
V1.1	2020.07.22	whb	Modify the VCC_1V2 and VCC_3V3 power path	
V1.2	2020.08.20	whb	Add power sleep control signal and other	
V1.3	2020.10.30	whb	Optimize 1.8V power supply	
V1.4	2020.12.21	whb	Modify the VDD_LOG power and improve the USB OTG signal	
V1.5	2021.02.07	whb	Modify the reset IC model、 power on timing and add power IC model	

RV1126_RV1109 Block Diagram

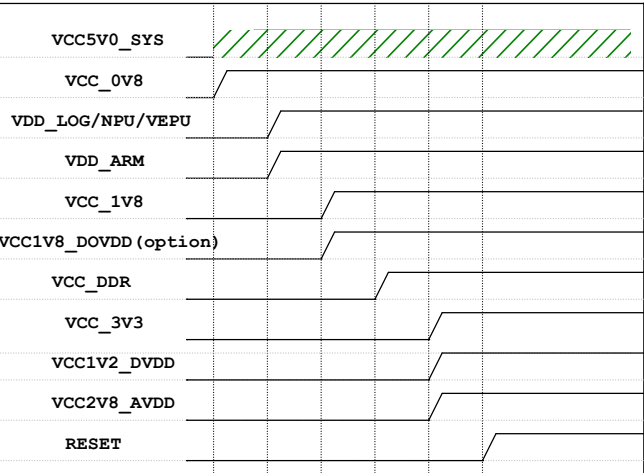


Power Diagram



Power-on Sequence

Power Name	PMIC Channel	Time Slot (step 6ms)	Default voltage	Supply Limit	Default ON/OFF	Sleep ON/OFF	Peak Current	Sleep Current
VCC 0V8	LDO	Slot: 1	0.8V	0.4A	ON	ON		
VDD LOG/NPU/VEPU	BUCK	Slot: 2	0.825V	3.0A	ON	ON		
VDD ARM	BUCK	Slot: 2	0.824V	2.0A	ON	ON		
VCC 1V8	LDO	Slot: 3	1.8V	0.4A	ON	ON		
VCC1V8_DVDD(option)	LDO	Slot: 3	1.8V	0.4A	ON	ON		
VCC DDR	BUCK	Slot: 4	1.35V	1.0A	ON	ON		
VCC 3V3	LDO	Slot: 5	3.3V	0.4A	ON	ON		
VCC1V2_DVDD	BUCK	Slot: 5	1.2V	1.0A	ON	ON		
VCC2V8_AVDD	LDO	Slot: 5	2.8V	0.4A	ON	ON		



I2C MAP

RV1126
RV1109

I2C0

I2C1

I2C1_SCL
I2C1_SDA

Pull-up voltage:1.8V
Rate: TBD

MIPI camera
I2C add = TBD

I2C2

I2C2_SCL
I2C2_SDA

Pull-up voltage:3.3V
Rate: TBD

Encrytion Chip
I2C add = TBD

M0

I2C3

M1

M2

M0

I2C4

M1

M0

I2C5_SCL_M0
I2C5_SDA_M0

Pull-up voltage:3.3V
Rate: TBD

MIC Array(Optional)
I2C add = TBD

I2C5

M1

M2

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Project:	RV1126_RV1109 AI Camera						
File:	05.I2C MAP						
Date:	Sunday, February 07, 2021				Rev:	V1.5	
Designed by:	whb	Reviewed by:		Sheet:	6	of 28	

IO Power Domain Map

IO Domain	IO Group	Support of IO Voltage		Default Actual assigned IO Domain Voltage			Notes
		1.8V	3.3V	Net Name of Power Supply	Power Source	Voltage	
PMUIO0	<i>GPIO0A</i>	✓	✓	VCC_3V3		3.3V	
PMUIO1	<i>GPIO0BC</i>	✓	✓	VCC_3V3		3.3V	
VCCIO1	<i>GPIO0CD/GPIO1A</i>	✓	✓	VCCIO_FLASH		1.8/3.3V	<i>GPIO0_B3/FLASH_VOL_SEL pin defined as a set pin for VCCIO1 voltage domain after power-on reset.It is pull-up for 1.8V</i>
VCCIO2	<i>GPIO1AB</i>	✓	✓	NC			
VCCIO3	<i>GPIO1BCD</i>	✓	✓	NC			
VCCIO4	<i>GPIO1D/GPIO2A</i>	✓	✓	VCC_1V8		1.8V	
VCCIO5	<i>GPIO2ABCD/GPIO3A</i>	✓	✓	VCC_3V3		3.3V	
VCCIO6	<i>GPIO3ABC</i>	✓	✓	NC			
VCCIO7	<i>GPIO3D/GPIO4A</i>	✓	✓	VCC_1V8		1.8V	

U1000N
RV1126_RV1109
BGA409_14R00X14R00X0R90

NPU/LOGIC/VEPU/ARM Power

NPU_VDD_1 H11
NPU_VDD_2 H12
NPU_VDD_3 J10
NPU_VDD_4 J11
NPU_VDD_5 K10
NPU_VDD_6 K11

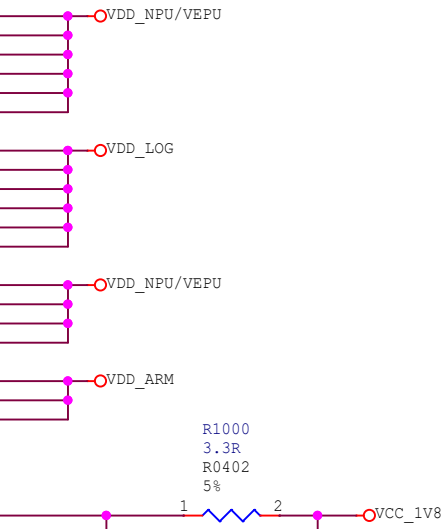
LOGIC_VDD_1 H9
LOGIC_VDD_2 J9
LOGIC_VDD_3 L10
LOGIC_VDD_4 M11
LOGIC_VDD_5 H13
LOGIC_VDD_6 J13

VEPU_VDD_1 L9
VEPU_VDD_2 M9
VEPU_VDD_3 N8
VEPU_VDD_4 N9

ARM_VDD_1 N12
ARM_VDD_2 P12
ARM_VDD_3 P13

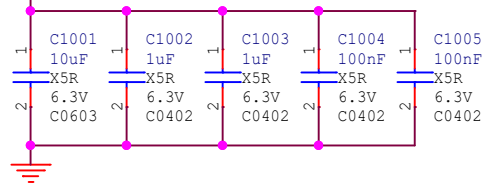
Supply for VCCIO1~7 Power

VCCIO_VDD_1V8



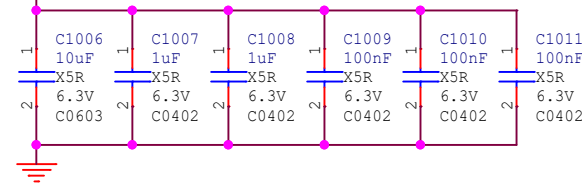
VDD_LOG

Close to VDD_LOG



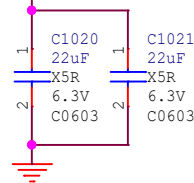
VDD_NPU/VEPU

Close to VDD_NPU



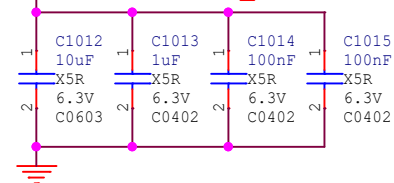
VDD_NPU/VEPU

Close to SOC



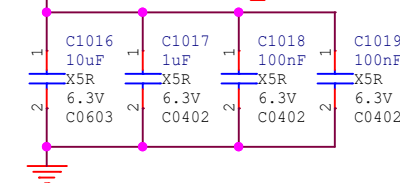
VDD_ARM

Close to VDD_ARM



VDD_NPU/VEPU

Close to VDD_VEPU

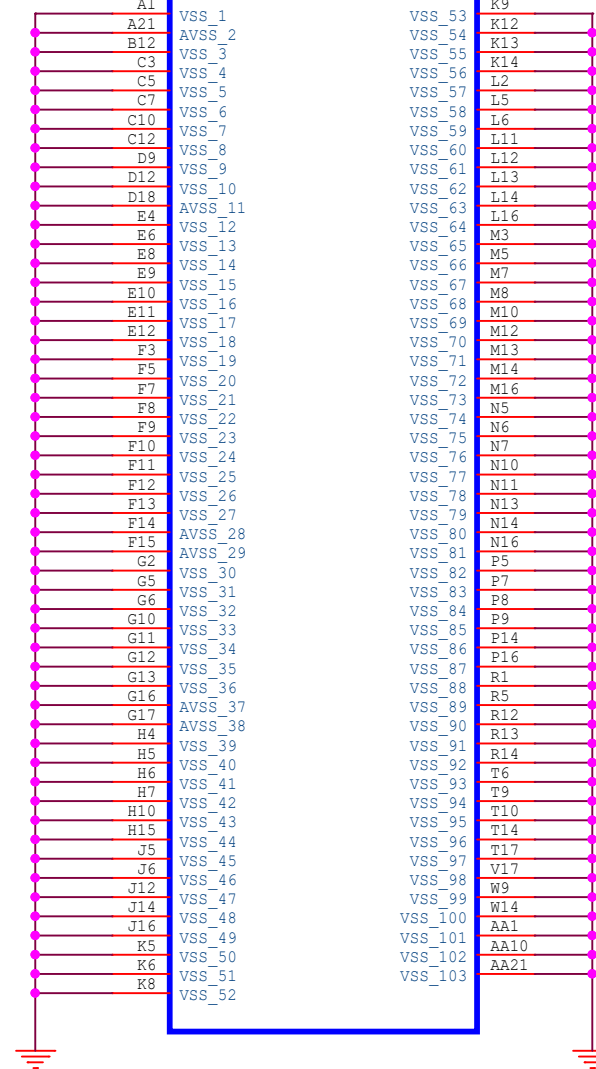



Power

GND

U10000
RV1126_RV1109
BGA409_14R00X14R00X0R90

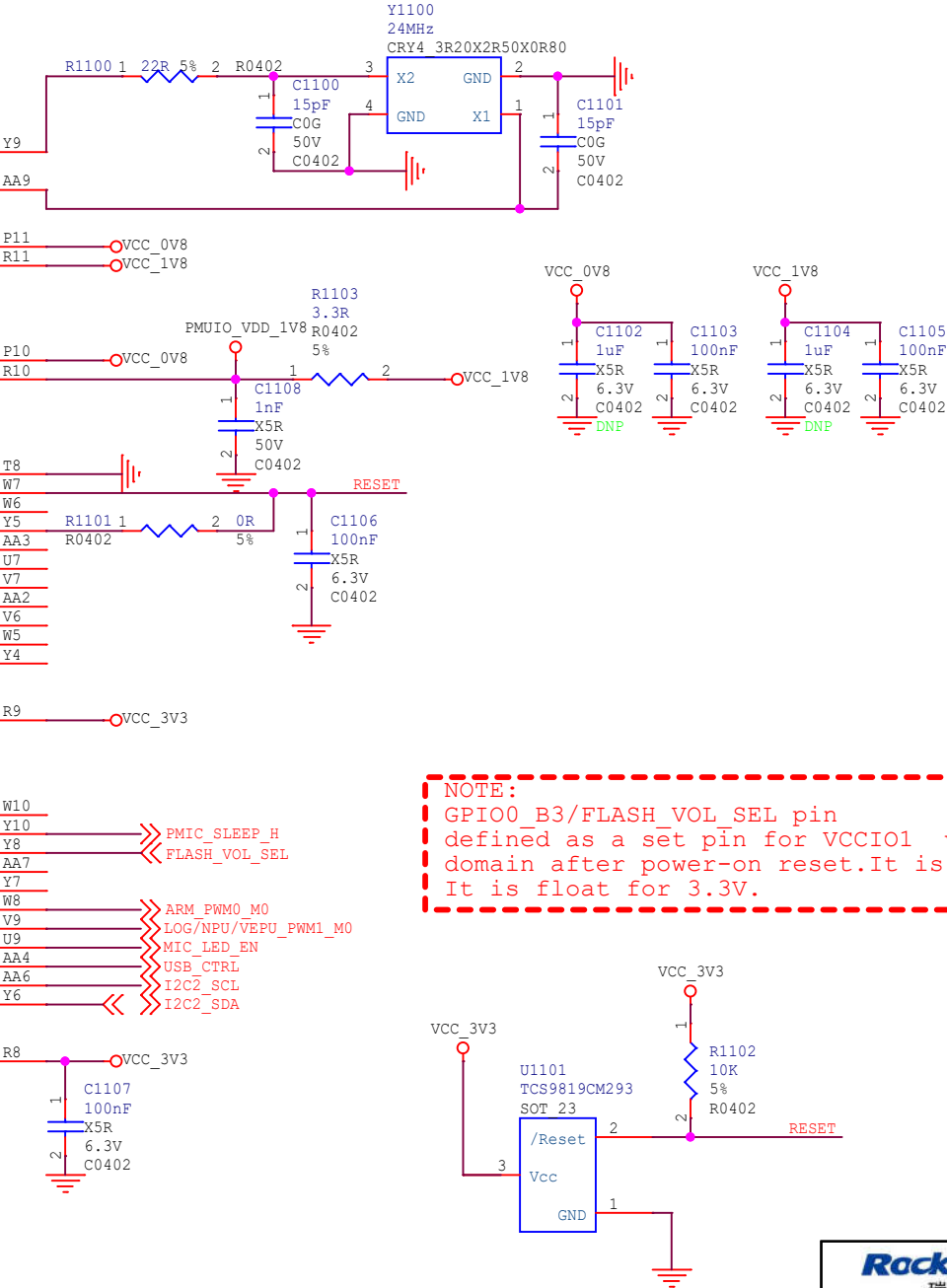
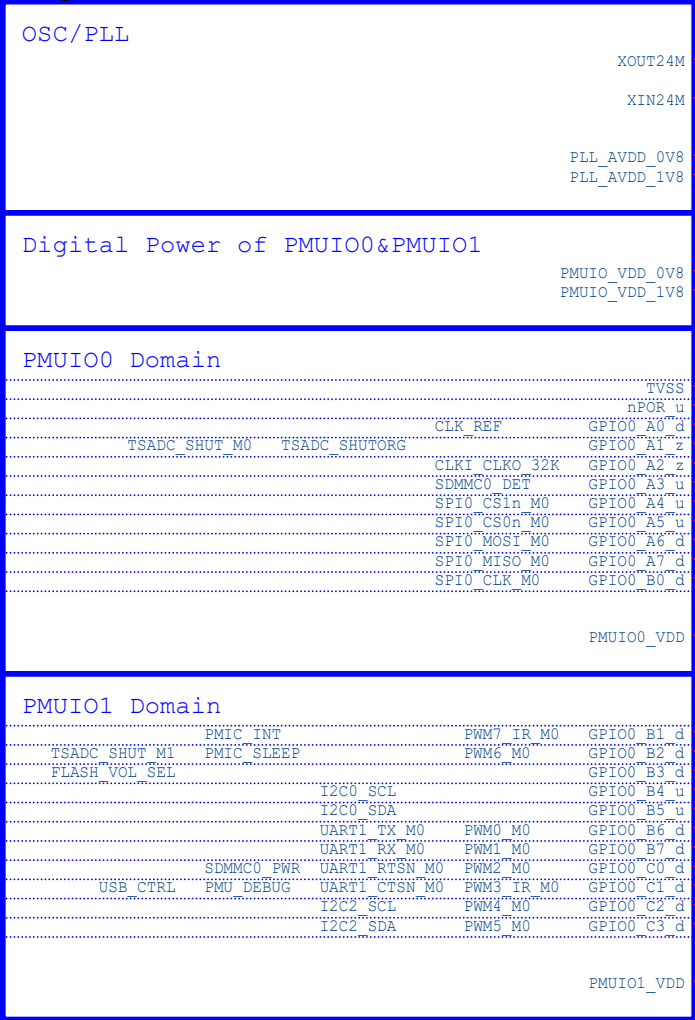
VSS/AVSS



 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	10.RV1126/1109_Power/GND		
Date:	Sunday, February 07, 2021		Rev: V1.5
Designed by:	whb	Reviewed by:	Sheet: 8 of 28

OSC/PLL/PMUIO

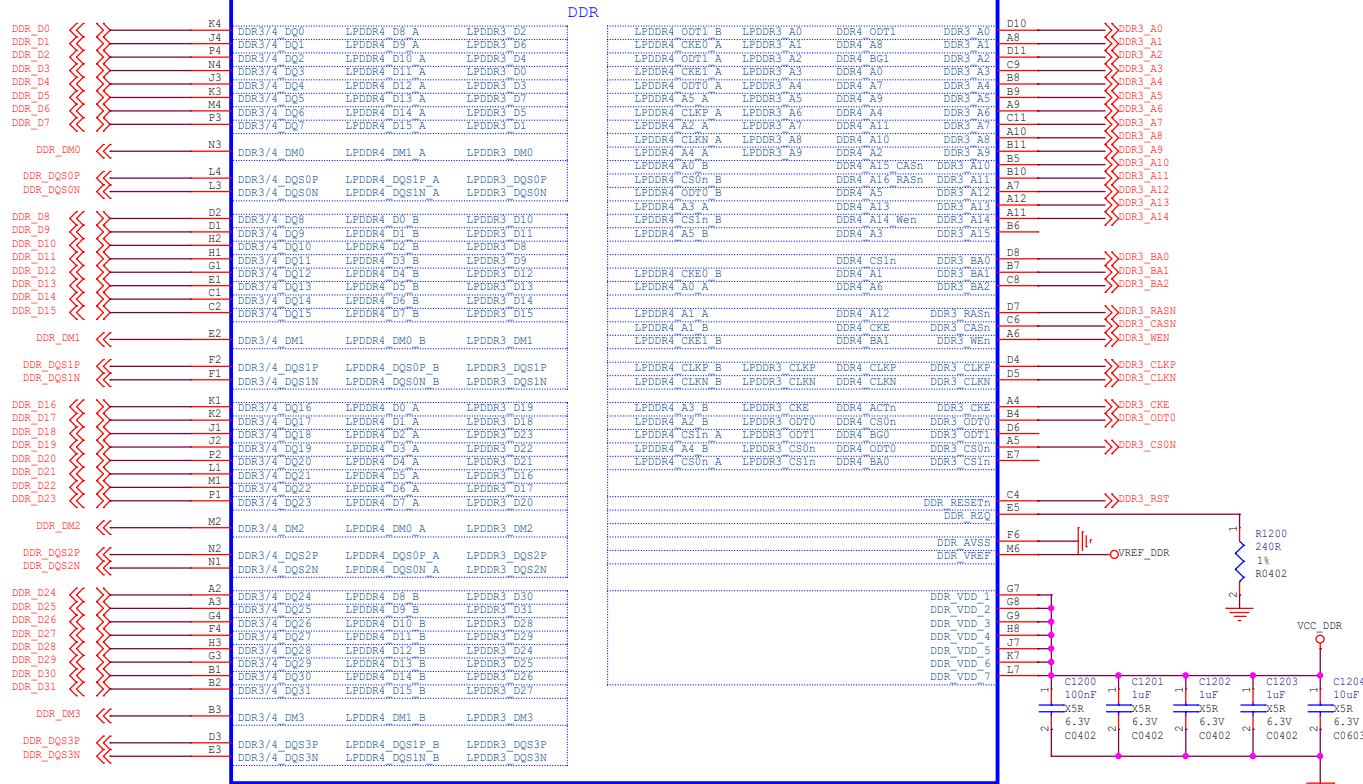
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RV1126_RV1109
BGA409_14R00X14R00X0R90



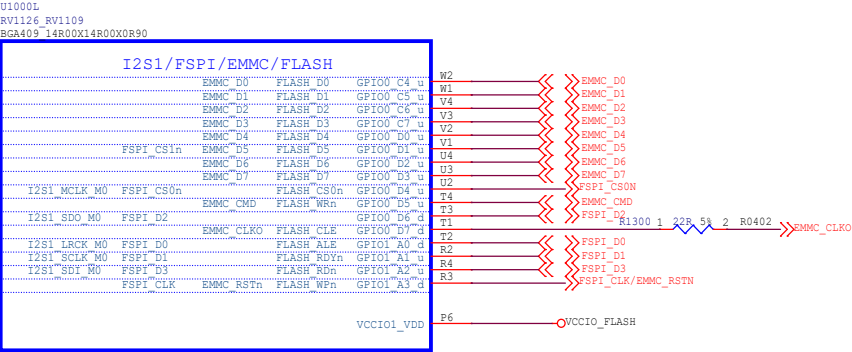
RESET IC

DDR Controller

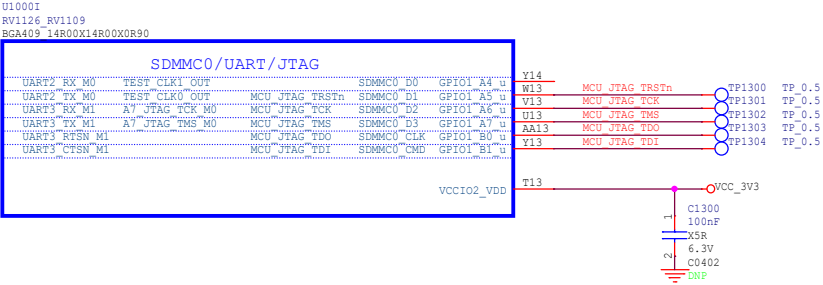
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RV1126 RV1109
BGA409 14R00X14R00X0R90



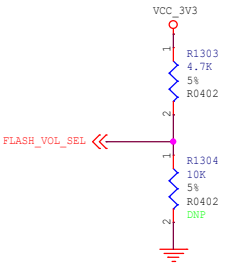
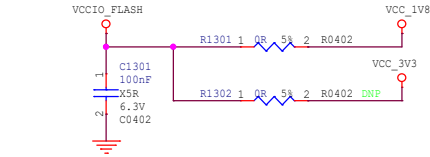
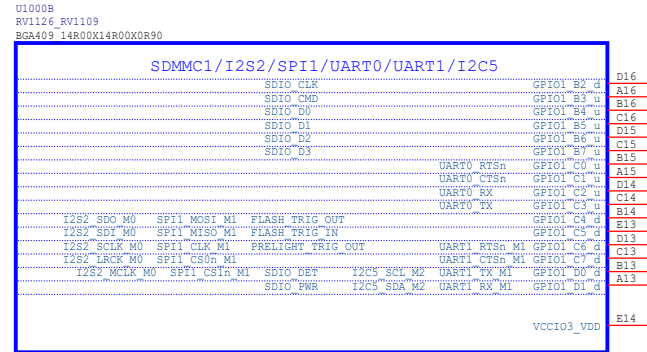
EMMC/FLASH



SDMMC0/JTAG



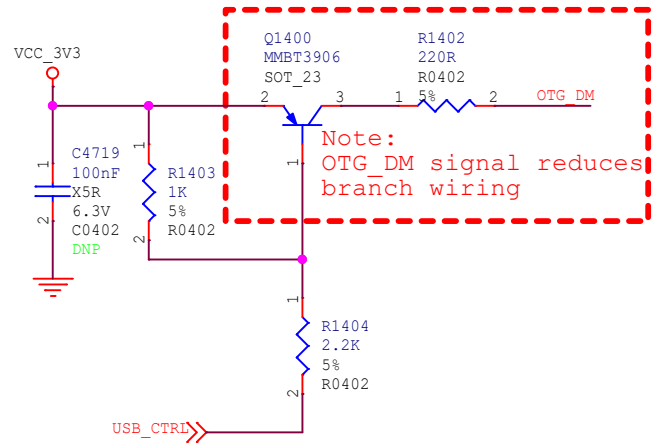
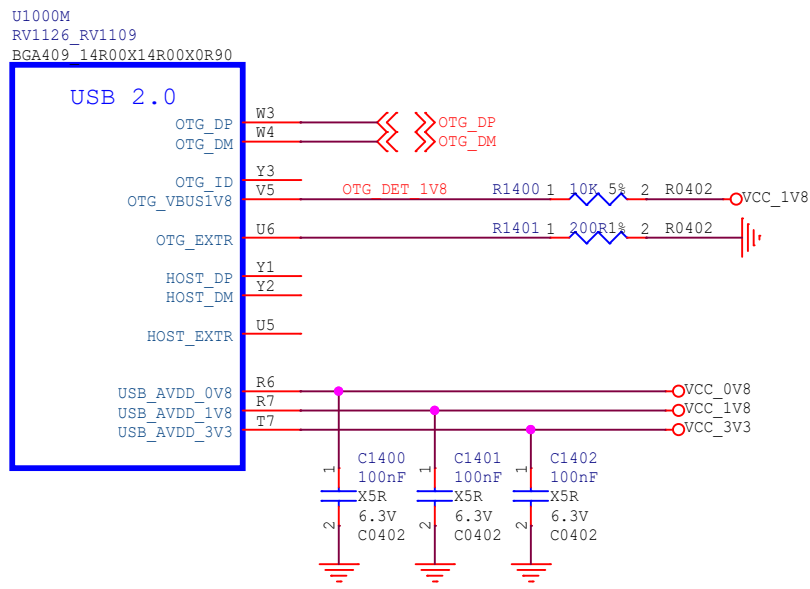
SDMMC1/UART/I2S2



NOTE:
FLASH(VCCIO1) power domain IO supply configuration pin:

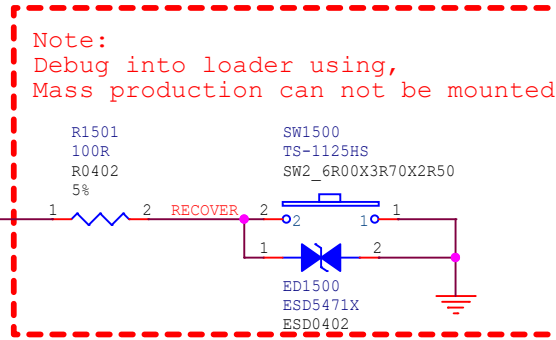
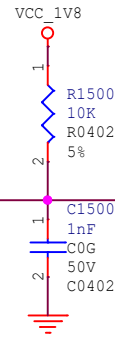
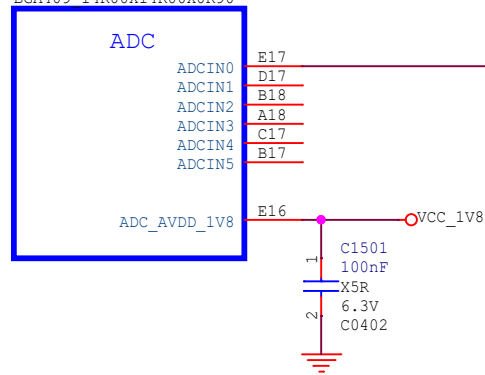
Condition	VCCIO1 (VCCIO_FLASH)
FLASH_VOL_SEL=0	3.3V
FLASH_VOL_SEL=1	1.8V Default


USB Controller



SARADC

U1000C
RV1126_RV1109
BGA409_14R00X14R00X0R90



 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	15.RV1126/1109_SARADC		
Date:	Sunday, February 07, 2021		Rev: V1.5
Designed by:	whb	Reviewed by:	Sheet: 13 of 28

CIF Interface

U1000F
RV1126_RV1109
BGA409_14R00X14R00X0R90

CIF/RGMII/I2S/PDM/UART/SPI/I2C

CIF_D0_M0	I2S0_SCLK_TX_M1	UART4_TX_M0	I2C3_SCL_M0	PWM8_M0	GPIO3_A4_d	R17
CIF_D1_M0	I2S0_LRCK_TX_M1	UART4_RX_M0	I2C3_SDA_M0	PWM9_M0	GPIO3_A5_d	T18
CIF_D2_M0	RGMII_COL_M0	UART5_TX_M0	CAN_RXD_M1	PWM10_M0	GPIO3_A6_d	P17
CIF_D3_M0	RGMII_RXD2_M0	UART5_RX_M0	CAN_TXD_M1	PWM11_IR_M0	GPIO3_A7_d	R18
CIF_D4_M0	RGMII_RXD3_M0	I2S0_MCLK_M1	UART5_RTSN_M0	I2C5_SCL_M1	GPIO3_B0_d	T19
CIF_D5_M0	RGMII_TXD2_M0	I2S0_SCLK_RX_M1	UART5_CTSN_M0	I2C5_SDA_M1	GPIO3_B1_d	T20
CIF_D6_M0	RGMII_TXD3_M0	I2S0_LRCK_RX_M1	UART4_RTSN_M0		GPIO3_B2_d	N17
CIF_D7_M0	RGMII_TXD0_M0	I2S0_SDO1_SDI3_M1	UART4_CTSN_M0		GPIO3_B3_d	R19
CIF_D8_M0	RGMII_TXD1_M0	I2S0_SDO2_SDI2_M1	SPI1_CS1n_M0		GPIO3_B4_d	T21
CIF_D9_M0	RGMII_TXEN_M0	I2S0_SDO3_SDI1_M1	SPI1_CS0n_M0		GPIO3_B5_d	N18
CIF_D10_M0	RGMII_RXD0_M0	PDM_SDI2_M1	SPI1_MOSI_M0		GPIO3_B6_d	R20
CIF_D11_M0	RGMII_RXD1_M0	PDM_SDI3_M1	SPI1_MISO_M0		GPIO3_B7_d	R21
CIF_D12_M0	RGMII_CLK_M0	PDM_CLK0_M1	SPI1_CLK_M0		GPIO3_C0_d	N19
CIF_D13_M0	RGMII_RXD0_M0	PDM_SDI0_M1			GPIO3_C1_d	M17
CIF_D14_M0	RGMII_RXER_M0	PDM_SDI1_M1			GPIO3_C2_d	M18
CIF_D15_M0	RGMII_MDIO_M0	PDM_CLK1_M1			GPIO3_C3_d	N20
CIF_VSYNC_M0	RGMII_MDC_M0		UART3_RTSN_M0		GPIO3_C4_d	M19
CIF_CLKIN_M0	CLK_OUT_ETHERNET_M0		UART3_CTSN_M0		GPIO3_C5_d	P19
CIF_CLKOUT_F0	RGMII_TXCLK_M0		UART3_TX_M0		GPIO3_C6_d	P20
CIF_HSYNC_M0	RGMII_RXCLK_M0		UART3_RX_M0		GPIO3_C7_d	M15

VCCIO6_VDD

I2C/SPI/MIPI-CLK

U1000G
RV1126_RV1109
BGA409_14R00X14R00X0R90

SPI/I2C/I2S/UART/MIPI_CLK

	I2C1_SDA	UART4_RTSN_M2	GPIO1_D2_U	W19	U18	I2C1_SDA
	I2C1_SCL	UART4_CTSN_M2	GPIO1_D3_U	U20	V21	I2C1_SCL
SPI0_CS1N_M1	I2S1_MCLK_M1	UART4_RX_M2	GPIO1_D4_D	W20	V20	MIPI_RX0_PDN
SPI0_MISO_M1	I2S1_SCLK_M1	I2C3_SCL_M2	GPIO1_D5_D	V21	U19	CAMERA_RST
SPI0_MISO_M1	I2S1_LRCK_M1	I2C3_SDA_M2	GPIO1_D6_D	U18		
SPI0_CS0N_M1	I2S1_SDI1_M1	UART5_TX_M2	GPIO1_D7_D	U19		
SPI0_CLK_M1	I2S1_SDO1_M1	UART5_RX_M2	GPIO2_A0_D	U20		
			GPIO2_A1_D	W21		
			GPIO2_A2_D	V21		
		MIPI_CSI_CLK1_M2	UART5_RTSN_M2			
		MIPI_CSI_CLK0_M2	UART5_CTSN_M2	GPIO2_A3_D		MIPI_CSI_CLK0

VCCIO4_VDD



MIPI-CSI Interface

U1000H
RV1126_RV1109
BGA409_14R00X14R00X0R90

MIPI CSI RX1

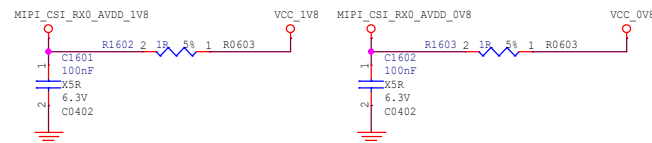
MIPI_CSI_RX1_D0P	LVDS1_RX0P	AA20
MIPI_CSI_RX1_D0N	LVDS1_RX0N	Y20
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MIPI_CSI_RX1_D1N	LVDS1_RX1N	Y19
MIPI_CSI_RX1_D2P	LVDS1_RX2P	AA18
MIPI_CSI_RX1_D2N	LVDS1_RX2N	Y18
MIPI_CSI_RX1_D3P	LVDS1_RX3P	Y17
MIPI_CSI_RX1_D3N	LVDS1_RX3N	W17
MIPI_CSI_RX1_CLKP	LVDS1_CLKP	V18
MIPI_CSI_RX1_CLKN	LVDS1_CLKN	W18

MIPI_CSI_RX1_AVDD_OV8
MIPI_CSI_RX1_AVDD_1V8

MIPI CSI RX0

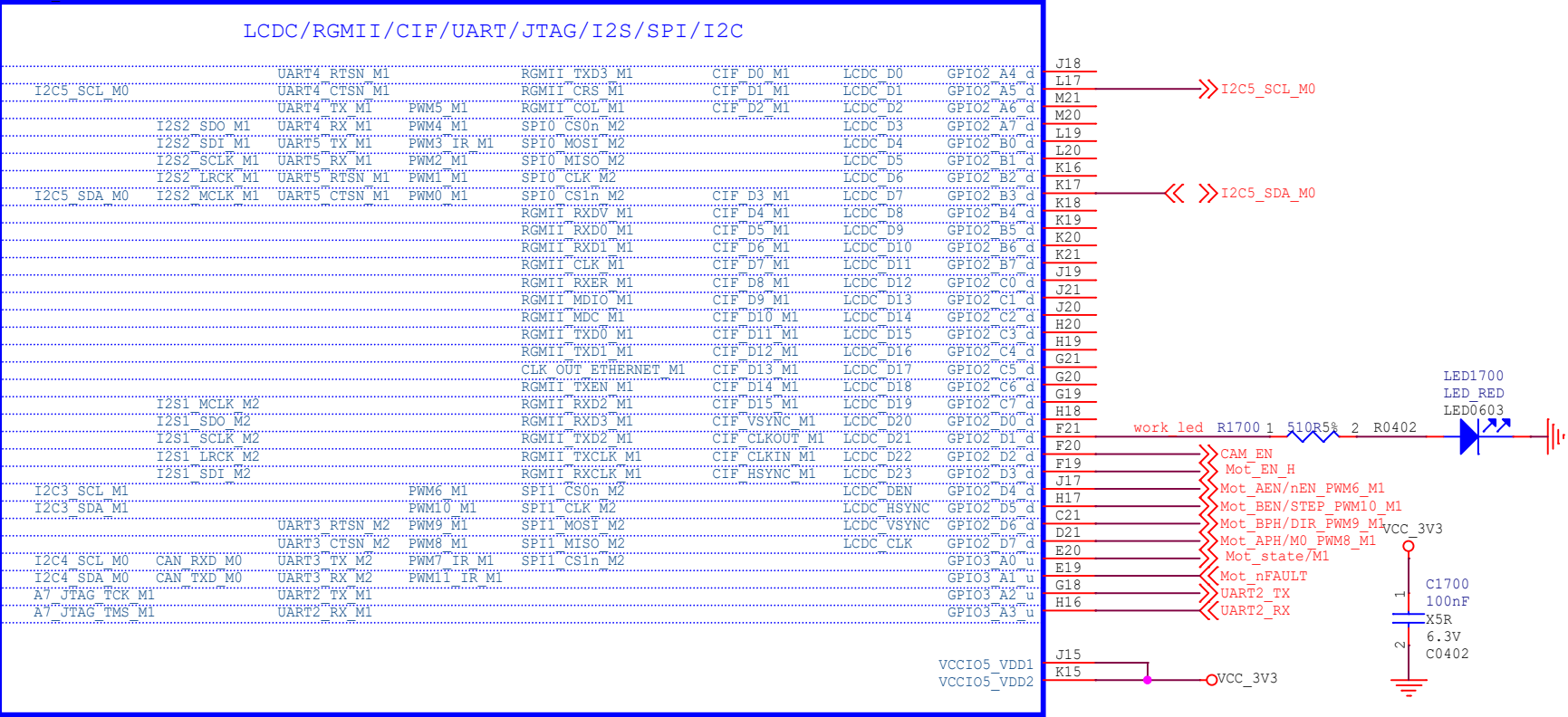
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MIPI_CSI_RX0_D1P	LVDS0_RX1P	Y16
MIPI_CSI_RX0_D1N	LVDS0_RX1N	W16
MIPI_CSI_RX0_D2P	LVDS0_RX2P	W15
MIPI_CSI_RX0_D2N	LVDS0_RX2N	Y15
MIPI_CSI_RX0_D3P	LVDS0_RX3P	AA15
MIPI_CSI_RX0_D3N	LVDS0_RX3N	AA16
MIPI_CSI_RX0_CLKP	LVDS0_CLKP	U15
MIPI_CSI_RX0_CLKN	LVDS0_CLKN	V15

MIPI_CSI_RX0_AVDD_OV8
MIPI_CSI_RX0_AVDD_1V8



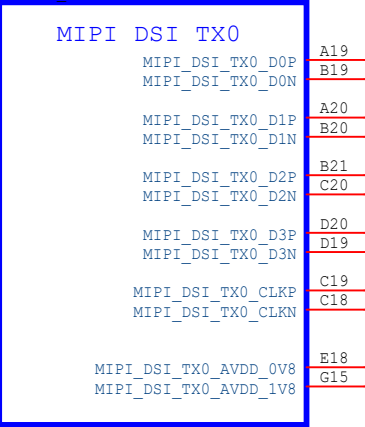
LCDC/RGMII/PWM

U1000E
RV1126_RV1109
BGA409 14R00X14R00X0R90



MIPI-DSI Interface

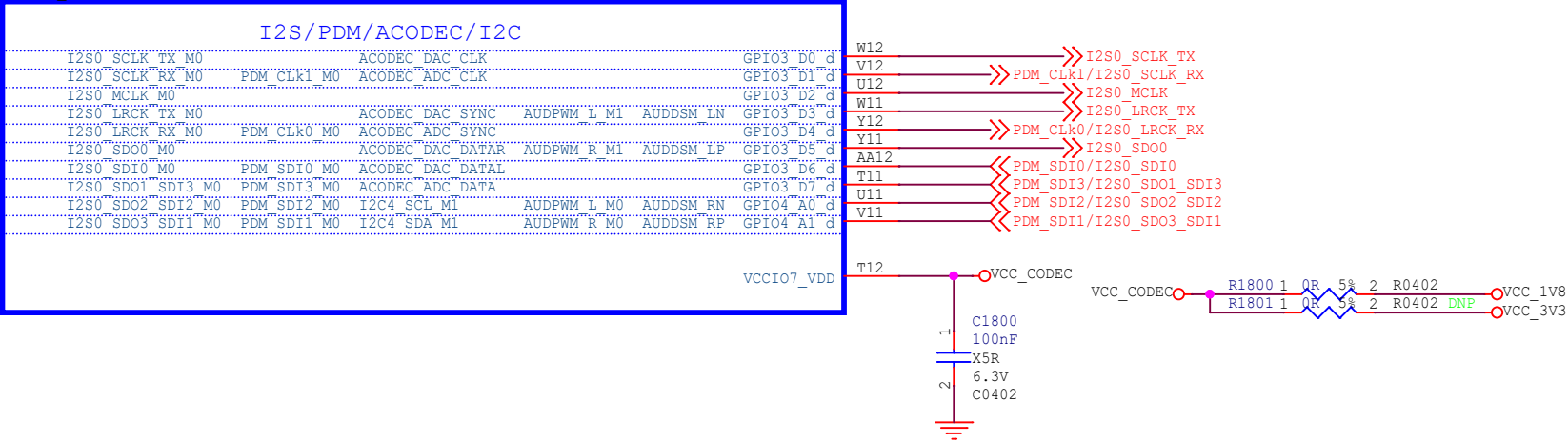
U1000D
RV1126_RV1109
BGA409 14R00X14R00X0R90



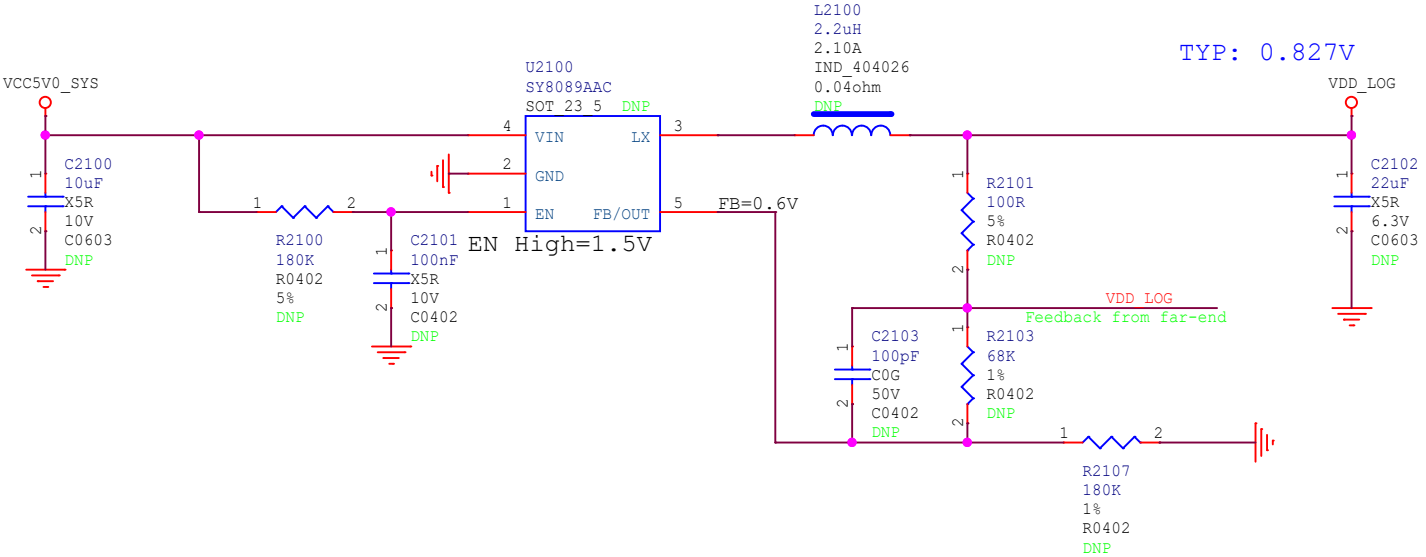
<div><div>Rockchip</div><div>瑞芯微电子</div></div> <div>Rockchip Electronics Co., Ltd</div>			
Project:	RV1126_RV1109 AI Camera		
File:	17.RV1126/1109_VideoOutput		
Date:	Sunday, February 07, 2021	Rev:	V1.5
Designed by:	whb	Reviewed by:	
Sheet:	15	of	28

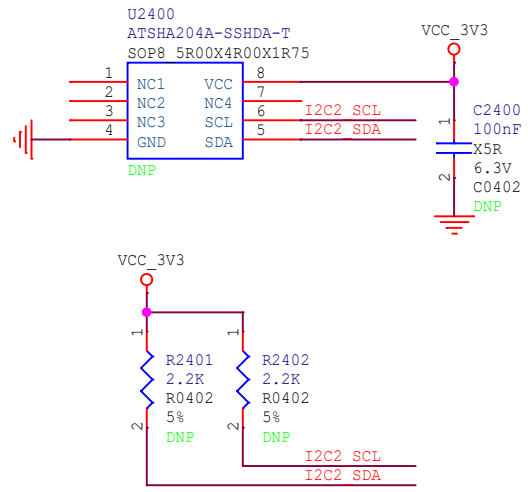
Audio Interface

U1000J
RV1126 RV1109
BGA409_14R00X14R00X0R90




VDD_LOG

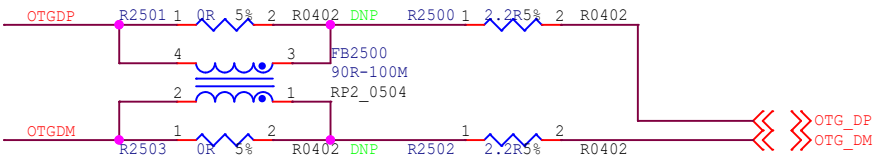
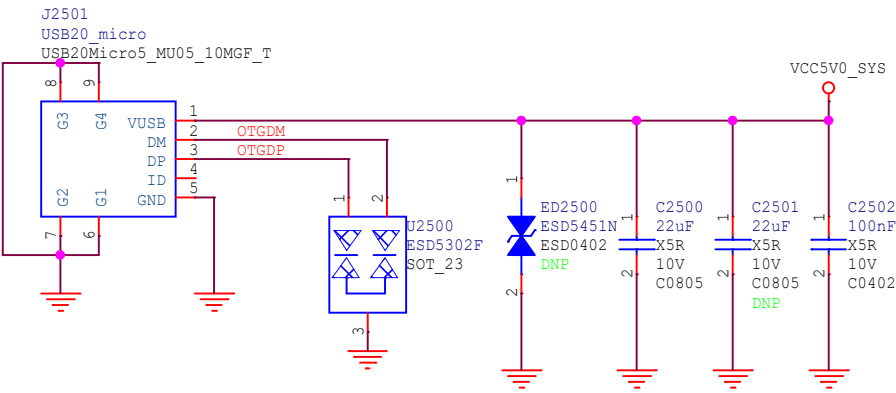





I2C2_SDA << >>
I2C2_SCL << >>

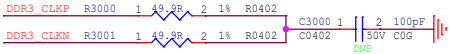
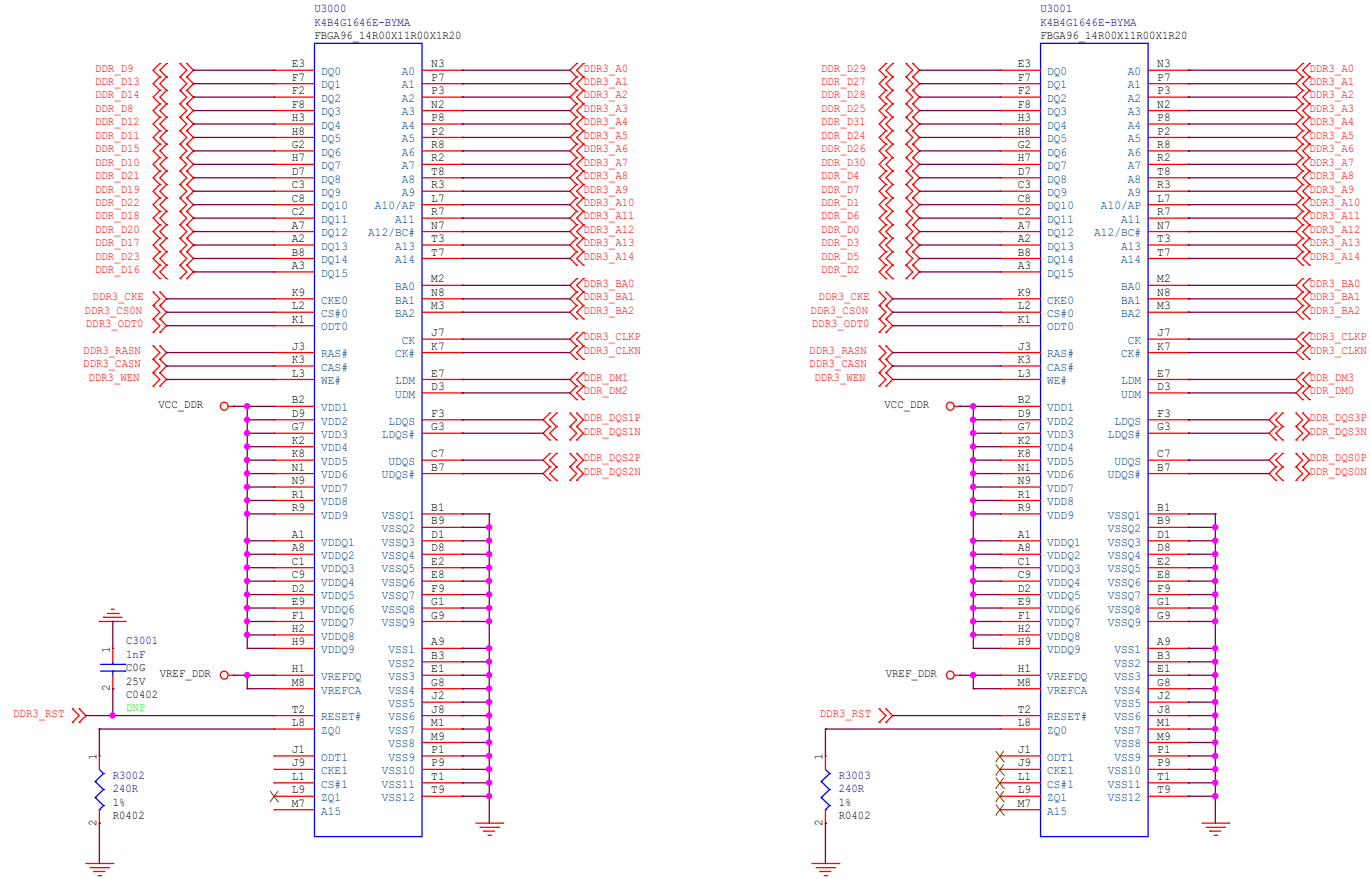
 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	24.Encrytion Chip		
Date:	Sunday, February 07, 2021		Rev: V1.5
Designed by:	whb	Reviewed by:	Sheet: 19 of 28

USB2.0 OTG

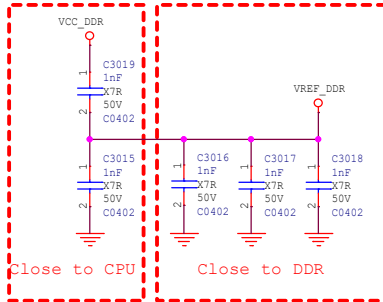
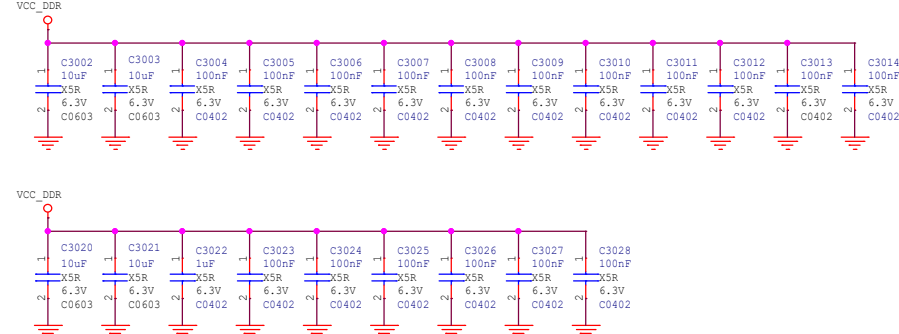


 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	25.USB OTG		
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DDR3/DDR3L 2x16bit

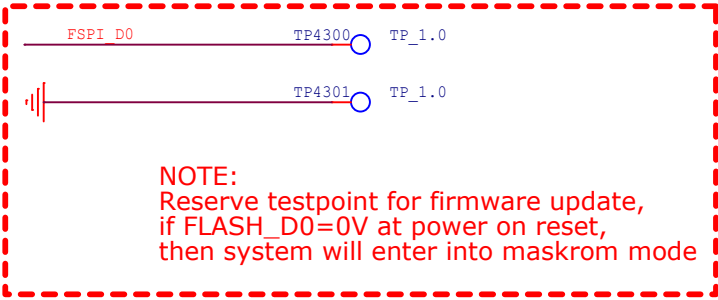
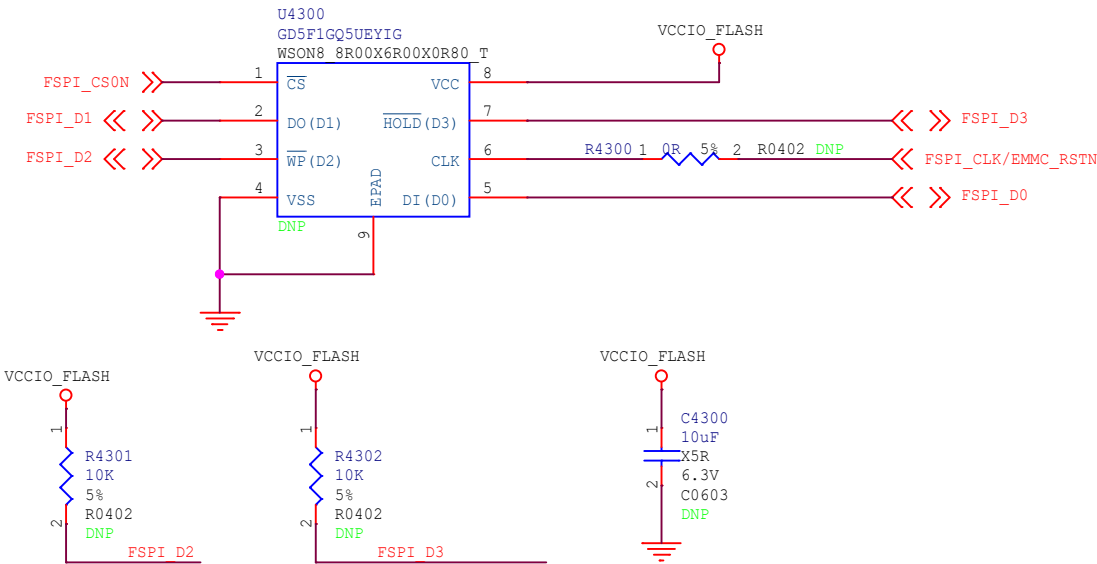



Note: All the Power filter capacitors should be placed close to the power pins of DDR3



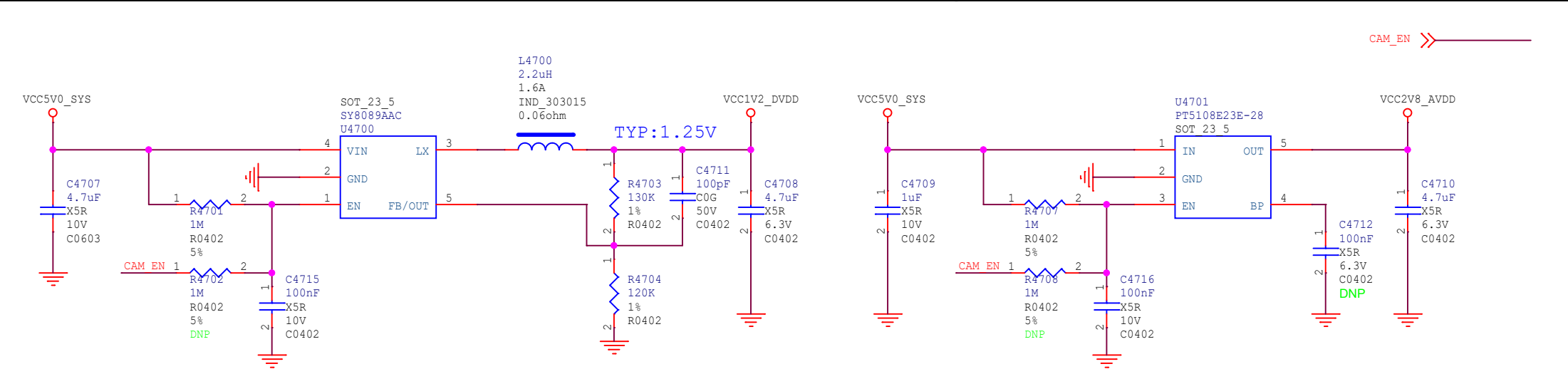
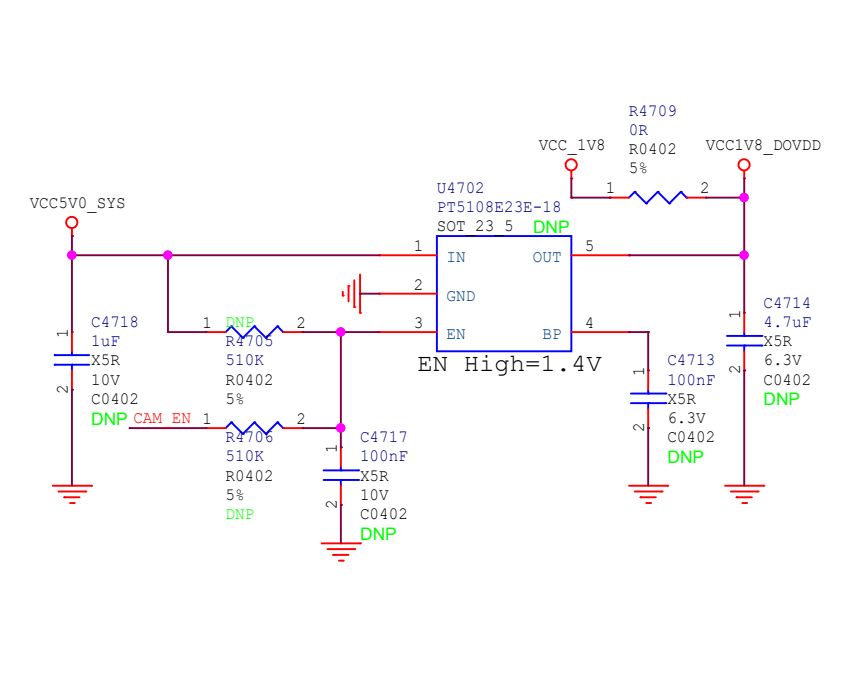
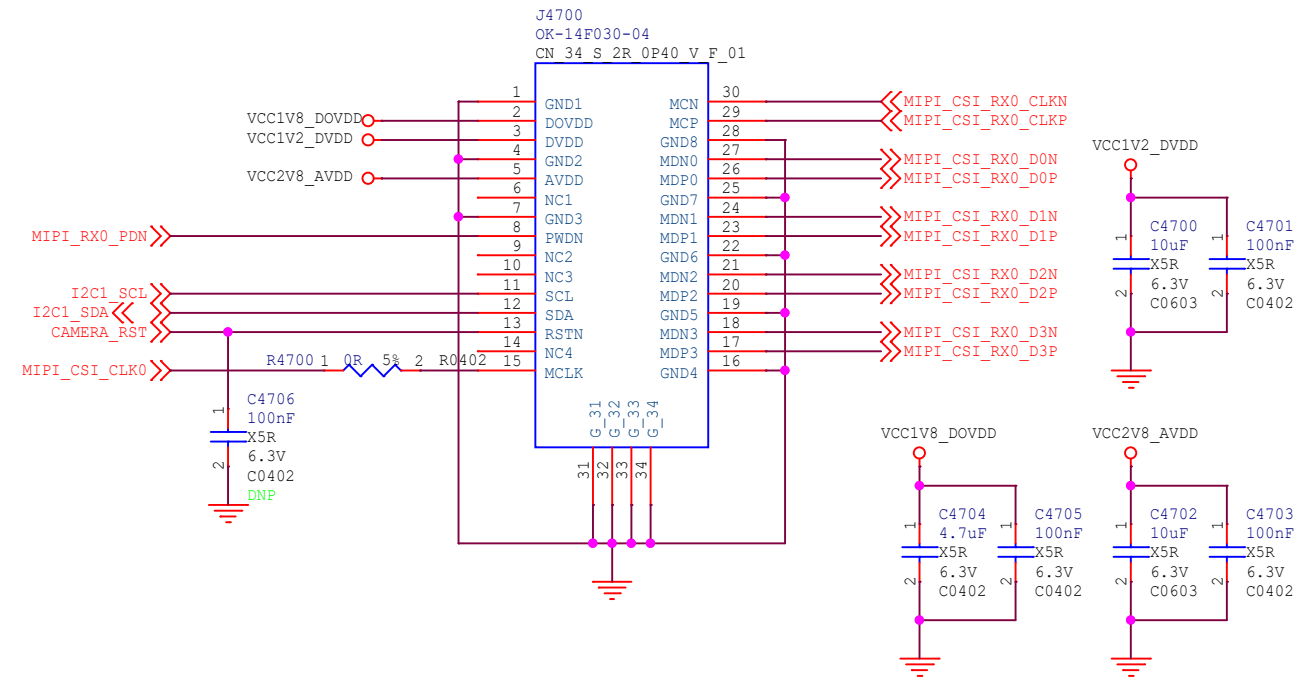
SPI Flash

NOTE:
Refer to the latest AVL for parts selection.




 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	43.Flash-SPI Flash(option)		
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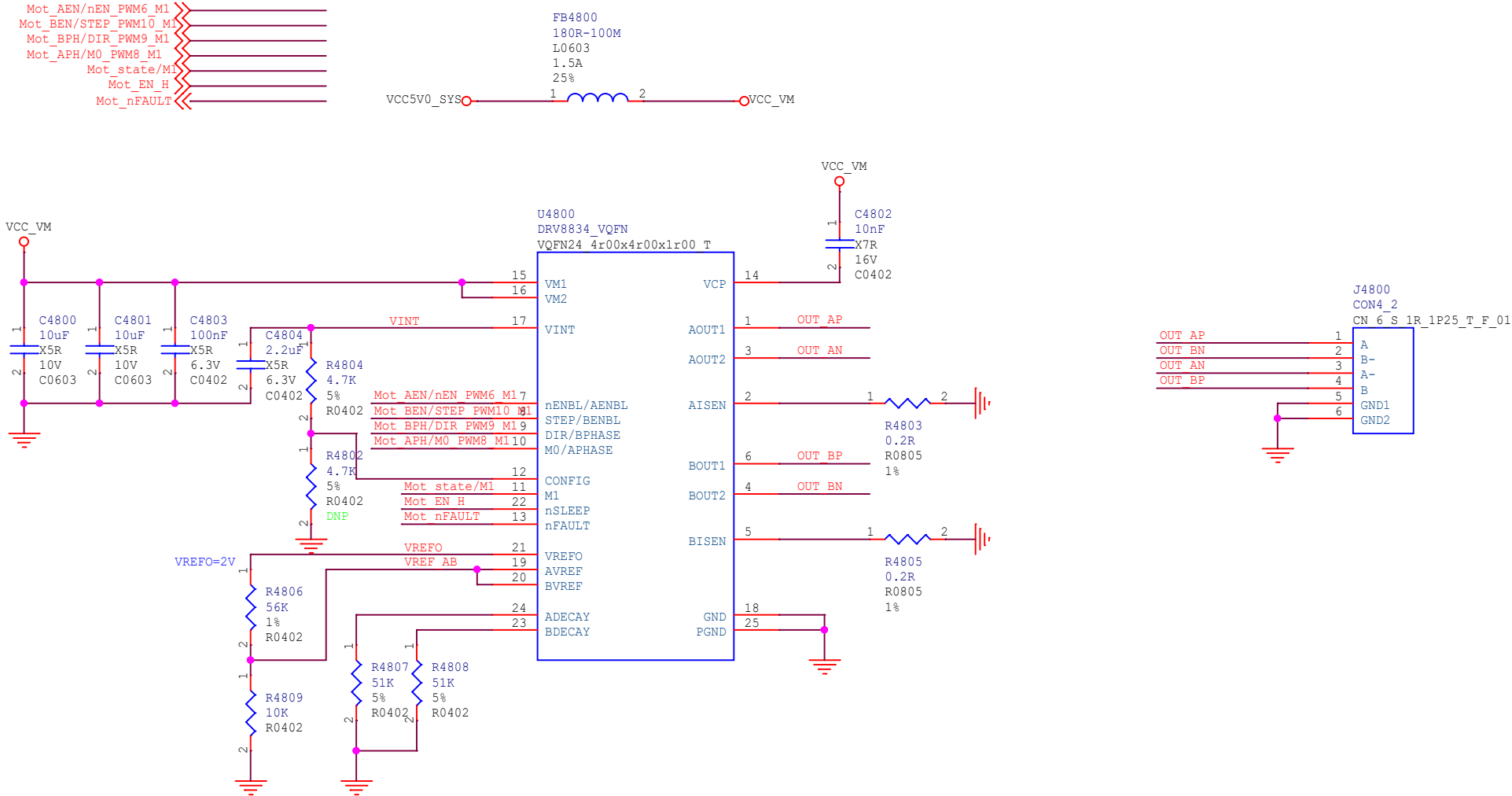
MIPI-CSI_RX0 Interface




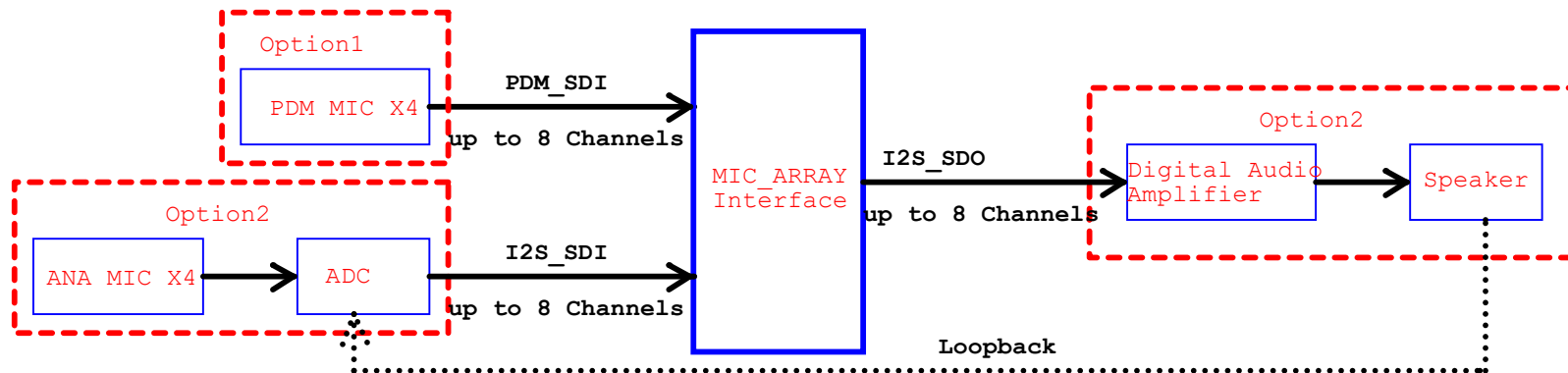
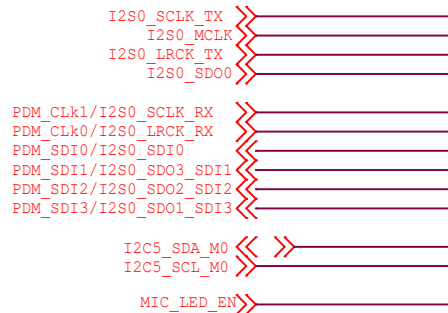
Note:
The power-on timing needs to be adjusted according to the actual camera module used
Default power-on timing:
VCC1V8_D0VDD-->VCC1V2_DVDD/VCC2V8_AVDD

 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	47.VI-Camera_MIPI-CSI		
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Iris Zoom Focus driver

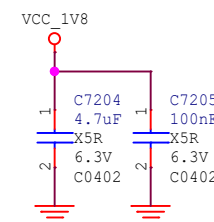
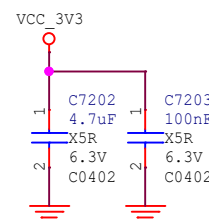
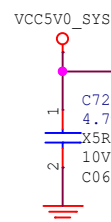
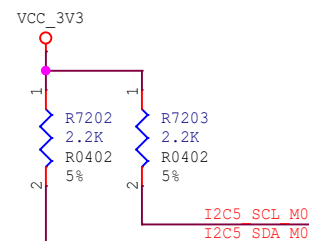
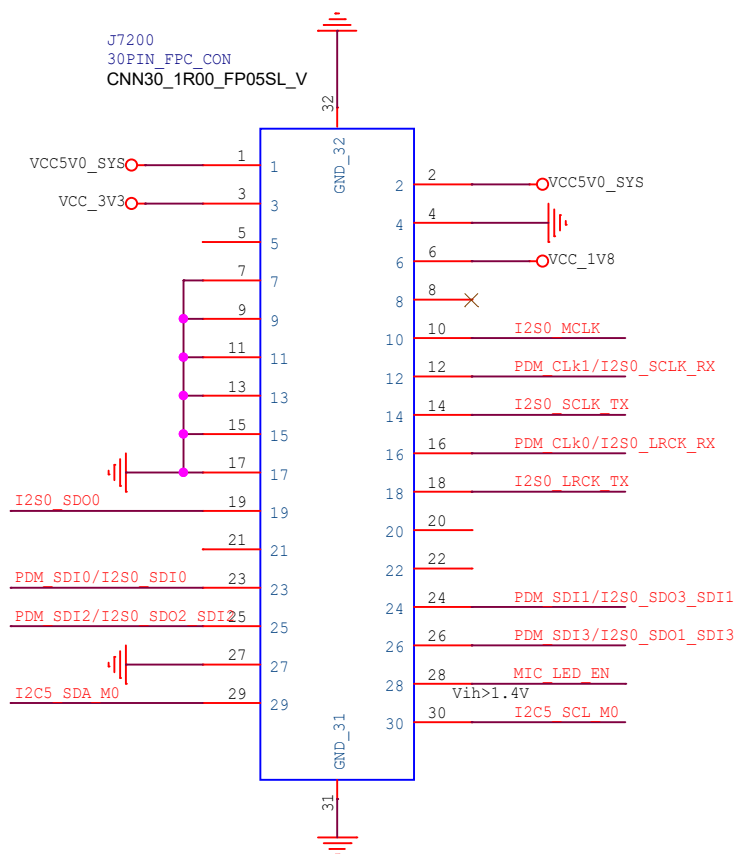



 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	48.Motor driver		
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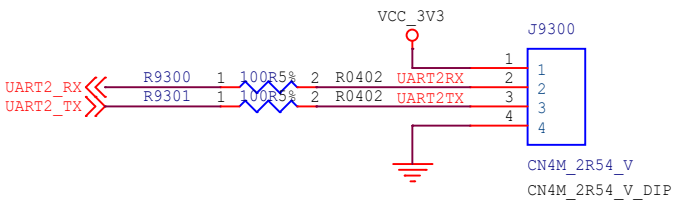
NOTE:
MIC support mode PDM or I2S

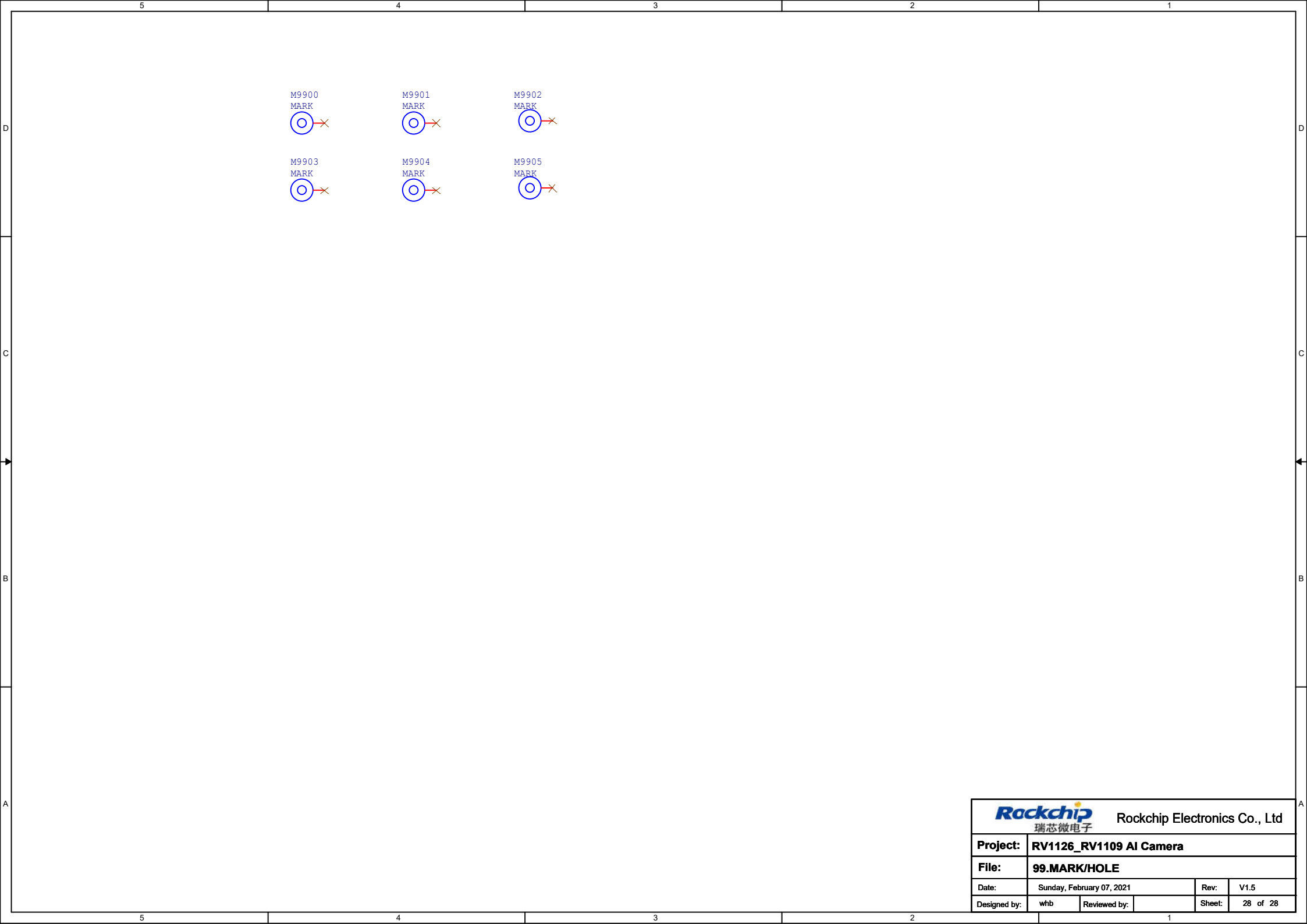
MIC_ARRAY Interface



 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	72.MIC Array Interface(option)		
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Designed by:	whb	Reviewed by:	Sheet: 26 of 28

Debug UART2





M9900
MARK


M9901
MARK

M9902
MARK

M9903
MARK

M9904
MARK

M9905
MARK

 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	99.MARK/HOLE		
Date:	Sunday, February 07, 2021		Rev: V1.5
Designed by:	whb	Reviewed by:	Sheet: 28 of 28