

RV1126_RV1109_USB_AI_Camera_DEMO_DDR3P216DD6_V14

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


 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	00.Cover Page		
Date:	Monday, December 21, 2020		Rev: V1.4
Designed by:	whb	Reviewed by:	Sheet: 1 of 28

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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

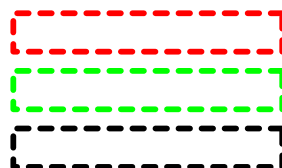
Header:

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

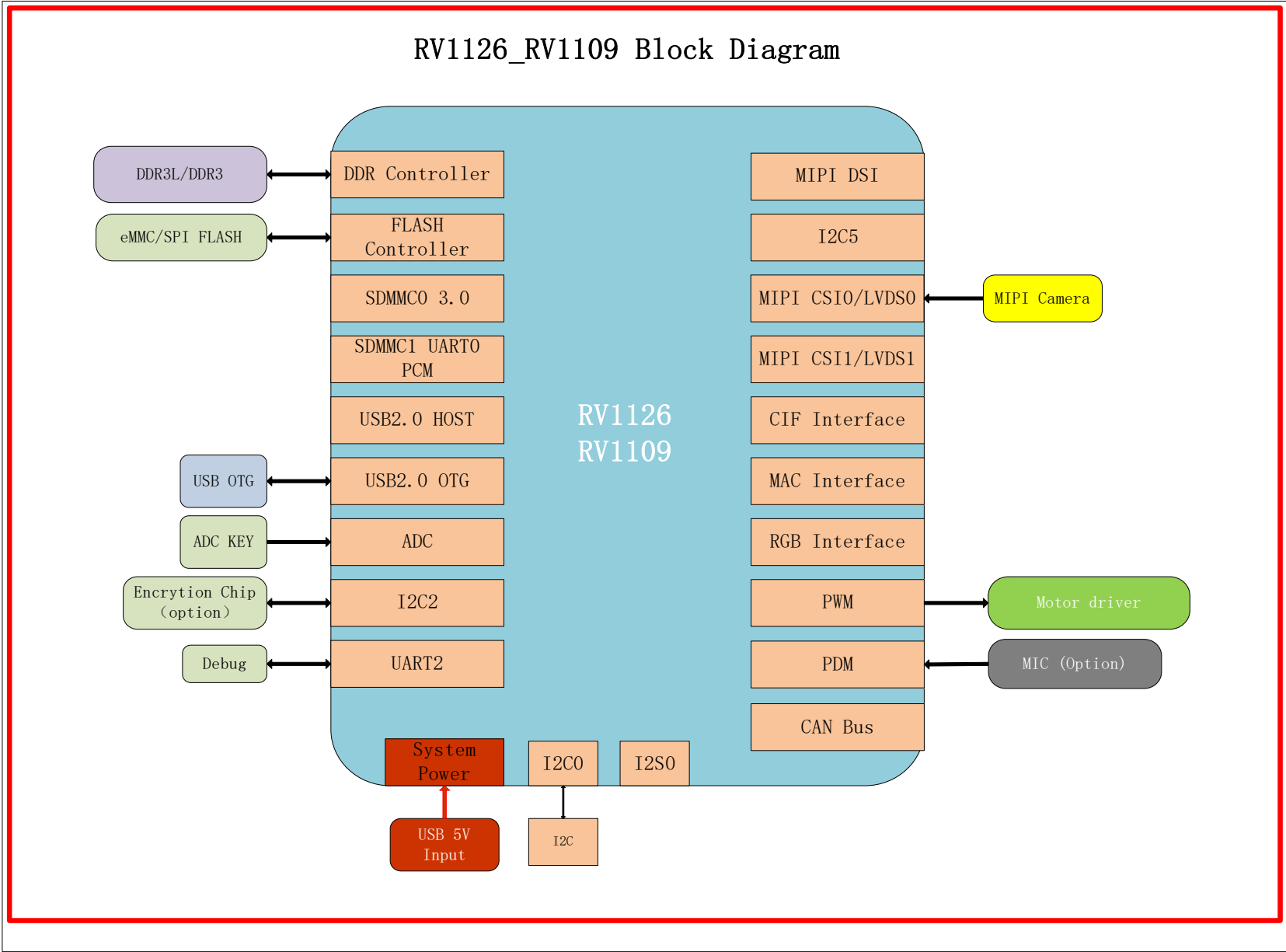


Note

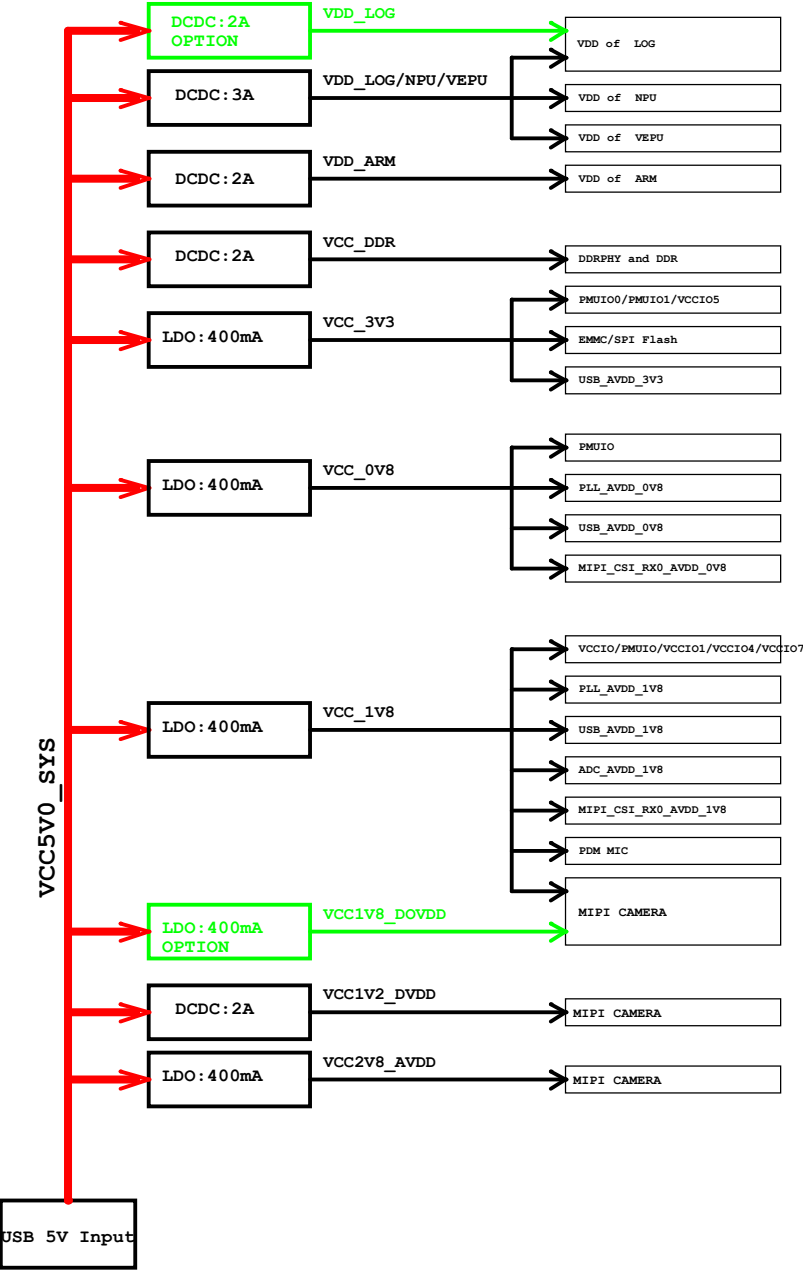
Option

Description

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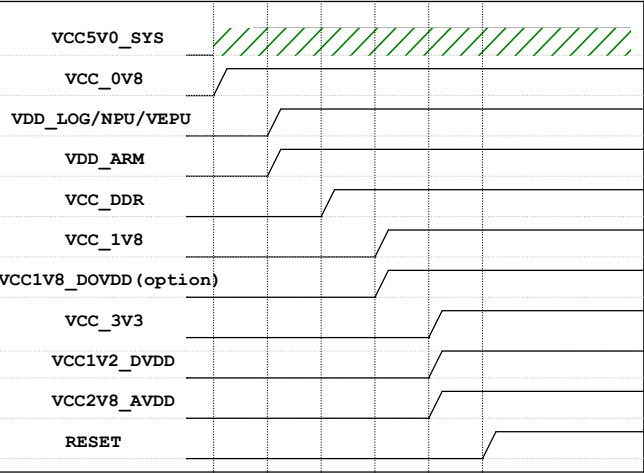


Power Diagram



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_DDR	BUCK	Slot: 3	1.35V	1.0A	ON	ON		
VCC_1V8	LDO	Slot: 4	1.8V	0.4A	ON	ON		
VCC1V8_DVDD(option)	LDO	Slot: 4	1.8V	0.4A	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

Rockchip Confidential



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Project:	RV1126_RV1109 AI Camera						
File:	05.I2C MAP						
Date:	Monday, December 21, 2020				Rev:	V1.4	
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

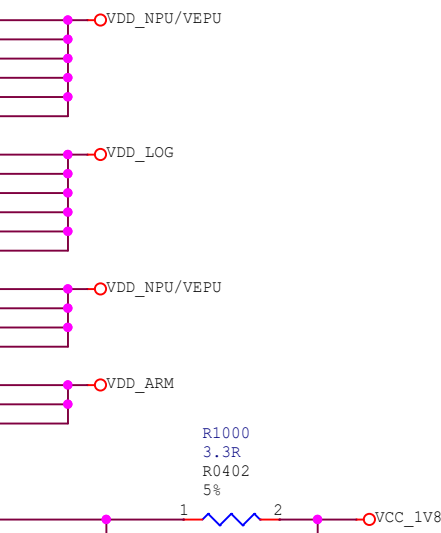
LOGIC_VDD_1 H9
LOGIC_VDD_2 J9
LOGIC_VDD_3 L10
LOGIC_VDD_4 M11
LOGIC_VDD_5 H13
LOGIC_VDD_6 J13

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

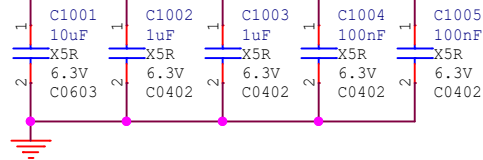
Supply for VCCIO1~7 Power

VCCIO_VDD_1V8



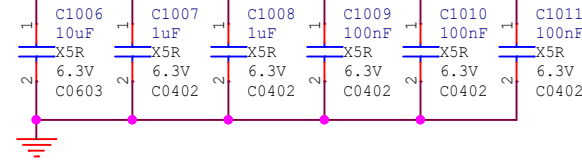
VDD_LOG

Close to VDD_LOG



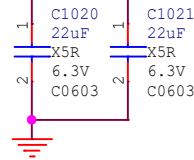
VDD_NPU/VEPU

Close to VDD_NPU



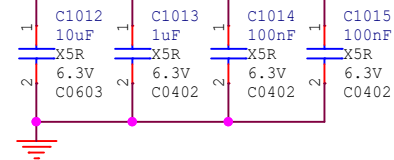
VDD_NPU/VEPU

Close to SOC



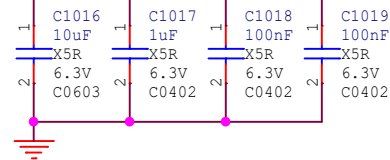
VDD_ARM

Close to VDD_ARM



VDD_NPU/VEPU

Close to VDD_VEPU

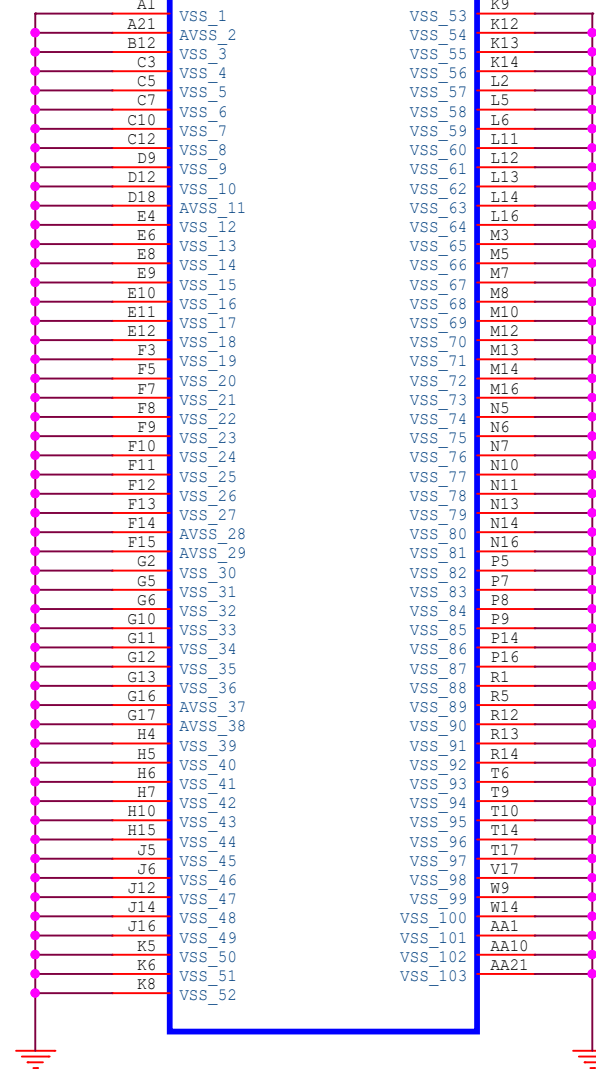


Power

GND

U10000
RV1126_RV1109
BGA409_14R00X14R00X0R90

VSS/AVSS



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Project:	RV1126_RV1109 AI Camera		
File:	10.RV1126/1109_Power/GND		
Date:	Monday, December 21, 2020	Rev:	V1.4
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OSC/PLL/PMUIO

U1000K
RV1126_RV1109
BGA409_14R00X14R00X0R90

OSC/PLL

XOUT24M

XIN24M

PLL_AVDD_0V8

PLL_AVDD_1V8

Digital Power of PMUIO0&PMUIO1

PMUIO_VDD_0V8

PMUIO_VDD_1V8

PMUIO0 Domain

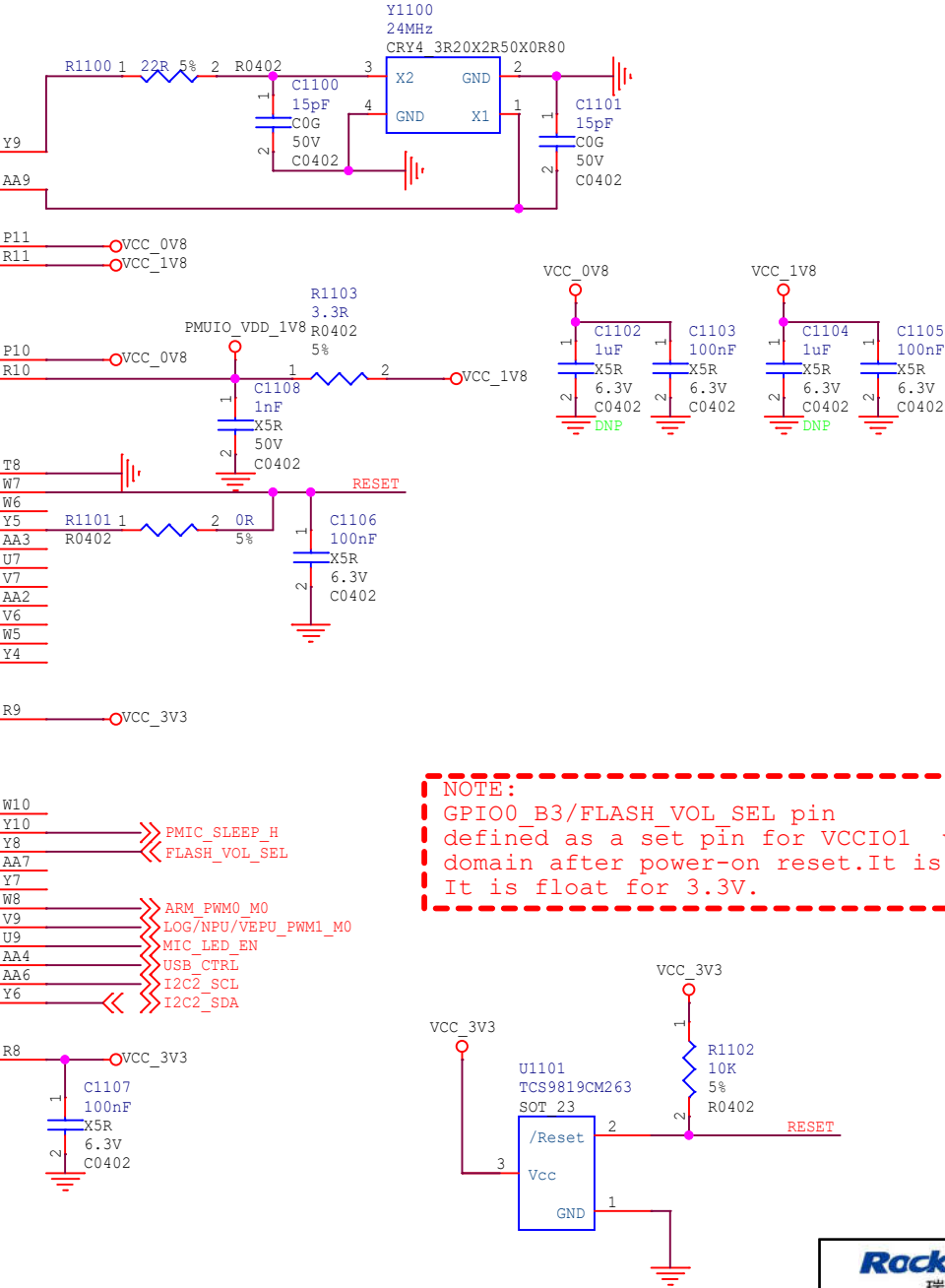
TVSS	GPIO0_A0 d
GPIO0_A1 z	GPIO0_A2 z
GPIO0_A3 u	GPIO0_A4 u
GPIO0_A5 u	GPIO0_A6 d
GPIO0_A7 d	GPIO0_B0 d
GPIO0_B1 d	GPIO0_B2 d
GPIO0_B3 d	GPIO0_B4 d
GPIO0_B5 d	GPIO0_B6 d
GPIO0_B7 d	GPIO0_C0 d
GPIO0_C1 d	GPIO0_C2 d
GPIO0_C3 d	

PMUIO0_VDD

PMUIO1 Domain

PMIC INT	PWM7 IR M0	GPIO0_B1 d
PMIC_SLEEP	PWM6 M0	GPIO0_B2 d
FLASH_VOL_SEL		GPIO0_B3 d
I2C0_SCL		GPIO0_B4 d
I2C0_SDA		GPIO0_B5 d
UART1_TX M0	PWM0 M0	GPIO0_B6 d
UART1_RX M0	PWM1 M0	GPIO0_B7 d
SDMMC0_PWR	UART1_RTSN M0	GPIO0_C0 d
USB_CTRL	PMU_DEBUG	UART1_CTSN M0
I2C2_SCL	PWM3 IR M0	GPIO0_C1 d
I2C2_SDA	PWM4 M0	GPIO0_C2 d
	PWM5 M0	GPIO0_C3 d

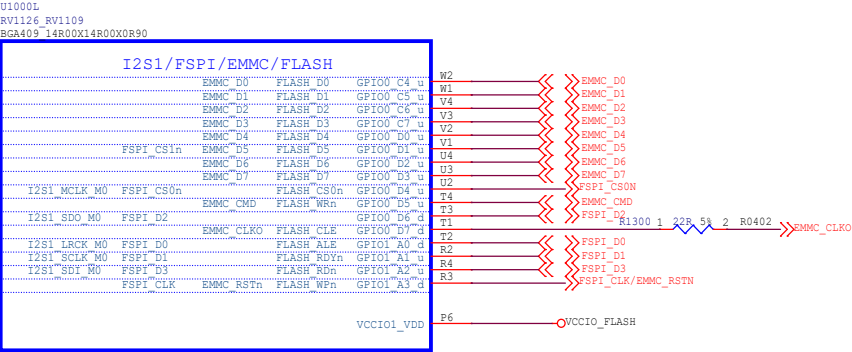
PMUIO1_VDD



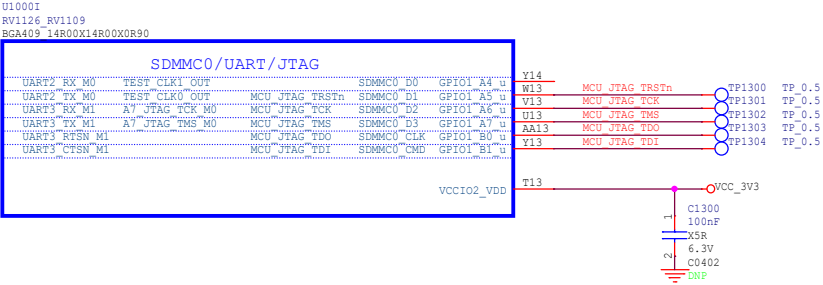
NOTE:
GPIO0_B3/FLASH VOL_SEL pin
defined as a set pin for VCCIO1 voltage
domain after power-on reset. It is pull-up for 1.8V.
It is float for 3.3V.

RESET IC

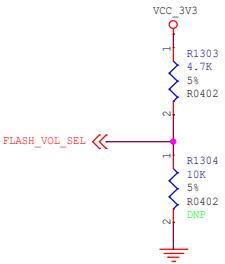
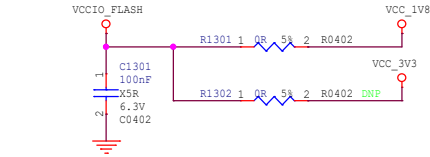
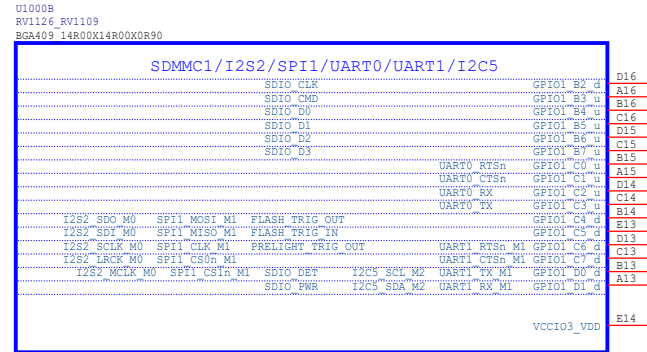
EMMC/FLASH



SDMMC0/JTAG



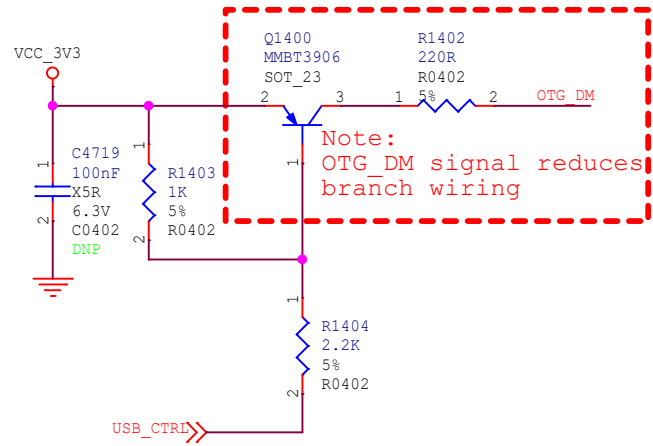
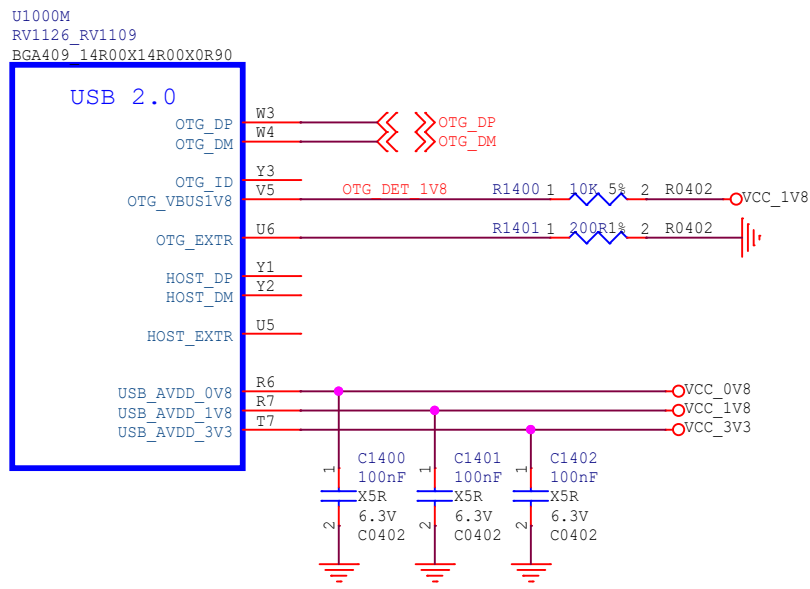
SDMMC1/UART/I2S2




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

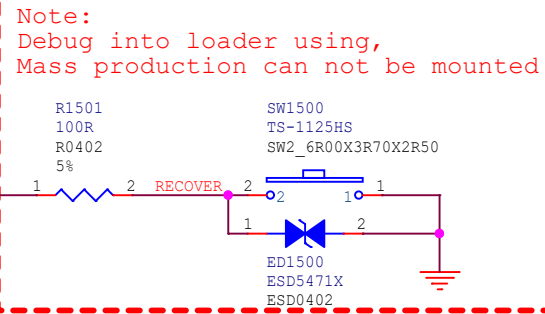
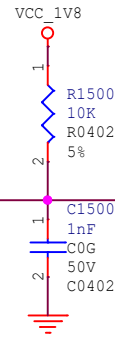
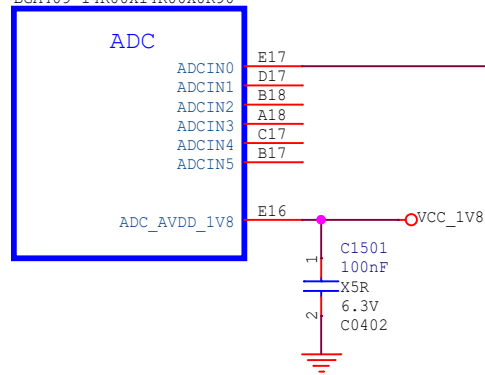
USB Controller




 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	14.RV1126/1109_USB Controller		
Date:	Monday, December 21, 2020		Rev: V1.4
Designed by:	whb	Reviewed by:	Sheet: 12 of 28

SARADC

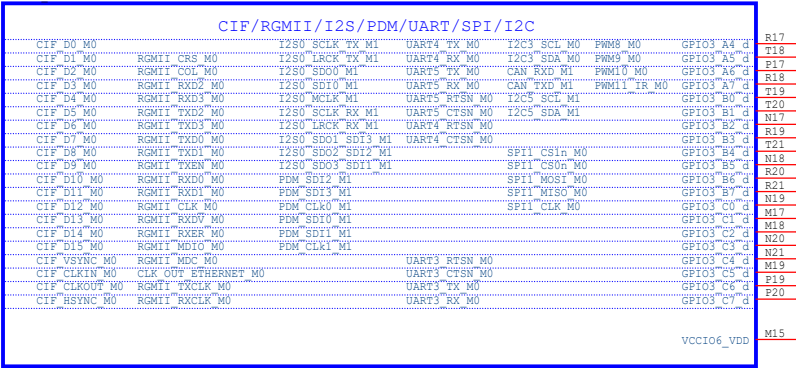
U1000C
RV1126_RV1109
BGA409_14R00X14R00X0R90



 Rockchip Electronics Co., Ltd			
Project:	RV1126_RV1109 AI Camera		
File:	15.RV1126/1109_SARADC		
Date:	Monday, December 21, 2020	Rev:	V1.4
Designed by:	whb	Reviewed by:	Sheet: 13 of 28

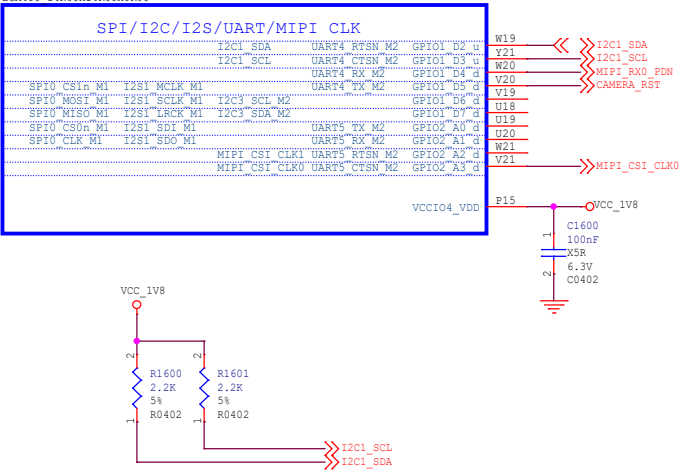
CIF Interface

U1000F
RV1126_RV1109
BGA409_14R00X14R00X0R90



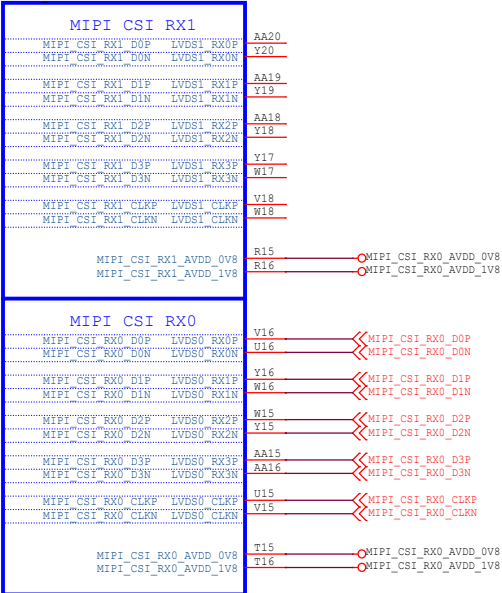
I2C/SPI/MIPI-CLK

U1000G
RV1126_RV1109
BGA409_14R00X14R00X0R90



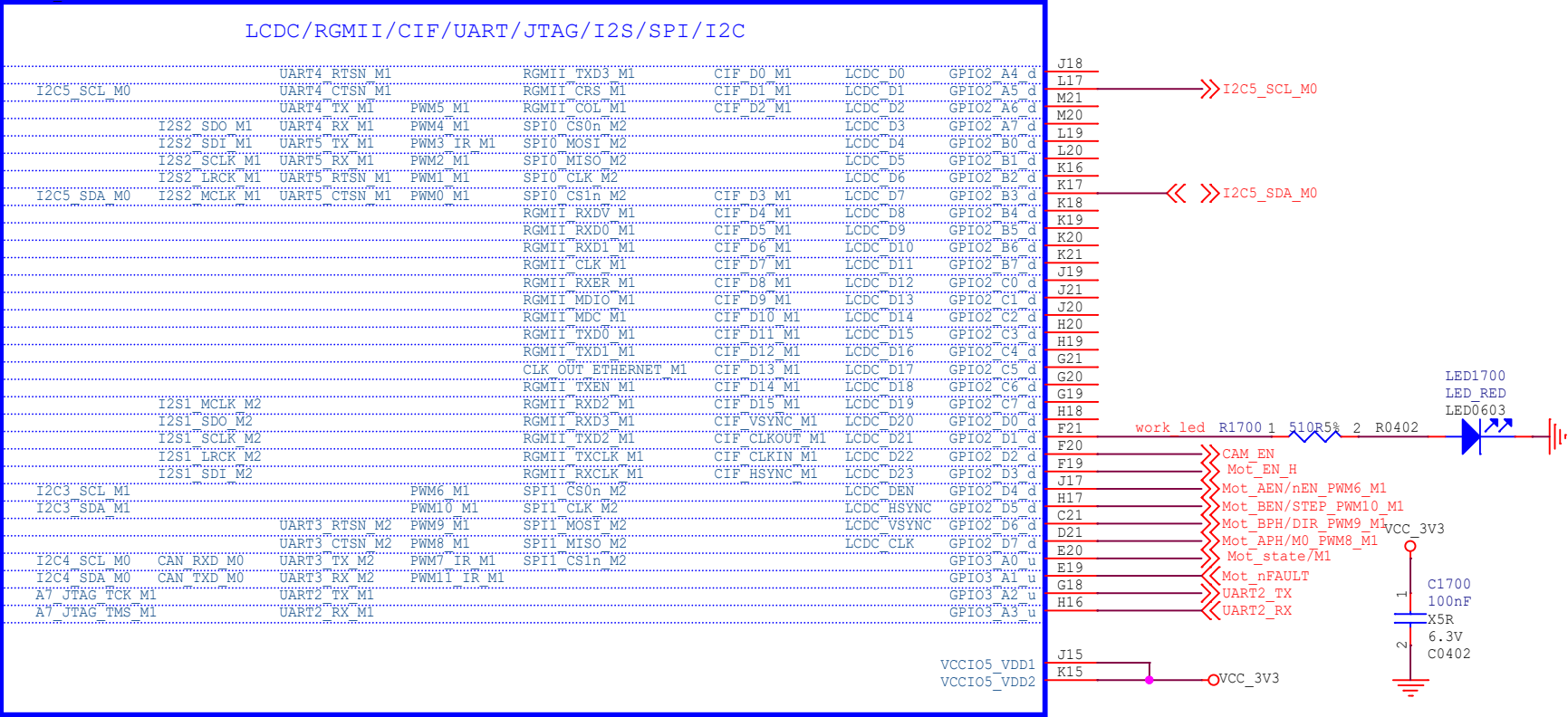
MIPI-CSI Interface

U1000H
RV1126_RV1109
BGA409_14R00X14R00X0R90



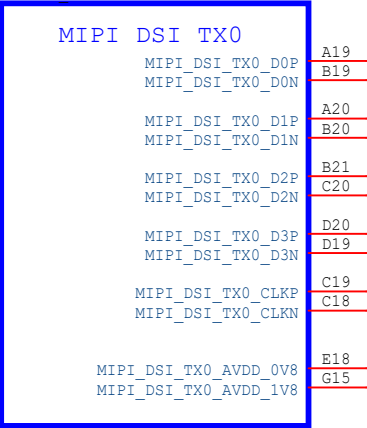
LCDC/RGMII/PWM

U1000E
RV1126_RV1109
BGA409 14R00X14R00X0R90



MIPI-DSI Interface

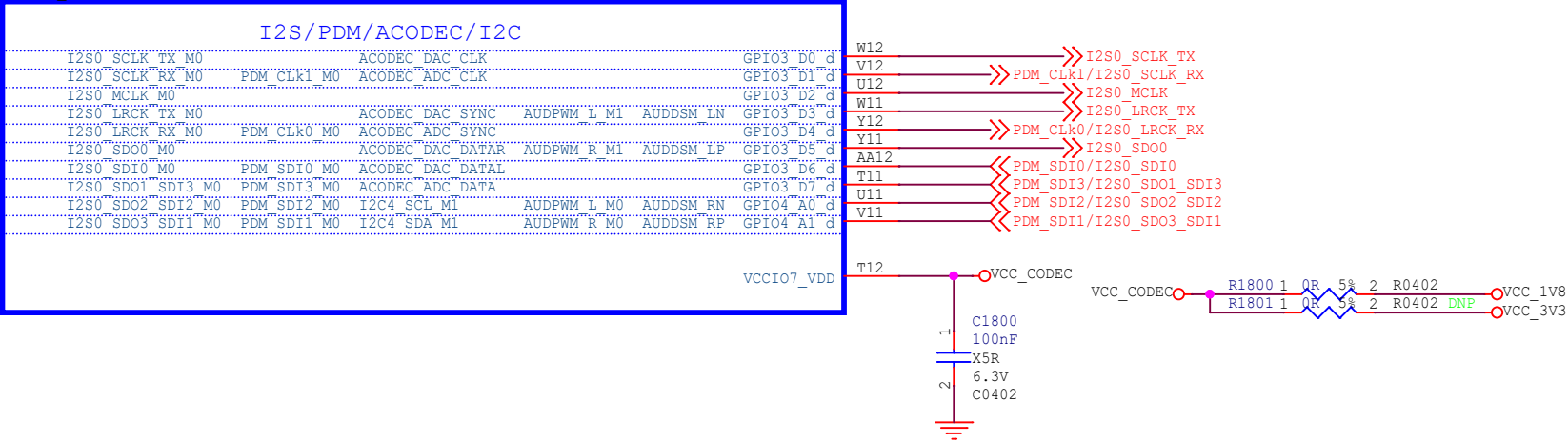
U1000D
RV1126_RV1109
BGA409 14R00X14R00X0R90



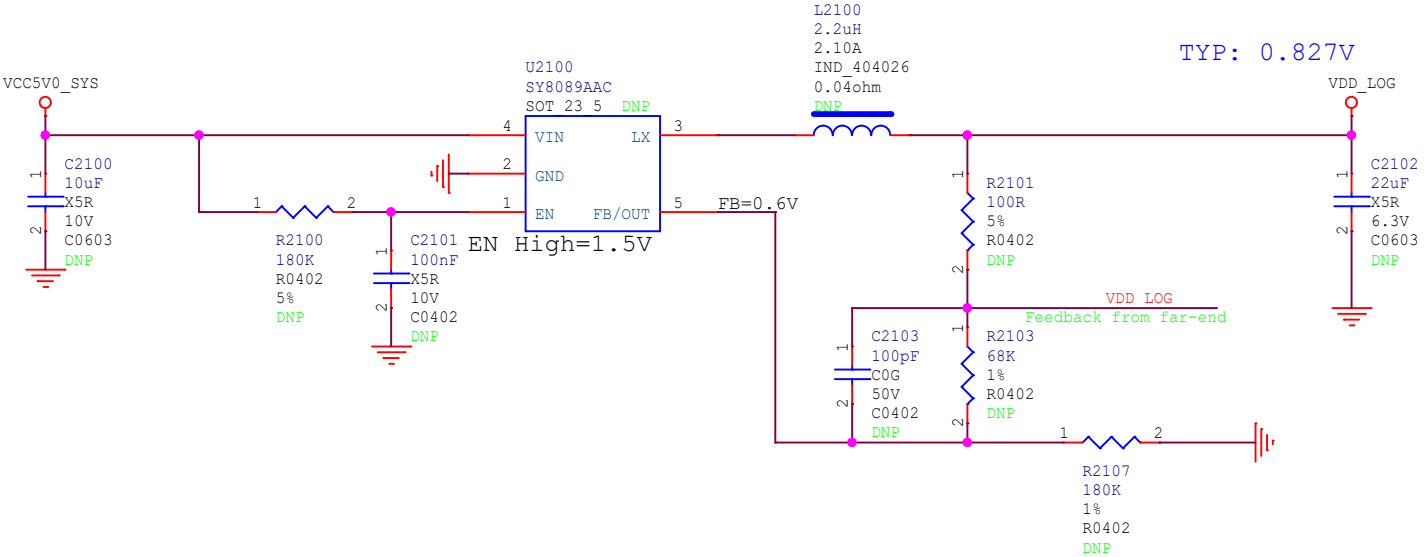
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Project:	RV1126_RV1109 AI Camera		
File:	17.RV1126/1109_VideoOutput		
Date:	Monday, December 21, 2020	Rev:	V1.4
Designed by:	whb	Reviewed by:	
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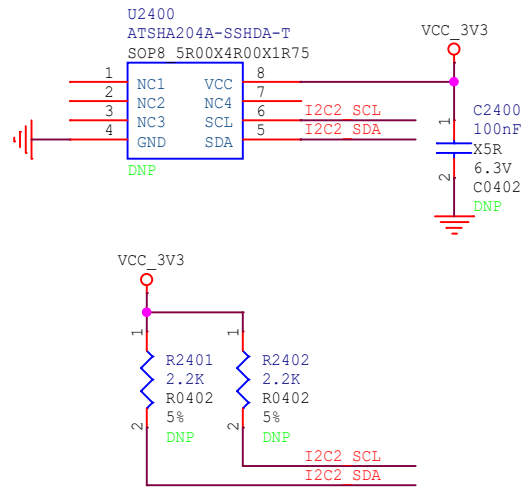
Audio Interface

U1000J
RV1126 RV1109
BGA409_14R00X14R00X0R90



VDD_LOG

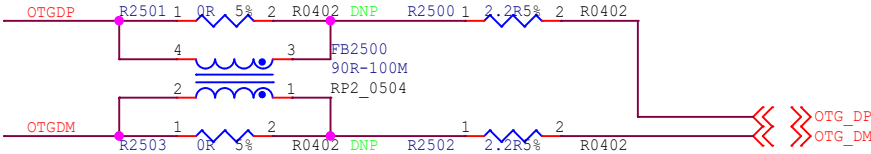
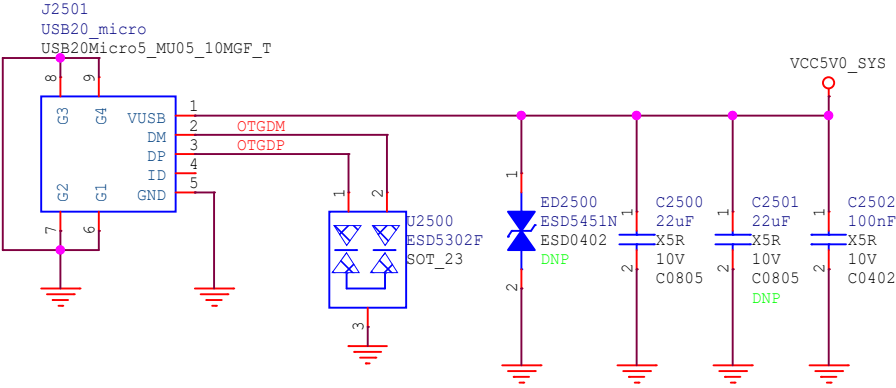




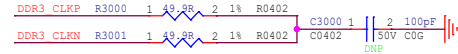
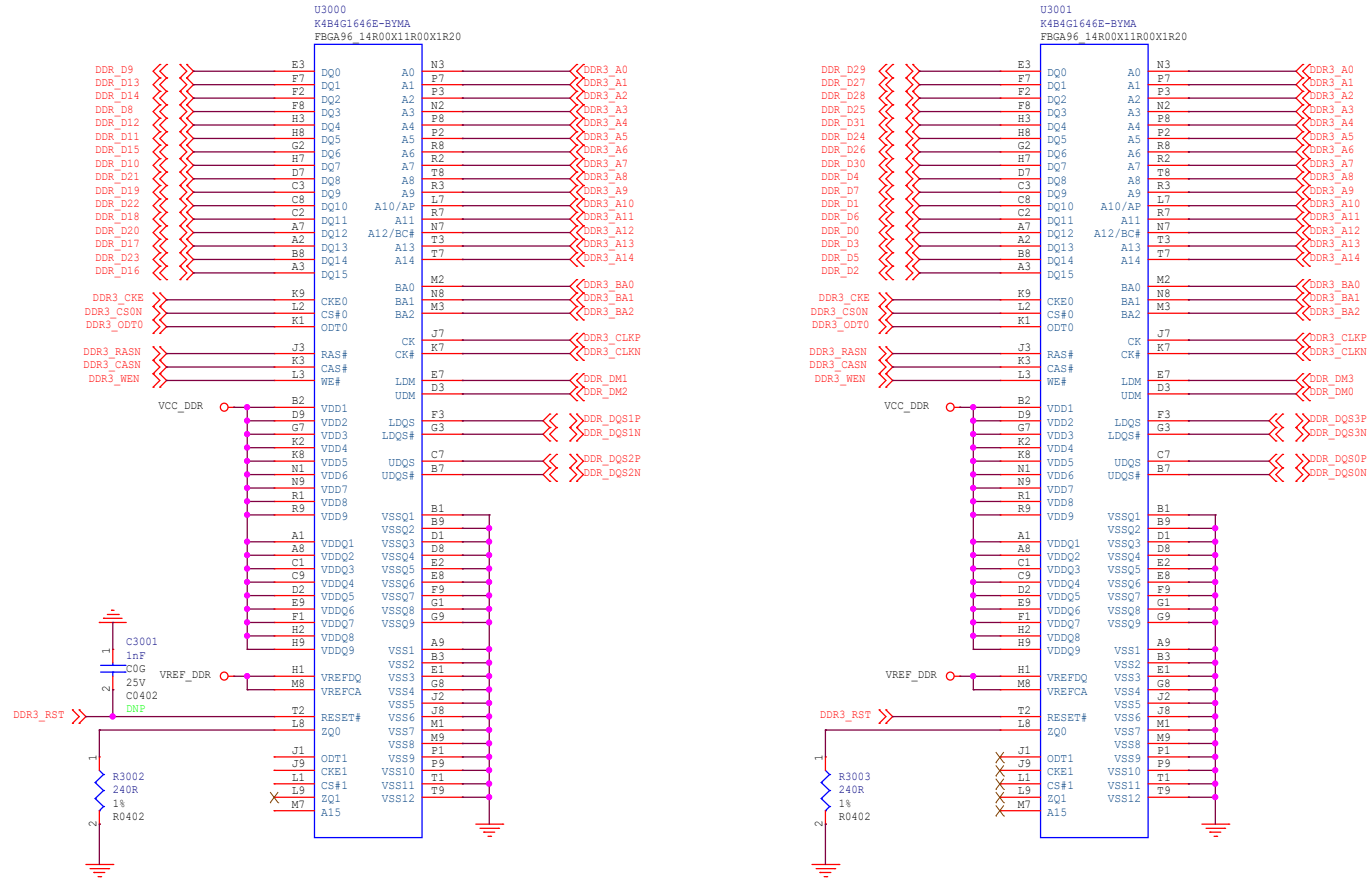
I2C2_SDA << >>
I2C2_SCL << >>

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Project:	RV1126_RV1109 AI Camera		
File:	24.Encrytion Chip		
Date:	Monday, December 21, 2020	Rev:	V1.4
Designed by:	whb	Reviewed by:	Sheet: 19 of 28

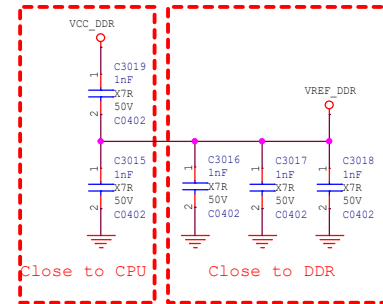
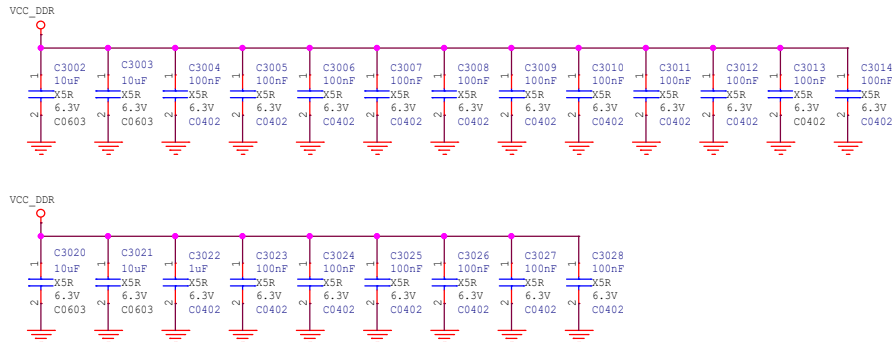
USB2.0 OTG



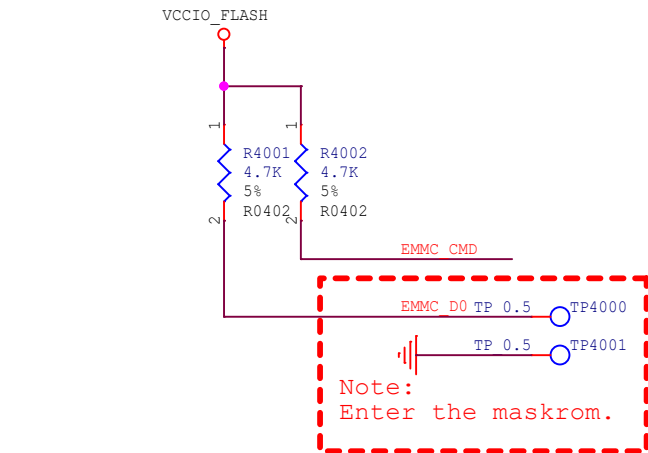
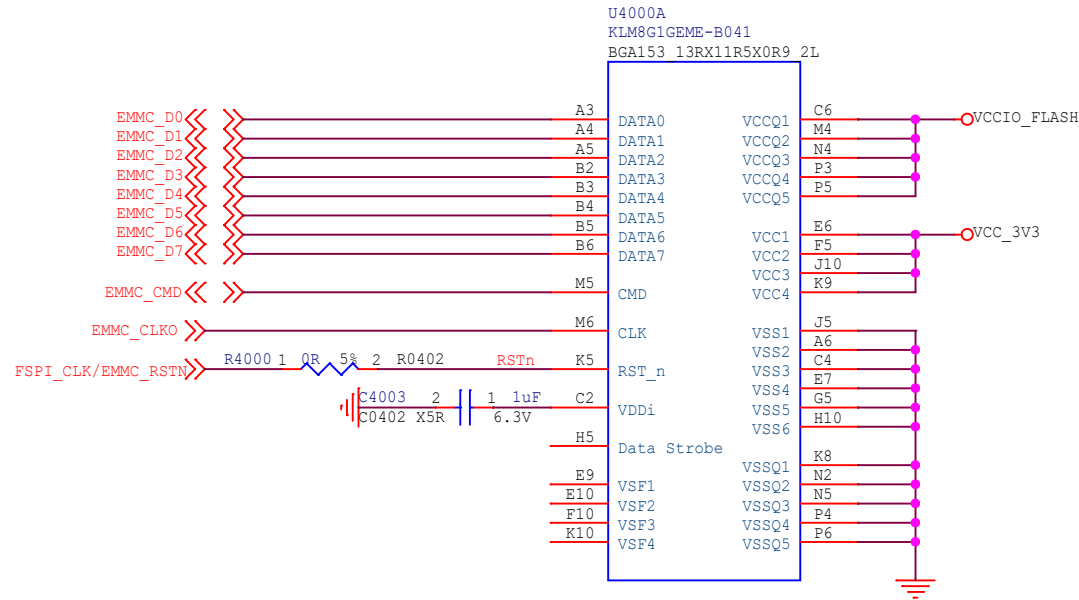
DDR3/DDR3L 2x16bit



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



eMMC



U4000B KLM8G1GEME-B041 BGA153_13RX11R5X0R9	A2	NC2	P14
	A8	NC8	P13
	A9	NC9	P12
	A10	NC10	P11
	A11	NC11	P8
	A12	NC12	P2
	A13	NC13	P1
	A14	NC14	
	B1	NC15	N14
	B7	NC21	N13
	B8	NC22	N12
	B9	NC23	N11
	B10	NC24	N10
	B11	NC25	N9
	B12	NC26	N8
	B13	NC27	N7
	B14	NC28	N6
	C1	NC29	N5
	C3	NC31	N4
	C7	NC35	N3
	C8	NC36	N2
	C9	NC37	N1
	C10	NC38	
	C11	NC39	NC168
	C12	NC40	NC167
	C13	NC41	NC166
	C14	NC42	NC165
	D1	NC43	NC164
	D2	NC44	NC163
	D3	NC45	NC162
	D4	NC46	NC161
	D12	NC54	NC160
	D13	NC55	NC159
	D14	NC56	NC158
	E1	NC57	NC157
	E2	NC58	NC156
	E3	NC59	NC155
	E12	NC68	NC154
	E13	NC69	NC153
	E14	NC70	NC152
	F1	NC71	NC151
	F2	NC72	NC150
	F3	NC73	NC149
	F12	NC82	NC148
	F13	NC83	NC147
	F14	NC84	NC146
	G1	NC85	NC145
	G2	NC86	NC144
	G12	NC96	NC143
	G13	NC97	NC142
	G14	NC98	NC141
			NC140
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			NC136
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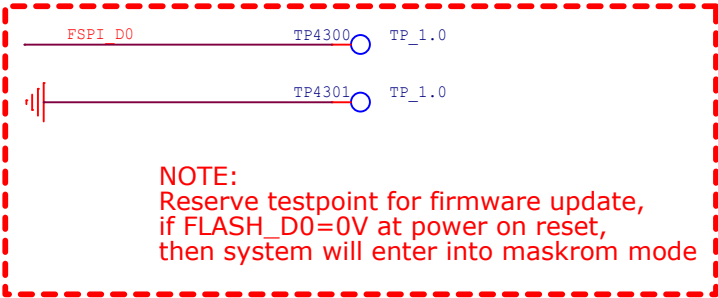
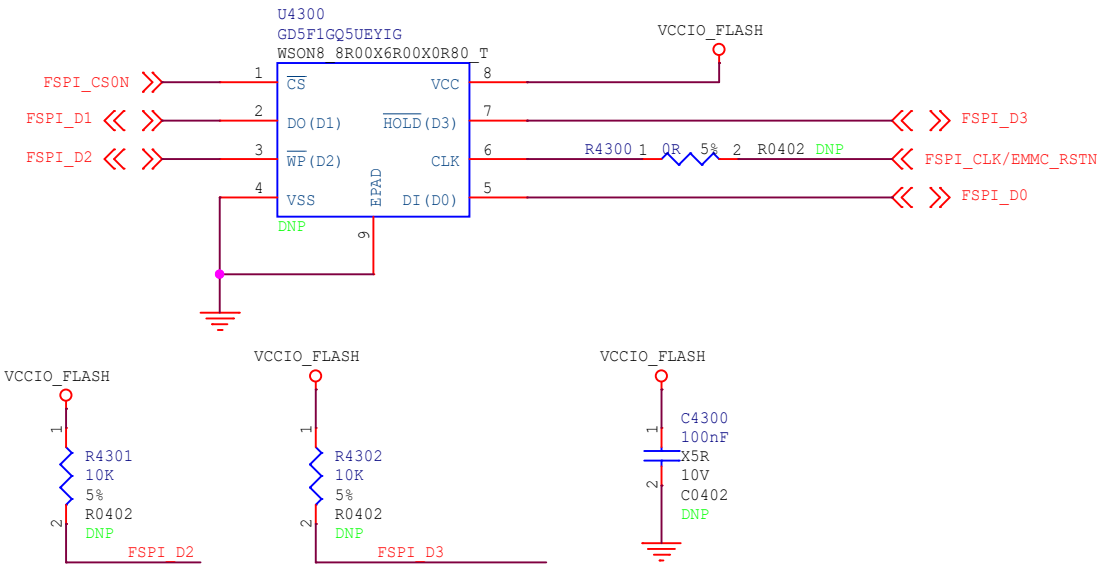



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Project:	RV1126_RV1109 AI Camera		
File:	40.Flash-eMMC Flash		
Date:	Monday, December 21, 2020	Rev:	V1.4
Designed by:	whb	Reviewed by:	Sheet: 22 of 28

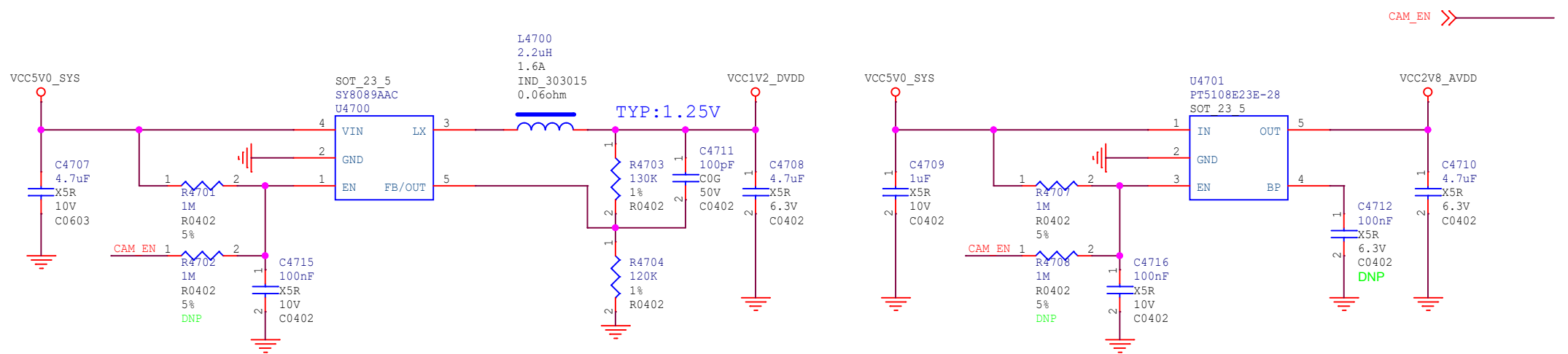
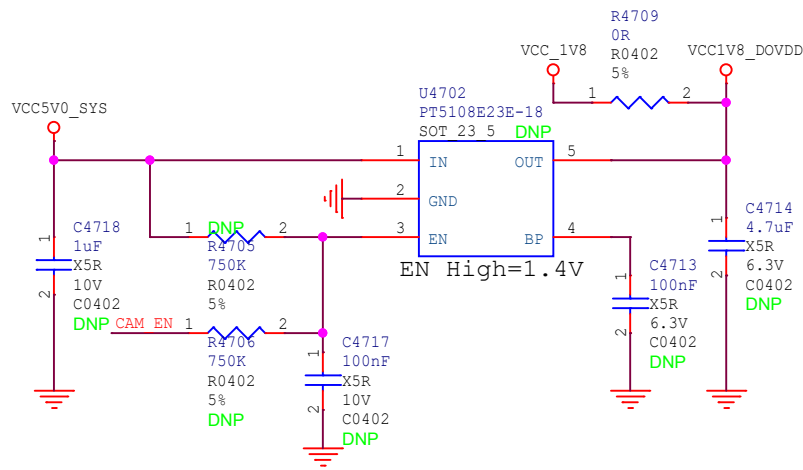
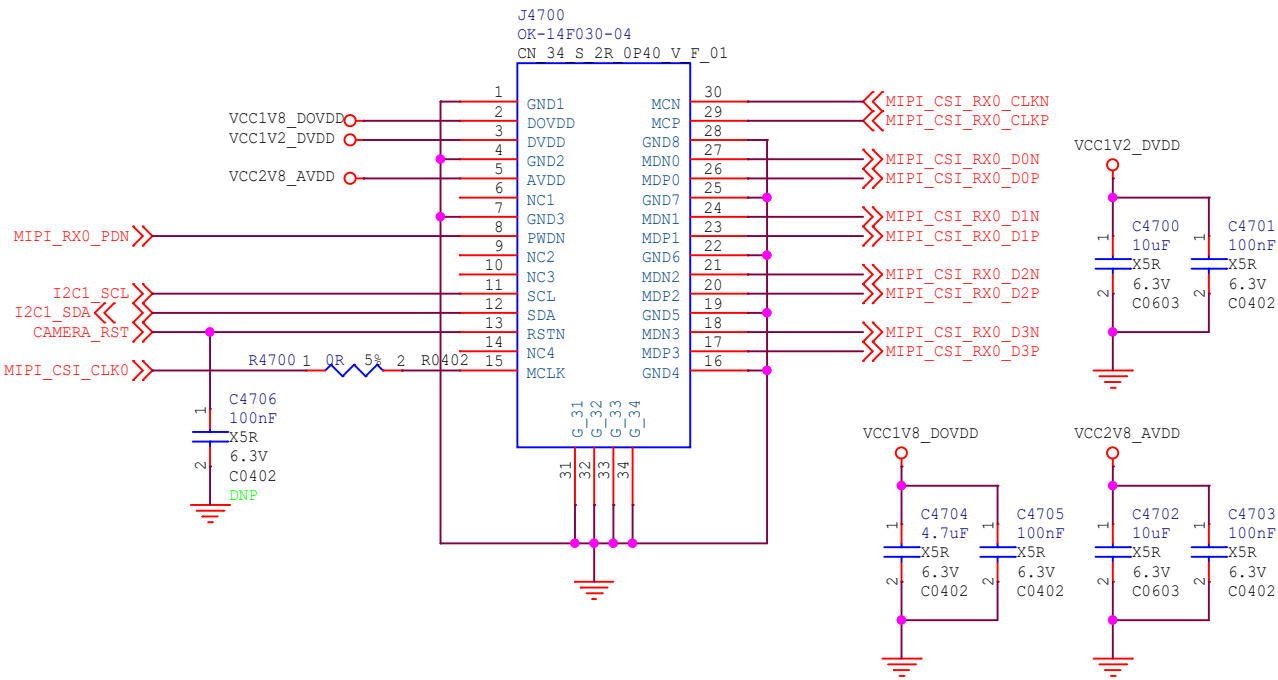
SPI Flash

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)		
Date:	Monday, December 21, 2020		Rev: V1.4
Designed by:	whb	Reviewed by:	Sheet: 23 of 28

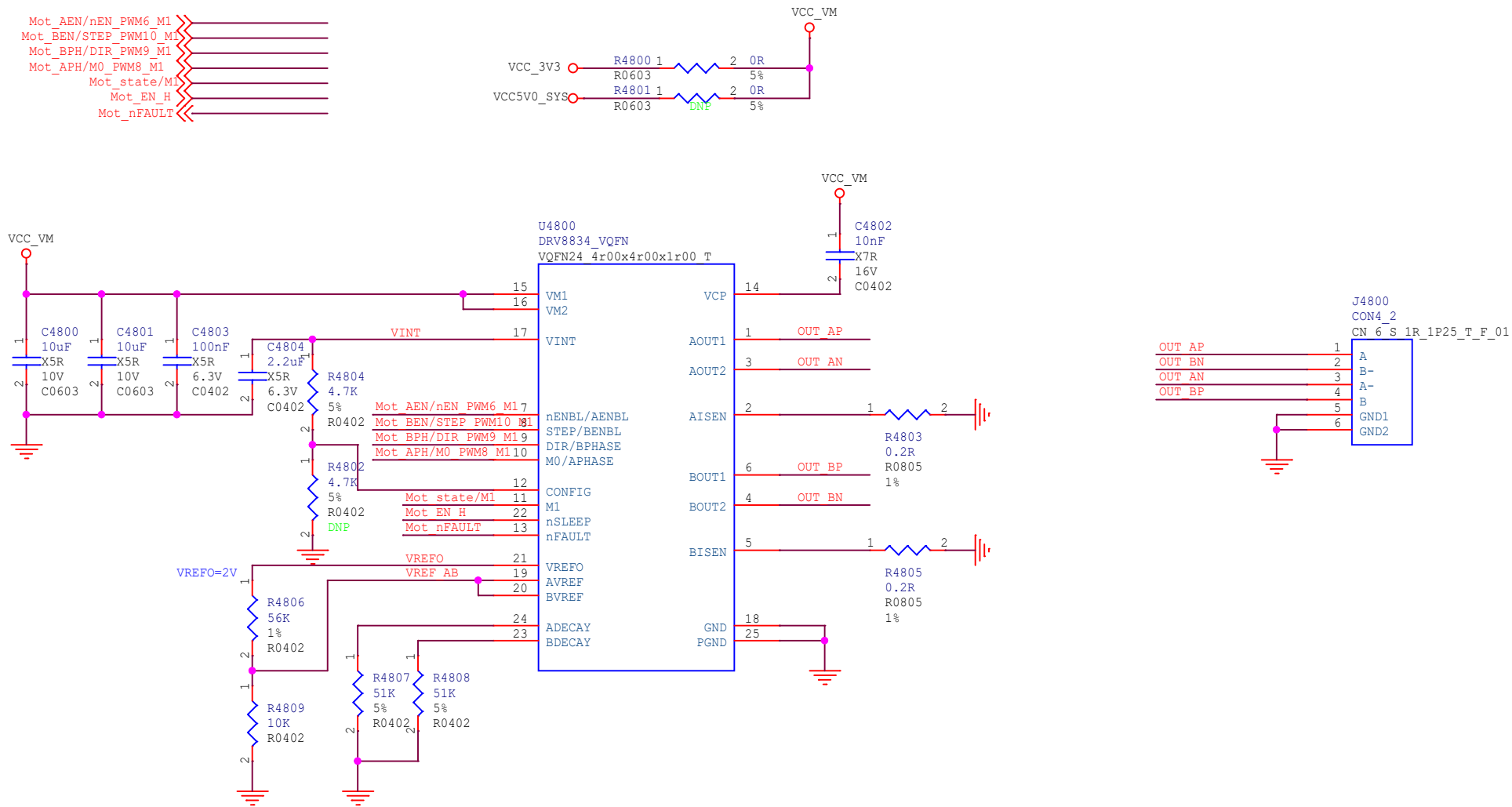
MIPI-CSI_RX0 Interface




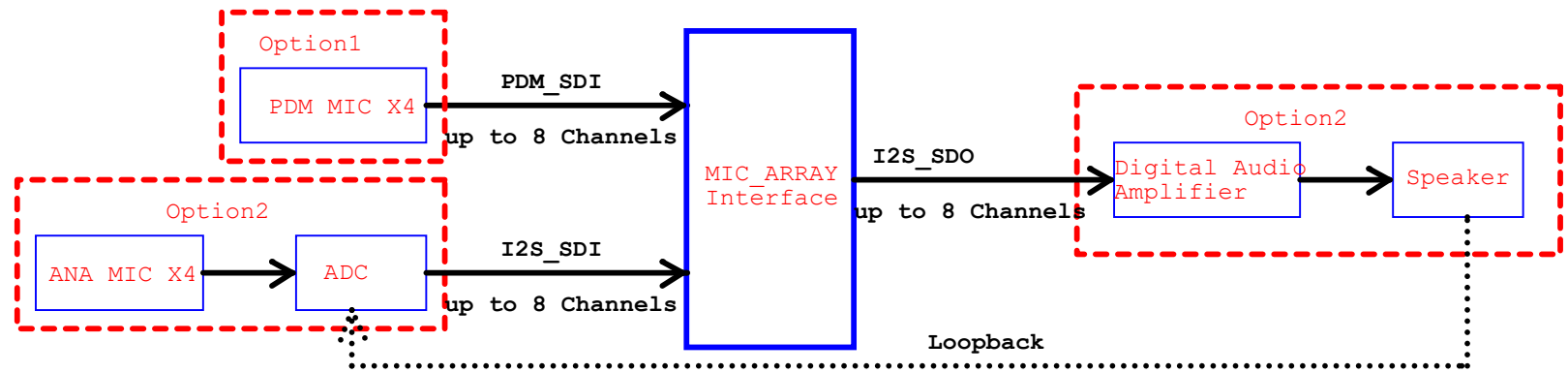
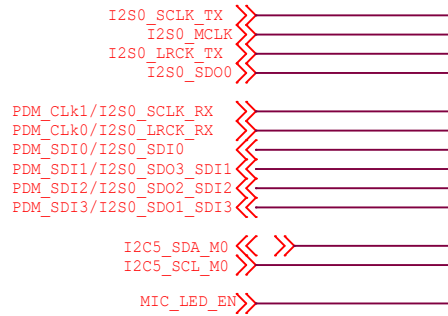
Note:
The power-on timing needs to be adjusted according to the actual camera module used
Default power-on timing:
VCC1V8_D0VDD-->VCC1V2_DVDD/VCC2V8_AVDD

 Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera
File:	47.VI-Camera_MIPI-CSI
Date:	Monday, December 21, 2020
Designed by:	whb
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Rev:	V1.4
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Iris Zoom Focus driver

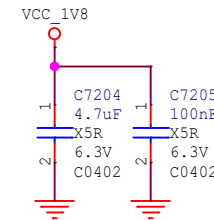
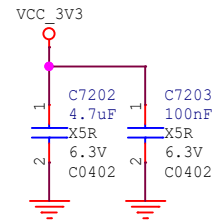
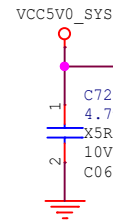
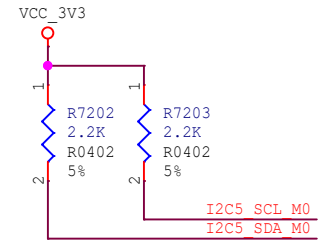
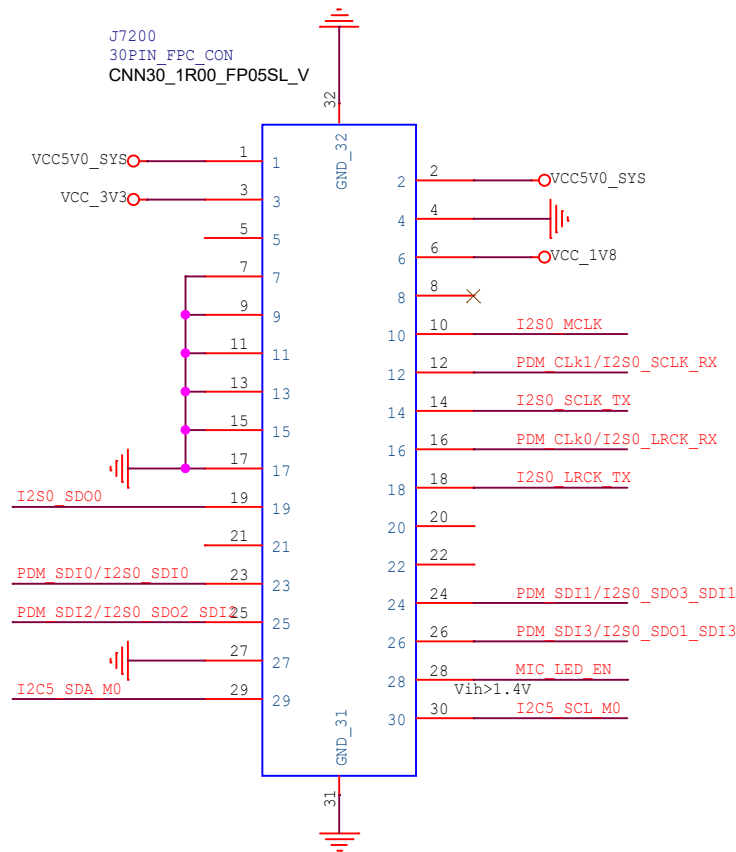



		Rockchip Electronics Co., Ltd	
Project:		RV1126_RV1109 AI Camera	
File:		48.Motor driver	
Date:		Monday, December 21, 2020	Rev: V1.4
Designed by: whb		Reviewed by:	Sheet: 25 of 28



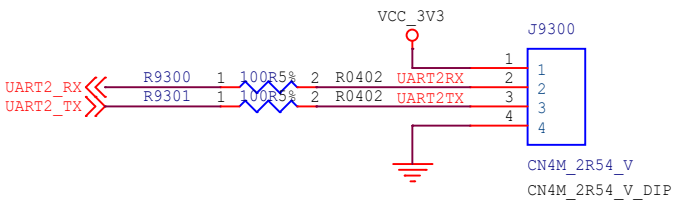
NOTE:
MIC support mode PDM or I2S

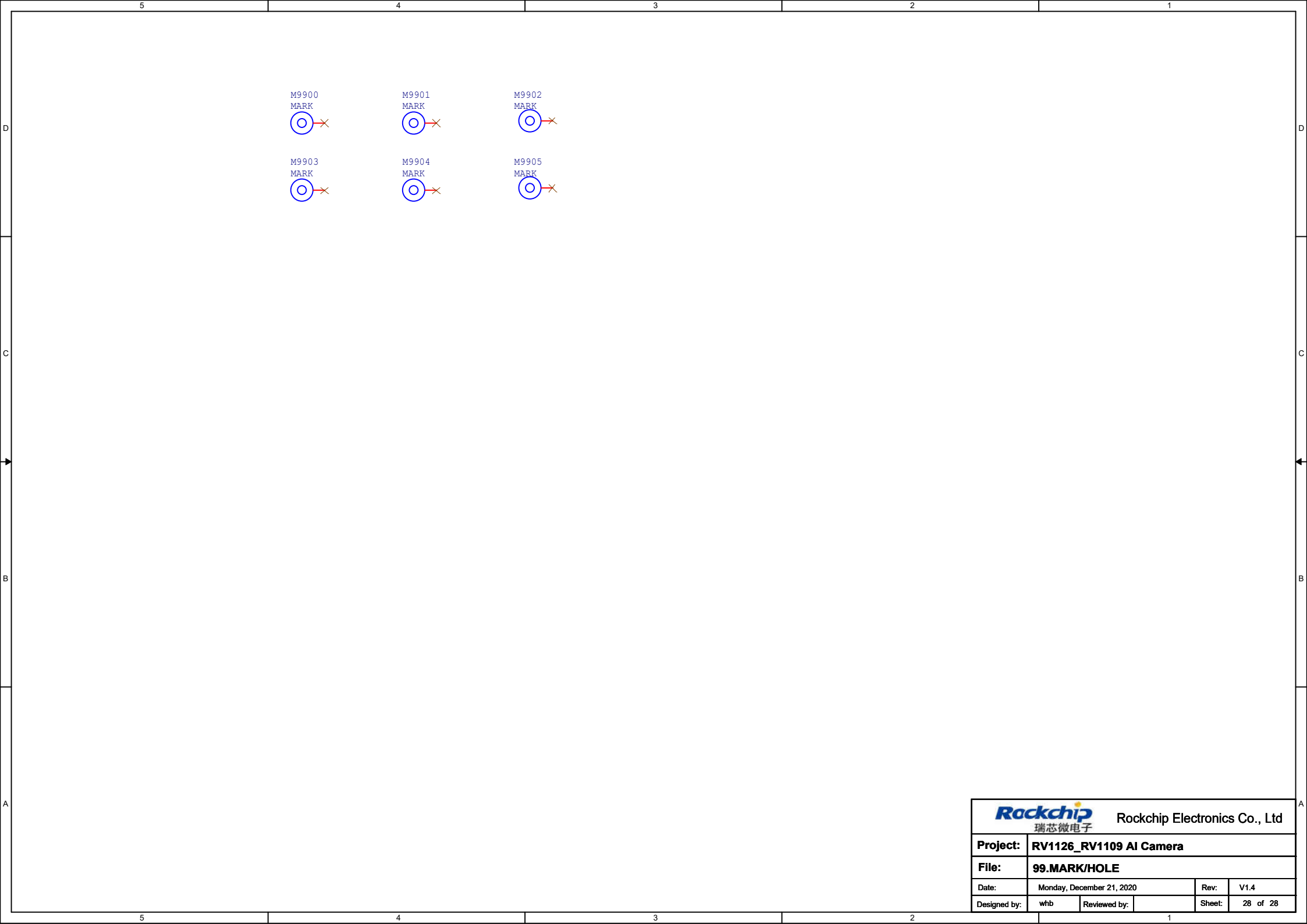
MIC_ARRAY Interface




 瑞芯微电子		Rockchip Electronics Co., Ltd	
Project:	RV1126_RV1109 AI Camera		
File:	72.MIC Array Interface(option)		
Date:	Monday, December 21, 2020		Rev: V1.4
Designed by:	whb	Reviewed by:	
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Debug UART2







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Rockchip Electronics Co., Ltd

Project:	RV1126_RV1109 AI Camera				
File:	99.MARK/HOLE				
Date:	Monday, December 21, 2020			Rev:	V1.4
Designed by:	whb	Reviewed by:		Sheet:	28 of 28