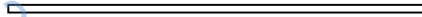



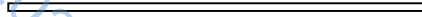
# Content Indexing

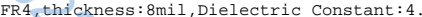
- 01.Index
- 02.Modify note
- 03.Block Diagram
- 04.Power Tree
- 05.System Power
- 06.RK3288 USB/HSIC Controler
- 07.USB HOST Port
- 08.RK3288 RAM Controler
- 09.RAM-DDR3-4X16bit
- 10.Nand FLASH/eMMC/TF Card
- 11.RK3288 GPIO/POWER
- 12.HDMI OUT
- 13.RK3288 LCDC/I2S Controler
- 14.RK1000-S-AV OUT
- 15.S/PDIF OUT
- 16.RK3288 Ethernet MAC Controler
- 17.10/100/1000M-PHY
- 18.RK3288 SDIO0 Controler
- 19.AP6XXX-WIFI/BT
- 20.USB WIFI-(option)
- 21.MIPI Interface
- 22.DTV-(Reserve)
- 23.HDMI IN
- 24.VGA OUT

## 6 LAYERS PCB STACK


TOP(Signal1)  Cu,thickness:0.7mil,Plating to 1oz


GND1  FR4,thickness:3.8mil,Dielectric Constant:4.3

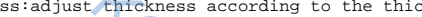
POWER  Cu,thickness:1.5mil, 1oz


 FR4,thickness:8mil,Dielectric Constant:4.3


FR4,thickness:adjust thickness according to the thickness of board ,Dielectric Constant:4.3

Signal2  Cu,thickness:1.5mil, 1oz

GND2  FR4,thickness:8mil,Dielectric Constant:4.3

 Cu,thickness:1.5mil, 1oz

BOTTOM(Signal3)  FR4,thickness:3.8mil,Dielectric Constant:4.3

 Cu,thickness:0.7mil,Plating to 1oz



福州瑞芯微电子有限公司

Title: Index

File: RK3288\_BOX\_Ref

REV:3.0

Create Date: Sunday, January 26, 2014

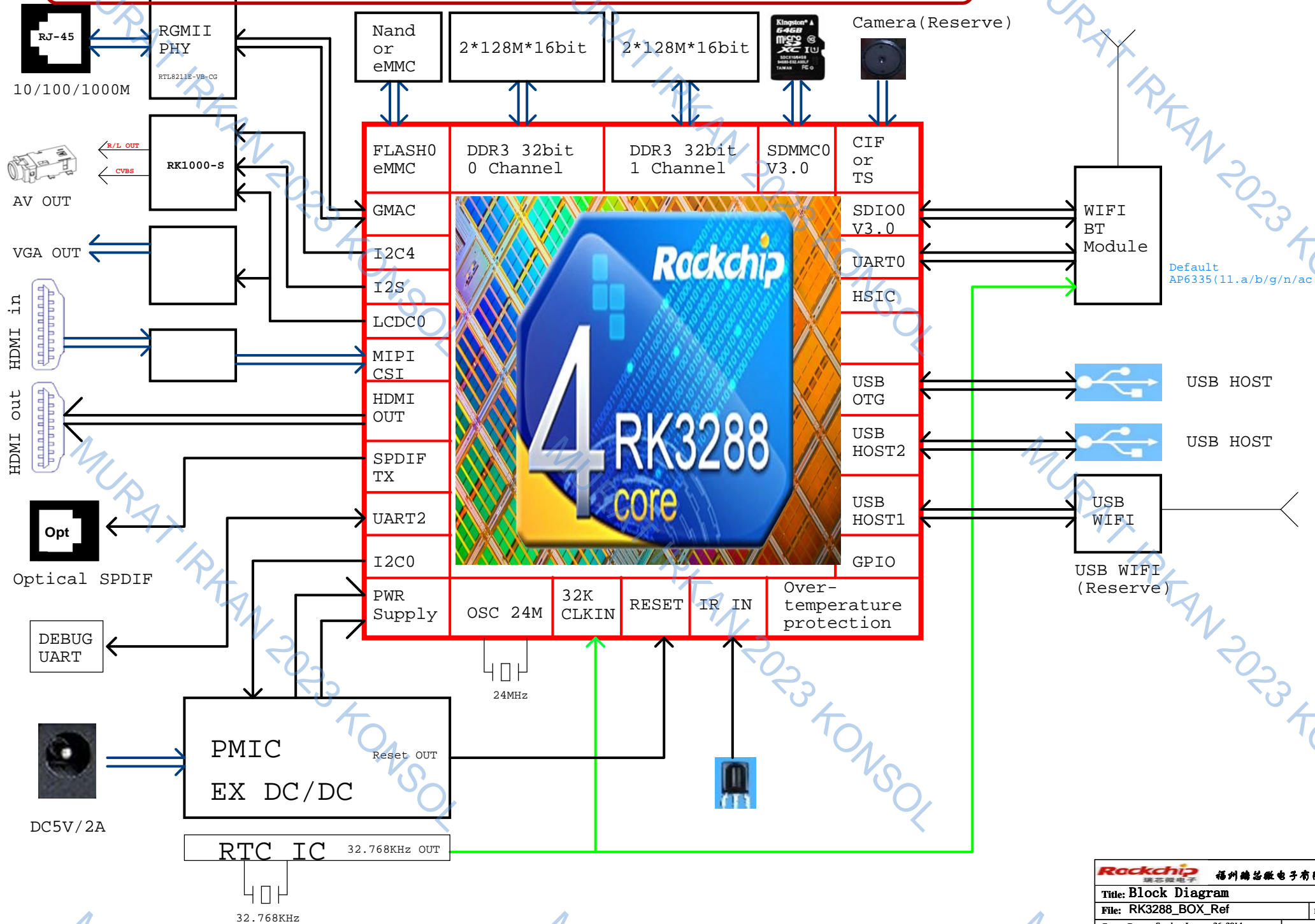
Page Num: 1

Modify Date: Tuesday, March 21, 2017

Page Total: 24

Version	Date	Author	Change Note	Approved
V2.0	20170207	LCH	Update	

# ANDROID OYUN KONSOLU VE TABLET PC



Adapter  
5V/2A

VCC\_SYS

VCC\_IO

RK808-B

VCC7

LDO3 100mA

VCC2

BUCK2 5A

VCC1

BUCK1 5A

VCC3

BUCK3 1.5A

LDO7 300mA

VCC6

LDO1 150mA

VCC4

BUCK4 1.5A

VCC9

LDO5 300mA

VCC8

SW1 0.2R

Reset OUT

VCC10

LDO6 150mA

VCC11

LDO8 300mA

LDO2 150mA

LDO4 150mA

VCC12

SW2 0.2R

External DC-DC

Current limiting IC

VDD_10	3288 PMUVDD
	3288 USB PHY
	RK3288 PLL

VDD_GPU	GPU
---------	-----

VDD_CPU	CPU Core
---------	----------

VCC_DDR	DDR_Ctrl
1.5V	DDR Device

VCC_18	SDIO WIFI IO
1.8V	RK3288 SAR-ADC
	RK3288 USB PHY

VCC_Flash	option	FLASH IO
1.8V		

VCC_IO	RK3288 IO Suply
3.3V	RK3288 USB PHY
	FLASH
	TF Card
	Ethernet MAC
	LCDC Controller
	WiFi

VCCIO_SD	RK3288
	SDIO-Ctrl

VCC_SD	SD Card
	Power

RESET	RESET
-------	-------

VDD10_LCD	RK3288 HDMI
	RK3288 LCDC

VCC18_LCD	RK3368 HDMI
	RK3368 LCDC

VCCA_33	
---------	--

VCCA_18	
---------	--

VCC_LAN	
---------	--

VDD_LOG	
---------	--

VCC_HOST_5V	
-------------	--

Power up Timing

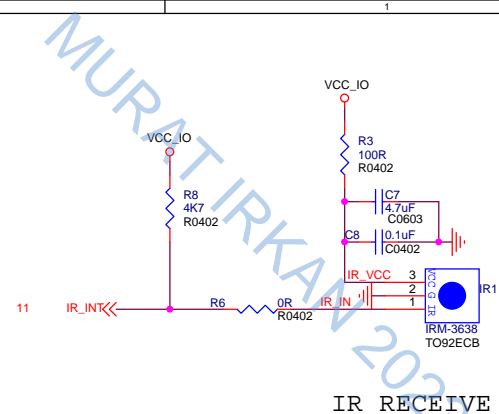
PowerName	RK808-B Channel	timer 2mS	Default voltage	Normal voltage
VDD_10	LDO3	Slot:1	1.0V	1.0V
VDD_CPU	BUCK1	Slot:2	1.1V	DVFS
VDD_GPU	BUCK2	Slot:3	1.1V	DVFS
VDD_LOG	External DC-DC	Slot:4A	1.0V	DVFS
VCC_DDR	BUCK3	Slot:3	1.5V	1.5V
VCC_18	LDO7	Slot:3	1.8V	1.8V
VCC18_FLASH	LDO1	Slot:4	1.8V	1.8V
VCC_IO	BUCK4	Slot:4	3.3V	3.3V
VCCIO_SD	LDO5	Slot:5	3.3V	1.8V or 3.3V
VCC_SD	SW1	Slot:5	3.3V	3.3V
Reset		16*2mS+50mS		
VDD10_LCD	LDO6	OFF	0V	1.0V
VCC18_LCD	LDO8	OFF	0V	1.8V
VCCA_33	LDO2	OFF	0V	3.3V
VCCA_18	LDO4	OFF	0V	1.8V
VCC_LAN	SW2	OFF	0V	3.3V

SPDIF
RK3288 I2S
RK1000-S
Audio Line Driver IC
RK3288 LCDC
RK1000-S
Ethernet PHY

Logic
-------

USB HOST
----------

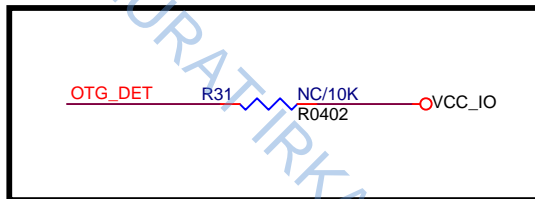
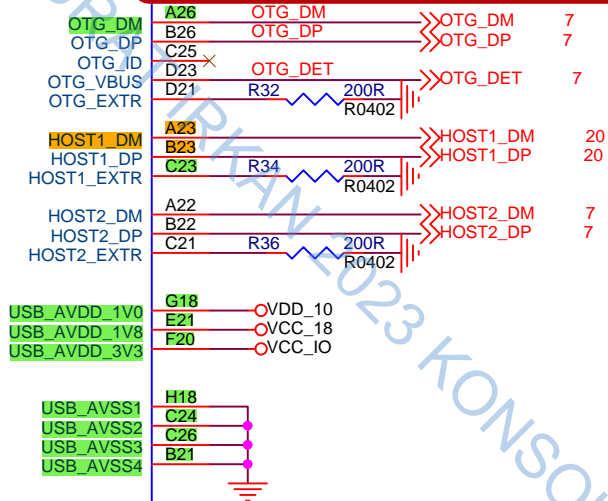
USB HOST
----------



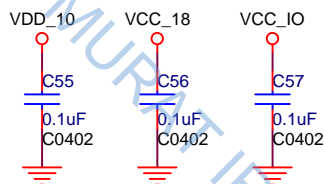
Page Total: 24

U1E  
MCU\_RK3288

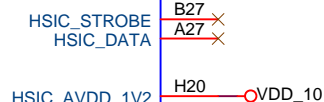
### RK3288 USB PORTLARI KONTROL OK



RK3288\_E



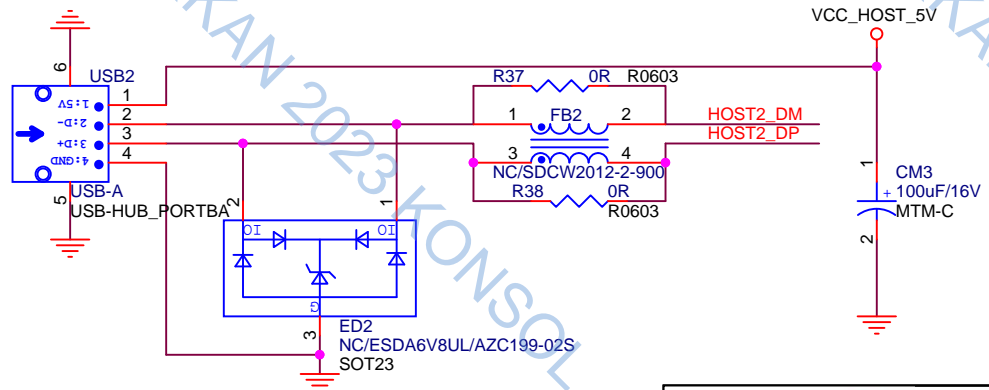
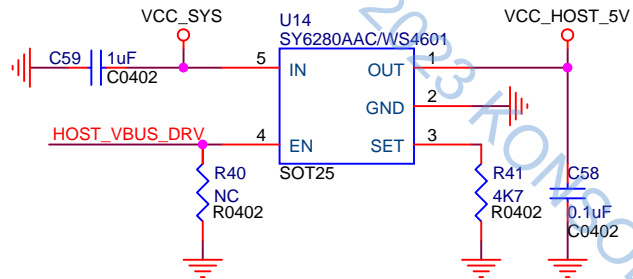
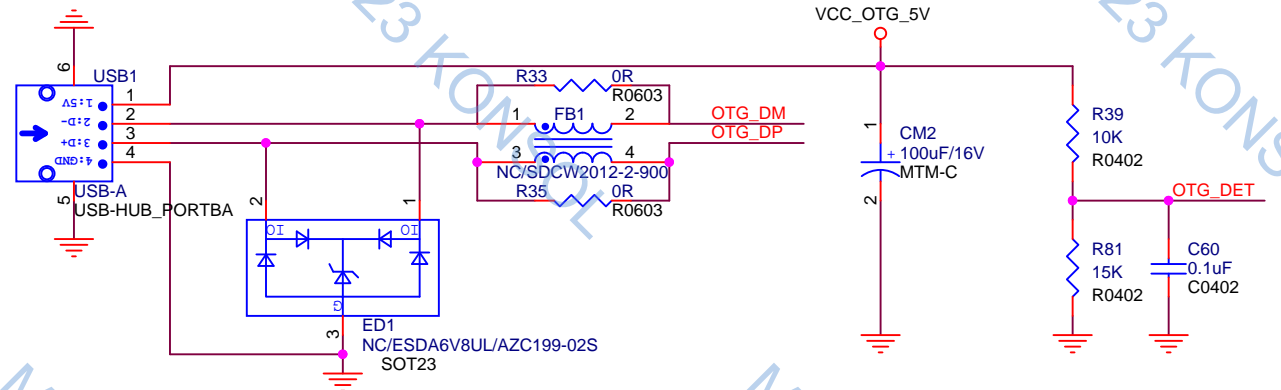
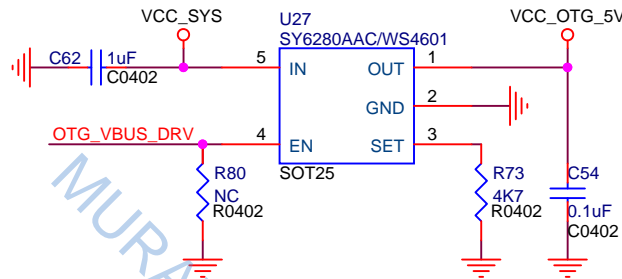
U1U  
MCU\_RK3288



RK3288\_U

 瑞芯微电子		福州瑞芯微电子有限公司	
Title: RK3288 USB/HSIC Controller			
File: RK3288_BOX_Ref			REV:3.0
Create Date:	Monday, February 17, 2014	Page Num:	6
Modify Date:	Tuesday, March 21, 2017	Page Total:	24

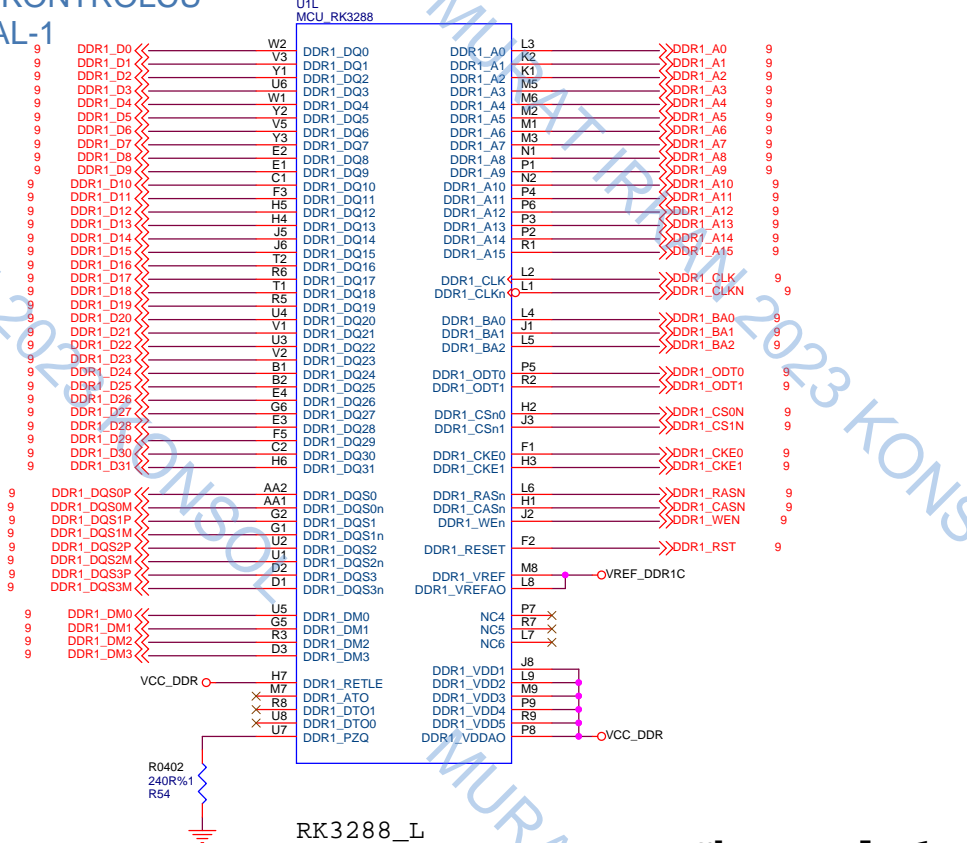
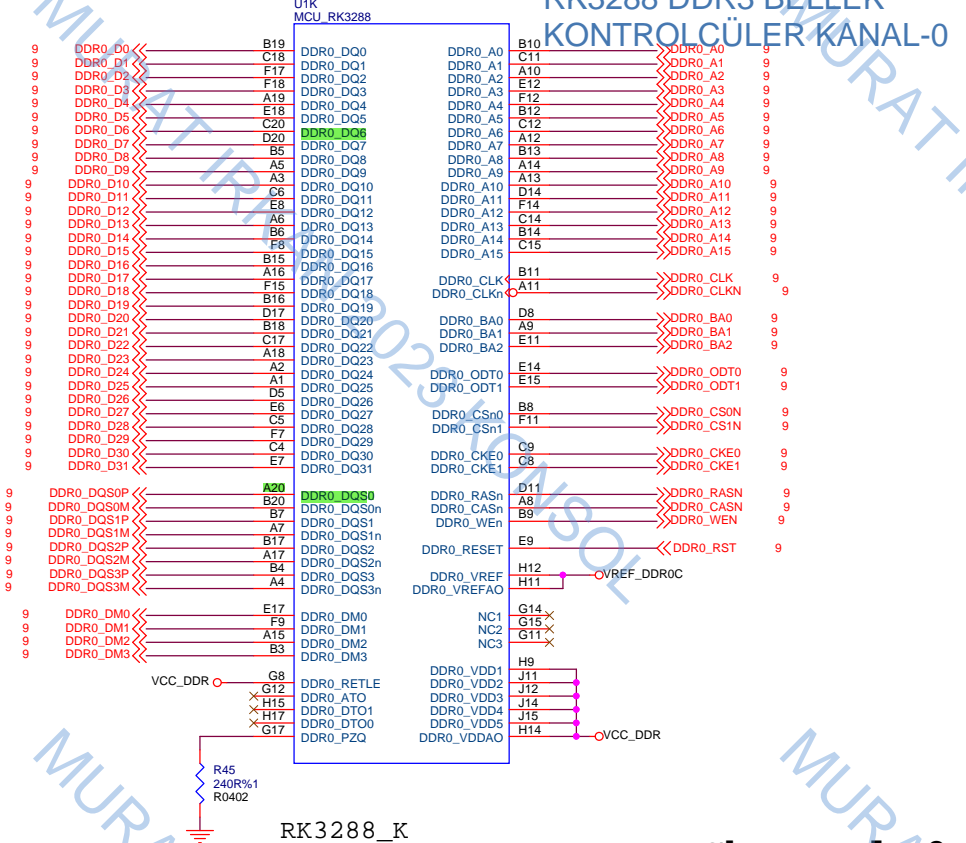
OTG\_DM >> OTG\_DM 6  
 OTG\_DP >> OTG\_DP 6  
 OTG\_DET >> OTG\_DET 6  
 HOST2\_DM >> HOST2\_DM 6  
 HOST2\_DP >> HOST2\_DP 6  
 HOST\_VBUS\_DRV >> HOST\_VBUS\_DRV 11  
 OTG\_VBUS\_DRV >> OTG\_VBUS\_DRV 11





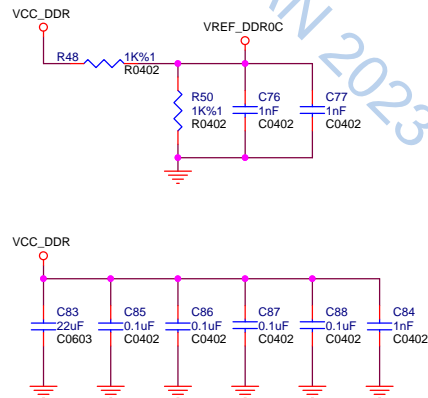
# RK3288 DDR3 BELLEK KONTROL CÜLER KANAL-0

# DDR KONTROL CÜ KANAL-1



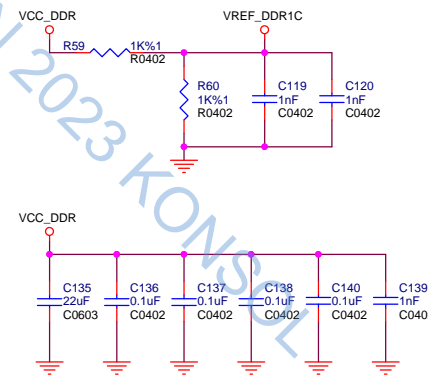
Channel 0

Channel 1



DDR0 FILTER

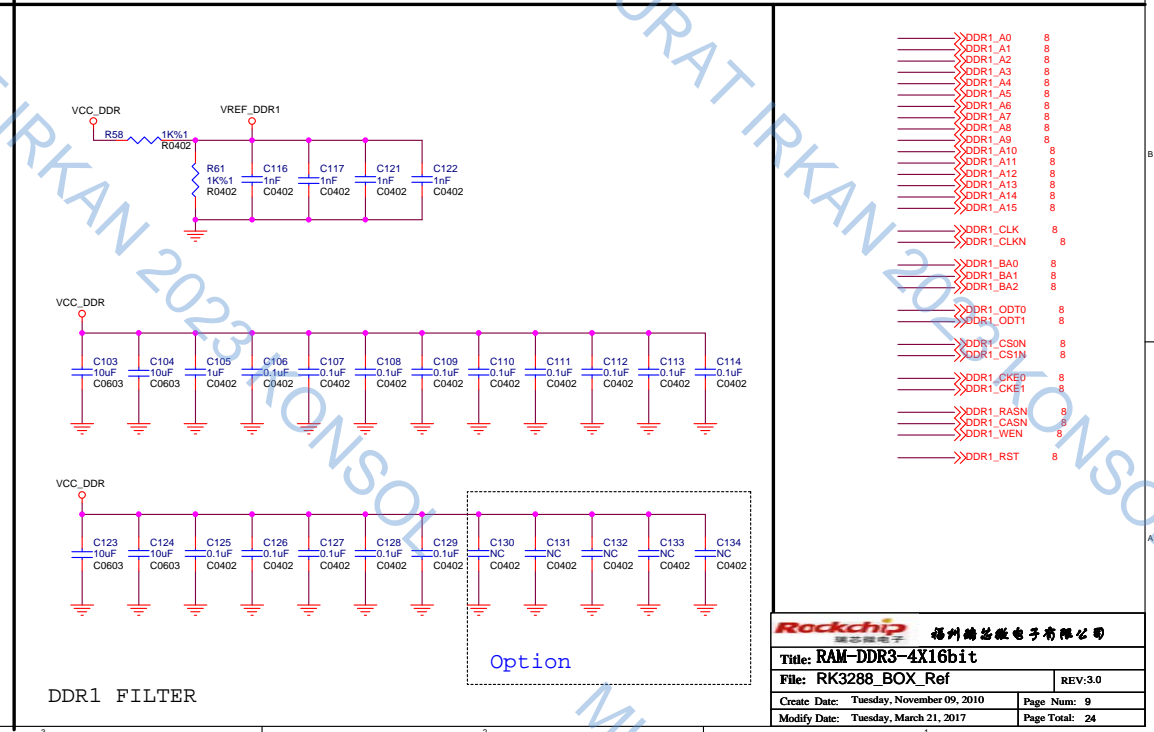
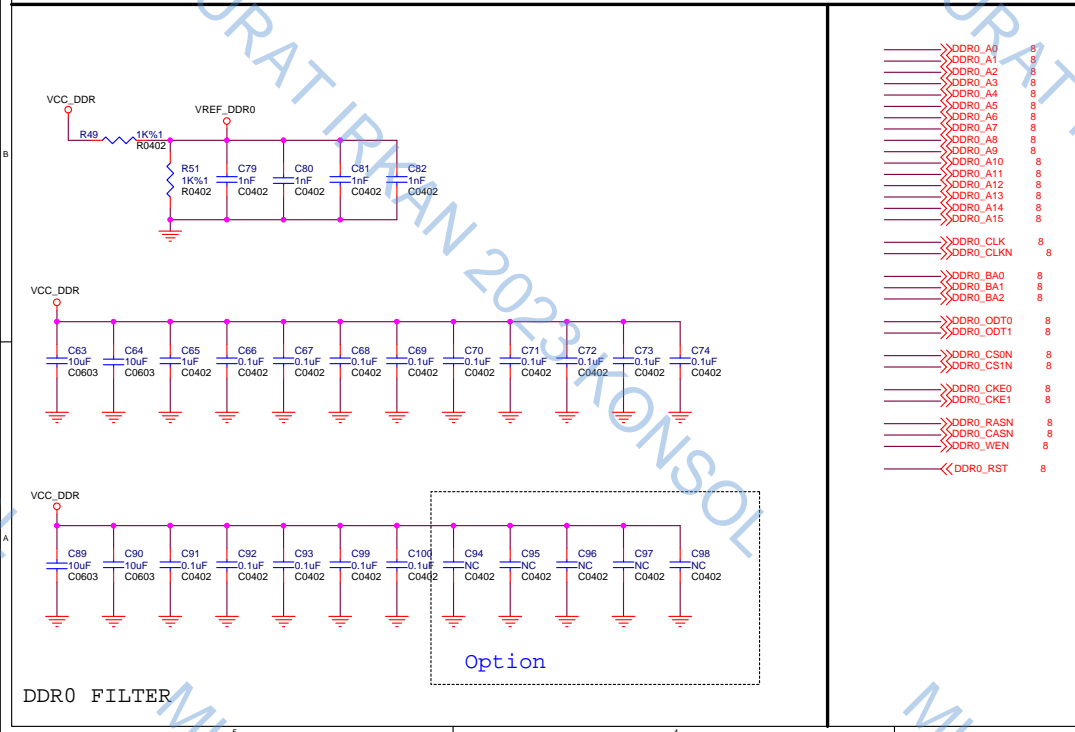
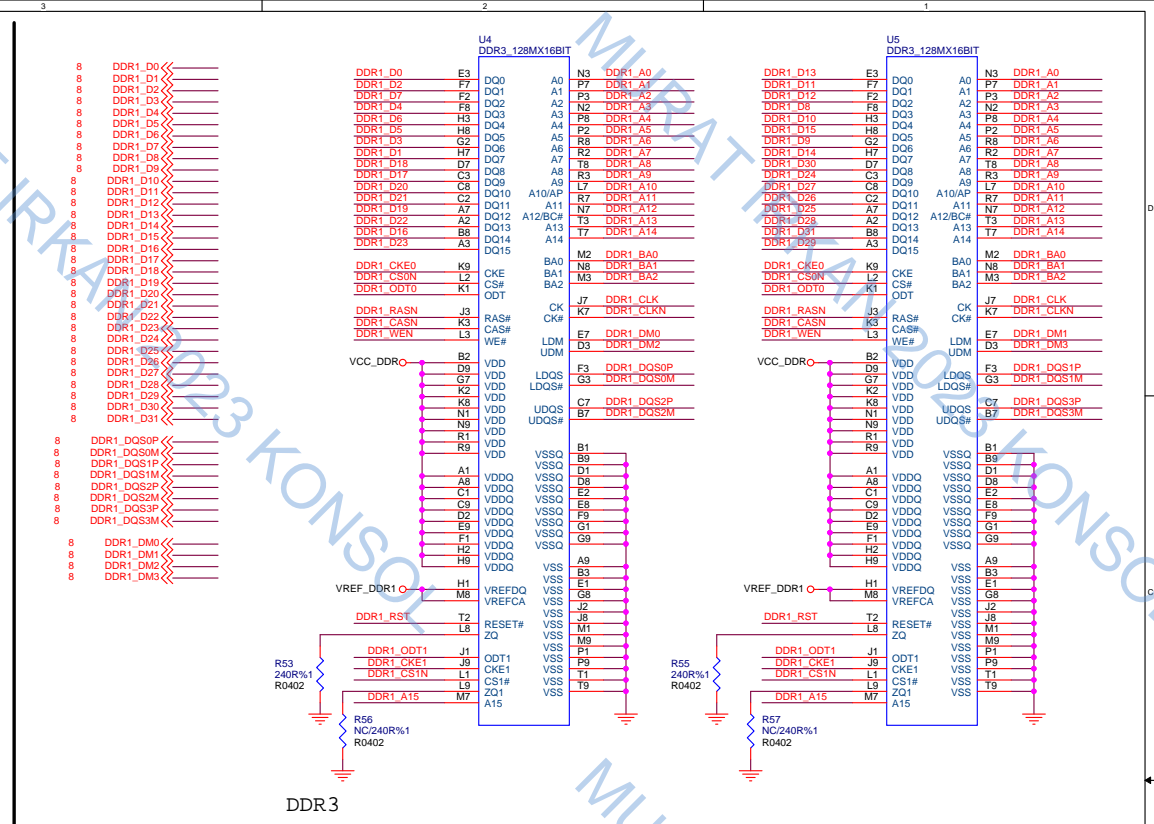
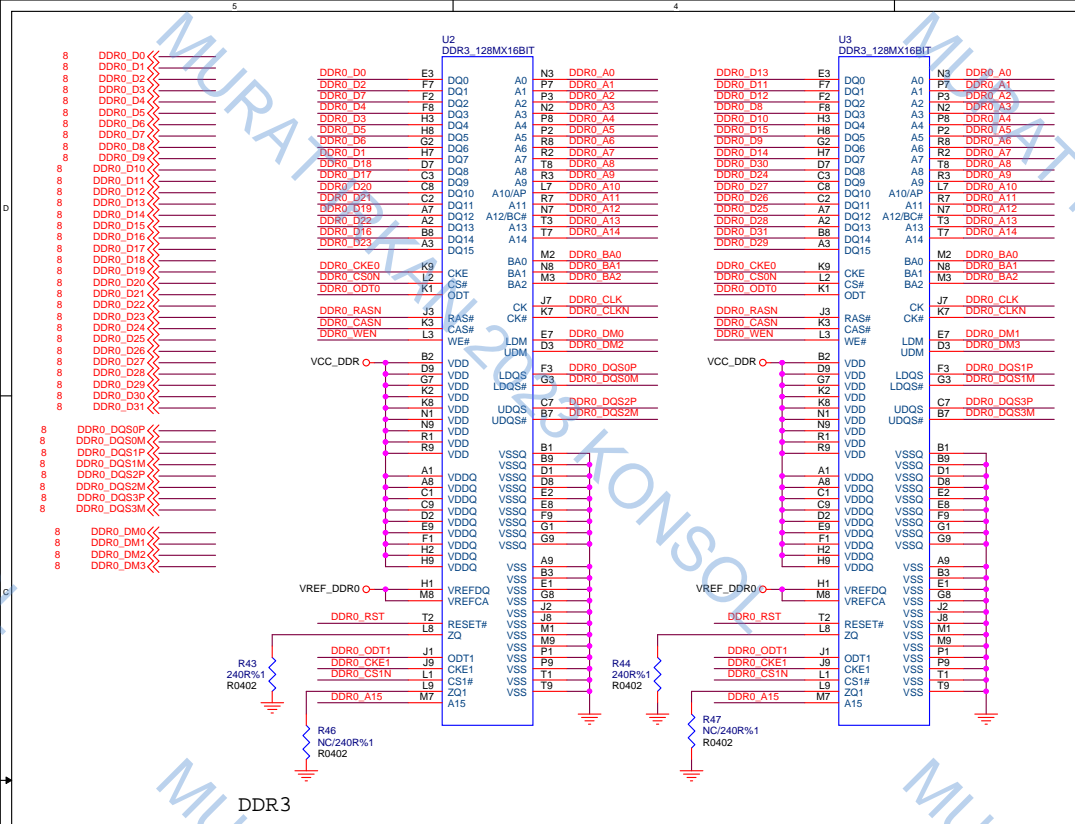
Note:  
These termination resistors must be placed in the middle of trace, and the termination resistor of CLK must be placed in the bifurcation point.

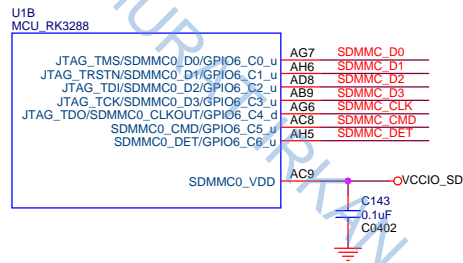


DDR1 FILTER

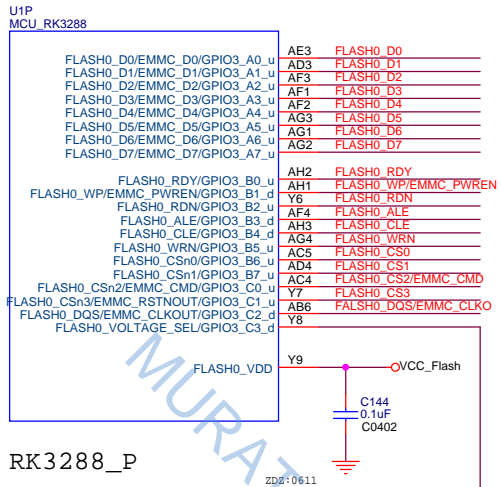
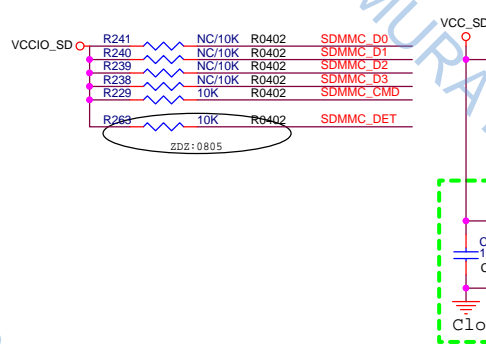
Note:  
These termination resistors must be placed in the middle of trace, and the termination resistor of CLK must be placed in the bifurcation point.







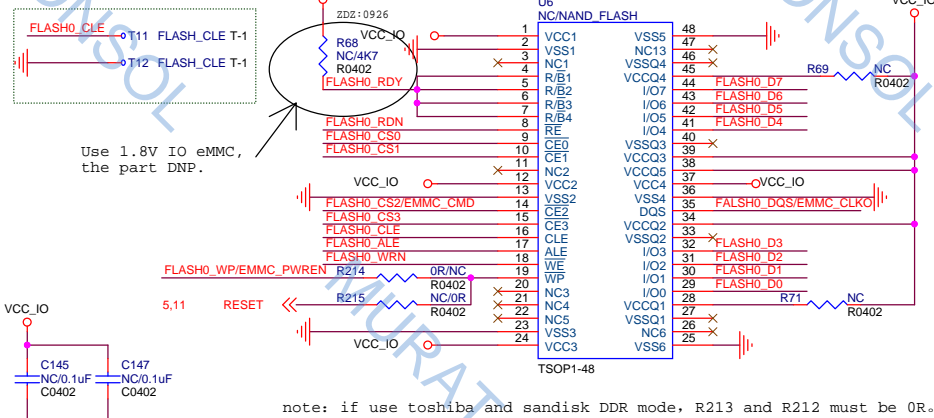
RK3288\_B



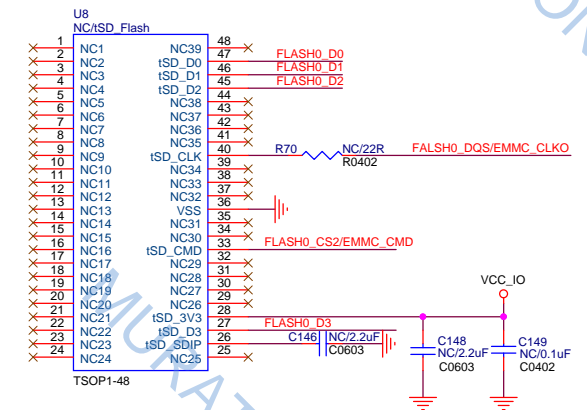
RK3288\_P

## NAND FLASH(Optional)

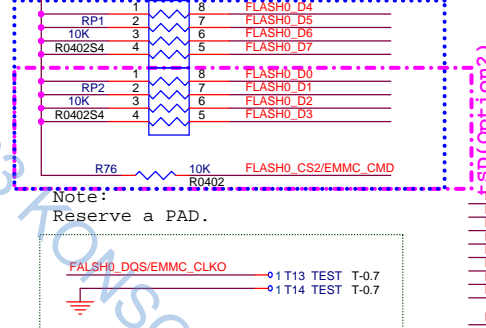
Note:  
Reserve a PAD.



## tSD\_Flash(Optional2)

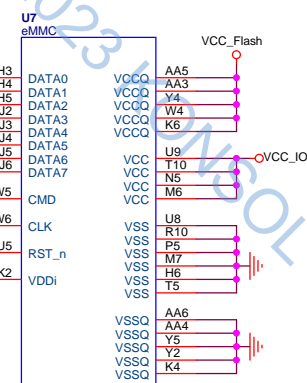


## eMMC(Optional1)



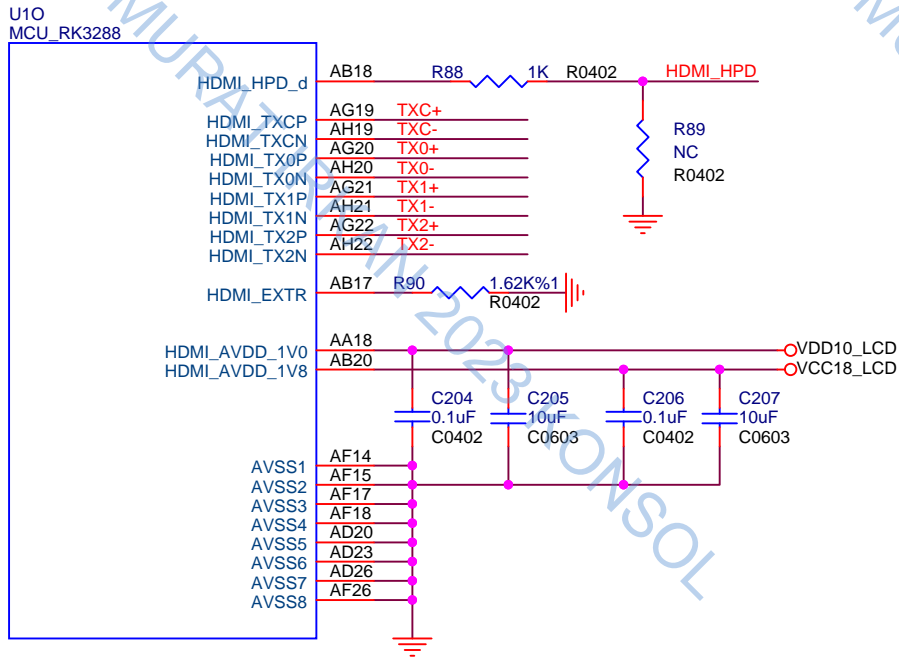
## eMMC(default)

Pull-up select

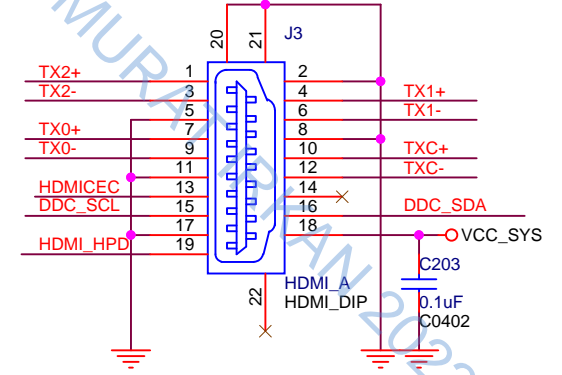
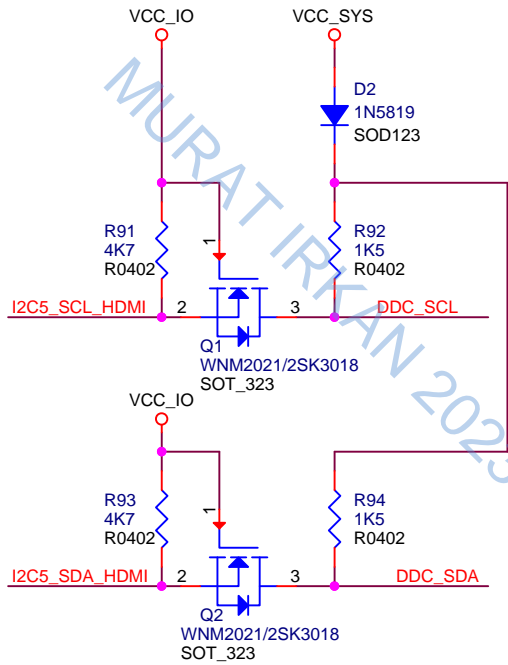
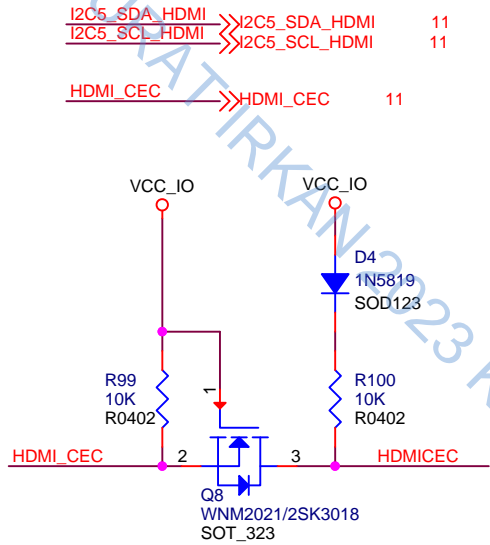


	Flash IO voltage		
eMMC (Default)	1.8V (VCCQ<150mA)	R74:DNP U15:DNP R532:0R	Default
	1.8V (VCCQ>150mA)	R74:DNP U15:PT5108E23E-18(500mA) R532:DNP	PLS confirm eMMC VCCQ peak current.
	3.3V	R74:0R U15:DNP R532:DNP	
Nand Flash	1.8V (VCCQ<150mA)	R74:DNP U15:DNP R532:0R	Default
	1.8V (VCCQ>150mA)	R74:DNP U15:PT5108E23E-18(500mA) R532:DNP	PLS confirm eMMC VCCQ peak current.
	3.3V	R74:0R U15:DNP R532:DNP	

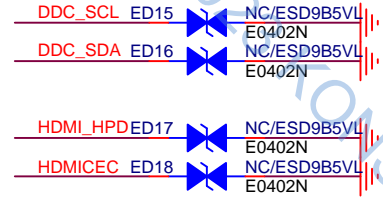
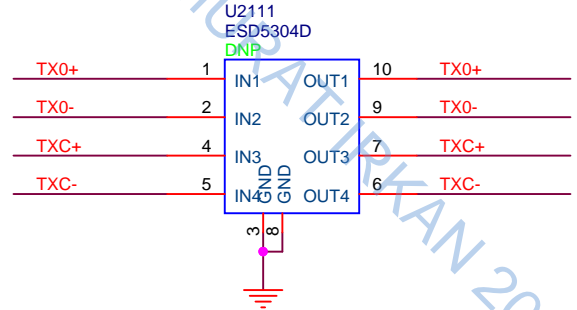
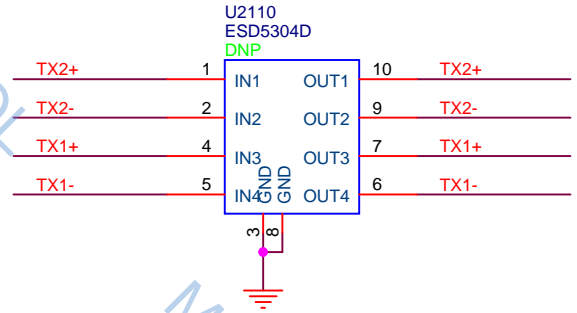




RK3288\_O



HDMI OUT



 瑞芯微电子		福州瑞芯微电子有限公司	
Title: HDMI OUT			
File: RK3288_BOX_Ref			REV:3.0
Create Date: Sunday, January 26, 2014		Page Num: 12	
Modify Date: Tuesday, March 21, 2017		Page Total: 24	

U1A  
MCU\_RK3288

LCDC domain

LCDC0\_HSYNC/GPIO1\_D0\_d  
LCDC0\_VSYNC/GPIO1\_D1\_d  
LCDC0\_DEN/GPIO1\_D2\_d  
LCDC0\_DCLK/GPIO1\_D3\_d

AA23 LCD\_HSYNC  
AB24 LCD\_VSYNC  
AA22 LCD\_DEN  
AA24 LCD\_CLK

TRACE\_D0/LCDC0\_D0/LVDS\_D0P  
TRACE\_D1/LCDC0\_D1/LVDS\_D0N  
TRACE\_D2/LCDC0\_D2/LVDS\_D1P  
TRACE\_D3/LCDC0\_D3/LVDS\_D1N  
TRACE\_D4/LCDC0\_D4/LVDS\_D2P  
TRACE\_D5/LCDC0\_D5/LVDS\_D2N  
TRACE\_D6/LCDC0\_D6/LVDS\_D3P  
TRACE\_D7/LCDC0\_D7/LVDS\_D3N  
TRACE\_D8/LCDC0\_D8/LVDS\_D4P  
TRACE\_D9/LCDC0\_D9/LVDS\_D4N  
TRACE\_D10/LCDC0\_D10/LVDS\_CLK0P  
TRACE\_D11/LCDC0\_D11/LVDS\_CLK0N  
TRACE\_D12/LCDC0\_D12/LVDS\_D5P  
TRACE\_D13/LCDC0\_D13/LVDS\_D5N  
TRACE\_D14/LCDC0\_D14/LVDS\_D6P  
TRACE\_D15/LCDC0\_D15/LVDS\_D6N  
TRACE\_CLK/LCDC0\_D16/LVDS\_D7P  
TRACE\_CTL/LCDC0\_D17/LVDS\_D7N  
LCDC0\_D18/LVDS\_D8P  
LCDC0\_D19/LVDS\_D8N  
LCDC0\_D20/LVDS\_D9P  
LCDC0\_D21/LVDS\_D9N  
LCDC0\_D22/LVDS\_CLK1P  
LCDC0\_D23/LVDS\_CLK1N

T27 LCD\_D0  
T28 LCD\_D1  
U27 LCD\_D2  
U28 LCD\_D3  
W27 LCD\_D4  
W28 LCD\_D5  
Y27 LCD\_D6  
Y28 LCD\_D7  
AA27 LCD\_D8  
AA28 LCD\_D9  
V27 LCD\_D10  
V28 LCD\_D11  
U25 LCD\_D12  
U26 LCD\_D13  
V25 LCD\_D14  
V26 LCD\_D15  
AA25 LCD\_D16  
AA26 LCD\_D17  
AB27 LCD\_D18  
AB28 LCD\_D19  
AC25 LCD\_D20  
AC26 LCD\_D21  
Y25 LCD\_D22  
Y26 LCD\_D23

LVDS\_EXTR

LVDS domain

LVDS\_AVDD\_1V0  
LVDS\_AVDD\_1V8  
LVDS\_AVDD\_3V3

AA20 VDD10\_LCD  
AB21 OVCC18\_LCD  
AB23  
R103 0R R0402 OVCCA\_33  
C327 Don't remove  
0.1uF  
C0402

RK3288\_A

U11  
MCU\_RK3288

I2S\_SCLK/GPIO6\_A0\_d  
I2S\_LRCK\_RX/GPIO6\_A1\_d  
I2S\_LRCK\_TX/GPIO6\_A2\_d  
I2S\_SDI/GPIO6\_A3\_d  
I2S\_SDO0/GPIO6\_A4\_d  
I2S\_SDO1/GPIO6\_A5\_d  
I2S\_SDO2/GPIO6\_A6\_d  
I2S\_SDO3/GPIO6\_A7\_d  
I2S\_CLK/GPIO6\_B0\_d  
I2C2\_SDA/GPIO6\_B1\_u  
I2C2\_SCL/GPIO6\_B2\_u

AD11 R801 22R R0402 I2S\_SCLK  
AG11 R803 22R R0402 I2S\_LRCK\_RX  
AF11 I2S\_LRCK\_TX  
AE11 R802 22R R0402 I2S\_SDI  
AG12 I2S\_SDO0  
AH13  
AG13  
AH12  
AC12 R800 22R R0402 I2S\_MCLK  
AF12  
AD12  
AE12 SPDIF\_TX

SPDIF\_TX/GPIO6\_B3\_d

APIO4\_VDD

Y12 OVCCA\_33  
C239 0.1uF  
C0402

LCD\_HSYNC LCD\_HSYNC 14,24  
LCD\_VSYNC LCD\_VSYNC 14,24  
LCD\_DEN 24  
LCD\_CLK LCD\_CLK 14,24

LCD\_D0 LCD\_D0 24  
LCD\_D1 LCD\_D1 14,24  
LCD\_D2 LCD\_D2 14,24  
LCD\_D3 LCD\_D3 14,24  
LCD\_D4 LCD\_D4 14,24  
LCD\_D5 LCD\_D5 14,24  
LCD\_D6 LCD\_D6 14,24  
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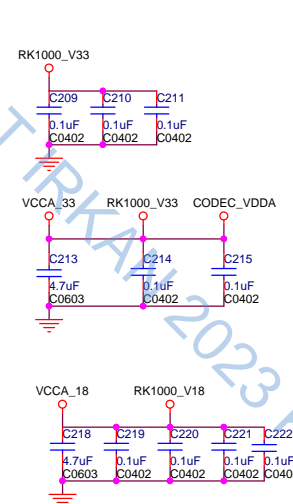
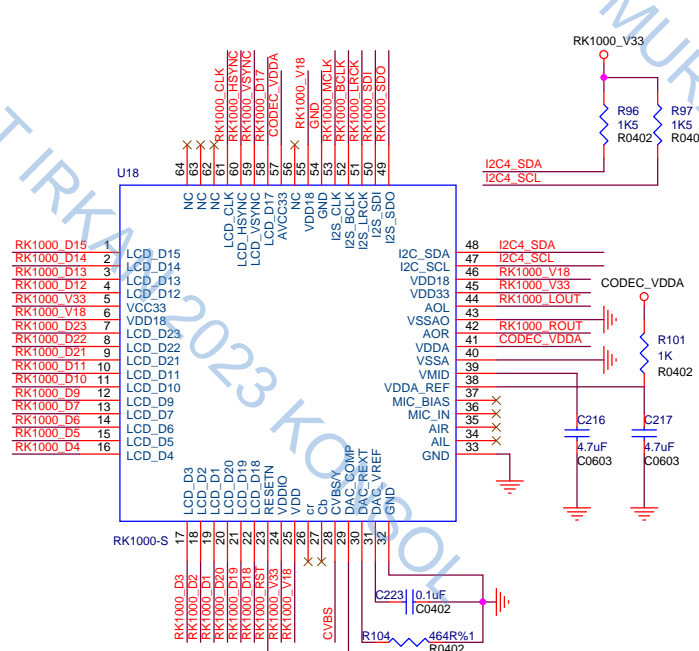
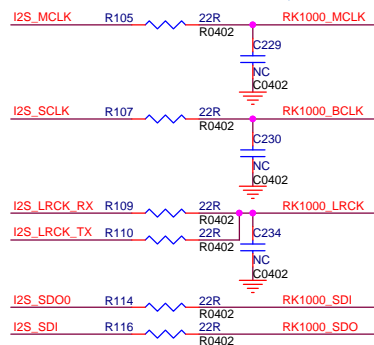
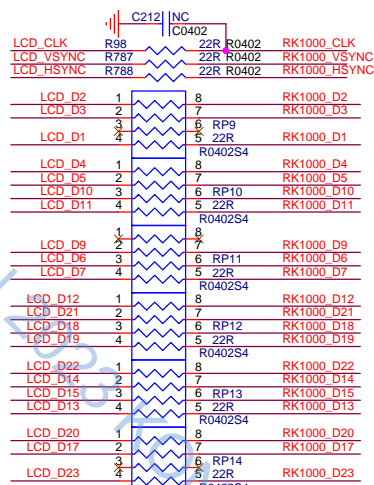
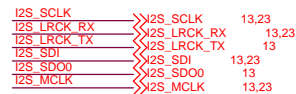
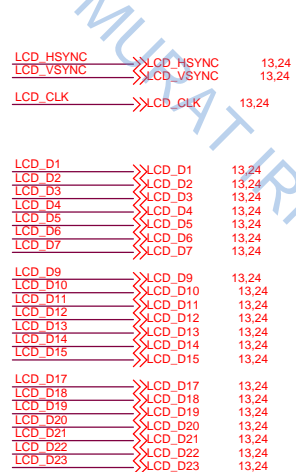
I2S\_SCLK I2S\_SCLK 14,23  
I2S\_LRCK\_RX I2S\_LRCK\_RX 14,23  
I2S\_LRCK\_TX 14  
I2S\_SDI I2S\_SDI 14,23  
I2S\_SDO0 I2S\_SDO0 14  
I2S\_MCLK I2S\_MCLK 14,23

SPDIF\_TX SPDIF\_TX 15

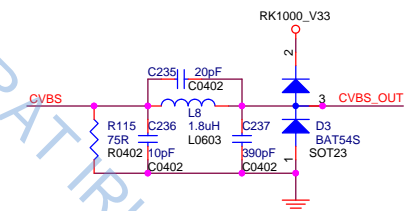
<b>Rockchip</b> 瑞芯微电子		福州瑞芯微电子有限公司	
Title: RK3288 LCDC/I2S Controller			
File: RK3288_BOX_Ref		REV:3.0	
Create Date: Monday, February 17, 2014	Page Num: 13		
Modify Date: Tuesday, March 21, 2017	Page Total: 24		

RK3288\_I

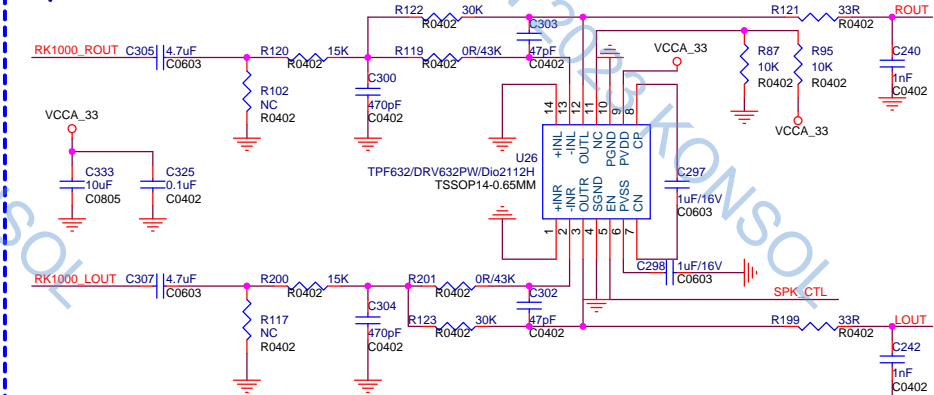




## RK1000-S POWER



## R/L OUT



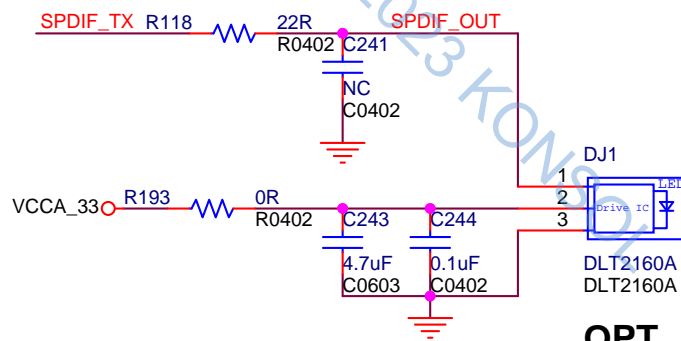
## 2-Vrms Audio Line Driver

## AV OUT


Rockchip 瑞芯微电子	
Title: RK1000-S-AV OUT	
File: RK3288_BOX_Ref	REV:3.0
Create Date: Sunday, January 26, 2014	Page Num: 14
Modify Date: Tuesday, March 21, 2017	Page Total: 24



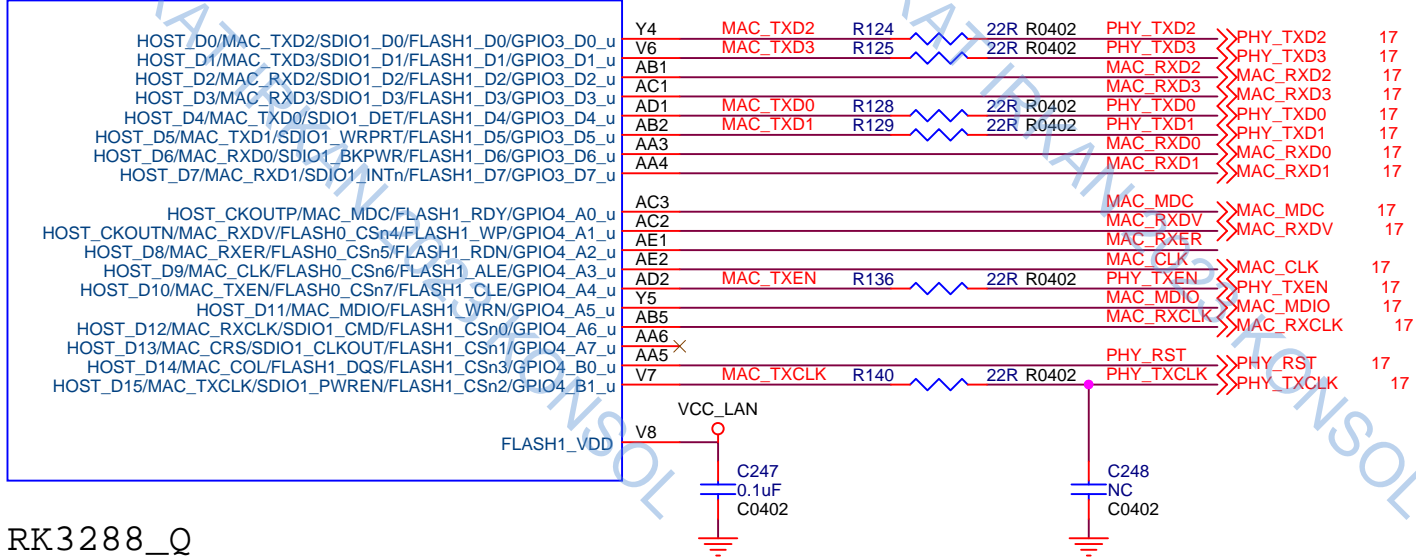
SPDIF\_TX >> SPDIF\_TX 13



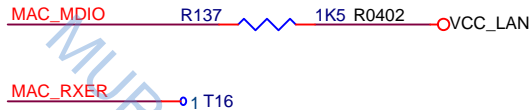
Optical S/PDIF OUT

 瑞芯微电子		福州瑞芯微电子有限公司	
Title: S/PDIF OUT			
File: RK3288_BOX_Ref			REV:3.0
Create Date: Monday, February 17, 2014		Page Num: 15	
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U1Q  
MCU\_RK3288



RK3288\_Q



MAC\_RXER 1 T16





U1H

MCU RK3288

UART0\_RXD/GPIO4\_C0\_u  
UART0\_TXD/GPIO4\_C1\_d  
UART0\_CTSn/GPIO4\_C2\_u  
UART0\_RTSn/GPIO4\_C3\_u

SDIO0\_D0/GPIO4\_C4\_u  
SDIO0\_D1/GPIO4\_C5\_u  
SDIO0\_D2/GPIO4\_C6\_u  
SDIO0\_D3/GPIO4\_C7\_u  
SDIO0\_CMD/GPIO4\_D0\_u  
SDIO0\_CLKOUT/GPIO4\_D1\_d  
SDIO0\_DET/GPIO4\_D2\_u  
SDIO0\_WP/GPIO4\_D3\_d  
SDIO0\_PWR/GPIO4\_D4\_d  
SDIO0\_BKPWR/GPIO4\_D5\_d  
SDIO0\_INTr/GPIO4\_D6\_u  
GPIO4\_D7\_u

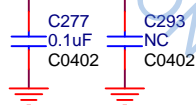
APIO3\_VDD

AH11 UART0\_RX R233 NC/10K R0402  
AG10 UART0\_TX R227 NC/10K R0402  
AB12 UART0\_CTS  
AB11 UART0\_RTS

AH9 SDIO0\_D0 R232 NC/10K R0402  
AH10 SDIO0\_D1 R235 NC/10K R0402  
AG9 SDIO0\_D2 R236 NC/10K R0402  
AH7 SDIO0\_D3 R237 NC/10K R0402  
AH8 SDIO0\_CMD R231 NC/10K R0402  
AG8 SDIO0\_CLK

AF9 BT\_WAKE  
AE9  
AC11 WIFI\_REG\_ON  
AF8 BT\_RST  
AE8 WIFI\_HOST\_WAKE  
AD9 BT\_HOST\_WAKE

AA11



RK3288\_H

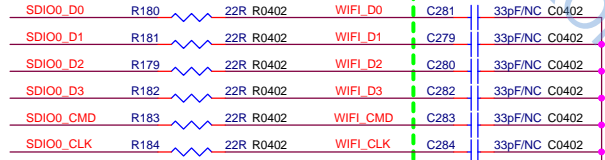
UART0\_RX >> UART0\_RX 19  
UART0\_TX >> UART0\_TX 19  
UART0\_CTS >> UART0\_CTS 19  
UART0\_RTS >> UART0\_RTS 19

SDIO0\_D0 >> SDIO0\_D0 19  
SDIO0\_D1 >> SDIO0\_D1 19  
SDIO0\_D2 >> SDIO0\_D2 19  
SDIO0\_D3 >> SDIO0\_D3 19  
SDIO0\_CMD >> SDIO0\_CMD 19  
SDIO0\_CLK >> SDIO0\_CLK 19

BT\_WAKE >> BT\_WAKE 19  
WIFI\_REG\_ON >> WIFI\_REG\_ON 19  
BT\_RST >> BT\_RST 19  
WIFI\_HOST\_WAKE >> WIFI\_HOST\_WAKE 19  
BT\_HOST\_WAKE >> BT\_HOST\_WAKE 19

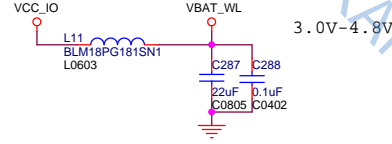
UART0\_RX >> UART0\_RX 18  
 UART0\_TX >> UART0\_TX 18  
 UART0\_CTS >> UART0\_CTS 18  
 UART0\_RTS >> UART0\_RTS 18  
 SDIO0\_D0 >> SDIO0\_D0 18  
 SDIO0\_D1 >> SDIO0\_D1 18  
 SDIO0\_D2 >> SDIO0\_D2 18  
 SDIO0\_D3 >> SDIO0\_D3 18  
 SDIO0\_CMD >> SDIO0\_CMD 18  
 SDIO0\_CLK >> SDIO0\_CLK 18  
 BT\_WAKE >> BT\_WAKE 18  
 WIFI\_REG\_ON >> WIFI\_REG\_ON 18  
 BT\_RST >> BT\_RST 18  
 WIFI\_HOST\_WAKE >> WIFI\_HOST\_WAKE 18  
 BT\_HOST\_WAKE >> BT\_HOST\_WAKE 18

32K\_OUT2 >> 32K\_OUT2 5,11

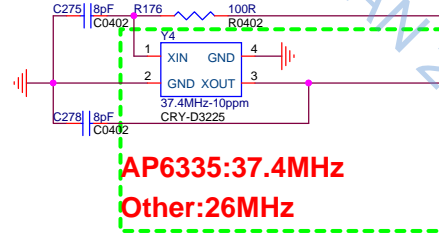


OPTION 3

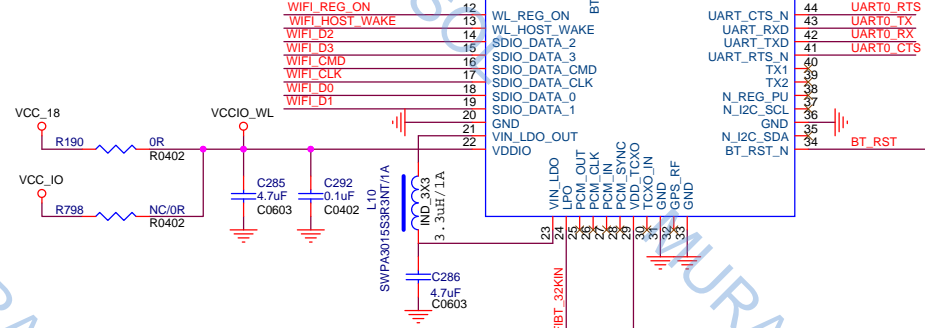
32K\_OUT2 R186 0R R0402 WIFIBT\_32KIN



Note:  
Adjusted the load capacitance  
according to the crystal specification.



AP6335:37.4MHz  
Other:26MHz



OPTION 1

OPTION 2

OPTION	WIFI			5GHz	BT4.0	Crystals	VDDIO
	a	b/g/n	ac				
AP6181		Yes				26MHz	1.71~3.6V
AP6212		Yes			Yes	26MHz	1.71~3.6V
XZ3538		Yes			Yes	26MHz	1.71~3.6V
XZ3660	Yes	Yes		Yes	Yes	26MHz	1.2~2.9V
AP6330	Yes	Yes		Yes	Yes	26MHz	1.2~2.9V
AP6335 (Default)	Yes	Yes	Yes	Yes	Yes	37.4MHz	1.71~3.63V

OPTION	1	2	3
AP6181	DNP	DNP	DNP
AP6212	DNP	DNP	DNP
XZ3538	DNP	DNP	DNP
XZ3660	DNP	DNP	DNP
AP6330	DNP	DNP	DNP
AP6335 (Default)	DNP	Paste	Paste

HOST1\_DM  
HOST1\_DP

HOST1\_DP  
HOST1\_DM

11

USBWIFI\_PWR

R242

10K

R0402

R274

100K

R0402

ZDZ:0805

VCC\_IO

C268

0.1uF

C0402

VCC\_WIFI

Q503

WPM2015

SOT23

3

2

1

4

3

2

1

5

6

5

6

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6

U25

GND

USB\_D+

USB\_D-

VCC

RL-UM12BS-8188EUS

GND

RF

5

6

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Rockchip  
瑞芯微电子

福州瑞芯微电子有限公司

Title: USB WIFI-(option)

File: RK3288\_BOX\_Ref

REV:3.0

Create Date: Sunday, January 26, 2014

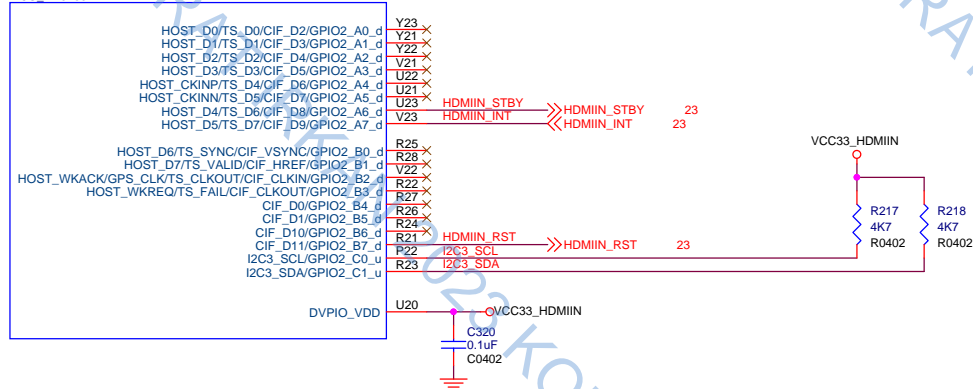
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Modify Date: Tuesday, March 21, 2017

Page Total: 24

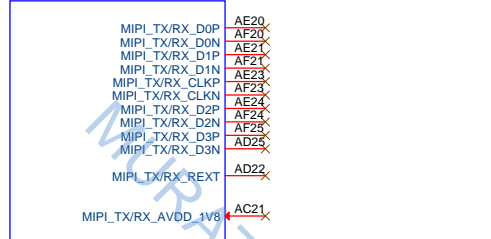


U1C  
MCU\_RK3288



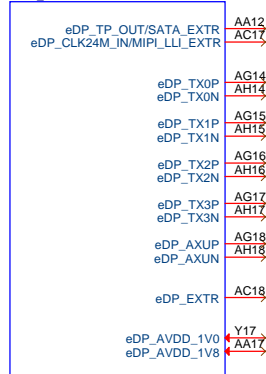
RK3288\_C

U1X  
MCU\_RK3288



RK3288\_X

U1N  
MCU\_RK3288



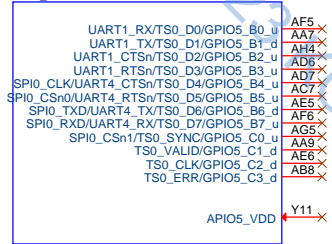
RK3288\_N

U1V  
MCU\_RK3288



RK3288\_V

U1J  
MCU\_RK3288



RK3288\_J





