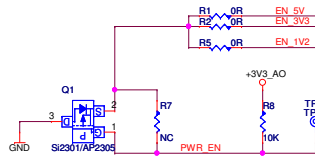
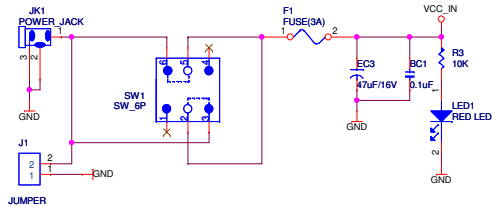


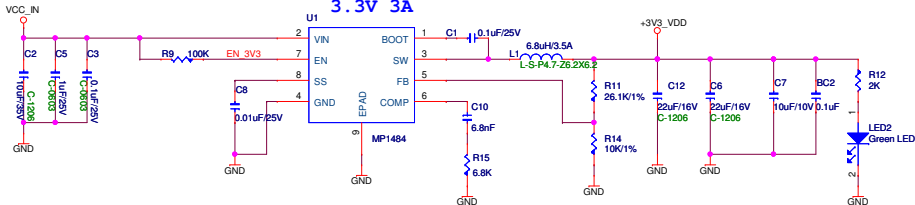
| | | |
|--|---|-----------------|
| SUNPLUS | | |
| Title: System Block | | |
| Size: Custom | Document Number: SP7021 Demo board | Rev: 1.0 |
| Date: Tuesday, November 19, 2019 Sheet 1 of 14 | | |

12V INPUT

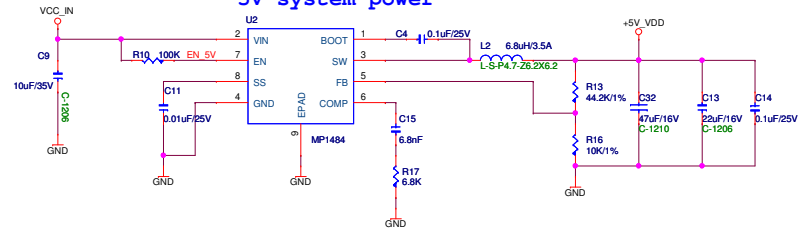


PWR_EN → PWR_EN 4

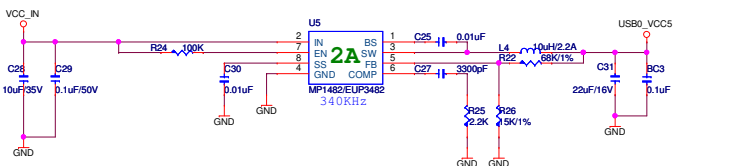
3.3V 3A



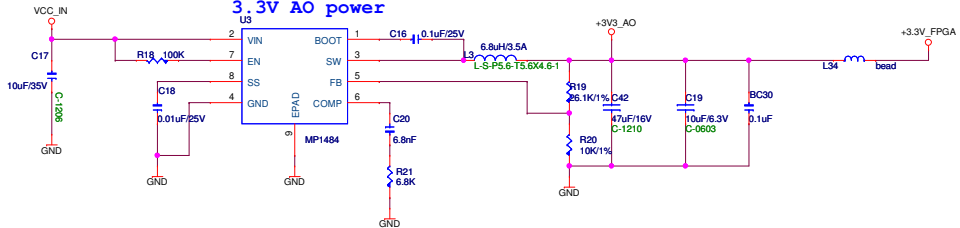
5V system power



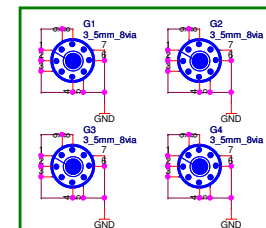
USB5V for USB0



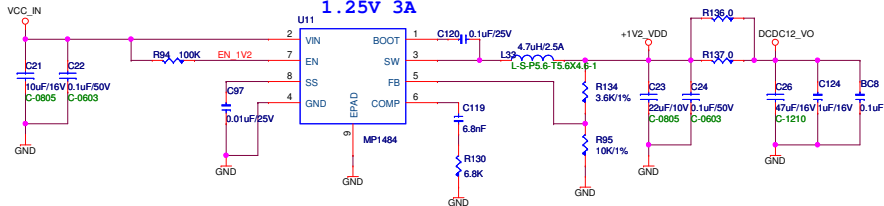
3.3V AO power



PCB Screw Position

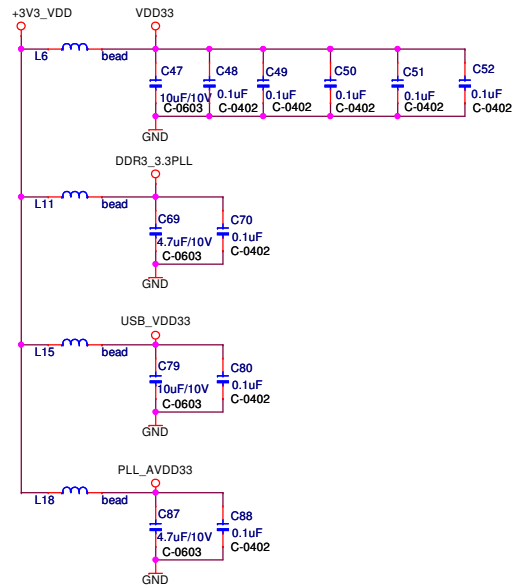


1.25V 3A

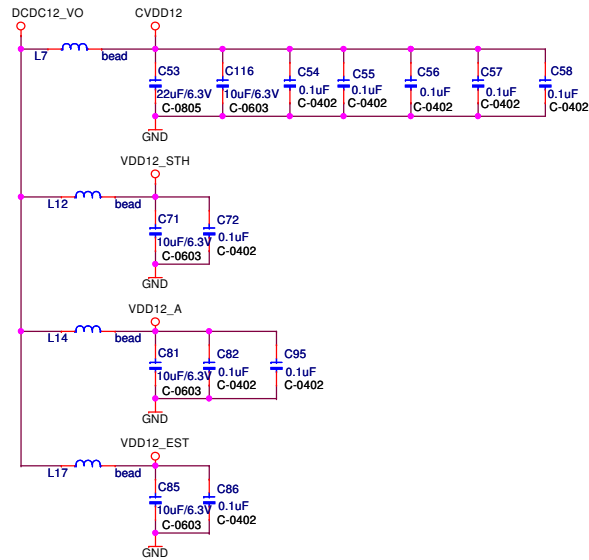


| | | |
|----------------|--|--|
| SUNPLUS | | |
| Power-1 | | |
| File | Document Number | |
| Size | SP7021 Demo board | |
| Custom | Rev 1.0 | |
| Date: | Tuesday, November 19, 2013 Sheet 2 of 14 | |

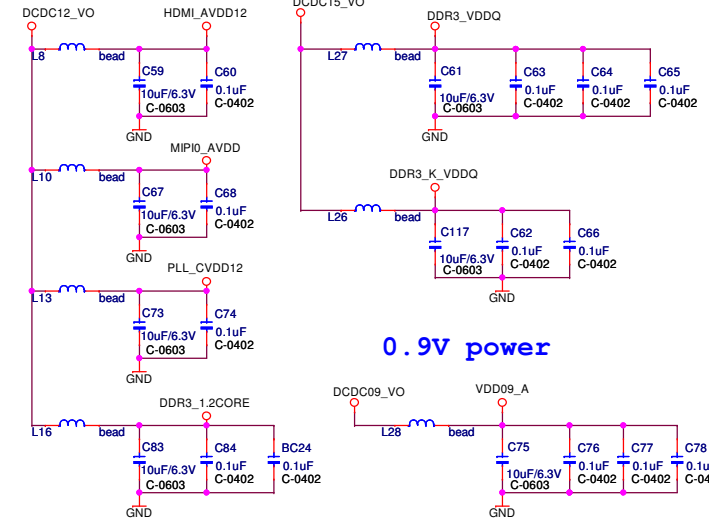
3.3V power



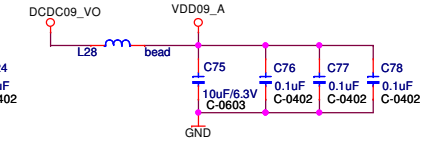
1.2V power



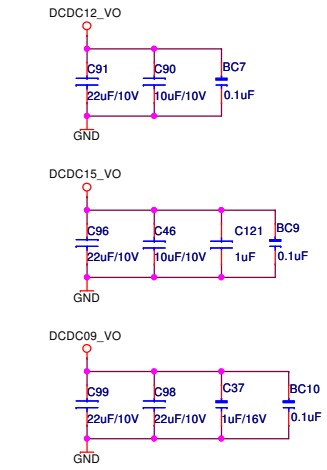
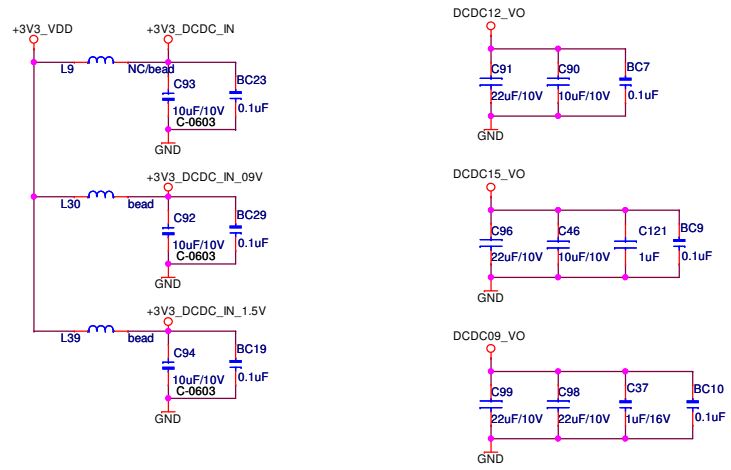
1.5V power



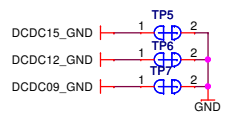
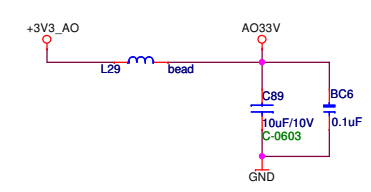
0.9V power




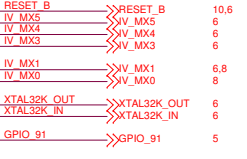
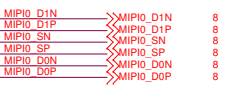
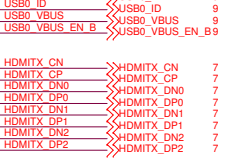
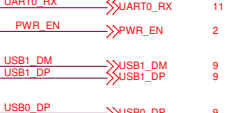
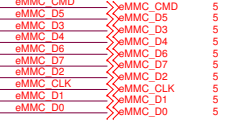
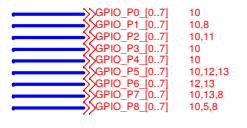
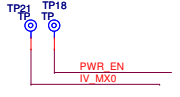
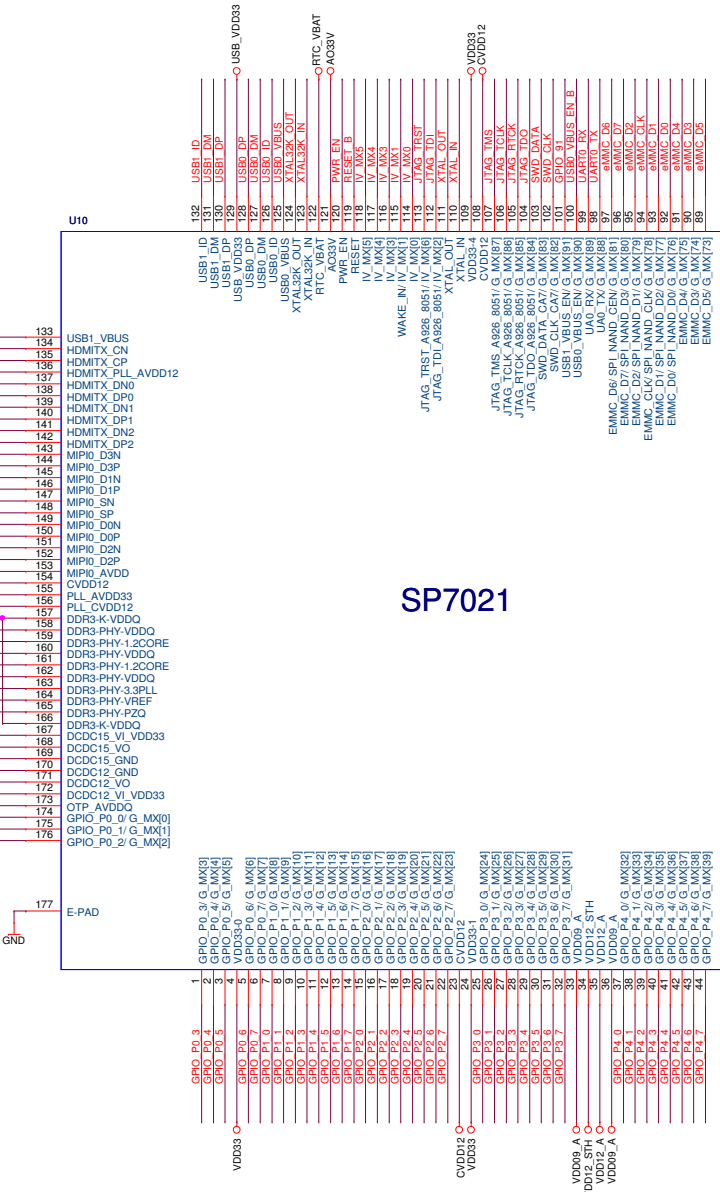
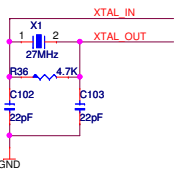
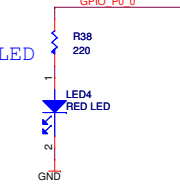
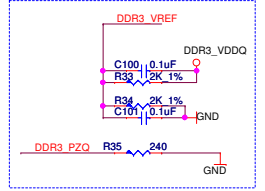
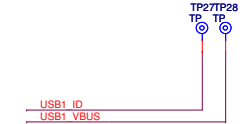
For internal DCDC




AO 3.3V power

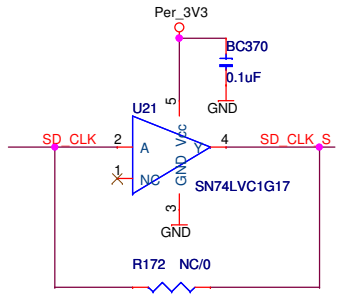
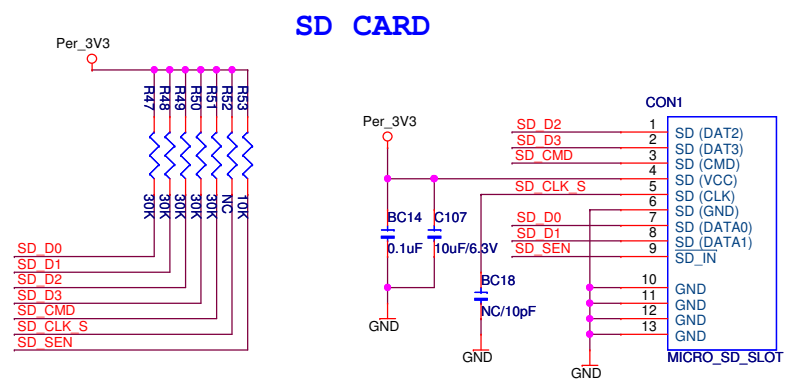
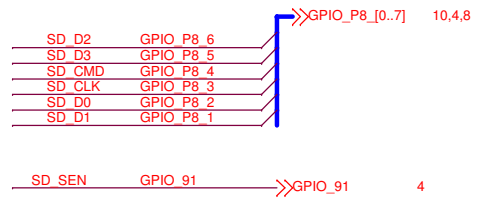
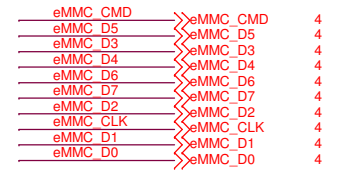
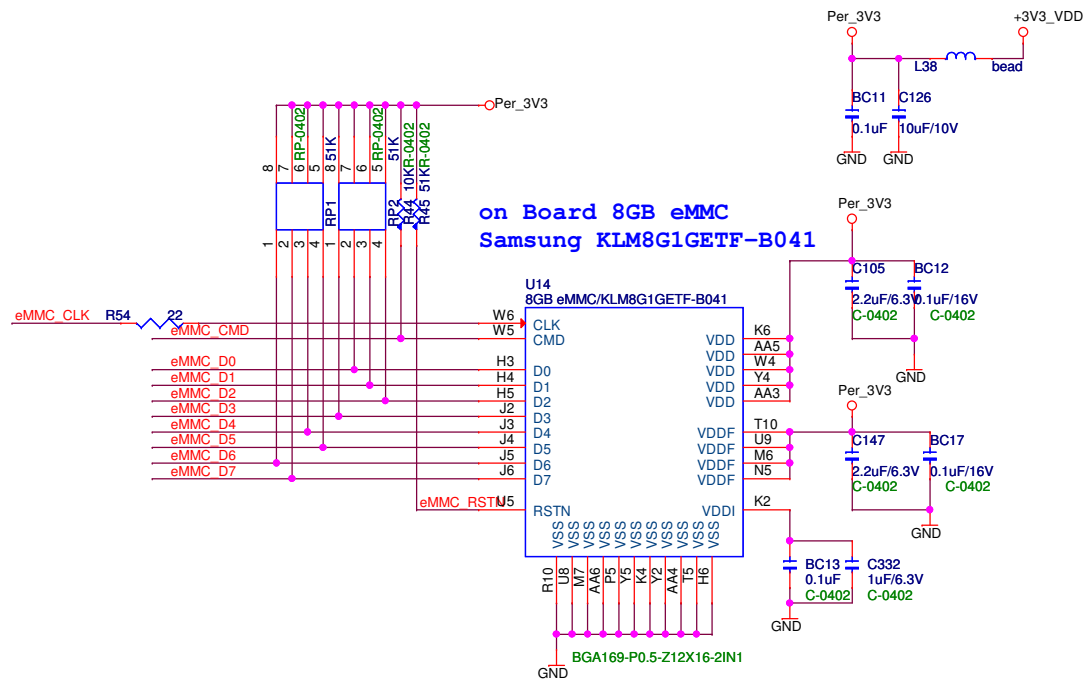


| | | | |
|---|----------------------------|--------------------------|---------------|
|  | | SUNPLUS | |
| | | Power Tree | |
| File | Size | Document Number | Rev |
| Custom | 10u | SP7021 Demo board | 1.0 |
| Date: | Tuesday, November 19, 2019 | | Sheet 3 of 14 |



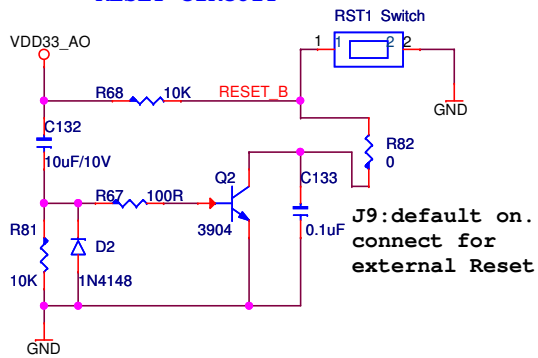
| | | | |
|---------------------|----|-----------|---|
| EMMC_CMD/ G_MX[72] | 88 | eMMC_CMD | 7 |
| GPIO_P8_7/ G_MX[71] | 86 | GPIO P8_6 | 6 |
| GPIO_P8_6/ G_MX[70] | 85 | GPIO P8_5 | 5 |
| GPIO_P8_5/ G_MX[69] | 83 | GPIO P8_3 | 3 |
| GPIO_P8_4/ G_MX[68] | 84 | GPIO P8_4 | 4 |
| GPIO_P8_3/ G_MX[67] | 82 | GPIO P8_2 | 2 |
| GPIO_P8_2/ G_MX[66] | 81 | GPIO P8_1 | 1 |
| GPIO_P8_1/ G_MX[65] | 80 | GPIO P8_0 | 0 |
| GPIO_P8_0/ G_MX[64] | 79 | GPIO P8_0 | 0 |
| GPIO_P7_7/ G_MX[63] | 77 | GPIO P7_7 | 7 |
| GPIO_P7_6/ G_MX[62] | 76 | GPIO P7_6 | 6 |
| GPIO_P7_5/ G_MX[61] | 75 | GPIO P7_5 | 5 |
| GPIO_P7_4/ G_MX[60] | 74 | GPIO P7_4 | 4 |
| GPIO_P7_3/ G_MX[59] | 73 | GPIO P7_3 | 3 |
| GPIO_P7_2/ G_MX[58] | 72 | GPIO P7_2 | 2 |
| GPIO_P7_1/ G_MX[57] | 71 | GPIO P7_1 | 1 |
| GPIO_P7_0/ G_MX[56] | 70 | GPIO P7_0 | 0 |
| GPIO_P6_7/ G_MX[55] | 69 | GPIO P6_7 | 7 |
| GPIO_P6_6/ G_MX[54] | 68 | GPIO P6_6 | 6 |
| GPIO_P6_5/ G_MX[53] | 67 | GPIO P6_5 | 5 |
| GPIO_P6_4/ G_MX[52] | 66 | GPIO P6_4 | 4 |
| GPIO_P6_3/ G_MX[51] | 65 | GPIO P6_3 | 3 |
| GPIO_P6_2/ G_MX[50] | 64 | GPIO P6_2 | 2 |
| GPIO_P6_1/ G_MX[49] | 62 | GPIO P6_1 | 1 |
| GPIO_P6_0/ G_MX[48] | 61 | GPIO P6_0 | 0 |
| GPIO_P5_7/ G_MX[47] | 55 | GPIO P5_7 | 7 |
| GPIO_P5_6/ G_MX[46] | 53 | GPIO P5_6 | 6 |
| GPIO_P5_5/ G_MX[45] | 51 | GPIO P5_4 | 4 |
| GPIO_P5_4/ G_MX[44] | 50 | GPIO P5_3 | 3 |
| GPIO_P5_3/ G_MX[43] | 49 | GPIO P5_2 | 2 |
| GPIO_P5_2/ G_MX[42] | 48 | GPIO P5_1 | 1 |
| GPIO_P5_1/ G_MX[41] | 47 | GPIO P5_0 | 0 |
| GPIO_P5_0/ G_MX[40] | 46 | GPIO P5_0 | 0 |
| GPIO_P4_7/ G_MX[39] | 45 | GPIO P4_7 | 7 |

| | | |
|---|----------------------------|---------------|
|  | | |
| SUNPLUS | | |
| File | Main Chip | |
| Size | SP7021 Demo board | |
| Customer | | |
| Date: | Tuesday, November 19, 2019 | Sheet 4 of 14 |

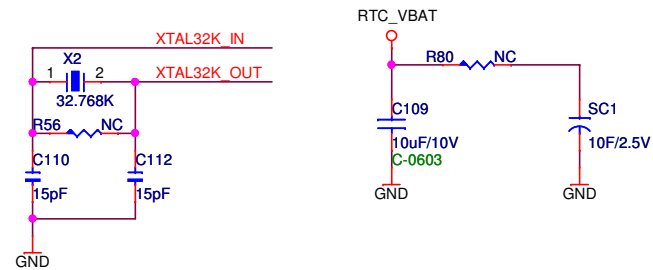


| | | | |
|----------------------------------|-----------------------------------|---|-------------------|
| | SUNPLUS | | |
| | Title SPI NOR/NAND/eMMC | | |
| | Size Custom | Document Number SP7021 Demo board | Rev 1.0 |
| Date: Tuesday, November 19, 2019 | | | Sheet 5 of 14 |

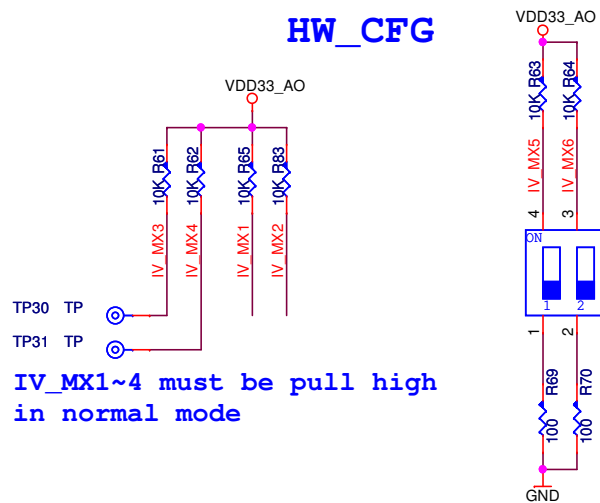
RESET CIRCUIT



32K X'tal and RTC battery



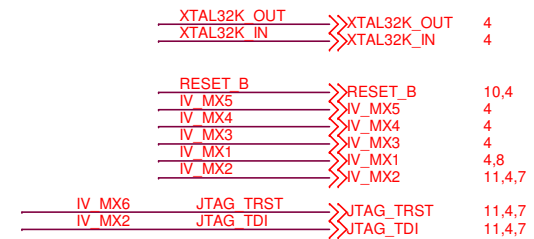
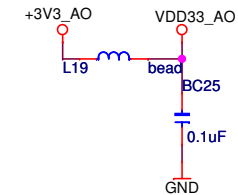
HW_CFG




IV_MX1~4 must be pull high in normal mode

文字面 PCB 説明 (HW_TRAP 訊號)
 HW_CFG_1 OFF is "High" '1'
 DIP SW-2 ON is "Low" '0'

| HW_CFG | (IV_MX6) | (IV_MX5) |
|--------------------|----------|----------|
| | [2] | [1] |
| eMMC boot | 1 | 1 |
| SD Card boot / ISP | 0 | 0 |
| USB_ISP | 1 | 0 |

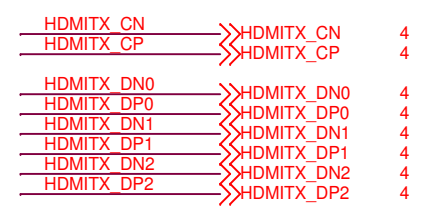
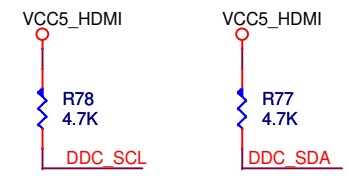
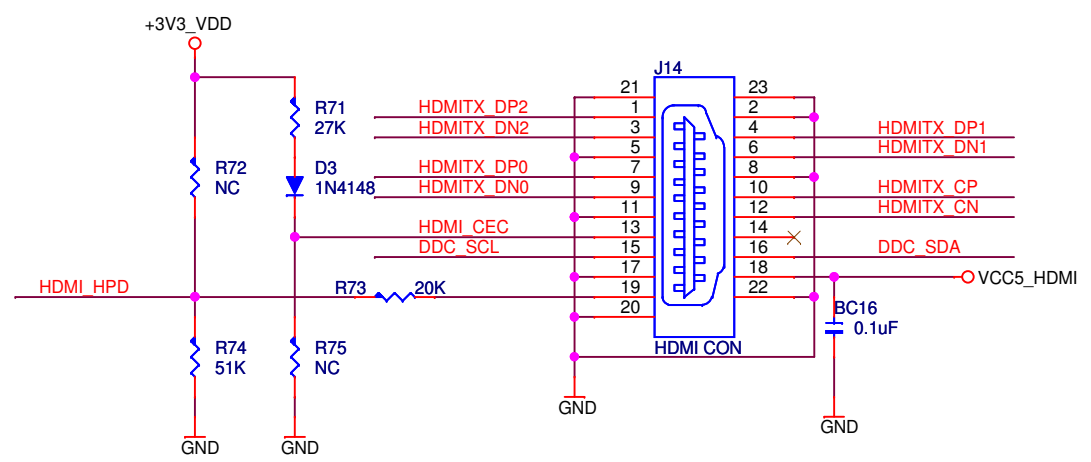
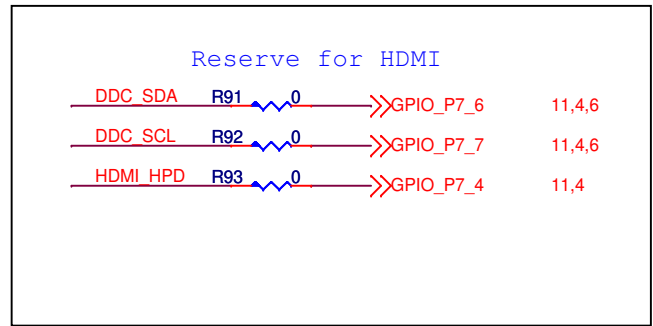
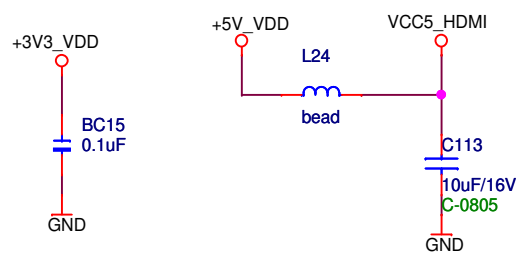




SUNPLUS

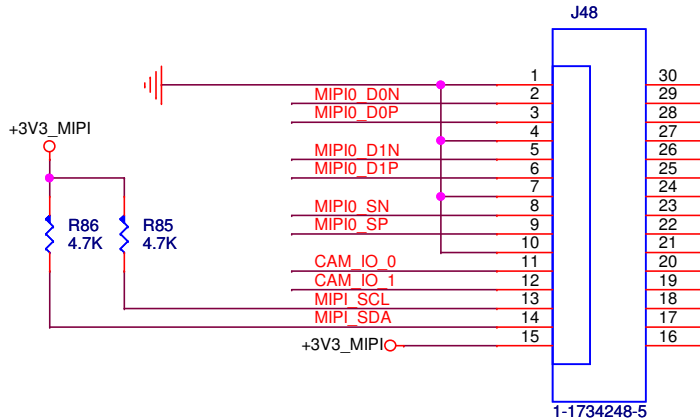
| | | |
|-------------------------|--|------------|
| Title | | |
| HW_CFG/RESET/RTC | | |
| Size | Document Number | Rev |
| Custom | SP7021 Demo board | 1.0 |
| Date: | Tuesday, November 19, 2019 Sheet 6 of 14 | |

Differential signals (TXCP/N, TXD0P/N, TXD1P/N and TXD2P/N):
50ohm single_ended, and 100ohm differential

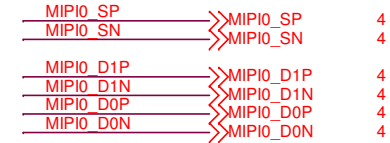
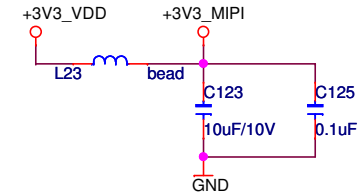


| | | |
|----------------------------------|-------------------------|---|
| | SUNPLUS | |
| | Title HDMI TX | |
| | Size Custom | Document Number SP7021 Demo board |
| Date: Tuesday, November 19, 2019 | | Sheet 7 of 14 |

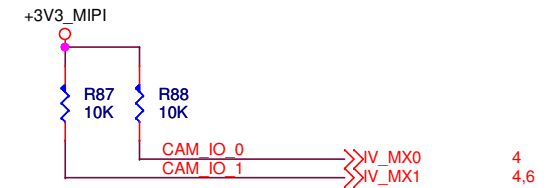
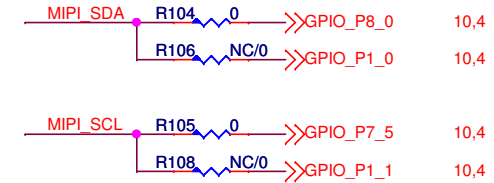
Differential impedance of differential pairs of MIPI should be kept 100 Ohm




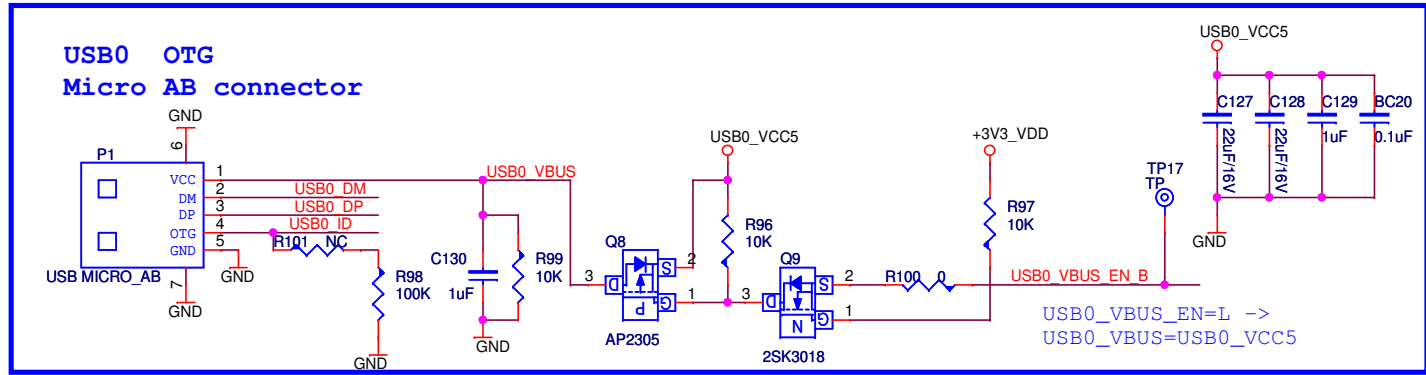
1. FFC connector, 30 pin, 0.5mm, vertical
2. Pin compatible to Raspberry Pi 2 camera connector
3. MIPI/CSI-RX



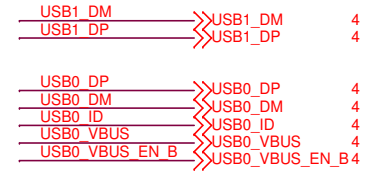
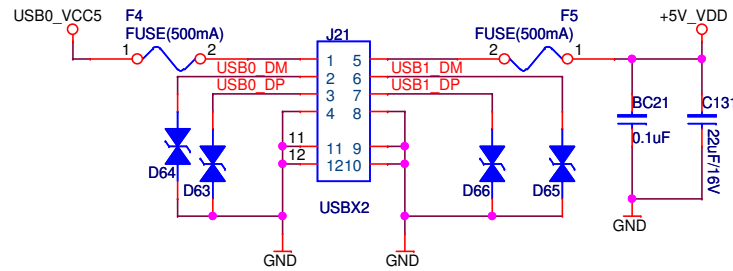
Option: for I2C share with TPM or FBIO




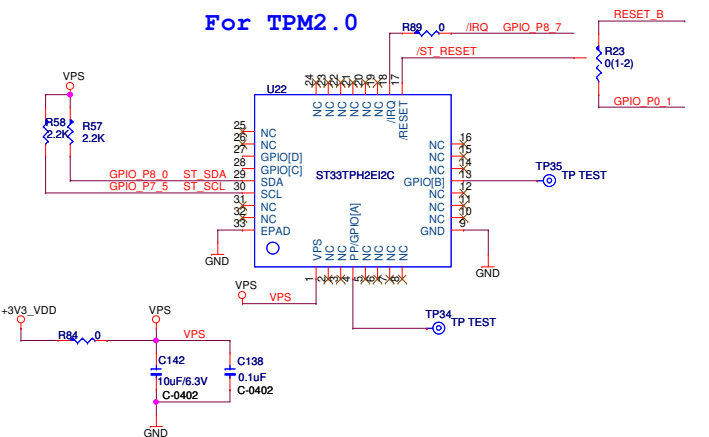
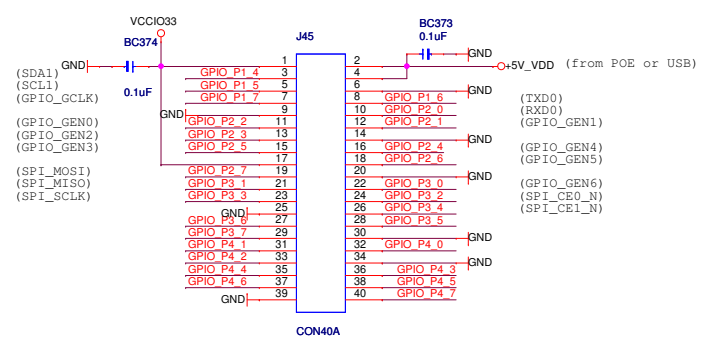
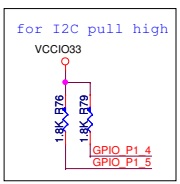
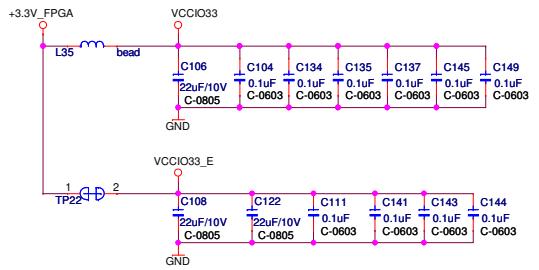
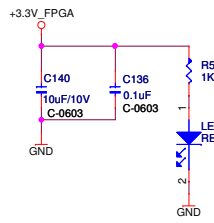
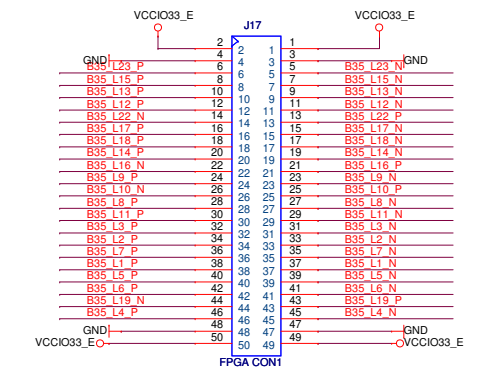
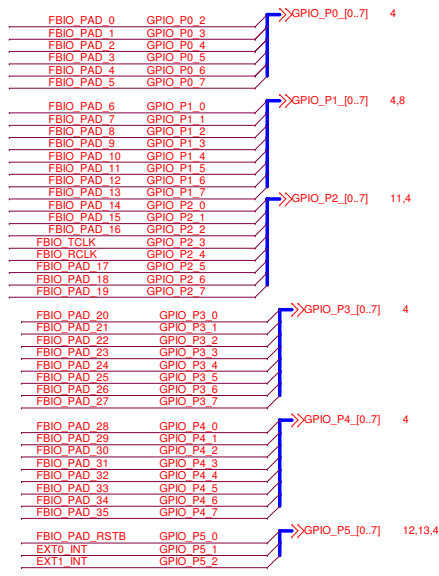
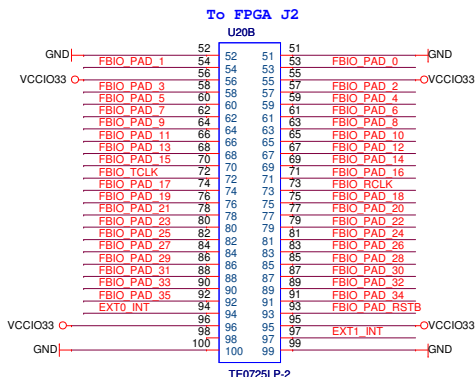
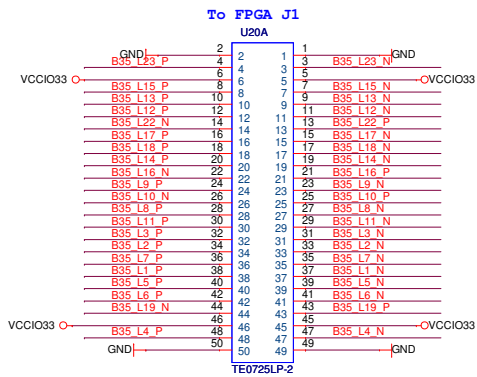
| | | | |
|---|---|-------------------------|-------|
|  | | SUNPLUS | |
| | | Title MIPI RX | |
| Size Custom | Document Number SP7021 Demo board | Rev 1.0 | |
| Date: Tuesday, November 19, 2019 | | Sheet 8 | of 14 |



USB0/1 Type A



| | | | |
|---|--|---|-------------------|
|  | SUNPLUS | | |
| | USB OTG | | |
| | Size Custom | Document Number SP7021 Demo board | Rev 1.0 |
| | Date: Tuesday, November 19, 2019 Sheet 9 of 14 | | |



1. 2x20 pin header, 100 mil, 180 degree
2. From GPIO of SP-7021 directly
3. Pin-compatible to Raspberry Pi 2 GPIO expansion

SUNPLUS

Title: **FPGA BOARD**

Size: Custom

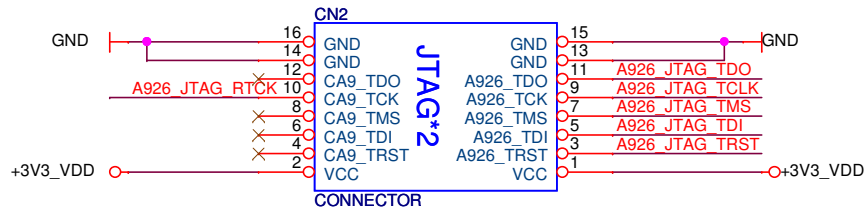
Document Number: **SP7021 Demo board**

Date: Tuesday, November 19, 2019 10 of 14

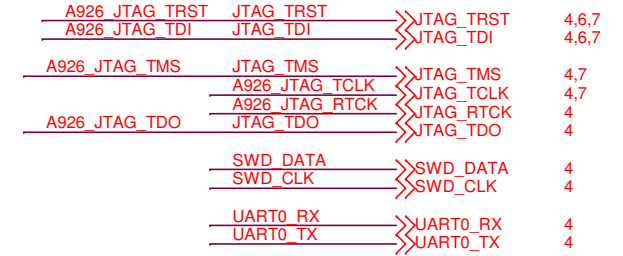
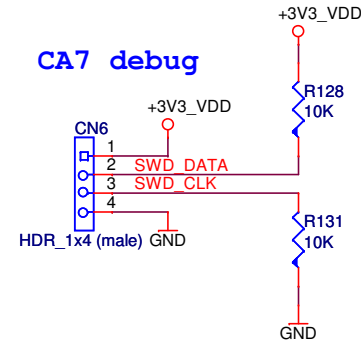
Rev: **1.0**

ARM926 JTAG

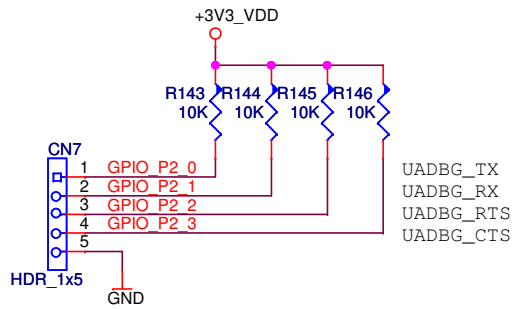
Connect to JTAG daughter board



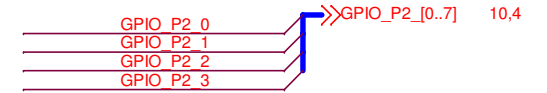
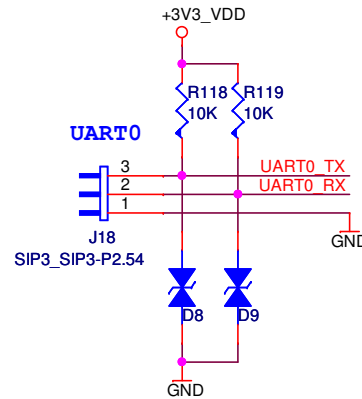
CA7 debug




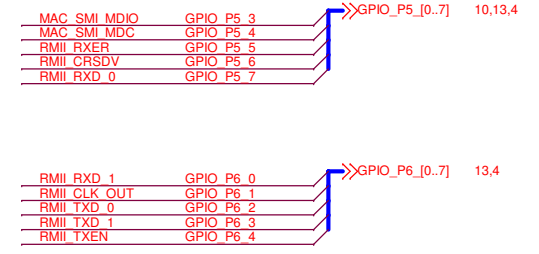
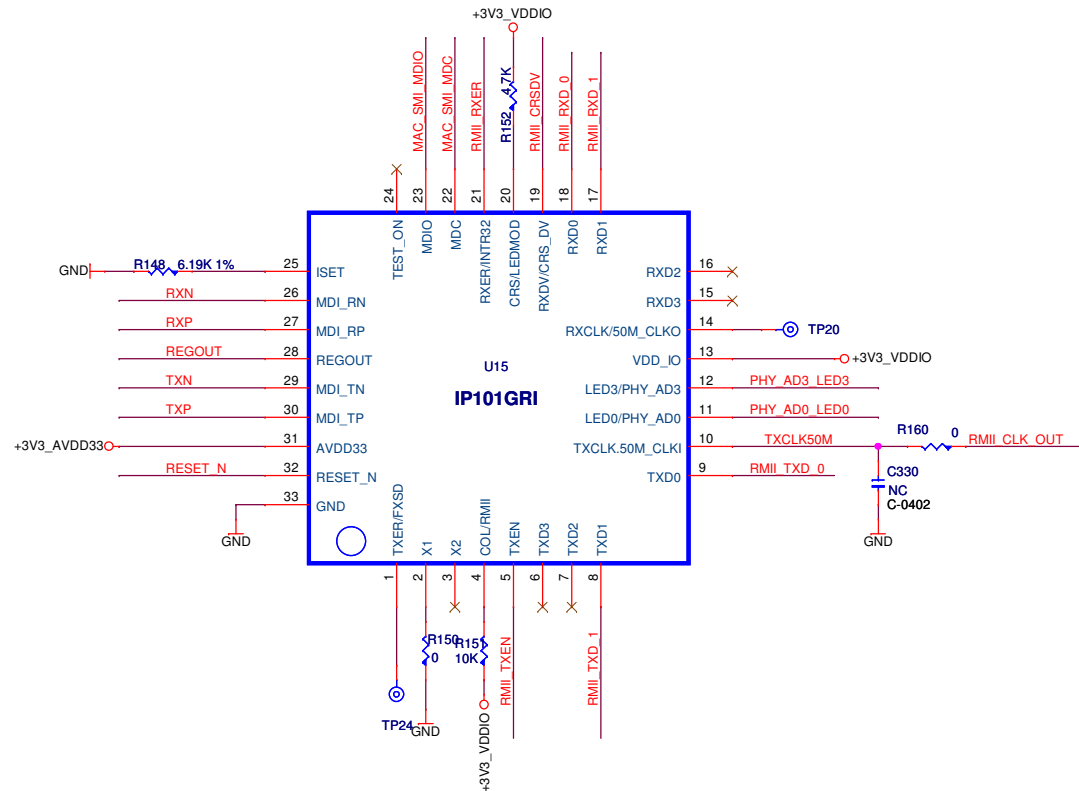
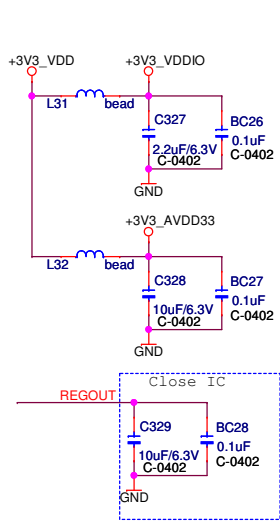
For UART2AXI



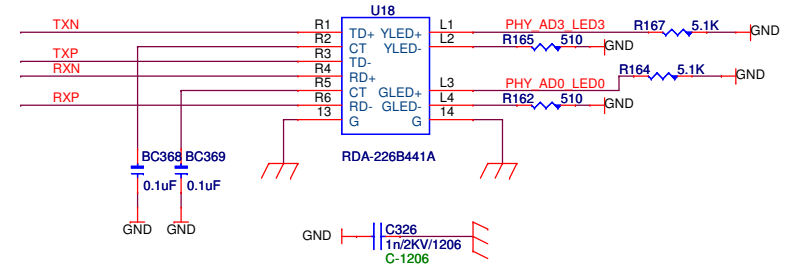
UART0 for debug



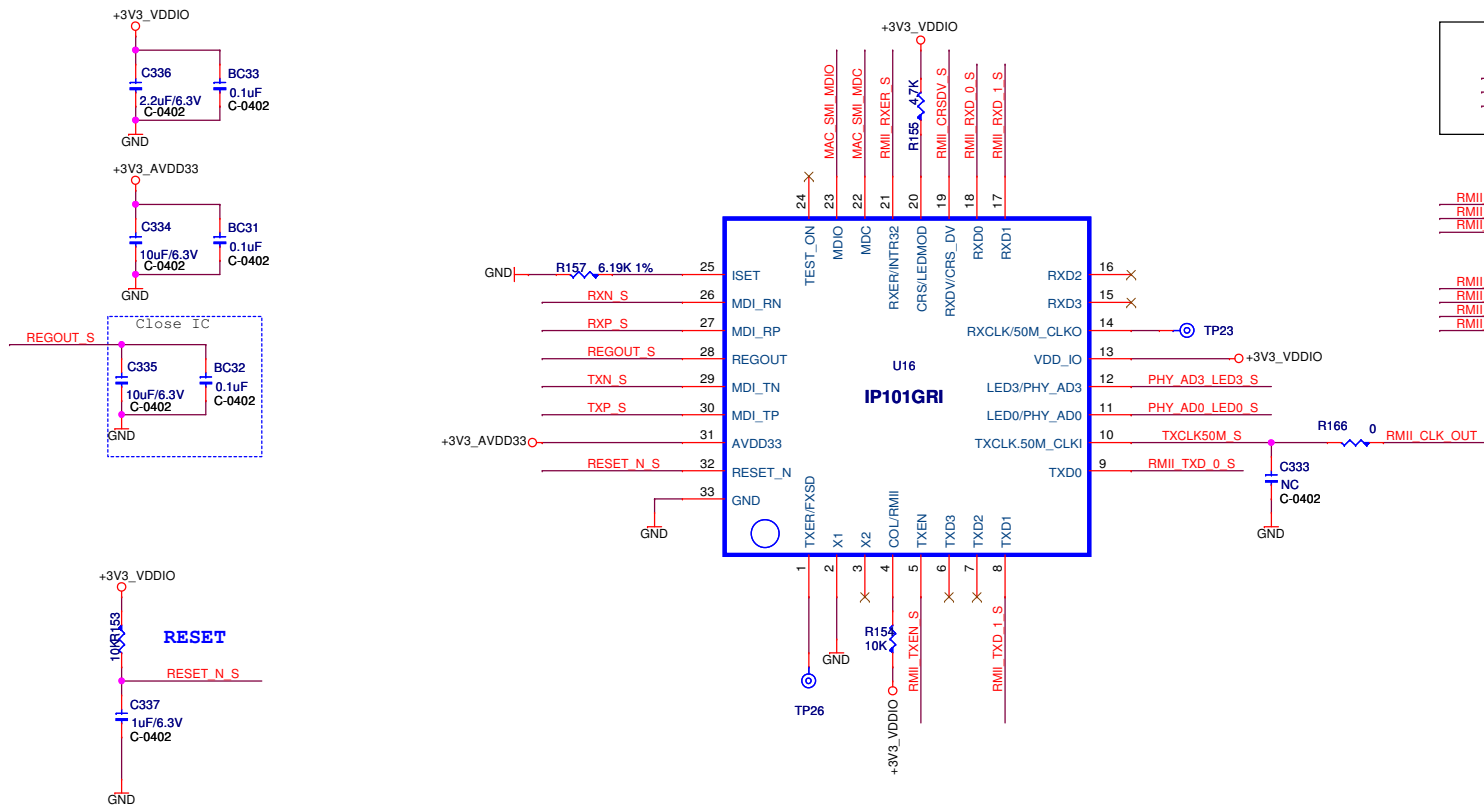
| | | | | | |
|---|--|----------------------------|--|-----------------------------|--|
|  | | | | SUNPLUS | |
| | | | | Debug JTAG/SWD/UART0 | |
| Title | | Document Number | | Rev | |
| Custom | | SP7021 Demo board | | 1.0 | |
| Date: | | Tuesday, November 19, 2019 | | Sheet 11 of 14 | |



TX and RX P->N swap for layout **RJ45**



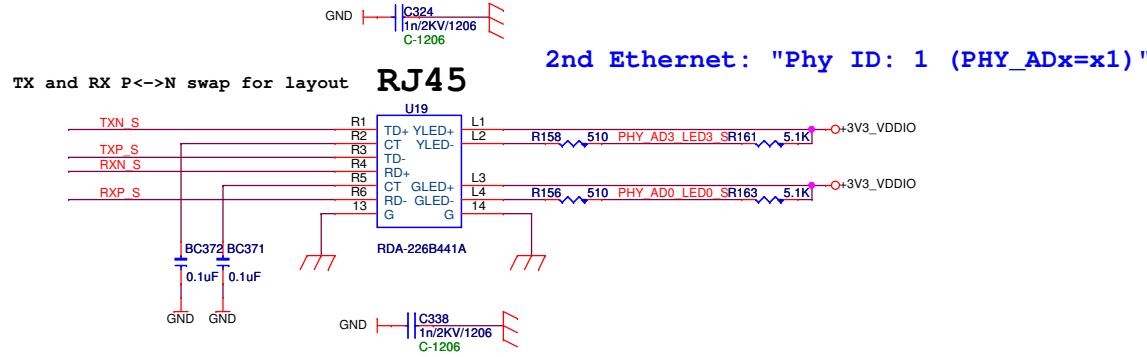

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|---|-------------------|---|-------------------|
| | SUNPLUS | | |
| | Title | | |
| | First EPHY | | |
| | Size Custom | Document Number SP7021 Demo board | Rev 1.0 |
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EPHY2 share with EPHY1

| | | |
|--------------|--------------|------|
| MAC_SMI_MDIO | >>>GPIO_P5_3 | 12,4 |
| MAC_SMI_MDC | >>>GPIO_P5_4 | 12,4 |
| RMII_CLK_OUT | >>>GPIO_P6_1 | 12,4 |

| | | | |
|--------------|-----------|-------------------|--------|
| RMII_RXER_S | GPIO_P6_5 | >>>GPIO_P6_5 | 4 |
| RMII_CRSDV_S | GPIO_P6_6 | >>>GPIO_P6_6 | 4 |
| RMII_RXD_0_S | GPIO_P6_7 | >>>GPIO_P6_7 | 4 |
| RMII_RXD_1_S | GPIO_P7_0 | >>>GPIO_P7_[0..7] | 10,4,8 |
| RMII_TXD_0_S | GPIO_P7_1 | | |
| RMII_TXD_1_S | GPIO_P7_2 | | |
| RMII_TXEN_S | GPIO_P7_3 | | |


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Title: **Second EPHY**

| | | |
|--------------|---|-----------------|
| Size: Custom | Document Number: SP7021 Demo board | Rev: 1.0 |
|--------------|---|-----------------|

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|---|---|-----------------|-----|
|  | SUNPLUS | | |
| | Title | | |
| | Notice | | |
| | Size | Document Number | Rev |
| Custom | SP7021 Demo board | 1.0 | |
| Date: | Tuesday, November 19, 2019 Sheet 14 of 14 | | |