

AMAZONES STK



Ver 1.0

JUNE. 01, 2020

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Revision history

Date	Doc. Rev		Changes
01-JUNE-20	Rev. 1.0		Initial Release

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1. Introduction

AMAZONES-STK는 AMAZONES, AMAZONES-B를 사용하는 개발자들이 이 module을 사용하는데 쉽게 접근하도록 하기 위한 board이다.

AMAZONES-B, AMAZONES를 사용하여 제품을 개발하기 전에 LCD display 및 sound등 Test 할 수 있는 Start Kite이다.

2. AMAZONES-STK

2-1 Feature

■ Module: AMAZONES-B

- ◆ CPU: AMAZON II
 - Up to 166 MHz
 - 8KB 2way Instruction Cache
 - 8KB 2way Data Cache
 - Debugger with JTAG Interface
 - 16 KB Internal SPM
 - JPEG Decoder
 - Graphics Engine
 - Sound Engine
 - Channel Master/Slave I2S
 - USB Host / Device
 - SDHC
 - 64 channel Interrupt Controller
 - 1 Channel TWI
 - Channel Master/Slave SPI with 8Bytes FIFO
 - Channel 16-bit Timer/Counter with 15-bit Pre-scaler, Capture, PWM
 - Channel UART with 16Bytes FIFO, Functionally compatible with the 16550
- ◆ Memory
 - DDR2: 1Gbit
 - NAND Flash: 2Gbit
- ◆ Power: 5V Input
 - Voltage Detector: RT9818C-29GV
 - DC/DC: KTB851AEHC-ADJ: 1V/0.6A, 1.8V/0.6A, 3.3V/0.6A

- OVP: KTS1681: 5.95V
- ◆ External IO: 24EA

■ Module: AMAZONES

- ◆ CPU: AMAZON II
 - Up to 166 MHz
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 - 64 channel Interrupt Controller
 - 1 Channel TWI
 - Channel Master/Slave SPI with 8Bytes FIFO
 - Channel 16-bit Timer/Counter with 15-bit Pre-scaler, Capture, PWM
 - Channel UART with 16Bytes FIFO, Functionally compatible with the 16550
- ◆ Memory
 - DDR2: 1Gbit
 - NAND Flash: 2Gbit
- ◆ Power : 5V
- ◆ External IO: 96EA

■ Base Board

- LCD: 800x480
- Touch: Resistive touch
- Sound: LM4890 AMP
- SD Card
- USB to UART(Debugging)
- USB Device/Host
- External IO

2-2 AMAZONES-STK board 구성

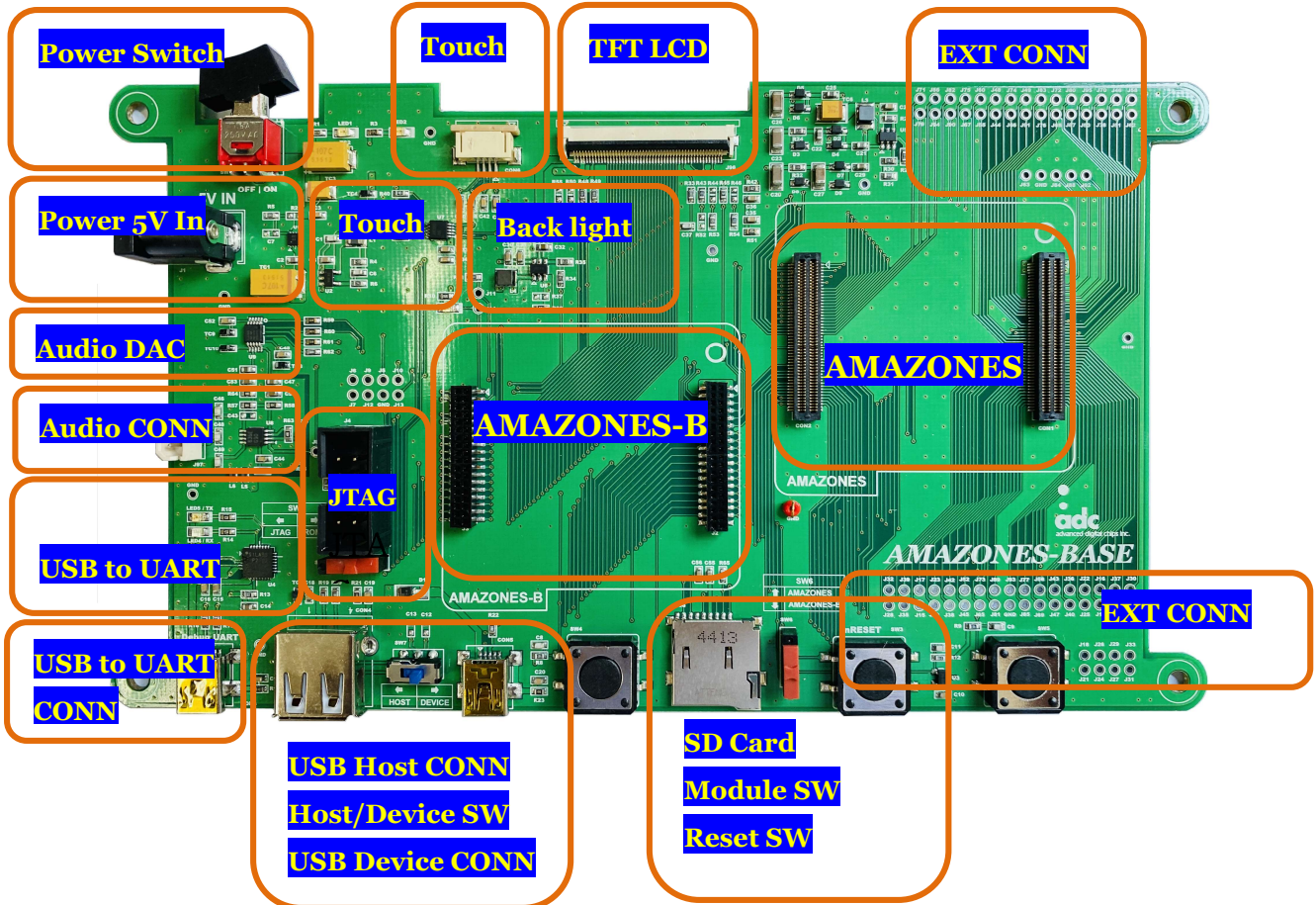
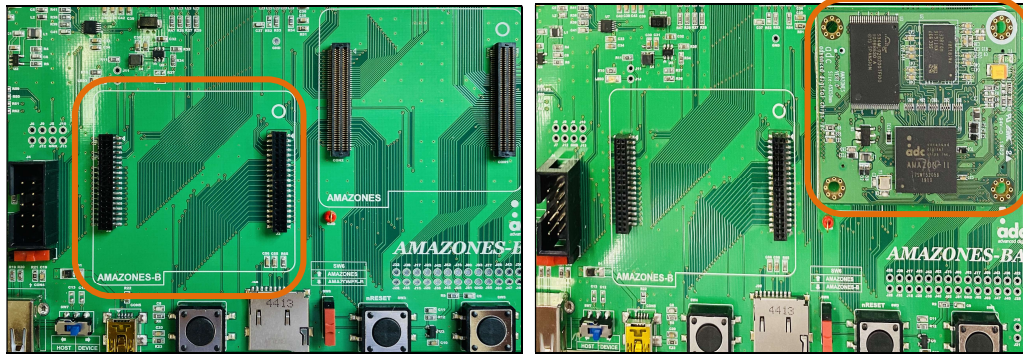


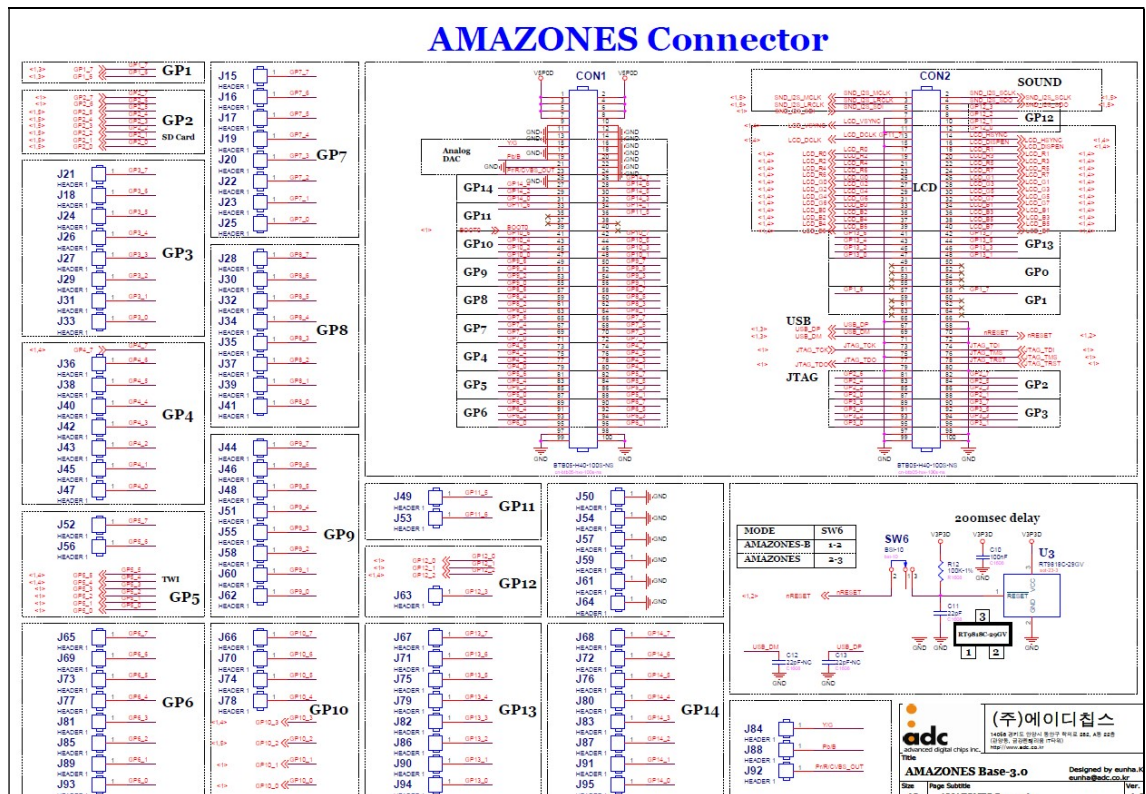
그림2-2 AMAZONES-B Module 연결 후



2-4 AMAZONES



그림



AMAZONES는 Graphic Chips으로 2D engine이 내장된 AMAZON II를 사용한 module이다.

또한 JPEG decoder 및 Digital RGB888, RGB565를 지원한다.

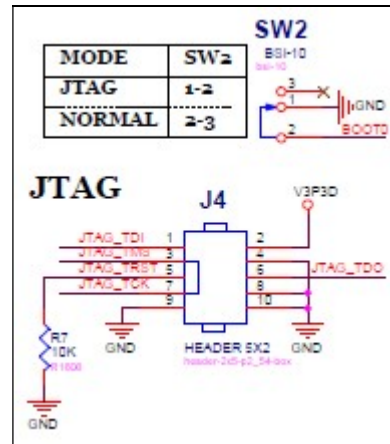
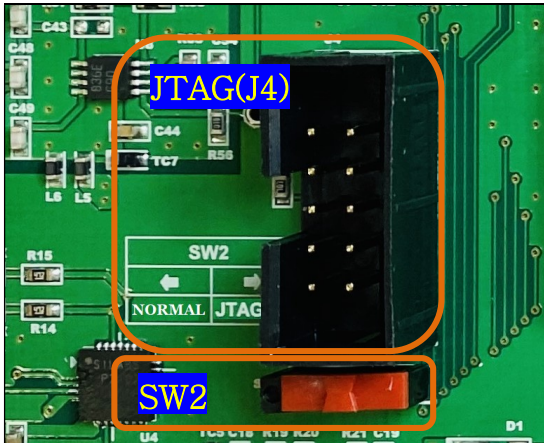
4channel sound Mix가 내장 되어있고 4channel UART, sd card, USB를 지원한다.

2-5 JTAG(J4)

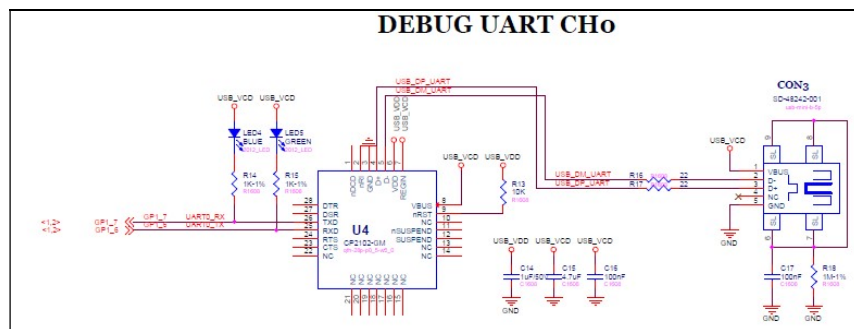
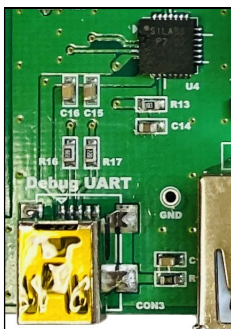
AMAZONES STK는 JTAG을 지원한다. (SW2를 JTAG(→)으로 설정)

JTAG을 이용하여 Flash writing 및 debugging을 사용할 수 있다.

Debugging의 사용 방법은 E-CON 사용 설명서를 참조하라.



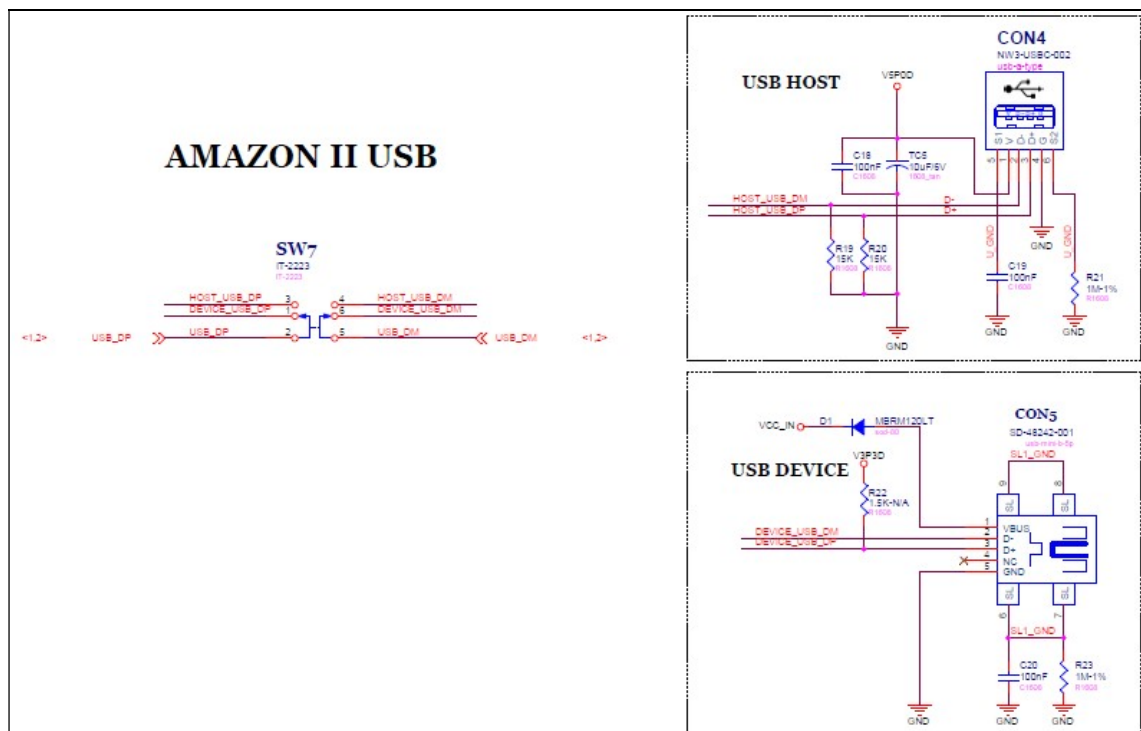
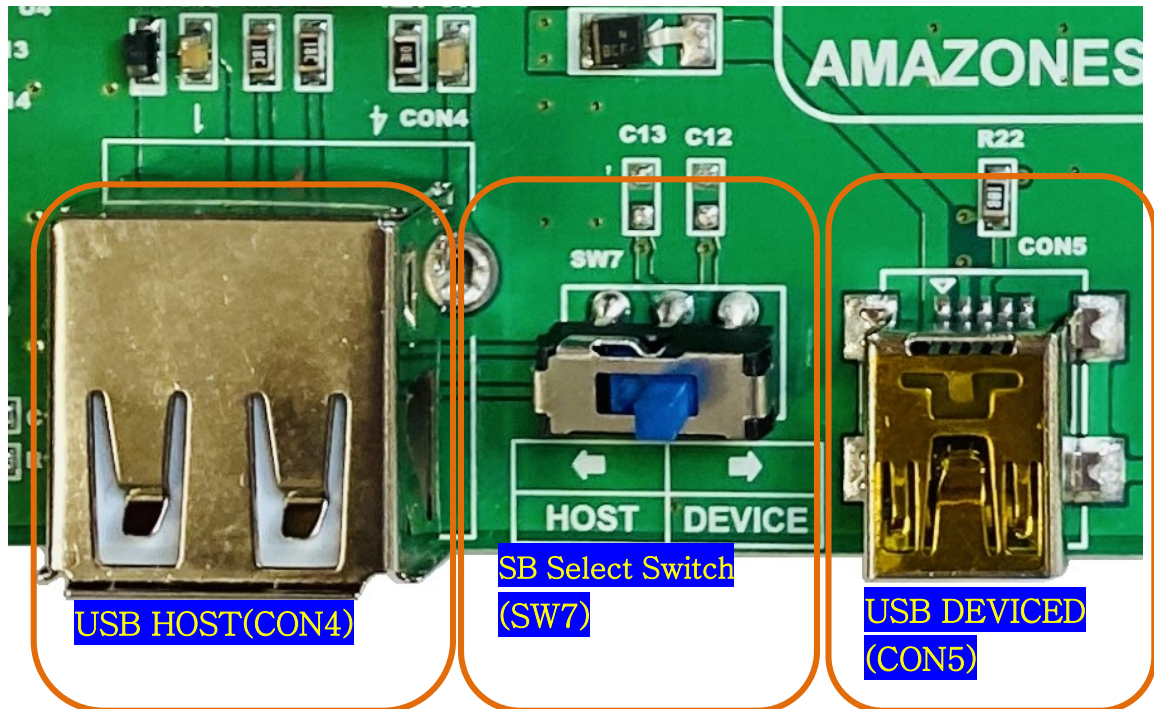
2-6 USB to UART



2-7 USB

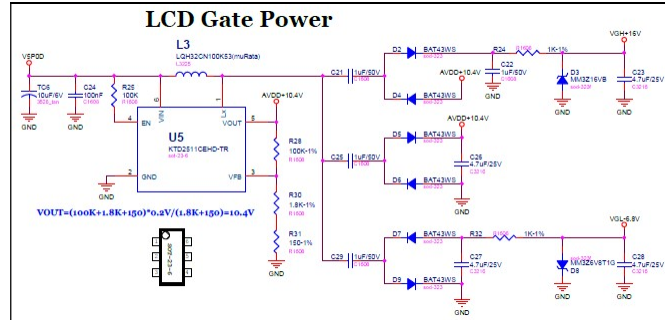
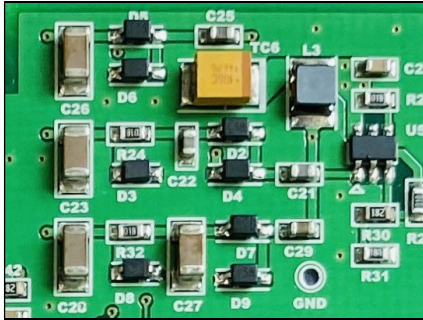
AMAZONES STK는 USB Host 및 Device를 지원한다.

Host, Device의 선택은 SW7로 선택한다.

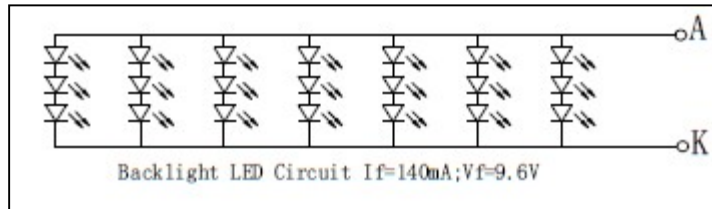


2-8 LCD, Touch

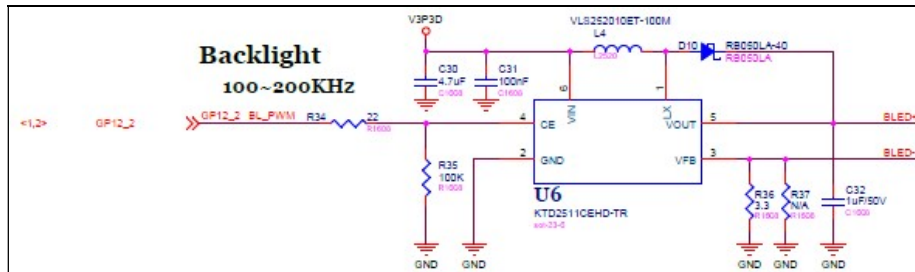
■ LCD Gate Power/Analog power Block



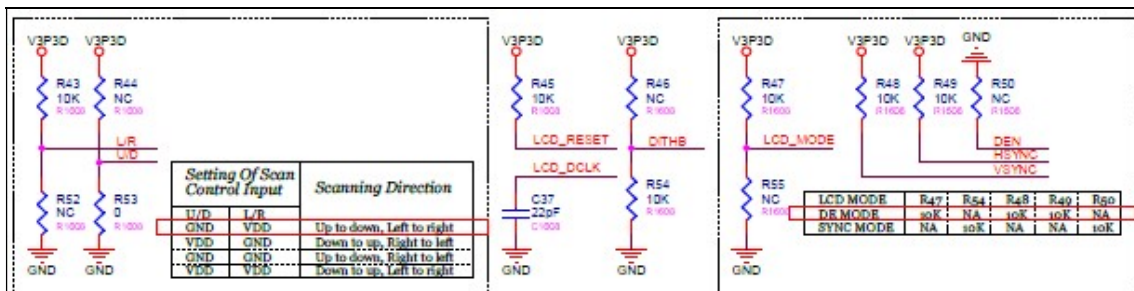
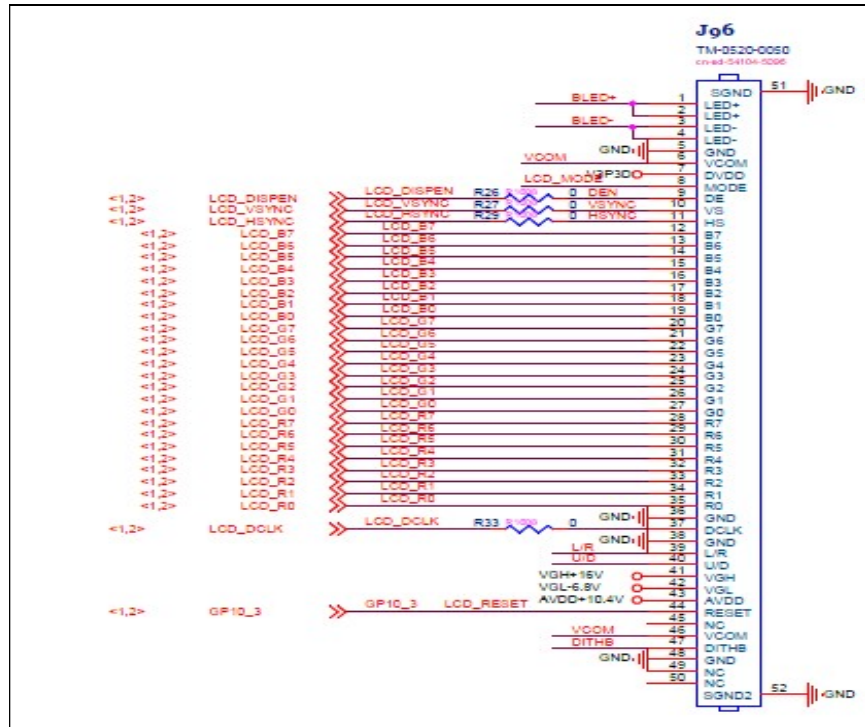
■ LCD Backlight



Backlight는 LED가 3열 7행으로 구성되어 있으며 순방향 전압은 9.6V이다.

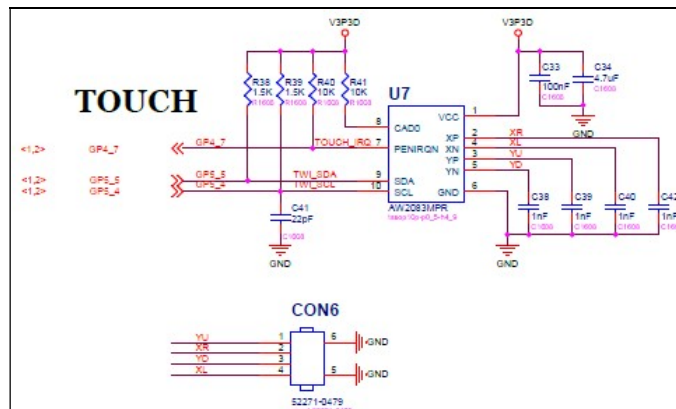
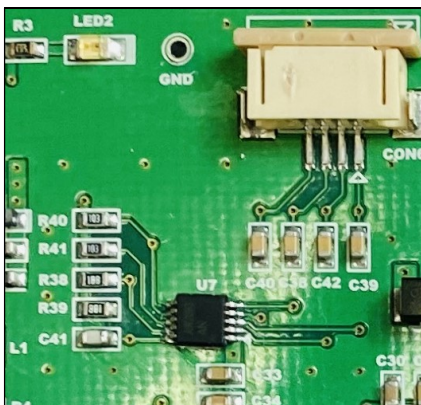


■ LCD Connector

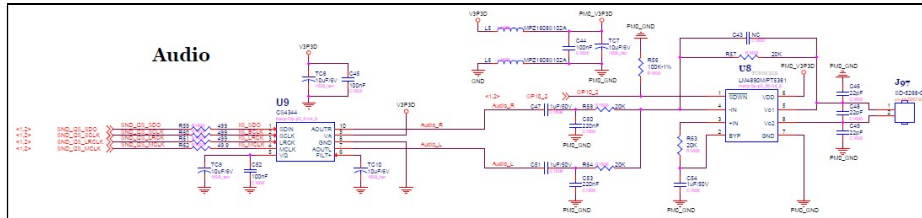
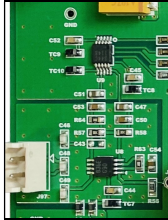


커넥터는 0.5mm pitch이며 50pin이다.

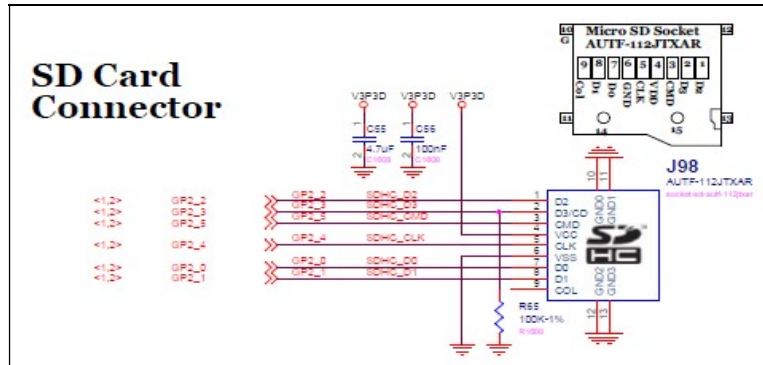
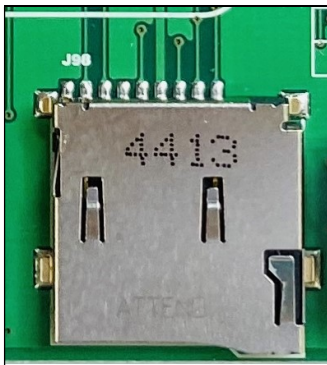
■ Touch: 감압방식 터치



2-9 Audio

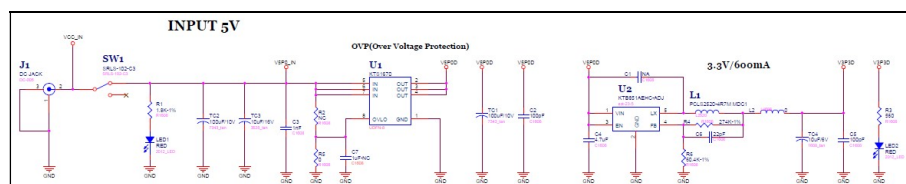
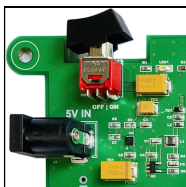


2-10 SD Card



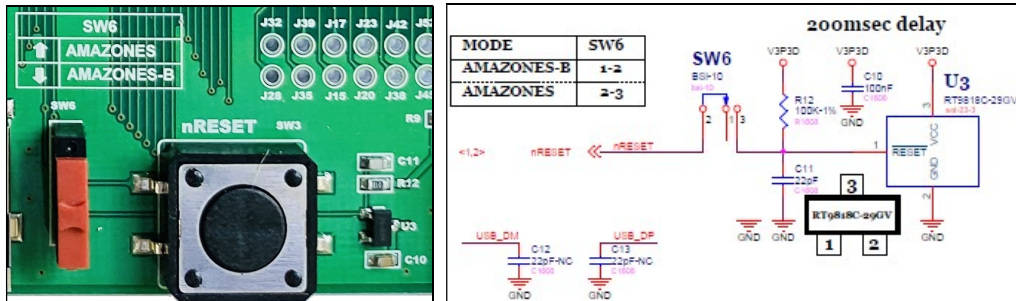
2-11 Power & OVP(Over Voltage Protection)

AMAZONES-B는 단일 전원 5V입력을 사용하며 OVP 기능을 지원한다.



- **Input Power:** 4V ~ 5.95V로 600mA이상
 - 1.2V: KTB851AEHC
 - 1.8V: KTB851AEHC
 - 3.3V: KTB851AEHC
- **OVP(Over Voltage Protection):** 입력 전압이 5.95V를 초과하면 module을 보호하기 위해 OVP는 전원을 차단한다.
 - KTS1681AEVZ

2-12 Reset



AMAZONES-B는 auto reset을 지원한다. AMAZONES-B에 공급되는 전압이 2.9V로 떨어지면 Voltage detector가 이 전압을 감지하여 reset를 출력하여 제품의 오 동작을 방지하는 기능을 제공한다.

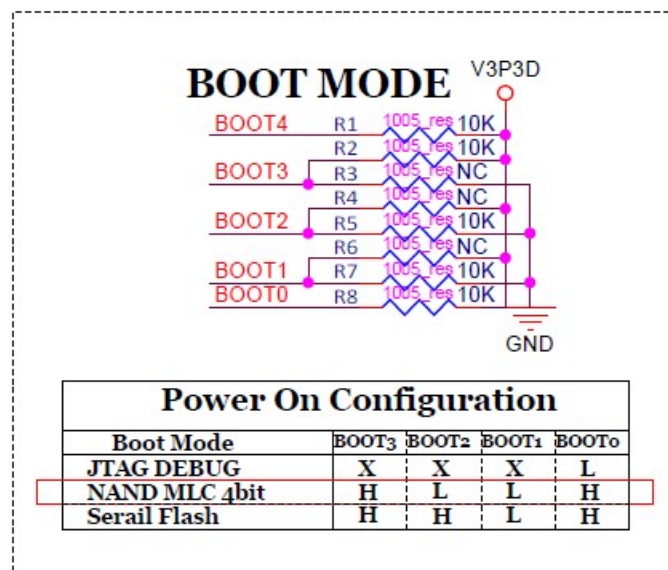
- Reset : 2.9V
- RT9818C-29GV

2-13 Boot Mode Select

AMAZON II는 Serial NOR flash, NAND flash Boot를 지원한다.

Boot Mode	Boot0	Boot1	Boot2	Boot3	Boot4
JTAG Debug	L	X	X	X	H
NAND 4b ECC	H	L	L	H	H
Serial NOR	H	L	H	H	H

☞ H: High, L: Low, X: Don't Care



AMAZONES-B의 Boot mode는 **NAND 4bit ECC mode**로 고정 되어 있다.

만약 다른 boot mode를 사용 할 경우 (주)에디칩스로 문의 해주세요.

2-14 Connectors

AMAZONES-B Pin Map

J2							
Left Side				Right Side			
No	1 ST Name	2 nd Name	3 rd Name	No	1 ST Name	2 nd Name	3 rd Name
1	UART_TX1	USB_HOST_POW	GP12_0	2	UART_RX1	USB_HOST_CUR	GP12_1
3	ICE_VDIN7	ERIQ0	GP4_7	4	PWOM_OUT1	SRAM_nCS2	GP12_2
5	GND			6	GND		
7	LCD_VSYNC			8	LCD_HSYNC		
9	EIRQ0	LCD_VCLKOUT	GP11_7	10	LCD_DISPEN		
11	GND			12	GND		
13	LCD_R0			14	LCD_R1		
15	LCD_R2			16	LCD_R3		
17	LCD_R4			18	LCD_R5		
19	LCD_R6			20	LCD_R7		
21	LCD_G0			22	LCD_G1		
23	LCD_G2			24	LCD_G3		
25	LCD_G4			26	LCD_G5		
27	LCD_G6			28	LCD_G7		
29	LCD_B0			30	LCD_B1		
31	LCD_B2			32	LCD_B3		
33	LCD_B4			34	LCD_B5		
35	LCD_B6			36	LCD_B7		

AMAZONES Pin Map(빨간색 표는 AMAZONES Only)

J1							
Left Side				Right Side			
No	1 ST Name	2 nd Name	3 rd Name	No	1 ST Name	2 nd Name	3 rd Name
1	5.0V			2	5.0V		
3	5.0V			4	5.0V		
5	5.0V			6	5.0V		
7	5.0V			8	5.0V		
9	NC			10	NC		
11	GND			12	GND		
13	GND			14	GND		
15	Y/G			16	GND		
17	GND			18	GND		
19	Pb?B			20	GND		
21	GND			22	GND		
23	Pr/R/CVBS			24	GND		
25	GND			26	GP14_7		
27	GP14_4			28	GP14_6		
29	GP14_2			30	GP14_5		
31	GP14_0			32	GP14_3		
33	SRAM_nWAIT	EIRQ1	GP11_6	34	GP14_1		
35	SRAM_A20	BOOT4	GP11_4	36	SRAM_A21	LCD_VCLKIN	GP11_5
37	SRAM_A18	BOOT2	GP11_2	38	SRAM_A19	BOOT3	GP11_3
39	SRAM_A16	BOOT0	GP11_0	40	SRAM_A17	BOOT1	GP11_1
41	SRAM_D14	SPI_MISO1	GP10_6	42	SRAM_D15	SPI_MOSI1	GP10_7
43	SRAM_D12	SPI_nCS1	GP10_4	44	SRAM_D13	SPI_SCK1	GP10_5
45	SRAM_D10	PWMOUT2	GP10_2	46	SRAM_D11	CAN_IN2	GP10_3
47	SRAM_D8	UART_TX2	GP10_0	48	SRAM_D9	UART_RX2	GP10_1
49	SRAM_D6		GP9_6	50	SRAM_D7		GP9_7
51	SRAM_D4		GP9_4	52	SRAM_D5		GP9_5
53	SRAM_D2		GP9_2	54	SRAM_D3		GP9_3
55	SRAM_D0		GP9_0	56	SRAM_D1		GP9_1
57	SRAM_A14	I2S_RX_WS1	GP8_6	58	SRAM_A15	EIRQ1	GP8_7
59	SRAM_A12	I2S_SDI1	GP8_4	60	SRAM_A13	I2S_RX_SCLK1	GP8_5

61	SRAM_A10	I2S_TX_WS1	GP8_2	62	SRAM_A11	I2S_SDO1	GP8_3
63	SRAM_A8	I2S_CDCLK1	GP8_0	64	SRAM_A9	I2S_TX_SCLK1	GP8_1
65	SRAM_A6		GP7_6	66	SRAM_A7		GP7_7
67	SRAM_A4		GP7_4	68	SRAM_A5		GP7_5
69	SRAM_A2		GP7_2	70	SRAM_A3		GP7_3
71	SRAM_A0		GP7_0	72	SRAM_A1		GP7_1
73	ICE_VDIN6	I2S_RX_WS1	GP4_6	74	ICE_VDIN7	ERIQ0	GP4_7
75	ICE_VDIN4	I2S_SDI1	GP4_4	76	ICE_VDIN5	I2S_RX_SCLK1	GP4_5
77	ICE_VDIN2	I2S_TX_WS1	GP4_2	78	ICE_VDIN3	I2S_SDO1	GP4_3
79	ICE_VDIN0	I2S_CDCLK1	GP4_0	80	ICE_VDIN1	I2S_TX_SCLK1	GP4_1
81	SF_nCS		GP5_6	82	SF_CLK		GP5_7
83	TWI_SCL		GP5_4	84	TWI_SDA		GP5_5
85	SPI_MISO0	PWM_OUT3	GP5_2	86	SPI_MOSI0	CANP_IN3	GP5_3
87	SPI_nCS0	UART_TX3	GP5_0	88	SPI_SCK0	UART_RX3	GP5_1
89	SRAM_nBE1		GP6_6	90	SRAM_nCS0		GP6_7
91	SRAM_nWE		GP6_4	92	SRAM_nRE		GP6_5
93	SF_D2		GP6_2	94	SF_D3		GP6_3
95	SF_D0		GP6_0	96	SPI_D1		GP6_1
97	GND			98	GND		
99	GND			100	GND		

J2								
Left Side				Right Side				
Pin	1 ST Name	2 nd Name	3 rd Name	Pin	1 ST Name	2 nd Name	3 rd Name	
1	SND_I2S_MCLK			2	SND_I2S_SCLK			
3	SND_I2S_LRCLK			4	5SND_I2S_SDO			
5	SND_I2S_SDI			6	CAP_IN1	SRAM_nCS3	GP12_3	
7	GND			8	PWOM_OUT1	SRAM_nCS2	GP12_2	
9	LCD_VSYNC			10	UART_RX1	USB_HOST_CUR	GP12_1	
11	GND			12	UART_TX1	USB_HOST_POW	GP12_0	
13	EIRQ0	LCD_VCLKOUT	GP11_7	14	LCD_HSYNC			
15	GND			16	LCD_DISPEN			
17	LCD_R0			18	LCD_R1			
19	LCD_R2			20	LCD_R3			
21	LCD_R4			22	LCD_R5			

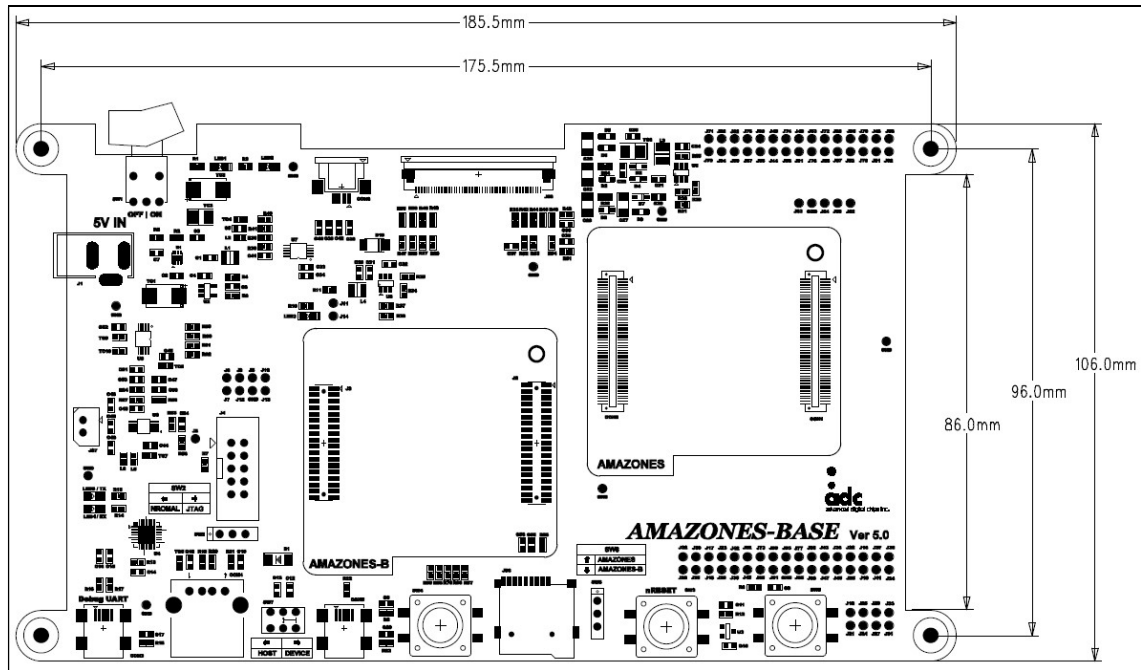
23	LCD_R6			24	LCD_R7		
25	LCD_G0			26	LCD_G1		
27	LCD_G2			28	LCD_G3		
29	LCD_G4			30	LCD_G5		
31	LCD_G6			32	LCD_G7		
33	LCD_B1			34	LCD_B1		
35	LCD_B3			36	LCD_B3		
37	LCD_B5			38	LCD_B5		
39	LCD_B7			40	LCD_B7		
41	GP13_6			42	GP13_7		
43	GP13_4			44	GP13_5		
45	GP13_2			46	GP13_3		
47	GP13_0			48	GP13_1		
49	NF_D6	PWM_OUT2	GP0_6	50	NF_D7	CAP_IN2	GP0_7
51	NF_D4	UART_TX2	GP0_4	52	NF_D5	UART_RX2	GP0_5
53	NF_D2	PWM_OUT1	GP0_2	54	NF_D3	CAP_IN1	GP0_3
55	NF_D0	UART_TX1	GP0_0	56	NF_D1	UART_RX1	GP0_1
57	UART_TX0		GP1_6	58	UART_RX0		GP1_7
59	NF_nRE		GP1_4	60	NF_nBUSY		GP1_5
61	NF_CLE		GP1_2	62	NF_nWE		GP1_3
63	NF_nCS		GP1_0	64	NF_ALE		GP1_1
65	GND			66	GND		
67	USB_DP			68	GND		
69	USB_DM			70	nRESET		
71	GND			72	GND		
73	JTAG_TCK			74	JTAG_TDI		
75	GND			76	JTAG_TMS		
77	JTAG_TDO			78	JTAG_TRST		
79	GND			80	GND		
81	PWM_OUT0		GP2_6	82	CAP_IN0	SRAM_nCS1	GP2_7
83	SDHC_CLK		GP2_4	84	SDHC_CMD		GP2_5
85	SDHC_D2	PWM_OUT3	GP2_2	86	SDHC_D3	CANPIN3	GP2_3
87	SDHC_D0	UART_TX3	GP2_0	88	SDHC_D1	UART_RX3	GP2_1
89	I2S_RX_WS0		GP3_6	90	ICE_VCLK		GP3_7
91	I2S_SDI0		GP3_4	92	I2S_RX_SCLK0		GP3_5

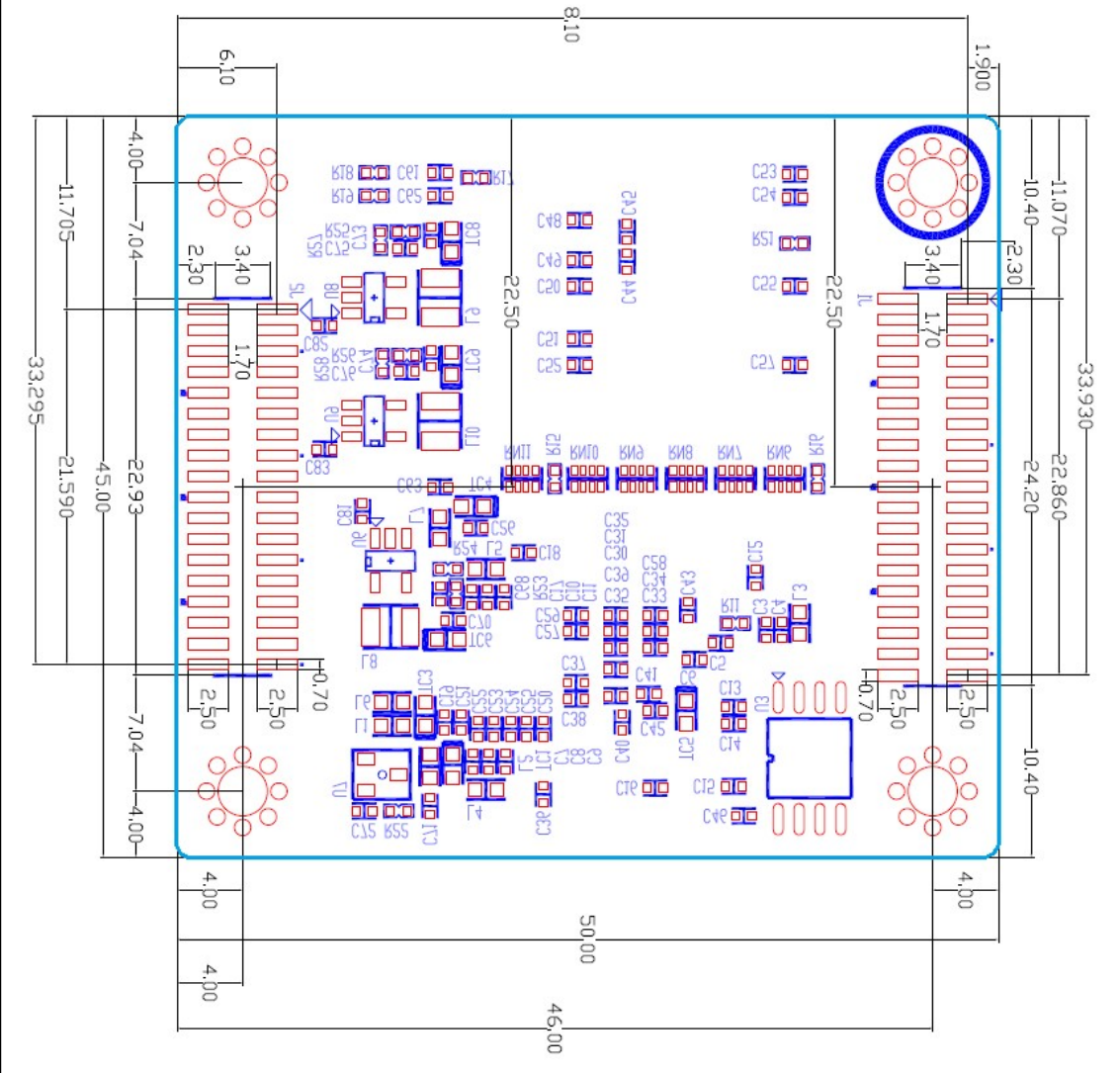
93	I2S_TX_WS0		GP3_2	94	I2S_SDO0		GP3_3
95	I2S_CDCLK0		GP3_0	96	I2S_TX_SCLK0		GP3_1
97	GND			98	GND		
99	GND			100	GND		

표 2-2 J2

2-14 Board Dimension(50mmx46mm)

→ AMAZONES-X Base board dimension(Top view)





→ AMAZONES board dimension(Top view)

