U1A
AllWinner-S3(FBGA-234)

Pin	Signal
B3	PB0/UART2_TX/PB_EINT0
B4	PB1/UART2_RX/PB_EINT1
B8	PB2/UART2_RTS/PB_EINT2
C4	PB3/UART2_CTS/PB_EINT3
C8	PB4/PWM0/PB_EINT4
C7	PB5/PWM1/PB_EINT5
A7	PB6/TWI0_SCK/PB_EINT6
B7	PB7/TWI0_SDA/PB_EINT7
B6	PB8/TWI1_SCK/UART0_TX/PB_EINT8
C6	PB9/TWI1_SDA/UART0_RX/PB_EINT9
A5	PB10/JTAG_MS/PB_EINT10
C5	PB11/JTAG_CK/PB_EINT11
B5	PB12/JTAG_DO/PB_EINT12
	PB13/JTAG_DI/PB_EINT13

BT_UART_RX, BT_UART_TX, BT_UART_CTS, BT_UART_RTS, GPIO_LED2, GPIO_LED1, PB6\TWI0_SCK, PB7\TWI0_SDA, PB8\TWI1_SCK, PB9\TWI1_SDA, USB_VBUSDET, WL_WAKE_AP, MIC_DET

Pin	Signal
A3	PC0/SDC2_CLK/SPI0_MISO
B2	PC1/SDC2_CMD/SPI0_CLK
C2	PC2/SDC2_RST/SPI0_CS
B1	PC3/SDC2_DO/SPI0_MOSI
F3	PC4/SDC2_D1
F4	PC5/SDC2_D2
C1	PC6/SDC2_D3
D3	PC7/SDC2_D4
C3	PC8/SDC2_D5
D2	PC9/SDC2_D6
D1	PC10/SDC2_D7
A2	GPIO_RST

Pins:25

U1B
AllWinner-S3(FBGA-234)

+3V3, C1 10u, GND

Pin	Signal
L11	VCC-PD0
L12	VCC-PD1
K15	PD0/LCD_D2/RGMII_RXD3/RMII_NULL
C11	PD1/LCD_D3/RGMII_RXD2/RMII_NULL
J14	PD2/LCD_D4/RGMII_RXD1/RMII_RXD1
J15	PD3/LCD_D5/RGMII_RXD0/RMII_RXD0
B16	PD4/LCD_D6/RGMII_RXCK/RMII_NULL
C16	PD5/LCD_D7/RGMII_RXCTL/RMII_NULL
B9	PD6/LCD_D10/RGMII_NULL/RMII_RXER
A9	PD7/LCD_D11/RGMII_TXD3/RMII_NULL
C15	PD8/LCD_D12/RGMII_TXD2/RMII_NULL
L15	PD9/LCD_D13/RGMII_TXD1/RMII_TXD1
A15	PD10/LCD_D14/RGMII_TXD0/RMII_TXD0
B15	PD11/LCD_D15/RGMII_NULL/RMII_CRS_D
B14	PD12/LCD_D18/LVDS_VP0/RGMII_TXCK/RMII_TXCK
A14	PD13/LCD_D19/LVDS_DN0/RGMII_TXCTL/RMII_TXEN
B13	PD14/LCD_D20/LVDS_VP1/RGMII_NULL/RMII_NULL
A13	PD15/LCD_D21/LVDS_VN1/RGMII_CLKIN/RMII_NULL
B12	PD16/LCD_D22/LVDS_VP2/MDC
C12	PD17/LCD_D23/LVDS_VN2/MDIO
A11	PD18/LCD_CLK/LVDS_VPC
B11	PD19/LCD_DE/LVDS_VNC
C10	PD20/LCD_HSYNC/LVDS_VP3
B10	PD21/LCD_VSYNC/LVDS_VN3

Pin	Signal
P16	PG0/SDC1_CLK/PG_EINT0
N15	PG1/SDC1_CMD/PG_EINT1
P15	PG2/SDC1_D0/PG_EINT2
N16	PG3/SDC1_D1/PG_EINT3
R15	PG4/SDC1_D2/PG_EINT4
R16	PG5/SDC1_D3/PG_EINT5
M15	PG6/UART1_TX/PG_EINT6
M14	PG7/UART1_RX/PG_EINT7
N14	PG8/UART1_RTS/PG_EINT8
R14	PG9/UART1_CTS/PG_EINT9
T14	PG10/PCM_SYNC/PG_EINT10
P14	PG11/PCM_BCLK/PG_EINT11
T15	PG12/PCM_DOUT/PG_EINT12
M13	PG13/PCM_DIN/PG_EINT13

WL_SDIO_CLK, WL_SDIO_CMD, WL_SDIO_D0, WL_SDIO_D1, WL_SDIO_D2, WL_SDIO_D3, UART1_TX, UART1_RX, BT_WAKE_AP, USB_ID, BT_PCM_SYNC, BT_PCM_CLK, BT_PCM_DOUT, BT_PCM_DIN

Pins: 45

Pin	Signal
	PF6
M1	PF5/SDC0_D2/JTAG_CK
M2	PF4/SDC0_D3/UART0_RX
N3	PF3/SDC0_CMD/JTAG_DO
N2	PF2/SDC0_CLK/UART0_TX
P2	PF1/SDC0_D0/JTAG_DI
P1	PF0/SDC0_D1/JTAG_MS
R1	

SDC0_DET#, SDC0_D2, SDC0_D3, SDC0_CMD, SDC0_CLK, SDC0_D0, SDC0_D1

D5 ESD5302F

R1, GND, J1 UART, R33, +3V3, UART1_RX, UART1_TX, GND

U1C
AllWinner-S3(FBGA-234)

+3V3

Pin	Signal
M11	VCC-PE0
M12	VCC-PE1
F14	PE0/CSI_PCLK/LCD_CLK
G13	PE1/CSI_MCLK/LCD_DE
C14	PE2/CSI_HSYNC/LCD_HSYNC
F15	PE3/CSI_VSYNC/LCD_VSYNC
F12	PE4/CSI_D0/LCD_D2
C13	PE5/CSI_D1/LCD_D3
E12	PE6/CSI_D2/LCD_D4
G15	PE7/CSI_D3/LCD_D5
H13	PE8/CSI_D4/LCD_D6
E13	PE9/CSI_D5/LCD_D7
J13	PE10/CSI_D6/LCD_D10

Pins: 27

Pin	Signal
	PE24/LCD_D23/UART1_CTS
	PE23/LCD_D22/UART1_RTS
	PE22/CSI_SDA/TWI1_SDA/UART1_RX
K14	MIPI_PWDN
L14	MIPI_RESET
	PE21/CSI_SCK/TWI1_SCK/UART1_TX
J16	MIPI_SDA
G16	MIPI_SCK
	PE20/CSI_FIELD/CSI_MIPI_MCLK
H15	MIPI_MSCK
	PE19/CSI_D15/LCD_D21
E16	WL_PMU_EN
	PE18/CSI_D14/LCD_D20
D14	
	PE17/CSI_D13/LCD_D19
D15	
	PE16/CSI_D12/LCD_D18
K13	
	PE15/CSI_D11/LCD_D15
L16	
	PE14/CSI_D10/LCD_D14
L13	
	PE13/CSI_D9/LCD_D13
G14	
	PE12/CSI_D8/LCD_D12
H14	
	PE11/CSI_D7/LCD_D11

AP_WAKE_BT, R2, BT_DIS_N

J2 SD

+3V3, R7 47k SDC0_D2, R8 47k SDC0_D3, R9 47k SDC0_CMD, FB1 FERRET, C4 10u, GND, R10 47k SDC0_CLK, R11 47k SDC0_D0, R12 47k SDC0_D1, R13 47k SDC0_DET#

Pin	Signal
1	DAT2
2	DAT3/CD
3	CMD
4	VDD
5	CLK
6	VSS
7	DAT0
8	DAT1
9	DET_A
10	DET_B
11	SHIELD

GND

LEDs

GPIO_LED1, GPIO_LED2, R3 5k1, R4 5k1, D1 LED, D2 LED, GND

Sheets
- Sheet: Power — File: Power.sch
- Sheet: Audio — File: Audio.sch
- Sheet: WifiBT — File: WifiBT.sch
- Sheet: MIPI & ETH — File: MIPI.sch

Power (Sheet 2/5)

U3 — AXP209(QFN-48)

I2C Address: 0x34

Left side pins:
- 37 TS — R15 22 — GND
- 34 IPSOUT — IPS
- 35 IPSOUT — C5 47u, C10 47u — GND
- 32 ACIN — +5V, D4 P6SMB6.8CA, C11 47u, C14 10u — GND
- 33 ACIN
- 31 VBUS — +5V_USBOTG, C6 10u — GND
- 49 Exposed_Pad(GND) — GND
- 3 GPIO3
- 5 GPIO2
- 18 GPIO1
- 19 GPIO0/LDO5 — +2V5, C7 100n — GND
- 36 CHGLED
- 30 BACKUP
- 26 VINT — VINT
- 23 BIAS — R16 200k — GND
- 22 AGND — GND
- 24 VREF — C9 2.2u — GND
- 21 APS — IPS, C8 100n — GND
- 20 EXTEN — EXTEN
- 47 PWRON — C12 1n — GND
- 4 N_OE / N_VBUSEN — SW3 RST, R6 DNP, Q1 DTA114YKA, IPS, GPIO_RST, R17 2k2, USB_DRV, GND
- 48 IRQ/WAKEUP — R18 47k, NMI, +3V3_RTC
- 2 SCK — MIPI_SCK
- 1 SDA — MIPI_SDA

Right side pins:
- 38 BAT
- 39 BAT — C15 100n — GND
- 42 BATSENSE — RESETn, C2 470n — GND
- 43 CHSENSE
- 45 LX1
- 46 PGND1 — GND
- 44 VIN1 — L2 2.2uH 1.6A 72mOhm, C16 10u, C19 10u — IPS, +1V1, GND
- 10 LX2
- 8 DCDC2 / PGND2 — GND
- 7 VIN2 — C18 100n, C22 10u — GND
- 17 LX3
- 16 DCDC3 / PGND3 — GND
- 14 VIN3 — L1 2.2uH 1.6A 72mOhm, C17 10u, C20 10u — IPS, +3V3, C21 100n, C23 10u, GND
- 13 LDO24IN — IPS, C24 10u — GND
- 28 LDO1 — +3V3_RTC, C25 10u — GND
- 12 LDO2 — +3.0VA, C26 10u — GND
- 41 LDO3 — +1V2, C27 10u — GND
- 40 LDO3IN — IPS, C28 10u — GND
- 11 LDO4 — +2V8, C29 10u — GND
- 25 PWROK — RESETn, R26 47k, +3V3_RTC
- 27 LDO1SET — R28 2k2, R29 DNP, VINT, 3V3, 1V3, GND
- 29 DC3SET — +3V3_RTC

U1D — AllWinner-S3(FBGA-234)

Pins: 77

- H11 VCC_IO0 — +3V3, C38 100n — GND
- P5 VCC_IO1
- K8 VDD_SYS0 — +1V1, C35 100n, C39 10u — GND
- K9 VDD_SYS1
- L8 VDD_SYS2
- M8 VDD_SYS3
- G12 VDD_CPU0 — +1V1, C33 100n, C36 100n — GND
- H12 VDD_CPU1
- J11 VDD_CPU2
- J12 VDD_CPU3
- K11 VDD_CPU4
- F6 VCC_DRAM0 — VCC-DDR, C32 100n, C34 100n, C37 100n, C41 10u — GND
- F7 VCC_DRAM1
- F8 VCC_DRAM2
- G8 VCC_DRAM3
- H8 VCC_DRAM4
- J8 VCC_DRAM5
- M6 VDD_EFUSE — R34 22 — GND
- E14 GND0
- F9 GND1
- GND pins: GND19–GND58, GND0–GND18

U4 — SY8089AAAC (1V5)

- IPS, C30 10u — GND
- 4 IN
- 3 LX — L3 2.2uH — VCC-DDR
- 1 EN
- 2 GND / FB — R30 5k1, C31 10u, R31 3k3, R32 100 — GND
- +3.0VA

U5 — SY6280AAC (OTG)

- +5V, C42 47u — GND
- 5 IN
- 1 OUT — OTG, R37 2k2, C43 47u, C45 47u — +5V_USBOTG, GND
- ISET — R36 5k1
- 4 EN — USB_DRV
- 2 GND — GNDGND
- R35 5k1 — GND
- R38 3k9 — GND, USB_VBUSDET, C44 100n — GND

J4 — OTG connector
- USB_D_N, USB_D_P, OTG, USB_ID
- R39 5k1 — GND

J3 — USB Power in

- VBUS A4 — +5V
- CC1 A5 — R24 5k1 — GND
- CC2 B5 — R25 5k1
- D- A7, D- B7 — R22 DNP — USB_D_N
- D+ A6, D+ B6 — R23 DNP — USB_D_P
- SBU1 A8
- SBU2 B8
- SHIELD
- GND A1 / GND
- S1, R21 200k, C13 1n — GND

D6 — ESD5302F
- USB_D_N, USB_D_P — GND

- +5V, R14 5k1, D3 LED — GND

OtterCastAudioV2 — Audio schematic (SSM2603 U6)

U7
AP6236

+3V3

R64 47k
R65 47k
R70 47k
R71 47k
R72 47k
R73 47k

9 VDD33
22 VDD_IO
20 GND
2 WIFI/BT_ANT

WL_DSI#/GPIO9 12 — WL_PMU_EN
WL_HOST_WAKE 13 — WL_WAKE_AP
SD_CLK 17 — R77 22 — WL_SDIO_CLK
SD_CMD 16 — WL_SDIO_CMD
SD_D0 18 — WL_SDIO_D0
SD_D1 19 — WL_SDIO_D1
SD_D2 14 — WL_SDIO_D2
SD_D3 15 — WL_SDIO_D3

PCM_SYNC 28 — R66 DNP — BT_PCM_SYNC
PCM_CLK 26 — R67 DNP — BT_PCM_CLK
PCM_DIN 27 — R68 DNP — BT_PCM_DIN
PCM_DOUT 25 — R69 DNP — BT_PCM_DOUT

UART_OUT 42 — BT_UART_TX
UART_IN 43 — R74 47k — +3V3 — BT_UART_RX
UART_CTS 44 — BT_UART_CTS
UART_RTS 41 — BT_UART_RTS

BT_WAKE 3 — AP_WAKE_BT
BT_HOST_WAKE 6 — R75 47k — +3V3 — BT_WAKE_AP
BT_DIS# 34 — BT_DIS_N

11 XTAL_OUT
10 XTAL_IN
8 CLK_REQ

21 SW
23 SW_IN SUSCLK_IN/GPIO6 24 — R76 22 — AP_CK32KO

+3V3

C72 10u   C73 100n
GND

+3V3
C74 10u   C76 100n
GND

AE1
KH-5220-A56_U.FL

GND
C75 1p

L5 2.2nH
C77 1p

C78 10p

GND   GND

X1
26Mhz TCXO

+3V3
4 VDD
1 EN   OUT 3
GND 2
GND

L4 2.2uH

C48 10u   C49 DNP
GND   GND

U1E
AllWinner-S3(FBGA-234)

Pin	Signal		Signal	Pin
R13	JTAG_SEL	LRADC0		T8
R7	NMI	LRADC1		R8
P7	RESET			
		VCC_MCSI		M4
N7	VCC_USB	MCSI_D3N		L2
R2	USB_DM	MCSI_D3P		L3
T2	USB_DP	MCSI_D2N		K1
		MCSI_D2P		K2
P10	MBIAS	MCSI_D1N		H1
N9	HBIAS	MCSI_D1P		H2
P9	MICIN3P	MCSI_D0N		G2
R9	MICIN3N	MCSI_D0P		G3
R11	MICIN2P	MCSI_CKN		J1
P11	MICIN2N	MCSI_CKP		J2
T10	MICIN1P			
R10	MICIN1N	EPHY_VCC		M5
N10	VRA2	EPHY_VDD		N5
		EPHY_TXP		E3
M7	AVCC	EPHY_TXN		E2
P8	AGND	EPHY_RXP		F2
		EPHY_RXN		F1
		EPHY_LINK_LED		K5
P12	HPVCCIN EPHY_SPD_LED			L5
M9	HPVCCBP	EPHY_RTX		P6
N12	HPCOM			
N11	HPCOMFB	VCC_RTC		N6
P13	HPOUTL	X32KFOUT		P3
N13	HPOUTR	X32KIN		T3
T6	LINEOUTR			
R6	LINEOUTL	X32KOUT		R3
R12	LINEINL	RTC_VIO		T5
T12	LINEINR			
H6	DVREF	VCC_PLL		L6
J5	DZQ	X24MIN		R4
F5	ZQ	X24MOUT		P4

Pins:60

GND — R81 — 22 — R13
NMI — R7
RESETn — P7

+3V3 — M4

MIPI_D3_N — L2
MIPI_D3_P — L3
MIPI_D2_N — K1
MIPI_D2_P — K2
MIPI_D1_N — H1
MIPI_D1_P — H2
MIPI_D0_N — G2
MIPI_D0_P — G3
MIPI_CK_N — J1
MIPI_CK_P — J2

+3V3 — N7
USB_D_N — R2
USB_D_P — T2

+3V3 — M5
EPHY_TX_P — E3
EPHY_TX_N — E2
EPHY_RX_P — F2
EPHY_RX_N — F1

+1V1 — N5
C95 10u

EPHY_LINK_LED — K5
EPHY_SPD_LED — L5

R89 6k04 — P6

C92 10u

R78 200k
C3 100n
+3.0VA
C89 100n

C79 10u
C85 100n
C82 100n
R79 2k2
VCC-DDR
C83 100n
R80 2k2
C88 100n

R82 240 — R83 240

+3V3_RTC

R86 5K1 — P3
AP_CK32KO

C98 100n

R84 10M — T3
Y2 32.768kHz
C96 18p
C97 18p
R3
C90 10u — T5

C93 18p
R4
Y3 24MHz
C94 18p
C99 100n

+3.0VA

J8
49F-1201GYD2NL

EPHY_SPD_LED — R88 2k2 — +3V3 — 10 / 9 YELLOW
EPHY_LINK_LED — R87 2k2 — +3V3 — 12 / 11 GREEN

J1	TD+	7
J4	TCT	6
J5	TD-	8
J2		
J3	RD+	1
J7	RCT	3
J8	RD-	2
J6		

75 75
75 75
1000pF 2kV

SH
C104 1n
GND

C103 100n
GND
R93 51 — EPHY_TX_P
C101 100n — GND
R92 51 — EPHY_TX_N
C102 100n — GND
R91 51 — EPHY_RX_P
C100 100n — GND
R90 51 — EPHY_RX_N