

AWSOM A31 Coreboard

Based on Allwinner Technology A31
ARM Cortex Quad Core A7 SoC



Revision History

| Version | Remark | Date |
|---------|-----------------|-----------|
| V1.0 | Initial Version | 2013-7-23 |

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1. Introduction

AWSOM A31 core board based on Allwinner A31 processor which integrated ARM Cortex Quad Core A7 core of up to 1GHz. The datasheet mainly introduces the hardware features, function, hardware interface and purchasing.

1.1 Basic Specification

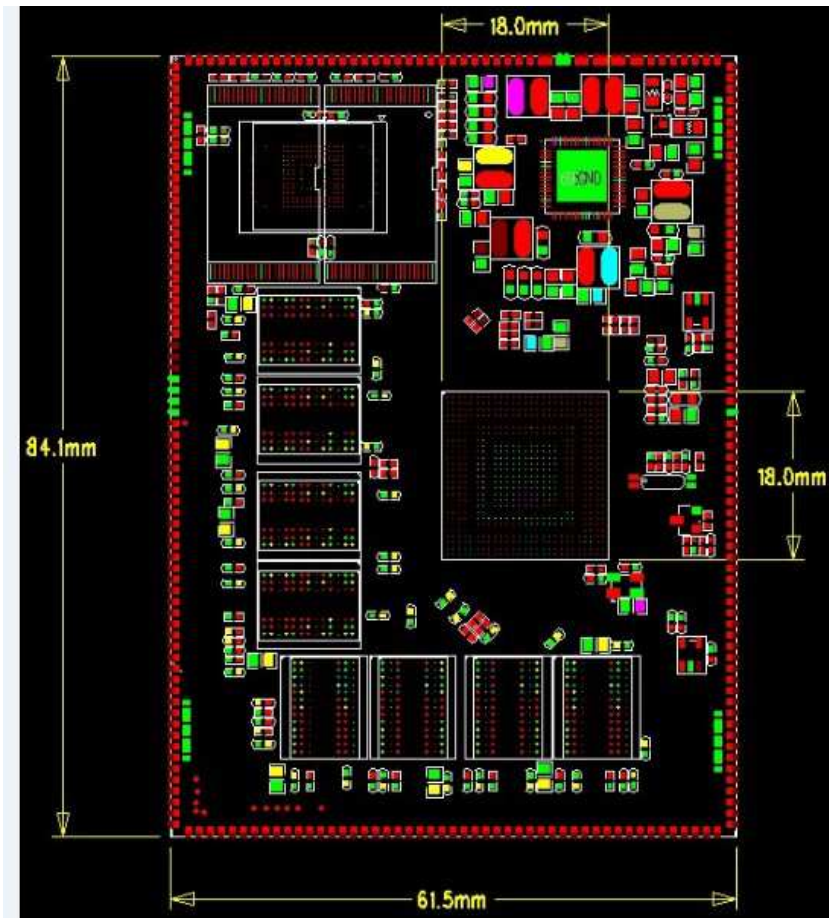
- Based on Allwinner A31 (ARM Cortex-A7 ,1GHz) processor
- 2GB DDR3 SDRAM, 8GB Nand Flash
- 4K*2K video decoding
- Dimension: 85*62*2.8mm, 238 PIN

2. Function

- 4K*2K decoding, blue ray 3D encoding and decoding
- Internal GPS Base Band, with external can support RFGPS
- Support 3G, internal 3G baseband
- Support TV-IN, TV-OUT, HDMI, VGA
- RGB or LVDS support dual-drive 2048*1536 screen
- Support two screens sharing the same content or displaying different content
- Directly support four stand two point resistance touch
- Support capacitive touch
- Support two cameras, up to 12.0 pixels
- Support GPS
- Left and right channel
- Three mic input
- Support USB*3
- Support SD Card*2
- Support CVBS output
- Support I2C*5
- Support USB WIFI
- Support multi-way GPIO
- Support 16 Bit Nand Flash or EMMC Nand
- Support 64-bit DDR3
- Support UART*6
- Support PCM*2
- Support I2S*2
- Support SPI*4

3. Hardware Overview

3.1 Dimension Drawing



3.2 Hardware Features

Hardware Features

Processor

- . Allwinner A31 Quad Core Processor (ARM Cortex-A7)
- . Basic frequency up to 1GHz
- . GPU SGX544MP2
- . PMU AXP221

Storage

- . 16Bit Nand Flash or EMMC Nand
- . Support LPDDR1/2, DDR2, DDR3 SDRAM
- . Storage is up to 32GB
- . 64 bit DDR3
- . ECC up to 64 bit

4. PIN Definition

| PIN | PIN Definition | PIN | PIN Definition |
|-----|--------------------|-----|--------------------------------|
| 1 | PH15/TWI0-SDA | 40 | PA4/GPS-UART-RX |
| 2 | PH14/TWI0-SCK | 41 | POWER-ON |
| 3 | PH22/CAM-R-RESET# | 42 | PA10/GY-INT |
| 4 | PH23/CAM-R-STBY-EN | 43 | PA7/GPS-UART-RTS |
| 5 | AVCC-AP | 44 | PA6/GPS-UART-CTS |
| 6 | VCC-WIFI/VCC-PG | 45 | PA1/GPS-PWR |
| 7 | VCC-GPS | 46 | PA5/GPS-UART-TX |
| 8 | VCC-LCD | 47 | PA0/GPS-RST |
| 9 | VCC2V8-LCD | 48 | PA27/USB-ICTRL |
| 10 | VCC-CSI/AFVCC-CSI | 49 | PA26 |
| 11 | PH13/LCD-PWM | 50 | PA24 |
| 12 | PF1/SDC0-D0 | 51 | PA23 |
| 13 | PF5/SDC0-D2 | 52 | PA21/FLASH-MODE |
| 14 | PF4/SDC0-D3 | 53 | PA20/LCD-SCL |
| 15 | PF3/SDC0-CMD | 54 | PA17/DMIC-DIN |
| 16 | PF0/SDC0-D1 | 55 | PA13/USB0-DRV |
| 17 | PF2/SDC0-CLK | 56 | PA16/DMIC-CLK |
| 18 | VDD1V8-CSI | 57 | PA12/LS-INT |
| 19 | RESET | 58 | PA15/USB0-IDDET |
| 20 | MT-DRV-N | 59 | PA14/USB0-VBUSDET |
| 21 | AVDD-CSI | 60 | PA11/CP-INT |
| 22 | AVDD-CSI-EN | 61 | PH27 |
| 23 | USB0-DRVVBUS | 62 | PH25 |
| 24 | VDD1V5-CSI | 63 | PH28 |
| 25 | VCC1V8-LCD | 64 | PH26 |
| 26 | VCC-3V0 | 65 | PH10/TCK |
| 27 | VCC-SDMMC | 66 | PH21/UART-RX |
| 28 | VCC-PA | 67 | PH24 |
| 29 | GND | 68 | PH9/TMS |
| 30 | GND | 69 | PC27 |
| 31 | GND | 70 | PH11/TDO |
| 32 | GND | 71 | PH12/TDI |
| 33 | PH20/UART-TX | 72 | PM3/BB-PWRON |
| 34 | PA22/FLASH-EN | 73 | PM6/BB-RST-N |
| 35 | PA25/LCD-BL-EN | 74 | PM1 |
| 36 | PA19/LCD-SDA | 75 | PM0/BB-WAKE-HOST |
| 37 | PA18/SPK-SHDN | 76 | PL7/STDO/BT-ENABLE/WL-SYSRST-N |

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|-----|------------------------|-----|-----------------------|
| 38 | PA8/SD0-DET | 77 | PL6/STCK/BT-WAKE-HOST |
| 39 | PA9/GS-INT | 78 | PL5/STMS/WL-WAKE-HOST |
| 79 | PL8/STDI/WL-PMU-EN | 118 | PD4/LCD0-D4/D2P |
| 80 | PL3/SUART-RX/WL-ENABLE | 119 | PD5/LCD0-D5/D2N |
| 81 | PL4/IR-RX/WL-VBAT-EN | 120 | PD2/LCD0-D2/D1P |
| 82 | PL2/BB-VBAT-EN | 121 | PD3/LCD0-D3/D1N |
| 83 | PM4/BB-WAKE-BB | 122 | PD1/LCD0-D1/D0N |
| 84 | PM2 | 123 | PD0/LCD0-D0/D0P |
| 85 | PM5/BB-RF-DIS | 124 | PD18/LCD0-D18 |
| 86 | CSI2-D0P | 125 | PD19/LCD0-D19 |
| 87 | CSI2-D0N | 126 | PD16/LCD0-D16 |
| 88 | CSI2-D1P | 127 | PD17/LCD0-D17 |
| 89 | CSI2-D1N | 128 | PD14/LCD0-D14 |
| 90 | CSI2-CKP | 129 | PD15/LCD0-D15 |
| 91 | CSI2-CKN | 130 | PD12/LCD0-D12 |
| 92 | CSI2-D2P | 131 | PD13/LCD0-D13 |
| 93 | CSI2-D2N | 132 | PD10/LCD0-D10 |
| 94 | CSI2-D3P | 133 | PD11/LCD0-D11 |
| 95 | CSI2-D3N | 134 | HACL |
| 96 | DSI-D0P | 135 | HHPD |
| 97 | DSI-D0N | 136 | HSDA |
| 98 | DSI-D1P | 137 | HTXCN |
| 99 | DSI-D1N | 138 | HTXCP |
| 100 | DSI-CKP | 139 | HTX0N |
| 101 | DSI-CKN | 140 | HTX0P |
| 102 | DSI-D2P | 141 | HTX1N |
| 103 | DSI-D2N | 142 | HTX1P |
| 104 | DSI-D3P | 143 | HTX2N |
| 105 | DSI-D3N | 144 | HTX2P |
| 106 | PD24/LCD0-CLK | 145 | DM2/USB2 |
| 107 | PD25/LCD0-DE | 146 | DP2/USB2 |
| 108 | PD26/LCD0-HSYNC | 147 | DM1/USB1 |
| 109 | PD27/LCD0-VSYNC/DSI-TE | 148 | DP1/USB1 |
| 110 | PD23/LCD0-D23 | 149 | DM0/USB0 |
| 111 | PD22/LCD0-D22 | 150 | DP0/USB0 |
| 112 | PD20/LCD0-D20 | 151 | PM7/CK32KO |
| 113 | PD21/LCD0-D21 | 152 | PHOUTN |
| 114 | PD8/LCD0-D8/D3P | 153 | PHOUTP |
| 115 | PD9/LCD0-D9/D3N | 154 | MIC-HBIAS |
| 116 | PD7/LCD0-D7/CLKN | 155 | MIC-MBIAS |
| 117 | PD6/LCD0-D6/CLKP | 156 | GND |

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|-----|------------------|-----|-------------------|
| 157 | MIC1P | 198 | VBAT-EXT |
| 158 | MIC1N | 199 | USBVBUS |
| 159 | MIC3N | 200 | USBVBUS |
| 160 | MIC3P | 201 | ACIN |
| 161 | LRADC1 | 202 | ACIN |
| 162 | LRADC0 | 203 | GND |
| 163 | SPKL | 204 | GND |
| 164 | SPKR | 205 | PS |
| 165 | MIC2N | 206 | PS |
| 166 | MIC2P | 207 | PG11 |
| 167 | PHINN | 208 | PG12 |
| 168 | PHINP | 209 | PG4/WL-SDIO-D2 |
| 169 | HPR | 210 | PG5/WL-SDIO-D3 |
| 170 | HPL | 211 | PG0/WL-SDIO-CLK |
| 171 | EARGND | 212 | PG1/WL-SDIO-CMD |
| 172 | HPCOMFB | 213 | RTPY1/CTP-SCK |
| 173 | HPCOM | 214 | RTPY2/CTP-SDA |
| 174 | FM-AUD-R | 215 | RTPX2/CTP-INT |
| 175 | FM-AUD-L | 216 | RTPX1/CTP-WAKE |
| 176 | PB7/BB-PCM-OUT | 217 | PE16/CSI2-MCLK |
| 177 | PG17 | 218 | PG3/WL-SDIO-D1 |
| 178 | PB5/BB-UART-RX | 219 | PG2/WL-SDIO-D0 |
| 179 | PB4/BB-UART-CTS | 220 | PE14/CSI-D10 |
| 180 | PG8/BT-UART-CTS | 221 | PE15/CSI-D11 |
| 181 | PG14/BT-PCM-SYNC | 222 | PE12/CSI-D8 |
| 182 | PG13/BT-PCM-CLK | 223 | PE11/CSI-D7 |
| 183 | PB6/BB-UART-TX | 224 | PE8/CSI-D4 |
| 184 | PB3/BB-PCM-IN | 225 | PE4/CAM-F-RESET# |
| 185 | PB2/BB-PCM-SYNC | 226 | PE7/CSI-D3 |
| 186 | PB1/BB-PCM-CLK | 227 | PE3/CSI-VSYNC |
| 187 | PG18/GPS-SYNC | 228 | PE13/CSI-D9 |
| 188 | PB0/BB-UART-RTS | 229 | PE10/CSI-D6 |
| 189 | PG15/BT-PCM-OUT | 230 | PE9/CSI-D5 |
| 190 | PG16/BT-PCM-IN | 231 | PE6/CSI-D2 |
| 191 | PG9/BT-UART-RTS | 232 | PE2/CSI-HSYNC |
| 192 | PG10 | 233 | PE1/CSI-MCLK |
| 193 | PG7/BT-UART-TX | 234 | PE5/CAM-F-STBY-EN |
| 194 | PG6/BT-UART-RX | 235 | PE0/CSI-PCLK |
| 195 | VBAT | 236 | UBOOT |
| 196 | VBAT | 237 | PH19/TWI2-SDA |
| 197 | VBAT-EXT | 238 | PH18/TWI2-SCK |

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5. Application:

- . Industry Automation
- . Intelligent Instrument
- . Network Terminal
- . Car Electronics
- . Mobile Internet Device
- . Digital Signage
- . Smart Home
- . Security Surveillance
- . Educational PC

6. Contact

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