ANDROID CPU MODULE[AS_812A]

▶ Description

AS_812A CPU module include AP, DDR3, eMMC, PMIC, 1Gb Ethernet Transceiver, SD card socket and various extension I/O interface .

AP used in AS_812A is S812. It is an advanced application processor designed for Tablet, Set Top Box(STB) and high-end media player applications. The quad core ARM Cortex-A9 CPU can run up to 2GHz and has a wide bus connecting to the memory sub-system. Together, the CPU and GPU handle all operating system, networking, user-interface and gaming related tasks. The Media CPU and tri-core Amlogic Video Engine (AVE) supports full formats including MVC, MPEG-1/2/4, VC-1/WMV, AVS, Real Video, MJPEG streams, H.264, H.265 and also JPEG pictures with no size limitation. The independent encoder is able to encode in JPEG and H.264 up to 1080p at 30fps.
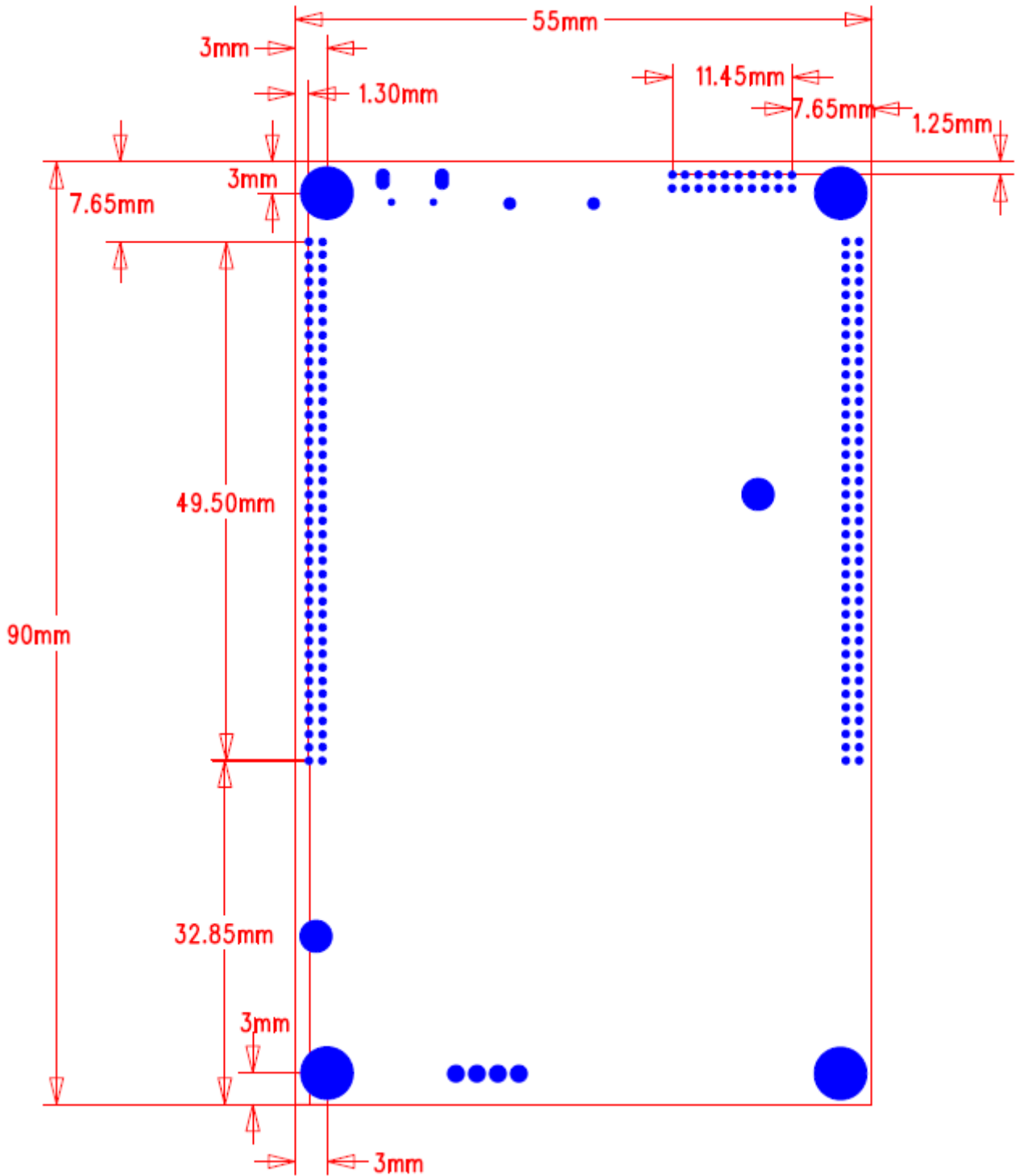
▶ AS_812A

ANDROID CPU MODULE[AS_812A]

▶ Specification

Part	Specification	
CPU	Quad core Cortex-A9(2GHz, S812-B)	
OS	Android OS(Kitkat 4.4)	
Memory	DDR3 512MB × 4 = 2GB	
Storage	eMMC : 8GB(default) up to 32GB(option), NAND Flash : 4GB(option)	
External Interface	Video output	HDMI 1.4b : 1ea, LVDS : 1ea, RGB888 TTL : 1ea
	Touch input	I2C[TSC2007]
	Audio	Line L/R out, headphone L/R out, I2S, PCM input and output Microphone bias and 2 input
	Network	Gigabit Ethernet MAC with RGMII interface and transceiver WiFi with SDIO interface[AP6330] Bluetooth with UART and PCM interface[AP6330]
	USB	USB 2.0 high-speed port : 2ea(one OTG and one HOST)
	Serial	TTL232 : 3ea[include debug 1ea] Quad Extension UART[MAX14380] IR input : 1ea
	ADC	0V~ 1.8V, 10bit SAR ADC : 2ea
	Storage	Include SD Card Socket & SDIO for external SD Card
	PWM	4ea(include LCD Backlight Control)
	GPIO	In : 4ea, Out : 12ea(Enable change Configure)
	RTC	0.9V RTC VDD input
Power	In : 5.0V, Out : 3.3V/1.8V	
Dimension	55mm × 90mm × 8.5mm[10.6 with debug connector]	

▶ Dimension

Pin pitch 1.27mm

ANDROID CPU MODULE[AS_812A]

▶ Pin Number

Total 180 external pin
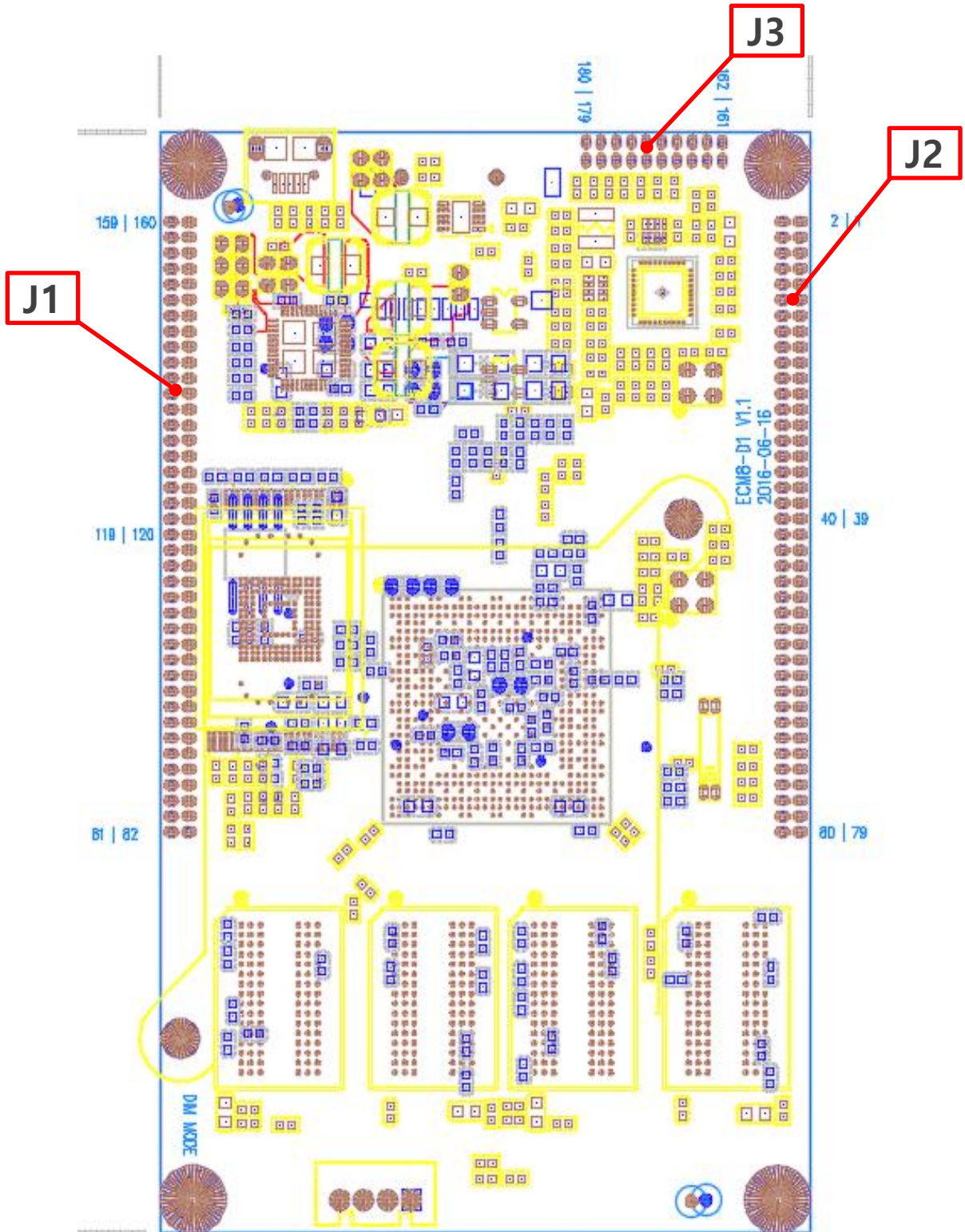
▶ J1 Pin Map

J1

NO	NAME	CLASS	NO	NAME	CLASS
81	VDD33	POWER OUT	82	VDD33	POWER OUT
83	VDD18	POWER OUT	84	VDD18	POWER OUT
85	WIFI_SD_D0	WIFI/BT	86	WIFI_SD_D1	WIFI/BT
87	WIFI_SD_D2	WIFI/BT	88	WIFI_SD_D3	WIFI/BT
89	BTPCM_DOUT	WIFI/BT	90	BTPCM_DIN	WIFI/BT
91	BTPCM_SYNC	WIFI/BT	92	BTPCM_CLK	WIFI/BT
93	WIFI_SD_CLK	WIFI/BT	94	WIFI_SD_CMD	WIFI/BT
95	WIFI_32K	WIFI/BT	96	WIFI_PWREN	WIFI/BT
97	UART_B_TX	UART	98	UART_B_RX	UART
99	UART_B_CTS	UART	100	UART_B_RTS	UART
101	UART_A_TX	UART	102	UART_A_RX	UART
103	UART_A_CTS	UART	104	UART_A_RTS	UART
105	BT_EN	WIFI/BT	106	WIFI_WAKE_HOST	WIFI/BT
107	UART_C_RTS	UART	108	UART_C_CTS	UART
109	UART_C_RX	UART	110	UART_C_TX	UART
111	GPIOY_15	GPO	112	PWM_A	PWM
113	GPIOY_14	GPO	114	SPI_SS0_IRQ	GPI
115	AUDIO_EN	GPO	116	SPI_SS0_RST	GPO
117	UART_IRQ	GPI	118	GPIOY_9	GPO
119	UART_RST	GPO	120	GPIOY_7	GPO
121	GPIOY_4	GPIO	122	TOUCH_INT	GPI
123	NC		124	NC	
125	NC		126	NC	
127	LCD_R0(B7)	RGB888	128	LCD_R1(B6)	RGB888
129	LCD_R2(B5)	RGB888	130	LCD_R3(B4)	RGB888
131	LCD_R4(B3)	RGB888	132	LCD_R5(B2)	RGB888
133	LCD_R6(B1)	RGB888	134	LCD_R7(B2)	RGB888
135	LCD_G0(G7)	RGB888	136	LCD_G1(G6)	RGB888
137	LCD_G2(G5)	RGB888	138	LCD_G3(G4)	RGB888
139	LCD_G4(G3)	RGB888	140	LCD_G5(G2)	RGB888
141	LCD_G6(G1)	RGB888	142	LCD_G7(G0)	RGB888
143	LCD_B0(R7)	RGB888	144	LCD_B1(R6)	RGB888
145	LCD_B2(R5)	RGB888	146	LCD_B3(R4)	RGB888
147	LCD_B4(R3)	RGB888	148	LCD_B5(R2)	RGB888
149	LCD_B6(R1)	RGB888	150	LCD_B7(R0)	RGB888
151	LCD_STVU	RGB888	152	LCD_STHL	RGB888
153	LCD_CLK	RGB888	154	LCD_DE	RGB888
155	LCD_BL_PWM	PWM	156	PWM_C	PWM
157	NC		158	PWM_F	PWM
159	GND	POWER_IN	160	GND	POWER_IN

ANDROID CPU MODULE[AS_812A]

▶ J2 Pin Map

J2

NO	NAME	CLASS	NO	NAME	CLASS
1	VDD33	POWER OUT	2	VDD33	POWER OUT
3	ADC_KEY1	ADC IN	4	ADC_KEY2	ADC IN
5	USBA_ID	USB	6	MIC_DET	ADC IN
7	USBA_DM	USB	8	USBA_DP	USB
9	USBB_DM	USB	10	USBB_DP	USB
11	ETH_MDI-BI_DAP_TXP	ETHERNET	12	ETH_MDI-BI_DAN_TXN	ETHERNET
13	ETH_MDI-BI-DBP_RXP	ETHERNET	14	ETH_MDI-BI-DBN_RXN	ETHERNET
15	ETH_MDI-BI_DCP	ETHERNET	16	ETH_MDI-BI_DCN	ETHERNET
17	ETH_MDI-BI_DDP	ETHERNET	18	ETH_MDI-BI_DDN	ETHERNET
19	ETH_LED1_LDO0	ETHERNET	20	ETH_LED2_LDO1	ETHERNET
21	UART_CS/GPIOH_9	SPI/GPO	22	NC	
23	SPI_SS0	SPI	24	GPIOH_4	SPI
25	SPI_MOSI	SPI	26	GPIOH_6	SPI
27	I2C_D_SDA	I2C	28	GPIOH_8	I2C
29	HDMI_CEC/GPIOA_12	HDMI/GPO	30	HDMI_SCL/GPIOH_2	HDMI/GPO
31	HDMI_SDA/GPIOH_1	HDMI/GPO	32	HDMI_HPD/GPIOH_0	HDMI/GPO
33	HDMI_TX2P	HDMI	34	HDMI_TX2N	HDMI
35	HDMI_TX1P	HDMI	36	HDMI_TX1N	HDMI
37	HDMI_TX0P	HDMI	38	HDMI_TX0N	HDMI
39	HDMI_CKP	HDMI	40	HDMI_CKN	HDMI
41	LVDS_0P/DIF_0P	LVDS/MIPI	42	LVDS_0N/DIF_0N	LVDS/MIPI
43	LVDS_1P/DIF_1P	LVDS/MIPI	44	LVDS_1N/DIF_1N	LVDS/MIPI
45	LVDS_CKP/DIF_2P	LVDS/MIPI	46	LVDS_CKN/DIF_2N	LVDS/MIPI
47	LVDS_2P/DIF_3P	LVDS/MIPI	48	LVDS_2N/DIF_3N	LVDS/MIPI
49	LVDS_3P/DIF_4P	LVDS/MIPI	50	LVDS_3N/DIF_4N	LVDS/MIPI
51	NC		52	NC	
53	NC		54	NC	
55	NC		56	NC	
57	NC		58	NC	
59	UART_DEBUG_TX	UART	60	UART_DEBUG_RX	UART
61	VBAT_IN	POWER IN	62	VBAT_IN	POWER IN
63	I2S_SCLK/GPIOAO_9	I2S/GPI	64	I2S_MCLK/GPIOAO_8	I2S/GPI
65	I2S_DATAOUT//GPIOAO_11	I2S/GPO	66	I2S_LRCK/GPIOAO_10	I2S/GPI
67	NC		68	I2S_DATAIN/GPIOY_5	I2S/GPI
69	I2C_AO_SDA	I2C	70	I2C_AO_SCK	I2C
71	IR_IN		72	PWR_KEY	
73	RTC_VDD	POWER IN	74	RESET_N	
75	VDD5	POWER IN	76	VDD5	POWER IN
77	VDD5	POWER IN	78	VDD5	POWER IN
79	GND	POWER_IN	80	GND	POWER_IN

ANDROID CPU MODULE[AS_812A]

▶ J3 Pin Map

J3

NO	NAME	CLASS	NO	NAME	CLASS
161	VDD33	POWER OUT	162	VDD33	POWER OUT
163	AL_OUT	AUDIO	164	AR_OUT	AUDIO
165	CPU_HPL	AUDIO	166	CPU_HPR	AUDIO
167	MIC1P_S1	AUDIO	168	MIC1P_S2	AUDIO
169	MIC_BIAS	AUDIO	170	SD_D0	SDIO
171	SD_D1	SDIO	172	SD_D2	SDIO
173	SD_D3	SDIO	174	SD_CLK	SDIO
175	SD_CMD	SDIO	176	SD_CARD_DET	SDIO
177	VDD5	POWER IN	178	VDD5	POWER IN
179	GND	POWER_IN	180	GND	POWER_IN