



YeaCreate-RK3566 Cord Board

--Specification Sheet V1.0

Mainboard Model: YeaCreate-RK3566-CORE V1.0

Board Name: YeaCreate-RK3566 Core Board

Security Level: Public

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1. Introduction

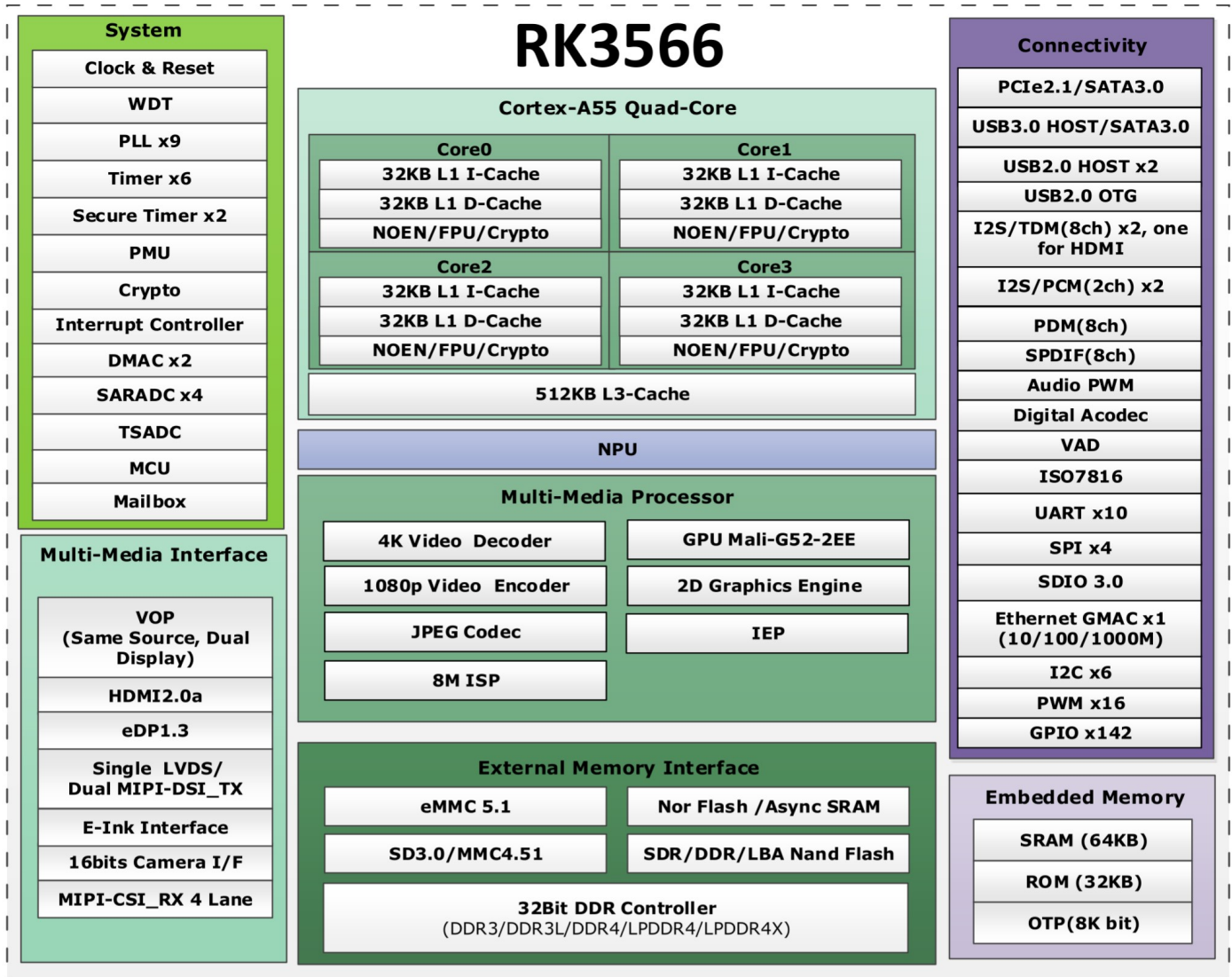
YeaCreate is dedicated to smart home solutions that create a wiser, more convenient life for people. As an innovator in embedded application technology, YeaCreate continuously drives innovation in home connectivity and intelligent interconnection solutions.

2. Features and Applications

1. The Core-RK3566 core board integrates the CPU, LPDDR4, eMMC, PMIC.
2. It features two display controllers supporting MIPI, LVDS, HDMI, and eDP interfaces. It supports up to dual independent displays or mirrored displays, with the HDMI output supporting up to 4K resolution.
3. It features high-speed interfaces including USB 3.0, PCIe 2.1, SDIO 3.0, SPI, and I²C for seamless peripheral connectivity.
4. It features a built-in NPU delivering up to 0.8 TOPS of computing power. It supports the Rockchip RKNN toolkit and mainstream frameworks such as TensorFlow and Caffe, meeting the demands of lightweight edge computing.
5. It supports application development across multiple platforms, including embedded Linux, Ubuntu, Debian, and Android.
6. Designed with a core board and carrier board architecture, the core board serves as the minimum system, while the carrier board handles peripheral interfaces. This allows for rapid development and verification using only a 2 - 4 layer carrier board.
7. The core board supports fast customization with different capacities of DRAM or EMMC.
8. The core board has been adapted with over 10 types of Wi-Fi modules.
9. A reserved shield case interface is provided for reliable operation in harsh environments.
10. High performance, low power consumption, and strong scalability. Highly integrated with a DDR4 gold finger package for easy installation. Proven stable and reliable through extensive deployment in diverse industrial embedded applications.

2.1. Functional Block Diagram

The Core-RK3566 Standard SoM utilizes the RK3566 as its main CPU. The functional block diagram of the chip is shown below:



2.2. Applications

The image displays three distinct applications of the RK3566 SoC, each with a corresponding color-coded header and a legend at the bottom.

- Smart Photo Frame:** A tablet displays a family photo and weather information. The RK3566 module is shown inserted into the back of the tablet. The header is green.
- RK3566 for Advanced Medical Diagnostics:** A tablet displays medical data including ECG, patient info, and a brain scan. It is connected to a 'Hospital Ethernet/WiFi' network. The RK3566 module is shown in the back. The header is blue.
- RK3566 Machine Vision Processing:** A camera module is mounted on a machine, with a monitor displaying a vision processing interface. The RK3566 module is shown in the back of the monitor. The header is orange.

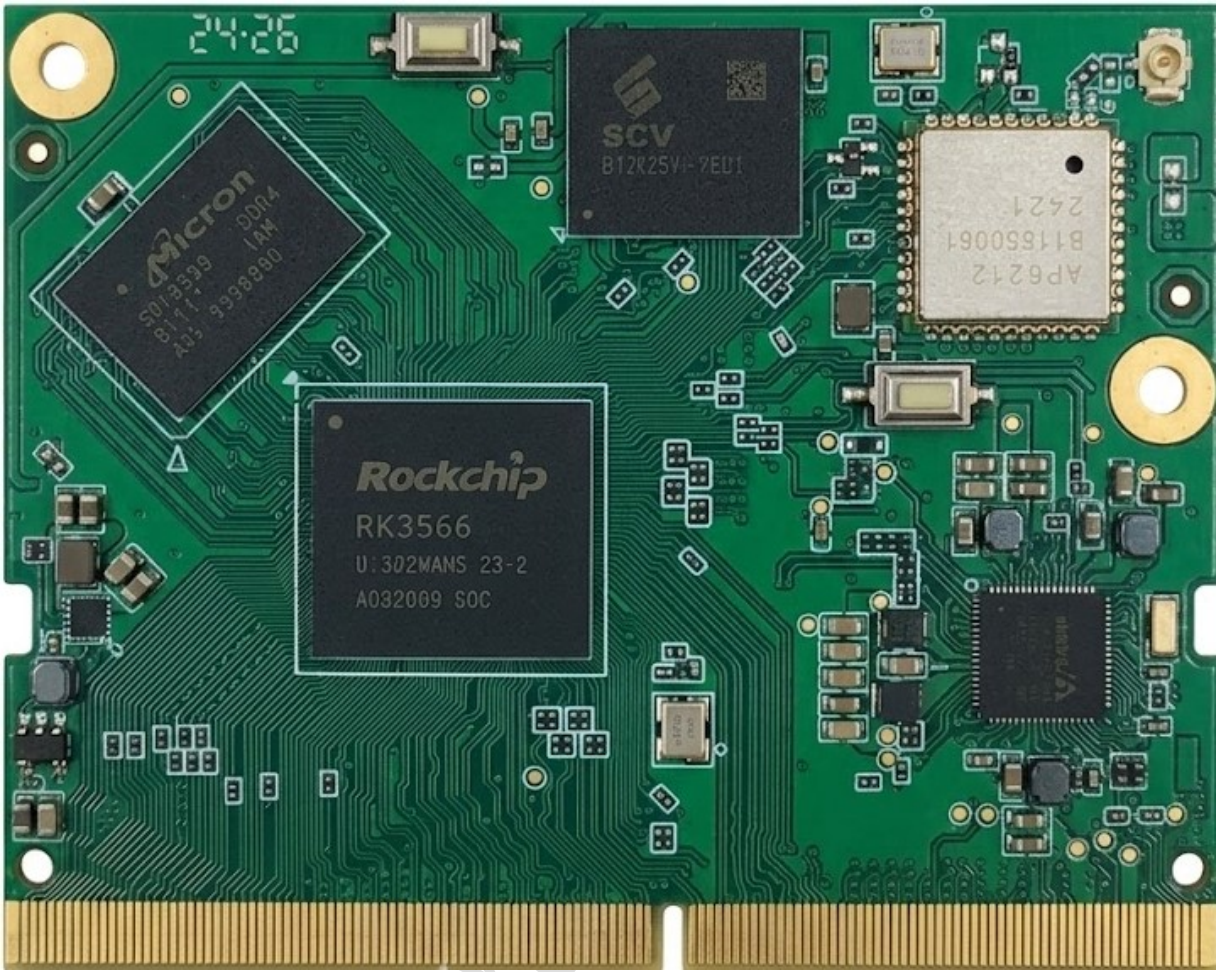
Legend:

- Multimedia & Display
- High-Speed Expansion
- Standard I/O Interface
- System Base Components

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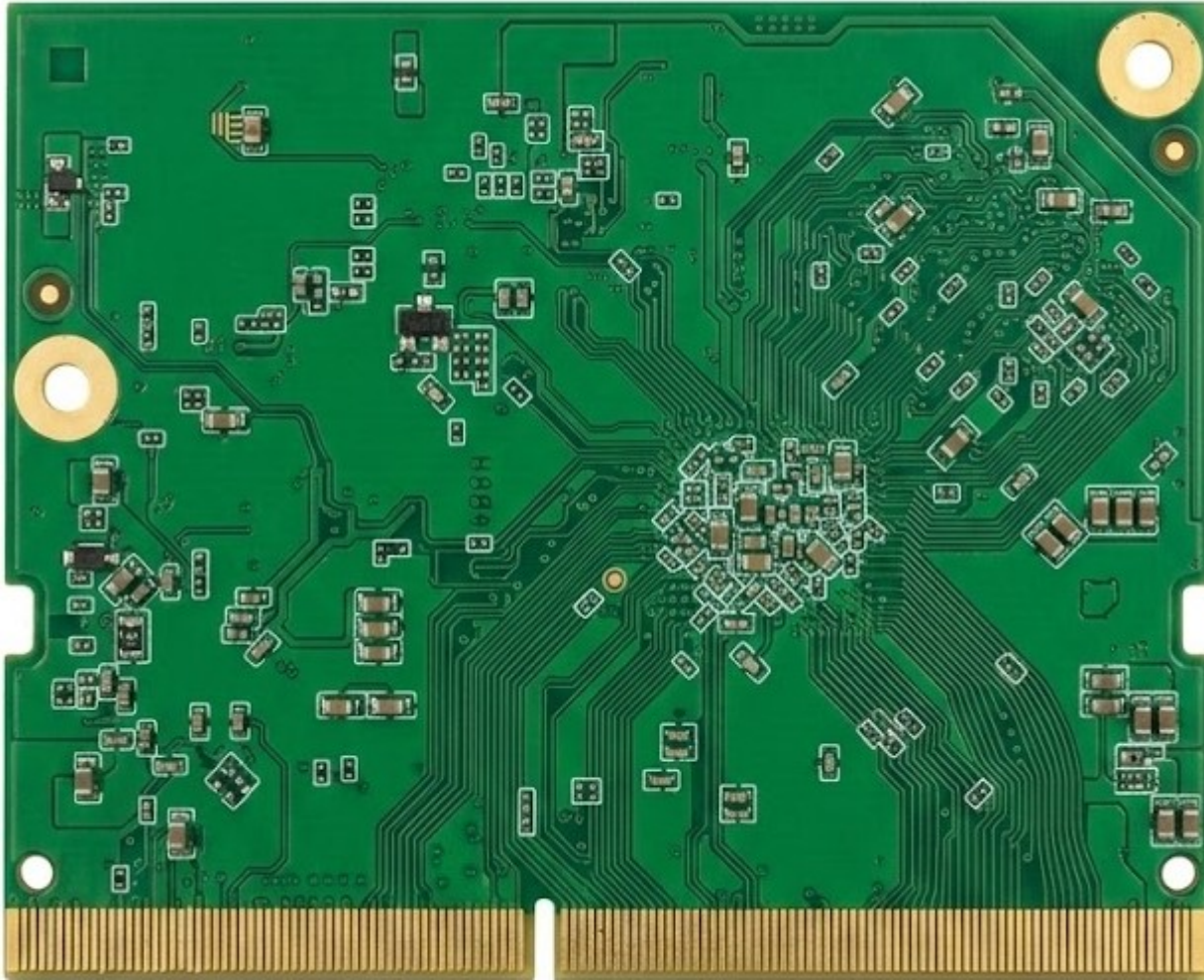
3. Mechanical Dimensions

3.1. Top View:



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3.2 Bottom View:



3.3. Dimensions:

Width	55mm
Length	69.5mm
Tolerance	±0.5mm

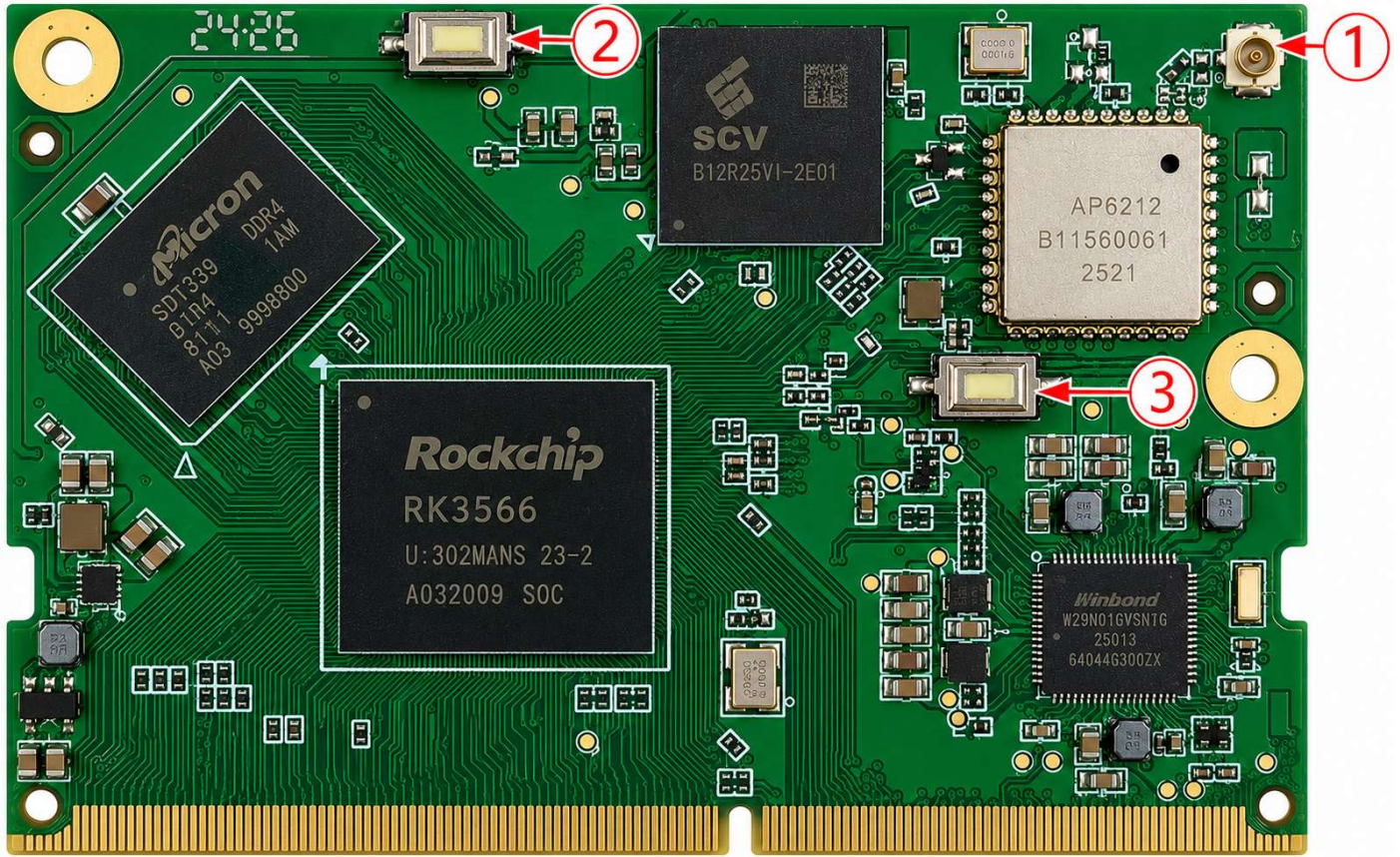


4. Electrical Characteristics

4.1. The basic parameters are listed in the table below:

Basic Parameters	
SoC	RockChip RK3566
CPU	Quad-core 64-bit ARM Cortex-A55 processor, up to 1.8 GHz
GPU	Mali-G52 1-Core-2EE Supporting OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1 Integrated high-performance 2D graphics acceleration hardware.
NPU	Neural network acceleration engine delivering up to 1 TOPS of processing power. Supports hybrid INT8/INT16/FP16/BFP16 MAC operations. Compatible with mainstream deep learning frameworks including TensorFlow, TF-Lite, PyTorch, Caffe, ONNX, MXNet, Keras, and Darknet.
Memory	LPDDR4/LPDDR4x, default 2GB
Storage	EMMC, default 32GB
Ethernet	Integrates a GMAC controller, providing a high-performance Gigabit Ethernet interface (1000 Mbps).
Multimedia	Supports 4K @ 60 fps video decoding (H.264, H.265, VP9). Supports 1080p @ 100 fps video encoding (H.264, H.265). Supports 8MP ISP.
Display Interface	Single display supported: eDP, HDMI 2.0, MIPI-DSI, LVDS, and EBC.
Audio Interface	1 × HDMI audio output 1 × HPR/L, Stereo Headphone Output 1 × SPK, Amplifier Output 1 × MIC Microphone Inputs 1 × VAD
USB	1 × USB2.0 OTG 1 × USB3.0 HOST 2 × USB2.0 HOST
PCIe/SATA	1 × PCIe 2.0 2 × SATA 3.0
Expansion Connector	10 × UART 4 × SPI 5 × I2C 3 × I2S 3 × SDIO 16 × PWM 4 × ADC 1 × FSPI 116 × GPIO

4.2. Core Board Functions:

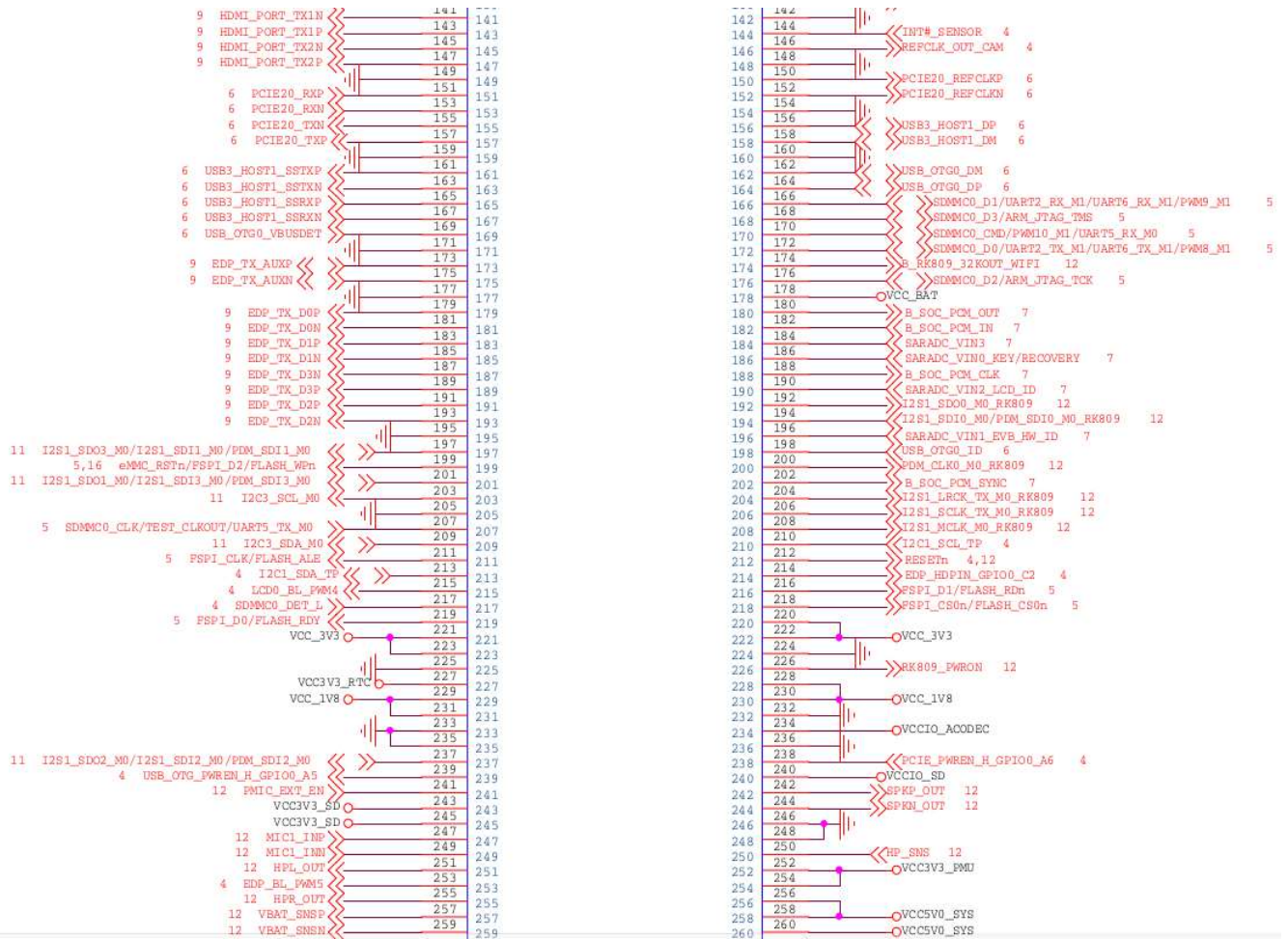


No.	Description
1	IPEX Gen 1 Connector
2	RK3566 BOOT Button
3	RK3566 Reset Button



5. Pin Configuration and Functions





5.1. Core Board Interface – Odd Pin Definitions (Refer to the SoC Datasheet for detailed pin multiplexing functions.)

Pin No.	Connector Label	Description
1	USB2_HOST2_DM	USB2_HOST2_DM
3	USB2_HOST2_DP	USB2_HOST2_DP
5	USB2_HOST3_DM	USB2_HOST3_DM
7	USB2_HOST2_DP	USB2_HOST2_DP
9	GPIO4_C1_d	GPIO4_C1_d
11	GPIO4_C0_d	GPIO4_C0_d
13	GPIO4_B7_d	GPIO4_B7_d
15	GPIO4_B5_d	GPIO4_B5_d
17	GPIO4_B3	GPIO4_B3_d
19	GPIO4_B4_d	GPIO4_B4_d
21	GPIO4_B2_d	GPIO4_B2_d
23	GPIO4_B1_d	GPIO4_B1_d
25	GPIO4_A6	GPIO4_A6_d



27	GPIO4_A3_d	GPIO4_A3_d
29	GPIO4_A5	GPIO4_A5_d
31	GPIO4_A0	GPIO4_A0_d
33	GPIO3_D6	GPIO3_D6_d
35	GPIO3_D7	GPIO3_D7_d
37	GPIO3_D3	GPIO3_D3_d
39	GPIO3_D2_d	GPIO3_D2_d
41	GPIO3_D1_d	GPIO3_D1_d
43	GPIO3_D0_d	GPIO3_D0_d
45	GMAC1_INT/PMEB_GPIO3_C3	GPIO3_C3_d
47	GMAC1_RSTn_GPIO3_C2	GPIO3_C2_d
49	PCIE20_PERSTn_M1	GPIO3_C1_d
51	IR_TX_GPIO3_C0	GPIO3_C0_d
53	PCIE20_PRSTn_L_GPIO3_B7	GPIO3_B7_d
55	I2C5_SCL_M0	I2C5 Clock Signal
57	UART4_TX_M1	UART4 Transmit Data
59	CAMERA1_PDN_L_GPIO3_B0	GPIO3_B0_d
61	UART4_RX_M1	UART4 Receive Data
63	MIPICAM1_RST_L_GPIO3_A5	GPIO3_A5_d
65	LCD1_RST_L_GPIO3_A4	GPIO3_A4_d
67	GSENSOR_INT_L_GPIO3_A2	GPIO3_A2_d
69	LCD0_RST_L_GPIO3_A3	GPIO3_A3_d
71	HDMITX_SDA	
73	HDMITX_SCL	
75	GND	GND
77	MIPI_CSI_RX_D3N	MIPI_CSI_RX_D3N
79	MIPI_CSI_RX_D3P	MIPI_CSI_RX_D3P
81	MIPI_CSI_RX_D2N	MIPI_CSI_RX_D2N
83	MIPI_CSI_RX_D2P	MIPI_CSI_RX_D2P
85	MIPI_CSI_RX_D1N	MIPI_CSI_RX_D1N
87	MIPI_CSI_RX_D1P	MIPI_CSI_RX_D1P
89	MIPI_CSI_RX_D0N	MIPI_CSI_RX_D0N
91	MIPI_CSI_RX_D0P	MIPI_CSI_RX_D0P
93	GND	GND
95	MIPI_DSI_TX1_D3N	MIPI_DSI_TX1_D3N
97	MIPI_DSI_TX1_D3P	MIPI_DSI_TX1_D3P
99	MIPI_DSI_TX1_D2N	MIPI_DSI_TX1_D2N
101	MIPI_DSI_TX1_D2P	MIPI_DSI_TX1_D2P
103	MIPI_DSI_TX1_D1N	MIPI_DSI_TX1_D1N
105	MIPI_DSI_TX1_D1P	MIPI_DSI_TX1_D1P
107	MIPI_DSI_TX1_D0N	MIPI_DSI_TX1_D0N
109	MIPI_DSI_TX1_D0P	MIPI_DSI_TX1_D0P
111	GND	GND
113	MIPI_DSI_TX0_D3N/LVDS_TX0_D3N	Data Lane 3 Negative D3-



115	MIPI_DSI_TX0_D3P/LVDS_TX0_D3P	Data Lane 3 Positive D3+
117	MIPI_DSI_TX0_D2N/LVDS_TX0_D2N	Data Lane 2 Negative D2-
119	MIPI_DSI_TX0_D2P/LVDS_TX0_D2P	Data Lane 2 Positive D2+
121	MIPI_DSI_TX0_D1N/LVDS_TX0_D1N	Data Lane 1 Negative D1-
123	MIPI_DSI_TX0_D1P/LVDS_TX0_D1P	Data Lane 1 Positive D1+
125	MIPI_DSI_TX0_D0N/LVDS_TX0_D0N	Data Lane 0 Negative D0-
127	MIPI_DSI_TX0_D0P/LVDS_TX0_D0P	Data Lane 0 Positive D0+
129	GND	GND
131	HDMI_PORT_TXCLKN	HDMI_TXCLK-
133	HDMI_PORT_TXCLKP	HDMI_TXCLK+
135	GND	GND
137	HDMI_PORT_TX0N	HDMI_TX0-
139	HDMI_PORT_TX0P	HDMI_TX0+
141	HDMI_PORT_TX1N	HDMI_TX1-
143	HDMI_PORT_TX1P	HDMI_TX1+
145	HDMI_PORT_TX2N	HDMI_TX2-
147	HDMI_PORT_TX2P	HDMI_TX2+
149	GND	GND
151	PCIE20_RXP	PCIE20_RX+
153	PCIE20_RXN	PCIE20_RX-
155	PCIE20_TXN	PCIE20_TX-
157	PCIE20_TXP	PCIE20_TX+
159	GND	GND
161	USB3_HOST1_SSTXP	USB3_HOST1_SSTX+
163	USB3_HOST1_SSTXN	USB3_HOST1_SSTX-
165	USB3_HOST1_SSRXP	USB3_HOST1_SSRX+
167	USB3_HOST1_SSRXN	USB3_HOST1_SSRX-
169	USB_OTG0_VBUSDET	USB_OTG0_VBUS Detect
171	GND	GND
173	EDP_TX_AUXP	EDP_TX_AUX+
175	EDP_TX_AUXN	EDP_TX_AUX-
177	GND	GND
179	EDP_TX_D0P	EDP_TX_D0+
181	EDP_TX_D0N	EDP_TX_D0-
183	EDP_TX_D1P	EDP_TX_D1+
185	EDP_TX_D1N	EDP_TX_D1-
187	EDP_TX_D3N	EDP_TX_D3-
189	EDP_TX_D3P	EDP_TX_D3+
191	EDP_TX_D2P	EDP_TX_D2+
193	EDP_TX_D2N	EDP_TX_D2-
195	GND	GND
197	I2S1_SDO3_M0/I2S1_SDI1_M0/PDM_SDI1_M0	GPIO1_B2_d
199	eMMC_RSTn/FSPI_D2/FLASH_WPn	GPIO1_C7_d



201	I2S1_SDO1_M0/I2S1_SDI3_M0/PDM_SDI3_M0	GPIO1_B0_d
203	I2C3_SCL_M0	I2C3 Clock Signal
205	GND	GND
207	SDMMC0_CLK/TEST_CLKOUT/UART5_TX_M0	SDMMC0 Clock Signal
209	I2C3_SDA_M0	I2C3 Data Signal
211	FSPI_CLK/FLASH_ALE	GPIO1_D0_d
213	I2C1_SDA_TP	I2C1 Data Signal
215	LCD0_BL_PWM4	GPIO0_C3_d
217	SDMMC0_DET_L	SDMMC0_DET_L
219	FSPI_D0/FLASH_RDY	GPIO1_D1
221	VCC_3V3	VCC_3V3
223	VCC_3V3	VCC_3V3
225	GND	GND
227	VCC3V3_RTC	VCC3V3_RTC
229	VCC_1V8	VCC_1V8
231	VCC_1V8	VCC_1V8
233	GND	GND
235	GND	GND
237	I2S1_SDO2_M0/I2S1_SDI2_M0/PDM_SDI2_M0	GPIO1_B1_d
239	USB_OTG_PWREN_H_GPIO0_A5	GPIO0_A5_d
241	PMIC_EXT_EN	PMIC_EXT_EN
243	VCC3V3_SD	VCC3V3_SD
245	VCC3V3_SD	VCC3V3_SD
247	MIC1_INP	Microphone 1 Positive (Mic+)
249	MIC1_INN	Microphone 1 Negative (Mic-)
251	HPL_OUT	Headphone Left Channel Output
253	EDP_BL_PWM5	GPIO0_C4_d
255	HPR_OUT	Headphone Right Channel Output
257	VBAT_SNSP	VBAT_SNSP
259	VBAT_SNSN	VBAT_SNSN

5.2. Core Board Interface – Even Pin Definitions (Refer to the SoC Datasheet for detailed pin multiplexing functions.)

Pin No.	Connector Label	Description
2	GND	GND
4	GND	GND
6	GND	GND
8	GND	GND
10	GND	GND



12	VCC5V0_SYS	VCC5V0_SYS
14	VCC5V0_SYS	VCC5V0_SYS
16	VCC5V0_SYS	VCC5V0_SYS
18	VCC5V0_SYS	VCC5V0_SYS
20	GVCC5V0_SYS	VCC5V0_SYS
22	GPIO4_B6_d	GPIO4_B6_d
24	GPIO4_B0_d	GPIO4_B0_d
26	GPIO4_A4	GPIO4_A4_d
28	GPIO4_A7_d	GPIO4_A7_d
30	SPDIF_TX_M1	SPDIF_TX_M1
32	GPIO4_A1_d	GPIO4_A1_d
34	AUDIO_CTRL_GPIO3_C4	GPIO3_C4_d
36	GPIO4_A2_d	GPIO4_A2_d
38	GPIO3_D4_d	GPIO3_D4_d
40	GPIO3_D5_d	GPIO3_D5_d
42	GPIO3_C6_d	GPIO3_C6_d
44	GPIO3_C7_d	GPIO3_C7_d
46	AUDIO_CTRL_GPIO3_B5	AUDIO_CTRL_GPIO3_B5
48	PWM11_M0_FSYNCR_IN_GPIO3_B6	GPIO3_B6_d
50	I2C5_SDA_M0	SDA Data Signal
52	INT_GPIO3_A7_CON1	GPIO3_A7_d
54	MIPICAM0_RST_L_GPIO3_A6	GPIO3_A6_d
56	I2S3_SDI_M1_CON1	GPIO4_C6_d
58	HP_DET_L_GPIO3_A1	GPIO3_A1_d
60	HDMITX_CEC_M0	HDMITX_CEC Signal
62	I2S3_SDO_M1_CON1	GPIO4_C5_d
64	I2S3_LRCK_M1_CON1	GPIO4_C4_d
66	I2S3_MCLK_M1_CON1	GPIO4_C2_d
68	FSPI_D3/FLASH_CS1n	GPIO1_D4
70	EDP_PWREN5V0_H_GPIO0_D4_d	GPIO0_D4_d
72	GND	GND
74	I2S3_SCLK_M1_CON1	GPIO4_C3_d
76	LCD2_PWREN_H_GPIO0_D5_d	GPIO0_D5_d
78	I2S1_SCLK_TX_M0	GPIO1_A3_d
80	I2S1_MCLK_M0	GPIO1_A2_d
82	GND	GND
84	MIPI_CSI_RX_CLK1P	CSI Clock Lane 1 Positive 1+
86	MIPI_CSI_RX_CLK1N	CSI Clock Lane 1 Negative 1-
88	MIPI_CSI_RX_CLK0N	CSI Clock Lane 0 Negative 0-
90	MIPI_CSI_RX_CLK0P	CSI Clock Lane 0 Positive 0+
92	GND	GND
94	MIPI_DSI_TX1_CLKP	Clock Lane Positive CLK+
96	MIPI_DSI_TX1_CLKN	Clock Lane Negative CLK-
98	GND	GND



100	UART2_TX_M0_DEBUG	UART2 Debug Transmit Data
102	I2S1_LRCK_RX_M0/PDM_CLK0_M0	GPIO1_A6_d
104	GPIO0_D6_d	GPIO0_D6_d
106	TP_RST_L_GPIO0_B6	GPIO0_B6
108	I2S1_SCLK_RX_M0/PDM_CLK1_M0	GPIO1_A4_d
110	I2S1_LRCK_TX_M0	GPIO1_A5_d
112	GND	GND
114	MIPI_DSI_TX0_CLKN/LVDS_TX0_CLKN	Clock Lane Negative CLK-
116	MIPI_DSI_TX0_CLKP/LVDS_TX0_CLKP	Clock Lane Positive CLK+
118	GND	GND
120	I2S1_SDO0_M0	GPIO1_A7_d
122	HDMI_TX_HPDIN	HDMI Hot Plug Detect
124	I2S1_SDI0_M0/PDM_SDI0_M0	GPIO1_B3_d
126	PWM7_IR	GPIO0_C6_d
128	UART2_RX_M0_DEBUG	UART2 Debug Receive Data
130	LCD1_PWREN_H_GPIO0_C5	GPIO0_C5_d
132	RTCIC_INT_L_GPIO0_C0	GPIO0_C0_d
134	EDP_LED_EN_H_GPIO0_C7	GPIO0_C7_d
136	CHG_DET	GPIO0_B0
138	TP_INT_L_GPIO0_B5	GPIO0_B5
140	DVP_PWREN0_H_GPIO0_C1	GPIO0_C1_d
142	GND	GND
144	INT#_SENSOR	GPIO0_B7_d
146	REFCLK_OUT_CAM	GPIO0_A0_d
148	GND	GND
150	PCIE20_REFCLKP	PCIE20_REFCLK+
152	PCIE20_REFCLKN	PCIE20_REFCLK-
154	GND	GND
156	USB3_HOST1_DP	USB3_HOST1+
158	USB3_HOST1_DM	USB3_HOST1-
160	GND	GND
162	USB_OTG0_DM	USB_OTG0-
164	USB_OTG0_DP	USB_OTG0+
166	SDMMC0_D1/UART2_RX_M1/UART6_RX_M1/PWM9_M1	SDMMC0 Data 1
168	SDMMC0_D3/ARM_JTAG_TMS	SDMMC0 Data 3
170	SDMMC0_CMD/PWM10_M1/UART5_RX_M0	SDMMC0 Command Signal
172	SDMMC0_D0/UART2_TX_M1/UART6_TX_M1/PWM8_M1	SDMMC0 Data 0
174	B_RK809_32KOUT_WIFI	RK809 32.768kHz Clock Output
176	SDMMC0_D2/ARM_JTAG_TCK	SDMMC0 Data 2
178	VCC_BAT	VCC_BAT
180	B_SOC_PCM_OUT	B_SOC_PCM_OUT



182	B_SOC_PCM_IN	B_SOC_PCM_IN
184	SARADC_VIN3	SARADC_VIN3
186	SARADC_VIN0_KEY/RECOVERY	RECOVERY Firmware Upgrade
188	B_SOC_PCM_CLK	B_SOC_PCM_CLK
190	SARADC_VIN2_LCD_ID	SARADC_VIN2_LCD_ID
192	I2S1_SDO0_M0_RK809	I2S1_SDO0_M0_RK809
194	I2S1_SDI0_M0/PDM_SDI0_M0_RK809	I2S1_SDI0_M0/PDM_SDI0_M0_RK809
196	SARADC_VIN1_EVB_HW_ID	SARADC_VIN1_EVB_HW_ID
198	USB_OTG0_ID	USB_OTG0_ID Signal
200	PDM_CLK0_M0_RK809	PDM_CLK0_M0_RK809
202	B_SOC_PCM_SYNC	GPIO2_C3_d
204	I2S1_LRCK_TX_M0_RK809	I2S1_LRCK_TX_M0_RK809
206	I2S1_SCLK_TX_M0_RK809	I2S1_SCLK_TX_M0_RK809
208	I2S1_MCLK_M0_RK809	I2S1_MCLK_M0_RK809
210	I2C1_SCL_TP	I2C Clock Signal
212	RESETn	Reset Input
214	EDP_HDPIN_GPIO0_C2	GPIO0_C2_d
216	FSPI_D1/FLASH_RDn	GPIO1_D2
218	FSPI_CS0n/FLASH_CS0n	GPIO1_D3
220	VCC_3V3	VCC_3V3
222	VCC_3V3	VCC_3V3
224	GND	GND
226	RK809_PWRON	Power On/Off Control
228	VCC_1V8	VCC_1V8
230	VCC_1V8	VCC_1V8
232	GND	GND
234	VCCIO_ACODEC	VCCIO_ACODEC
236	GND	GND
238	PCIE_PWREN_H_GPIO0_A6	GPIO0_A6_d
240	VCCIO_SD	VCCIO_SD
242	SPKP_OUT	SPK+ Speaker Positive Output
244	SPKN_OUT	SPK- Speaker Negative Output
246	GND	GND
248	GND	GND
250	HP_SNS	HP_SNS
252	VCC3V3_PMU	VCC3V3_PMU
254	VCC3V3_PMU	VCC3V3_PMU
256	VCC5V0_SYS	VCC5V0_SYS
258	VCC5V0_SYS	VCC5V0_SYS
260	VCC5V0_SYS	VCC5V0_SYS