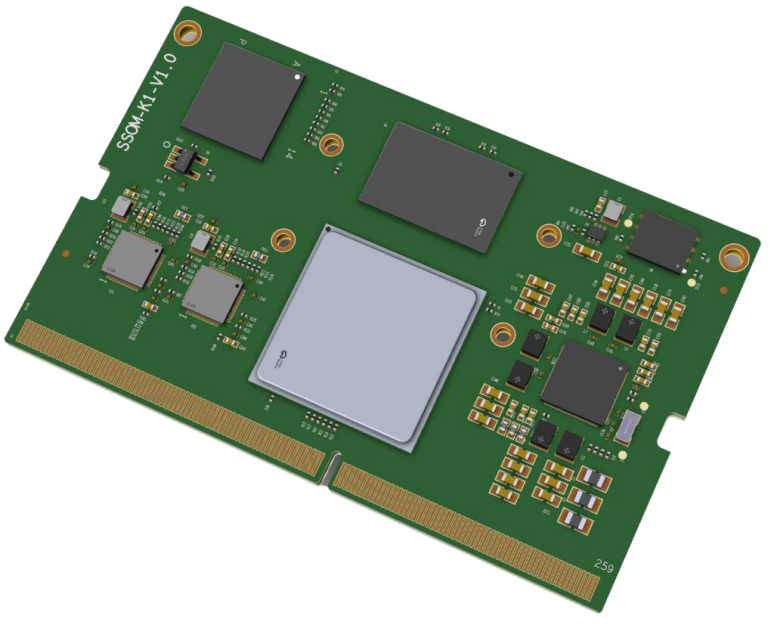
SSOM-K1-XXXX
data sheet



Provisional version

V 1.0

Bit Brick Education Technology Corporation

October 29, 2024

1. introduction

SSOM-K1 is an ultra-compact SoM (System on Module) with SpaceMIT K1 System on Chip(SOC).The module integrate with high speed LPDDR4X SDRAM, eMMC, NOR Flash, power monitoring IC (PMIC), and two Ethernet PHY.

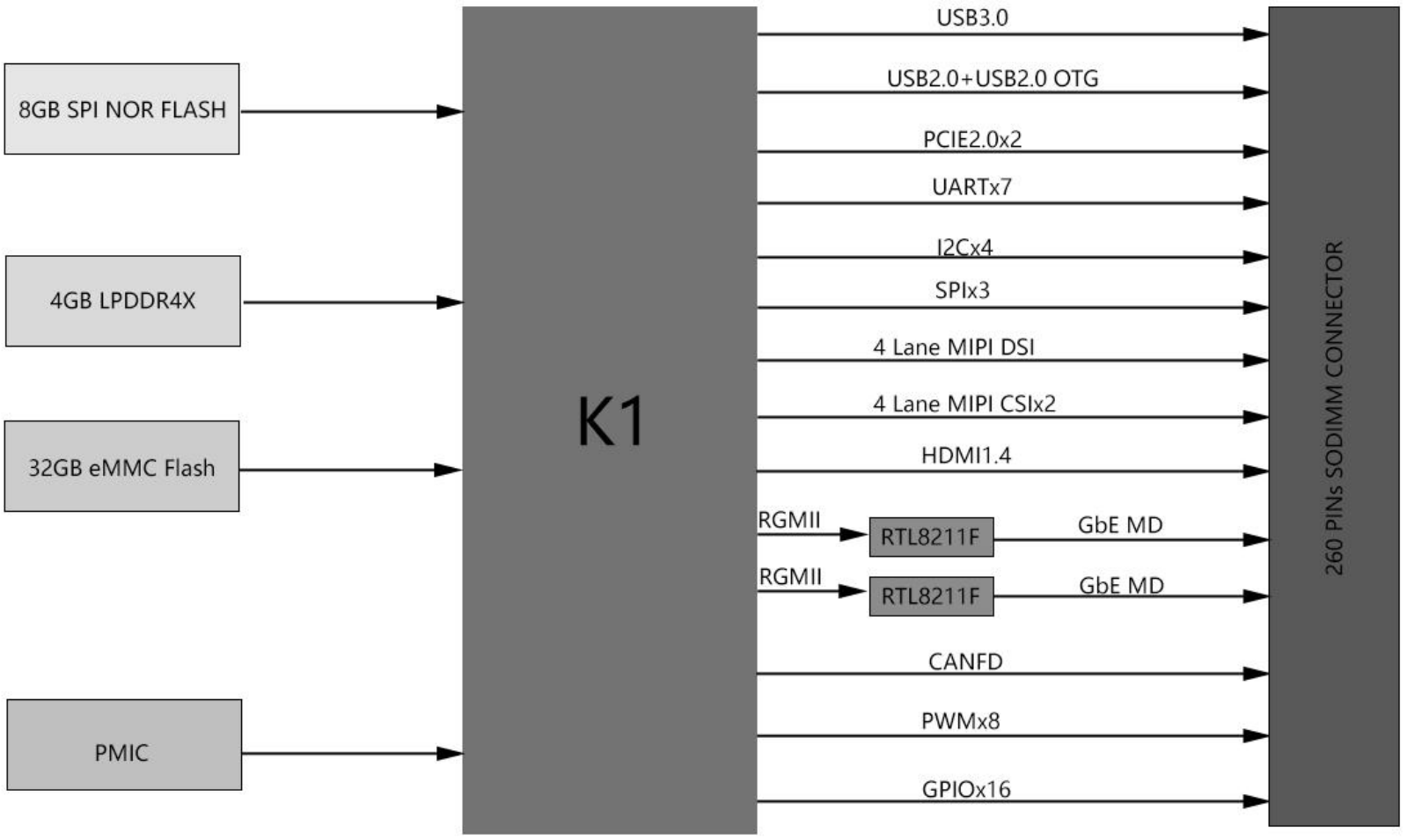
SSOM-K1 provide extensive connectivity options, including USB 2.0, USB 3.0, Gigabit Ethernet, MIPI-CSI, PCI Express, as well as HDMI and a 4-lane MIPI-DSI Display interface. These remarkable features position the SOM as an exceptional choice for a wide variety of embedded applications.

Since most of the SoC signals can be connected through the SODIMM connector, most of the SoC functions are available.

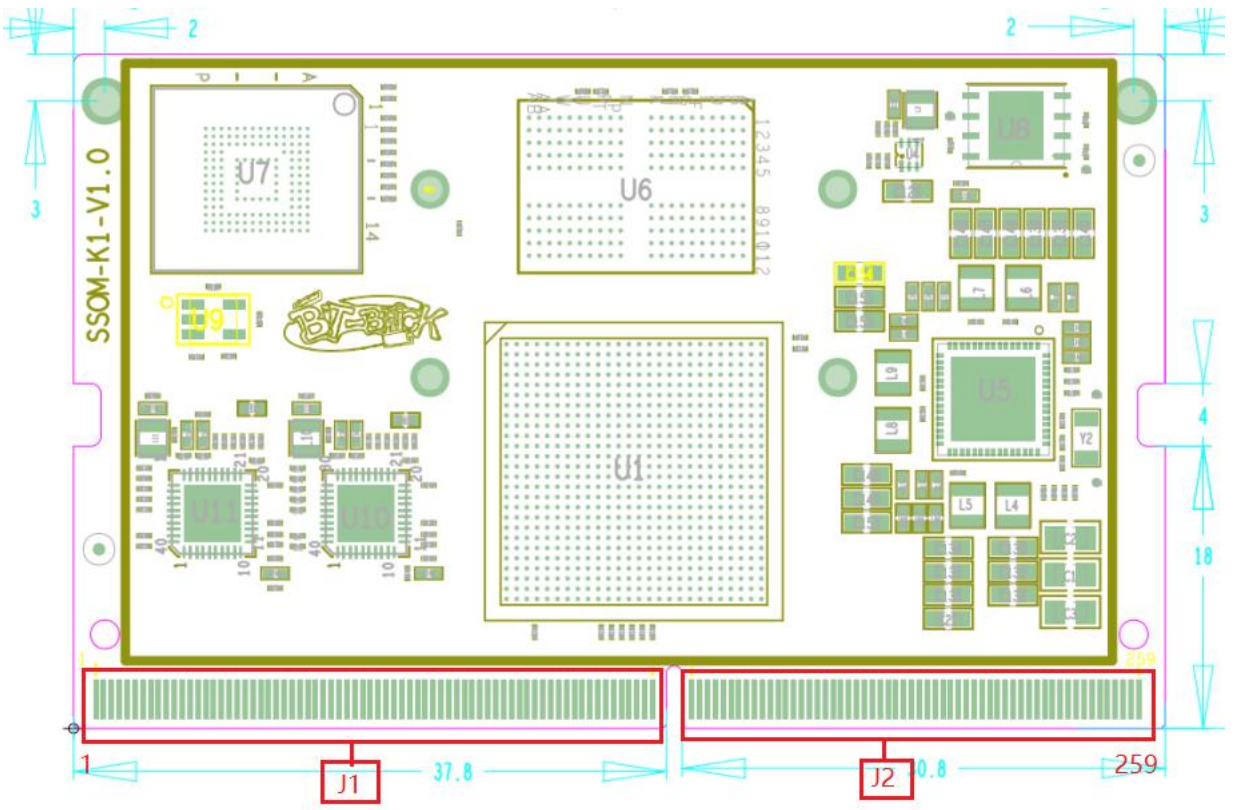
2. Specifications

Form factor	Specification	
Processor	CPU	RISC-V SpacemiT® X60™ Dual-Cluster Octa-core processors, adhere to the RISC-V 64GCVB architecture and RVA22 standard
	GPU	IMG BXE-2-32@819MHz, 32KB SLC, support OpenCL3.0/OpenGL ES 3.2/Vulkan1.3
Memory	RAM	LPDDR4X SDRAM (2GB / 4GB/8GB available)
	Flash	eMMC flash ,maximum size up to 64GB
Graphic	Graph engine	IMG BXE-2-32@819MHz, 32KB SLC, support OpenCL3.0/OpenGL ES 3.2/Vulkan1.3
	H/W Video Codec	
	HDMI	HDMI1.4 support 1920*1080@60fps
	LCD interface	1xMIPI 4lanes
Ethernet	Chipset	RTL8211F
	Speed	1000Mbit/s
IO	PCIE	2xPCIE 2.0 2 lanes
	USB	1xUSB3.0,1xUSB2.0,1xUSB2.0 OTG
	Audio	2xI2S
	SDIO	2xSDIO
	UART	7
	I2C	4
	SPI	3
	CAN	1
	Camera interface	2xMIPI DSI 4 lanes
	PWM	10
	GPIO	16
Power supply	Power Supply Voltage	Fixed 5V DC source
	Power Consumption	2W typical
Environment	Operating Temperature	-40 ~ 85 °C
	Operating Humidity	95% relative humidity, non-condensing
Mechanical	Dimensions (W x D)	82 x 50 mm
Operation System		Bianbu OS/Linux/Open harmony
Certifications		CE/FCC Class B

3. Block Diagram



4. Pin definations



J1

Top		Bottom	
Pin Number	Pin Defination	Pin Number	Pin Defination
1	**GND**	2	GND
3	PHY1_LED1/CFG_LDO0	4	CSI1_DP0
5	PHY1_LED2/CFG_LDO1	6	CSI1_DN0
7	GND	8	GND
9	PHY1_MDI0+	10	CSI1_CKP
11	PHY1_MDI0-	12	CSI1_CKN
13	GND	14	GND
15	PHY1_MDI1+	16	CSI1_DP1
17	PHY1_MDI1-	18	CSI1_DN1

19	GND	20	GND
21	PHY1_MDI2+	22	CSI1_DP2
23	PHY1_MDI2-	24	CSI1_DN2
25	GND	26	GND
27	PHY1_MDI3+	28	CSI1_DP3
29	PHY1_MDI3-	30	CSI1_DN3
31	GND	32	GND
33	PHY0_LED1/CFG_LDO0	34	CSI3_DP0
35	PHY0_LED2/CFG_LDO1	36	CSI3_DN0
37	GND	38	GND
39	PHY0_MDI0+	40	CSI3_CKP
41	PHY0_MDI0-	42	CSI3_CKN
43	GND	44	GND
45	PHY0_MDI1+	46	CSI3_DP1
47	PHY0_MDI1-	48	CSI3_DN1
49	GND	50	GND
51	PHY0_MDI2+	52	CSI3_DP2
53	PHY0_MDI2-	54	CSI3_DN2
55	GND	56	GND
57	PHY0_MDI3+	58	CSI3_DP3
59	PHY0_MDI3-	60	CSI3_DN3
61	GND	62	GND
63	GMAC0_REF0_CLK_25M	64	CSI2_CKP
65	GMAC1_REF0_CLK_25M	66	CSI2_CKN
67	GND	68	GND
69	USB3_TXP	70	CSI1_PWDN
71	USB3_TXN	72	CSI1_RST
73	GND	74	GND
75	USB1_DP	76	CSI_I2C0_SCL
77	USB1_DN	78	CSI_I2C0_SDA
79	GND	80	GND
81	USB0_DP	82	CSI3_RST
83	USB0_DN	84	CSI3_PWDN
85	GND	86	GND
87	USB2_DP	88	CSI_MCLK
89	USB2_DN	90	USB2_PWREN
91	GND	92	GND
93	USB3_RXP	94	USB3_PWREN
95	USB3_RXN	96	LCD_BL_PWM_1V8
97	GND	98	GND
99	MIPI_DSI1_D3N	100	AP_I2C6_SCL
101	MIPI_DSI1_D3P	102	AP_I2C6_SDA
103	GND	104	GND
105	MIPI_DSI1_D2N	106	GPIO_74
107	MIPI_DSI1_D2P	108	UART5_CTS
109	GND	110	UART5_RTS
111	MIPI_DSI1_CLKN	112	UART5_TXD
113	MIPI_DSI1_CLKP	114	UART5_RXD
115	GND	116	PCIEB_CLKREQN
117	MIPI_DSI1_D1N	118	PCIEC_PERSTN
119	MIPI_DSI1_D1P	120	PCIEB_PERSTN
121	GND	122	PCIEB_WAKEN
123	MIPI_DSI1_D0N	124	GPIO_92
125	MIPI_DSI1_D0P	126	JTAG_SEL
127	GND	128	GND
129	HDMI_TXCN	130	GPIO_90
131	HDMI_TXCP	132	GPIO_91
133	GND	134	GND
135	HDMI_TX0N	136	HDMI_CEC
137	HDMI_TX0P	138	HDMI_HPD
139	GND	140	LCD_BL_EN_1V8
141	HDMI_TX1N	142	LCD_PWR_EN_1V8
143	HDMI_TX1P	144	LCD_RST_1V8

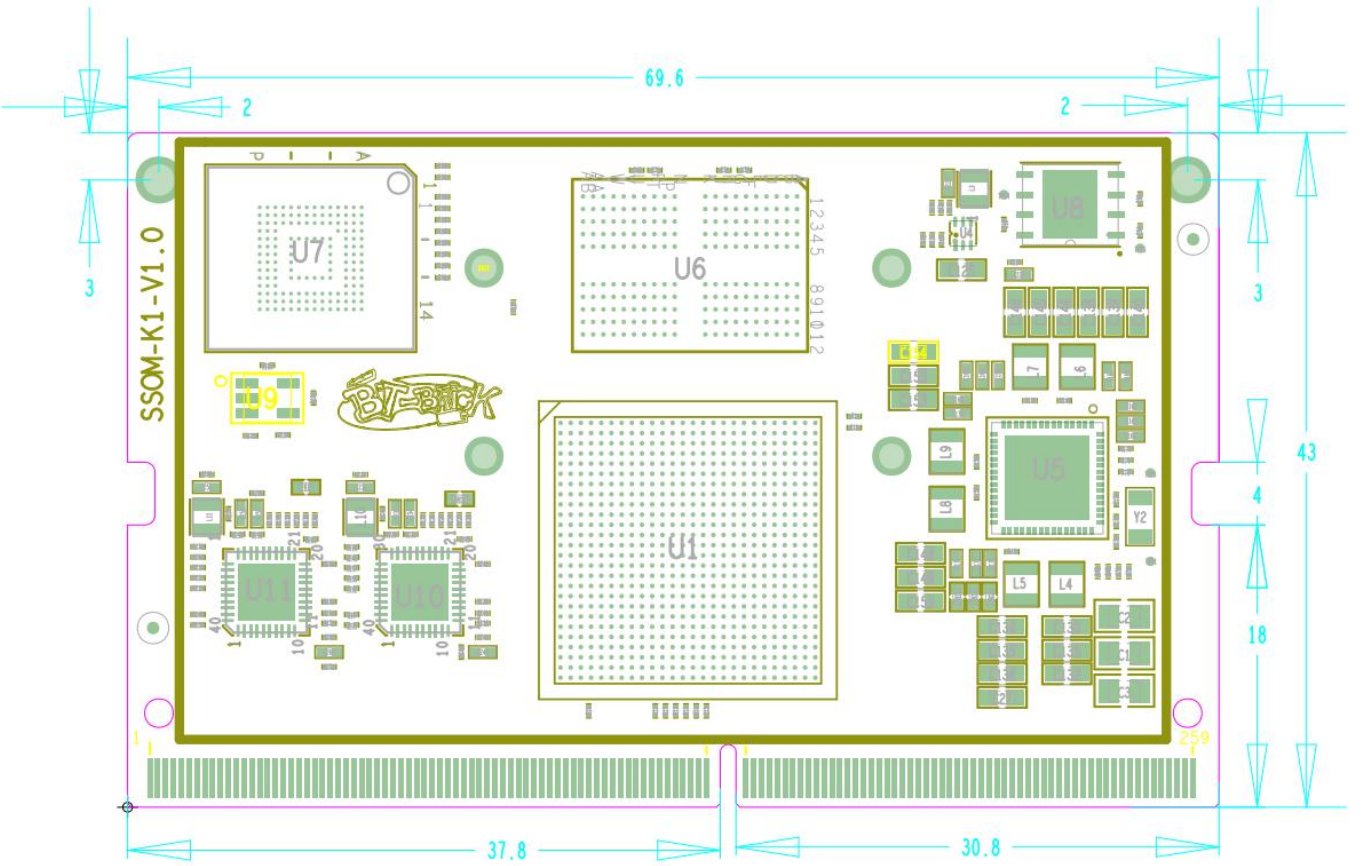
J2

Top		Bottom	
Pin Number	Pin Defination	Pin Number	Pin Defination
145	GND	146	GND
147	HDMI_TX2N	148	SD0_DATA1
149	HDMI_TX2P	150	SD0_CLK
151	GND	152	SD0_DATA3
153	PCIEB_RX1N	154	SD0_CD_3V3
155	PCIEB_RX1P	156	SD0_DATA2
157	GND	158	SD0_CMD
159	PCIEB_REFCLK_N	160	SD0_DATA0
161	PCIEB_REFCLK_P	162	HDMI_SCL
163	GND	164	HDMI_SDA
165	PCIEB_RX0N	166	CAN_RX0
167	PCIEB_RX0P	168	CAN_TX0
169	GND	170	AP_I2C4_SCL_3V3
171	PCIEB_TX1N	172	AP_I2C4_SDA_3V3
173	PCIEB_TX1P	174	AP_I2C3_SCL_3V3
175	GND	176	AP_I2C3_SDA_3V3
177	PCIEB_TX0N	178	GND
179	PCIEB_TX0P	180	MIPI_LCD_ADC_1V8
181	GND	182	GND
183	PCIEC_RX1N	184	GPIO_96
185	PCIEC_RX1P	186	GPIO_47
187	GND	188	GPIO_48
189	PCIEC_RX0N	190	GND
191	PCIEC_RX0P	192	AP_I2C2_SCL
193	GND	194	AP_I2C2_SDA
195	PCIEC_TX1N	196	R_I2C0_SCL_3V3
197	PCIEC_TX1P	198	R_I2C0_SDA_3V3
199	GND	200	GND
201	PCIEC_REFCLK_N	202	TP_INT_1V8
203	PCIEC_REFCLK_P	204	TP_RST_1V8
205	GND	206	GND
207	PCIEC_TX0N	208	UART0_RXD
209	PCIEC_TX0P	210	UART0_TXD
211	GND	212	UART2_CTS
213	PCIEC_WAKEN	214	UART2_RTS
215	GND	216	UART2_RXD
217	PCIEC_CLKREQN	218	UART2_TXD
219	GND	220	I2S1_SCLK
221	GND	222	I2S1_LRCK
223	SDIO2_DATA0	224	I2S1_RXD
225	SDIO2_DATA1	226	I2S1_TXD
227	SDIO2_DATA2	228	I2S0_TXD
229	SDIO2_DATA3	230	I2S0_SCLK
231	SDIO2_CMD	232	I2S0_LRCK
233	SDIO2_CLK	234	I2S0_SYSCLK
235	GND	236	I2S0_RXD
237	WL_DIS_N_GPIO116	238	CODEC_IRQ
239	WL_REG_ON_GPIO67	240	PA_SHUTDOWN
241	AP_WAKE_BT	242	QSPI_DATA3
243	BT_RESETN	244	QSPI_DATA2
245	WL_WAKE_AP	246	QSPI_DATA1
247	BT_WAKE_AP	248	QSPI_DATA0
249	SLEEP_OUT	250	SW_PWRON
251	RESET_IN_N	252	SW_RST
253	VCC5V0_SYS	254	VCC5V0_SYS
255	VCC5V0_SYS	256	VCC5V0_SYS
257	VCC5V0_SYS	258	VCC5V0_SYS
259	VCC5V0_SYS	260	VCC_BAT

5. mechanical specification

Board

Board Dimensions
69.6mm X 43mm X 7mm



6. Ordering Information

Part No.	CPU	Memory	Flash	Operating Temperature
SSOM-K1-4320	K1	4GB	32GB	-40~85°C
SSOM-K1-2160	K1	4GB	16GB	-40~85°C

7. Update history

Version revision	Update date	content
Provisional V 1.0	2024-10-30	Initial the first version