

Bill of Materials

Project: Ultra96 SBC V2
 Project Name: PRJ-US1SBC
 PCB Revision: 1
 Temp-Grade: C-Grade (01)
 BOM Version: 04



Report Date: 11/5/2019 3:54 PM

#	Quantity	Designator	Description	Manufacturer 1	Manufacturer Part Number 1	Fitted	Notes
1	2	C1, C2	CAP CER 27PF 25V 5% NP0 0201	Kyocera AVX	02013A270JAT2A	Fitted	
2	114	C3, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C25, C27, C59, C62, C64, C65, C66, C67, C68, C69, C70, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C95, C97, C103, C105, C108, C109, C111, C114, C117, C120, C123, C128, C137, C139, C145, C146, C149, C151, C153, C158, C160, C173, C174, C175, C176, C178, C179, C181, C182, C183, C185, C187, C188, C189, C190, C192, C193, C194, C195, C199, C200, C201, C202, C203, C204, C206, C207, C208, C209, C210, C212, C213, C214, C215, C216, C217, C218, C224, C230, C236, C240, C244, C248, C249, C250, C251, C252, C253, C254, C255, C256, C257, C258	CAP CER 0.1UF 25V 10% X5R 0201	Samsung	CL03A104KA3NNNC	Fitted	
3	12	C4, C86, C87, C88, C90, C124, C126, C130, C133, C219, C221, C227	CAP CER 1UF 16V 20% X5R 0201	Samsung	CL03A105MO3NRNH	Fitted	
4	6	C5, C47, C94, C136, C161, C226	CAP CER 10UF 25V 20% X5R 0603	TDK	C1608X5R1E106M080AC	Fitted	
5	16	C24, C99, C100, C101, C102, C107, C113, C135, C141, C142, C143, C144, C148, C157, C180, C239	CAP CER 2.2UF 10V 10% X5R 0201	Samsung	CL03A225MP3CRNC	Fitted	
6	0	C26, C71, C74, C122, C159, C184, C205	CAP CER 0.1UF 25V 10% X5R 0201	Samsung	CL03A104KA3NNNC	Not Fitted	
7	23	C28, C30, C32, C33, C34, C35, C36, C37, C38, C39, C40, C43, C44, C45, C46, C48, C58, C61, C63, C162, C168, C223, C229	CAP CER 0.47UF 6.3V 10% X5R 0201	Samsung	CL03A474KQ3NNNC	Fitted	
8	1	C29	CAP CER 33PF 25V 5% NP0 0201	Kyocera AVX	02013A330JAT2A	Fitted	
9	8	C31, C42, C49, C57, C60, C163, C222, C228	CAP CER 4.7UF 10V 10% X5R 0402	TDK	C1005X5R1A475K050BC	Fitted	
10	14	C41, C51, C52, C53, C165, C166, C167, C170, C171, C172, C186, C191, C197, C198	CAP CER 1000PF 25V 10% X7R 0201	Samsung	CL03B102KA3NNNC	Fitted	
11	3	C50, C164, C169	CAP CER 0.047UF 10V 10% X5R 0201	Taiyo Yuden	LMK063BJ473KP-F	Fitted	
12	7	C54, C55, C56, C118, C119, C155, C156	CAP CER 10000PF 6.3V 10% X5R 0201	Kyocera AVX	02016D103JAT2A	Fitted	

13	0	C72, C73	CAP CER 10UF 25V 20% X5R 0603	TDK	C1608X5R1E106M080AC	Not Fitted	
14	7	C89, C116, C125, C154, C241, C242, C243	CAP CER 47UF 10V 20% X5R 0805	TDK	C2012X5R1A476M125AC	Fitted	
15	13	C91, C92, C93, C98, C106, C112, C121, C129, C131, C132, C134, C140, C150	CAP CER 22UF 10V 20% X5R 0603	TDK	C1608X5R1A226M080AC	Fitted	
16	6	C96, C104, C110, C127, C138, C147	CAP CER 100UF 6.3V 20% X5R 1210	KEMET	C1210C107M9PACTU	Fitted	
17	2	C115, C152	CAP CER 220UF 6.3V 20% X5R 1210	Murata	GRM32ER60J227ME05K	Fitted	
18	1	C177	CAP CER 5.6UF 10V 10% X7R 1206	KEMET	C1206C565K4RACTU	Fitted	
19	2	C196, C211	CAP TANT 150UF 10V 20% 1210	Kyocera AVX	TLJB157M010R0500	Fitted	
20	1	C220	CAP CER 1UF 25V 10% X5R 0402	Murata	GRM155R61E105KA12D	Fitted	
21	1	C225	CAP CER 0.1UF 25V 10% X7R 0402	Kyocera AVX	04023C104KAT2A	Fitted	
22	1	C231	CAP CER 2200PF 10V 10% X5R 0201	Kyocera AVX	0201ZC222KAT2A	Fitted	
23	4	C232, C233, C234, C235	CAP CER 33UF 25V 20% X5R 1206	TDK	C3216X5R1E336M160AC	Fitted	
24	1	C237	CAP CER 4700PF 50V 5% X7R 0402	KEMET	C0402C472K5RACTU	Fitted	
25	1	C238	CAP CER 56PF 25V 10% NP0 0402	KEMET	C0402C560J5GACTU	Fitted	
26	0	C245, C246	CAP CER 0.1UF 25V 10% X7R 0402	Kyocera AVX	04023C104KAT2A	Not Fitted	
27	0	C247	CAP CER 10000PF 16V 10% X7R 0402	Kyocera AVX	0402YC103KAT2A	Not Fitted	
28	0	C259	CAP CER 1000PF 50V 10% X7R 0402	KEMET	C0402C102K5RACTU	Not Fitted	
29	2	D1, D10	LED CHIPLED BLUE 470NM 0603 SMD	Osram Opto	LB Q39G-L200-35-1	Fitted	
30	6	D2, D3, D4, D6, D7, D17	LED SMARTLED 570NM GREEN 0603	Osram Opto	LG Q396-PS-35	Fitted	
31	1	D5	LED CHIPLED 633NM RED 0603 SMD	Rohm	SML-D14VWT86A	Fitted	
32	1	D8	DIODE GEN PURP 100V 200MA SOD123	ON Semiconductor	MMSD4148T3G	Fitted	
33	1	D9	LED YELLOW CHIP TOP EMIT	Osram Opto	LY Q971-H1K1-36	Fitted	
34	0	D11	DIODE SCHOTTKY 40V 2A SMB	ON Semiconductor	MBRS240LT3G	Not Fitted	
35	0	D12	LED SMARTLED 570NM GREEN 0603	Osram Opto	LG Q396-PS-35	Not Fitted	
36	1	D13	TVS DIODE 5.5V 9.5V 10DFN2510	Nexperia	IP4283CZ10-TBR,115	Fitted	
37	1	D14	TVS DIODE 5.5V 6TSOP	Nexperia	IP4220CZ6,125	Fitted	
38	1	D15	DIODE SCHOTTKY 30V 2A MICROSMP	Vishay	MSS2P3-M3/89A	Fitted	
39	1	D16	TVS DIODE 5.5V 4.6V 10DFN2510	Nexperia	PUSB3F96X	Fitted	
40	2	D18, D19	CSP SCHOTTKY BARRIER DIODE	Panasonic	DB2F43100L1	Fitted	
41	0	D20	CSP SCHOTTKY BARRIER DIODE	Panasonic	DB2F43100L1	Not Fitted	
42	1	ESD1	ESD Bag	3M	TBD	Fitted	
43	5	FB1, FB2, FB3, FB4, FB5	FERRITE BEAD 220 OHM 2.5A 0603	Murata	BLM18SG221TN1D	Fitted	
44	2	FB6, FB7	FERRITE BEAD 220 OHM 0603 1LN	TDK	MPZ1608S221ATA00	Fitted	
45	1	FL1	FILTER LC(T) 2200PF SMD	Murata	NFE31PT222Z1E9L	Fitted	
46	1	J1	CONN HEADER 4POS 2MM RA SMD	Samtec	MMT-104-01-T-SH-LC	Fitted	
47	1	J2	MICRO SD PUSH PUSH LOW PROFILE T	TE Connectivity	2201778-1	Fitted	
48	1	J3	CONN HEADER 8POS 2MM RA SMD	Samtec	MMT-108-01-T-SH-LC	Fitted	
49	1	J4	CONN RCPT 60POS .8MM VERT DUAL SMD	TE Connectivity	5177983-2	Fitted	
50	1	J5	CONN RECEPT 40POS 2MM STR DL SMD	Amphenol FCI	55510-140LF	Fitted	
51	1	J6	MINI DISPLAYPORT REVERSE OFFSET	TE Connectivity	2129320-3	Fitted	
52	1	J7	CONN RCPT MICRO USB 3.0 AB R/A SMD 10 POS	Kycon	KMMX-AB10-SMT1SB30TR	Fitted	
53	2	J8, J9	CONN RCPT USB 3.0 TYPE A R/A 9PS, HORIZONTAL	Amphenol Commercial	GSB311131HR	Fitted	
54	1	J10	CONN PWR JACK 1.70X4.75MM SOLDER	CUI	PJ1-021-SMT-TR	Fitted	
55	0	JP1	CONN HEADR BRKWAY .100 2POS STR, SINGLE ROW	Samtec	TSW-102-23-L-S	Not Fitted	
56	2	JT1, JT5	RES 0.0 OHM 1/16W JUMP 0402 SMD-3 PAD JUMPER (1-2)	Yageo	RC0402JR-070RL	Fitted	Position 1-2
57	7	JT2, JT3, JT4, JT6, JT7, JT8, JT9	RES 10K OHM 1/20W 1% 0201 SMD-3 PAD JUMPER (1-2)	Panasonic	ERJ-1GNF1002C	Fitted	Position 1-2
58	5	L1, L3, L5, L6, L7	FIXED IND 2.2uH 2.1A 102 mOHM	Bourns	SRP2512-2R2M	Fitted	
59	1	L2	FIXED IND 1uH 3.4A 49 mOHM SMD	Bourns	SRP2512-1R0M	Fitted	
60	2	L4, L8	FIXED IND 1UH 11A 11.7MOHM SMD	Bourns	SRP4020FA-1R0M	Fitted	
61	1	L9	FIXED IND 1.2UH 15A 9.7 MOHM SMD	Bourns	SRP5030CA-1R2M	Fitted	
62	1	Label1	Label, Product	AES	PBA-US1SBC V2-1-01-04	Fitted	
63	1	Label2	Label, Serial Number	AES	TBD	Fitted	
64	1	Label_ESD1	Label, ESD	AES	TBD	Fitted	
65	1	MECH1	Ultra96 V2 Passive Heatsink Assembly	AES	AES-ACC-U96-PHS1	Fitted	
66	1	PCB1	BARE PCB Part Number	AES	PWB-US1SBC-1	Fitted	
67	5	Q1, Q2, Q12, Q13, Q14	MOSFET N-CH 50V 200MA SOT23-3	Infineon Technologies	BSS138NH6327XTSA2	Fitted	
68	4	Q3, Q4, Q5, Q6	MOSFET 2N-CH 20V 0.6A SC89	ON Semiconductor	FDY3000NZ	Fitted	
69	1	Q9	MOSFET N-CH 20V 2A SOT 23-3	ON Semiconductor	FDN327N	Fitted	
70	6	R1, R2, R3, R4, R5, R6	RES 30.1 OHM 0201 1% 1/20W	Vishay	CRCW020130R1FNED	Fitted	

71	16	R7, R15, R16, R21, R43, R44, R46, R47, R48, R49, R50, R54, R57, R58, R147, R150	RES 4.75K OHM 0201 1% 1/20W	Vishay	CRCW02014K75FKED	Fitted
72	21	R8, R9, R11, R12, R24, R30, R31, R55, R89, R94, R102, R121, R123, R124, R140, R141, R151, R165, R166, R168, R169	RES 10.0K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF1002C	Fitted
73	0	R10, R14, R25, R64, R65, R112, R130, R190	RES 0.0 OHM JUMP 0201 1/20W	Panasonic	ERJ-1GN0R00C	Not Fitted
74	1	R13	RES 4.7M OHM 0201 1% 1/20W	Yageo	RC0201FR-074M7L	Fitted
75	3	R17, R104, R106	RES 1M OHM 0201 1% 1/20W	Yageo	RC0201FR-071ML	Fitted
76	7	R18, R19, R29, R69, R74, R149, R173	RES 0.0 OHM JUMP 0402 1/16W	Yageo	RC0402JR-070RL	Fitted
77	5	R20, R23, R35, R146, R148	RES 240 OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF2400C	Fitted
78	1	R22	RES 500 OHM 0402 0.1% 1/20W	Vishay	PNM0402E5000BST1	Fitted
79	1	R26	RES 40.2 OHM 0201 1% 1/20W	Vishay	CRCW020140R2FNED	Fitted
80	2	R27, R28	RES 24.9 OHM 0201 1% 1/20W	Vishay	CRCW020124R9FNED	Fitted
81	2	R32, R153	RES 8.06K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF8061C	Fitted
82	0	R33, R154, R160, R161, R164	RES 0.0 OHM JUMP 0402 1/16W	Yageo	RC0402JR-070RL	Not Fitted
83	0	R34, R117, R118, R155, R158	RES 4.75K OHM 0201 1% 1/20W	Vishay	CRCW02014K75FKED	Not Fitted
84	8	R36, R66, R127, R144, R156, R172, R178, R193	RES 1.00K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF1001C	Fitted
85	0	R37	RES 100K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF1003C	Not Fitted
86	0	R38, R39, R113, R131	RES 49.9K OHM 0201 1% 1/20W	Vishay	CRCW020149K9FNED	Not Fitted
87	2	R40, R41	RES 20.5K OHM 0201 1% 1/20W	Vishay	CRCW020120K5FKED	Fitted
88	9	R42, R45, R52, R53, R56, R59, R60, R67, R68	RES 261 OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF2610C	Fitted
89	1	R51	RES 20 OHM 0201 1% 1/20W	Vishay	CRCW020120R0FNED	Fitted
90	5	R61, R62, R183, R187, R195	RES 499 OHM 0201 1% 1/20W	Vishay	CRCW0201499RFKED	Fitted
91	18	R63, R71, R75, R110, R114, R115, R120, R128, R132, R135, R138, R145, R152, R174, R181, R185, R188, R191	RES 0.0 OHM JUMP 0201 1/20W	Panasonic	ERJ-1GN0R00C	Fitted
92	5	R70, R101, R108, R109, R180	RES 100K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF1003C	Fitted
93	11	R72, R73, R84, R85, R86, R87, R90, R91, R92, R192, R194	RES 4.99K OHM 0201 1% 1/20W	Vishay	CRCW02014K99FNED	Fitted
94	11	R76, R77, R78, R79, R80, R81, R82, R83, R88, R93, R196	RES 2.21K OHM 0201 1% 1/20W	Vishay	CRCW02012K21FNED	Fitted
95	0	R95	RES 1.00K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF1001C	Not Fitted
96	0	R96	RES 18.2K OHM 0201 1% 1/20W	Samsung	RC0603F1822CS	Not Fitted
97	0	R97	RES 240 OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF2400C	Not Fitted
98	0	R98	RES 4.02K OHM 0201 1% 1/20W	Vishay	CRCW02014K02FKED	Not Fitted
99	1	R99	RES 2.49K OHM 0201 1% 1/20W	Vishay	CRCW02012K49FKED	Fitted
100	1	R100	RES 1.5K OHM 0201 1% 1/20W	Yageo	RC0201FR-071K5L	Fitted
101	2	R103, R105	RES 49.9 OHM 0201 1% 1/20W	Vishay	CRCW020149R9FKED	Fitted
102	2	R107, R177	RES 10 OHM 0201 1% 1/20W	Vishay	CRCW020110R0FNED	Fitted
103	2	R111, R129	RES 2 OHM 0201 1% 1/20W	Vishay	CRCW02012R00FXED	Fitted
104	2	R116, R136	RES 49.9K OHM 0201 1% 1/20W	Vishay	CRCW020149K9FNED	Fitted
105	3	R119, R137, R182	RES 22.1 OHM 0201 1% 1/20W	Panasonic	ERJ-1GEF22R1C	Fitted
106	2	R122, R125	RES 2.32K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF2321C	Fitted
107	1	R126	RES 5.62K OHM 0201 1% 1/20W	Vishay	CRCW02015K62FNED	Fitted
108	2	R133, R134	RES 249 OHM 0201 1% 1/20W	Vishay	CRCW0201249RFKED	Fitted
109	2	R139, R142	RES 2.87K OHM 0201 1% 1/20W	Vishay	CRCW02012K87FKED	Fitted
110	1	R143	RES 1.4K OHM 0201 1% 1/20W	Vishay	CRCW02011K40FKED	Fitted
111	1	R157	RES 12.0K OHM 0402 1% 1/16W	Vishay	CRCW040212K0FKED	Fitted
112	2	R159, R162	RES 200K OHM 0201 1% 1/20W	Vishay	CRCW0201200KFNED	Fitted
113	2	R163, R167	RES 330 OHM 0402 1% 1/16W	Panasonic	ERJ-2RKF3300X	Fitted
114	2	R170, R171	RES 191 OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF1910C	Fitted
115	1	R175	RES 4.02K OHM 0201 1% 1/20W	Vishay	CRCW02014K02FKED	Fitted
116	1	R176	RES 127 OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF1270C	Fitted
117	1	R179	RES 3.74K OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF3741C	Fitted
118	2	R184, R186	RES 1.47K OHM 0201 1% 1/20W	Vishay	CRCW02011K47FKED	Fitted
119	1	R189	RES 3.24K OHM 0201 1% 1/20W	Yageo	RC0201FR-073K24L	Fitted

120	1	R197	RES 825 OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF8250C	Fitted	
121	1	R198	RES 392 OHM 0201 1% 1/20W	Panasonic	ERJ-1GNF3920C	Fitted	
122	3	SW1, SW2, SW4	SWITCH TACTILE SPST-NO 0.05A 16V	ITT C&K	PTS810SJG250SMTRLFS	Fitted	-
123	1	SW3	SWITCH SLIDE DIP SPST 25MA 24V	CTS	218-2LPSTRF	Fitted	
124	1	U1	IC MPSoC ZYNQ ULTRASCALE+ 3EG 625BGA, EXTENDED TEMP, -1 SPEED GRADE, SBVA484	Xilinx	XCZU3EG-1SBVA484E	Fitted	
125	1	U2	RF TXRX MOD BLUETOOTH/WIFI CHIP	Microchip	ATWILC3000-MR110CA	Fitted	
126	1	U3	IC SDIO PORT EXPANDER 24WQFN	Texas Instruments	TXS02612RTWR	Fitted	
127	2	U4, U14	MULTI-FREQ USB 2.0 ULPI PHY	Microchip	USB3320C-EZK	Fitted	
128	1	U5	VERSACLOCK 6E W/ INTEGRATED CRYST	IDT	5P49V6975A114LTGI	Fitted	Based on IDT's VersaClock® 6E 5P49V6975
129	1	U6	On/Off Controller	Dialog Semiconductor	SLG4G42480V	Fitted	Based on Dialog GreenPAK SLG46170
130	1	U7	IC I2C SW 8CH W/RESET 24VQFN	Texas Instruments	TCA9548ARGER	Fitted	
131	0	U8	IC REG LDO ADJ 0.5A 8TDFN	MAXIM INTEGRATED	MAX8902BATA/V+T	Not Fitted	
132	1	U9	IC DRVR/RCVR3.3V LVDS HS 14TSSOP	ON Semiconductor	FIN1019MTCX	Fitted	
133	1	U10	IC TRNSLTR BIDIRECTIONAL 16UQFN	Texas Instruments	SN74AVC4T245DR	Fitted	
134	2	U11, U12	IC REG BUCK SYNC, 5 OUTPUTS	Infineon Technologies	AVT-IRPS5401MTRPBF/BKN-462223-P M	Fitted	Based on Infineon IRPS5401MTRPBF
135	1	U13	IC SDRAM LPDDR4 16GBIT 512MX32 F	Micron Technology	MT53D512M32D2DS-053AIT:D	Fitted	
136	1	U15	IC GATE AND 1CH 2-INP SOT-23-5	Texas Instruments	SN74LVC1G08DBVT	Fitted	
137	1	U16	IC HUB CTRLR USB 56VQFN, INDUSTRIAL	Microchip	USB5744-I/2G	Fitted	
138	2	U17, U18	IC SW DISTRIBUTION HI SIDE, ADJ 6-MLF	Microchip	MIC2009YMLTR	Fitted	
139	1	U19	IC REG LINEAR 3.3V 80MA 6WDFN	ON Semiconductor	NCP716MT33TBG	Fitted	
140	1	U20	IC REG LINEAR 0.85V 500MA 4XDFN4 (1.2x1.2)	ON Semiconductor	NCP134AMX085TCG	Fitted	
141	1	U21	Buck Regulator, 6A, 1.5V-21V Vin	Infineon Technologies	AVT-IR38060MTRPBF/BKN-459794-UP MR	Fitted	Based on Infineon IR38060MTRPBF
142	1	U22	IC REG LINEAR 1.8V 500MA 4XDFN	ON Semiconductor	NCP177AMX180TCG	Fitted	
143	1	U23	IC COMPARATOR SINGLE DFN6	STMicroelectronics	TS331IQT	Fitted	
144	1	U24	IC VREF SHUNT ADJ SOT23-3	STMicroelectronics	TLVH431BIL3T	Fitted	
145	1	X1	CRYSTAL 32.768kHz 12.5PF SMD	Abracon	ABS07AIG-32.768KHZ-1-T	Fitted	
146	1	Y1	OSC MEMS 32.7680KHZ CMOS SMD	Microchip	DSC6083CI2A-032K768	Fitted	
147	0	Y2, Y3	OSCILLATOR MEMS 24MHZ LVCMOS SMD	Microchip	DSC6101M2A-024.0000T	Not Fitted	
148	0	Y4	OSC MEMS 25.000MHZ CMOS SMD	Microchip	DSC6101HI2A-025.0000T	Not Fitted	
149	1	SD1	16 GB microSD card, Utility family, -25 to 85C	Delkin	S416APG49-U3000-3	Fitted	

Approved	Notes



Date	Revision	Designator	Description
28-Feb-2019	1.00		Initial Release
5-Nov-2019	1.04 Please see PCN19003	Label1	Added a new label that includes more product revision information
		MECH1	Bracket/fan assembly replaced with a better-performing, passive, Aavid/Boyd Heatsink
		U11, U12	Programming for IRPS5401 Pmics updated to August 2019 files
		U20	Regulator changed from 0.90V output to 0.85V
		U21	Programming for IR38060MTRPBF Pmic updated to August 2019 file