

## Appendix B. Bill of Materials

Item	Reference	Qty	Part	PCB Footprint	PART_NUMBER	Manufacturer	DESCRIPTION
1	C1,C3,C67	3	4.7uF	cc0603	ECJ-1VB0J475K	Panasonic	CAP CER 4.7UF 6.3V 10% X5R 0603
2	C2,C4,C5,C6,C7, C8,C9,C11,C12, C15,C37,C38,C39, C40,C44,C49,C53, C63,C64,C66,C87, C89,C91,C93,C94	25	0.1uF	cc0402	C0402C104K4RA CTU	Kemet	CAP CER 0.1UF 16V 10% X7R 0402
3	C10,C35,C42,C47, C65	5	10uF	cc0603	LMK107BJ106M ALTD	Taiyo Yuden	CAP CER 10UF 10V 20% X5R 0603
4	C36,C43	2	1uF	cc0402	C0402C105K9PA CTU	Kemet	CAP CER 1UF 6.3V 10% X5R 0402
5	C41,C45,C46,C48	4	0.01uF	cc0402	C0402C103J4RA CTU	Kemet	CAP CER 10000PF 16V 5% X7R 0402
6	C72,C73,C74,C75, C76	5	0.1uF	cc0603	C0603C104K4RA CTU	Kemet	CAP CER 0.1UF 16V 10% X7R 0603
7	C84,C85	2	22uF	cc0805	LMK212BJ226M G-T	Taiyo Yuden	CAP CER 22UF 10V 20% X5R 0805
8	C88, C95, C99, C100	4	1uF	cc0402	C0402C105K4PA C7867	Kemet	CAP CER 1UF 16V 10% X5R 0402
9	C90, C92, C98, C101	4	10nF	cc0402	C0402C103J4RA CTU	Kemet	CAP CER 10000PF 16V 5% X7R 0402
10	C96	1	100nF	cc0402	C0402C104K4RA CTU	Kemet	CAP CER 0.1UF 16V 10% X7R 0402
11	C97	1	10uF	cc0402	CL05A106MP5N UNC	Samsung	CAP CER 10UF 10V X5R 0402
12	D3	1	Green	SM_D_0603	LG L29K-G2J1- 24-Z	Osram	LED SMARTLED GREEN 570NM 0603
13	D8,D9,D10,D11	4	CDBU0130R	diode_sod523f	CDBU0130R	Comchip	DIODE SCHOTTKY 30V 100MA 0603
14	D13	1	Blue	led_0603	LTST-C190TBKT	LITE-On Inc.	LED BLUE CLEAR 0603 SMD
15	FB4,FB5	2	FB_60ohm	L0603	HI0603P600R-10	Laird-signal	FERRITE CHIP POWER 60 Ω SMD
16	J1	1	SPI PGM	hdr5x2	77313-801-10LF	FCI	CONN HEADER .100 DUAL STR 10POS
17	J2,J3	2	Header2x10	hdr_samtec_mts w_2x10_100	MTSW-110-08-T- D-300	Samtec	CONN HEADER 20POS .100" TH DUAL
18	J5	1	SKT_MINIUSB_ B_RA	skt_miniusb_b_r a	5075BMR-05- SM-CR	Neltron	CONN MINI USB RCPT RA TYPE B SMD
19	J6	1	TSW-102-07-F- D	hdr_samtec_tsw _2x2_100	TSW-102-07-F-D	Samtec	CONN HEADER 4POS .100" DBL
20	J7	1	TSW-102-07-G- S	hdr_samtec_tsw _1x2_100	TSW-102-07-G-S	Samtec	CONN HEADER 2POS .100" SGL GOLD
21	J11	1	CRST	HDR1X2-40	77311-801-02LF	FCI	CONN HEADER

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							.100 SINGL STR 2POS
22	J27	1	HEADER 3X2	HDR3x2	—	—	—
23	J28	1	DONE	HDR1X2-40	77311-801-02LF	FCI	CONN HEADER .100 SINGL STR 2POS
24	J51	1	2 PIN JPR	2PIN_100MIL	—	—	—
25	J52	1	HEADER 6X2_0	HDR_6X2	—	—	—
26	L4,L6,L7	3	600 OHM 800MA	fb0603	BLM18HE601SN 1D	Murata	FERRITE CHIP 600 $\Omega$ 800MA 0603
27	R5,R6,R7,R8,R49, R70,R71	7	0	cr0603	RC0603JR-070RL	Yageo	RES 0.0 $\Omega$ 1/10W JUMP 0603 SMD
28	R9,R19	2	2.2K	cr0402	RC0402FR- 072K2L	Yageo	RES 2.20 K $\Omega$ 1/16W 1% 0402 SMD
29	R10	1	12K	cr0402	RC0402FR- 0712KL	Yageo	RES 12.0 K $\Omega$ 1/16W 1% 0402 SMD
30	R11,R12,R13,R25, R58,R59,R60	7	10K	cr0402	RC0402FR- 0710KL	Yageo	RES 10.0 K $\Omega$ 1/16W 1% 0402 SMD
31	R14	1	100	R0603	CRCW0603100R FKEAHP	Vishay	RES 100 $\Omega$ 0.25W 1% 0603 SMD
32	R34	1	10k	R0603	ERJ-3EKF1002V	Panasonic	RES 10 K $\Omega$ 1/10W 1% 0603 SMD
33	R35	1	2k2	R0603	ERJ-3EKF2201V	Panasonic	RES 2.2 K $\Omega$ 1/10W 1% 0603 SMD
34	R54	1	1K	cr0402	ERJ-2GEJ102X	Panasonic	RES SMD 1 K $\Omega$ 5% 1/10W 0402
35	R62,R63	2	1M	cr0402	RC0402JR- 071ML	Yageo	RES 1.0M $\Omega$ 1/16W 5% 0402 SMD
36	R64	1	357K	cr0603	ERJ-3EKF3573V	Panasonic	RES SMD 357 K $\Omega$ 1% 1/10W 0603
37	R65	1	210K	cr0402	ERJ-2RKF2103X	Panasonic	RES SMD 210 K $\Omega$ 1% 1/10W 0402
38	R66,R67	2	100	cr0603	RC0603FR- 07100RL	Yageo	RES 100 $\Omega$ 1/10W 1% 0603 SMD
39	R68,R69	2	0.1	cr0603	ERJ-3RSFR10V	Panasonic	RES .10 $\Omega$ 1/10W 1% 0603 SMD
40	R72,R78,R79,R80	4	4.7K	cr0603	CRCW06034K70 FKEA	Vishay	RES 4.70 K $\Omega$ 1/10W 1% 0603 SMD
41	R73,R74,R75,R76, R77	5	1	cr0603	RC0603FR-071RL	Yageo	RES SMD 1 $\Omega$ 1% 1/10W 0603
42	R94,R95	2	62	SM_R_0603	ERJ-3EKF62R0V	Panasonic	RES 62 $\Omega$ 1/10W 1% 0603 SMD
43	R97	1	110	SM_R_0603	ERJ-3EKF1100V	Panasonic	RES 110 $\Omega$ 1/10W 1% 0603 SMD
44	SW1	1	CRST	2psmd_eswitch	TL1015AF160QG	E-Switch	SWITCH TACTILE SPST-NO 0.05 A 12V
45	SW2	1	SW-DIP4	sw_sp_st_cts_19	195-4MST	CTS	SWITCH SIDE

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				5-4mst		Electrocomponents	ACTUATED 4 SEC 50V
46	TP1,TP2,TP3	3	TP_S_40_63	tp_s_40_63	—	—	Square test point, 40mil inner diameter, 63mil outer diameter
47	TP5,TP6,TP7,TP8, TP9,TP10,TP11,TP12,TP13,TP14	10	DNI	tp_s_40_63	—	—	Square test point, 40mil inner diameter, 63mil outer diameter
48	U1	1	iCE40UP5K/3K-SG48	iCE40UP5K_SG48	—	—	—
49	U2	1	FT2232HL	tqfp64_0p5_12p2x12p2_h1p6	FT2232HL-REEL	FTDI	IC USB HS DUAL UART/FIFO 64-LQFP
50	U3	1	93LC56-SO8	so8_50_244	93LC56CT-I/SN	Microchip	IC EEPROM 2KBIT 3MHZ 8SOIC
51	U4	1	LED TRI-COLOUR_1	6-PLCC	SFT722N-S	Seoul Semiconductor Inc.	LED RED/GRN/BLU CLEAR LENS 6PLCC
52	U5	1	N25Q032A13ESC40F	so8_50_244	N25Q032A13ESC40F	Micron	IC Flash Mem Serial-SPI 3V/3.3V 32M-Bit 4M 7ns 8-Pin SO T/R
53	U6	1	PMOD socket	HDR_2X6	—	—	—
54	U7	1	LT3030EFE#TRPBF	tssop20_26_260_thrm_pad	LT3030EFE#TRPBF	Linear	IC REG LDO ADJ 20TSSOP
55	X1	1	12.0000MHZ	2_5mmx2mm	SiT1602AC-12-33E-12.000	SiTime	OSC MEMS 12MHZ H/LV-CMOS SMD
57	iCE40 ULTRAPLUS BREAKOUT BOARD PCB	1	—	—	305-PD-16-0084	PACTRON	—