



Index	Quantity	Reference	Description	Value / Generic Part Number	Voltage	Power/Current	Tolerance	Package	Manufacturer	Manufacturer's ordering code / Orderable Part Number	Additional Notes
1	1	CN5	Sil socket straight 10 pos, 2.54 mm	STRIP-P2_54-10P-FEMALE				SIL-SOCKET10PIN-P254	WURTH ELEKTRONIK	61301011821 or SSQ-110-21-F-S	
2	2	CN6,CN9	Sil socket straight 8 pos, 2.54 mm	STRIP-P2_54-8P-FEMALE				SIL-SOCKET8PIN-P254	WURTH ELEKTRONIK	61300811821 or SSQ-108-21-F-S	
3	1	CN8	Sil socket straight 6 pos, 2.54 mm	STRIP-P2_54-6P-FEMALE				SIL-SOCKET6PIN-P254	WURTH ELEKTRONIK	61300611821 or SSQ-106-21-F-S	
4	1	CON1	5.0 mm Horizontal Entry Screwless Connector	Power con3P				2834082-2-TE	TE Connectivity	2834082-2 or equivalent	
5	1	CON2	5.0 mm Horizontal Entry Screwless Connector	Power con2P				2834082-1-TE	TE Connectivity	2834082-1 or equivalent	
6	1	C1	SMT ceramic capacitor	10uF	25V		10%	C0805			
7	4	C2,C13,C14,C15	SMT ceramic capacitor	220nF	100V		10%	C0805			
8	4	C3,C22,C23,C24	SMT ceramic capacitor		6.3V		10%	C0603			N.M.
9	2	C4,C5	SMT ceramic capacitor	6.8pF	6.3V		0.25pF	C0402			
10	1	C6	SMT ceramic capacitor	10uF	6.3V		10%	C0805			
11	16	C7,C9,C11,C12,C28,C29,C30,C40,C42,C43,C45,C50,C51,C52,C53,C54	SMT ceramic capacitor	100nF	6.3V		10%	C0603			
12	4	C8,C10,C44,C46	SMT ceramic capacitor	1uF	6.3V		10%	C0603	WURTH ELEKTRONIK	885012206076	
13	3	C16,C17,C18	SMT ceramic capacitor	1uF	25V		10%	C0805	WURTH ELEKTRONIK	885012207078	
14	3	C19,C20,C21	SMT ceramic capacitor	33nF	6.3V		10%	C0603			
15	3	C25,C26,C27	SMT ceramic capacitor	82nF	6.3V		5%	C0603			
16	3	C31,C32,C33	THT Electrolytic Capacitor	2200uF	100V		20%	D500p200	WURTH ELEKTRONIK	860040878017 or EEUFC2A221L	
17	5	C34,C35,C36,C38,C39	SMT ceramic capacitor	1nF	6.3V		10%	C0603			
18	1	C37	SMT ceramic capacitor	100nF	25 V		10%	C0603			
19	1	C41	SMT ceramic capacitor	100nF	6.3V		10%	C0603			N.M.
20	1	C47	SMT ceramic capacitor	10nF	6.3V		10%	C0603			
21	2	C48,C49	SMT ceramic capacitor	100pF	6.3V		10%	C0603			
22	1	D1	High Voltage Power Schottky Rectifier	STPS1H100A	100V			SMA	STMicroelectronics	STPS1H100A or equivalent	
23	6	D2,D3,D4,D5,D6,D7	Small signal Schottky diode	BAT48	40 V			SOD-323	STMicroelectronics	BAT48FILM or equivalent	
24	7	D8,D9,D10,D11,D12,D13,D14	Small signal Schottky diodes	BAT30K	30 V			SOD523	STMicroelectronics	BAT30KFILM or equivalent	
25	1	HS1	Heatsink	RAWA410-0					SCHAFFNER	RAWA410-0 or Equivalent	
26	2	JP1,JP2	SMT Jumper	OPEN				JUMPER-LARGOS_5MM			N.M.
27	1	J1	Jumper	OPEN					WURTH ELEKTRONIK	60900213421 or equivalent	
28	1	J2	Strip connector 2 pos, 2.54 mm	STRIP 1x2				STRIP254P-M-2	WURTH ELEKTRONIK	61300211121 or Equivalent	
29	2	J3,J9	Strip connector 2x5, pitch 2.54 mm	STRIP 2x5				PIN2X5P127	WURTH ELEKTRONIK	62201021121 or FTSH-105-01-F-D-K	
30	1	J4	Strip connector 3 pos, 2.54 mm	STRIP 1x3				STRIP254P-M-3	WURTH ELEKTRONIK	61300311121 or equivalent	
31	1	J5	Strip connector 7 pos, 2.54 mm	STRIP 1x7				STRIP254P-M-7	WURTH ELEKTRONIK	61300311121 or equivalent	
32	1	J6	Strip connector 5 pos, 2.54 mm	STRIP 1x5				STRIP254P-M-5	WURTH ELEKTRONIK	61300511121 or Equivalent	
33	1	J7	Strip connector 4 pos, 2.54 mm	STRIP 1x4				STRIP254P-M-4	WURTH ELEKTRONIK	61300411121 or Equivalent	N.M.
34	1	J8	USB RECEPTACLE-MINI B	Micro USB Type B				629105150521-USB-MICRO-B-WE	Wurth Elektronik	629105150521 or equivalent	
35	1	LED1	WL-SMCW SMT Mono-color Chip LED Waterclear	RED				led-0805	WURTH ELEKTRONIK	150080RS75000 or Equivalent	
36	2	LED2,LED3	WL-SMCW SMT Mono-color Chip LED Waterclear	YELLOW				led-0603	WURTH ELEKTRONIK	150060YS75000 or Equivalent	
37	1	LED4	LED indicators, PLCC-4 Red/Yellow Green	RED-GREEN LED				PLCC4	AVAGO	HSMF-A201-A00J1 or equivalent	
38	1	L1	WE-PD2 SMT Power Inductor	18uH		1A		7447732115-WURTH	WURTH ELEKTRONIK	744045180 or 7447732115	
39	3	NET1,NET2,NET3		PCB short				CurrentSense			N.M.
40	1	NTC1	NTC Thermistor	10k			1%	R0603	muRata	NCP18XH103F03RB or Equivalent	
41	6	Q1,Q2,Q3,Q4,Q5,Q6	N-channel 100 V, 5 mO typ., 107 A STripFET F7 Power MOSFET	STL110N10F7				PFLAT_6X5-8LEADS	STMicroelectronics	STL110N10F7 or equivalent	
42	1	Q7	NPN General Purposes Transistor	BC847B				SOT23		BC847B or equivalent	
43	13	R1,R6,R7,R8,R9,R38,R65,R84,R109,R111,R112,R113,R118	SMT resistor	0		0.1W	5%	J0805			
44	7	R2,R41,R42,R43,R47,R48,R49	SMT resistor	22k		0.1W	1%	R0603			
45	1	R3	SMT resistor	10k		0.1W	1%	R0603			

46	9	R10,R11,R12,R19,R20,R21,R22,R23,R24	SMT resistor	0		0.1W	5%	R0603		
47	6	R13,R14,R15,R25,R26,R27	SMT resistor	33		0.1W	5%	R0603		
48	6	R16,R17,R18,R28,R29,R30	SMT resistor			0.1W	5%	R0603		N.M.
49	6	R31,R32,R33,R34,R35,R36	SMT resistor	10m		3W	1%	R2512	Bourns	CRA2512-FZ-R010ELF or equivalent
50	1	R37	SMT resistor	72.3k		0.1W	1%	R0603		
51	1	R39	SMT resistor	3.01k		0.1W	1%	R0603		
52	3	R40,R105,R106	SMT resistor	4.7k		0.1W	1%	R0603		
53	6	R44,R45,R46,R50,R51,R52	SMT resistor	1.5k		0.1W	1%	R0603		
54	3	R53,R54,R55	SMT resistor	11k		0.1W	1%	R0603		
55	3	R56,R58,R60	SMT resistor	68k		0.1W	1%	R0603		
56	3	R57,R59,R61	SMT resistor	27k		0.1W	1%	R0603		
57	3	R62,R63,R64	SMT resistor	3.9k		0.1W	1%	R0603		
58	15	R66,R67,R68,R69,R70,R71,R72,R73,R74,R75,R87,R89,R100,R108,R115	SMT resistor	0		0.1W	5%	J0805		N.M.
59	2	R76,R77	SMT resistor	4.7k		0.5 W	5%	R0805		
60	8	R78,R79,R80,R81,R82,R83,R101,R116	SMT resistor	10k		0.1W	5%	R0603		
61	4	R85,R86,R88,R117	SMT resistor			0.1W	5%	R0603		N.M.
62	5	R90,R93,R97,R119,R120	SMT resistor	100k		0.1W	5%	R0603		
63	3	R91,R92,R96	SMT resistor	200		0.1W	5%	R0603		
64	2	R94,R95	SMT resistor	120		0.1W	5%	R0603		
65	1	R98	SMT resistor	120		0.1W	5%	R0603		N.M.
66	1	R99	SMT resistor	10k		0.1W	5%	R0603		N.M.
67	4	R102,R114,R121,R122	SMT resistor	100		0.1W	5%	R0603		
68	1	R103	SMT resistor	36k		0.1W	5%	R0603		
69	1	R104	SMT resistor	1.5k		0.1W	5%	R0603		
70	1	R107	SMT resistor	4.7k		0.1W	5%	R0603		
71	1	R110	SMT resistor	2.7k		0.1W	5%	R0603		
72	8	SC1,SC2,SC3,SC4,SC5,SC6,SC7,SC8	M3 Cheese-head screw	M3						
73	4	SP1,SP2,SP3,SP4	M3 F-F Hexagonal spacer 20 mm	222424					RS-PRO	222-424
74	3	SW1,SW2,SW3	TACTILE SWITCHES - 6x6 J-bend SMT	6x6 J-bend SMT				BUTTON_L6_2_W6_2	WURTH ELEKTRONIK	430483025816 or equivalent
75	1	TIM1	Thermally conductive Gap filler, 150x150 mm sp.0,5 mm.	7074645					RS-PRO	707-4645
76	2	TP1,TP2	40x71 mils SMD PAD	TP-SMD-S1751-46R				tp_SMD_135_70	HARWIN	S1751-46R or equivalent
77	7	TP3,TP4,TP5,TP6,TP7,TP8,TP9	Test point - PCB 1.5 mm diameter	TP-SMD-diam1_5mm				TP-D60		N.M.
78	2	TP10,TP11	TP for Probe	TP-diam1_27mm-Hole0_8mm				TP-SONDA		N.M.
79	1	TR1	3/8 Square Trimpot trimming potentiometer, side adjust	100k				TRIMMER-3386P-BOURNS	Bourns	3386P-1-104 T x LF or equivalent
80	1	U1	3-phase brushless motor controller embedding STM32G4 MCU	STSPIN32G4				VFQFPN9x9x1_0-64L-EXP	STMicroelectronics	STSPIN32G4
81	1	U2	TCAN33x 3.3-V CAN Transceivers with CAN FD (Flexible Data Rate)	TCAN330DCNT				SOT23-8L	TEXAS INSTRUMENTS	(TCAN330DCNT or Equivalent)
82	1	U3	Ultra low drop and low noise BiCMOS voltage regulators	LD3985M33R				SOT23-5L	STMicroelectronics	LD3985M33R or Equivalent
83	1	U4	Very low capacitance ESD protection	USBLC6-25C6				SOT23-6L	STMicroelectronics	USBLC6-25C6 / YCRA2512-FZ-R050ELF or equivalent
84	1	U5	Medium-density performance line ARM®-based 32-bit MCU with 128 KB Flash, USB, CAN, 7 timers, 2 ADCs, 9 com. interfaces	STM32F103CBT6				LQFP48_L7_W7_P0_5	STMicroelectronics	STM32F103
85	1	X1	IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL	24.000MHZ				ABMM11W	ABRACON	ABM11W-24.0000MHZ-7-D1X-T3 or equivalent
86	1	X2	CRYSTAL 8.0000MHZ 8PF SMD	NX3225CD-CRYSTAL				XTAL_L3_2_W2_5_2PINS	NDK	NX3225GD-8MHZ-STD-CRA-3 or equivalent

Chip capacitors X7R

Perform four M3 threaded holes on heatsink. Distances are: 45x39.42 mm. (see Heatsink mechanical drawing)

Heatsink mounted with gap filler on PCB top