

MightyWatt 3.1 – Bill of Materials

Printed circuit board

Symbol in schematic	Description	Value	Package
C1	MLCC X7R	2.2 μ F/16V	1206
C2, C4		DNP	0603
C3, C14, C16, C28–C31	MLCC X7R	10 μ F/16V	1206
C5–C7, C9–C13, C15, C22–C26	MLCC X7R	100nF/25V	0603
C8, C27	MLCC NP0/COG	10pF/50V	0603
C17	MLCC NP0/COG	10n/25V	0603
C18–C21	MLCC X7R	1 μ F/16V	0603
C32	Tantalum capacitor	470 μ F/10V	E
D1	Bi-directional TVS	Standoff voltage 36V/51V, 1.5kW	SMC
D2, D3	Silicon diode	1N4148W-7-F	SOD123
D4	Schottky diode	RSX101M-30TR; PMEG6010CEH	SOD123
D5	Unidirectional TVS	Standoff voltage 5V, 600W	SMB
D6, D7	Bi-directional TVS	Standoff voltage 45V/75V, 400W	SMA
D8	Bi-directional TVS	Standoff voltage 12V, 400W	SMA
IC1	OP-AMP	OPA197IDBVR	SOT23-5
IC2	3 \times SPDT analog switch	MAX4619EUE+	TSSOP-16
IC3	OP-AMP	OPA365AIDBVR	SOT23-5
IC4	SPST analog switch	TS5A3166DCKR	SC70-5
IC5	Current shunt monitor	INA225AIDGKR	MSOP-8
IC6	ADC	ADS1015IDGSR; ADS1115IDGSR	MSOP-10
IC7	OP-AMP	TLV2313IDGKR	MSOP-8
IC8	DAC	AD5691RBRMZ; AD5693RBRMZ	MSOP-10
IC9	Charge pump	LM2766M6	SOT23-6
JP1, JP2, JP3	Extended pin headers	18 pins	2.54mm pitch
LED1	Orange LED	OSO50805C1E	0805
R1A, R1B, R1C	Current sense resistor 1%	WSL3637; LVK24; LVK12	
R2, R6, R19–R22	Resistor 1% 100 mW	75R	0603
R3, R4	Zero-ohm link	0R	0603
R5, R7, R15–R18, R26–R28, R30	Resistor 1% 100 mW	4k7	0603
R8–R11	Resistor 0.1% thin-film 62.5 mW	39k/23k7	0603
R12, R13	Resistor 0.1% thin-film 62.5 mW	1M	0603
R14	Resistor 0.1% thin-film 62.5 mW	8k2/3k	0603
R23	Resistor 0.1% thin-film 62.5 mW	39k	0603
R24, R25	Resistor 0.1% thin-film 62.5 mW	1k2	0603
R29	Resistor 1% 100 mW	220R	0603
REL1	Relay DPDT	IM03NS; G6J-2P-Y; UA2-5NU	
T1	N-MOSFET	IXTH64N10L2; IXTH80N075L2; IXTH75N10L2	TO247
T2, T3	N-MOSFET	FDV301N	SOT23-3
T4	N-MOSFET	BSS306NH6327XTSA1	SOT23-3
TH1	NTC thermistor 1% β =3455	10k, NCP15XH103F03RC	0402
X1	Screw clamp terminal, 4 way	24A (20A pluggable version)	5mm pitch
X2	Connector – header, 2 way	Molex 22-23-2021 compatible	2.54mm pitch

Heatsink material

Name	Description	Model	Remark
Fan	50×50 mm, 5VDC	Sunon ME50100V1-A99	
Fan grill	50×50 mm	Sunon FG-05	
Heatsink	Anodized aluminium	Fischer ICKPGA20X20	1
Screws	4× M4×40 Phillips head screws	stainless steel A2	
Nuts	4× M4 nut	stainless steel A2	
Dielectric washers	8× polyamide washer for M4		
Spacers	4× Ni-plated brass, 4.3×5 mm		
Dielectric pad	16×20×1 mm compressible pad	Kerafol SOFTTHERM 86/200	2
Thermal grease	non-conductive, high-performance	Arctic Silver 5	
Socket	for fan cable, 2 way, 2.54mm pitch		
Crimp contacts	2× for fan cable, to housing		

Remarks

- 1 drill holes for fan, 4× 4.5 mm diameter
- 2 between T1 and PCB