

Reference	Part	Digikey #	Price 1/27/05		Footprint	
C11,C1	2.2nf	1119PHCT-ND	3.24	CAP 100V .0022UF AXIAL CERAM X7R	AC100\100	
C5,C2	1uf	P5305-ND	0.36	CAP 1.0UF 100V ALUM LYTIC RADIAL	RC100\200+	
C4,C3	100uf	P5192-ND	0.42	CAP 47UF 63V ALUM LYTIC RADIAL	RC100\250+	Note: changed to 47uf for fit
C6	10uf	P5309-ND	0.19	CAP 10UF 100V ALUM LYTIC RADIAL	RC100\200+	
C7	.1uf	399-2127-ND	0.16	CAP .1UF 50V 20% CER RADIAL	AC100\100	
C12,C8	500pf	399-1837-1-ND	0.44	CAP 470PF 100V 10% CER AXIAL	AC100\100	Note: changed to 470pf
C9,C10	27pf	399-1891-ND		CAP 27PF 200V 5% CER RADIAL	AC100\125	Optional only needed if a regular 20mhz crystal is used
D4,D1	1N4148	1N4148FS-ND		DIODE SGL JUNC 100V 4.0NS DO-35	D400(CA,AN)	D1 Optional used for programming
D2	1N5817	1N5817DICT-ND		DIODE SCHOTTKY 20V 1A DO-41	D400(CA,AN)	Optional 1N4000 will work. used to prevent reverse power. Use J1 to short out
D3	LED	P562-ND		LED RED CLEAR 3MM ROUND	LED_1	Optional power indicator
JP1	HEADER 3X2	103186-5-ND		CONN HDR BRKWAY 10POS STR AU PC	J\6P	Optional on board program header
JP2	HEADER 2X2			use rest of JP1	J\4P	Optional can be permanently shorted with wires
JP3	HEADER 8	ED1520-ND	1.79	TERMINAL BLOCK 3.5MM 8POS PCB	3.5MM 8POS	Optional screw on terminal post but can be hard wired
JP5	HEADER 3	1-102972-0-ND		CONN HDR BRKWAY 10 POS STR .100	SIP\3P	Optional not used since microstepper in effect.
JP6,JP7	HEADER 3	ED1515-ND	1.34	TERMINAL BLOCK 3.5MM 3POS PCB	3.5MM 3POS	Optional screw on terminal post but can be hard wired
JP9	HEADER 2	ED1514-ND	0.45	TERMINAL BLOCK 3.5MM 2POS PCB	3.5MM 2POS	Optional screw on terminal post but can be hard wired
J1,J2,J3,J4	SOLDER				SOLDER	Note: not a part
R7,R1	20K	CFR-25JB-20K	0.56	RES 20K OHM 1/4W 5% CARBON FILM	AC100\100	
R8,R2	6.6K	6.65KXBK-ND	1.08	RES 6.65K OHM 1/4W 1% METAL FILM	AC100\100	
R3	450	470QBK-ND		RES 470 OHM 1/4W 5% CARBON FILM	AC100\100	Optional used for LED Note: changed to 470 more common
R4,R5,R6,R9	10K	CFR-25JB-10K	1.12	RES 10K OHM 1/4W 5% CARBON FILM	R400	
R10,R11	25k POT (OPT.)	3266W-253-ND		POT 25K OHM 1/4" SQ CERM SL MT	SMALL TRIMPOT	Optional used to vary the current set instead with resistors remove R8 and R2 if used
U1	LM7805	NJM78L05A-ND	0.36	IC 5V POSITIVE REGULATOR TO-92	TO-92A	
U2,U4	LMD18245	LMD18245T-ND	26.08	IC H BRIDGE 3A 55V TO-220	TO-220PWR	
U3	PIC16F627	PIC16F627-20/P-ND	3.43	IC MCU FLASH 1KX14 EEPROM 18DIP	DIP18	
Y1	20MHZ	490-1215-ND	0.61	RESONATOR 20.0MHZ CERAMIC	SIP\3P	Regular 20mhz crystal can be substituted, but C9 and C10 would be needed
			10	Microstep circuit board		
			51.63	Total minimum parts for 1 board (Note: Terminal blocks can be left out -\$3.58)		

Note: R8 and R2 is set for 3amps. You need to change this value for lower current

CS OUT current sense resistor
 $(V_{ref} \times D/16) / (250e-6 \times R) = A$

R=10K 2amps
R=6.6K 3amps
1/4 watt