

1. Surface-mounted components

Quantity	Reference	Description	Manufacturer Part Number	Digi-Key Part Number
17	C10 11 14 17 18 20 22 26-29 31 33 34 37 47 49	CAP CER 0.1UF 50V 10% X7R 0805	C0805C104K5RACTU	399-1170-1-ND
2	C12 35	CAP CER 10000PF 50V 10% X7R 0805	08055C103KAT2A	478-1383-1-ND
6	C13 24 25 42 46 48	CAP CER 10UF 25V 10% X7R 1206	TMK316B7106KL-TD	587-2399-1-ND
2	C15 16	CAP CER 22PF 50V 5% NP0 0805	C0805C220J5GACTU	399-1113-1-ND
1	C32	CAP ALUM 100UF 16V 20% SMD	EMZJ160ADA101MF61G	565-3656-1-ND
1	C36	CAP CER 2200PF 50V 10% X7R 0805	C0805C222K5RACTU	399-1151-1-ND
2	CAL RESET	SWITCH TACTILE SPST-NO 0.05A 12V	2-1437565-9	450-1792-1-ND
2	D10 11	DIODE SCHOTTKY 20V 0.5A TO236AB	PMEG2005ET,215	568-4111-1-ND
3	D31-33	IR EMITTER HIGH SPEED 940NM SMD	VSMB2948SL	VSMB2948SLCT-ND
2	D41 43	DIODE SCHOTTKY 40V 3A SMB	B340LB-13-F	B340LB-FDICT-ND
1	L11	BEAD FERRITE 60 OHM 5A	MH2029-600Y	MH2029-600YCT-ND
1	LO	LED CHIPLEAD 645NM RED DIFF 1206	LH N974-KN-1	475-1416-1-ND
1	PTC	PTC RESTTBLE 0.50A 8V CHIP 1206	OZCJ0050FF2G	507-1802-1-ND
1	Q11	TRANS NPN 40V 200MA SOT23	MMBT3904,215	568-4510-1-ND
2	Q31 32	MOSFET N-CH 25V 220MA SOT-23	FDV301N	FDV301NCT-ND
6	R11-14 16 18	RES 1K OHM 1/8W 1% 0805	RMCF0805FT1K00	RMCF0805FT1K00CT-ND
9	R15 17 33 35-38 41 43	RES 10.0K OHM 1/8W 1% 0805 SMD	RC0805FR-0710KL	311-10.0KCRCT-ND
1	R20	RES 47.0 OHM 1/8W 1% 0805 SMD	RC0805FR-0747RL	311-47.0CRCT-ND
2	R21 26	RES 143K OHM 1/8W 1% 0805 SMD	RC0805FR-07143KL	311-143KCRCT-ND
4	R22 23 34 42	RES 13.0K OHM 1/8W 1% 0805 SMD	RC0805FR-0713KL	311-13.0KCRCT-ND
2	R24 R47	RES 124 OHM 1/8W 1% 0805 SMD	RC0805FR-07124RL	311-124CRCT-ND
1	R25	RES 30.9K OHM 1/8W 1% 0805 SMD	RC0805FR-0730K9L	311-30.9KCRCT-ND
2	R27 49	RES 20.0K OHM 1/8W 1% 0805 SMD	RC0805FR-0720KL	311-20.0KCRCT-ND
2	R28 29	RES 33.0K OHM 1/8W 1% 0805 SMD	RC0805FR-0733KL	311-33.0KCRCT-ND
1	R31	RES 33.0 OHM 1/8W 1% 0805 SMD	RC0805FR-0733RL	311-33.0CRCT-ND
1	R32	RES 4.99K OHM 1/8W 1% 0805	RMCF0805FT4K99	RMCF0805FT4K99CT-ND
1	R39	RES 47K OHM 1/8W 5% 0805 SMD	RC0805JR-0747KL	311-47KARCT-ND
1	R48	RES 392 OHM 1/8W 1% 0805 SMD	RC0805FR-07392RL	311-392CRCT-ND
2	RX TX	LED CHIPLEAD 588NM YLW 0805 SMD	LY R976-PS-36	475-2560-1-ND
1	U11	IC USB FS SERIAL UART 28-SSOP	FT232RL-REEL	768-1007-1-ND
1	U12	IC MCU 8BIT 32KB FLASH 32TQFP	ATMEGA328P-AU	ATMEGA328P-AU-ND
2	U21 27	IC COMP 1.6V SNGL P-P SOT23-5	MCP6541T-E/OT	MCP6541T-E/OTCT-ND
1	U24	IC DECODER/DEMUX DUAL 2:4 16SOIC	74AHC139D,118	568-8787-1-ND
2	U25 26	IC MOTOR DRIVER PAR HRP7	BD6222HFP-TR	BD6222HFPCT-ND
1	U31	AMBIENT LIGHT SENSOR	SI1143-A11-GMR	336-2201-1-ND
1	U32	GYRO/ACCELEROMETER 6AXIS 24QFN	MPU-6050	1428-1007-1-ND
1	U42	IC REG LDO 3.3V 1A SOT223	NCP1117ST33T3G	NCP1117ST33T3GOSCT-ND
1	U43	IC REG LDO ADJ 0.8A SOT223	LD1117SC-R	497-4241-1-ND
1	Y	CRYSTAL 16MHZ 18PF SMD	ABLS-16.000MHZ-B4-T	535-10226-1-ND

2. Through-hole PCB components

Quantity	Reference	Description	Manufacturer Part Number	Digi-Key Part Number
1	BP1	HOLDER BATT 3-AA CELLS PC MNT	BC3AAPC	BC3AAPC-ND
2	C21 23	CAP ALUM 1500UF 16V 20% RADIAL	UHM1C152MPD	UHM1C152MPD-ND
1	J11	CONN HEADER FEMALE 6POS .1" TIN	PPTC061LFBN-RC	S7004-ND
2	J12 14	CONN HEADER FEMALE 8POS .1" TIN	PPTC081LFBN-RC	S7006-ND
1	J21	CONN HEADER VERT 4POS .100 TIN	640456-4	A1922-ND
1	BZ	BUZZER MAGNETIC 5V 12MM PCMNT	AT-1224-TWT-R	668-1098-ND
1	J13	CONN HEADER FEMALE 10POS.1" TIN	PPTC101LFBN-RC	S7008-ND
1	BP2	HOLDER BATT 4-AA CELLS PC MNT	BC4AAPC	BC4AAPC-ND
2	U22 23	SENSOR OPTO SLOT 2MM TRANS THRU	GP1S093HCZ0F	425-1963-5-ND
1	J15	DIL VERTICAL PC TAIL PIN HEADER	M20-9980346	952-2121-ND
1	ON	SWITCH SLIDE DPDT 3A PCB 125V	GPI-152-3013	SW114-ND
1	J16	CONN USB TYPE B R/A WHITE	USB-B1HSW6	ED2982-ND

3. Mechanical and off-PCB components

Quantity	Description	Supplier	Part number
2	Motor	microcontrollershop.com	MG-6-48
2	Wheel	microcontrollershop.com	MG-WHEEL
2	Mount kit	microcontrollershop.com	MG-ACC
8	Washer M3 0.5 mm	Zoro	G3068694
2	Encoder wheel	Stellar Robotics, LLC	n/a
2	Screw M3-0.5 5 mm	Zoro	G0718487
4	Wire AWG24, 3î	Digi-Key	C2015Y-100-ND
7	Alkaline battery AA	cheap-batteries.com	Varies
1	Connector inline	Digi-Key	A30980-ND
3	Screw M2.5 flat head 8 mm	Zoro	G2161101
3	Nut M2.5	Zoro	G0475851
6	Split lock washer M3	Zoro	G1140544