





Quantity	Comment	LibRef	Designator	Description	Footprint
2	Motor	Motor	B1, B2	Motor, General Kind	RB5-10.5
1	Battery	Battery	BT1	Multicell Battery	BAT-2
36	100nF	100nF[(\)]0603[(\)]1	C1, C3, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C22, C23, C24, C25, C26, C27, C28, C29, C30, C33, C35, C36, C37, C38, C39, C55, C62, C65, C66, C67, C68, C69, C70, C71	Capacitor	RESC1608X06L
7	10uF	4.7uF[(\)]0603[(\)]1, 10uF[(\)]0603[(\)]1	C2, C4, C32, C46, C51, C52, C72	Capacitor	RESC1608X06L
7	4.7nF	CAP-NP	C15, C16, C17, C18, C19, C20, C21	Capacitor	CAPC1608N
9	4.7uF	4.7uF[(\)]0603[(\)]1	C31, C40, C43, C44, C45, C47, C48, C49, C50	Capacitor	RESC1608X06L
1	10uF X5R	10uF[(\)]0603[(\)]1	C34	Capacitor	RESC1608X06L
2	18pF	10pF[(\)]0603[(\)]3	C41, C42		RESC1608X06L
2	1nF	100nF[(\)]0603[(\)]1	C53, C54	Capacitor	RESC1608X06L
3	1uF	10uF[(\)]0603[(\)]1, 4.7uF[(\)]0603[(\)]1	C56, C61, C63	Capacitor	RESC1608X06L
1	1.5nF	10nF[(\)]0603[(\)]1	C57	Capacitor	RESC1608X06L
3	47nF	10nF[(\)]0603[(\)]1, 470nF[(\)]0603[(\)]1	C58, C59, C60	Capacitor	RESC1608X06L
1	51pF	10nF[(\)]0603[(\)]1	C64	Capacitor	RESC1608X06L
4	19-21SURC/ S530-A3/ TR8	LED	D1, D3, D4, D5	SMD Red 0603 2V@20ma 56 mcd	DIOC1608X08N
4	BT5050RGB-C-T180	LED RGB SMD 2	D2, D6, D27, D38	\$0.027/2000k	LEDSMD5
12	27-21SURC/ S530-A3	LED	D7, D9, D10, D11, D12, D17, D18, D25, D26, D32, D35, D36	SMD Red led right angle mount 2V@20ma 57mcd	27-21 Everlight
3	27-21/ BHC-AN1P2/ 3C	LED	D8, D31, D37	SMD Blue led right angle mount 3.3V@20ma 28mcd	27-21 Everlight Blue
8	APTD1608SYCK	LED	D13, D14, D15, D16, D21, D22, D23, D24	LED standard - CMS Helios SMD Yellow 590nm 480mcd	DIOC1608X08N
2	WP7104SRC/ D	LED	D19, D20	Red led 2V@20ma 57mcd	Led_TH_3mm_20mm
3	APTD1608CGCK	LED	D28, D29, D30	LED standard - CMS Helios SMD Green 570nm 230mcd	DIOC1608X08N
2	BAT54S	BAT54S	D33, D34	Schottky Barrier Double Diode	SOT23_N
1	Speaker	Speaker	LS1	Loudspeaker	PIN2
1	TD4015BPN	Micro1	MC1	Omnidirectional Back Electret Condenser Microphone	MICRO_TD4015BPN
46	BC817-40	BC817-40	Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43, Q44, Q45, Q46	NPN General-purpose Transistor	SOT23_N
22	4.7K	4.7K[(\)]0603[(\)]1	R1, R2, R37, R39, R61, R63, R64, R65, R67, R92, R93, R94, R103, R104, R111, R112, R113, R114, R142, R144, R145, R146	Resistor	RESC1608X06L
16	33	68K[(\)]0603[(\)]1, RES	R3, R5, R68, R69, R70, R71, R72, R73, R98, R99, R100, R135, R147, R148, R149, R150	120, Resistor	RESC1608X06L
2	2.7K	RES	R4, R6	Resistor	RESC1608X06L
8	22K	22K[(\)]0603[(\)]1, RES	R7, R8, R9, R10, R11, R42, R43, R130	120, Resistor	RESC1608X06L
15	2.2K	2.2K[(\)]0603[(\)]1, RES	R12, R13, R14, R15, R16, R32, R33, R34, R35, R41, R44, R45, R52, R53, R126	120, Resistor	RESC1608X06L
7	1.5K	RES	R17, R18, R19, R20, R26, R46, R47	120	RESC1608X06L
8	1K	1K[(\)]0603[(\)]1, RES	R21, R22, R23, R24, R25, R48, R49, R108	120, Resistor	RESC1608X06L
16	10K	5.2K[(\)]0603[(\)]2, 10K[(\)]0603[(\)]1, 10K[(\)]0603[(\)]2, RES	R27, R28, R29, R30, R31, R50, R51, R101, R102, R109, R110, R117, R118, R128, R129, R136	120, Resistor	RESC1608X06L
7	6.2	RES	R36, R37, R38, R39, R40, R54, R55	120	RESC1608X06L
14	56	68K[(\)]0603[(\)]1	R56, R58, R60, R62, R74, R75, R76, R77, R78, R79, R80, R81, R90, R91	Resistor	RESC1608X06L
14	39	68K[(\)]0603[(\)]1	R66, R82, R83, R84, R85, R86, R87, R88, R89, R95, R96, R97, R133, R134	Resistor	RESC1608X06L
2	100	RES_AOORT	R105, R106	Resistance	RESC1608X06N
2	180	180R[(\)]0603[(\)]1	R107, R137	Resistor	RESC1608X06L
2	5.6K	2.2K[(\)]0603[(\)]1	R115, R116	Resistor	RESC1608X06L
10	100K	10K[(\)]0603[(\)]1, 100K[(\)]0603[(\)]1	R119, R120, R121, R122, R123, R124, R138, R139, R141, R143	Resistor	RESC1608X06L
1	680K	470K[(\)]0603[(\)]1	R125	Resistor	RESC1608X06L
1	6.8K	10K[(\)]0603[(\)]1	R127	Resistor	RESC1608X06L
1	820	22K[(\)]0603[(\)]1	R131	Resistor	RESC1608X06L
1	47K	22K[(\)]0603[(\)]1	R132	Resistor	RESC1608X06L
1	270K	270K[(\)]0603[(\)]2	R140	Resistor	RESC1608X06L
1	NCP15XH103F03RC	Res Thermal	RT1	Thermistors - NTC 10K OHM 1%0402	RESC1005X04L
1	MicroSD-Astron 5190008-XA4-R	SD Card Micro-ASL TRON 5190008-XA4-R	S1	MicroSD Card connector 5190008-XA4-R	Astron 5190008-XA4-R
1	SW-PB	SW-PB	S2	Switch	FSMRA2JH
4	DMG1013T	DMG1013T	T1, T2, T3, T4	Transistor MOSFET 1 x P Pining : 1=G, 2=S, 3=D	SOT50P160X80-3N
4	DMG1012T	DMG1012T	T5, T6, T7, T8	Transistor MOSFET 1 x N, Pining : 1=G, 2=S, 3=D	SOT50P160X80-3N
1	MMA7660FC	MMA7660FC	U1	MMA7660FC: XYZ-AXIS ACCELEROMETER ±1.5 g	DFN50P300X300X100-12N
2	ITR9909	ITR9909	U2, U3	Everlight Opto Interrupter	ITR9909_LONG
2	MCP6L04T-E/ ST	MCP6L04T-E/ ST	U4, U5	1 MHz, 65 µA Quad Op Amp, 14-Pin TSSOP, Extended Temperature Range, Tape and Reel	TSSOP-ST14_N
7	ITR9909	ITR9909	U6, U7, U8, U9, U10, U11, U12	Everlight Opto Interrupter	ITR9909_EDGE
5	MC74HC595ADTR2	MC74HC595ADTR2	U13, U14, U15, U16, U17	8-Bit Serial Input/Serial or Parallel Output Shift Register with Latched 3-State Outputs	948F-01_N
4	AP7331-33WG-7	AP7331	U18, U22, U24, U26	300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N
1	PIC24FJ128GB106-I/PT	PIC24FJ128GB106-I/PT	U19	General Purpose 16-Bit Flash microcontroller with USB On-The-Go, 128KB Flash, 16KB SRAM, 64-Pin TQFP, Industrial Temperature	TQFP-PT64_N
1	IRM-3636T	T SOP32236	U20	IR Receiver Module (38 kHz) for Remote Control Systems	IR-receiver
1	MCP73871-2AAI/ML	MCP73871-2AAI/ML	U21	Stand-Alone System Load Sharing and Low-Voltage Polymer Battery Charge Management Controller, 4.2V, 20-Pin QFN, Industrial Temperature	QFN-ML20_N
1	FAN3988	FAN3988	U23	USB/ Charger and Over Voltage Detection Device	MLP 1.45x1mm
1	LM4819M	LM4819M	U25	350mW Audio Power Amplifier with Shutdown Mode	M08A_N
1	Con1x6	Con1x6	X2	1 x 6 pins connector	MHDR1X6
1	Alkstron R3190005-021-R	USB_MINIAB	X3	USB connector Micro B	Astron 3190005-x21-r
1	815-ABLS-8-B2	HC49/ 4H_SMX	Y1	Surface Mount Quartz Crystal 8Mhz	HC49/ 4H_SMX

Quantity	Comment	LibRef	Designator	Description	Footprint	Layer
1	100	RES_ALO RT	R105	Resistance	RESC1608X06N	Bottom
1	1uF	100F[/[/\]] 603[/[/\]]1	C83	Capacitor	RESC1608X06L	Bottom
1	6.2	RES	R38	120	RESC1608X06L	Bottom
1	815-ABLS-8-B2	HC49/4H _SMX	Y1	Surface Mount Quartz Crystal 8MHz	HC49/4H_SMX	Bottom
1	AP7331-33W/G-7	AP7331	U26	300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N	Bottom
1	MCP6L04T-E/ST	MCP6L04 T-E/ST	U4	1 MHz, 85 μ A Quad Op Amp, 14-Pin TSSOP, Extended Temperature Range, Tape and Reel	TSSOP-ST14_N	Bottom
12	4.7K	4.7K[/[/\]] 603[/[/\]]1	R1, R2, R57, R59, R61, R63, R64, R65, R111, R112, R113, R114	Resistor	RESC1608X06L	Bottom
15	100nF	100nF[/[/\]] 0603[/[/\]]1	C5, C7, C8, C9, C14, C22, C25, C26, C28, C30, C55, C68, C69, C70, C71	Capacitor	RESC1608X06L	Bottom
18	BC817-40	BC817-40	Q1, Q2, Q3, Q4, Q7, Q12, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30	NPN General-purpose Transistor	SOT23_N	Bottom
2	18pF	100F[/[/\]] 0603[/[/\]]3	C41, C42		RESC1608X06L	Bottom
2	2.7K	RES	R4, R6	Resistor	RESC1608X06L	Bottom
2	4.7uF	4.7uF[/[/\]] 0603[/[/\]]1	C40, C43	Capacitor	RESC1608X06L	Bottom
2	BT5050RGBCT-180	LED RGB SMD 2	D2, D6	\$0.027/ 2000k	LED5MD5	Bottom
2	ITR9909	ITR9909	U2, U3	Everlight Opto Interrupter	ITR9909_LONG	Bottom
2	WP7104SRC/ D	LED	D19, D20	Red led 2V@20ma 57mcd	Led_TH_3mm_20mm	Bottom
3	10uF	4.7uF[/[/\]] 0603[/[/\]]1 10uF[/[/\]] 0603[/[/\]]1	C51, C52, C72	Capacitor	RESC1608X06L	Bottom
3	MC74HC595ADTR2	MC74HC5 95ADTR2	U13, U15, U17	8-Bit Serial-Input/Serial or Parallel-Output Shift Register with Latched 3- State Outputs	948F-01_N	Bottom
4	1.5K	RES	R17, R18, R19, R20	120	RESC1608X06L	Bottom
4	1K	RES	R21, R22, R23, R24	120	RESC1608X06L	Bottom
4	22K	RES	R7, R8, R9, R10	120	RESC1608X06L	Bottom
4	DMG1012T	DMG1012 T	T5, T6, T7, T8	Transistor MOSFET 1 x N, Pining : 1=G, 2=S, 3=D	SOT50P160X80-3N	Bottom
4	DMG1013T	DMG1013 T	T1, T2, T3, T4	Transistor MOSFET 1 x P, Pining : 1=G, 2=S, 3=D	SOT50P160X80-3N	Bottom
6	100K	100K[/[/\]] 0603[/[/\]]1	R119, R120, R121, R122, R123, R124	Resistor	RESC1608X06L	Bottom
6	56	68K[/[/\]] 603[/[/\]]1	R74, R75, R76, R77, R90, R91	Resistor	RESC1608X06L	Bottom
7	4.7nF	CAP-NP	C15, C16, C17, C18, C19, C20, C21	Capacitor	CAPC1608N	Bottom
8	10K	10K[/[/\]] 603[/[/\]]2, RES	R27, R28, R29, R30, R31, R50, R51, R136	120, Resistor	RESC1608X06L	Bottom
8	2.2K	2.2K[/[/\]] 603[/[/\]]1 RES	R12, R13, R14, R15, R16, R33, R44, R45	120, Resistor	RESC1608X06L	Bottom
8	33	RES	R3, R5, R68, R69, R70, R71, R72, R73	120, Resistor	RESC1608X06L	Bottom
8	39	68K[/[/\]] 603[/[/\]]1	R82, R83, R84, R85, R95, R96, R97, R133	Resistor	RESC1608X06L	Bottom
9	27-Z1SURC/ SS30- A3	LED	D9, D10, D11, D12, D17, D18, D25, D26, D35	SMD Red led right angle mount 2V@20ma 57mcd	27-21 Everlight	Bottom
1	1.5nF	100F[/[/\]] 0603[/[/\]]1	C57	Capacitor	RESC1608X06L	Top
1	100	RES_ALO RT	R106	Resistance	RESC1608X06N	Top
1	10uF X5R	100F[/[/\]] 0603[/[/\]]1	C34	Capacitor	RESC1608X06L	Top
1	270K	270K[/[/\]] 0603[/[/\]]2	R140	Resistor	RESC1608X06L	Top
1	47K	22K[/[/\]] 603[/[/\]]1	R132	Resistor	RESC1608X06L	Top
1	51pF	100F[/[/\]] 0603[/[/\]]1	C64	Capacitor	RESC1608X06L	Top
1	6.8K	10K[/[/\]] 603[/[/\]]1	R127	Resistor	RESC1608X06L	Top
1	680K	470K[/[/\]] 0603[/[/\]]1	R125	Resistor	RESC1608X06L	Top
1	820	22K[/[/\]] 603[/[/\]]1	R131	Resistor	RESC1608X06L	Top
1	Astron K3190005- 1 021-R	USB_MIN AB	X3	USB connector Micro B	Astron 3190005-x21-r	Top
1	Battery	Battery	BT1	Multicell Battery	BAT-2	Top
1	Con1x6	Con1x6	X2	1 x 6 pins connector	MHDR1X6	Top
1	FAN3988	FAN3988	U23	USB Charger and Over Voltage Detection Device	MLP 1.45x1mm	Top
1	IRM-3636T	TSOP322 36	U20	IR Receiver Module (36 kHz) for Remote Control Systems	IR-receiver	Top
1	LM4819M	LM4819M	U25	350mW Audio Power Amplifier with Shutdown Mode	M08A_N	Top
1	MCP6L04T-E/ST	MCP6L04 T-E/ST	U5	1 MHz, 85 μ A Quad Op Amp, 14-Pin TSSOP, Extended Temperature Range, Tape and Reel	TSSOP-ST14_N	Top
1	MCP73871-2AAI/ML	MCP7387 1-2AAI/ML	U21	Stand-Alone System Load Sharing and Li-Ion/ Li- Polymer Battery Charge Management Controller, 4.2V, 20-Pin QFN, Industrial Temperature	QFN-ML20_N	Top
		SD-Card- Micro-				

	1	MCP73871-2AAI/ML	MCP73871-2AAI/ML	U21		Polymer Battery Charge Management Controller, 4.2V, 20-Pin QFN, Industrial Temperature	QFN-ML20_N	Top
		MicroSD-Astron 15190008-XA4-R	SD-Card-Micro-ASLTRON 5190008-XA4-R	S1		MicroSD Card connector 5190008-XA4-R	Astron 5190008-XA4-R	Top
	1	MMA7660FC	MMA7660FC	U1		MMA7660FC XYZ-AXIS ACCELEROMETER ±1.5g	DFN50P300X300X100-12N	Top
	1	NCP15XH103F03R1C	R85 Thermal	RT1		Thermistors -NTC 10K Ohm 1%0402	RES1005X04L	Top
		PIC24FJ128GB106-I/PT	PIC24FJ128GB106-I/PT	U19		Flash Microcontroller with USB On-The-Go, 128KB Flash, 16KB SRAM, 64-Pin TQFP, Industrial Temperature	TQFP-PT64_N	Top
	1	Speaker	Speaker	LS1		Loudspeaker	PIN2	Top
	1	SW-PB	SW-PB	S2		Switch	FSMRA2JH	Top
	1	TD4015BPN	Micro1	MC1		Omnidirectional Back Electret Condenser Microphone	MICRO_TD4015BPN	Top
	10	4.7K	4.7K[[\]]0603[[\]]1	R67, R92, R93, R94, R103, R104, R142, R144, R145, R146		Resistor	RES1608X06L	Top
	2	180	180R[[\]]0603[[\]]1	R107, R137		Resistor	RES1608X06L	Top
	2	1nF	100nF[[\]]0603[[\]]1	C53, C54		Capacitor	RES1608X06L	Top
	2	1uF	10uF[[\]]0603[[\]]1, 4.7uF[[\]]0603[[\]]1	C56, C61		Capacitor	RES1608X06L	Top
	2	5.6K	2.2K[[\]]0603[[\]]1	R115, R116		Resistor	RES1608X06L	Top
	2	BAT54S	BAT54S	D33, D34		Schottky Barrier Diode	SOT23_N	Top
	2	BT5050RGBC-T180	LED RGB SMD 2	D27, D38		\$0.027/2000k	LED SMD5	Top
	2	MC74HC595ADTR2	MC74HC595ADTR2	U14, U16		8-Bit Serial-Input/Serial-Output Shift Register with Latched 3-State Outputs	948F-01_N	Top
	2	Motor	Motor	B1, B2		Motor, General Kind	RB5-10.5	Top
	21	100nF	100nF[[\]]0603[[\]]1	C1, C3, C6, C10, C11, C12, C13, C23, C24, C27, C29, C33, C35, C36, C37, C38, C39, C62, C65, C66, C67		Capacitor	RES1608X06L	Top
	28	BC817-40	BC817-40	Q5, Q6, Q8, Q9, Q10, Q11, Q13, Q14, Q15, Q16, Q17, Q18, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43, Q44, Q45, Q46		NPN General-purpose Transistor	SOT23_N	Top
	3	1.5K	RES	R26, R46, R47		120	RES1608X06L	Top
	3	27-21/BHC-AN1P2/3C	LED	D8, D31, D37		SMD Blue led right angle mount 3.3V @ 20ma 28mcd	27-21 Everlight Blue	Top
	3	27-21/SURC/SS30-A3	LED	D7, D32, D36		SMD blue led right angle mount 2V @ 20ma 57mcd	27-21 Everlight	Top
	3	47nF	100nF[[\]]0603[[\]]1, 470nF[[\]]0603[[\]]1	C58, C59, C60		Capacitor	RES1608X06L	Top
	3	AP7331-33WG-7	AP7331	U18, U22, U24		300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N	Top
	3	APTD1608CGCK	LED	D28, D29, D30		LED standard - CMS Helios SMD Green 570nm 230mcd	DI0C1608X08N	Top
	4	100K	10K[[\]]0603[[\]]1, 100K[[\]]0603[[\]]1	R138, R139, R141, R143		Resistor	RES1608X06L	Top
	4	10uF	4.70uF[[\]]0603[[\]]1, 10uF[[\]]0603[[\]]1	C2, C4, C32, C46		Capacitor	RES1608X06L	Top
	4	19-21/SURC/SS30-A3/TR8	LED	D1, D3, D4, D5		SMD Red 0603 2V @ 20ma 56 mcd	DI0C1608X08N	Top
	4	1K	1K[[\]]0603[[\]]1, RES	R25, R48, R49, R108		120, Resistor	RES1608X06L	Top
	4	22K	22K[[\]]0603[[\]]1, RES	R11, R42, R43, R130		120, Resistor	RES1608X06L	Top
	6	39	68K[[\]]0603[[\]]1	R66, R86, R87, R88, R89, R134		Resistor	RES1608X06L	Top
	6	6.2	RES	R36, R37, R39, R40, R54, R55		120	RES1608X06L	Top
	7	2.2K	2.2K[[\]]0603[[\]]1	R32, R34, R35, R41, R52, R53, R126		Resistor	RES1608X06L	Top
	7	4.7uF	4.70uF[[\]]0603[[\]]1	C31, C44, C45, C47, C48, C49, C50		Capacitor	RES1608X06L	Top
	7	ITR9909	ITR9909	U6, U7, U8, U9, U10, U11, U12		Everlight Opto Interrupter	ITR9909_EDGE	Top
	8	10K	8.2K[[\]]0603[[\]]2, 10K[[\]]0603[[\]]1, 10K[[\]]0603[[\]]2	R101, R102, R109, R110, R117, R118, R128, R129		Resistor	RES1608X06L	Top
	8	33	68K[[\]]0603[[\]]1, RES	R98, R99, R100, R135, R147, R148, R149, R150		120, Resistor	RES1608X06L	Top
	8	56	68K[[\]]0603[[\]]1	R56, R58, R60, R62, R78, R79, R80, R81		Resistor	RES1608X06L	Top
	8	APTD1608SYCK	LED	D13, D14, D15, D16, D21, D22, D23, D24		LED standard - CMS Helios	DI0C1608X08N	Top



