





Quantity	Comment	LibRef	Designator	Description	Footprint	Layer
1	100	RES_A00 RT	R105	Resistance	RESC1608X06N	Bottom
1	1uF	100F[V][U] 603[[]][I]	C63	Capacitor	CAPC1608X08L	Bottom
1	6.2	RES	R38	120	RESC1608X06L	Bottom
1	815-ABLS-8-B2	HC494H _SMX	Y1	Surface Mount Quartz Crystal 8Mhz	HC49/ 4H_SMX	Bottom
1	AP7331-33WG-7	AP7331	U26	300mA Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N	Bottom
1	Battery connector 89400-0220	Battery	BT1	Multicell Battery	BAT-2	Bottom
1	MCP6L04T-E/ ST	MCP6L04 T-E/ ST	U4	1MHz, 85 $\mu$ A Quad Op Amp, 14-Pin TSSOP, Extended Temperature Range, Tape and Reel	TSSOP-ST14_N	Bottom
12	4.7K	4.7K[[]][U] 603[[]][I]	R1, R2, R57, R59, R61, R63, R64, R65, R111, R112, R113, R114	Resistor	RESC1608X06L	Bottom
15	100nF	100nF[V][U] 0603[[]][I]	C5, C7, C8, C9, C14, C22, C25, C26, C28, C30, C55, C68, C89, C70, C71	Capacitor	CAPC1608X08L	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	18pF[V][U] 0603[[]][I]	C41, C42		CAPC1608X08L	Bottom
2	2.7K	RES	R4, R6	Resistor	RESC1608X06L	Bottom
2	4.7uF	4.7uF[V][U] 0603[[]][I]	C40, C43	Capacitor	CAPC1608X08L	Bottom
2	BT5050RGBCT-180	LED RGB SMD 2	D2, D6	\$0.027/ 2000k	LEDSMD5	Bottom
2	ITR9909	ITR9909	U2, U3	Everlight Opto Interrupter	ITR9909_LONG	Bottom
2	Motor connector 89400-0220	Motor	B1, B2	Motor, General Kind	BAT-2	Bottom
2	WP7104SRC/D	LED	D19, D20	Red led 2V@20ma 57mcd	Led_TH_3mm_20mm	Bottom
3	MC74HC595ADTR2	MC74HC5 95ADTR2	U13, U15, U17	8-Bit Serial Input/Shift 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	10uF	100F[V][U] 0603[[]][I] 1, 10uF[[]][I] 0603[[]][I] 1, 4.7uF[[]][I] 0603[[]][I] 1, 10uF[[]][I] 0603[[]][I] 1	C51, C52, C72, C73	Capacitor	CAPC1608X08L	Bottom
4	1K	RES	R21, R22, R23, R24	120	RESC1608X06L	Bottom
4	22K	RES	R7, R8, R9, R10	120	RESC1608X06L	Bottom
4	820	22K[V][U] 603[[]][I]	R151, R152, R153, R154	Resistor	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
4	MLP2520S3R3S	IND	L1, L2, L3, L4	Inductors for Power Circuits, Multilayer/ STD Magnetic Shielded	INDC2520X12L	Bottom
6	100K	100K[V][U] 0603[[]][I] 1	R119, R120, R121, R122, R123, R124	Resistor	RESC1608X06L	Bottom
6	56	56K[V][U] 603[[]][I]	R74, R75, R76, R77, R90, R91	Resistor	RESC1608X06L	Bottom
7	4.7nF	CAP-NP	C15, C16, C17, C18, C19, C20, C21	Capacitor	CAPC1608X08L	Bottom
		RES, RES, RES, RES,				

	6	56	603K[ $\wedge$ ]J0 603[ $\wedge$ ]J1	R74, R75, R76, R77, R90, R91	Resistor	RESC1608X06L	Bottom
	7	4.7nF	CAP-NP	C15, C16, C17, C18, C19, C20, C21	Capacitor	CAPC1608X08L	Bottom
	8	10K	RES, RES, RES, RES, RES, 10K[ $\wedge$ ]J0 603[ $\wedge$ ]J2	R27, R28, R29, R30, R31, R50, R51, R136	120, 120, 120, 120, 120, 120, 120, Resistor	RESC1608X06L	Bottom
	8	2.2K	RES, RES, RES, RES, 2.2K[ $\wedge$ ]J0 603[ $\wedge$ ]J1, RES, RES	R12, R13, R14, R15, R16, R33, R44, R45	120, 120, 120, 120, 120, Resistor, 120, 120	RESC1608X06L	Bottom
	8	33	RES	R3, R5, R68, R69, R70, R71, R72, R73	120, Resistor, 120, 120, 120, 120, 120, 120	RESC1608X06L	Bottom
	8	39	603[ $\wedge$ ]J0 603[ $\wedge$ ]J1	R82, R83, R84, R85, R95, R96, R97, R133	Resistor	RESC1608X06L	Bottom
	9	27-21SURC/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	100nF[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	C57	Capacitor	CAPC1608X08L	Top
	1	100	RES_ACO RT	R106	Resistance	RESC1608X06N	Top
	1	10uF X5R	100F[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	C34	Capacitor	CAPC1608X08L	Top
	1	270K	270K[ $\wedge$ ]J 0603[ $\wedge$ ]J 2	R140	Resistor	RESC1608X06L	Top
	1	47K	22K[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	R132	Resistor	RESC1608X06L	Top
	1	51pF	100nF[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	C64	Capacitor	CAPC1608X08L	Top
	1	6.8K	10K[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	R127	Resistor	RESC1608X06L	Top
	1	680K	470K[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	R125	Resistor	RESC1608X06L	Top
	1	820	22K[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	R131	Resistor	RESC1608X06L	Top
	1	Astron R3190005-021-R	USB_MINI AB	X3	USB connector Micro B	Astron 3190005-x21-r	Top
	1	Con1x6	Con1x6	X2	1 x 6 pins connector	MHDR1X6	Top
	1	FAN3988	FAN3988	U23	USER 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	1MHz 85 $\mu$ 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
	1	MicroSD-Astron 5190008-XA4-R	SD-Card- Micro- ASLTRON 5190008- XA4-R	S1	MicroSD Card connector 5190008-XA4-R	Astron 5190008-XA4-R	Top
	1	MMA7660FC	MMA7660 FC	U1	MMA7660FC: XYZ-AXIS ACCELEROMETER $\pm$ 1.5 g	DFN50P300X300X100- 12N	Top
	1	NCP15XH103F0R C	Res Thermal	RT1	Transistors - NTC 10K OHM 1%0402	RESC1005X04L	Top
	1	PIC24FJ128GB106- I/PT	PIC24FJ1 28GB106- 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	Top
	1	Speaker	Speaker	LS1	Loudspeaker	PIN2	Top
	1	SW-PB	SW-PB	S2	Switch	FSMRA2JH	Top
	1	TD4015BPN	Micro1	MC1	Unidirectional back Electret Condenser Microphone	MICRO_TD4015BPN	Top
	10	4.7K	4.7K[ $\wedge$ ]J0 603[ $\wedge$ ]J1	R67, R92, R93, R94, R103, R104, R142, R144, R145, R146	Resistor	RESC1608X06L	Top
	2	180	180K[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	R107, R137	Resistor	RESC1608X06L	Top
	2	1nF	100nF[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	C53, C54	Capacitor	CAPC1608X08L	Top
	2	1uF	4.70F[ $\wedge$ ]J 0603[ $\wedge$ ]J 1, 1uF[ $\wedge$ ]J0 603[ $\wedge$ ]J1	C56, C61	Capacitor	CAPC1608X08L	Top
	2	5.6K	2.2K[ $\wedge$ ]J0 603[ $\wedge$ ]J1	R115, R116	Resistor	RESC1608X06L	Top
	2	BAT54S	BAT54S	D33, D34	Schottky Barrier Diode	SOT23_N	Top
	2	BT5050RGBCT180	LED RGB SMD 2	D27, D38	\$0.027/2000k	LEDSMD5	Top
	2	MC74HC595ADTR2	MC74HC5 95ADTR2	U14, U16	8-Bit Serial-Input/Serial or Parallel-Output Shift Register with Latched 3- State Outputs	948F-01_N	Top
	21	100nF	100nF[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	C1, C3, C6, C10, C11, C12, C13, C23, C24, C27, C29, C33, C35, C36, C37, C38, C39, C62, C65, C66, C67	Capacitor	CAPC1608X08L	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	RESC1608X06L	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	27-21SURC/SS30-A3	LED	D7, D32, D36	SMD Red led right angle mount 2V@20ma 57mcd	27-21 Everlight	Top
	3	47nF	470nF[ $\wedge$ ]J 0603[ $\wedge$ ]J 1, 10nF[ $\wedge$ ]J 0603[ $\wedge$ ]J 1, 470nF[ $\wedge$ ]J 0603[ $\wedge$ ]J 1	C58, C59, C60	Capacitor	CAPC1608X08L	Top
	3	AP7331-33WG-7	AP7331	U18, U22, U24	300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N	Top
	3	APTD1608GQCK	LED	D28, D29, D30	LED standard - CMS Helios SMD Green 570nm 230mcd	DIOC1608X08N	Top
			100K[ $\wedge$ ]J 0603[ $\wedge$ ]J 1, 100K[ $\wedge$ ]J 0603[ $\wedge$ ]J				

	3	APTD1608GCK	LED	D28, D29, D30	Helios SMD Green 570nm 230mcd	DIOC1608X08N	Top
	4	100K	100K[(V)] 0603[(A)] 1, 100K[(A)] 0603[(A)] 1, 10K[(A)]0 603[(A)]1, 100K[(A)] 0603[(A)] 1	R138, R139, R141, R143	Resistor	RESC1608X06L	Top
	4	10uF	100F[(V)] 0603[(A)] 1, 10uF[(A)] 0603[(A)] 1, 4.7uF[(A)] 0603[(A)] 1, 10uF[(A)] 0603[(A)] 1	C2, C4, C32, C46	Capacitor	CAPC1608X08L	Top
	4	A3/TR8	LED	D1, D3, D4, D5	SMD Red 0603 2V @ 20mA 56 mcd	DIOC1608X08N	Top
	4	1K	RES, RES, RES, 1K[(A)]06 03[(A)]1	R25, R48, R49, R108	120, 120, 120, Resistor	RESC1608X06L	Top
	4	22K	RES, RES, RES, 22K[(A)]0 603[(A)]1	R11, R42, R43, R130	120, 120, 120, Resistor	RESC1608X06L	Top
	6	39	68K[(V)]0 603[(A)]1	R66, R86, R87, R88, R89, R134	Resistor	RESC1608X06L	Top
	6	6.2	RES	R36, R37, R39, R40, R54, R55	120	RESC1608X06L	Top
	7	2.2K	2.2K[(A)]0 603[(A)]1	R32, R34, R35, R41, R52, R53, R126	Resistor	RESC1608X06L	Top
	7	4.7uF	4.7uF[(V)] 0603[(A)] 1	C31, C44, C45, C47, C48, C49, C50	Capacitor	CAPC1608X08L	Top
	7	ITR9909	ITR9909	U6, U7, U8, U9, U10, U11, U12	Everlight Opto Interrupter	ITR9909_EDGE	Top
	8	10K	10K[(A)]0 603[(A)]2, 10K[(A)]0 603[(A)]2, 10K[(A)]0 603[(A)]1, 10K[(A)]0 603[(A)]1, 8.2K[(A)]1, 8.2K[(A)]0 603[(A)]2, 8.2K[(A)]0 603[(A)]2, 10K[(A)]0 603[(A)]1, 10K[(A)]0 603[(A)]1	R101, R102, R109, R110, R117, R118, R128, R129	Resistor	RESC1608X06L	Top
	8	33	RES, RES, RES, 68K[(A)]0 603[(A)]1, RES, RES, RES, 68K[(A)]0 603[(A)]1	R98, R99, R100, R135, R147, R148, R149, R150	120, 120, 120, Resistor, 120, 120, 120, Resistor	RESC1608X06L	Top
	8	56	68K[(V)]0 603[(A)]1	R56, R58, R60, R62, R78, R79, R80, R81	Resistor	RESC1608X06L	Top
	8	APTD1608SYCK	LED	D13, D14, D15, D16, D21, D22, D23, D24	LED standard - CMS Helios	DIOC1608X08N	Top



