



| Quantity | Comment | LibRef | Designator | Description | Footprint |
|----------|------------------------------|---|---|---|-----------------------|
| 2 | Motor connector 89400-0220 | Motor | B1, B2 | Motor, General Kind | BAT-2 |
| 1 | Battery connector 89400-0220 | Battery | BT1 | Multicell Battery | BAT-2 |
| 36 | 100nF | 100nF[[\A]]0603[[\A]]J1 | C1, C3, C5, C6, C7, C8, C8, 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 | CAPC1608X08L |
| 8 | 10uF | 10uF[[\A]]0603[[\A]]J1, 4.7uF[[\A]]0603[[\A]]J1, 10uF[[\A]]0603[[\A]]J1, 10uF[[\A]]0603[[\A]]J1, 10uF[[\A]]0603[[\A]]J1, 4.7uF[[\A]]0603[[\A]]J1, 10uF[[\A]]0603[[\A]]J1 | C2, C4, C32, C46, C51, C52, C72, C73 | Capacitor | CAPC1608X08L |
| 7 | 4.7nF | CAP-NP | C15, C16, C17, C18, C19, C20, C21 | Capacitor | CAPC1608X08L |
| 4 | 4.7uF | 4.7uF[[\A]]0603[[\A]]J1 | C31, C40, C43, C44, C45, C47, C48, C49, C50 | Capacitor | CAPC1608X08L |
| 1 | 10uF XSR | 10uF[[\A]]0603[[\A]]J1 | C34 | Capacitor | CAPC1608X08L |
| 2 | 18pF | 10pF[[\A]]0603[[\A]]J3 | C41, C42 | | CAPC1608X08L |
| 2 | 1nF | 100nF[[\A]]0603[[\A]]J1 | C53, C54 | Capacitor | CAPC1608X08L |
| 3 | 1uF | 4.7uF[[\A]]0603[[\A]]J1, 1uF[[\A]]0603[[\A]]J1, 1uF[[\A]]0603[[\A]]J1 | C56, C61, C63 | Capacitor | CAPC1608X08L |
| 1 | 1.5nF | 10nF[[\A]]0603[[\A]]J1 | C57 | Capacitor | CAPC1608X08L |
| 3 | 47nF | 470nF[[\A]]0603[[\A]]J1, 10nF[[\A]]0603[[\A]]J1, 470nF[[\A]]0603[[\A]]J1 | C58, C59, C60 | Capacitor | CAPC1608X08L |
| 1 | 51pF | 10nF[[\A]]0603[[\A]]J1 | C64 | Capacitor | CAPC1608X08L |
| 4 | 19-21SURC/ S530-A3/ TR8 | LED | D1, D3, D4, D5 | SMD Red 0603 2V@20ma 56 mcd | DIOC1608X08N |
| 4 | BT5050RGBCT180 | LED RGB SMD 2 | D2, D6, D27, D38 | \$0.027/ 2000k | LEDSMD5 |
| 12 | 27-21SURC/ S530-A3 | LED | D7, D8, D10, D11, D12, D17, D18, D28, D28, 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 | APT D1608SYCK | 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 | APT D1608CGCK | LED | D28, D29, D30 | LED standard - CMS Helios SMD Green 570nm 230mcd | DIOC1608X08N |
| 2 | BAT54S | BAT54S | D33, D34 | Schottky Barrier Double Diode | SOT23_N |
| 4 | MLP2520S3R3S | IND | L1, L2, L3, L4 | Inductors for Power Circuits Multilayer SMD Magnetic Shielded | INDC2520X12L |
| 1 | Speaker | Speaker | LS1 | Loudspeaker | PIN2 |
| 1 | TD4015BPN | Micro1 | MCI | 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[[\A]]0603[[\A]]J1 | R1, R2, R57, R59, R61, R63, R64, R65, R67, R6Z, R93, R94, R103, R104, R111, R112, R113, R114, R142, R144, R145, R146 | Resistor | RESC1608X06L |
| 16 | 33 | RES, RES, RES, RES, RES, RES, RES, RES, RES, RES, RES, RES, RES, RES, RES, RES, 68K[[\A]]0603[[\A]]J1, RES, RES, RES, 68K[[\A]]0603[[\A]]J1 | R3, R5, R68, R69, R70, R71, R72, R73, R98, R99, R100, R135, R147, R148, R149, R150 | 120, Resistor, 120, 120, 120, 120, 120, 120, 120, 120, Resistor, 120, 120, 120, Resistor | RESC1608X06L |
| 2 | 2.7K | RES | R4, R6 | Resistor | RESC1608X06L |
| 8 | 22K | RES, RES, RES, RES, RES, RES, RES, 22K[[\A]]0603[[\A]]J1 | R7, R8, R9, R10, R11, R42, R43, R130 | 120, 120, 120, 120, 120, 120, 120, Resistor | RESC1608X06L |
| 15 | 2.2K | RES, RES, RES, RES, RES, 2.2K[[\A]]0603[[\A]]J1, 2.2K[[\A]]0603[[\A]]J1, 2.2K[[\A]]0603[[\A]]J1, 2.2K[[\A]]0603[[\A]]J1, 2.2K[[\A]]0603[[\A]]J1, RES, RES, 2.2K[[\A]]0603[[\A]]J1, 2.2K[[\A]]0603[[\A]]J1, 2.2K[[\A]]0603[[\A]]J1 | R12, R13, R14, R15, R16, R32, R33, R34, R35, R41, R44, R45, R52, R53, R126 | 120, 120, 120, 120, 120, Resistor, Resistor, Resistor, Resistor, Resistor, 120, 120, Resistor, Resistor, Resistor | RESC1608X06L |
| 7 | 1.5K | RES | R17, R18, R19, R20, R26, R46, R47 | 120 | RESC1608X06L |
| 8 | 1K | RES, RES, RES, RES, RES, RES, RES, 1K[[\A]]0603[[\A]]J1 | R21, R22, R23, R24, R25, R48, R49, R108 | 120, 120, 120, 120, 120, 120, 120, Resistor | RESC1608X06L |
| 16 | 10K | RES, RES, RES, RES, RES, RES, RES, RES, 10K[[\A]]0603[[\A]]J2, 10K[[\A]]0603[[\A]]J2, 10K[[\A]]0603[[\A]]J2, 10K[[\A]]0603[[\A]]J1, 10K[[\A]]0603[[\A]]J1, 10K[[\A]]0603[[\A]]J1, 8.2K[[\A]]0603[[\A]]J2, 8.2K[[\A]]0603[[\A]]J2, 10K[[\A]]0603[[\A]]J1, 10K[[\A]]0603[[\A]]J1, 10K[[\A]]0603[[\A]]J2 | R27, R28, R29, R30, R31, R50, R51, R101, R102, R109, R110, R117, R118, R128, R129, R136 | 120, 120, 120, 120, 120, 120, 120, Resistor, Resistor, Resistor, Resistor, Resistor, Resistor, Resistor | RESC1608X06L |
| 7 | 6.2 | RES | R36, R37, R38, R39, R40, R54, R55 | 120 | RESC1608X06L |
| 14 | 56 | 68K[[\A]]0603[[\A]]J1 | R56, R58, R60, R6Z, R74, R75, R76, R77, R78, R79, R80, R81, R90, R91 | Resistor | RESC1608X06L |
| 14 | 39 | 68K[[\A]]0603[[\A]]J1 | R66, R6Z, R83, R84, R85, R86, R87, R88, R89, R95, R96, R97, R133, R134 | Resistor | RESC1608X06L |
| 2 | 100 | RES, ACORT | R105, R106 | Resistance | RESC1608X06N |
| 2 | 180 | 180R[[\A]]0603[[\A]]J1 | R107, R137 | Resistor | RESC1608X06L |
| 2 | 5.6K | 2.2K[[\A]]0603[[\A]]J1 | R115, R116 | Resistor | RESC1608X06L |
| 10 | 100K | 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1, 100K[[\A]]0603[[\A]]J1 | R119, R120, R121, R122, R123, R124, R138, R139, R141, R143 | Resistor | RESC1608X06L |
| 1 | 680K | 470K[[\A]]0603[[\A]]J1 | R125 | Resistor | RESC1608X06L |
| 1 | 6.8K | 10K[[\A]]0603[[\A]]J1 | R127 | Resistor | RESC1608X06L |
| 5 | 820 | 22K[[\A]]0603[[\A]]J1 | R131, R151, R152, R153, R154 | Resistor | RESC1608X06L |
| 1 | 147K | 22K[[\A]]0603[[\A]]J1 | R132 | Resistor | RESC1608X06L |
| 1 | 270K | 270K[[\A]]0603[[\A]]J2 | R140 | Resistor | RESC1608X06L |
| 1 | NCP15XH103F03RC | Res Thermal | RT1 | Thermistors - NTC 10K OHM 1% 0402 | RESC1005X04L |
| 1 | MicroSD-Astron 5190008-XA4-R | SD-CARD-Micro-ASLTRON 5190008-XA4-R | S1 | MicroSD Card connector 5190008-XA4-R | Astron 5190008-XA4-R |
| 1 | SW-PB | SW-PB | S2 | Switch | FSMRA2,H |
| 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 | MMAT7660FC | MMAT7660FC | U1 | MMAT7660FC XYZ-AXIS ACCELEROMETER ±1.5 g | DFN50P300X300X100-12N |
| 2 | ITR9909 | ITR9909 | U2, U3 | Everlight Opto Interrupter | ITR9909_LONG |
| 2 | MCPL04T-E/ST | MCPL04T-E/ST | U4, U5 | 1 MHz, 85 µA Quad Up 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/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 | SOT9P285X100-5N |
| 1 | PKC24FJ128GB106-I/PT | PKC24FJ128GB106-I/PT | U19 | General Purpose 16-Bit Flash Microcontroller with USB To-Flash, 128KB Flash, 16KB SRAM, 64-Pin TQFP, Industrial Temperature | TQFP-PK24_N |
| 1 | IRM-3636T | TSOP32236 | U20 | IR Receiver module (36 kHz) for Remote Control Systems | IR-receiver |
| 1 | MCP73871-2AAI/ML | MCP73871-2AAI/ML | U21 | Stand-Alone System Load Sharing and Charge-Limited 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 | MLP1.45x1mm |
| 1 | LM4819M | LM4819M | U25 | 350mW Audio Power Amplifier with Shutdown Mode | MO8A_N |
| 1 | Con1x6 | Con1x6 | X2 | 1 x 6 pins connector | MHDR1X6 |
| 1 | Alstron R3190005-021-R | USB_MINIAB | X3 | USB connector Micro B | Astron 3190005-x21-r |
| 1 | 815-ABL-S-8-B2 | HC49/4H_SMX | Y1 | Surface Mount Quartz Crystal 8Mhz | HC49/4H_SMX |

| Quantity | Comment | LibRef | Designator | Description | Footprint | Layer |
|----------|---------------------------------|--|---|--|------------------|--------|
| 1 | 100 | RES_A00 RT | R105 | Resistance | RESC1608X06N | Bottom |
| 1 | 1uF | 100F[/[/]] 603[/[/]] | 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 μ A Quad Op Amp, 14-Pin TSSOP, Extended Temperature Range, Tape and Reel | TSSOP-ST14_N | Bottom |
| 12 | 4.7K | 4.7K[/[/]] 603[/[/]] | R1, R2, R57, R59, R61, R63, R64, R65, R111, R112, R113, R114 | Resistor | RESC1608X06L | Bottom |
| 15 | 100nF | 100nF[/[/]] J0603[/[/]] | 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[/[/]] 0603[/[/]] | C41, C42 | | CAPC1608X08L | Bottom |
| 2 | 2.7K | RES | R4, R6 | Resistor | RESC1608X06L | Bottom |
| 2 | 4.7uF | 4.7uF[/[/]] 0603[/[/]] | 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[/[/]] 0603[/[/]] 1, 10uF[/[/]] 0603[/[/]] 1, 4.7uF[/[/]] 0603[/[/]] 1, 10uF[/[/]] 0603[/[/]] 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[/[/]] 603[/[/]] | 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[/[/]] 0603[/[/]] 1 | R119, R120, R121, R122, R123, R124 | Resistor | RESC1608X06L | Bottom |
| 6 | 56 | 56K[/[/]] 603[/[/]] | 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[∕∧]J0 603[∕∧]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[∕∧]J0 603[∕∧]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[∕∧]J0 603[∕∧]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 | 603K[∕∧]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[∕∧]J 0603[∕∧]J 1 | C57 | Capacitor | CAPC1608X08L | Top |
| | 1 | 100 | RES_ACO RT | R106 | Resistance | RESC1608X06N | Top |
| | 1 | 10uF X5R | 100F[∕∧]J 0603[∕∧]J 1 | C34 | Capacitor | CAPC1608X08L | Top |
| | 1 | 270K | 270K[∕∧]J 0603[∕∧]J 2 | R140 | Resistor | RESC1608X06L | Top |
| | 1 | 47K | 22K[∕∧]J0 603[∕∧]J1 | R132 | Resistor | RESC1608X06L | Top |
| | 1 | 51pF | 100nF[∕∧]J 0603[∕∧]J 1 | C64 | Capacitor | CAPC1608X08L | Top |
| | 1 | 6.8K | 10K[∕∧]J0 603[∕∧]J1 | R127 | Resistor | RESC1608X06L | Top |
| | 1 | 680K | 470K[∕∧]J 0603[∕∧]J 1 | R125 | Resistor | RESC1608X06L | Top |
| | 1 | 820 | 22K[∕∧]J0 603[∕∧]J1 | 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 µA 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 ±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[∕∧]J0 603[∕∧]J1 | R67, R92, R93, R94, R103, R104, R142, R144, R145, R146 | Resistor | RESC1608X06L | Top |
| | 2 | 180 | 180K[∕∧]J 0603[∕∧]J 1 | R107, R137 | Resistor | RESC1608X06L | Top |
| | 2 | 1nF | 100nF[∕∧]J 0603[∕∧]J 1 | C53, C54 | Capacitor | CAPC1608X08L | Top |
| | 2 | 1uF | 4.70F[∕∧]J 0603[∕∧]J 1, 1uF[∕∧]J0 603[∕∧]J1 | C56, C61 | Capacitor | CAPC1608X08L | Top |
| | 2 | 5.6K | 2.2K[∕∧]J0 603[∕∧]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[∕∧]J 0603[∕∧]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[∕∧]J 0603[∕∧]J 1, 10nF[∕∧]J 0603[∕∧]J 1, 470nF[∕∧]J 0603[∕∧]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[∕∧]J 0603[∕∧]J 1, 100K[∕∧]J 0603[∕∧]J | | | | |

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|--|---|--------------|--|--|---|--------------|-----|
| | 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 |
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