U8
ITR9909
U7
ITR9909
U9
ITR9909
U6
ITR9909
U10
ITR9909
D13
APTD1608SYCK
D24
APTD1608SYCK
C13
100nF
R32
2.2K
R80
39
C6
100nF
C12
100nF
2x
BC817-40
APTD1608SYCK
R37
6.2
Q11
Q6
BC817-40
2x
Q8
Q13
R39
6.2
R34
2.2K
C10
100nF
R35
2.2K
R40
6.2
Q14
2x
BC817-40
Q5
Q10
R36
6.2
BC817-40
2x
C11
100nF
R41 2.2K
MC74HC595ADTR2
U14
R88 D23
39
APTD1608SYCK
R62
R60
R58
R56
4x99
S2
SW-PB
C27
100nF
D1
D5
APTD1608YCK
R78
R79
R80
R81
2x
MC74HC595ADTR2
U16
U20
IRM-3636T
R143
100K
R66
39
D7
27-21SURC/S530-A3
19-21SURC/S530-A3/TR8
B1
Motor
R115
5.6K
C53
1nF
R117
10K
D33
BAS54S
D3
B2 Motor
R16
5.6K
X2
Conn X6
APTD1608SYCK
R25 R11
1K
22K
MCP6L04T-E/ST
Q46
R150
33
BC817-40
Q45
2x
27-21SURC/S530-A3
C65
100nF
D36
27-21SURC/S530-A3
R134
39
R142
4.7K
R135
33
Q32
Q38
BC817-40
R137
180
D37
27-21/BHC-AN1P2/3C
R87
39
D22
APTD1608SYCK
R86
39
D21
APTD1608SYCK
R125
680K
R26
1.5K
R46
1K
Q5
R128
10K
C66
1uF
R127
C56
6.8K
D16
R104
R103
R102
R48
C67
C3
100nF
R42
2.2K
R43 R49
1K
R126
2.2K
TD4015BPN
D8
27-21/BHC-AN1P2/3C
C62
100nF
RT1
NCP15XH103F03RC
R102
2x 10K
C31 U19 C32
4.7uF
10uF
AP131-33WGCT-ND
C33
10K R101
100nF C38
2x
4.7K
C35
100nF
R44 C3
10uF
C39
100nF
C3
100nF
U13
PIC24FJ128GB106-I/PT
D39
100nF
MMA7660FC
BC817-40
R99
R92
4.7K
R90
R100
4.7K
R94
Q35
Q33
Q36
Q32
Q31
Q34
R93
4.7K
D30 D29 D28
3x APTD1608SYCK
C36
100nF
R148
33
BC817-40
R147
4.7K
Q40
R149
33
R146
Q41
Q44
BC817-40
Q39
Q42
BT5050RGBC-T180
D27
C59
47nF C60
47nF
C61
1uF
U25
LM4810M
R165
4.7K
U22 C48
4.7uF
D38
BT5050RGBC-T180
U24
C50
4.7uF
R54
6.2
R132
47K
R130 22K
C57 1.5nF
R47
4.7uF
AP7336-33WG-7
C49
4.7uF
AP9331-33WG-7
2x
BC817-40
Q17
R52
2.2K
Q15
C24
100nF
Speaker
R108
10K
R110
10K
R133
100K
R53
2.2K
Q18
2x
BC817-40
Q16
C23
100nF
R109
10K
U21
MGC9871-2AAI/ML
R55
1K
C45
4.7uF
Battery
R139
100K
C44
4.7uF
R140
270K
U23
FAN5988
R111
180
U11
ITR9909
S1
R106
100
X3
D31
27-21/BHC-AN1P2/3C
D32
27-21SURC/S530-A3
U12
ITR9909

MicroSD-Astron 5190008-XA4-R   Alstron R3190005-021-R

27-21SURC/S530-A3
D18
D17
27-21SURC/S530-A3
WP7104SRC/D
R83
39
R82
WP7104SRC/D
D20
R85
39
U2
TR9908
R84
39
U3
R9908
D19
27-21SURC/S530-A3
D11
C7
100nF
R4
2.7K
Q1
BC817-40
R14
2.7K
C17
C5
R6
3.7K
4.7uF
Q2
BC817-40
27-21SURC/S530-A3
D10
R76
56
R15
2.2K
C18
4.7nF
R33 Q7
2.2K 10K
R29
2x BC817-40
Q4
4.7K
R2
4.7K
R28
10K
C16
4.7nF
R75
56
R30
10K
R1
R3
4.7K
Q3 2.2K
Q12
R38
6.2
R3
33
Q4
R5
33
100nF
R13
2.2K
C9
100nF
D12
27-21SURC/S530-A3
R77
56
C71
2x
100nF
R16
2.2K
C8
C19
4.7nF
R31
10K
R23
2x 1.5K
R9
22K
C64
R8
22K
R22 1K
R18
R17 2x 1.5K
D9
27-21SURC/S530-A3
R27
10K
C15
4.7nF
R12
2K
R74
56
C70
100nF
C13
4.7uF
R102
10K
U15
C28
100nF
R19
22K
R20
U4
R10
22K
R7
22K
R21
1K
MC6L04T-E/ST
MC74HC595ADTR2
R112
4.7K
C52
T3
R114
4.7K
R26
1K
R113
4.7K
C51
10uF
R24
DMG1013S
T1
R61 R70
Q24 Q22
R122
100K
T4
DMG1013T
DMG1013T
T2
R114
4.7K
R57 R68
Q21 Q19
6x
BC817-40 33 4.7K
R72 R64
Q26 Q29
DMG1012T
T6
2x T5
DMG1012T T6
2x 100K
R199
R121
R59 R69
Q23 Q20
D6
Q25 Q27
R71 R63
R199
3x
4.7K 3x
33
D2
BT5050RGBC-T180
Q28 Q30
R73 R65
MC74HC595ADTR2
U16
C26
100nF
6x BC817-40
BT5050RGBC-T180
C41
18pF
Y1
8L5-ABLS-8-B2
39 33 39
R95 R96 R97
C42
18pF
MC74HC595ADTR2
U17
C30
100nF
100nF
C68
R51
10K
API31-33WGCT-ND
U26
C69
100nF
R50 10K
C25
100nF
C21
4.7nF
R45
2.2K
C22
100
C40
4.7
C72
10uF
C20
4.7nF
R44
2.2K
R136
10K
R124
100K
C63 1uF
C55 100nF
R123 10K
56 R91
D26
R133
39
D35
D25
R90
56
27-21SURC/S530-A3
27-21SURC/S530-A3
27-21SURC/S530-A3

Quantity	Comment	LibRef	Designator	Description	Footprint	Supplier	Supplier Nr
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	Farnell	1288255
7	10uF	4.7uF[[/\]]0603[[/\]]1, 10uF[[/\]]0603[[/\]]1	C2, C4, C32, C46, C51, C52, C72	Capacitor	RESC1608X06L	Farnell	1463375, 9227784
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	Farnell	9227784
1	10uF X5R	10uF[[/\]]0603[[/\]]1	C34	Capacitor	RESC1608X06L	Farnell	1463375
2	18pF	10pF[[/\]]0603[[/\]]3	C41, C42		RESC1608X06L	Farnell	8819815
2	1nF	100nF[[/\]]0603[[/\]]1	C53, C54	Capacitor	RESC1608X06L	Farnell	1288255
3	1uF	1uF[[/\]]0603[[/\]]1, 4.7uF[[/\]]0603[[/\]]1	C56, C61, C63			Distrelec, Farnell	823495, 9227784
1	1.5nF	10nF[[/\]]0603[[/\]]1	C57	Capacitor	RESC1608X06L	Farnell	9406182
3	47nF	10nF[[/\]]0603[[/\]]1, 470nF[[/\]]0603[[/\]]1	C58, C59, C60	Capacitor	RESC1608X06L	Distrelec, Farnell	823494, 9406182
1	51pF	10nF[[/\]]0603[[/\]]1	C64	Capacitor	RESC1608X06L	Farnell	9406182
4	19-21SURC/ S530-A3/ TR8	LED	D1, D3, D4, D5	SMD Red 0603 2V@20ma 56 mcd	DIOC1608X08N		
4	BT5050RGBC-T-180	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_PANASONIC_WM-64PN		
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, R57, R59, R61, R63, R84, R65, R67, R92, R93, R94, R103, R104, R111, R112, R113, R114, R142, R144, R145, R146	Resistor	RESC1608X06L	Distrelec	715604
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	Distrelec	715632
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	Distrelec	715620
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	Distrelec	715596
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	Distrelec	715588
16	10K	8.2K[[/\]]0603[[/\]]2, 10K[[/\]]0603[[/\]]2, 10K[[/\]]0603[[/\]]2, RES	R27, R28, R29, R30, R31, R50, R51, R101, R102, R109, R110, R117, R118, R128, R129, R136	120, Resistor	RESC1608X06L	Distrelec, Farnell	715612, 9330399, 9331565
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	Distrelec	715632
14	39	68K[[/\]]0603[[/\]]1	R66, R82, R83, R84, R85, R86, R87, R88, R89, R95, R96, R97, R133, R134	Resistor	RESC1608X06L	Distrelec	715632
2	100	RES_ACORT	R105, R106	Resistance	RESC1608X06N		
2	180	180K[[/\]]0603[[/\]]1	R107, R137	Resistor	RESC1608X06L	Distrelec	715570
2	5.6K	2.2K[[/\]]0603[[/\]]1	R115, R116	Resistor	RESC1608X06L	Distrelec	715596
10	100K	10K[[/\]]0603[[/\]]1, 100K[[/\]]0603[[/\]]1	R119, R120, R121, R122, R123, R124, R138, R139, R141, R143	Resistor	RESC1608X06L	Distrelec	715612, 715636
1	680K	470K[[/\]]0603[[/\]]1	R125	Resistor	RESC1608X06L	Distrelec	715652
1	6.8K	10K[[/\]]0603[[/\]]1	R127	Resistor	RESC1608X06L	Distrelec	715612
1	820	22K[[/\]]0603[[/\]]1	R131	Resistor	RESC1608X06L	Distrelec	715620
1	47K	22K[[/\]]0603[[/\]]1	R132	Resistor	RESC1608X06L	Distrelec	715620
1	270K	270K[[/\]]0603[[/\]]2	R140	Resistor	RESC1608X06L	Farnell	9330941
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	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, 85 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 Prallel-Output Shift Register with Latched 3-State Outputs	948F-01_N		
2	AP131-33WGCT-ND	AP7331	U18, 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	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 Li-Ion/ Li-Polymer Battery Charge Management Controller, 4.2V, 20-Pin QFN, Industrial Temperature	QFN-ML20_N		
2	AP7331-33WG-7	AP7331	U22, U24	300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N		
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	Alstron 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	Supplier	Supplier Nr	Layer
1	100	RES_ACORT	R105	Resistance	RESC1608X06N			Bottom
1	1uF	1uF[[/\]]0603[[/\]]1	C63	Capacitor	RESC1608X06L	Distrelec	823495	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	AP131-33WGCT-ND	AP7331	U26	300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N			Bottom
1	MCP6L04T-E/ST	MCP6L04T-E/ST	U4	1 MHz, 85 µA Quad Op Amp, 14-Pin TSSOP, Extended Temperature Range, Tape and Reel	TSSOP-ST14_N			Bottom
12	4.7K	4.7K[[/\]]0603[[/\]]1	R1, R2, R57, R59, R61, R63, R64, R65, R111, R112, R113, R114	Resistor	RESC1608X06L	Distrelec	715604	Bottom
15	100nF	100nF[[/\]]0603[[/\]]1	C5, C7, C8, C9, C14, C22, C25, C26, C28, C30, C55, C68, C69, C70, C71	Capacitor	RESC1608X06L	Farnell	1288255	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	10pF[[/\]]0603[[/\]]3	C41, C42		RESC1608X06L	Farnell	8819815	Bottom
2	2.7K	RES	R4, R6	Resistor	RESC1608X06L			Bottom
2	4.7uF	4.7uF[[/\]]0603[[/\]]1	C40, C43	Capacitor	RESC1608X06L	Farnell	9227784	Bottom
2	BT5050RGBC-T180	LED RGB SMD 2	D2, D6	$0.027/2000k	LEDSMD5			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	Farnell	1463375, 9227784	Bottom
3	MC74HC595ADTR2	MC74HC595ADTR2	U13, U15, U17	8-Bit Serial-Input/Serial or Prallel-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	DMG1012T	T5, T6, T7, T8	Transistor MOSFET 1 x N, Pining : 1=G, 2=S, 3=D	SOT50P160X80-3N			Bottom
4	DMG1013T	DMG1013T	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	Distrelec	715636	Bottom
6	56	68K[[/\]]0603[[/\]]1	R74, R75, R76, R77, R90, R91	Resistor	RESC1608X06L	Distrelec	715632	Bottom
7	4.7nF	CAP-NP	C15, C16, C17, C18, C19, C20, C21	Capacitor	CAPC1608N			Bottom
8	10K	10K[[/\]]0603[[/\]]2, RES	R27, R28, R29, R30, R31, R50, R51, R136	120, Resistor	RESC1608X06L	Farnell	9330399	Bottom
8	2.2K	2.2K[[/\]]0603[[/\]]1, RES	R12, R13, R14, R15, R16, R33, R44, R45	120, Resistor	RESC1608X06L	Distrelec	715596	Bottom
8	33	RES	R3, R5, R68, R69, R70, R71, R72, R73	120, Resistor	RESC1608X06L			Bottom
8	39	68K[[/\]]0603[[/\]]1	R82, R83, R84, R85, R95, R96, R97, R133	Resistor	RESC1608X06L	Distrelec	715632	Bottom
9	27-21SURC/S530-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	10nF[[/\]]0603[[/\]]1	C57	Capacitor	RESC1608X06L	Farnell	9406182	Top
1	100	RES_ACORT	R106	Resistance	RESC1608X06N			Top
1	10uF X5R	10uF[[/\]]0603[[/\]]1	C34	Capacitor	RESC1608X06L	Farnell	1463375	Top
1	270K	270K[[/\]]0603[[/\]]2	R140	Resistor	RESC1608X06L	Farnell	9330941	Top
1	47K	22K[[/\]]0603[[/\]]1	R132	Resistor	RESC1608X06L	Distrelec	715620	Top
1	51pF	10nF[[/\]]0603[[/\]]1	C64	Capacitor	RESC1608X06L	Farnell	9406182	Top
1	6.8K	10K[[/\]]0603[[/\]]1	R127	Resistor	RESC1608X06L	Distrelec	715612	Top
1	680K	470K[[/\]]0603[[/\]]1	R125	Resistor	RESC1608X06L	Distrelec	715652	Top
1	820	22K[[/\]]0603[[/\]]1	R131	Resistor	RESC1608X06L	Distrelec	715620	Top
1	Alstron R3190005-021-R	USB_MINI AB	X3	USB connector Micro B	Astron 3190005-x21-r			Top
1	AP131-33WGCT-ND	AP7331	U18	300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N			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	TSOP32236	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	MCP6L04T-E/ST	U5	1 MHz, 85 µA Quad Op Amp, 14-Pin TSSOP, Extended Temperature Range, Tape and Reel	TSSOP-ST14_N			Top
1	MCP73871-2AAI/ML	MCP73871-2AAI/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

Qty	Part	Value	Designators	Description	Footprint	Vendor	Order No.	Side
1	MCP6L04T-E/ST	T-E/ST	U5	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	NCP15XH103F03R C	Res Thermal	RT1	Thermistors - NTC 10K OHM 1% 0402	RESC1005X04L			Top
1	PIC24FJ128GB106-I/PT	PIC24FJ12 8GB106-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	Omnidirectional Back Electret Condenser Microphone	MICRO_PANASONIC_WM-64PN			Top
10	4.7K	4.7K[[/\]]0 603[[/\]]1	R67, R92, R93, R94, R103, R104, R142, R144, R145, R146	Resistor	RESC1608X06L	Distrelec	715604	Top
2	180	180R[[/\]] 0603[[/\]]1	R107, R137	Resistor	RESC1608X06L	Distrelec	715570	Top
2	1nF	100nF[[/\]] 0603[[/\]]1	C53, C54	Capacitor	RESC1608X06L	Farnell	1288255	Top
2	1uF	1uF[[/\]]06 03[[/\]]1, 4.7uF[[/\]] 0603[[/\]]1	C56, C61	Capacitor	RESC1608X06L	Distrelec, Farnell	823495, 9227784	Top
2	5.6K	2.2K[[/\]]0 603[[/\]]1	R115, R116	Resistor	RESC1608X06L	Distrelec	715596	Top
2	AP7331-33WG-7	AP7331	U22, U24	300mA, Low Quiescent Current, Fast Transient LDO	SOT95P285X100-5N			Top
2	BAT54S	BAT54S	D33, D34	Schottky Barrier Double Diode	SOT23_N			Top
2	BT5050RGBC-T180	LED RGB SMD 2	D27, D38	$0.027/ 2000k	LEDSMD5			Top
2	MC74HC595ADTR2	MC74HC5 95ADTR2	U14, U16	8-Bit Serial-Input/Serial or Prallel-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	RESC1608X06L	Farnell	1288255	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/ S530-A3	LED	D7, D32, D36	SMD Red led right angle mount 2V@20ma 57mcd	27-21 Everlight			Top
3	47nF	10nF[[/\]]0 603[[/\]]1, 470nF[[/\]] 0603[[/\]]1	C58, C59, C60	Capacitor	RESC1608X06L	Distrelec, Farnell	823494, 9406182	Top
3	APTD1608CGCK	LED	D28, D29, D30	LED standard - CMS Helios SMD Green 570nm 230mcd	DIOC1608X08N			Top
4	100K	10K[[/\]]0 603[[/\]]1, 100K[[/\]] 0603[[/\]]1	R138, R139, R141, R143	Resistor	RESC1608X06L	Distrelec	715612, 715636	Top
4	10uF	4.7uF[[/\]] 0603[[/\]]1 , 10uF[[/\]]0 603[[/\]]1	C2, C4, C32, C46	Capacitor	RESC1608X06L	Farnell	1463375, 9227784	Top
4	19-21SURC/ S530-A3/ TR8	LED	D1, D3, D4, D5	SMD Red 0603 2V@20ma 56 mcd	DIOC1608X08N			Top
4	1K	1K[[/\]]06 03[[/\]]1, RES	R25, R48, R49, R108	120, Resistor	RESC1608X06L	Distrelec	715588	Top
4	22K	22K[[/\]]0 603[[/\]]1, RES	R11, R42, R43, R130	120, Resistor	RESC1608X06L	Distrelec	715620	Top
6	39	68K[[/\]]0 603[[/\]]1	R66, R86, R87, R88, R89, R134	Resistor	RESC1608X06L	Distrelec	715632	Top
6	6.2	RES	R36, R37, R39, R40, R54, R55	120	RESC1608X06L			Top
7	2.2K	2.2K[[/\]]0 603[[/\]]1	R32, R34, R35, R41, R52, R53, R126	Resistor	RESC1608X06L	Distrelec	715596	Top
7	4.7uF	4.7uF[[/\]] 0603[[/\]]1	C31, C44, C45, C47, C48, C49, C50	Capacitor	RESC1608X06L	Farnell	9227784	Top
7	ITR9909	ITR9909	U6, U7, U8, U9, U10, U11, U12	Everlight Opto Interrupter	ITR9909_EDGE			Top
8	10K	8.2K[[/\]]0 603[[/\]]2, 10K[[/\]]0 603[[/\]]1, 10K[[/\]]0 603[[/\]]2	R101, R102, R109, R110, R117, R118, R128, R129	Resistor	RESC1608X06L	Distrelec, Farnell	715612, 9330399, 9331565	Top
8	33	68K[[/\]]0 603[[/\]]1, RES	R98, R99, R100, R135, R147, R148, R149, R150	120, Resistor	RESC1608X06L	Distrelec	715632	Top
8	56	68K[[/\]]0 603[[/\]]1	R56, R58, R60, R62, R78, R79, R80, R81	Resistor	RESC1608X06L	Distrelec	715632	Top
8	APTD1608SYCK	LED	D13, D14, D15, D16, D21, D22, D23, D24	LED standard - CMS Helios	DIOC1608X08N			Top

U8
ITR9909
D13
APTD1608SYCK

U7
ITR9909
D24
APTD1608SYCK

U9
ITR9909

C6
100nF

C13
100nF
R32
2.2K
R89
39

D14
APTD1608SYCK
C12
100nF
2x
BC817-40
Q8   Q13
R39
6.2

R37
6.2
Q11 Q6
2x
BC817-40

U6
ITR9909
2x
BC817-40

R34
2.2K
R35
2.2K
C10
100nF

R40
6.2
Q14 QS
2x
BC817-40

U10
ITR9909

S2

Q5   Q10
R36
6.2

C11
100nF
R41 2.2K

D1

R88 D23
39
APTD1608SYCK

D15
APTD1608SYCK
R78
R79
R80
R81
2x

C29
100nF

U20
IRM-3636T
R43

MC74HC595ADTR2

U14
R62
R60
R58

D4

D5

U16
MC74HC595ADTR2

100K
R66
39
D7

C27
100nF

R56
4x99

4x
19-21SURC/S530-A3/TR8A
BAT54S

D3

D36
27-21SURC/S530-A3
D37
27-21/BHC-AN1P2/3C

R134
39
R142
4.7K

R135
33

B1
Motor
R115 5.6K
C53
1nF
R117
10K

2 Mot
R116 5.6K
R114
10K
R118

D16

R150
Q46 Q45
R67
27-21SURC/S530-A3

2x BC817-40
C65
100nF

D33
BAT54S
R25 R11
1K 22K
R26
1.5K
R42

MCP6L04T-E/ST
R125
680K
U5
R129
10K
C66
R128
10K

C56
6.8K
R127

MC1
TD4015BPN
D8
27-21/BHC-AN1P2/3C

R137
180

Q37 Q38
BC817-40

R87
39
D22
APTD1608SYCK

R86
39
D21
APTD1608SYCK

X2
Con1x6
APTD1608SYCK

B104
R103
2x
R46
1K
C67

R48
R47 22K
R49
1K
R43 R49

R126
2.2K

R62
C62
100nF
RT1
NCP15XH103F03RC

R102
2x 10K

6x
BC817-40

C31 U18 C32
4.7uF   10uF
AP131-33WGCT-ND

R99 R92
4.7K 4.7K
R98 R100
33
R94
4.7K

Q35 Q33 Q36
R93 Q32 Q31 Q34
4.7K

D27
BT5050RGBC-T180

100nF C33
10K R101
100nF C38

U19
PIC24FJ128GB106-I/PT

C39
100nF

C35
100nF

R144 C2
C1 C2 10uF
100nF

MMA7660FC
X5R
U17

C36
100nF

C30 C29 C28
3x APTD1608CGCK

R148
33
Q43Q40
BC817-40

R145
4.7K

U22 C48 D38
4.7uF
AP7331-33WG-7

C37
10uF
C3 100nF
C34

R146
Q41 R149
Q44 33
4.7K
LQ39 Q42
BT5050RGBC-T180
2xBC817-40

U24
C49 C50
4.7uF 4.7uF
AP7331-33WG-7

R53
2.2K
R55 6.2
Q18
2x
BC817-40

Q16
C23
100nF

C59
47nF C60
C58 47nF
820
47nF R132
47nF
R131
R130 22K
C57 1.5nF

U25
LM4810M
C61
1uF

Speaker
R108 R110
10K
R109
10K
U21
MCP73871-2AAI/ML
C44
4.7uF
R1
1K

R138
100K

R54
6.2

2x
BC817-40
Q17 Q15
R52
2.2K
C24
100nF

C45
4.7uF
Battery
D139
100K
C46
10uF
U23

R141
R140
270K

R106
100
D31
27-21/BHC-AN1P2/3C

S1

X3
FAN3988
R107
180
D32
27-21SURC/S530-A3

U11
ITR9909

U12
ITR9909

SW-PB
SW-PB

MicroSD-Astron 5190008-XA4-R
Alstron R3190005-021-R

27-21SURC/S530-A3
D18
D17
27-21SURC/S530-A3
WP7104SRC/D
D20
R83
39
R82
39
WP7104SRC/D
D19
R85 39
U2
LTR990
U3
LTR990
R84
39
D11
27-21SURC/S530-A3
C7
100nF
C17
4.7nF
27-21SURC/S530-A3
D10
R76
56
R4
2.7K
R14
2.2K
R33 2.2K
Q7 10K
R29
2x
C5
100nF
Q2
R6
2.7K
R75
56
R15
2.2K
C18
4.7nF
Q1
BC817-40
Q8
BC817-40
BC817-40
R2
4.7K
R28
10K
C16
4.7nF
10K
R30
R1
4.7K
Q3
R3
33
2.2K
R38
6.2
Q4
R5 33
R13
2.2K
27-21SURC/S530-A3
D12
C9
100nF
D9
27-21SURC/S530-A3
100nF
C14
R23 1K
R9 22K
R8 22K
R221K
C71
2x
C8
100nF
R16
2.2K
C19
4.7nF
2x 1.5K
R19
R18
R17
2x 1.5K
C13
4.7nF
R74
56
C70
100nF
R77
56
10K
R31
R19
R20
U4
R10
10K
R27
R12
2.2K
R43
4.7uF
R105
100
R24
1K
R7
22K
R21
1K
MCP6L04T-E/ST
MC74HC595ADTR2
U15
C28
100nF
C52 10uF
R112
4.7K
T3
R114
4.7K
R113
4.7K
10uF
C51
R61 R70
R122
100K
T4
DMG1013T
DMG1013T
DMG1013T
T1 2x T2
R111
4.7K
Q24 Q22
DMG1012T
T8
DMG1012T
T7
100K R120
T5 2x T6
DMG1012T
2x 100K
R121
R57 R68
Q21 Q19
D2
6x
BC817-40
3x
33
3x
4.7K
R72 R64
Q26 Q29
R71 R63
Q25 Q27
R73 R65
Q28 Q30
R59 R69
Q23 Q20
BT5050RGBC-T180
R119
R59 R69
3x
4.7K
3x
33
6x BC817-40
BT5050RGBC-T180
MC74HC595ADTR2
U13
C26
100nF
C41
18pF
39 39 39
R95 R96 R97
Y1
815-ABLS-8-B2
C42
18pF
MC74HC595ADTR2
U17
C30
100nF
C68
100nF
R51
10K
C21
4.7nF
R45
2.2K
C22
100nF
AP131-33WGCT-ND
U26
C40
4.7uF
C72
10uF
R136 10K
C63 1uF
R124
100K
C55 100nF
R123 100K
C69
100nF
R50 10K
100nF
C25
C20
4.7nF
R44
2.2K
56 R91
D26
27-21SURC/S530-A3
D35
R133
39
27-21SURC/S530-A3
R90
56
D25
27-21SURC/S530-A3