Page	Number of Lines	Price (\$)
PCB	39	155.545
Dashboard Electrical	24	443.54
Dashboard Mechanical	8	55.07
Totals	71	654.155

Line Number	Description	Design Reference	Value/PN	Quantity Per PCB	Manufacturer Part No	Supplier	Supplier PN	Link	Unit Price	Line Total
1	Unpolarized capacitor	C5 C6	0.01uF	2	AR205F103K4 R	Digikey	478-5095-ND	https://www. digikey. com/products/e n? keywords=478- 5095-ND	0.69	1.38
2	Unpolarized capacitor	C1 C2 C3 C4 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18	0.1uF	16	AR205F104K4 R	Digikey	478-5096-ND	https://www. digikey. com/products/e n? keywords=478- 5096-ND	0.484	7.744
3	Diode	D2 D3 D7 D8 D11	SB5100E-G	5	SB5100E-G	Digikey	641-1421-1-ND	https://www. digikey. com/products/e n? keywords=641- 1421-1-ND	0.57	2.85
4	LED generic	D4 D5	WP7113ID	2	WP7113ID	Digikey	754-1264-ND	https://www. digikey. com/product- detail/en/kingbri ght/WP7113ID/ 754-1264- ND/1747663	0.45	0.9
5	Generic connector, double row, 02x03, counter clockwise pin numbering scheme (similar to DIP packge numbering)	J2 J3 J5 J6 J7 J9 J10 J11 J12 J14 J15 J16 J17 J18 J19 J20 J21 J22 J23 J24	Conn_02x03_C ounter_Clockwi se	20	75869-131LF	Digikey	609-2845-ND	https://www. digikey. com/products/e n? keywords=609- 2845-ND	0.697	13.94
6	45Deg Generic screw terminal, single row, 01x16	J1 J4 J8 J13	Screw_Terminal _01x16	4	1702972	Digikey	277-13705-ND	https://www. digikey. com/products/e n? keywords=277- 13705-ND	3	12

7	40V Vce, 0.2A Ic, NPN, Small Signal Transistor, TO- 92	Q1 Q4 Q6 Q9 Q11 Q15 Q17 Q19 Q21 Q22 Q24 Q26 Q28 Q30 Q34 Q36 Q38 Q40	2N3904	18	2N3904BU	Digikey	2N3904FS-ND	https://www. digikey. com/products/e n? keywords=2N39 04FS-ND	0.19	3.42
8	50V Vds, 0.22 A Id, N-channel MOSFET, SOT- 23	Q41 Q42	BSS138	2	BSS138LT1G	Digikey	BSS138LT1GO SCT-ND	https://www. digikey. com/products/e n? keywords=BSS 138LT1GOSCT -ND	0.31	0.62
9	Transistor N- MOSFET with substrate diode (general)	Q7 Q12 Q13 Q20 Q31 Q32	FQB30N06LTM	6	FQB30N06LTM	Digikey	FQB30N06LTM CT-ND	https://www. digikey. com/products/e n? keywords=FQB 30N06LTMCT- ND	1.68	10.08
10	Transistor P- MOSFET with substrate diode (general)	Q2 Q3 Q5 Q8 Q10 Q14 Q16 Q18 Q23 Q25 Q27 Q29 Q33 Q35 Q37 Q39	NTB5605PT4G	16	NTB5605PT4G	Digikey	NTB5605PT4G OSCT-ND	https://www. digikey. com/products/e n? keywords=NTB 5605PT4GOSC T-ND	1.338	21.408
11	Resistor	R13 R17 R23 R25 R118	100ΚΩ	5	MBA02040C10 03FRP00	Digikey	BC100KXCT- ND	https://www. digikey. com/products/e n? keywords=BC1 00KXCT-ND	0.25	1.25
12	Resistor	R18	105ΚΩ	1	MFR-25FBF52- 105K	Digikey	105KXBK-ND	https://www. digikey. com/products/e n? keywords=105K XBK-ND	0.1	0.1

13	Resistor	R1 R8 R9 R19 R20 R27 R29 R30 R31 R33 R35 R37 R38 R40 R42 R44 R46 R47 R48 R49 R50 R51 R52 R53 R54 R55 R56 R57 R58 R59 R60 R62 R64 R65 R67 R69 R71 R73 R75 R77 R80 R81 R82 R83 R84 R85 R87 R88 R89 R90 R92 R94 R96 R98 R100 R102 R104 R107 R109 R110 R112 R114 R116 R120 R122 R124 R126 R128 R129 R130 R131	10ΚΩ	71	MBA02040C10 02FRP00	Digikey	BC10.0KXCT- ND	https://www. digikey. com/products/e n? keywords=BC1 0.0KXCT-ND	0.211	14.981
14	Resistor	R86	15ΚΩ	1	MBA02040C15 02FCT00	Digikey	BC3248CT-ND	https://www. digikey. com/products/e n? keywords=BC3 248CT-ND	0.24	0.24
15	Resistor	R2 R3 R4 R5 R7 R11 R12 R28 R32 R39 R43 R66 R70 R74 R91 R95 R99 R103 R111 R115 R121 R125	1ΚΩ	22	MBA02040C10 01FRP00	Digikey	BC1.00KXCT- ND	https://www. digikey. com/products/e n? keywords=BC1. 00KXCT-ND	0.211	4.642
16	Resistor	R78 R79	3.3ΚΩ	2	MBA02040C33 01FRP00	Digikey	BC3499CT-ND	https://www. digikey. com/products/e n? keywords=BC3 499CT-ND	0.25	0.5

17	Resistor	R41 R45	330Ω	2	MBA02040C33 00FCT00	Digikey	BC3292CT-ND	https://www. digikey. com/products/e n? keywords=BC3 292CT-ND	0.24	0.48
18	Resistor	R21 R22	4.3ΚΩ	2	MBA02040C43 01FC100	Digikey	BC3513CT-ND	https://www. digikey. com/products/e n? keywords=BC3 292CT-ND	0.46	0.92
19	Resistor	R15	43Ω	1	MBA02040C43 09FC100	Digikey	BC4443CT-ND	https://www. digikey. com/products/e n? keywords=BC4 443CT-ND	0.44	0.44
20	Resistor	R16	47Ω	1	MBA02040C47 09FCT00	Digikey	BC3277CT-ND	https://www. digikey. com/products/e n? keywords=BC3 277CT-ND	0.24	0.24
21	Resistor	R34	5.1ΚΩ	1	MBA02040C51 01FCT00	Digikey	BC3294CT-ND	https://www. digikey. com/products/e n? keywords=BC3 294CT-ND	0.24	0.24
22	Resistor	R14 R24 R26 R119	51ΚΩ	4	MBA02040C51 02FRP00	Digikey	BC3531CT-ND	https://www. digikey. com/products/e n? keywords=BC3 531CT-ND	0.25	1
23	Resistor	R6	560Ω	1	MBA02040C56 00FCT00	Digikey	BC3282CT-ND	https://www. digikey. com/products/e n? keywords=BC3 282CT-ND	0.24	0.24

24	Potentiometer	RV1	10ΚΩ	1	PV36W103C01 B00	Digikey	490-2875-ND	https://www. digikey. com/products/e n? keywords=490- 2875-ND	1.5	1.5
25	FLIP FLOP D- TYPE DUAL 1BIT 14DIP	U3	CD4013B	1	CD4013BE	Digikey	296-2033-5-ND	https://www. digikey. com/products/e n? keywords=296- 2033-5-ND	0.5	0.5
26	IC MUX/DEMUX 1X16 24SOIC	U7	CD74HC4067	1	CD74HCT4067 M	Digikey	296-23078-ND	https://www. digikey. com/products/e n? keywords=296- 23078-ND	0.78	0.78
27	RELAY OPTOMOS 1.8 A SPST-NO	U2	LCA715	1	LCA715	Digikey	CLA308-ND	https://www. digikey. com/products/e n? keywords=CLA 308-ND	5.63	5.63
28	Quad Differential Comparators, DIP-14/SOIC- 14/SSOP-14	U8	LM339	1	LM339N	Digikey	296-1393-5-ND	https://www. digikey. com/products/e n? keywords=296- 1393-5-ND	0.5	0.5
29	Dual Operational Amplifiers, DIP- 8/SOIC- 8/TSSOP- 8/VSSOP-8	U4	LM358	1	LM358P	Digikey	296-1395-5-ND	https://www. digikey. com/products/e n? keywords=296- 1395-5-ND	0.45	0.45
30	DC/DC CONVERTER 5V 3W	U1	NCS3S1205SC	1	NCS3S1205SC	Digikey	811-3084-ND	https://www. digikey. com/products/e n? keywords=811- 3084-ND	11	11

31	8-BIT SHIFT REGISTER 16- DIP	U5 U6	SN74HC595N	2	SN74HC595N	Digikey	296-1600-5-ND	https://www. digikey. com/products/e n? keywords=296- 1600-5-ND	0.53	1.06
32	DIP-14 Socket	-	-	2	A 14-LC-TT	Digikey	AE9989-ND	https://www. digikey. com/product- detail/en/assma nn-wsw- components/A- 14-LC- TT/AE9989- ND/821743	0.22	0.44
33	DIP-6 Socket	-	-	1	A 06-LC-TT	Digikey	AE1485-ND	https://www. digikey. com/product- detail/en/assma nn-wsw- components/A- 06-LC- TT/AE1485- ND/930269	0.24	0.24
34	DIP-16 Socket	-	-	2	A 16-LC-TT	Digikey	AE9992-ND	https://www. digikey. com/product- detail/en/assma nn-wsw- components/A- 16-LC- TT/AE9992- ND/821746	0.25	0.5
35	DIP-8 Socket	-	-	1	A 08-LC-TT	Digikey	AE9986-ND	https://www. digikey. com/product- detail/en/assma nn-wsw- components/A- 08-LC- TT/AE9986- ND/821740	0.18	0.18

36	2x18 Stackable Header	-	-	1	ESQ-118-14-G- D	Digikey	SAM9312-ND	https://www. digikey. com/product- detail/en/samte c-inc/ESQ-118- 14-G- D/SAM9312- ND/6678049	7.68	7.68
37	1x8 Stackable Header	-	-	5	ESQ-108-14-T- S	Digikey	SAM9303-ND	https://www. digikey. com/product- detail/en/samte c-inc/ESQ-108- 14-T- S/SAM9303- ND/6678040	1.53	7.65
38	1x10 Stackable Header	-	-	1	ESQ-110-14-G- S	Digikey	SAM9307-ND	https://www. digikey. com/product- detail/en/samte c-inc/ESQ-110- 14-G- S/SAM9307- ND/6678044	2.83	2.83
39	Arduino Mega	SHIELD1	SHIELD1	1	EL-CB-003	Amazon	B01H4ZLZLQ	https://www. amazon. com/gp/product/ B01H4ZLZLQ/r ef=od_aui_detai lpages00? ie=UTF8&psc=1	14.99	14.99
									Total:	155.545

Line Number	Description	Design Reference	Quantity In Design	Manufacturer Part No	Supplier	Supplier PN	Link	Unit Price	Line Total
40	6 Pos IDC Cable Connector	-	20	71600-006LF	Digikey	609-2841-ND	https://www. digikey. com/product- detail/en/amphe nol-fci/71600- 006LF/609- 2841- ND/1302571	0.668	13.36
41	6 Conductor Ribbion Cable (10 Feet)	-	3	3365/06 300SF	Digikey	MC06G-10-ND	https://www. digikey. com/product- detail/en/3m/33 65-06- 300SF/MC06G- 10-ND/1832098	5.59	16.77
42	2 Postion Rotary Switch	RS1	1	HS13X-D	Digikey	360-2349-ND	https://www. digikey. com/products/e n? keywords=360- 2349-ND	7.54	7.54
43	4 Postion Rotary Switch	RS2	1	MA04L1NZQD	Digikey	CKN11063-ND	https://www. digikey. com/product- detail/en/c- k/MA04L1NZQ D/CKN11063- ND/3753889	12.41	12.41
44	Small Switch Knob	-	1	420061B18	Digikey	679-3549-ND	https://www. digikey. com/product- detail/en/apem- inc/420061B18/ 679-3549- ND/1797566	3.19	3.19

45	Large Switch Knob	-	1	OEJL-75-4-7	Digikey	226-4094-ND	https://www. digikey. com/product- detail/en/kilo- international/OE JL-75-4-7/226- 4094- ND/710674	6.12	6.12
46	Green Indicator LED	LED1	1	Q6P3CXXG12E	Digikey	679-2715-ND	https://www. digikey. com/product- detail/en/apem- inc/Q6P3CXXG 12E/679-2715- ND/3153206	13.02	13.02
47	Red Indicator LED	LED2	1	Q6P3CXXR12E	Digikey	679-2674-ND	https://www. digikey. com/product- detail/en/apem- inc/Q6P3CXXR 12E/679-2674- ND/3153205	13.02	13.02
48	Ball Socket Joint	-	1	RAP-B-201U-A	Amazon	B005KWPJ04	https://www.amazon.com/Mount-Composite-Double-Socket-1-Inch/dp/B005KWPJ04/ref=pdbxgy_107_img2?encoding=UTF8&pdrdi=B005KWPJ04&pdrde=W6V8G18D0NWYGSCXYWP6&pdrdwg=3CSpc&psc=1&refRID=W6V8G18D0NWYGSCXYWP6	8.99	8.99

49	Universial Cellphone Holder	-	1	RAM-HOL- UN7BU	Amazon	B0055PH0XA	https://www. amazon. com/Cradle- Holder- Universal-X- Grip- Cellphone/dp/B 0055PH0XA/ref =pd_bxgy_107 img_2? encoding=UTF 8&pd_rd_i=B00 55PH0XA&pd_r d_r=B506RQF6 BJR28DXFB5R 4&pd_rd_w=dg brT&pd_rd_wg= r4Pmx&psc=1& refRID=B506R QF6BJR28DXF B5R4	20	20
50	Panel Mount USB B Female	-	1	USBPNLBFBM 1	Amazon	B002M8VBIS	https://www. amazon. com/gp/product/ B002M8VBIS/re f=oh_aui_detail page_004_s00? ie=UTF8&psc=1	6.78	6.78
51	Panel Mount USB Female Socket	-	1	LYSB01LYC9N C6- ELECTRNCS	Amazon	B01LYC9NC6	https://www. amazon. com/gp/product/ B01LYC9NC6/r ef=oh_aui_detai lpage_000_s00 ? ie=UTF8&psc=1	6.45	6.45

52	USB Backup Camera	xxx	1	ELP-UP188	Amazon	B00K7ZWVVO	https://www. amazon. com/gp/product/ B00K7ZWVVO/ ref=oh_aui_det ailpage_o03_s0 0? ie=UTF8&psc=1	20.99	20.99
53	Rugged Metal Pushbutton with White LED Ring - 16mm White Momentary	All Pushbuttons but PB8	16	-	Adafruit	558	https://www. adafruit. com/product/55	4.95	79.2
54	Rugged Metal Pushbutton - 16mm 6V RGB Momentary	PB8	1	-	Adafruit	3350	https://www. adafruit. com/product/33 50	10.95	10.95
55	Raspberry Pi 3 Model B	-	1	-	Amazon	B01CD5VC92	https://www. amazon. com/Raspberry- Pi- RASPBERRYPI 3-MODB-1GB- Model- Motherboard/dp /B01CD5VC92	34.99	34.99
56	Micro SD Card	-	1	SDSQUAR- 032G-GN6MA	Amazon	B073JWXGNT	https://www. amazon. com/Sandisk- Ultra-Micro- UHS-I- Adapter/dp/B07 3JWXGNT/ref= sr_1_4? s=electronics&i e=UTF8&qid=1 528432906&sr= 1- 4&keywords=32 +gb+micro+sd+ card	12.29	12.29

57	Official 7" Raspberry Pi Display	-	1	7TOUCH	Amazon	B0153R2A9I	https://www.amazon. com/Raspberry- Pi-7- Touchscreen- Display/dp/B01 53R2A9l/ref=sr1_3? s=electronics&i e=UTF8&qid=1 528433086&sr= 1- 3&keywords=ra spberry+pi+disp lay	72	72
58	12V/5V DC DC Converter	PSU2 PSU3 PSU4	3	90586	Amazon	B00CEP3A0Q	https://www. amazon. com/gp/product/ B00CEP3A0Q/r ef=od_aui_detai lpages00? ie=UTF8&psc=1	15.49	46.47
59	10M WIRE, PVC, 130 BC 0.50, 2.7MM - Red	-	1	CT2879-2-10	Digikey	BKCT2879-2- 10-ND	https://www. digikey. com/product- detail/en/cal- test- electronics/CT2 879-2- 10/BKCT2879- 2-10- ND/5874980	13	13
60	10M WIRE, PVC, 130 BC 0.50, 2.7MM - Black	-	1	CT2879-0-10	Digikey	BKCT2879-0- 10-ND	https://www. digikey. com/product- detail/en/cal- test- electronics/CT2 879-0- 10/BKCT2879- 0-10- ND/5874977	13	13

61	10M WIRE, PVC, 130 BC 0.50, 2.7MM - Yellow	-	1	CT2879-4-10	Digikey	BKCT2879-4- 10-ND	https://www. digikey. com/product- detail/en/cal- test- electronics/CT2 879-4- 10/BKCT2879- 4-10- ND/5874983	13	13
62	Dash Side Socket	-	3	50841150	Digikey	WM1254-ND	https://www. digikey. com/product- detail/en/molex- llc/0050841150/ WM1254- ND/134553		
63	Pins	-	30	2081001	Digikey	WM1271CT-ND	https://www. digikey. com/product- detail/en/molex- IIc/0002081001/ WM1271CT- ND/1784901		
								Total	443.54

Line Number	Description	Design Reference	Quantity In Design	Manufacturer Part No	Supplier	Supplier PN	Link	Order Price	Min Order Quantity	Num Orders	Line Total
64	18-8 Stainless Steel Socket Head Screw M3 x 0.5 mm Thread, 16 mm Long	PCB Mount -> Dash (Alum)	9	91292A115	McMaster-Carr	91292A115	https://www. mcmaster. com/#91292a11 5/=1ap446h	5.36	100	1	5.36
65	18-8 Stainless Steel Socket Head Screw M3 x 0.5 mm Thread, 8 mm Long	DC/DC -> Mount, PCB -> Mount, Lid -> Mount	14	91292A112	McMaster-Carr	91292A112	https://www. mcmaster. com/#91292a11 2/=1d74phf	4.12	100	1	4.12
66	18-8 Stainless Steel Socket Head Screw M3 x 0.5 mm Thread, 10 mm Long	Phone Mount -> Dash (Alum)	6	91292A113	McMaster-Carr	91292A113	https://www. mcmaster. com/#91292a11 3/=1ap43bs	4.53	100	1	4.53
67	Heat-Set Inserts for Plastics M3 x 0.5 mm Thread Size, 3.8 mm Installed Length	All Threaded Inserts	21	94180A331	McMaster-Carr	94180A331	https://www. mcmaster. com/#94180a33 1/=1ap4206	12.3	100	1	12.3
68	18-8 Stainless Steel Washer for M3 Screw Size, 3.2 mm ID, 7 mm OD	DC/DC Mount	6	93475A210	McMaster-Carr	93475A210	https://www. mcmaster. com/#93475a21 0/=1ap456t	1.62	100	1	1.62
69	18-8 Stainless Steel Phillips Flat Head Screws for Metal M4.2 Size, 19 mm Long	Angle Bracket (Wood)	6	95844A525	McMaster-Carr	95844A525	https://www. mcmaster. com/#95844a52 5/=1d759ph	14.37	50	1	14.37
70	18-8 Stainless Steel Socket Head Screw M3 x 0.5 mm Thread, 20 mm Long	Phone Mount -> Dash (Wood)	6	91292A123	McMaster-Carr	91292A123	https://www. mcmaster. com/#91292a12 3/=1d75bml	6.18	100	1	6.18
71	18-8 Stainless Steel Socket Head Screw M3 x 0.5 mm Thread, 25 mm Long	PCB Mount -> Dash (Wood)	9	91292A020	McMaster-Carr	91292A020	https://www. mcmaster. com/#91292a02 0/=1d75d05	6.59	100	1	6.59

	Total:	55.07
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