

Item	Name On PCB	Value	Package Size	Manufacturer part Num	DigKey part number	Quantity per PCB	Cost per 1 pcs	Cost for Required quantity	Product/site info	Future Design Considerations
ANALOG SWITCH										
SN74LVC253	IC3		SMB	SN74LVC253DCT	286-13289-2-ND	1	\$0.67	\$0.67	https://www.digkey.com/product-detail/instrument/SN74LVC253DCT/286-13289-2-ND/484508	
Bypass Capacitor 1 uF (1206)	C5	1 uF	1206	CC1206RX7R9BB104	311-1179-1-ND	1	\$0.19	\$0.19	https://www.digkey.com/product-detail/vague/C1206RX7R9BB104/311-1179-1-ND/303088	
RADIO										
SAMTEC TLE 14 POS	Freewave 29-C		TLE	TLE-107-01-G-DV-A	SAM10182-ND	1	\$2.83	\$2.83	https://www.digkey.com/product-detail/antennae/TLE-107-01-G-DV-A/SAM10182-ND/8678918	
Freewave 29-C or 29-T	Freewave 29-C		29-C	Y108-29-C-ND		1	\$490.44	\$490.44	https://www.digkey.com/product-detail/antennae/TLE-107-01-G-DV-A/SAM10182-ND/8678918	
CONNECTIVE HARDWARE										
Female Female 1/4", 2-56 standoffs	For connecting the Freewave Radio					4	\$1.87	\$1.48	https://www.mcmaster.com/91115A806	
2-56 Thread, 3/16" Long Bolt	For connecting the Freewave Radio	(Packs of 100 @ \$5.40)				12	\$5.40	\$5.40	https://www.mcmaster.com/91802A519	
Female Male 1/4", 2-56 standoffs	For connecting the entire board					4	\$1.13	\$1.48	https://www.mcmaster.com/910754211	
CONNECTORS/ANTENNA										
900 MHz RF antenna			SMA	A09-HASM-675	A09-HASM-675-ND	1	\$25.00	\$25.00	https://www.digkey.com/product-detail/isdg-international/A09-HASM-675/A09-HASM-675-ND/815818	
MMCX to SMA connector			MMCX	CBA-SMA-MMCXRA	CBA-SMA-MMCXRA-ND	1	\$5.81	\$5.81	https://www.digkey.com/product-detail/psf-solutions/CBA-SMA-MMCXRA/CBA-SMA-MMCXRA-ND/27817729	
JUMPERS										
2x3 2.54 mm header block	29-C Radio/29-TRadio	2.54 mm		M20-9980345	952-2120-ND	3	\$0.27	\$0.81	https://www.digkey.com/product-detail/instrument/20-9980345/952-2120-ND/3728084	
2x2 2.54 mm Shunt Jumper	29-C Radio/29-TRadio	2.54 mm		SAM0042-ND		2	\$0.76	\$1.52	https://www.digkey.com/product-detail/antennae/20-MNT-102-BK/GSAM0042-ND/2665308	
2x1 2.54 mm Shunt Jumper	RST RADIOEN_VCC2	2.54 mm		GPC025XGN-RC	99337-ND	2	\$0.10	\$0.20	https://www.digkey.com/product-detail/bullitts-connector-solutions/GPC025XGN-RC/99337-ND/2611246	
RS232 INTERFACE TO RADIO										
MAX3243	MAX3243		SSOP-28	MAX3243C28R	286-6841-1-ND	1	\$1.91	\$1.91	https://www.digkey.com/product-detail/instrument/286-6841-1-ND/371583	
0.1 uF SMD capacitor (1206)	C1, C2, C3, C4, CBYPASS	1 uF	1206	CC1206RX7R9BB104	311-1179-1-ND	5	\$0.19	\$0.95	https://www.digkey.com/product-detail/vague/C1206RX7R9BB104/311-1179-1-ND/303088	
ACCELEROMETER										
Adafruit MMA8451	Adafruit MMA8451					1	\$7.95	\$7.95	https://www.adafruit.com/product/2038	
POWER GND										
Pololu 3V step down	D36V28F5			D36V28F5		1	\$11.95	\$11.95	https://www.pololu.com/product/3782	
Pololu 3V step down	(Recommend D36V28F3)			N/A		1	\$11.95	\$11.95	https://www.pololu.com/product/3782	
3.5 mm 3-position screw terminal			3.5 mm pitch length	1751251	277-5749-ND	1	\$1.95	\$1.95	https://www.digkey.com/product-detail/zhuchen-corded/1751251/277-5749-ND/2611152	
VOLTAGE DIVIDER										
10K Resistor (0603) 1MOhm	R12	1 M Ohms	0603	CFP0603B1MKE	A119950KR-ND	1	\$0.52	\$0.52	https://www.digkey.com/product-detail/instrument/CFP0603B1MKE/A119950KR-ND/4966666	
Trim pot CT16 2MOhms	CT6	2 M Ohms	CT6	CT16P205	CT16P205-ND	1	\$0.79	\$0.79	https://www.digkey.com/product-detail/roder-conal-electronics/CT16P205/CT16P205-ND/738311	
Microcontroller										
Adafruit Feather Adalogger						1	\$19.95	\$19.95	https://www.adafruit.com/product/2706	
RTC										
DS3231			16-SDIC	DS3231SMT&R	DS3231SMT&R-ND	1	\$7.87	\$7.87	https://www.digkey.com/product-detail/instrument/integrated/DS3231S-T-R/DS3231S-T-R/CT-ND/4885454	
Bypass Capacitor 1 uF	C6	1 uF	1206	CC1206RX7R9BB104	311-1179-1-ND	1	\$0.19	\$0.19	https://www.digkey.com/product-detail/vague/C1206RX7R9BB104/311-1179-1-ND/303088	
10K Resistor 0805	R9,R6	10K	0803	RNCP0805FTD10K0	RNCP0805FTD10K0CT-ND	2	\$0.10	\$0.20	https://www.digkey.com/product-detail/instrument/connectivity-passive-product/PTD0803B1MKE/A119950KR-ND/4966666	
SD										
SD connector	SD CARD MICO CONNECTOR					1	\$1.95	\$1.95	https://www.adafruit.com/product/1560	
Relay										
MAX4280			TSOP	MAX4820EUP-T	MAX4820EUP-CT-ND	1	\$3.93	\$3.93	https://www.digkey.com/product-detail/instrument/integrated/MAX4820EUP-T/MAX4820EUP-CT-ND/4605781	
2A Latching Relay	relays 1 and 2			TG28S-L2-3V-2	285-3845-1-ND	2	\$5.07	\$10.14	https://www.digkey.com/product-detail/instrument/electro-actuator/TG28S-L2-3V-2/285-3845-1-ND/2685984	
Bypass Capacitor 1 uF (1206)	C8	1 uF	1206	CC1206RX7R9BB104	311-1179-1-ND	1	\$0.19	\$0.19	https://www.digkey.com/product-detail/vague/C1206RX7R9BB104/311-1179-1-ND/303088	
							TOTAL	\$31.34		

Source	Description	Units	Part number	Price/unit	Total	Purpose: X for Y
Digkey	SN74LVC253		1 286-13289-2-ND	\$0.67	\$0.67	For signal routing on the rover
Digkey	Bypass Capacitor 1 uF (1206)		8 311-1179-1-ND	\$0.19	\$1.52	Passives for Rover PCB
Digkey	SAMTEC TLE 14 POS		1 SAM10182-ND	\$2.83	\$2.83	Connector for Freewave
Digkey	Freewave 29-C or 29-T		1 Y108-29-C-ND	\$490.44	\$490.44	Radio for Rover
Digkey	900 MHz RF antenna		1 A09-HASM-675-ND	\$25.00	\$25.00	Antenna for radio
Digkey	MMCX to SMA connector		1 CBA-SMA-MMCXRA-ND	\$5.81	\$5.81	Antenna adapted for radio
Digkey	2x3 2.54 mm header block		3 952-2120-ND	\$0.27	\$0.81	Jumpers for Rover PCB
Digkey	2x2 2.54 mm Shunt Jumper		2 SAM0042-ND	\$0.76	\$1.52	Jumpers for Rover PCB
Digkey	2x1 2.54 mm Shunt Jumper		2	\$0.10	\$0.20	Jumpers for Rover PCB
Digkey	MAX3243		1 286-6841-1-ND	\$1.91	\$1.91	RS232 interface for 29-C
Digkey	3.5 mm 3-position screw terminal		1 277-5749-ND	\$1.95	\$1.95	Screw terminal for Rover PCB
Digkey	1MOhm resistor		1 A119950KR-ND	\$0.52	\$0.52	Resistor for Rover PCB
Digkey	2 M Ohms Trim Pot		1 CT16P205-ND	\$0.79	\$0.79	Trim pot for rover
Digkey	DS3231		1 DS3231SMT&R-ND	\$7.87	\$7.87	RTC for rover
Digkey	10K 0803 resistors		2 RNCP0805FTD10K0CT-ND	\$0.10	\$0.20	Resistor for RTC
Digkey	MAX4280		1 MAX4820EUP-CT-ND	\$3.93	\$3.93	Low side relay driver SPI
Digkey	2A Latching Relay		2 285-3845-1-ND	\$5.07	\$10.14	2A Latching Relay
Adafruit	Microcontroller		1	\$19.95	\$19.95	Microcontroller from rover
Adafruit	MMA8451 breakout		1	\$7.95	\$7.95	Accelerometer for Rover
McMaster	Female-Female 1/4", 2-56 standoffs		4	\$1.87	\$7.48	Hardware for rover
McMaster	2-56 Thread, 3/16" Long Bolt		1 (pack of 100)	\$5.40	\$5.40	Hardware for rover
McMaster	Female Male 1/4", 2-56 standoffs		4	\$2.15	\$8.60	Hardware for rover
Pololu	5 Volt regulator		1	\$11.95	\$11.95	Voltage regulator for PCB
Pololu	3.3 Volt regulator		1	\$11.95	\$11.95	Voltage regulator for PCB
				Total	\$659.39	

Rover Pins	Function	Block
A0	Select bit	SPDT
A3	Int1 on MMA8451	Accelerometer
A1	Battery Voltage	Power
A2	SD CARD RESET	SD
A4	SD_CARD CS	SD
A5	FORCEOFF_N_RS232	Radio
RX (0)	Serail1_RX	Radio
TX (1)	Serail1_TX	Radio
9	CS MAX4280	Relay
13	VCC2_EN	Power
12	Serail2_RX	GPS
11	Serail2_TX	GPS
10	CD	radio
6	reset Radio	Radio
5	RTC wake	RTC
SCL		
SDA		