

Item	Name On PCB	Value	Package Size	Manufacturer part Num	DigiKey part number	Quantity per PCB	Cost per 1 pcs	Cost for Required quantity	Product/site info	Future Design Considerations
ANALOG SWITCH										
SN74LVC2G53	C3		SMB	SN74LVC2G53DCT	296-13289-2-ND	1	\$0.67	\$0.67	https://www.digkey.com/product-detail/en/linear-instruments/SN74LVC2G53DCT/296-13289-2-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/en/vague/C1206RX7R9BB104/311-1179-1-ND/303088	
RADIO										
SAMTEC TLE 14 POS	Freewave 29-C		TLE	TLE-107-01-G-DV-A	5AM10182-ND	1	\$2.83	\$2.83	https://www.digkey.com/product-detail/en/samtec-inc/TLE-107-01-G-DV-A/5AM10182-ND/8678918	
FREERNAVE 29-C or 29-T	Freewave 29-C		29-C	2108-29-C-ND	1	\$490.44	\$490.44	https://www.digkey.com/product-detail/en/freewave-semiconductor/2108-29-C-ND/44		
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/91802A219	
Female Male 1/4", 2-56 standoffs	For connecting the entire board					4	\$2.13	\$1.48	https://www.mcmaster.com/91075A411	
CONNECTORS/ANTENNA										
600 MHz RF antenna			SMA	A09-HASM-675	A09-HASM-675-ND	1	\$25.00	\$25.00	https://www.digkey.com/product-detail/en/digi-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/en/cba-solutions/CBA-SMA-MMCXRA/CBA-SMA-MMCXRA-ND/27817229	
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/en/hyperm-inc/M20-9980345/952-2120-ND/3728084	
2x2 2.54 mm Shunt Jumper	29-C Radio/29-TRadio		2.54 mm	MNT-102-BK-G	5AM0642-ND	2	\$0.76	\$1.52	https://www.digkey.com/product-detail/en/samtec-inc/MNT-102-BK-G/5AM0642-ND/2663308	
2x1 2.54 mm Shunt Jumper	RST_RADIOEN_VCC2		2.54 mm	GPC02S0GN-RC	89337-ND	2	\$0.10	\$0.20	https://www.digkey.com/product-detail/en/bullitts-connector-solutions/GPC02S0GN-RC/89337-ND/2611246	
RS232 INTERFACE TO RADIO										
MAX3243	MAX3243		SSOP-28	MAX3243C28R	296-6941-1-ND	1	\$1.91	\$1.91	https://www.digkey.com/product-detail/en/linear-instruments/MAX3243C28R/296-6941-1-ND/371983	
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/en/vague/C1206RX7R9BB104/311-1179-1-ND/303088	
ACCELEROMETER										
Adafruit MMA8451	Adafruit MMA8451					1	\$7.95	\$7.95	https://www.adafruit.com/product/2038	
POWER GRID										
Pololu 3V step down	D36V28F5			D36V28F5		1	\$11.95	\$11.95	https://www.pololu.com/product/2782	
Pololu 3V step down	(Recommend D36V28F3)			N/A		1	\$11.95	\$11.95	https://www.pololu.com/product/2782	
3.5 mm 3-position screw terminal			3.5 mm pitch length	1751251	277-6749-ND	1	\$1.95	\$1.95	https://www.digkey.com/product-detail/en/schepco-corded/1751251/277-6749-ND/2611152	
VOLTAGE DIVIDER										
V/IAT Resistor (0603) 1MOhm	R12	1 M Ohms	0603	CFP0603B1MKE	A1199550KR-ND	1	\$0.52	\$0.52	https://www.digkey.com/product-detail/en/te-connectivity-passive-product/CFP0603B1MKE-A1199550KR-ND/4966666	
Trim pot CT6 2MOhms	CT6	2 M Ohms	CT6	CT6EP205	CT6EP205-ND	1	\$0.79	\$0.79	https://www.digkey.com/product-detail/en/te-connectivity-electronic/CT6EP205/CT6EP205-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/en/maxim-integrated/DS3231S-T-R/DS3231S-T-R/CT-ND/4886454	
Bypass Capacitor 1 uF	C6	1 uF	1206	CC1206RX7R9BB104	311-1179-1-ND	1	\$0.19	\$0.19	https://www.digkey.com/product-detail/en/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/en/te-connectivity-passive-product/RNCP0805B1MKE-A1199550KR-ND/4966666	
SD										
SD connector	SD CARD MICO CONNECTOR					1	\$1.95	\$1.95	https://www.adafruit.com/product/1560	
Relay										
MAX480	TS50CP		TSOP	MAX4820EUP+T	MAX4820EUP+CT-ND	1	\$3.93	\$3.93	https://www.digkey.com/product-detail/en/maxim-integrated/MAX4820EUP-T/MAX4820EUP+CT-ND/5465783	
2A Latching Relay	relays 1 and 2			TG28S-L2-3V-2	255-3845-1-ND	2	\$5.07	\$10.14	https://www.digkey.com/product-detail/en/paragon-electric-automation/TAGS-L2-3V-2/255-3845-1-ND/2685584	
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/en/vague/C1206RX7R9BB104/311-1179-1-ND/303088	
							TOTAL	\$31.34		

Consolidated BOM										
Date needed	DIFF FROM SIMPLE	Source	Description	Units	Part number	Price/unit	Total	Purpose: X for Y		
		Digkey	SN74LVC2G53		1 296-13289-2-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 5AM10182-ND	\$2.83	\$2.83	Connector for Freewave		
		Digkey	FREERNAVE 29-C or 29-T		1 2108-29-C-ND	\$490.44	\$490.44	Radio for Rover		
		Digkey	600 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 5AM0642-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		1 296-6941-1-ND	\$1.91	\$1.91	RS232 Interface for 29-C		
		Digkey	3.5 mm 3-position screw terminal		1 277-6749-ND	\$1.95	\$1.95	Screw terminal for Rover PCB		
		Digkey	1MOhm resistor		1 A1199550KR-ND	\$0.52	\$0.52	Resistor for Rover PCB		
		Digkey	2 M Ohms Trim Pot		1 CT6EP205-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		2 255-3845-1-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	\$2.13	\$8.40	Hardware for rover		
		Adafruit	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	\$629.39		

Rover Pins	Function	Block	Verified
A0	Selected 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	Relay	
RX (0)	Serail1_RX	Radio	
TX (1)	Serail1_TX	Radio	
9	CS MAX4280	Relay	
I3	VCC2_EN	Power	
I2	Serail2_RX	GPS	
I1	Serail2_TX	GPS	
I0	SD	Radio	
6	Reset Radio	Radio	
5	RTC wake	RTC	
SCL			
SDA			