

Birch Mini Joystick - A								Unit Cost	Total Cost	Total Print time (hr)	Total filament (g)
Version: V0.2		Last Updated: 2023-Mar-31						\$20.07	\$38.76	2.95	35.1
Commercial Parts											
ID	Part Name	Part Type	QTY	QTY/PKG	\$/PKG	PKG QTY	\$/Unit	Extended	Total	Link	
	Mini 2-Axis Analog Thumbstick	Electrical	1	1	\$3.84	1	\$3.84	\$3.84	\$3.84	<a href="https://www.digikey.ca/en/products/detail/adafruit-28374240">https://www.digikey.ca/en/products/detail/adafruit-28374240</a>	
	Analog Mini Thumbstick Breakout Board	Electrical	1	1	\$2.16	1	\$2.16	\$2.16	\$2.16	<a href="https://www.digikey.ca/en/products/detail/adafruit-28374240">https://www.digikey.ca/en/products/detail/adafruit-28374240</a>	
	Universal Proto-board PCB 4cm x 6cm	Electrical	1	3	\$3.60	1	\$1.20	\$1.20	\$3.60	<a href="https://www.digikey.ca/en/products/detail/adafruit-28374240">https://www.digikey.ca/en/products/detail/adafruit-28374240</a>	
	3.5 mm stereo cable (4 conductor, TRRS, M-M)	Electrical	0.5	1	\$6.80	1	\$6.80	\$3.40	\$6.80	<a href="https://www.digikey.ca/en/products/detail/tenflex-28374240">https://www.digikey.ca/en/products/detail/tenflex-28374240</a>	
	24 AWG Wire, 1 foot	Electrical	1	1	\$0.72	1	\$0.72	\$0.72	\$0.72	<a href="https://www.digikey.ca/en/products/detail/cnc-machines-usa-28374240">https://www.digikey.ca/en/products/detail/cnc-machines-usa-28374240</a>	
	M2 x 6 mm Machine Screws	Mechanical	8	1000	\$12.99	1	\$0.01	\$0.10	\$12.99	<a href="https://a.co/d/1mQQYbU">https://a.co/d/1mQQYbU</a>	
	(Optional for mount) M3 hex nut x2	Mechanical	0	100	\$6.65	0	\$0.07	-	-	<a href="https://www.digikey.ca/en/products/detail/b-fab-28374240">https://www.digikey.ca/en/products/detail/b-fab-28374240</a>	
	(Optional for mount) M3x12mm screw x2	Mechanical	0	1	\$1.11	0	\$1.11	-	-	<a href="https://www.digikey.ca/en/products/detail/apr-28374240">https://www.digikey.ca/en/products/detail/apr-28374240</a>	
	(Optional for mount) Tee nut	Mechanical	0	1	\$0.48	0	\$0.48	-	-	<a href="https://www.homedepot.ca/product/paulin-1-4x1-2-tee-nut/28374240">https://www.homedepot.ca/product/paulin-1-4x1-2-tee-nut/28374240</a>	
	Digikey shipping (if spending less than \$100)	Shipping	1	1	\$8.00	1	\$8.00	\$8.00	\$8.00		
3D Printed Parts		ESTIMATED PRICING USING 1KG ROLL COST:	\$25.00								
ID	Part	Material	QTY	Mass (g) / Unit	Time / Unit		Print Time (Min)	Estimated Unit Price	Total Price	Link	
	Birch_Enclosure_Bottom v1.0	PLA	1	14.9	127		106	\$0.37	\$0.37		
	Birch_Enclosure_Top v1.0	PLA	1	10.6	74		67	\$0.27	\$0.27		
	Inner cover disk v1.0	PLA	1	0.5	4		4	\$0.01	\$0.01		
	(Optional) Joystick_Camera_Mount	PLA	0	8.5	54		0	\$0.21	\$-		
	(Optional) Topper - small dome	PLA	0	0.6	8		0	\$0.02	\$-		
	(Optional) Topper - medium dome	PLA	0	1.7	17		0	\$0.04	\$-		
	(Optional) Topper - large dome	PLA	0	4.9	37		0	\$0.12	\$-		
	(Optional) Topper - ring	PLA	0	1.5	16		0	\$0.04	\$-		
	(Optional) Topper - concave	PLA	0	1	10		0	\$0.03	\$-		
								\$-	\$-		
Custom Printed Circuit Board (PCB)											
ID	Part		QTY								
Tools for Assembly											
	Flush cutters										
	Wire strippers										
	Soldering iron										
	Philips head screw driver										
	3D printer										
	(Optional for mount adapter) 1/4-20 screw or hex bolt, at least 1/2" long									<a href="https://www.homedepot.ca/product/paulin-1-4x1-2-hex-bolt/28374240">https://www.homedepot.ca/product/paulin-1-4x1-2-hex-bolt/28374240</a>	
Alternatives (if there are other sources for some parts link them below)											
ID	Part and description	Part Type	QTY	QTY/PKG	\$/PKG	PKG QTY	\$/Unit	Extended	Total	Link	
	Universal Proto-board PCB 4cm x 6cm - Amazon	Electrical	1	10	\$11.31	1	\$1.13	\$1.13	\$11.31	<a href="https://a.co/d/ftDjiYV">https://a.co/d/ftDjiYV</a>	
	Analog Mini Thumbstick Breakout Board - Adafruit	Electrical	1	1	\$1.50	1	\$1.50	\$1.50	\$1.50	<a href="https://www.adafruit.com/product/3246">https://www.adafruit.com/product/3246</a>	
	Mini 2-Axis Analog Thumbstick	Electrical	1	1	\$2.50	1	\$2.50	\$2.50	\$2.50	<a href="https://www.adafruit.com/product/2765">https://www.adafruit.com/product/2765</a>	
	24 Guage wire	Electrical	1	6	\$22.99	1	\$3.83	\$3.83	\$22.99	<a href="https://a.co/d/0x1zLnq">https://a.co/d/0x1zLnq</a>	
	Jumper wire kit - varying lengths	Electrical	10	560	\$18.99	1	\$0.03	\$0.34	\$18.99	<a href="https://a.co/d/i4QJhrz">https://a.co/d/i4QJhrz</a>	
	Jumper wire kit - varying lengths	Electrical	10	70	\$6.60	1	\$0.09	\$0.94	\$6.60	<a href="https://www.digikey.ca/en/products/detail/globelec-28374240">https://www.digikey.ca/en/products/detail/globelec-28374240</a>	
	3.5 mm 4C TRRS M-M Cable	Electrical	0.5	1	\$2.89	1	\$2.89	\$1.45	\$2.89	<a href="https://www.primecables.ca/p-370661-cab-aud">https://www.primecables.ca/p-370661-cab-aud</a>	

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(Optional for mount)	M3x10mm screws and nuts x2	Mechanical	4	340	\$ 22.14	1	\$ 0.07	\$ 0.26	\$ 22.14	<a href="https://a.co/d/0B9sk8N">https://a.co/d/0B9sk8N</a>