Apple][
Poor Man's Keyboard
Bill of Materials
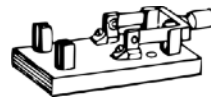
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Part	Value	Remarks	Quantity	Reference	Provided
Pin header	1 x 4 pin	male horizontal	**1**	J2	
	1 x 4 pin	male vertical	**2**	J1	
	1 x 3 pin	male vertical	**1**	J1	
	1 x 1 pin	male vertical	**1**	J1	
	1 x 8 pin	male-male vertical with rounded pins [1]	**2**	J1	
Resistor [2]	330 Ω	1/4 W - orange, orange, black, black, brown	**1**	R1	
	1 kΩ	1/4 W - brown, black, black, brown, brown	**1**	R2	
Resistor Net	1 kΩ	7x resistor, 8 legs	**1**	RN1	
Switch	ON	Push Button	**2**	SW1, SW3 [3]	
	SPST	7x DIP Switch ON-OFF	**1**	SW2	
LED	green [4]	3 mm, round	**1**	D1	

Notes:

1) Also a single 16 pin DIP male-male adapter IC socket can be used.
2) Some provided resistor-values could differ slightly, as could their band colors, this has no effect on the working of the board.
3) When attached to a computer, it could be that the character is put on screen more than once. The push button (SW3) is not debounced because of the educational/fun purpose of the Poor Man's Keyboard and to keep the circuit simple.
4) When preferred, other LED colors can be used. Make sure to check if the value of the resistor R1 is correct for the used LED.

Important:

- Use a 16 pin IC socket as a guide to solder the 2 x 8 pin male-male pin headers perfectly right-angled (at position J1).
- After soldering, cut short the pins of SW1 and SW3 to make sure they do not stand out. Solder again the soldered spots to make sure there is no break in their contacts.
- Check J1 for shorts between all keyboard pins using a multimeter in continuity mode.
- **Affix electrical insulation tape** (or adhesive felt) on the solder side of the board, as indicated by the dotted rectangle. Otherwise soldered pins can come in contact with the ICs of the Apple][.
- Will fit on an Apple][, ITT 2020, an ASCII Keyboard Tester (without the mounted One Byte Hex Display) and the Character Generator Tester.