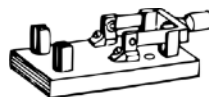


# Character Generator Tester

## Bill of Materials



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Part	Value	Remarks	Quantity	Reference	Provided
<b>Standoffs</b>	M3	nylon stands	4		
	M3	nylon nuts	4		
	M3	metal bolt	1	U1	
	M3	metal nut	1	U1	
<b>Pin header</b>	1 x 1 pin	male vertical	1	J3	
	1 x 4 pin	male horizontal	1	J1	
	1 x 4 pin	male vertical	1	J2	
	1 x 7 pin	male vertical	1	J4	
	1 x 9 pin	male vertical	1	J7	
<b>Socket</b>	8 pin	<i>optional</i>	1	U2	
	14 pin	<i>optional</i>	1	U3	
	16 pin	<i>2 needed, 3 optional</i> <sup>1</sup>	5	J5, J6, U6-U8	
	24 pin	<i>ZIF?</i>	2	U4, U5	
<b>Resistor</b> <sup>2</sup>	100 Ω	1/4 W - brown, black, black, black, brown	5	R3-R7	
	1 kΩ	1/4 W - brown, black, black, brown, brown	1	R2	
	2 kΩ	1/4 W - red, black, black, brown, brown	2	R8, R9	
	4.7 kΩ	1/4 W - yellow, violet, black, brown, brown	1	R1	
<b>Resistor Net</b>	330 Ω	4x resistor, 5 legs	1	RN1	
	330 Ω	6x resistor, 7 legs	1	RN2	
<b>Resistor Var.</b>	100 kΩ	potentiometer 6 mm round top adjust <sup>3</sup>	1	RV1	
<b>Capacitor</b>	100 nF	marked with '104'	1	C2	
	200 nF	marked with '204' <sup>4</sup>	1	C4	
	22 μF		2	C1, C3	

### Notes:

- 1) Check the orientation of the sockets. Pin 1 of J5 and J6 face down, while the other U6-U8 face up.
- 2) Some provided resistor-values could differ slightly, as could their band colors, this has no effect on the working of the board.
- 3) Also top adjust precision trimmers can be used, like the Vishay T73YP.
- 4) A 220 nF capacitor can be used as well, these are marked with '224'.

Part	Value	Remarks	Quantity	Reference	Provided
<b>IC</b>	L7905	-5V Negative Voltage Regulator <sup>4</sup>	1	U1	
	555	Timer	1	U2	
	74LS393	Dual 4-Bit Binary Counter	1	U3	
	2513	Signetics 64 x 8 x 5 Character Generator		U4	X
	2316B	Static Read Only Memory (2048 x 8) <sup>5</sup>		U5	X
	74LS365	Hex Bus Driver with 3-State Outputs	1	U6	
	74LS156	Dual 1-of-4 Decoder / Demultiplexer	1	U7	
	74LS174	Hex D-Type Flip-Flop with Clear	1	U8	
<b>Switch</b>	SW1	Push Button ON for stepping	1	SW1	
	SPST	4x DIP Switch ON-OFF for settings	1	SW2	
	SPDT	Slide Switch ON-ON to set count speed	1	SW3	
<b>LED <sup>6</sup></b>	red	3 mm, round	9	D1-D9	
	blue	3 mm, round	1	D10	
<b>LED Display</b>	Dot Matrix	For example, Kingbright TA-07-11EWA <sup>7</sup>	1	AFF1	

#### Notes:

- 4) Make sure to first mount the voltage regulator with the metal bolt and nut before soldering.
- 5) A **2716 UV EPROM** or **2816 EEPROM** can be used instead of the 2316B (position U5). They should be programmed to contain the Apple ][ character data.
- 6) When preferred, other LED colors can be used. Make sure to check if the values of the resistor networks RN1 and RN2 are correct for the LEDs used.
- 7) See the datasheet of the Kingbright display for compatibility with other displays.

#### Important:

- Populate either U4 or U5, not both at the same time. Always check the voltages at the pins of U4 before inserting the 2513 IC, just to make sure the power supply is correct.