

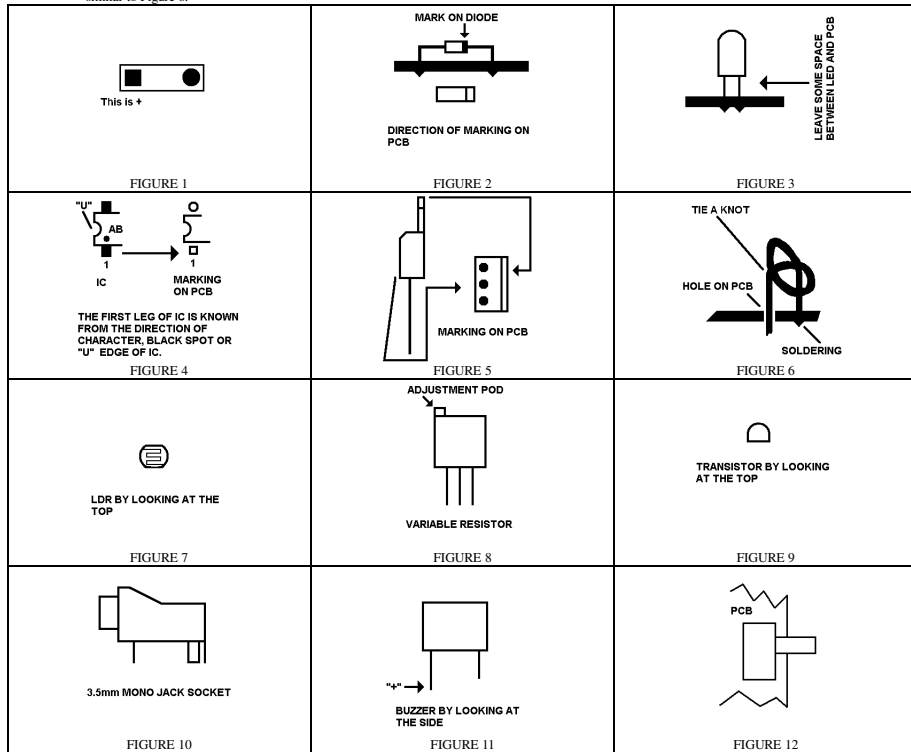
TARGET FOR LASER PEN

PRODUCT CODE: M00270024

DESCRIPTION: This is a target for any general laser pen buying in stationery store. (The laser pen is needed to be bought by the player).

READ BEFORE INSTALLATION:

- Put the component on the side of screen printing and solder on the back of PCB without printing.
- Placing direction of component.
- 1. On component, longer leg is "+".
- 2. On PCB marking, square pad as Figure 1 is always "+".
- 3. For diode, please install as Figure 2.
- 4. For Voltage Regulator, please place the component as Figure 5.
- Do not put the LED to very bottom, just install as Figure 3.
- For any IC, finding out which leg is first leg (FIGURE 4) is important. Also, solder the socket (chair) to the PCB and the IC sit on the top.
- For 9V Battery Adaptor, Red is B+ and Black is B-. Also, please tie a knot after the red and black wire has passed the neighbors hole before soldering. This is similar to Figure 6.



CIRCUIT EXPLANATION:

Please read the below together with the circuit diagram in Figure 13.

- The function of D1 is to prevent reverse power supply.
- Part 1 is for detecting the laser if the laser has hit the target.
 1. PR1, PR2 and PR3 are the Light Dependent Resistor (LDR), the resistance decreases with increasing light intensity. R11 and the LDR work as potential divider circuit. VR is a variable resistor and these three legs also work as potential divider circuit inside the VR with middle leg as output. U1D work as comparator. The output of Leg 13 of U1D becomes low when the voltage at Leg 11 is lower than Leg 10. The output of Leg 13 of U1D becomes high when the voltage at Leg 11 is higher than Leg 10.
- Part 2 also behaves as a comparator as U1D. When the laser pen hit the target, the output 13 of U1D would suddenly becomes low. At this moment, Leg of 9 would be higher in voltage than Leg of 8. This cause Leg 14 of U1C becomes high.
- Part 3 is an oscillator circuit; this would oscillate when Leg 14 of U1C is high.
- When part 3 oscillates, this would cause the LED in part 4 flashing and the buzzer beeping.
- Part 5 is the voltage regulation circuit so as to make sure the whole circuit is working at 5V. This is important because part 1 and part 2 use the potential divider as working logic. If the voltage floats due to any reason, the final result may be not expected.

- Part 6 is a general LED circuit that is for the player to target the target easier when he is far away. Also, this also indicates that the game is on/off.

INSTALLATION:

Just install the component to the PCB M00260040 according to below table.

ITEM	SYMBOL ON PCB	DESCRIPTION	OUTLOOK	DIRECTION IS IMPORTANT?
1	R1	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
2	R2	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
3	R3	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
4	R4	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
5	R5	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
6	R6	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
7	R7	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
8	R8	RESISTOR, 10K ohms	BROWN, BLACK, ORANGE	NO
9	R9	RESISTOR, 1M ohms	BROWN, BLACK, GREEN	NO
10	R10	RESISTOR, 10K ohms	BROWN, BLACK, ORANGE	NO
11	R11	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
12	R12	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
13	R13	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
14	R14	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
15	R15	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
16	R16	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
17	PR1	LDR	FIGURE 7	NO
18	PR2	LDR	FIGURE 7	NO
19	PR3	LDR	FIGURE 7	NO
20	D1	DIODE, IN4001	FIGURE 2 (MOSTLY BLACK)	FIGURE 2
21	D2	DIODE, IN4148	FIGURE 2 (MOSTLY TRANSPARAENT RED)	FIGURE 2
22	Q1	TRANSISTOR, PNP	FIGURE 9	YES
23	U1	DIP 14 SOCKET	14 LEGS	NO
24	L1	LED	RED	YES
25	L2	LED	RED	YES
26	L3	LED	RED	YES
27	L4	LED	TRANSPARENT	YES
28	L5	LED	TRANSPARENT	YES
29	L6	LED	TRANSPARENT	YES
30	L7	LED	TRANSPARENT	YES
31	C1	CAPACITOR, 0.1uF	MARK WITH 0.1uF OR SAME MEANING OF VALUE	YES
32	C2	CAPACITOR, 0.33uF	MARK WITH 0.33uF OR SAME MEANING OF VALUE	YES
33	C3	CAPACITOR, 10uF	MARK WITH 10uF OR SAME MEANING OF VALUE	YES
34	C4	CAPACITOR, 10*10E4 pF	MARK WITH 104 OR SAME MEANING OF VALUE	NO
35	VR	VARIABLE RESISTOR, 1M ohms	FIGURE 8	NO
36	SWITCH	SLIDE SWITCH	SIX LEGS	FIGURE 12
37	DCJACK	3.5mm MONO JACK SOCKET	FIGURE 10	YES
38	B+, B-	9V BATTERY ADAPTOR	RED WIRE, BLACK WIRE	YES
39	BZ	BUZZER	FIGURE 11	YES
40	VRE	VOLTAGE REGULATOR, LM7805	FIGURE 5	FIGURE 5
41	ON THE TOP OF ITEM 23	IC, LM339	14 LEGS	YES

- After the installation, we now need to adjust this equipment to working conditions; I now assume you play this game at home with fluorescent lamp as the major source of light in the room.
 1. Turn on the fluorescent lamp.
 2. Turn the adjustment pod of item 35, VR, until the four LED, L4, L5, L6, L7 is just "OFF".
 3. Now using a laser pen (You need to buy yourself in the stationery store) pointing to any LDR, RR1 (Item 17), PR2 (Item 18) or PR3 (Item 19). If everything is ok, the buzzer should beep and the LED, L4, L5, L6, L7 would flash.
- After installation, you can use external DC adaptor as power sources. You can use our product M00270013 or other similar adaptor.

CIRCUIT DIAGRAM:

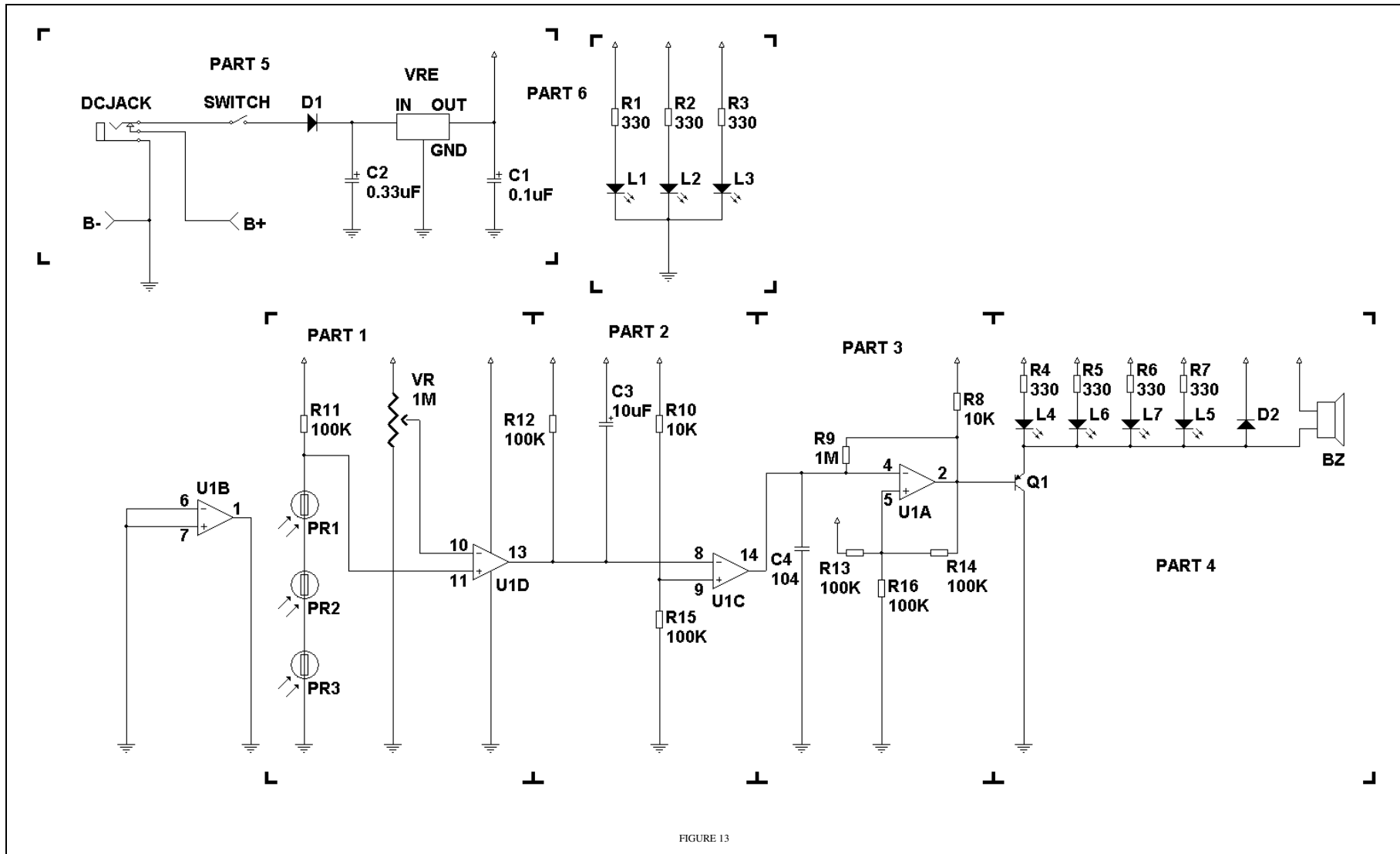


FIGURE 13