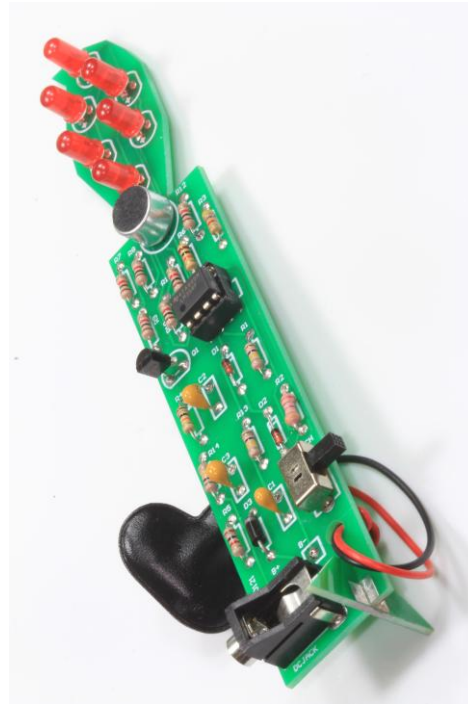


MAGIC CANDLE

PRODUCT CODE: M00270076

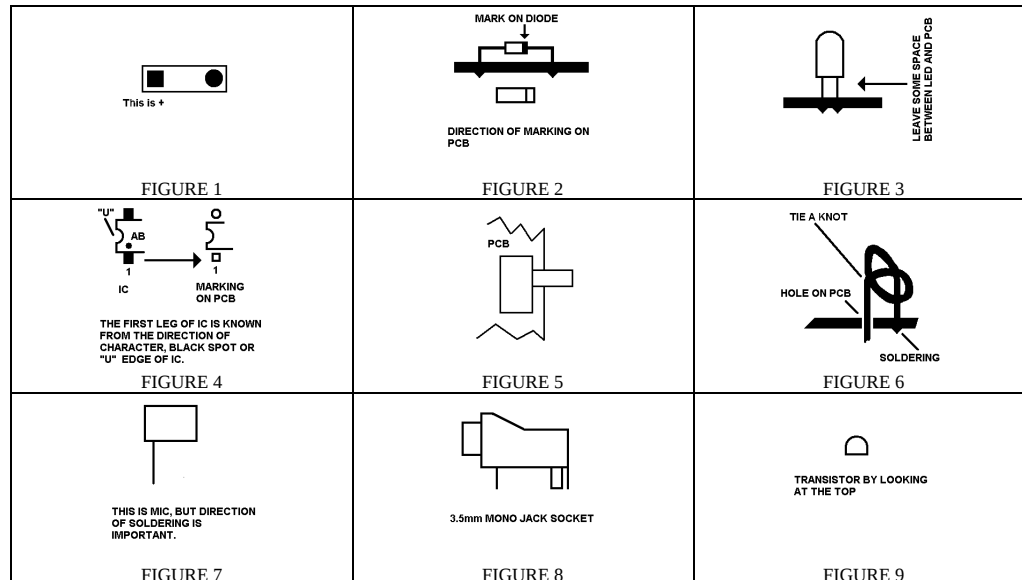
FEATURE:

- This is to simulate the behavior of magic candle.
- On and Off switch is provided.
- There is a leg for the kit so that the kit could stand upright.
- Assembly is needed.



READ BEFORE INSTALLATION:

- Put the component on the side of screen printing and solder on the back of PCB without printing.



INSTALLATION:

Just install the component to the PCB M00260121 according to below table.

ITEM	SYMBOL ON PCB	DESCRIPTION	OUTLOOK	DIRECTION ON INSTALLATION? AND OTHER
1	R1	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
2	R2	RESISTOR, 200M ohms	RED, BLACK, VIOLET	NO
3	R3	RESISTOR, 4.7K ohms	YELLOW, VIOLET, RED	NO
4	R4	RESISTOR, 10K ohms	BROWN, BLACK, ORANGE	NO
5	R5	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
6	R6	RESISTOR, 10K ohms	BROWN, BLACK, ORANGE	NO
7	R7	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
8	R8	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
9	R9	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
10	R10	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
11	R11	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
12	R12	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
13	R13	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
14	R14	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
15	D1	DIODE, IN4148	FIGURE 2 (MOSTLY TRANSPARENT RED)	FIGURE 2
16	D2	DIODE, IN4148	FIGURE 2 (MOSTLY TRANSPARENT RED)	FIGURE 2
17	D3	DIODE, IN4001	FIGURE 2 (MOSTLY BLACK)	FIGURE 2
18	L1	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
19	L2	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
20	L3	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
21	L4	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
22	L5	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
23	L6	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
24	C1	CAPACITOR, 22*10E4 pF	MARK WITH 224 OR SAME MEANING OF VALUE	NO
25	C2	CAPACITOR, 22*10E4 pF	MARK WITH 224 OR SAME MEANING OF VALUE	NO
26	C3	CAPACITOR, 22*10E4 pF	MARK WITH 224 OR SAME MEANING OF VALUE	NO
27	U1	DIP 8 SOCKET	8 LEGS	NO
28	ON THE TOP OF ITEM 27	IC, LM358	8 LEGS	FIGURE 4
29	MIC	MICROPHONE	TWO LEGS, FIGURE 7	YES
30	Q1	TRANSISTOR, 9014, NPN	FIGURE 9	YES
31	DCJACK	3.5mm MONO JACK SOCKET	FIGURE 8	YES
32	B+ B-	9V BATTERY ADAPTOR	RED WIRE, BLACK WIRE	YES, NOTE 2
33	SWITCH	SLIDE SWITCH	SIX LEGS	YES, FIGURE 5
34	/	LEG	PCB IN OUTLOOK	NOTE 3

- NOTE 1: On component, longer leg is “+”.
- NOTE 2: 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.
- NOTE 3: You could solder the both PCB together. There are soldering pads on the bottom on both PCB.

HOW TO PLAY?

The voltage of 5V to 9V plug into the “DCJACK” or “B+ B-”. Turn on the “SWITCH”. Then blow the air to the “MIC”, the LED “L1” to “L6” would getting dim or even off, but finally LED would light up again. This is just like what a magic candle does. For “MIC”, this is to sense how hard you blow the air. This is similar that you try to blow off the candle.

CIRCUIT DESCRIPTION:

The function of “C2” is to isolate the DC voltage from the side of “MIC” to amplifier circuit of “U1A”. “U1A” is an Inverting Operational Amplifier.

The function of “R13” to “R14” is to confirm the signal from “MIC” swing around half of VCC to G because voltage at leg 2 should be almost the same at leg 3 of “U1A”. This is the characteristic of Operational Amplifier (This is shown at small picture at Figure 10).

There are two proposes of “C3”, “D1”, “D2”, “C1 and “R2”. Firstly, this let the AC voltage caused from the “MIC” becoming DC voltage sensed at leg 5 of “U1B”. Secondly, this is to let the DC voltage drop at leg 5 of “U1B” when the player blows the “MIC”.

When there is no signal, the DC voltage at leg 5 of “U1B” is similar to VCC. When “C3” put “+” charge due to signal from

“MIC”, the “+” charge would go to VCC rail through “D1”. When “C3” pull “+” charge due to signal from “MIC”, the “+” charge would go from “C1” to “D2”. Then go to “C3”. The voltage drops at leg 5 of “U1B”. The extent of drop is the amplitude difference of the wave sensed from the “MIC” (This is shown at small picture at Figure 10). After there is no signal from the “MIC”, the lost charge from “C1” would gain again from “R2”. The voltage at leg 5 of “U1B” would go back to around VCC. The function of “R5” is to slow down the discharging time of “C1” so that the LED could behaviors like real candle.

The function of “U1B” is just a voltage follower. This is just to isolate the circuit before and after “U1B”.

The function of “Q1” is to let the LED “L1” to “L6” light on.

The function of “D3” is protection diode for reverse power connection.

CIRCUIT DIAGRAM:

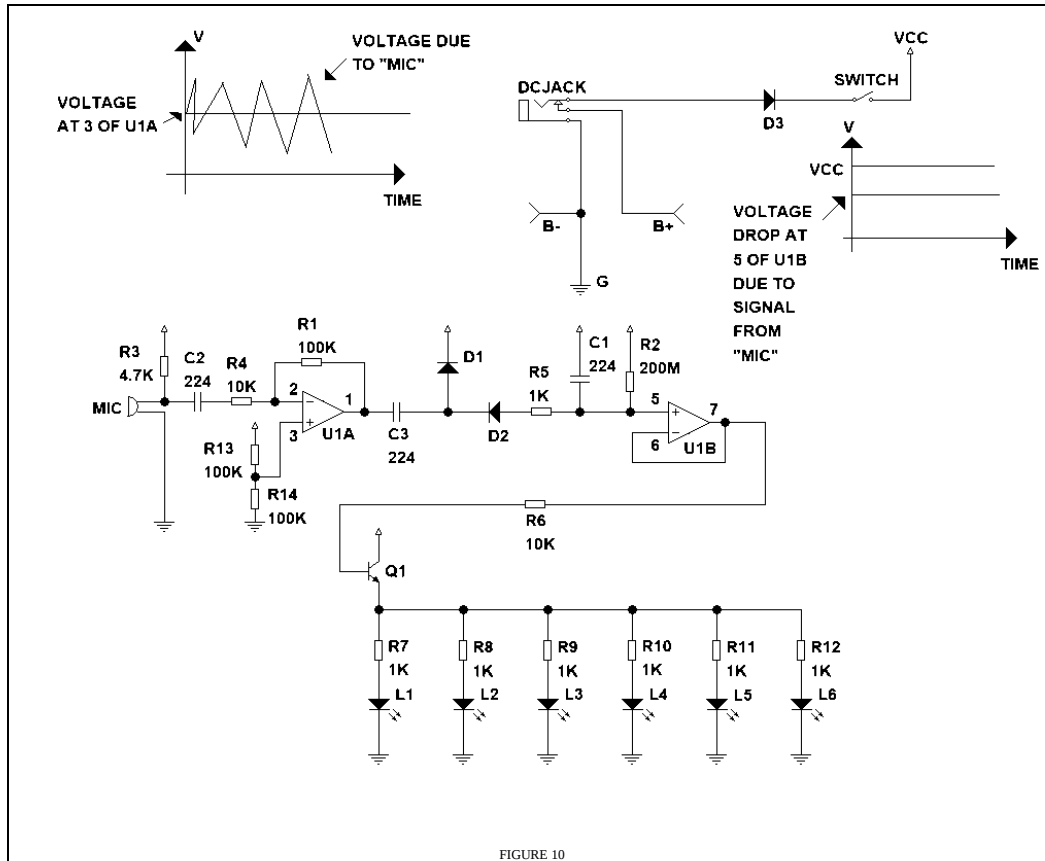


FIGURE 10