“I L U” TRIGGERED BY COMMON REMOTE CONTROL

PRODUCT CODE: M00270079

FEATURE:

- 15 sets of LEDs would light on by pointing to the infrared red receiver with pushing any button of any common remote control. The pattern is “I L U”.
- On and Off switch is provided.
- Duration of “ON” status of LEDs could be adjusted by variable resistor.
- 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.

FIGURE 1

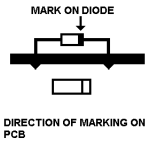

FIGURE 2

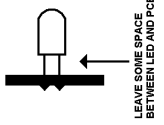

FIGURE 3

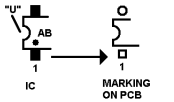

FIGURE 4

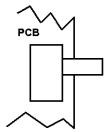

FIGURE 5

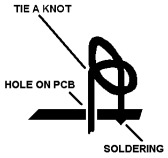

FIGURE 6

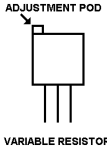

FIGURE 7

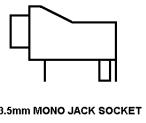

FIGURE 8

FIGURE 9

FIGURE 10

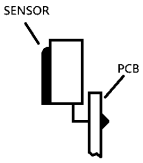

FIGURE 11

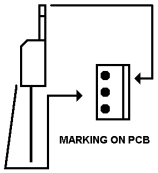

FIGURE 12

INSTALLATION:

Just install the component to the PCB M00260124 according to below table.

ITEM	SYMBOL ON PCB	DESCRIPTION	OUTLOOK	DIRECTION ON INSTALLATION? AND OTHER
1	R1	RESISTOR, 10K ohms	BROWN, BLACK, ORANGE	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, 10K ohms	BROWN, BLACK, ORANGE	NO
8	R8	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
9	R9	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
10	R10	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
11	R11	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
12	R12	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
13	R13	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
14	R14	RESISTOR, 10K ohms	BROWN, BLACK, ORANGE	NO
15	R15	RESISTOR, 1M ohms	BROWN, BLACK, GREEN	NO
16	R16	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
17	R17	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
18	R18	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
19	R19	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
20	R20	RESISTOR, 330 ohms	ORANGE, ORANGE BROWN	NO
21	R21	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
22	R22	RESISTOR, 100K ohms	BROWN, BLACK, YELLOW	NO
23	D1	DIODE, IN4001	FIGURE 2 (MOSTLY BLACK)	FIGURE 2
24	D2	DIODE, IN4148	FIGURE 2 (MOSTLY TRANSPARAENT RED)	FIGURE 2
25	Q1	TRANSISTOR, 9014, NPN	FIGURE 9	YES
26	Q2	TRANSISTOR, 9014, NPN	FIGURE 9	YES
27	Q3	TRANSISTOR, 9014, NPN	FIGURE 9	YES
28	C1	CAPACITOR, 0.33uF	MARK WITH 0.33uF OR SAME MEANING OF VALUE	YES, FIGURE 1, NOTE 1
29	C2	CAPACITOR, 10uF	MARK WITH 10uF OR SAME MEANING OF VALUE	YES, FIGURE 1, NOTE 1
30	C3	CAPACITOR, 0.1uF	MARK WITH 0.1uF OR SAME MEANING OF VALUE	YES, FIGURE 1, NOTE 1
31	IS1	PC838 INFRARED RED RECEIVER	FIGURE 10, FIGURE 11	YES, FIGURE 11, NOTE 3
32	VR	VARIABLE RESISTOR, 100K ohms	FIGURE 7	NO
33	U1	DIP 8 SOCKET	8 LEGS	NO
34	ON THE TOP OF ITEM 33	IC, LM358	8 LEGS	FIGURE 4
35	L1	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
36	L2	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
37	L3	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
38	L4	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
39	L5	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
40	L6	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
41	L7	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
42	L8	LED	RED	YES, FIGURE 1, FIGURE 3, NOTE 1
43	L9	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
44	L10	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
45	L11	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
46	L12	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
47	L13	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
48	L14	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
49	L15	RGB LED	TRANSPARAENT	YES, FIGURE 1, FIGURE 3, NOTE 1
50	VRE	VOLTAGE REGULATOR, LM7805	FIGURE 12	FIGURE 12
51	SWITCH	SLIDE SWITCH	SIX LEGS	YES, FIGURE 5
52	B+ B-	9V BATTERY ADAPTOR	RED WIRE, BLACK WIRE	YES, NOTE 2
53	DCJACK	3.5mm MONO JACK SOCKET	FIGURE 8	YES
54	/	LEG	PCB IN OUTLOOK	NOTE 4

- 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: The marking on PCB is similar to FIGURE 10. Please do not solder the component to close to the bottom of PCB. The leg of sensor should be bended like FIGURE 11 after soldering so that the sensing area could face as FIGURE 11.
- NOTE 4: You could solder the both PCB together. There are soldering pats on the bottom on both PCB.

HOW TO PLAY?

Turn on the “SWITCH”. Point to the infrared red receiver “IS1” by any infrared red remote control such as TV remote control and push any button. The 15 LEDs would light on for certain duration. The duration could be controlled by adjusting “VR”.

CIRCUIT DESCRIPTION:

(a). “IS1” is the infrared red receiver. This kind of receiver is actually an infrared receiver for remote control requiring improved ambient light rejection (The working logic is out of scope of this manual. For more detail, you could visit the manual from the web for PC838.). Maybe you could understand as when connect “V” and “T” with resistor and “IS1” has sensed the infrared red signal from any remote control, “T” would become ground.

(b). “U1A” is a voltage comparator. When “3” is higher voltage than “2”, output “1” would become high. Because “3” is fixed in voltage due to voltage divider, “3” would have higher voltage than “2” with the condition happening at (a).

(c). “D2”, “C2” and “R15” is to keep the voltage high at “5” for certain duration of time when “1” from “U1A” is high. Even “1” is only at high for very short of time. “C2” would charge up in very short of time and make “5” becoming high. Even “U1A” now become low again. The charge would discharge slower to ground through “R15”. “D2” is to prevent the charges discharge to “1”.

(d). “U1B” is also a voltage comparator. “7” would be high when “5” is higher than “6”. “VR” is a variable voltage divider. From (c), the discharge time from high to ground is fixed. But we can control what voltage to make “6” is higher than “5” by adjusting “VR” so as to control when “7” become low and turn off all LEDs.

(e). All the circuit after “7” of “U1B” is just LED circuit. Using transistor because output of “U1B” may not have enough power to turn on all LEDs.

(f) “VRE” is a voltage regulator IC because the working voltage of “IS1” is around 5V. “C1” and “C3” work with “VRE” as partner component. The function of “D1” is to prevent reverse power supply.

CIRCUIT DIAGRAM:

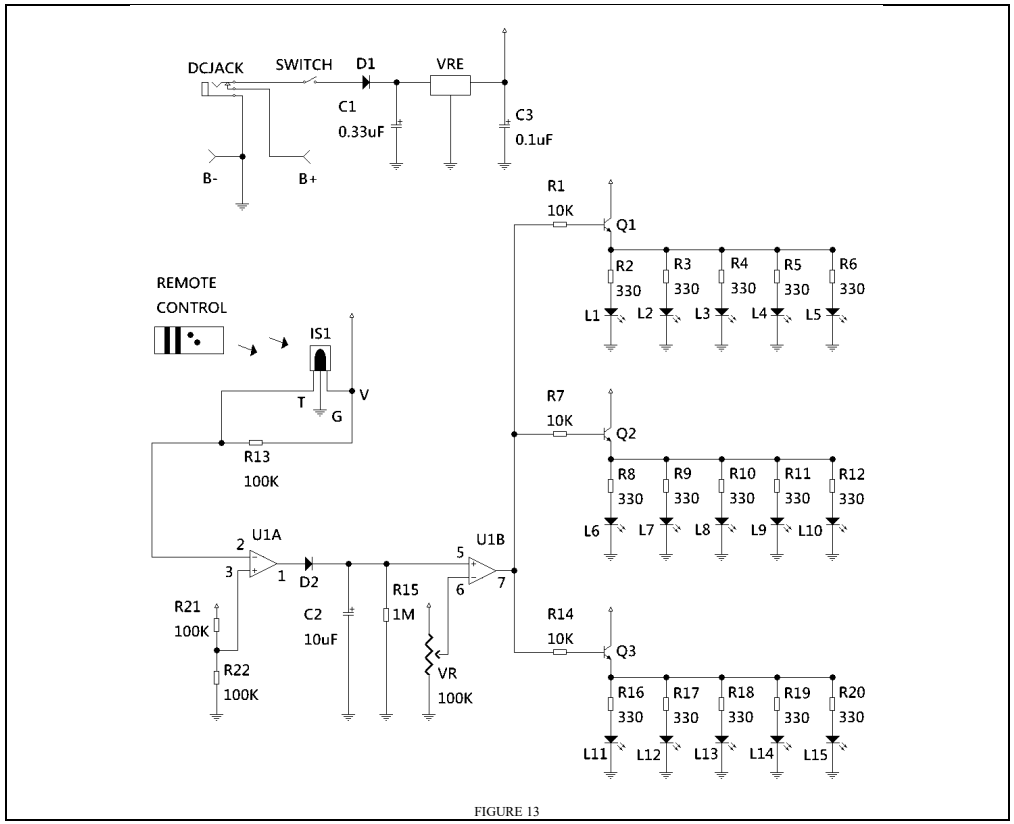

FIGURE 13