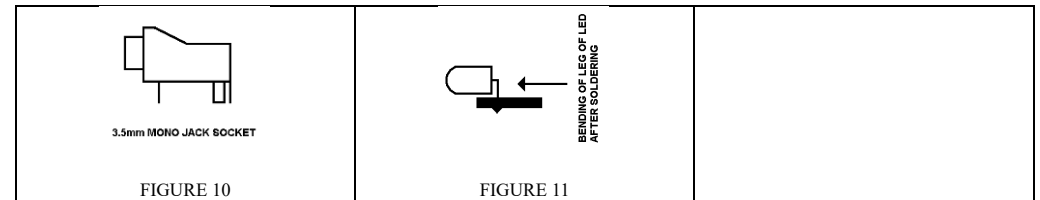
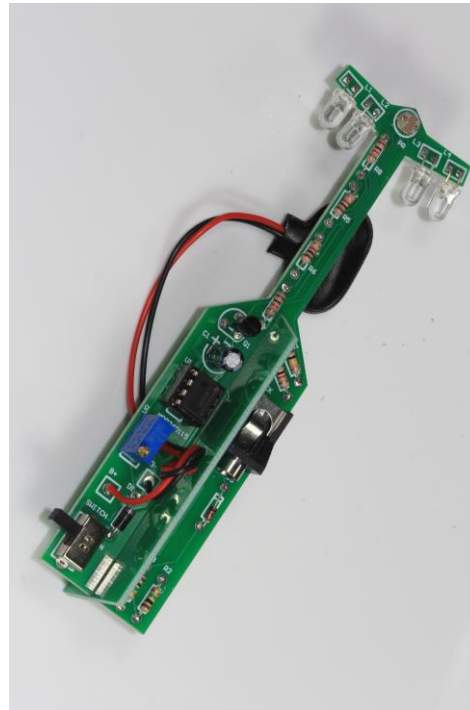


FADING IN AND OUT AUTOMATIC STREETLIGHT

PRODUCT CODE: M00270067

FEATURE:

- A light dependent resistor (LDR) is used as sensor for this kit.
- The LED would be on and off in Fading style. This would be similar to the real streetlight.
- There is a leg for the kit so that the kit could stand upright.
- Assembly is needed.



DESCRIPTION:

- Just look at circuit diagram of Figure 12.
- In Part 1, the function of D1 is to prevent reverse power supply.
- Part 2 is the brain of the whole circuit. PR is a Light Dependent Resistor (LDR), the resistance decreases with increasing light intensity. R1 and PR work as potential divider circuit. VR is a variable resistor and these three legs also work as potential divider circuit. The middle leg of VR work as output. U1A work as comparator. Leg 1 of U1A becomes high when the voltage at Leg 3 is higher than Leg 2. Leg 1 of U1A becomes low when the voltage at Leg 3 is lower than Leg 2. By using this logic, this part work as light detecting circuit.
- Part 3 is the fading in and out circuit. When leg 1 of U1A is high, this would charge up the capacitor C1 through R2. Why not charge up the capacitor C1 through R3 because there is a diode D3 restricting this. When Output of U1A is low due to lower light intensity on part 2, the charge on capacitor C1 would discharge through R3, D3 to leg 1 of U1A. The function of R2 and R3 is the reason of fading effect because they would slow down the charging and discharging time of capacitor C1.
- Part 4 is just a voltage follower. You could understand this as isolating the circuit (infinity input resistance at leg 5 and zero output resistance at leg 7) of Part 3 and Part 5. What voltage sense at leg 5 of U1B would appear at leg 7 of U1B.
- Part 5 is only four LED that you can think this is similar to Streetlight. This gives out the result coming from part 2. When Leg 7 of U1B is high, four LED is on.

INSTALLATION:

Just install the component to the PCB M00260115 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, 1M ohms	BROWN, BLACK, GREEN	NO
3	R3	RESISTOR, 1M ohms	BROWN, BLACK, GREEN	NO
4	R4	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
5	R5	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
6	R6	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
7	R7	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
8	R8	RESISTOR, 1K ohms	BROWN, BLACK, RED	NO
9	Q1	TRANSISTOR, NPN	FIGURE 9	YES
10	D1	DIODE, IN4001	FIGURE 2 (MOSTLY BLACK)	YES, FIGURE 2
11	D2	DIODE, IN4148	FIGURE 2 (MOSTLY TRANSPARENT RED)	YES, FIGURE 2
12	D3	DIODE, IN4148	FIGURE 2 (MOSTLY TRANSPARENT RED)	YES, FIGURE 2
13	PR	LDR	FIGURE 7	NO
14	VR	VARIABLE RESISTOR, 1M ohms	FIGURE 8	NO
15	U1	DIP 8 SOCKET	8 LEGS	NO
16	C1	CAPACITOR, 10uF	MARK WITH 10uF OR SAME MEANING OF VALUE	YES, NOTE 1
17	SWITCH	SLIDE SWITCH	SIX LEGS	YES, FIGURE 5
18	DCJACK	3.5mm MONO JACK SOCKET	FIGURE 10	YES
19	B+, B-	9V BATTERY ADAPTOR	RED WIRE, BLACK WIRE	YES, NOTE 2
20	L1	LED	ONE LONG LEG AND ONE SHORT LEG	YES, FIGURE 1, FIGURE 3, NOTE 1, NOTE 3
21	L2	LED	ONE LONG LEG AND ONE SHORT LEG	YES, FIGURE 1, FIGURE 3, NOTE 1, NOTE 3
22	L3	LED	ONE LONG LEG AND ONE SHORT LEG	YES, FIGURE 1, FIGURE 3, NOTE 1, NOTE 3
23	L4	LED	ONE LONG LEG AND ONE SHORT LEG	YES, FIGURE 1, FIGURE 3, NOTE 1, NOTE 3
24	ON THE TOP OF ITEM 15	IC, LM358	8 LEGS	FIGURE 4
25	/	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.

READ BEFORE INSTALLATION:

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

