

**UNIVERSAL FLASHER 10 LED**  
CODE 163 **LEVEL 1**

This circuit is the chasing light circuit. The shape is like the saturn. This circuit is consist of 31 LEDs. Idea as light-shows for model construction etc.

**Technical specifications:**

- power supply : 9VDC.
- consumption : 21mA max.
- display : 31 LED's (3 mm., 7 LED's and 5 mm., 3 LED's)
- dimensions of PCB : 3.17 x 3.27 inches

**How to works:**

TR1, TR2 and TR3 are configured as a frequency generator. With the both transistor is working together and the rest of the transistor is not working.

**Step1 :** when TR1 and TR2 are working, LED4 to LED9 are light on and TR3 is not working, causing LED1 to LED3 is light off.

**Step2 :** When TR2 and TR3 are working, LED1 to LED6 are light on and TR1 is not working, causing LED7 to LED9 is light off.

**Step3 :** When TR1 and TR3 are working, LED1 to LED3 and LED7 to LED9 are light on and TR2 is not working, causing LED4 to LED6 is light off.

This frequency is depending on C1, R3, C2, R5, C3 and R7. For LED10 is light on continuously.

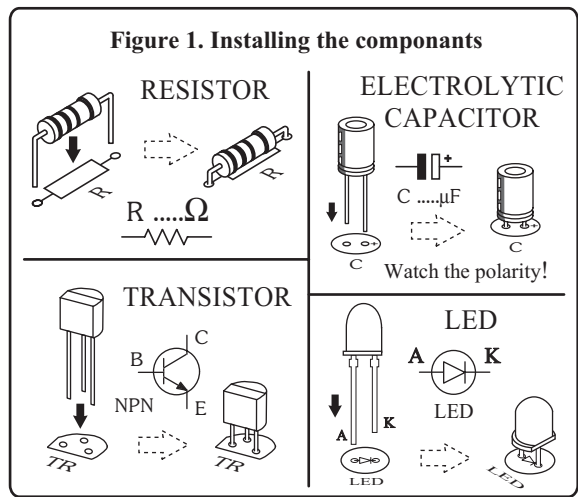
**PCB assembly:**

Shown in Figure 3 is the assembled PCB. Starting with the lowest height components first, taking care not to short any tracks or touch the edge connector with solder. Some tracks run under components, and care should be taken not to short out these tracks. If the pins will not enter the holes with ease, use a small drill to slightly enlarge the opening. All components with axial leads should be carefully bent to fit the position on the PCB and then soldered into place. Make sure that the electrolytic capacitors are inserted the correct way around. Some components are particularly sensitive to heat ( ie: Transistors, IC's, diodes etc.) extra care must be taken to only apply the iron for as little time as

possible, using a pair of pliers to grip the leads will help conduct heat away. Trim components leads with wire cutters to prevent excess lengths causing a short circuit. Now check that you really did mount them all the right way round!

**Testing:**

This kit has an operating voltage range of 9 VDC. Connect the power supply to the circuit. All LED's is blinking to the same the planet. If you want to change the speed of LED can be increased or decreased the value of capacitor C1, C2 and C3.

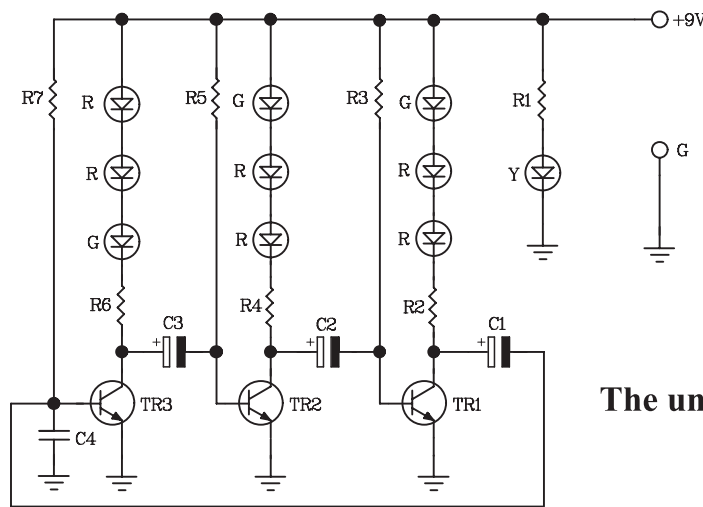


**Troubleshooting:**

The most problem like the fault soldering. Check all the soldering joint suspicious. If you discover the short track or the short soldering joint, re-solder at that point and check other the soldering joint. Check the position of all component on the PCB. See that there are no components missing or inserted in the wrong places. Make sure that all the polarised components have been soldered the right way round.

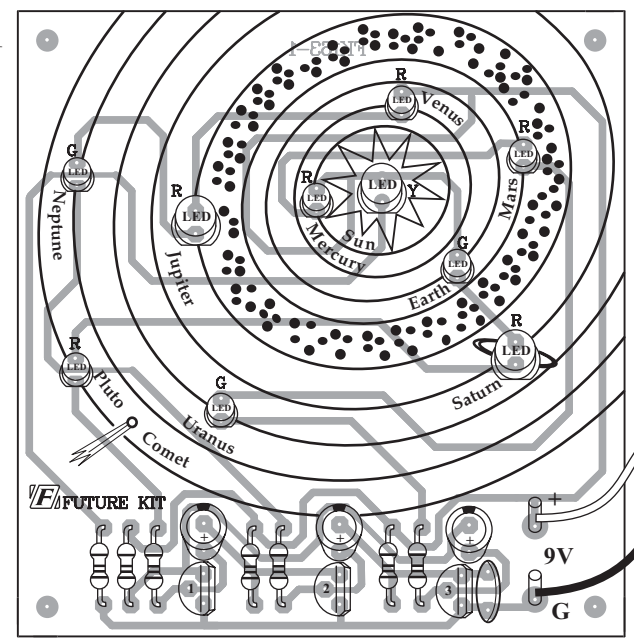
**The sun statistics**

- Spectral Type : G2 V
- Mass :  $1.989 \times 10^{30}$  kg.
- Equatorial radius : 695,000 km.
- Mean density :  $1.410 \text{ gm/cm}^3$
- Rotational period : 25-36 days
- Escape velocity : 618.02 km/sec
- Magnitude : -26.8 Vo
- Luminosity :  $3.827 \times 10^{33}$  ergs/sec
- Mean surface temperature : 6,000°C
- Age : 4.5 billion years



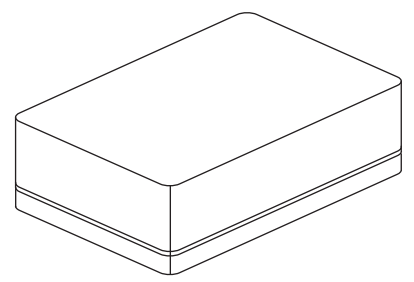
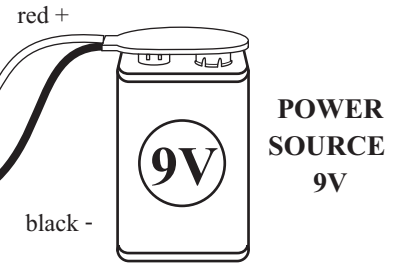
**Figure 2.**  
**The universal flasher circuit**

**FK163-1**



**Figure 3. Connections**

- Sun = 5 mm., yellow LED
- Mercury = 3 mm., red LED
- Venus = 3 mm., red LED
- Earth = 3 mm., green LED
- Mars = 3 mm., red LED
- Jupiter = 5 mm., red LED
- Saturn = 5 mm., red LED
- Uranus = 3 mm., green LED
- Neptune = 3 mm., green LED
- Pluto = 3 mm., red LED



**NOTE:**  
FUTURE BOX FB04 is suitable for this kit.

NEW KIT SET **NEW**

CODE FK	DESCRIPTION	POWER
161	FEELING FLASHER 14 LED	9-12VDC
162	SATURN'S RING FLASHER 31 LED	9-12VDC
163	UNIVERSAL FLASHER 10 LED	9VDC
164	XENON TUBE FLASHER (STRAIGHT TYPE)	220VAC
165	SOUND ACTIVATED XENON FLASHER (STRAIGHT TYPE)	220VAC
166	LIGHT ACTIVATED XENON FLASHER (STRAIGHT TYPE)	220VAC