EK030 – Running light 3LED

Kit description:

A simple little kit with three animated LEDs. The LEDs are controlled by a phase shift oscillator, which despite the complicated name, is quite simple. The oscillator works by amplifying the small noise inherent in all transistors. Each step or transistor, inverts and further amplifies the noise. After the last step, the signal is fed back into the first transistor. The feedback makes the oscillation steady and with a frequency set by the resistors and capacitors connected to each transistor. An LED is connected to the collector of each transistor in the oscillator. The kit is suitable as a first solder practice or as a demonstration of transistors, self-amplification and oscillators.

* Supply voltage:	~3 - 9VDC
* Dimensions:	36 x 28mm

Assembly guide:

Before soldering anything, please inspect the PCB and make sure it's free from damages. Check that all the components are included, compare with the component list below.

Start by mounting the six resistors, 3x 22 kohm and 3x 470 ohm. When the resistors are soldered and component leads are trimmed, continue the assembly by soldering the capacitors, LEDs and transistors. Please note that the capacitors, LEDs and transistors needs to be oriented the correct way for the circuit to work. Observe the markings on the PCB.

As a final step, inspect the solder joints. Make sure there are no solder bridges, shorts or incomplete solder joints. If everything looks ok, connect a power source to the pads marked + and -. The oscillator should start by itself and turn off one LED at a time.

Component list:

RefDes	Value	Qty	Part.no.	
C1, C2, C3	100uF 16V	3	41017679	
D1, D2, D3	LED Red 5mm	3	40307020	
R1, R3, R5	22kohm	3	40811422	
R2, R4, R6	470ohm	3	40811247	
T1, T2, T3	BC547	3	40320001	

Schematic: