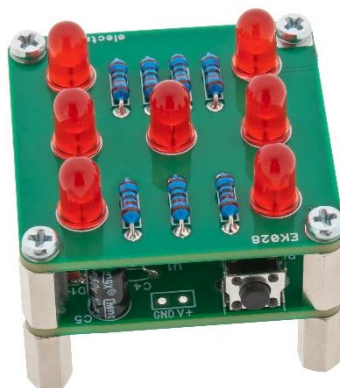


EK028 – Electronic dice

Kit description:

Clever little kit with LEDs and a digital counter circuit that together form an electronic die. When the button on the side is pressed, the die rolls and as soon as the button is released, the result of the roll is displayed with the LEDs. After a while, the LEDs turn off to save power. The circuit is built with four separate functions; A high-speed clock frequency is generated by two transistors connected as an astable multivibrator. The clock signal is then sent to a 10-stage decade counter. The outputs from the counter circuit are combined with simple diode logic and drive the LEDs. The fourth function is an automatic shutdown with slow dimming of the LEDs.



The kit is delivered as two circuit boards that are linked together with four copper traces. For a somewhat simpler assembly process, you can just solder the components in place and leave the boards connected. Solder wires to V+ and GND, and the die is ready to use.

For a slightly more advanced build, the boards can be snapped apart and assembled with spacers. With a battery holder and button cell on the underside, you get a die that's ready to use anytime.

- * Supply voltage: 3 – 12VDC
- * Auto shutdown delay: approx. 15s
- * PCB dimensions: 38.1 x 38.1mm (each half) / 38.1 x 77.5mm (undivided)

Assembly guide:

Always start by checking that all components are included. Cross-check with the component list below. Also check that the circuit board is free from scratches and defects. When assembling the components, it's easiest to start with the lowest and smallest components and to begin mounting components from the center of the board, working outward toward the edges. This makes it easier to access the soldering points with the soldering iron. It's important to remember to mount electrolytic capacitors, diodes, LEDs, and the IC chip in the correct orientation! The component markings on the board show the correct orientation where it matters. In this kit, a battery holder can also be mounted. The battery holder should be mounted on the back of the board, and it can be a bit tricky to access the soldering points. Be careful not to let the soldering iron touch and melt the components that are already in place! For the die to work when the boards are separated, the included spacers must be used, as they serve both as an electrical and mechanical connection between the boards!

Component list:

RefDes	Value	Qty	Part.no.	
BAT	CR2032 PTH	1	41003391	
C1, C2	47nF	2	40500044	
C3, C5	10uF	2	41017674	
C4	100nF	1	41015538	
D1 – D10	1N4148	10	40310010	
LED1 – LED7	5mm	7	40307020	
R1 – R8, R11	1kohm	9	40811310	
R9, R10, R12	47kohm	3	40811447	
R13	2.2Mohm	1	40811622	
SW	6mm tact	1	41013367	
T1, T2	BC547C	2	40320001	
T3	2N7000	4	40327000	
U1	CD4017B	1	40360038	
	Battery 3V CR2032	1	41002720	
	Screw M2.5x6	4	41010778	
	Spacer M2.5 10mm	4	41014104	
	Spacer screw 10mm	4	41014099	

Schematic:

