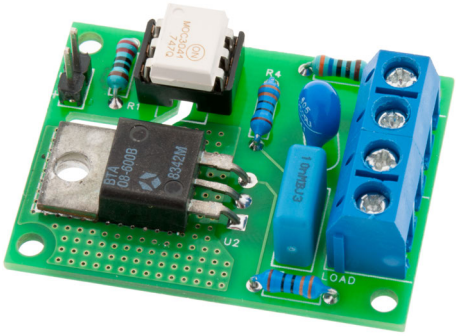
EK025 – Triac Switch

Kit description:



EK025 is an electronic switch for AC loads, built around an opto-triac and a power triac. When a voltage above 1.25V is presented at the input (P1), the IR-LED inside U1 is lit and the triac conducts, which in turn will open the power triac. The opto-triac can not control a heavy load on its own and is only used to provide galvanic isolation between the low- and high voltage parts of the circuit. A snubber circuit (C1+R4) enables control of motors and other inductive loads. A MOV (metal oxide varistor) will catch transients that can occur when a load is switched off and protect the rest of the circuit.

* Control voltage:	1.25 – 5.5 VDC (12V: R1 = 470ohm, 24V: R1 = 1kohm)
* Control current (@3.3V):	10mA (max 50mA)
* Max voltage (load):	230VAC
* Max current (load):	3A (without extra heatsink)
* Dimensions:	40.64 x 30.48mm
* Mounting holes:	c-c 35.56 x 25.4mm, ø2.54mm

!!OBSERVE!! 230VAC mains voltage is present in this circuit! Please take necessary caution to prevent electric shock!

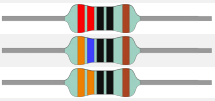
Assembly guide:

Before you begin mounting components, make sure the board is free from damage and scratches. Make sure all the components are included and are of correct value. Compare with the component list!

Begin mounting the lowest components and work your way up to the largest. IC sockets, resistors, ceramic capacitors and diodes go first. Electrolytic capacitors, connectors and potentiometers go last. Some components are polarized and must be mounted in the right way. Please observe the markings on the board!

For lighter loads (below 3A) the triac (U2) can be mounted horizontally. The exposed pad must be soldered to the board. For heavier loads, the triac can instead be mounted vertically and a heatsink can be mounted to the tab. Please note that the mounting tab on the triac is NOT insulated and mains voltage is present on the entire heatsink unless it's properly insulated!

Component list:

RefDes	Value	Qty.	Part.no.	
P1	2.54mm 2-pol	1	41001167	
AC, LOAD	5.08mm 2-pol	2	41016290	
R1	220 ohm	1	40811222	
R2	360 ohm	1	40811236	
R3, R4	330 ohm	2	40811233	
C1	10 nF	1	41015996	
RV1	Varistor 250V	1	41003398	
U1	MOC3041	1	40353041	
U2	BTA08-600BRG	1	41004528	

Schematic: