

# EK027 – DC motordriver Bipolar

## Kit description:

EK027 is a motor driver for most small DC motors and can be used for controlling the speed in both directions. Speed and direction is controlled using the onboard potentiometer. When the knob is turned to the left, the motor spins counter-clockwise. When turned to the right, the motor will turn clockwise. A zone in the middle will stop the motor completely. The zone can be adjusted by replacing the resistor R6. An input for an external control voltage is available and can be connected to an external potentiometer, sensors or switches. The controller is built around a triangle wave oscillator and a window comparator. The comparator compares the voltage from the oscillator with the two voltages generated by the resistor ladder (R6, R7 and R8). By offsetting the triangle wave with the potentiometer or external control voltage, either positive or negative going pulses will be generated by the comparator outputs. When no offset is applied, no pulses are generated and the motor will be stopped. The comparator outputs are connected to four high current FET transistors connected in an H-bridge configuration which in turn drives the motor.



* Supply voltage:	5 - 15 VDC
* Control voltage:	0 – supply voltage
* Maximum load:	5A (requires additional cooling)
* PWM frequency:	266Hz or 16kHz
* Dimensions:	50.8 x 76.4mm
* Mounting holes:	c-c 71.12 x 45.72mm, $\varnothing$ 2.54mm

## 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!

## Component list:

RefDes	Value	Qty.	Part.no.	
C1, C3	1000 uF	2	41016237	
C2, C7, C9	100 nF	3	41016717	
C4	10 uF	1	40520021	
C5	10 nF	1	41011998	
C6	220 uF	1	41004825	
D1, D2	1N4148	2	40310010	
D3, D4, D5, D6	1N4004	4	40310004	
D7	LED 3mm	1	40307070	
R1, R2	47 kohm	2	40811447	
R3, R4, R16	100 kohm	3	40811510	
R5, R7, R8, R9, R10, R11, R12, R15, R17, R18, R20	10 kohm	11	40811410	
R6, R13, R14	4.7 kohm	3	40811347	
R19	10 ohm	1	40811110	
M1, M4	Heatsink	2	41016259	
T1, T3	IRF530	2	40320530	
T2, T4	IRF9530	2	41015917	
T5, T6	BC547	2	40320001	
U2	TLC274	1	40350274	
VR1	Pot 100k	1	40910030	

## Schematic:

