

## **BMC069. Gate To Trigger Converter**

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**I What it does**

**II Schematics**

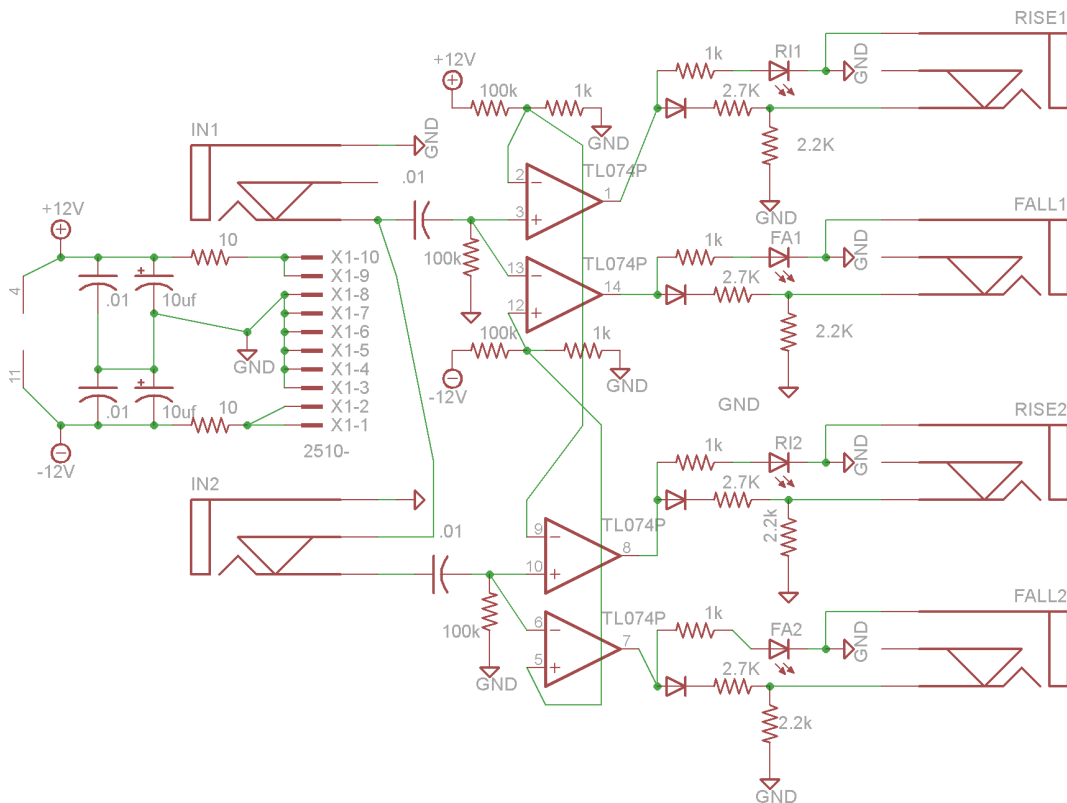
**III Construction**

**A.Parts List**

**B.The Board**

## I. What it Does

This module creates trigger outputs from the rising and falling edges of a gate or square wave input. Trigger length is ~1ms and outputs +5V. The module is useful when needing a trigger from a source that only outputs gates, or for converting a clock signal into two out of phase clock signals of the same frequency.



## II. Schematic

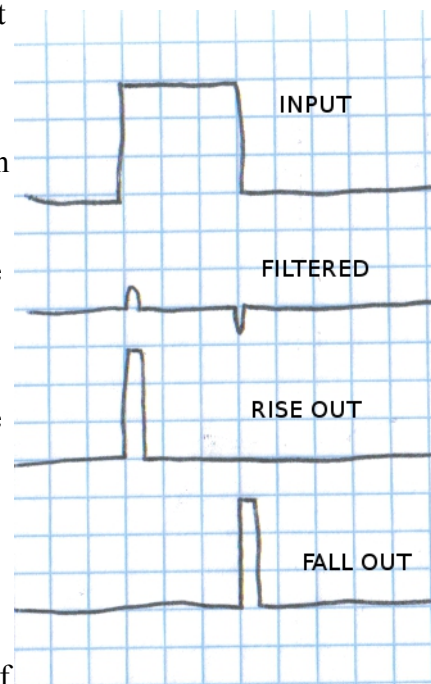
Above is the schematic. The module has two channels that are identical except that the switch on the second channel's input jack is connected to the tip of the first channel, this lets channel two act as a buffer or "mult" of channel 1 when not in use.

The input jack's tip is connected to a .01uF capacitor which connects to a 100K resistor to ground. Together these form a high pass filter. When applying a square wave through this filter, you get two very short pulses, one positive from the rising edge of the wave and one negative from the falling edge of the wave. The diagram to the right shows the difference between input and filtered.

The filtered wave is then sent to a pair of comparators one inverting with a threshold of -12V to catch the fall and one non-inverting with a threshold of +12V to catch the rise. The threshold voltages are set by 100K/1K voltage dividers.

The outputs of the comparators are connected to LEDs through current limiting resistors, as well as a network of a switching diode and 2.7K resistor in series and finally a 2.2K resistor to ground. This network limits the comparators' outputs of -12V to +12V to 0V to +5V.

The power connections are on the left. The +/-12V voltage rails are filtered by a 10 ohm/10uF passive low pass filter and further filtering is done by a .01uF capacitor at each power pin of the TL074.



### III Construction

#### A.PARTS LIST

##### SEMICONDUCTORS

Name/Value	QTY	Notes
TL074	1	8 Pin DIP
1N4148	4	Or any small switching diode
LED	4	3mm size. Resistor values were chosen for normal brightness RED leds. For high efficiency LEDs or other colors increase resistor values of the 1K resistors near the LEDs

##### RESISTORS

Name/Value	QTY	Notes
10 ohms	2	All resistors 1/4W metal film except potentiometers
1K	6	
2.2K	4	
2.7K	4	
100K	4	

##### CAPACITORS

Name/Value	QTY	Notes
.01uf	4	Ceramic disc.
10uf	2	Electrolytic, 16V or higher rating.

##### OTHER

Name/Value	QTY	Notes
14 pin DIP socket	1	
Power connecter	1	Right angle 2x5 2.54mm, <a href="#">like this</a> .
Jacks	6	PCB is designed around these jacks: <a href="#">PJ-323M</a>

## B. THE BOARD

The PCB is 102mm x 33mm. The jacks are spaced 17.78mm apart (.7 inch). Below are images of the PCB with and without traces present. The image of the PCB with traces does not show connections to ground.

