

— HIGH CURRENT PATH

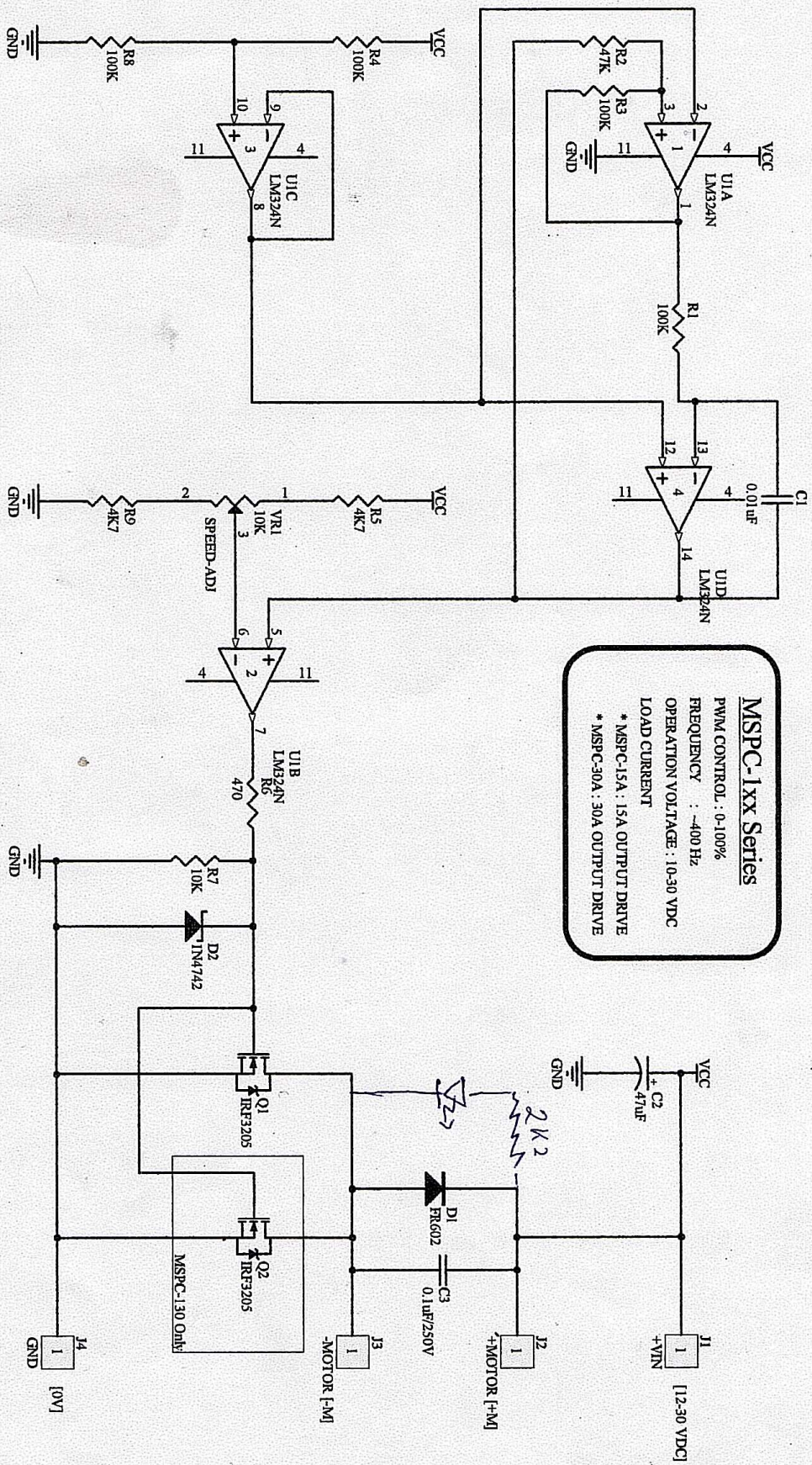
# BI-DIRECTIONAL MOTOR SPEED CONTROLLER

| Title                                 | Size         | Number       | Revision |
|---------------------------------------|--------------|--------------|----------|
| BI-DIRECTIONAL MOTOR SPEED CONTROLLER | A4           | K166         | 2        |
| Date: 21-FEB 2004                     | Sheet 1 of 1 | Drawn By: FC |          |
| File: K166/1                          |              |              |          |



# MSPC-1xx Series

PWM CONTROL : 0-100%  
 FREQUENCY : ~400 Hz  
 OPERATION VOLTAGE : 10-30 VDC  
 LOAD CURRENT  
 \* MSPC-15A : 15A OUTPUT DRIVE  
 \* MSPC-30A : 30A OUTPUT DRIVE

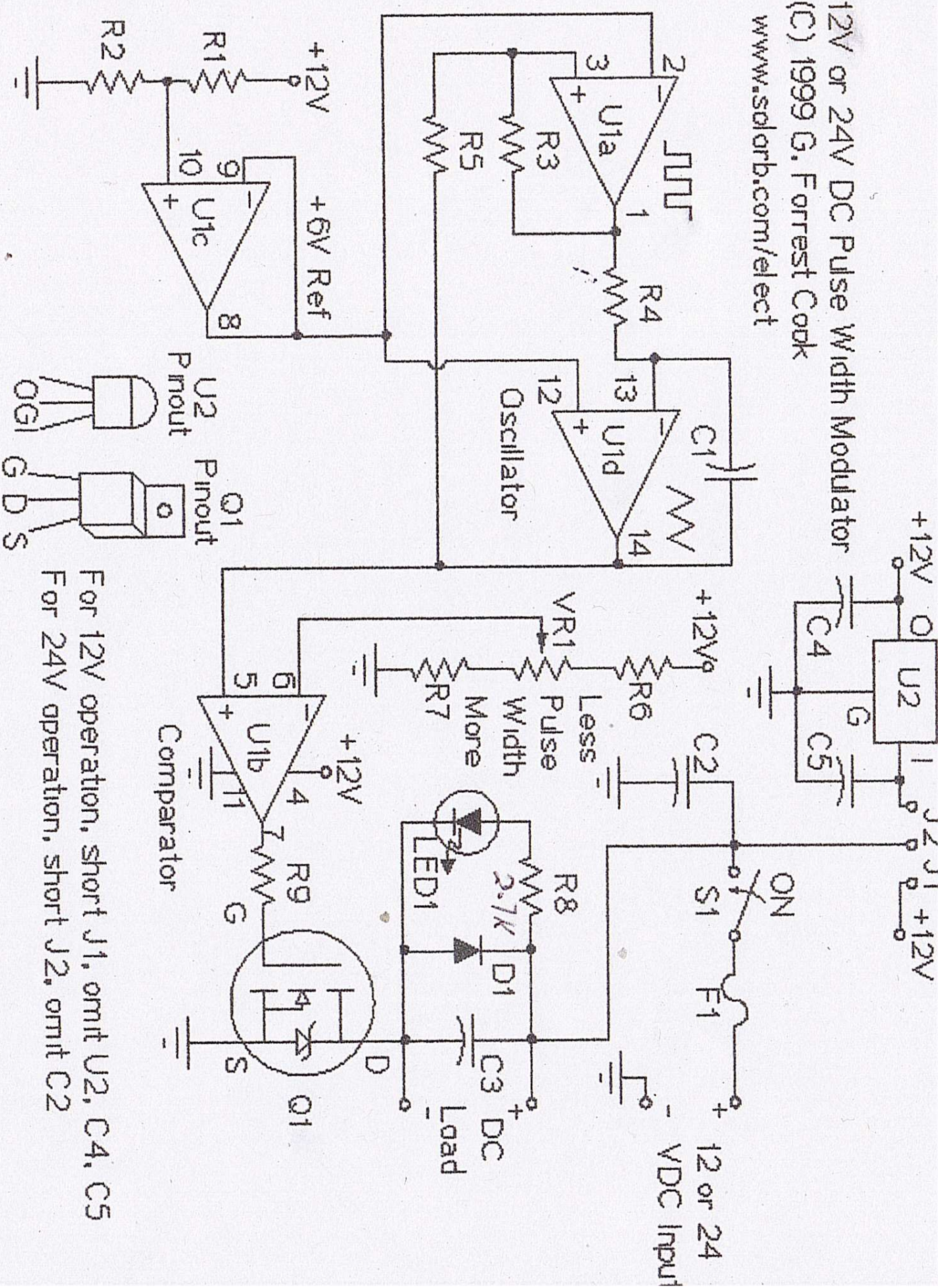


MSPC-1xx Series : PWM Motor Speed Control

Mikro-Kits Product



12V or 24V DC Pulse Width Modulator  
(C) 1999 G. Forrest Cook  
[www.solarb.com/elect](http://www.solarb.com/elect)



For 12V operation, short J1, omit U2, C4, C5  
For 24V operation, short J2, omit C2





## PWM-MOTOR-SPEED-CONTROL

## PWM COMPONENTS-LIST

### RESISTORS

RV1-10K-LINEAR POTENTIOMETER

R1,R3,R4 & R7=100K

R2=47K

R5 & R9=4K7

R6=470 ohms

R8=10K

### DIODES

D1=FR602 (or equivalent)

D2=IN4742 Zener

### CAPACITORS

C1=0.01uF Ceramic disc

C2= 47uF Electrolytic

C3=0.1uF Ceramic disc

### ICs

Q1=LM324N

Q2=IRFZ48N

A LED is optional,& can be fitted between the motor + and motor - with a suitable resistor in series with the LED (suggest Red LED and 2K2 Resistor)

### **CAUTION !**

A Suitable heat-sink **MUST** be fitted to the Mosfet , (even for testing) & bear in mind that the DRAIN is connected to the case of the mosfet, and should never be grounded.

## ASSEMBLY

The pwm can be populated on a piece of strip-board,(approx,6x2 inches)  
The only part that will need beefing up,is the Mosfet source & drain tracks

It is also an advantage to fit a 14 pin socket for Q1,  
this prevents any damage when soldering and  
makes it easy for replacement.

The schematic shown is the usual configuration for 15amps

If it is required that it should be used for higher  
current,then simply add another mosfet,  
or substitute the existing one for one of a  
higher rating.

From past experience,it is best to over spec  
the unit,because the option to draw more  
current is always available & it will survive longer.

The important thing is cooling,and a fan  
as well as a heatsink,should be considered

This is a simple circuit,and when used with an  
ammeter,wil give control from zero to maximum

The driver assembly was populated on a piece of strip-board, 100mm x 35mm.  
The Mosfet was mounted on 50mm x 50mm heat-sink (with incorporated fan).  
The unit was operated by a remote "Pot"





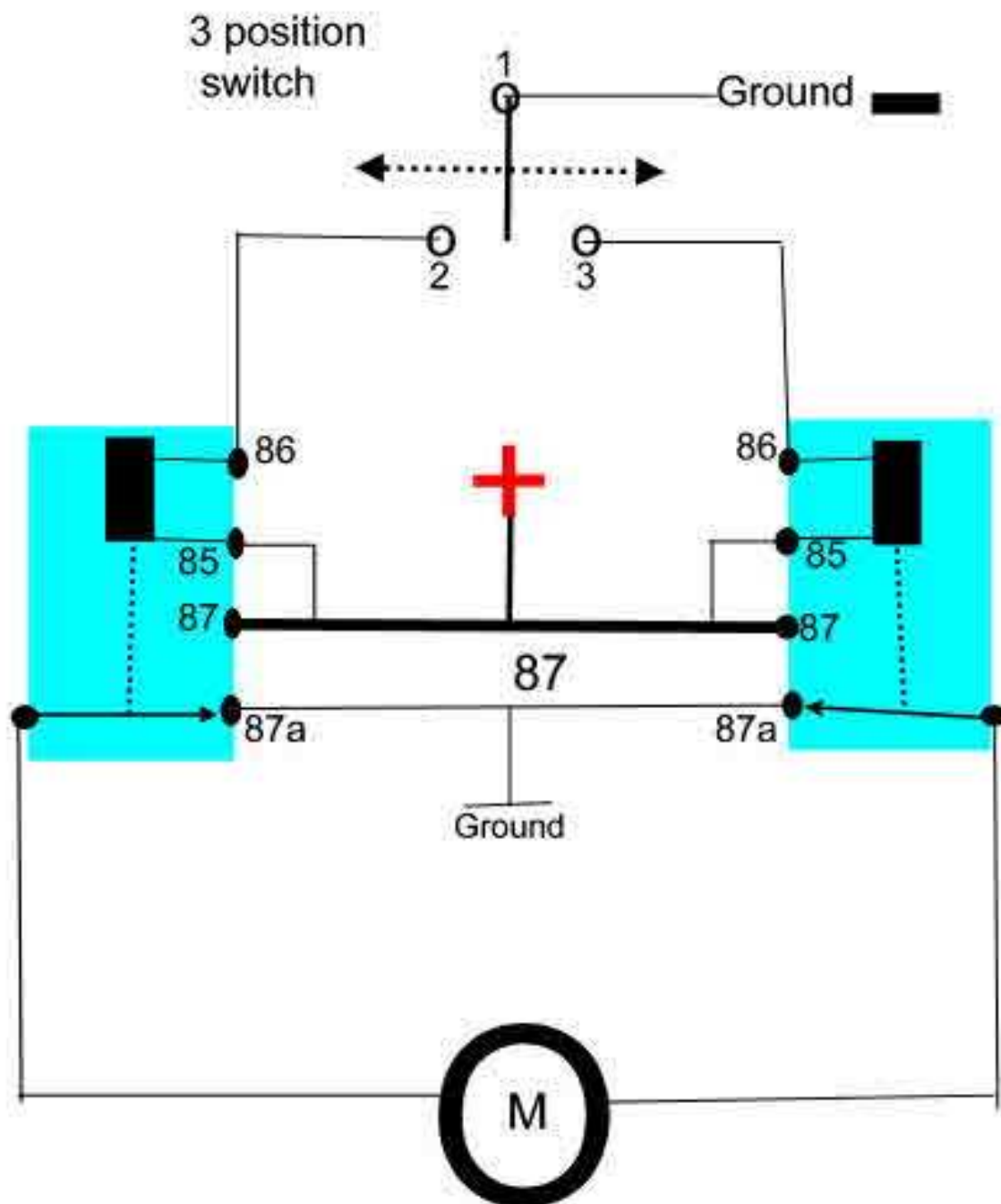
## ERROR

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The suggestion to use a 5 pin reversing switch, as a substitute for a 3 position switch, is Wrong. while the switch will function, it will have to be permanently pressed, as the switch is spring loaded.



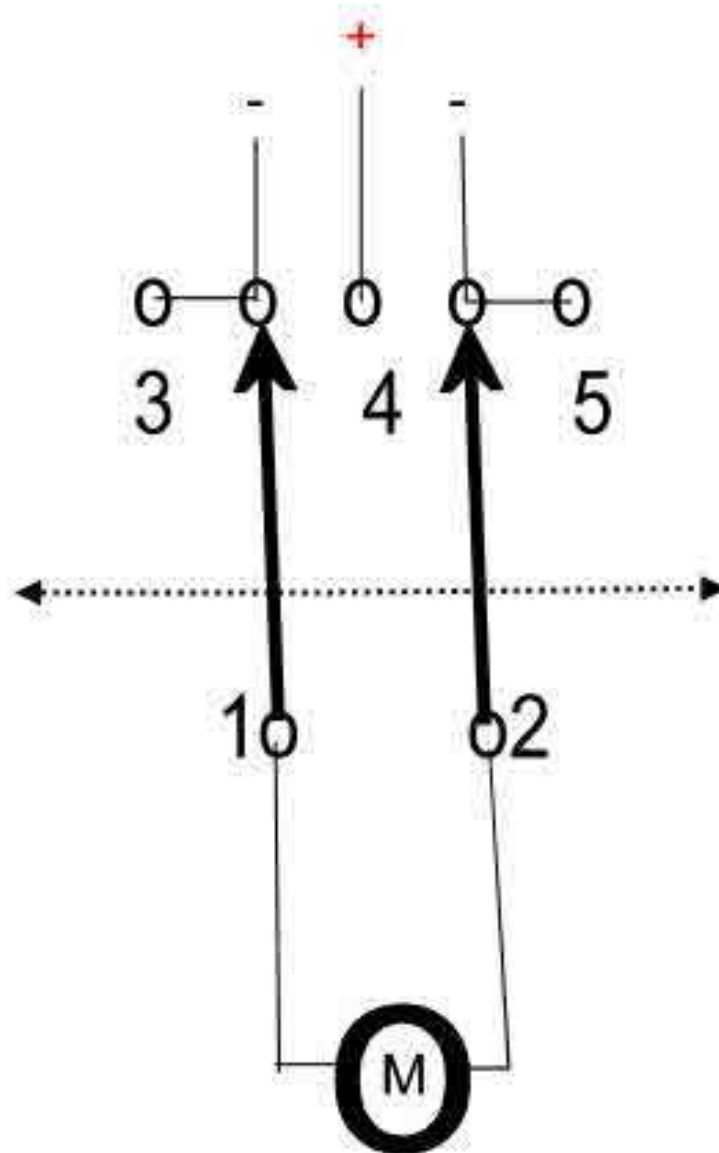
## POLARITY REVERSING WITH RELAYS



If a 3 position switch is not available  
A 5 pin reversing switch can be used  
By using pins# 1,2 &4 (pins 3&5 are N/C)

## POLARITY REVERSING CIRCUIT REVERSING SWITCHES

Switch contacts will NOT cope with high current



When motor is at rest, both terminals  
are grounded.



10K  
POT

## Reversing and speed control

[illegible]