

Battery +48V rail connected to relay and key switch before arriving on board.
Note that 48V supply rail climbs to 53V when current is drawn, and can reach 58V while charging.

TVS diodes for motor IC protection.

TVS diodes for gate punch-through protection from motor transients.

Gate-Source And IC Supply Rail
TVS Parameters:
Mnf Code = PTVS12VP1UP
Voff = 12V
Vclamp = 19.9V
P = 600W

MOSFET Parameters:
Mnf Code = IRFS3107PBF
Vds(max) = 75V
Vgs(max) = +-20V
Rds(on) = 2.5mR
Id(max) = 195A
Cin=9.37nF

Drain-Source Protection TVS
Parameters:
Mnf Code = PTVS60VP1UP
Vrwm = 60V
Vbr = 66.7-73.7V
Vclamp = 96.8V
P = 600W

RC snubber network in parallel with motor.

High-current rung and bolt connections to motor.

TO-220 package MOSFET's and schottky diodes are bolted to custom-made heatsink.

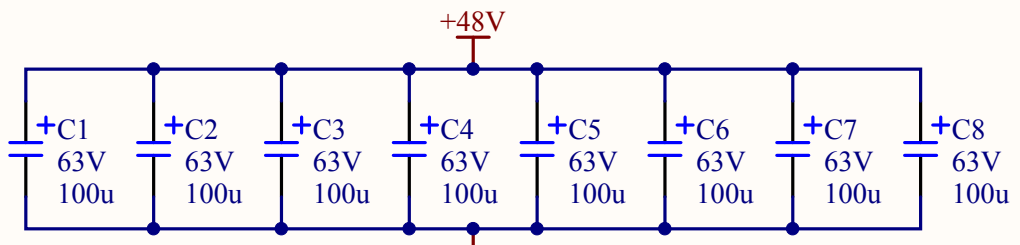
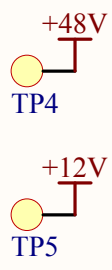
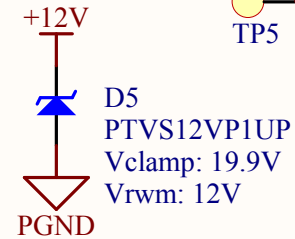
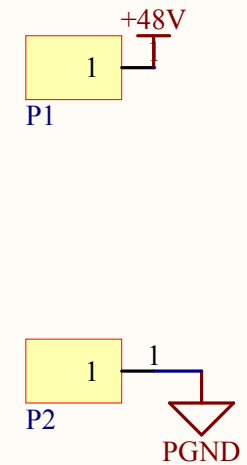
Stabilization capacitor for driver. Without this on the input, oscillations can occur. PWM Freq = 22kHz

C15 acts as a noise decoupling cap for the gate. Helps reduce noise present on the low-side gate when the high-side MOSFET switches on.

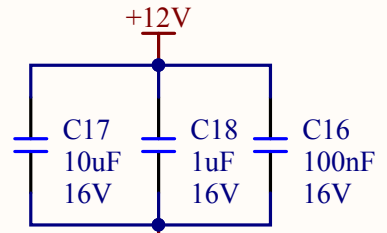
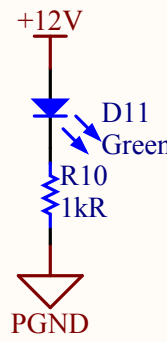
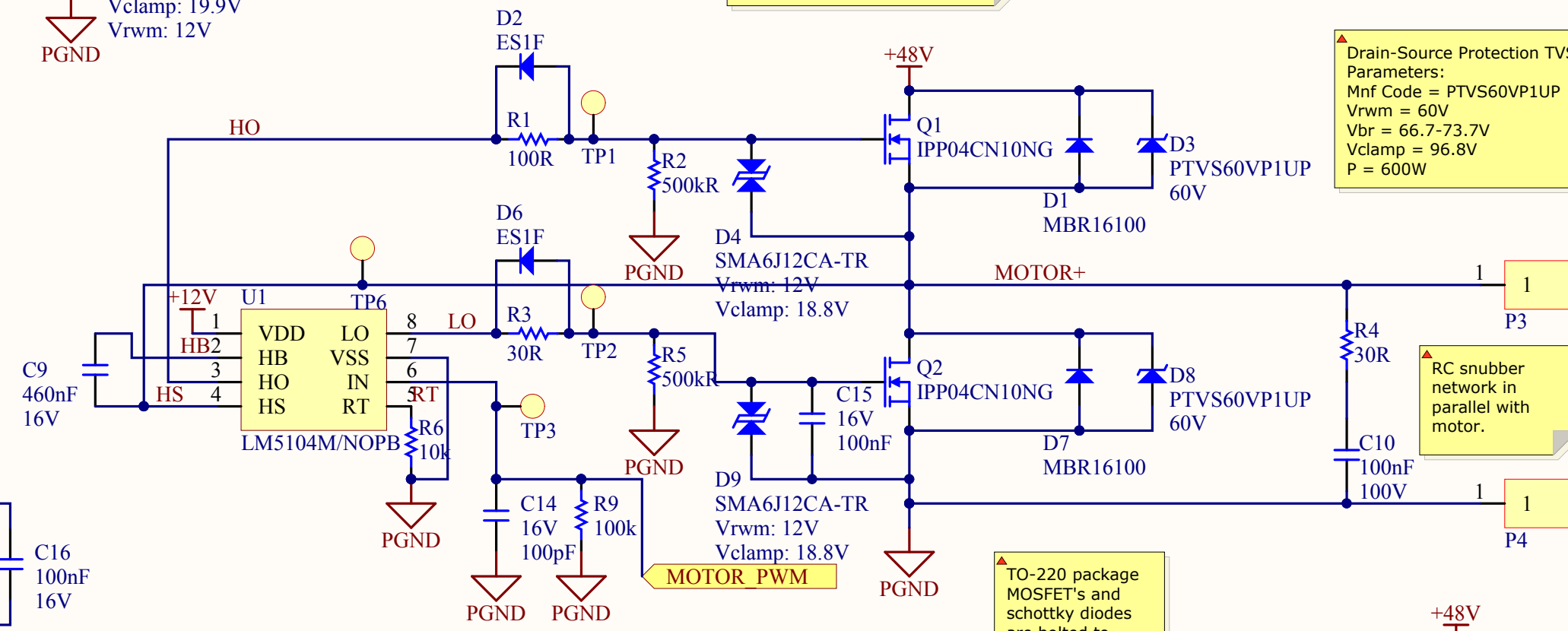
For absorbing voltage spikes on voltage rail from motor. Put close to motor.

IMPORTANT:
Circuit did not work. When tested, both high-side and low-side MOSFET's blew up when stopping the motor abruptly.
Ended up buying a 12-60V 30A motor controller from AliExpress to replace this (model num A121#). Worked, but does not have breaking capabilities as it uses a quarter-bridge design.

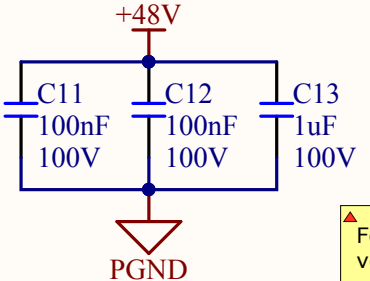
Title Hald-Bridge Motor Controller	
Document Name Motor Driver.SchDoc	
Project Name Motor Driver v1.1.PrjPCB	Sheet 1 of 1
Client Geo	Revision 1.1
Company Name CladLabs	Modified Date 7/1/2012
Drawn By Geoffrey Hunter	



Bulk decoupling for 48V supply rail. 800uF total.



Supply decoupling for LM5104.



Connector to main board.

