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

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

Supply decoupling for LM5104.

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

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

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

RC snubber network in parallel with motor.

High-current rung and bolt connections to motor.

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

Connector to main board.

IMPORTANT:
Circuit did not work. When tested, both high-side and low-side MOSFET's blew up when stpping the motor abrutly.

Eneded 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 quater-bridge design.

Title	Hald-Bridge Motor Controller
Document Name	Motor Driver.SchDoc
Project Name	Motor Driver v1.1.PrjPCB
Sheet	1 of 1
Cient	Geo
Revision	1.1
Company Name	CladLabs
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Drawn By	Geoffrey Hunter