

A

B

C

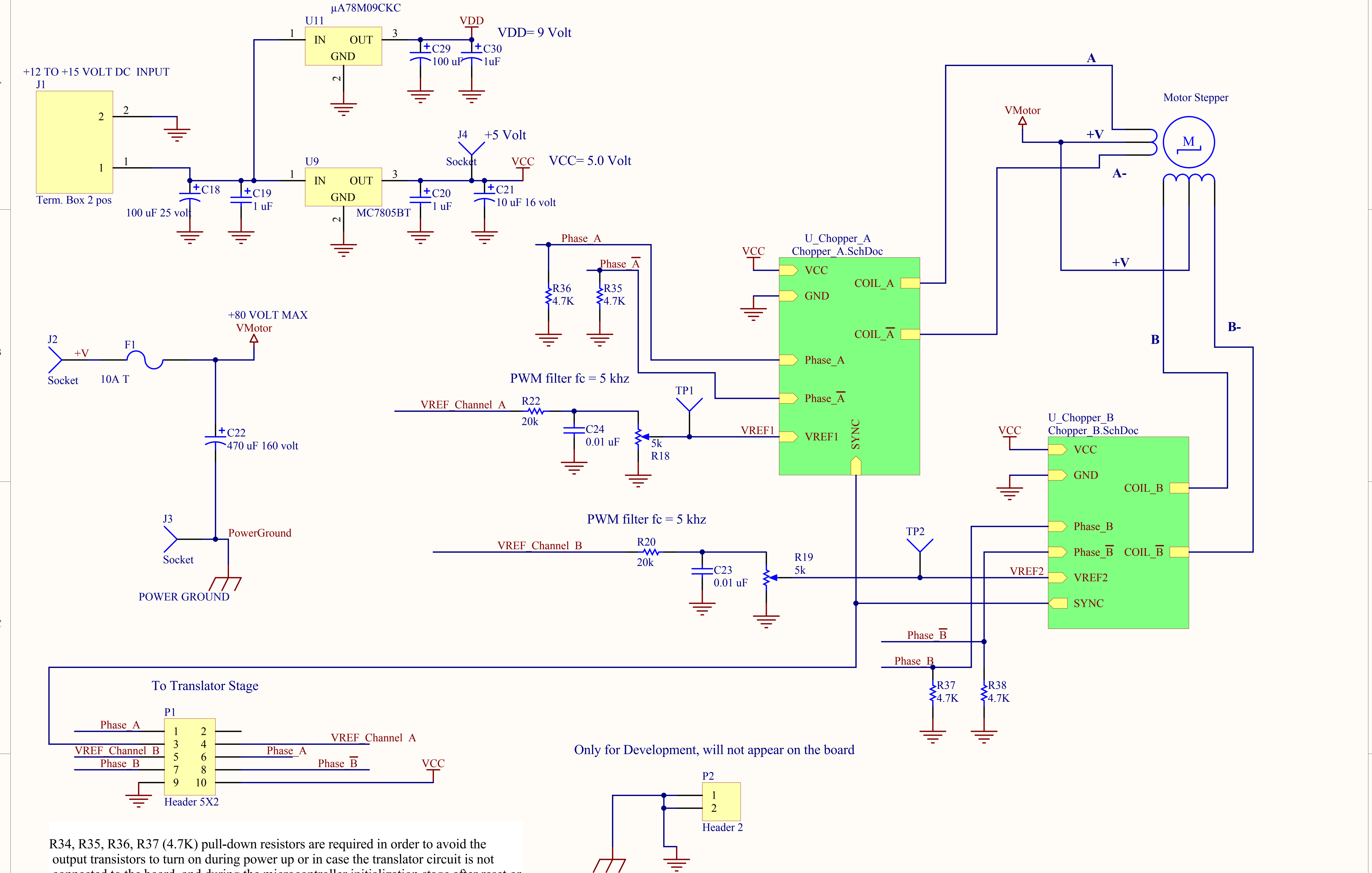
D

A

B

C

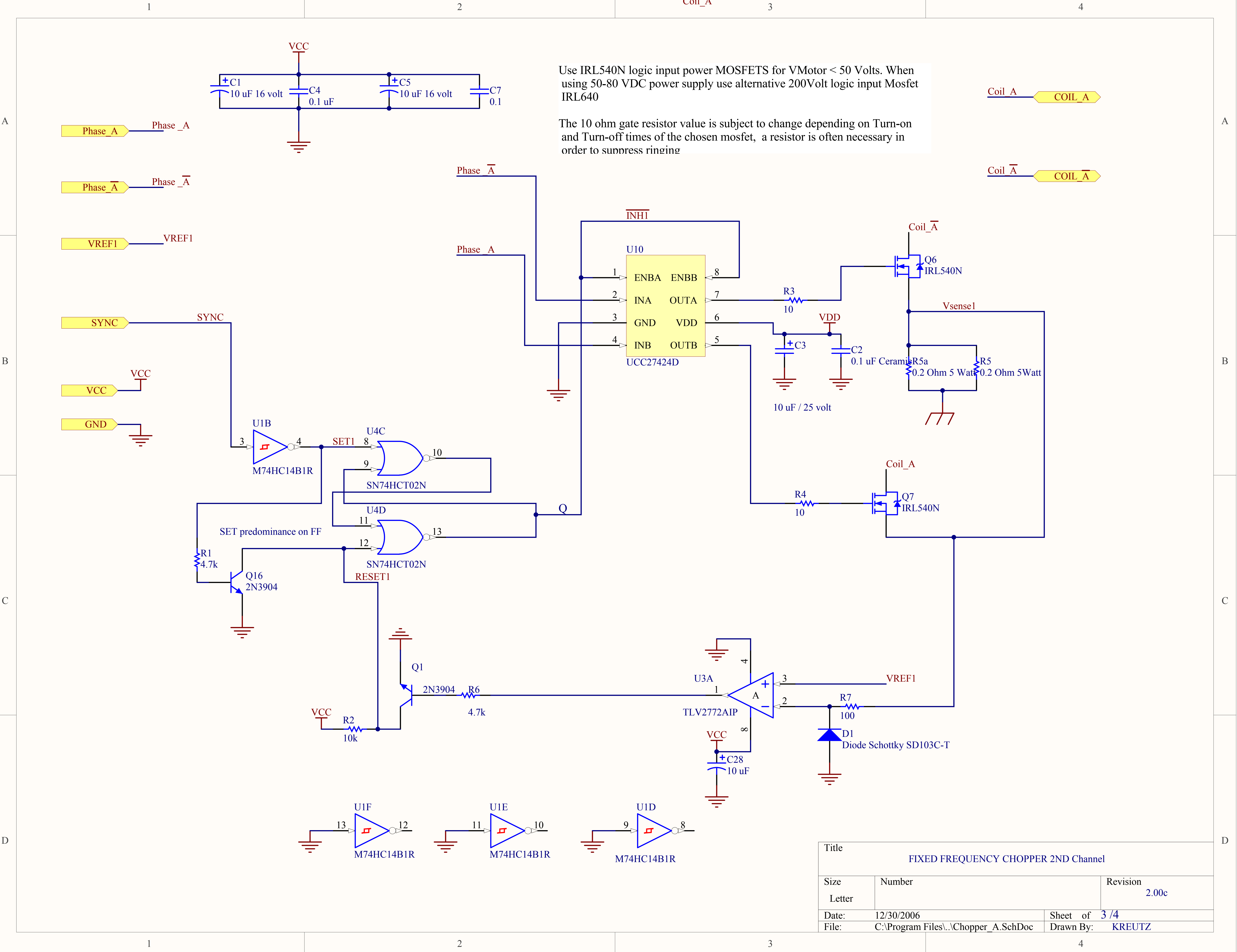
D



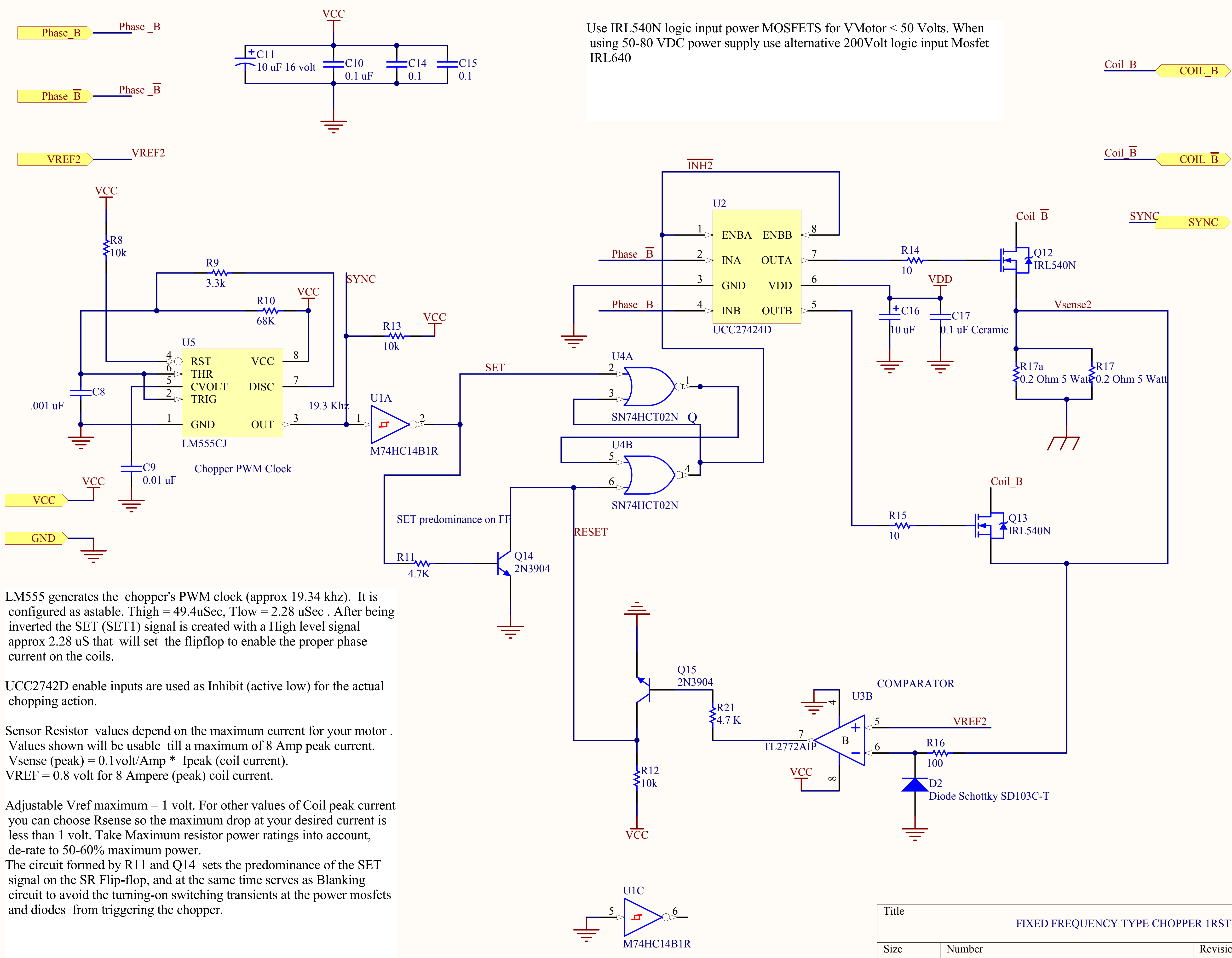
R34, R35, R36, R37 (4.7K) pull-down resistors are required in order to avoid the output transistors to turn on during power up or in case the translator circuit is not connected to the board, and during the microcontroller initialization stage after reset or power up. +12 volt must be present before powering up the +Vmotor power supply.

For 8 Amp option use 2 Oz copper FR4 pcb or beefup with solder the PCB traces corresponding with the coil connections and +Vmotor. Replace also the 10 Amp slow Blow fuse by 20 Amp Slow Blow Fuse. 10 Amp fuse has been calculated for 4 Amp peak coil current. Keep the Sensor resistor's bodies separated from the PCB board by at least 1 mm.

Title			FIXED FREQUENCY UNIPOLAR STEPPER DRIVER		
Size	Number		Revision		2.00c
Letter					
Date:	12/30/2006		Sheet of	1/4	
File:	C:\Program Files\...\Input-Power.SchDoc		Drawn By:	KREUTZ	



Title			FIXED FREQUENCY CHOPPER 2ND Channel		
Size	Number		Revision		
Letter			2.00c		
Date:	12/30/2006		Sheet of 3 / 4		
File:	C:\Program Files\...\Chopper_A.SchDoc		Drawn By: KREUTZ		



Use IRL540N logic input power MOSFETS for VMotor < 50 Volts. When using 50-80 VDC power supply use alternative 200Volt logic input Mosfet IRL640

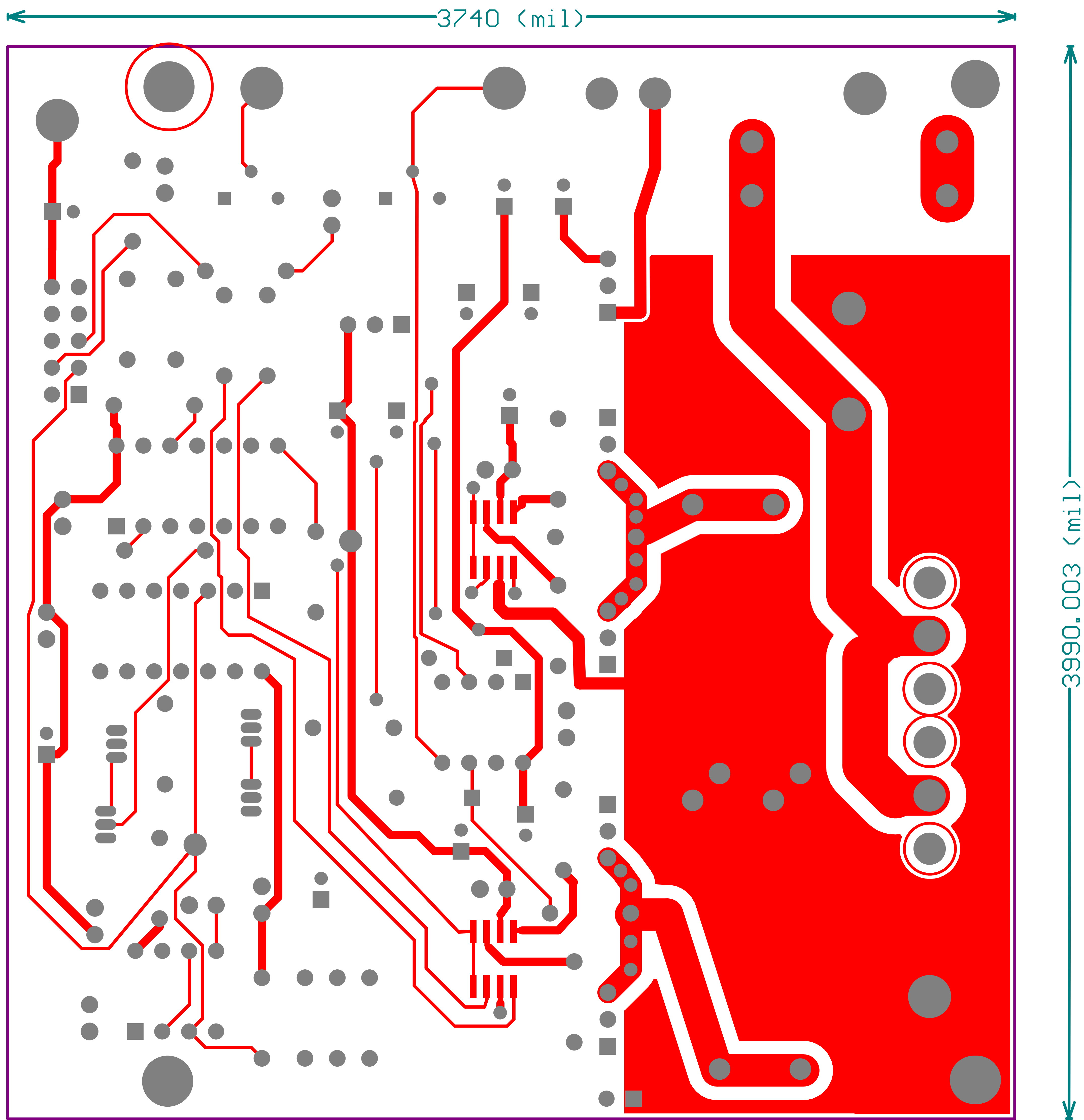
LM555 generates the chopper's PWM clock (approx 19.34 khz). It is configured as astable. $T_{high} = 49.4\mu\text{Sec}$, $T_{low} = 2.28\mu\text{Sec}$. After being inverted the SET (SET1) signal is created with a High level signal approx 2.28 uS that will set the flipflop to enable the proper phase current on the coils.

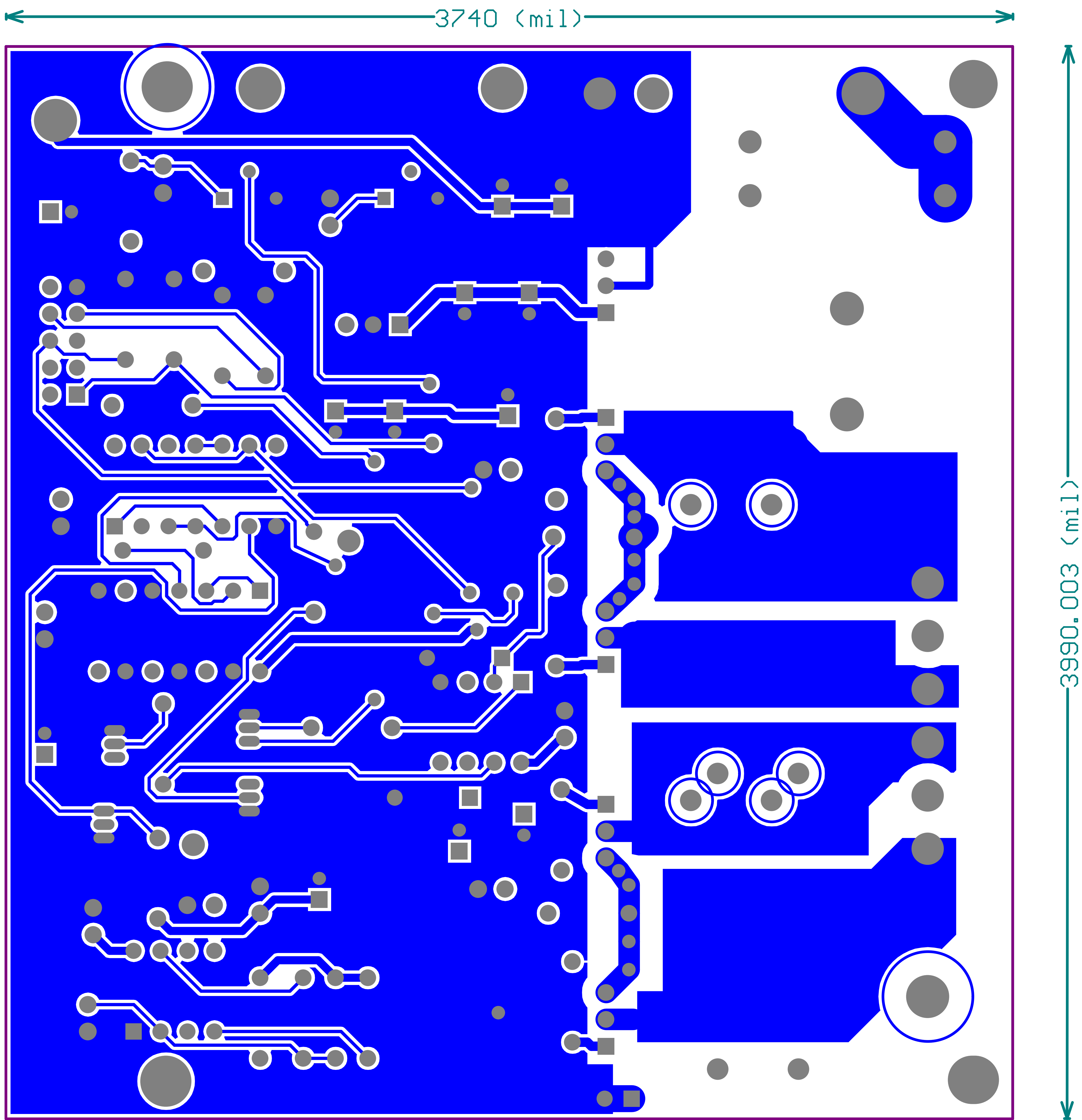
UCC2742D enable inputs are used as Inhibit (active low) for the actual chopping action.

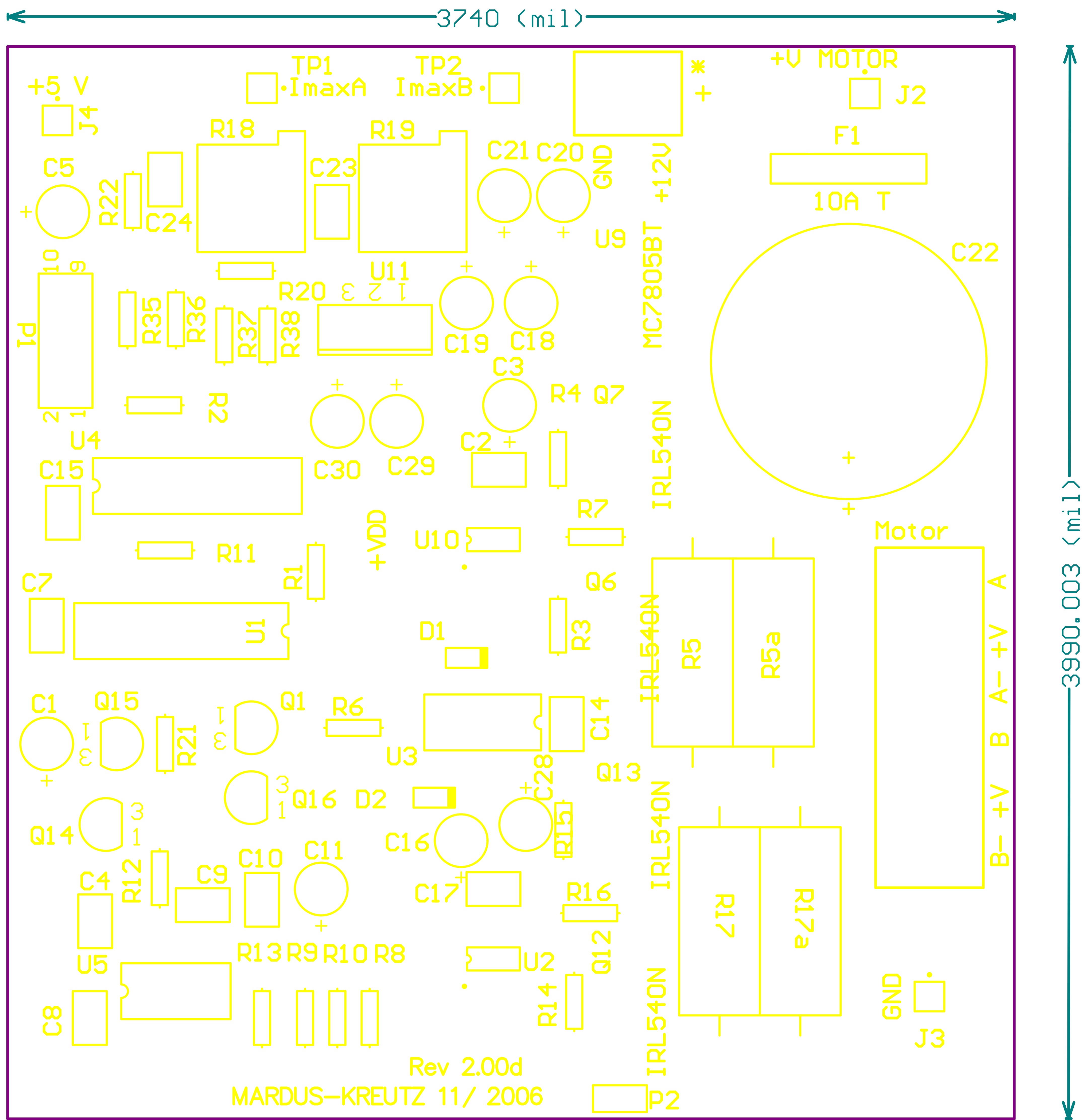
Sensor Resistor values depend on the maximum current for your motor. Values shown will be usable till a maximum of 8 Amp peak current.
 $V_{sense}(\text{peak}) = 0.1\text{volt/Amp} \times I_{\text{peak}}(\text{coil current})$.
 $V_{REF} = 0.8\text{ volt for } 8\text{ Ampere (peak) coil current}$.

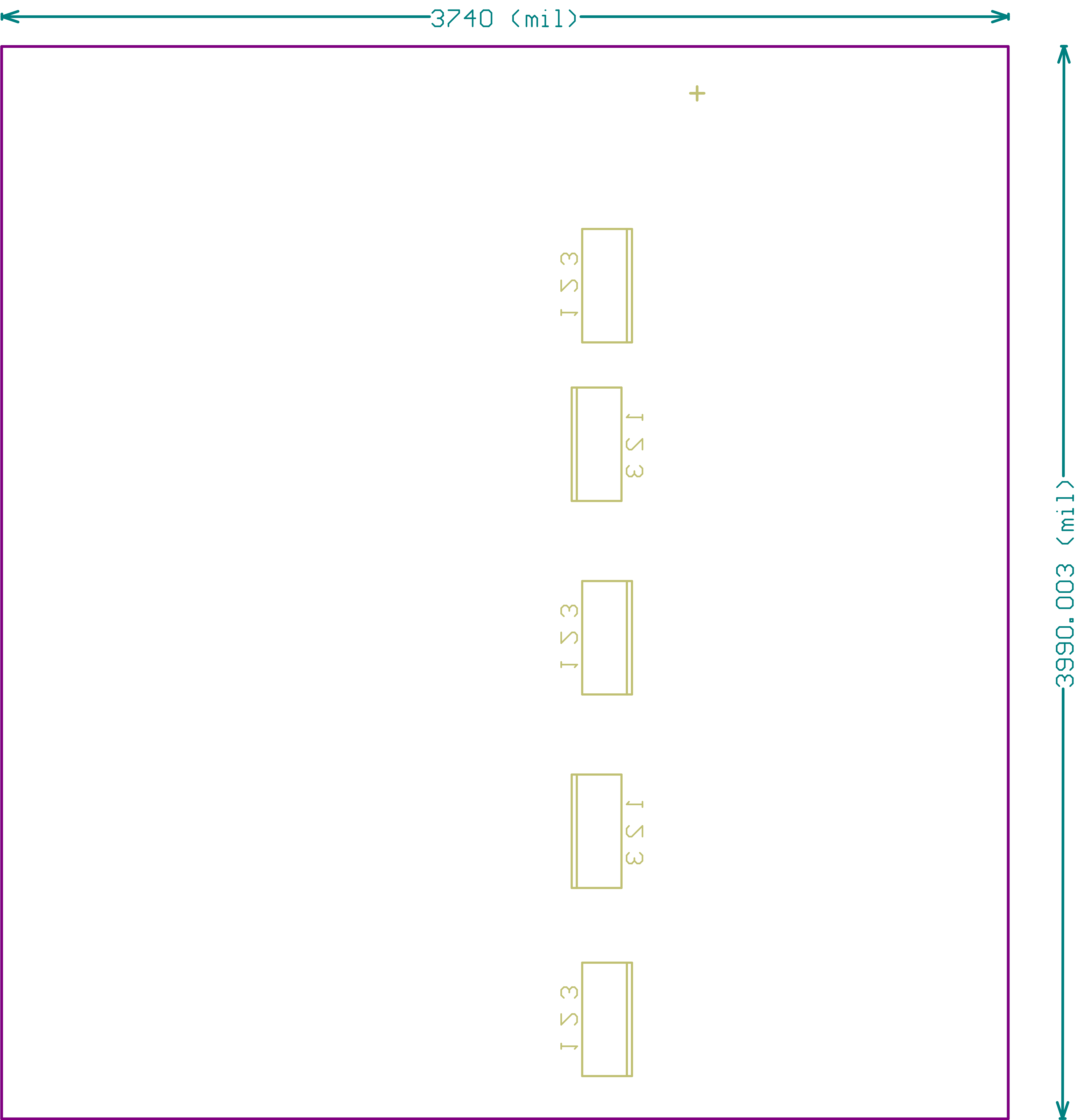
Adjustable Vref maximum = 1 volt. For other values of Coil peak current you can choose Rsense so the maximum drop at your desired current is less than 1 volt. Take Maximum resistor power ratings into account, de-rate to 50-60% maximum power.
The circuit formed by R11 and Q14 sets the predominance of the SET signal on the SR Flip-flop, and at the same time serves as Blanking circuit to avoid the turning-on switching transients at the power mosfets and diodes from triggering the chopper.

Title			FIXED FREQUENCY TYPE CHOPPER 1rst CHANNEL	
Size	Number		Revision	
Letter			2.00c	
Date:	12/30/2006		Sheet of	2 / 4
File:	C:\Program Files\...\Chopper_B.SchDoc		Drawn By:	KREUTZ









A

B

C

D

A

B

C

D

When using this Translator, components U5 (LM555) and associated circuit components R8, R9, R10, C8, and C9 are not populated on Chopper_B diagram. PB2 on the ATtiny2313 isbecomes the Chopper PWM Clock.

