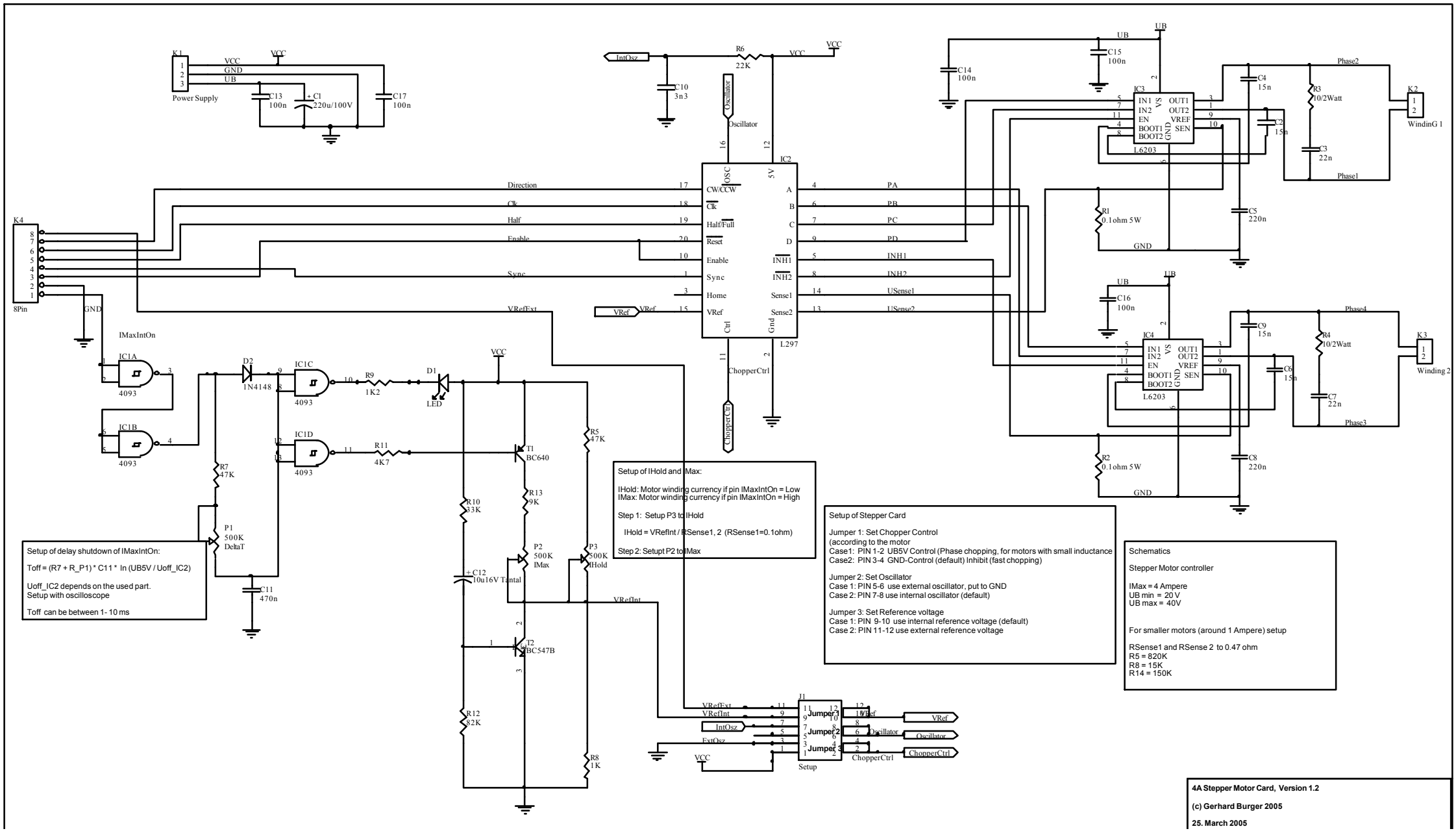
K1
Power Supply
VCC
GND
UB
C13 100n
C1 220u/100V
C17 100n
IntOsz
R6 22K
C10 3n3
Oscillator
IC2
L297
OSC
5V
CW/CCW
Clk
Half/Full
Reset
Enable
Sync
Home
VRef
Ctrl
Gnd
A
B
C
D
INH1
INH2
Sense1
Sense2
ChopperCtrl
Direction
Half
VRefExt
PA
PB
PC
PD
INH1
INH2
USense1
USense2
K4
8Pin
IMaxIntOn
IC1A
IC1B
IC1C
IC1D
4093
D2
1N4148
R9 1K2
D1
LED
R11 4K7
R7 47K
P1 500K DeltaT
C11 470n
C12 10u16V Tantal
R10 33K
R12 82K
T1 BC640
T2 BC547B
R13 9K
P2 500K IMax
R5 47K
P3 500K IHold
R8 1K
VRefInt
IC3
IC4
L6203
IN1
IN2
EN
BOOT1
BOOT2
OUT1
OUT2
VREF
SEN
VS
C14 100n
C15 100n
C16 100n
C4 15n
C2 15n
C3 22n
R3 10/2Watt
Phase1
Phase2
K2
WindinG 1
C5 220n
R1 0.1ohm 5W
C9 15n
C6 15n
C7 22n
R4 10/2Watt
Phase3
Phase4
K3
Winding 2
C8 220n
R2 0.1ohm 5W
J1
Jumper 1
Jumper 2
Jumper 3
Setup
ExtOsz
Setup of IHold and IMax:
IHold: Motor winding currency if pin IMaxIntOn = Low
IMax: Motor winding currency if pin IMaxIntOn = High
Step 1: Setup P3 to IHold
IHold = VRefInt / RSense1, 2 (RSense1=0.1ohm)
Step 2: Setupt P2 to IMax
Setup of delay shutdown of IMaxIntOn:
Toff = (R7 + R_P1) * C11 * ln (UB5V / Uoff_IC2)
Uoff_IC2 depends on the used part.
Setup with oscilloscope
Toff can be between 1- 10 ms
Setup of Stepper Card
Jumper 1: Set Chopper Control
(according to the motor
Case1: PIN 1-2 UB5V Control (Phase chopping, for motors with small inductance
Case2: PIN 3-4 GND-Control (default) Inhibit (fast chopping)
Jumper 2: Set Oscillator
Case 1: PIN 5-6 use external oscillator, put to GND
Case 2: PIN 7-8 use internal oscillator (default)
Jumper 3: Set Reference voltage
Case 1: PIN 9-10 use internal reference voltage (default)
Case 2: PIN 11-12 use external reference voltage
Schematics
Stepper Motor controller
IMax = 4 Ampere
UB min = 20 V
UB max = 40V
For smaller motors (around 1 Ampere) setup
RSense1 and RSense 2 to 0.47 ohm
R5 = 820K
R8 = 15K
R14 = 150K
4A Stepper Motor Card, Version 1.2
(c) Gerhard Burger 2005
25. March 2005