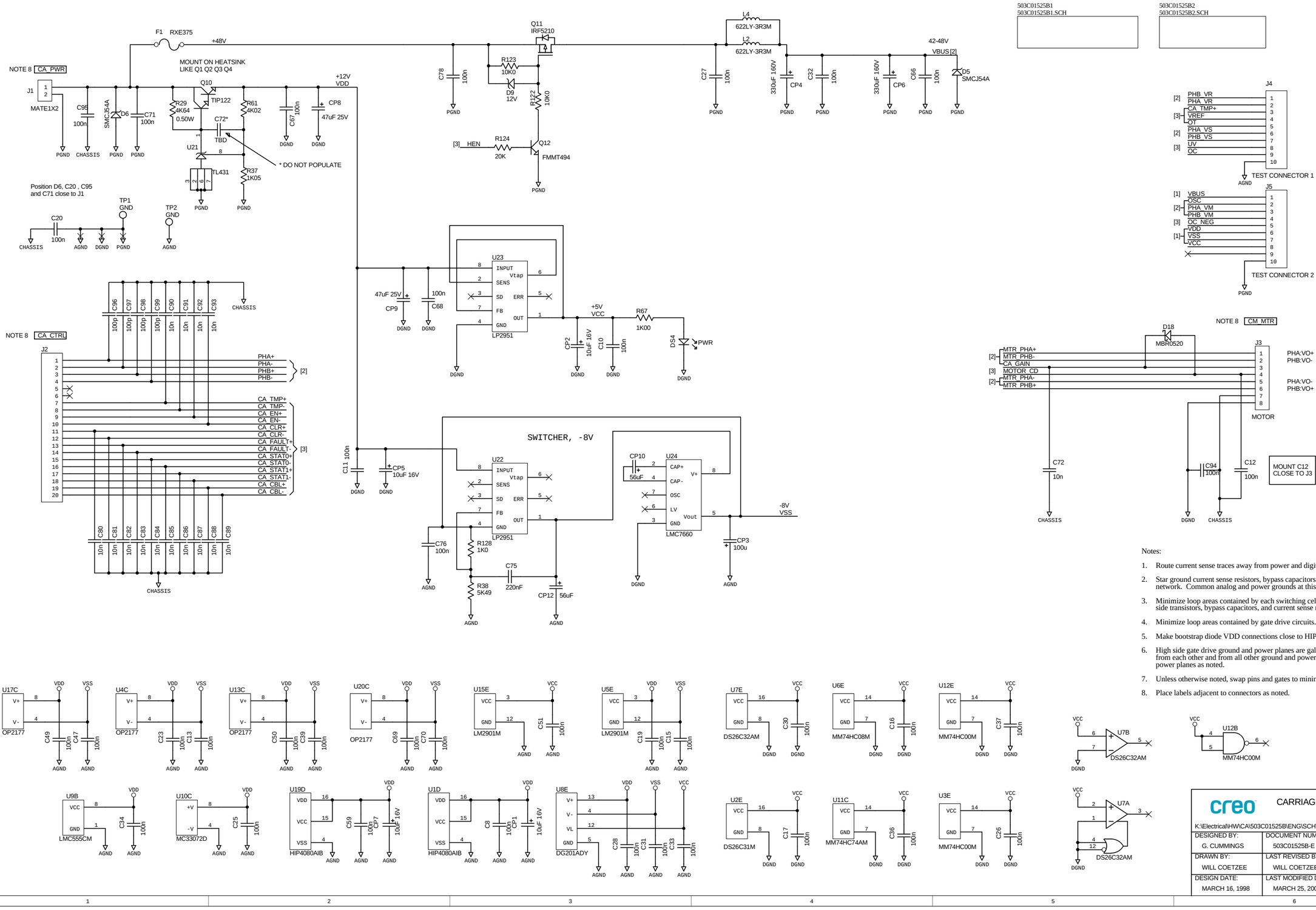
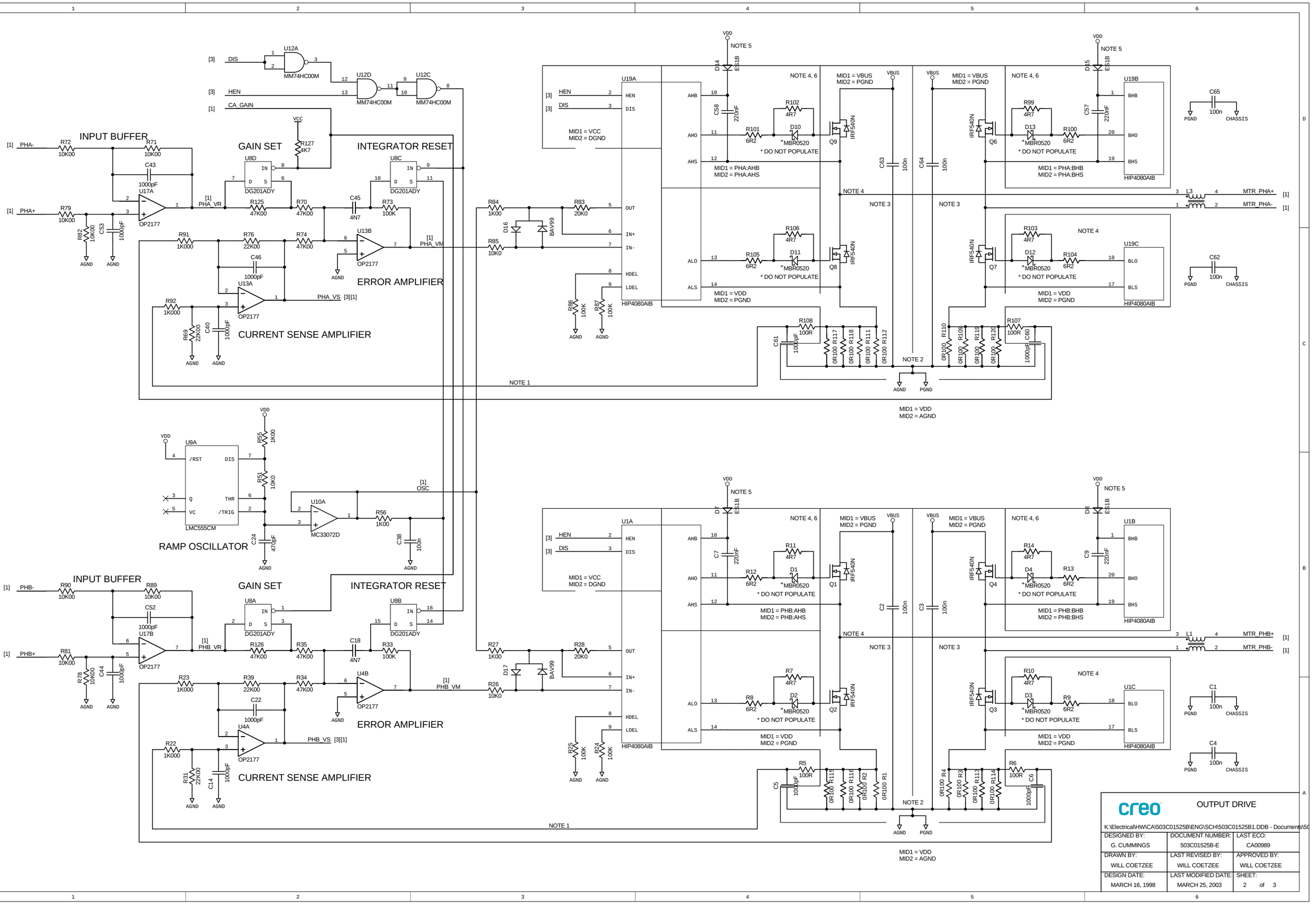
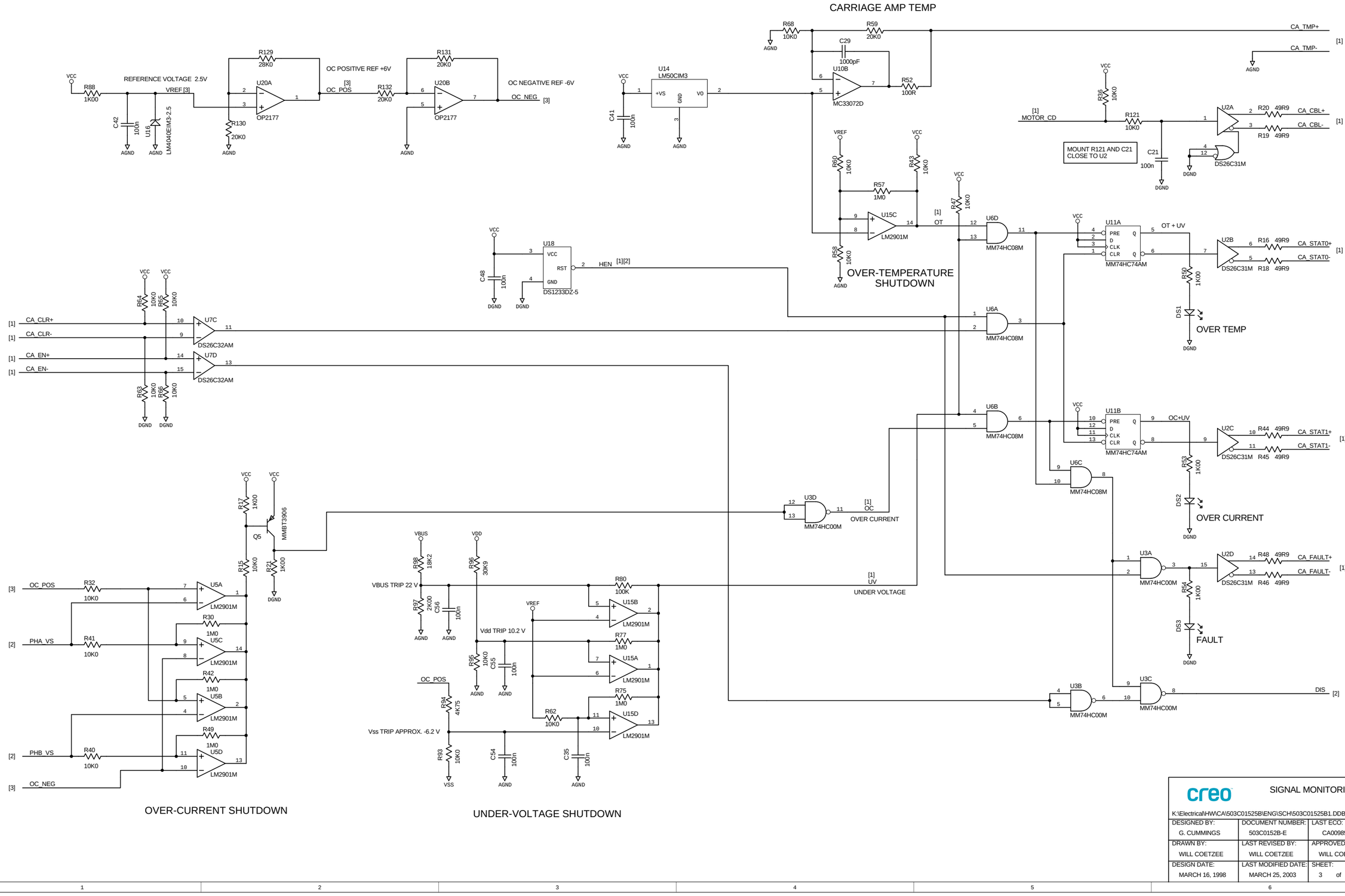

503C01525B1
503C01525B1.SCH
503C01525B2
503C01525B2.SCH
F1 RXE375
+48V
NOTE 8 CA_PWR
MOUNT ON HEATSINK
LIKE Q1 Q2 Q3 Q4
+12V
VDD
Q10
TIP122
R29 4K64 0.50W
R61 4K02
C72* TBD
* DO NOT POPULATE
U21
TL431
R37 1K05
C95 100n
D6 SMCJ54A
C71 100n
C67 100n
CP8 47uF 25V
PGND
CHASSIS
DGND
AGND
Position D6, C20 , C95
and C71 close to J1
TP1 GND
TP2 GND
C20 100n
Q11 IRF5210
R123 10K0
D9 12V
R122 10K0
[3] HEN
R124 20K
Q12 FMMT494
L4 622LY-3R3M
L2 622LY-3R3M
42-48V
VBUS [2]
C27 100n
330uF 160V
CP4
C32 100n
CP6
C66 100n
D5 SMCJ54A
J4
PHB_VR
PHA_VR
CA_TMP+
VREF
OT
PHA_VS
PHB_VS
UV
OC
TEST CONNECTOR 1
J5
VBUS
OSC
PHA_VM
PHB_VM
OC_NEG
VDD
VSS
VCC
TEST CONNECTOR 2
U23
INPUT
Vtap
SENS
SD
ERR
FB
OUT
GND
LP2951
47uF 25V
CP9
100n
C68
+5V
VCC
R67 1K00
DS4 PWR
CP2 10uF 16V
C10 100n
NOTE 8 CA_CTRL
J2
PHA+
PHA-
PHB+
PHB-
CA_TMP+
CA_TMP-
CA_EN+
CA_EN-
CA_CLR+
CA_CLR-
CA_FAULT+
CA_FAULT-
CA_STAT0+
CA_STAT0-
CA_STAT1+
CA_STAT1-
CA_CBL+
CA_CBL-
C96 C97 C98 C99 C90 C91 C92 C93
C80 C81 C82 C83 C84 C85 C86 C87 C88 C89
100p
10n
CHASSIS
SWITCHER, -8V
U22
LP2951
C11 100n
CP5 10uF 16V
C76 100n
R128 1K0
C75 220nF
R38 5K49
CP12 56uF
CP10 56uF
U24
CAP+
CAP-
OSC
LV
Vout
LMC7660
-8V
VSS
CP3 100u
NOTE 8 CM_MTR
D18 MBR0520
J3
MTR_PHA+
MTR_PHB-
CA_GAIN
MOTOR_CD
MTR_PHA-
MTR_PHB+
PHA:VO+
PHB:VO-
PHA:VO-
PHB:VO+
MOTOR
C72 10n
C94 100n
C12 100n
MOUNT C12
CLOSE TO J3
Notes:
1. Route current sense traces away from power and digital grounds.
2. Star ground current sense resistors, bypass capacitors, and RC filter network. Common analog and power grounds at this point.
3. Minimize loop areas contained by each switching cell (high and low side transistors, bypass capacitors, and current sense resistors).
4. Minimize loop areas contained by gate drive circuits.
5. Make bootstrap diode VDD connections close to HIP4080 bypass capacitors.
6. High side gate drive ground and power planes are galvanically isolated from each other and from all other ground and power planes. Connect power planes as noted.
7. Unless otherwise noted, swap pins and gates to minimize trace lengths.
8. Place labels adjacent to connectors as noted.
U17C OP2177
U4C OP2177
U13C OP2177
U20C OP2177
U15E LM2901M
U5E LM2901M
U7E DS26C32AM
U6E MM74HC08M
U12E MM74HC00M
U7B DS26C32AM
U12B MM74HC00M
U9B LMC555CM
U10C MC33072D
U19D HIP4080AIB
U1D HIP4080AIB
U8E DG201ADY
U2E DS26C31M
U11C MM74HC74AM
U3E MM74HC00M
U7A DS26C32AM
creo
CARRIAGE AMP 10A 48V
K:\Electrical\HW\CA\503C01525B\ENG\SCH\503C01525B1.DDB - Documents\50
DESIGNED BY: G. CUMMINGS
DOCUMENT NUMBER: 503C01525B-E
LAST ECO: CA00989
DRAWN BY: WILL COETZEE
LAST REVISED BY: WILL COETZEE
APPROVED BY: WILL COETZEE
DESIGN DATE: MARCH 16, 1998
LAST MODIFIED DATE: MARCH 25, 2003
SHEET: 1 of 3


INPUT BUFFER
GAIN SET
INTEGRATOR RESET
ERROR AMPLIFIER
CURRENT SENSE AMPLIFIER
RAMP OSCILLATOR
PHA_VR
PHA_VS
PHA_VM
PHB_VR
PHB_VS
PHB_VM
OSC
DIS
HEN
CA_GAIN
MM74HC00M
DG201ADY
OP2177
LMC555CM
MC33072D
HIP4080AIB
BAV99
IRF540N
MBR0520
ES1B
NOTE 1
NOTE 2
NOTE 3
NOTE 4
NOTE 5
MID1 = VCC
MID2 = DGND
MID1 = VDD
MID2 = PGND
MID1 = VDD
MID2 = AGND
MID1 = PHA:AHB
MID2 = PHA:AHS
MID1 = PHA:BHB
MID2 = PHA:BHS
MID1 = PHB:AHB
MID2 = PHB:AHS
MID1 = PHB:BHB
MID2 = PHB:BHS
* DO NOT POPULATE
MTR_PHA+
MTR_PHA-
MTR_PHB+
MTR_PHB-
OUTPUT DRIVE
creo
K:\Electrical\HW\CA\503C01525B\ENG\SCH\503C01525B1.DDB - Documents\50
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DESIGN DATE: MARCH 16, 1998
LAST MODIFIED DATE: MARCH 25, 2003
SHEET: 2 of 3


REFERENCE VOLTAGE 2.5V
VREF [3]
OC POSITIVE REF +6V
OC_POS
OC NEGATIVE REF -6V
OC_NEG
OP2177
LM4040EIM3-2.5
CARRIAGE AMP TEMP
MC33072D
LM50CIM3
CA_TMP+
CA_TMP-
MOTOR_CD
MOUNT R121 AND C21 CLOSE TO U2
DS26C31M
OVER-TEMPERATURE SHUTDOWN
LM2901M
MM74HC08M
MM74HC74AM
OT + UV
OVER TEMP
DS1233DZ-5
HEN
CA_CLR+
CA_CLR-
CA_EN+
CA_EN-
DS26C32AM
MMBT3906
OVER-CURRENT SHUTDOWN
OC
OVER CURRENT
MM74HC00M
VBUS TRIP 22 V
Vdd TRIP 10.2 V
Vss TRIP APPROX. -6.2 V
UV
UNDER VOLTAGE
UNDER-VOLTAGE SHUTDOWN
DIS
FAULT
SIGNAL MONITORING
creo
K:\Electrical\HW\CA\503C01525B\ENG\SCH\503C01525B1.DDB - Documents\50
DESIGNED BY: G. CUMMINGS
DOCUMENT NUMBER: 503C0152B-E
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DESIGN DATE: MARCH 16, 1998
LAST MODIFIED DATE: MARCH 25, 2003
SHEET: 3 of 3