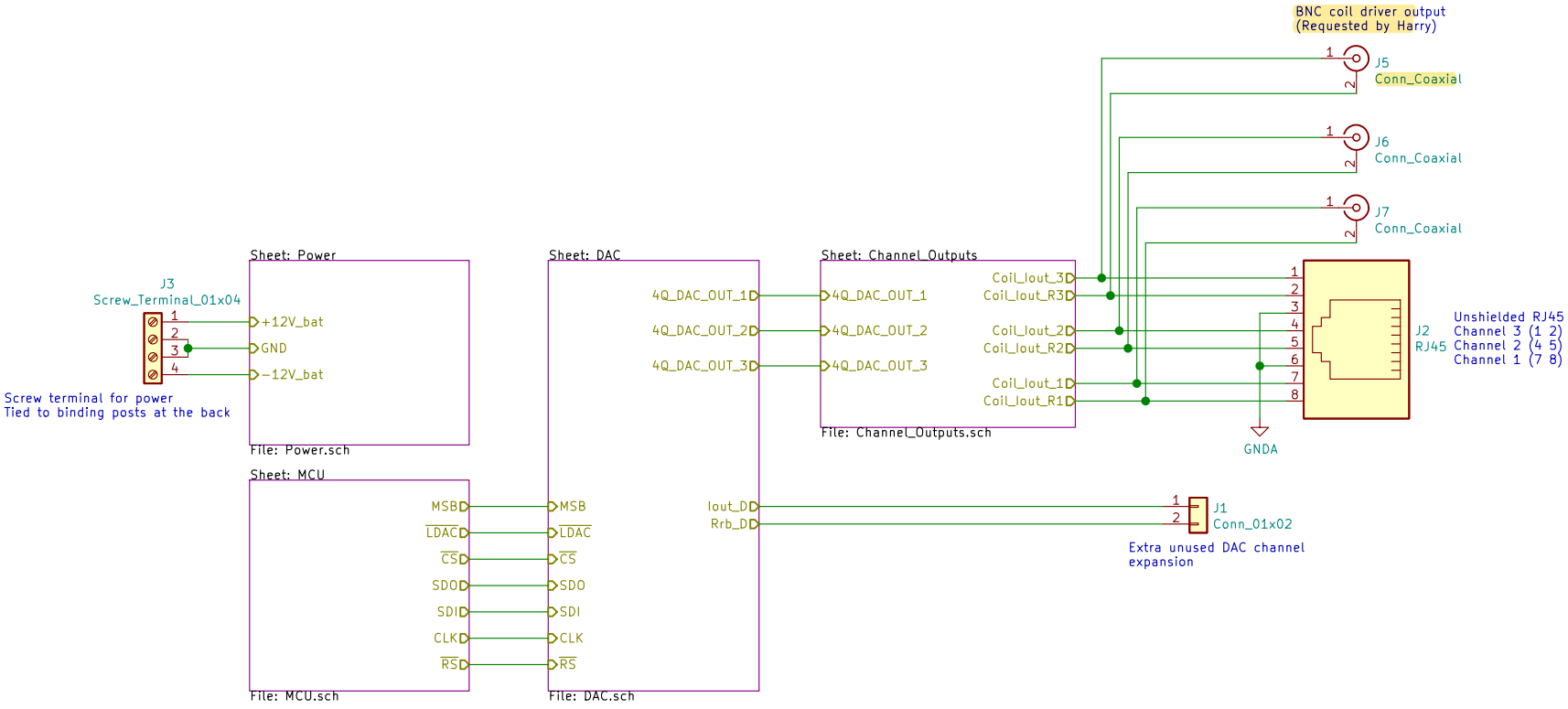


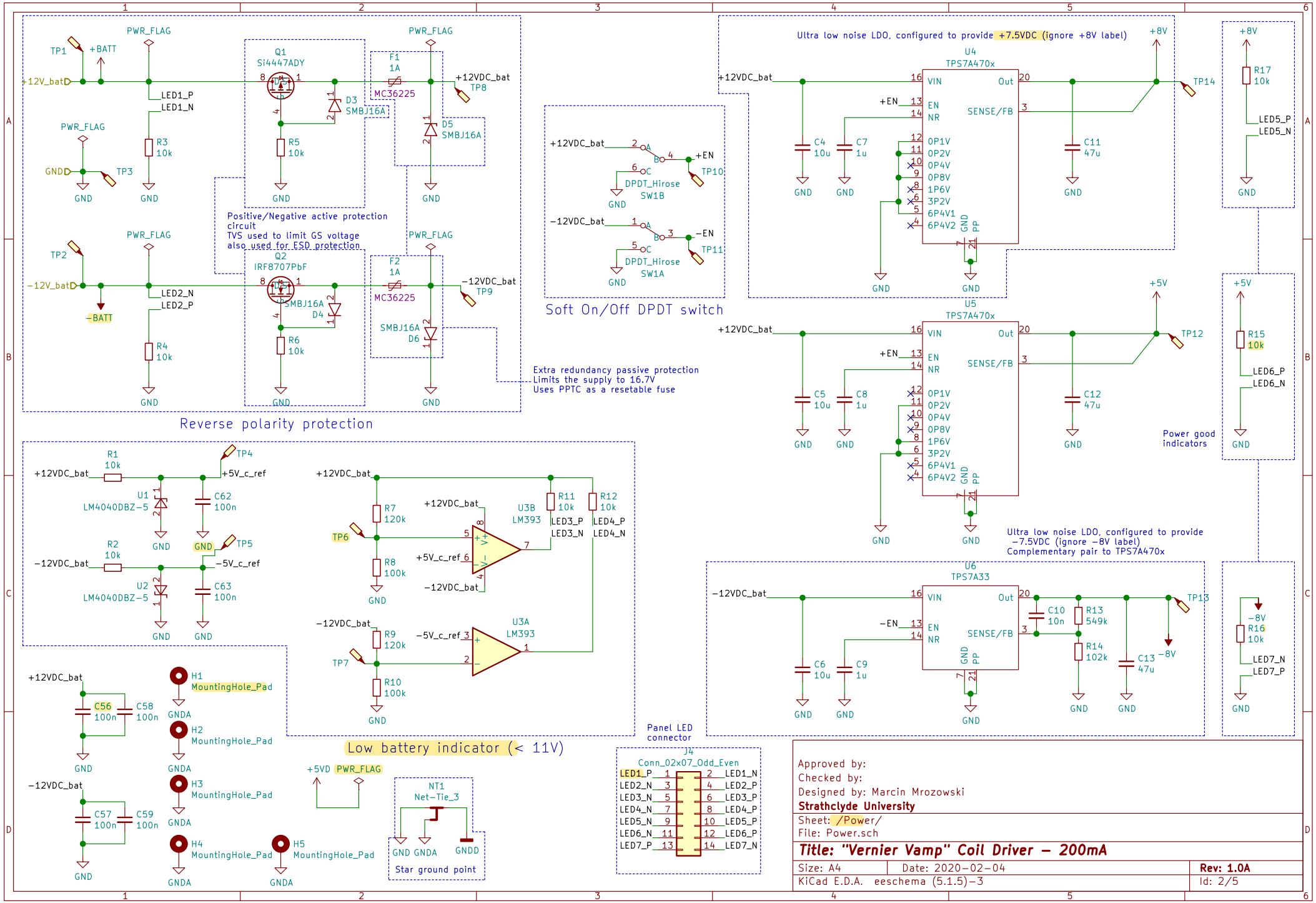
Enclosure: Hammond 1455N1601BK
160 X 103 X 53

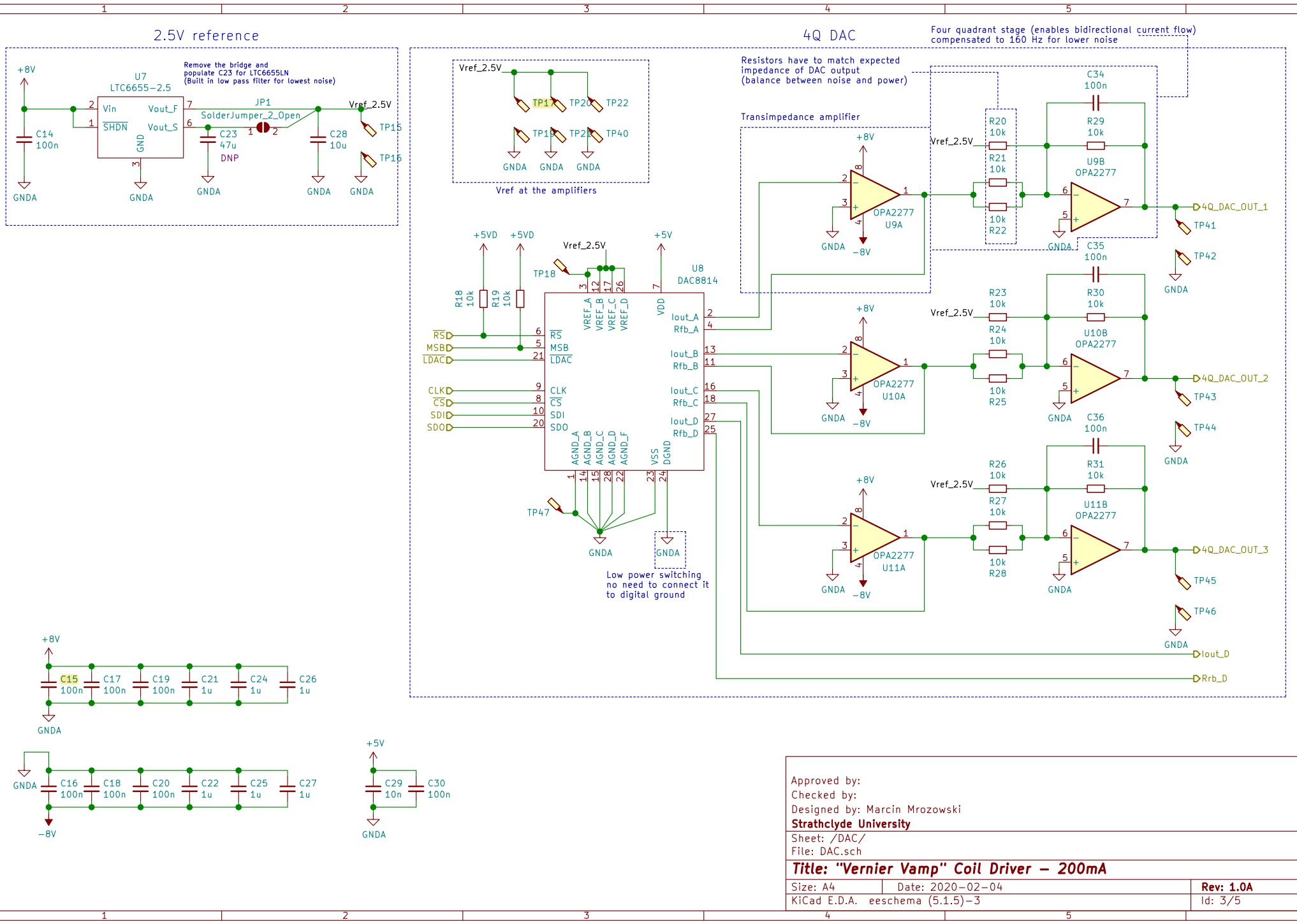
Anodised aluminum

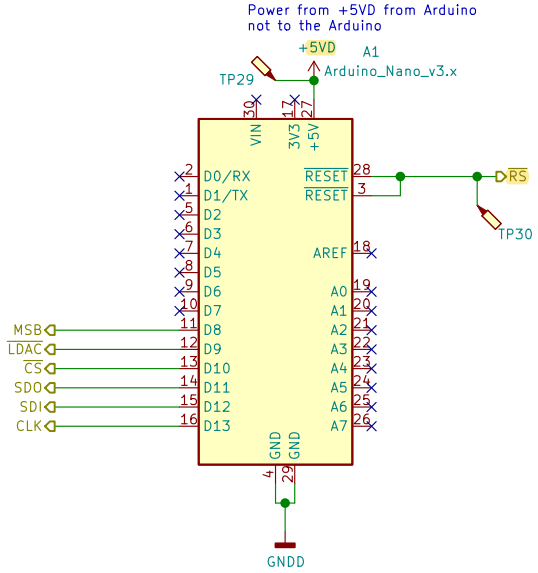
Approved by:
Checked by:
Designed by: Marcin Mrozowski
Strathclyde University
Sheet: /
File: Vernier_Vamp-200mA.sch

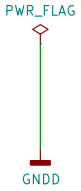
Title: "Vernier Vamp" Coil Driver - 200mA

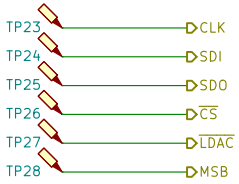
Size: A4	Date: 2020-02-04	**Rev: 1.0A**
KiCad E.D.A. eeschema (5.1.5)-3		Id: 1/5


Reverse polarity protection
Positive/Negative active protection circuit
TVS used to limit GS voltage also used for ESD protection
Extra redundancy passive protection
Limits the supply to 16.7V
Uses PPTC as a resetable fuse
Soft On/Off DPDT switch
Ultra low noise LDO, configured to provide +7.5VDC (ignore +8V label)
Power good indicators
Ultra low noise LDO, configured to provide −7.5VDC (ignore −8V label)
Complementary pair to TPS7A470x
Low battery indicator (< 11V)
Panel LED connector
Star ground point
Approved by:
Checked by:
Designed by: Marcin Mrozowski
Strathclyde University
Sheet: /Power/
File: Power.sch
Title: "Vernier Vamp" Coil Driver – 200mA
Size: A4
Date: 2020-02-04
Rev: 1.0A
KiCad E.D.A. eeschema (5.1.5)-3
Id: 2/5


2.5V reference
Remove the bridge and
populate C23 for LTC6655LN
(Built in low pass filter for lowest noise)
U7
LTC6655-2.5
+8V
Vin
SHDN
Vout_F
Vout_S
GND
JP1
SolderJumper_2_Open
C14
100n
C23
47u
DNP
C28
10u
Vref_2.5V
TP15
TP16
GNDA
4Q DAC
Four quadrant stage (enables bidirectional current flow)
compensated to 160 Hz for lower noise
Resistors have to match expected
impedance of DAC output
(balance between noise and power)
Transimpedance amplifier
Vref at the amplifiers
TP17
TP20
TP22
TP19
TP21
TP40
U8
DAC8814
+5VD
+5V
TP18
R18
10k
R19
10k
RS
MSB
LDAC
CLK
CS
SDI
SDO
VREF_A
VREF_B
VREF_C
VREF_D
VDD
VSS
DGND
AGND_A
AGND_B
AGND_C
AGND_D
AGND_F
Iout_A
Rfb_A
Iout_B
Rfb_B
Iout_C
Rfb_C
Iout_D
Rfb_D
TP47
Low power switching
no need to connect it
to digital ground
U9A
U9B
U10A
U10B
U11A
U11B
OPA2277
R20
10k
R21
10k
R22
10k
R23
10k
R24
10k
R25
10k
R26
10k
R27
10k
R28
10k
R29
10k
R30
10k
R31
10k
C34
100n
C35
100n
C36
100n
4Q_DAC_OUT_1
4Q_DAC_OUT_2
4Q_DAC_OUT_3
TP41
TP42
TP43
TP44
TP45
TP46
Iout_D
Rrb_D
C15
100n
C17
100n
C19
100n
C21
1u
C24
1u
C26
1u
C16
100n
C18
100n
C20
100n
C22
1u
C25
1u
C27
1u
C29
10n
C30
100n
-8V
Approved by:
Checked by:
Designed by: Marcin Mrozowski
Strathclyde University
Sheet: /DAC/
File: DAC.sch
Title: "Vernier Vamp" Coil Driver – 200mA
Size: A4
Date: 2020-02-04
Rev: 1.0A
KiCad E.D.A. eeschema (5.1.5)-3
Id: 3/5







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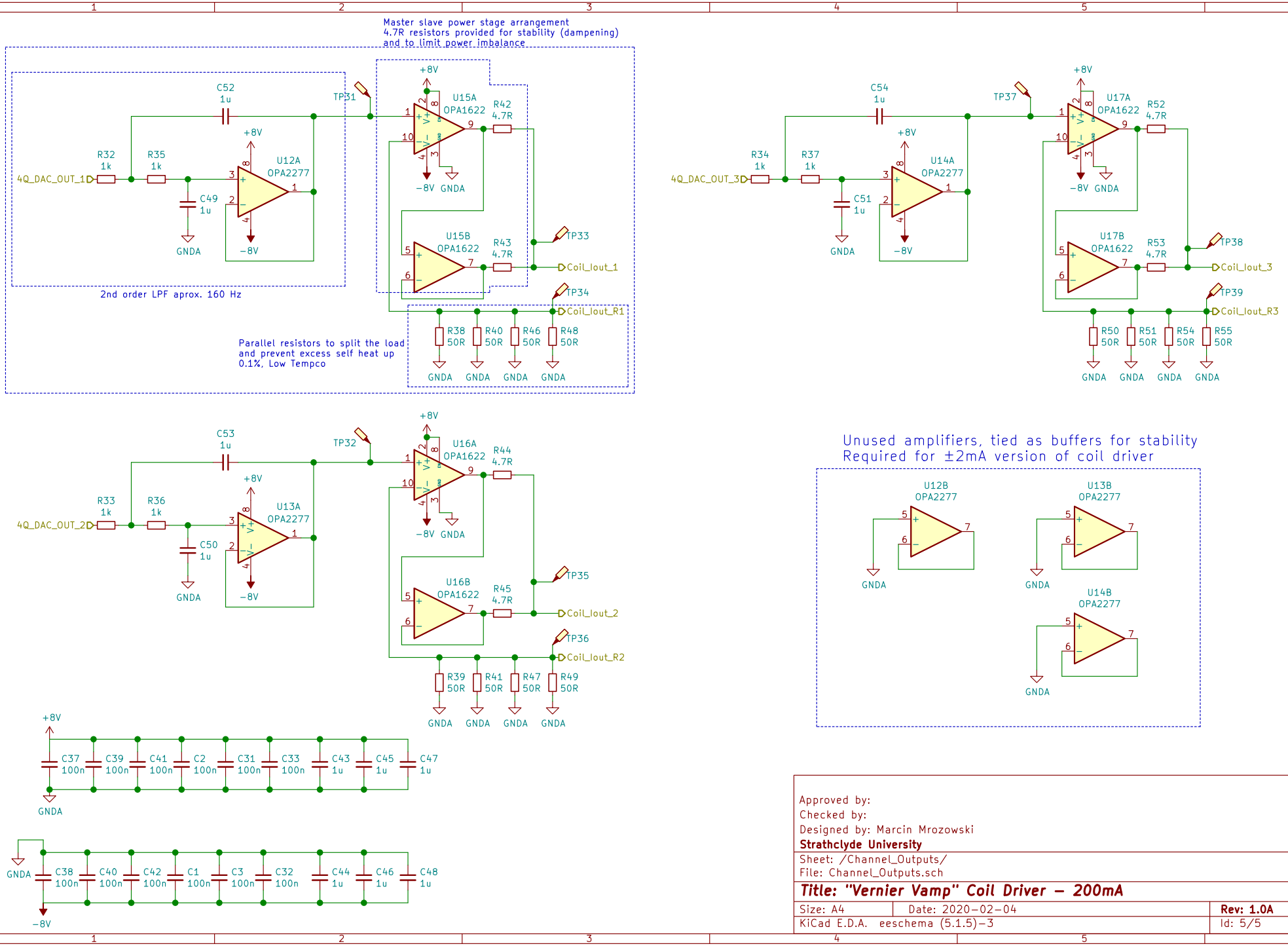
Checked by:
Designed by: Marcin Mrozowski
Strathclyde University

Sheet: /MCU/
File: MCU.sch

Title: "Vernier Vamp" Coil Driver – 200mA

Size: A4	Date: 2020-02-04	**Rev: 1.0A**
KiCad E.D.A. eeschema (5.1.5)-3		Id: 4/5



Approved by:
Checked by:
Designed by: Marcin Mrozowski
Strathclyde University
Sheet: /Channel_Outputs/
File: Channel_Outputs.sch

Title: "Vernier Vamp" Coil Driver – 200mA

Size: A4	Date: 2020-02-04	**Rev: 1.0A**
KiCad E.D.A. eeschema (5.1.5)-3		Id: 5/5