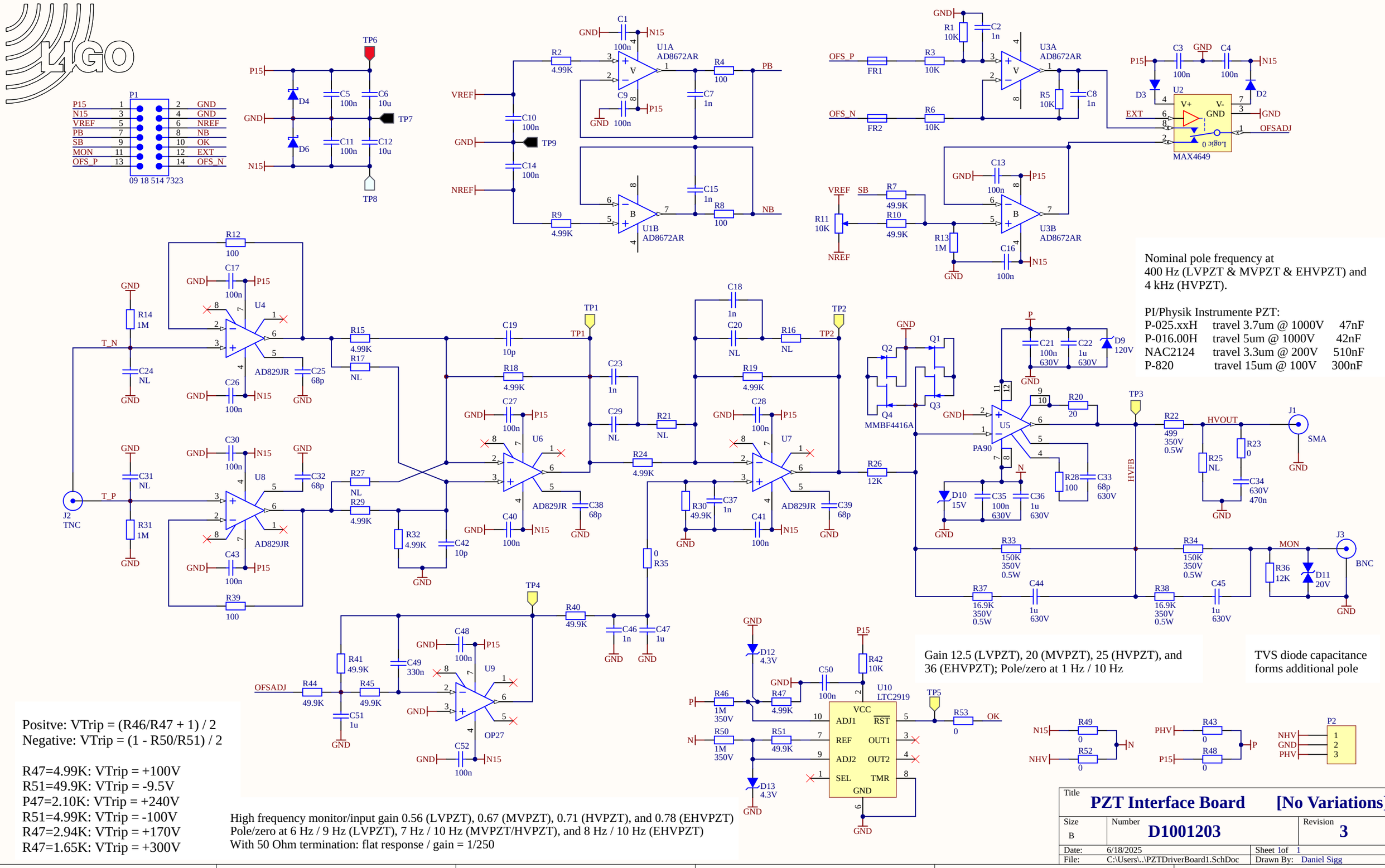
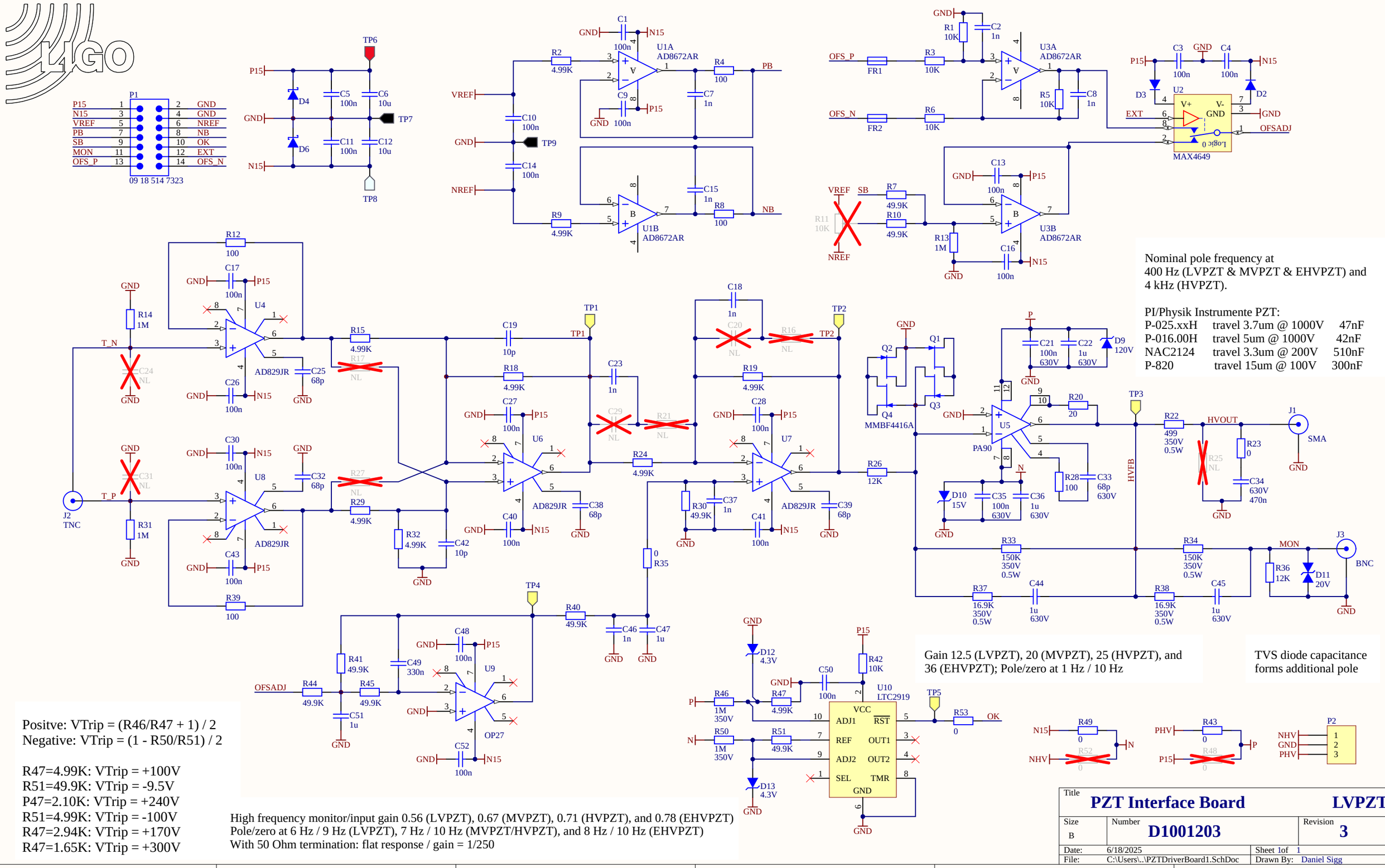

P1
P15 1 2 GND
N15 3 4 GND
VREF 5 6 NREF
PB 7 8 NB
SB 9 10 OK
MON 11 12 EXT
OFS_P 13 14 OFS_N
09 18 514 7323
TP6
TP7
TP8
D4
D6
C5 100n
C6 10u
C11 100n
C12 10u
U1A AD8672AR
U1B AD8672AR
R2 4.99K
R4 100
R9 4.99K
R8 100
C1 100n
C9 100n
C10 100n
C14 100n
C7 1n
C15 1n
TP9
VREF
NREF
PB
NB
U3A AD8672AR
U3B AD8672AR
R1 10K
R3 10K
R5 10K
R6 10K
C2 1n
C8 1n
FR1
FR2
OFS_P
OFS_N
U2
MAX4649
C3 100n
C4 100n
D2
D3
EXT
OFSADJ
R7 49.9K
R10 49.9K
R11 10K
R13 1M
C13 100n
C16 100n
SB
U4 AD829JR
U5 PA90
U6 AD829JR
U7 AD829JR
U8 AD829JR
R12 100
R14 1M
R15 4.99K
R17 NL
C17 100n
C24 NL
C25 68p
C26 100n
T_N
C18 1n
C19 10p
C20 NL
R16 NL
R18 4.99K
R19 4.99K
C23 1n
C29 NL
R21 NL
R24 4.99K
C27 100n
C28 100n
C30 100n
C31 NL
C32 68p
C43 100n
R27 NL
R29 4.99K
R31 1M
R32 4.99K
C42 10p
R39 100
T_P
J2 TNC
C40 100n
C41 100n
C38 68p
C39 68p
R30 49.9K
C37 1n
R26 12K
0 R35
TP1
TP2
TP4
Q1
Q2
Q3
Q4 MMBF4416A
P
C21 100n 630V
C22 1u 630V
D9 120V
R20 20
R22 499 350V 0.5W
HVOUT
J1 SMA
R23 0
C34 630V 470n
R25 NL
R28 100
C33 68p 630V
D10 15V
C35 100n 630V
C36 1u 630V
HVFB
N
R33 150K 350V 0.5W
R34 150K 350V 0.5W
R37 16.9K 350V 0.5W
R38 16.9K 350V 0.5W
C44 1u 630V
C45 1u 630V
MON
J3 BNC
R36 12K
D11 20V
R41 49.9K
R44 49.9K
R45 49.9K
C49 330n
C51 1u
C46 1n
C47 1u
R40 49.9K
OFSADJ
U9 OP27
C48 100n
C52 100n
D12 4.3V
D13 4.3V
R42 10K
C50 100n
R46 1M 350V
R47 4.99K
R50 1M 350V
R51 49.9K
U10 LTC2919
VCC
ADJ1
RST
REF
OUT1
ADJ2
OUT2
SEL
TMR
TP5
R53 0
OK
R49 0
R52 0
R43 0
R48 0
P2
NHV
GND
PHV
Nominal pole frequency at
400 Hz (LVPZT & MVPZT & EHVPZT) and
4 kHz (HVPZT).
PI/Physik Instrumente PZT:
P-025.xxH travel 3.7um @ 1000V 47nF
P-016.00H travel 5um @ 1000V 42nF
NAC2124 travel 3.3um @ 200V 510nF
P-820 travel 15um @ 100V 300nF
Gain 12.5 (LVPZT), 20 (MVPZT), 25 (HVPZT), and
36 (EHVPZT); Pole/zero at 1 Hz / 10 Hz
TVS diode capacitance
forms additional pole
Positve: VTrip = (R46/R47 + 1) / 2
Negative: VTrip = (1 - R50/R51) / 2
R47=4.99K: VTrip = +100V
R51=49.9K: VTrip = -9.5V
P47=2.10K: VTrip = +240V
R51=4.99K: VTrip = -100V
R47=2.94K: VTrip = +170V
R47=1.65K: VTrip = +300V
High frequency monitor/input gain 0.56 (LVPZT), 0.67 (MVPZT), 0.71 (HVPZT), and 0.78 (EHVPZT)
Pole/zero at 6 Hz / 9 Hz (LVPZT), 7 Hz / 10 Hz (MVPZT/HVPZT), and 8 Hz / 10 Hz (EHVPZT)
With 50 Ohm termination: flat response / gain = 1/250
Title
PZT Interface Board
[No Variations]
Size
B
Number
D1001203
Revision
3
Date: 6/18/2025
Sheet 1of 1
File: C:\Users\..\PZTDriverBoard1.SchDoc
Drawn By: Daniel Sigg



Nominal pole frequency at
400 Hz (LVPZT & MVPZT & EHVPZT) and
4 kHz (HVPZT).

PI/Physik Instrumente PZT:

P-025.xxH	travel 3.7um @ 1000V	47nF
P-016.00H	travel 5um @ 1000V	42nF
NAC2124	travel 3.3um @ 200V	510nF
P-820	travel 15um @ 100V	300nF

Gain 12.5 (LVPZT), 20 (MVPZT), 25 (HVPZT), and 36 (EHVPZT); Pole/zero at 1 Hz / 10 Hz

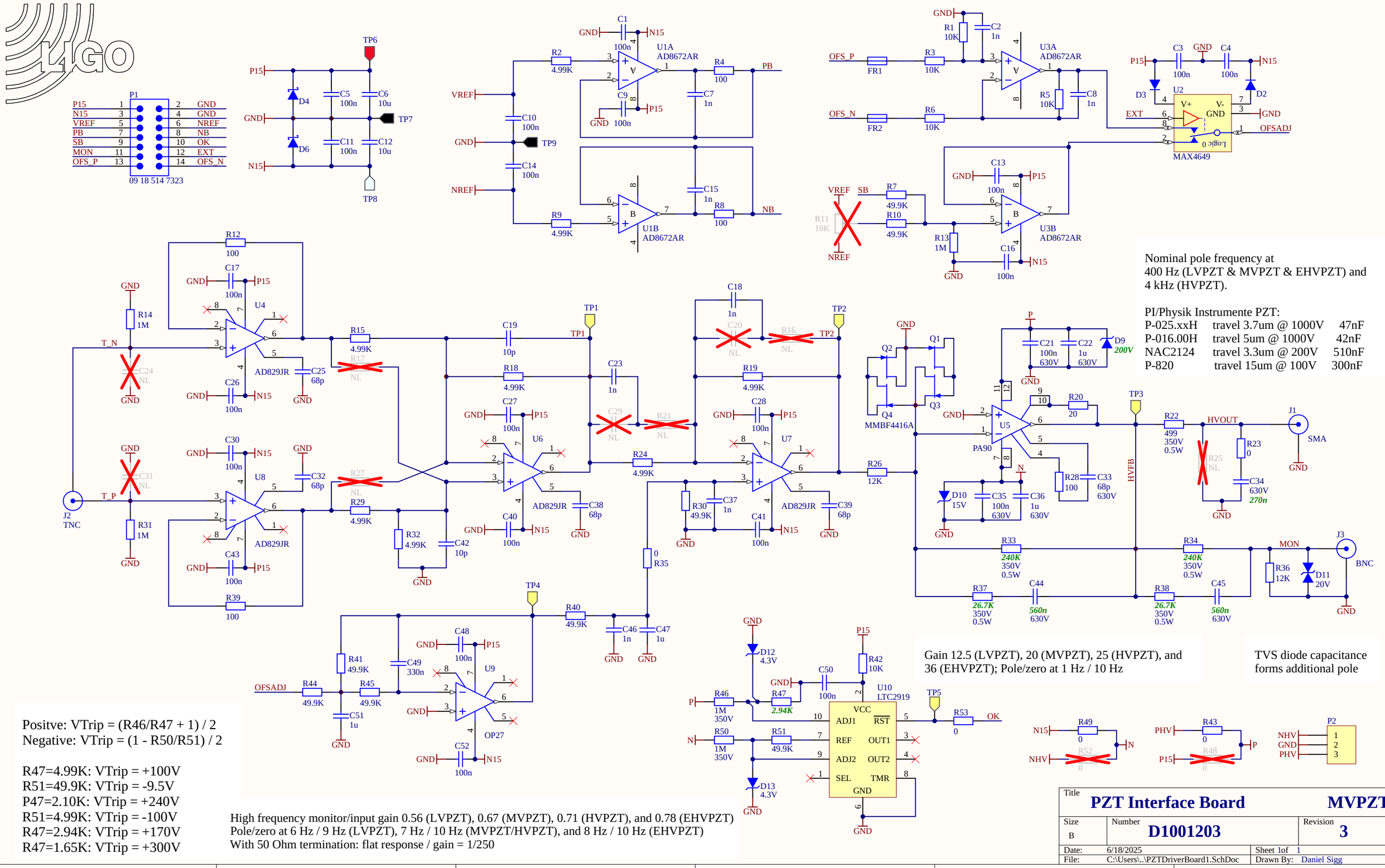
TVS diode capacitance forms additional pole

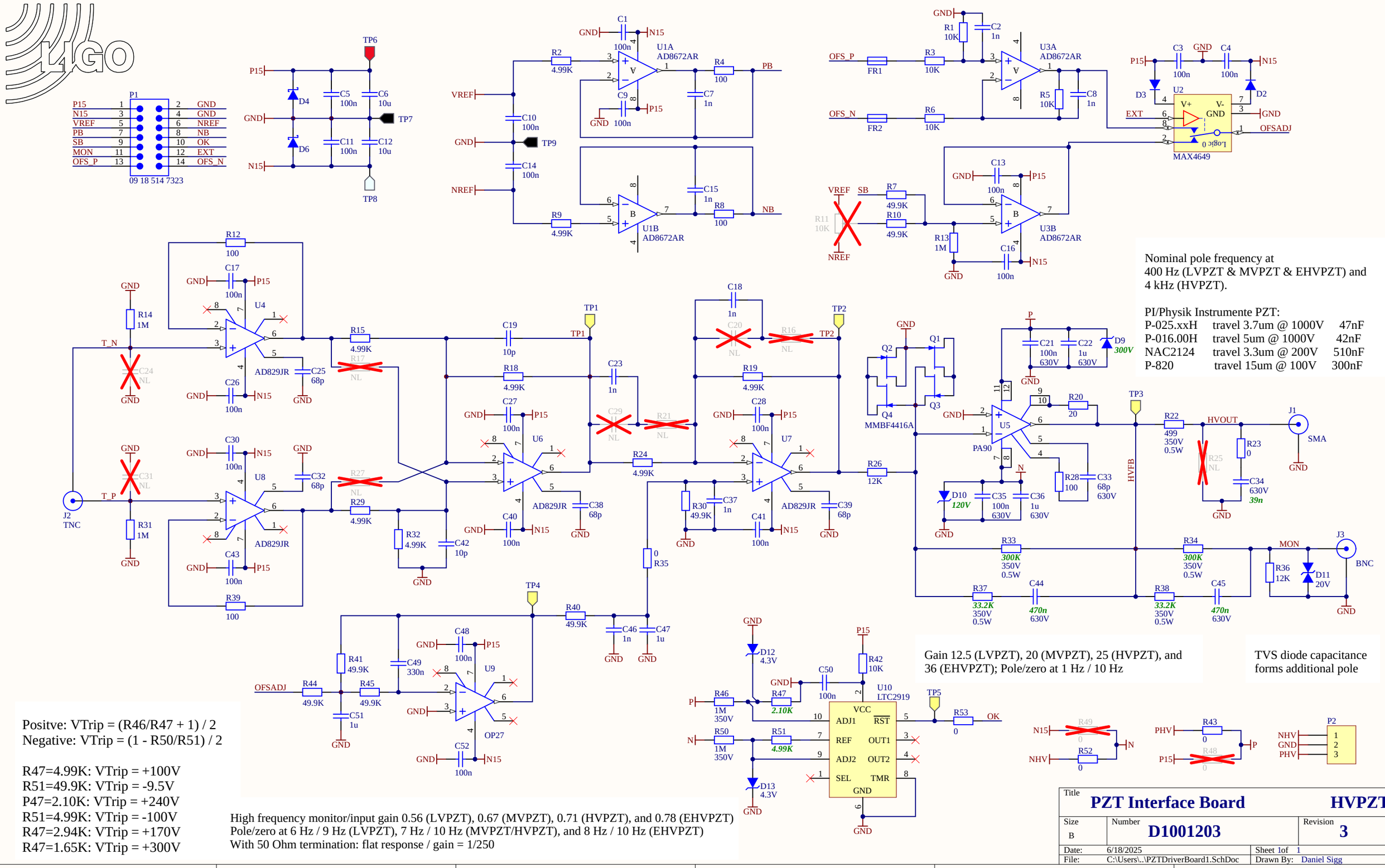
Positve: VTrip = (R46/R47 + 1) / 2
Negative: VTrip = (1 - R50/R51) / 2

R47=4.99K: VTrip = +100V
R51=49.9K: VTrip = -9.5V
P47=2.10K: VTrip = +240V
R51=4.99K: VTrip = -100V
R47=2.94K: VTrip = +170V
R47=1.65K: VTrip = +300V

High frequency monitor/input gain 0.56 (LVPZT), 0.67 (MVPZT), 0.71 (HVPZT), and 0.78 (EHVPZT)
Pole/zero at 6 Hz / 9 Hz (LVPZT), 7 Hz / 10 Hz (MVPZT/HVPZT), and 8 Hz / 10 Hz (EHVPZT)
With 50 Ohm termination: flat response / gain = 1/250

Title	PZT Interface Board		LVPZT
Size	Number		Revision
B	D1001203		3
Date:	6/18/2025	Sheet 1of 1	
File:	C:\Users\..\PZTDriverBoard1.SchDoc	Drawn By:	Daniel Sigg


P1
P15 1 2 GND
N15 3 4 GND
VREF 5 6 NREF
PB 7 8 NB
SB 9 10 OK
MON 11 12 EXT
OFS_P 13 14 OFS_N
09 18 514 7323
TP6
TP7
TP8
D4
D6
C5 100n
C6 10u
C11 100n
C12 10u
U1A AD8672AR
U1B AD8672AR
R2 4.99K
R4 100
R8 100
R9 4.99K
C1 100n
C9 100n
C10 100n
C14 100n
C7 1n
C15 1n
TP9
U3A AD8672AR
U3B AD8672AR
R1 10K
R3 10K
R5 10K
R6 10K
C2 1n
C8 1n
FR1
FR2
OFS_P
OFS_N
U2
MAX4649
C3 100n
C4 100n
D2
D3
EXT
OFSADJ
R7 49.9K
R10 49.9K
R11 10K
R13 1M
C13 100n
C16 100n
U4
AD829JR
R12 100
R14 1M
R15 4.99K
R17 NL
C17 100n
C24 NL
C25 68p
C26 100n
T_N
U6
U7
AD829JR
C18 1n
C19 10p
C20 NL
C23 1n
C27 100n
C28 100n
R16 NL
R18 4.99K
R19 4.99K
R21 NL
R24 4.99K
R26 12K
C29 NL
C37 1n
C38 68p
C39 68p
C40 100n
C41 100n
R30 49.9K
TP1
TP2
U8
AD829JR
C30 100n
C31 NL
C32 68p
C42 10p
C43 100n
R27 NL
R29 4.99K
R31 1M
R32 4.99K
R39 100
J2
TNC
T_P
0
R35
TP4
R40 49.9K
C46 1n
C47 1u
U9
OP27
C48 100n
C49 330n
C51 1u
R41 49.9K
R44 49.9K
R45 49.9K
OFSADJ
C52 100n
U10
LTC2919
D12 4.3V
D13 4.3V
R42 10K
R46 1M 350V
R47 2.94K
R50 1M 350V
R51 49.9K
R53 0
TP5
OK
VCC
ADJ1
RST
REF
OUT1
ADJ2
OUT2
SEL
TMR
Q1
Q2
Q3
Q4
MMBF4416A
P
C21 100n 630V
C22 1u 630V
D9 200V
U5
PA90
R20 20
R22 499 350V 0.5W
R25 NL
R23 0
C34 630V 270n
R28 100
C33 68p 630V
C35 100n 630V
C36 1u 630V
D10 15V
HVOUT
HVFB
J1
SMA
R33 240K 350V 0.5W
R34 240K 350V 0.5W
R37 26.7K 350V 0.5W
R38 26.7K 350V 0.5W
C44 560n 630V
C45 560n 630V
MON
J3
BNC
R36 12K
D11 20V
R49 0
R52 0
R43 0
R48 0
P2
NHV
GND
PHV
Nominal pole frequency at
400 Hz (LVPZT & MVPZT & EHVPZT) and
4 kHz (HVPZT).
PI/Physik Instrumente PZT:
P-025.xxH travel 3.7um @ 1000V 47nF
P-016.00H travel 5um @ 1000V 42nF
NAC2124 travel 3.3um @ 200V 510nF
P-820 travel 15um @ 100V 300nF
Gain 12.5 (LVPZT), 20 (MVPZT), 25 (HVPZT), and
36 (EHVPZT); Pole/zero at 1 Hz / 10 Hz
TVS diode capacitance
forms additional pole
Positve: VTrip = (R46/R47 + 1) / 2
Negative: VTrip = (1 - R50/R51) / 2
R47=4.99K: VTrip = +100V
R51=49.9K: VTrip = -9.5V
P47=2.10K: VTrip = +240V
R51=4.99K: VTrip = -100V
R47=2.94K: VTrip = +170V
R47=1.65K: VTrip = +300V
High frequency monitor/input gain 0.56 (LVPZT), 0.67 (MVPZT), 0.71 (HVPZT), and 0.78 (EHVPZT)
Pole/zero at 6 Hz / 9 Hz (LVPZT), 7 Hz / 10 Hz (MVPZT/HVPZT), and 8 Hz / 10 Hz (EHVPZT)
With 50 Ohm termination: flat response / gain = 1/250
Title
PZT Interface Board
MVPZT
Size
B
Number
D1001203
Revision
3
Date: 6/18/2025
Sheet 1of 1
File: C:\Users\..\PZTDriverBoard1.SchDoc
Drawn By: Daniel Sigg



Nominal pole frequency at
400 Hz (LVPZT & MVPZT & EHVPZT) and
4 kHz (HVPZT).

PI/Physik Instrumente PZT:

P-025.xxH	travel 3.7um @ 1000V	47nF
P-016.00H	travel 5um @ 1000V	42nF
NAC2124	travel 3.3um @ 200V	510nF
P-820	travel 15um @ 100V	300nF

Gain 12.5 (LVPZT), 20 (MVPZT), 25 (HVPZT), and 36 (EHVPZT); Pole/zero at 1 Hz / 10 Hz

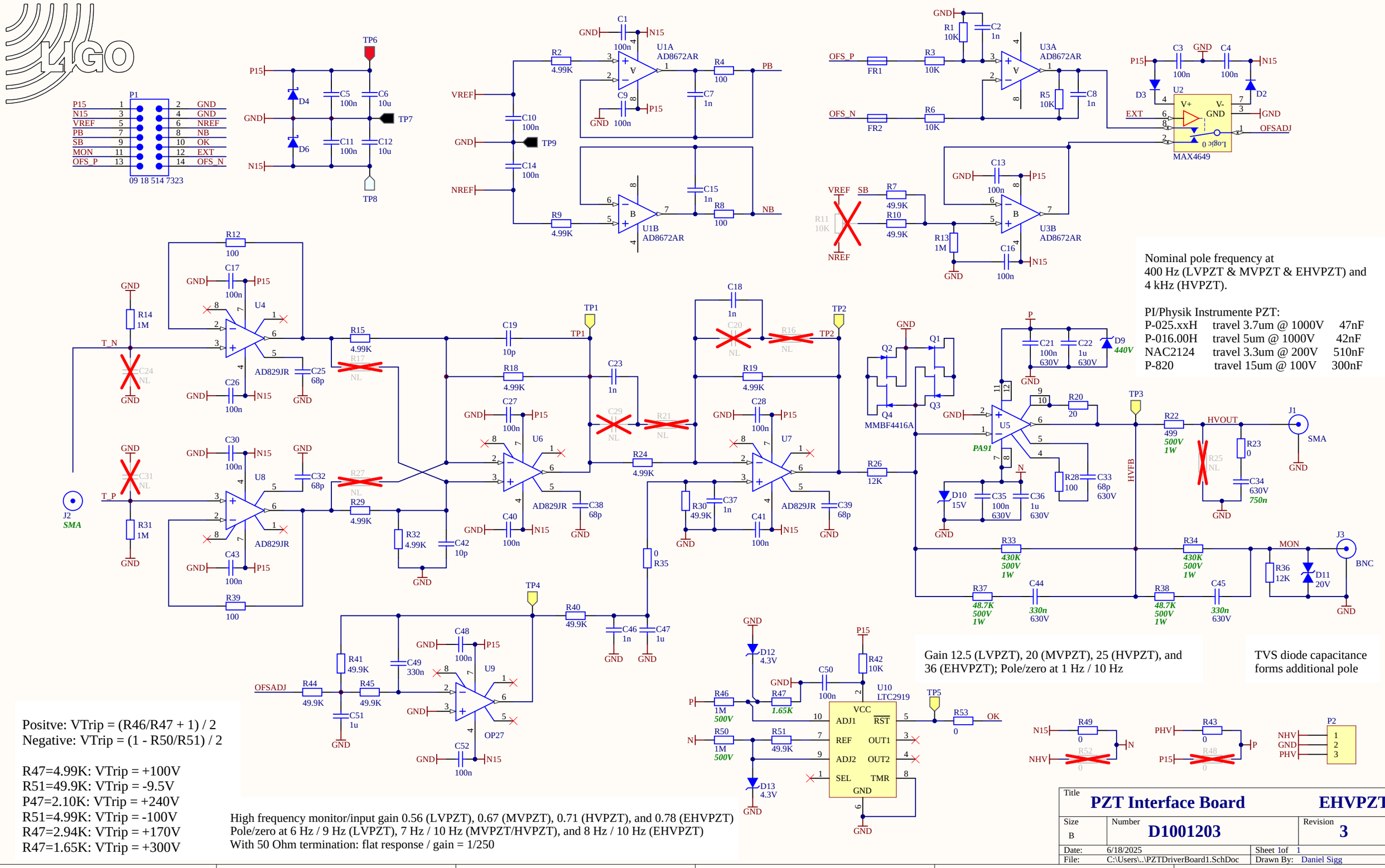
TVS diode capacitance forms additional pole

Positve: VTrip = (R46/R47 + 1) / 2
Negative: VTrip = (1 - R50/R51) / 2

R47=4.99K: VTrip = +100V
R51=49.9K: VTrip = -9.5V
P47=2.10K: VTrip = +240V
R51=4.99K: VTrip = -100V
R47=2.94K: VTrip = +170V
R47=1.65K: VTrip = +300V

High frequency monitor/input gain 0.56 (LVPZT), 0.67 (MVPZT), 0.71 (HVPZT), and 0.78 (EHVPZT)
Pole/zero at 6 Hz / 9 Hz (LVPZT), 7 Hz / 10 Hz (MVPZT/HVPZT), and 8 Hz / 10 Hz (EHVPZT)
With 50 Ohm termination: flat response / gain = 1/250

Title	PZT Interface Board		HVPZT
Size: B	Number: D1001203		Revision: 3
Date: 6/18/2025		Sheet 1of 1	
File: C:\Users\..\PZTDriverBoard1.SchDoc		Drawn By: Daniel Sigg	



Nominal pole frequency at
400 Hz (LVPZT & MVPZT & EHVPZT) and
4 kHz (HVPZT).

PI/Physik Instrumente PZT:

P-025.xxH	travel 3.7um @ 1000V	47nF
P-016.00H	travel 5um @ 1000V	42nF
NAC2124	travel 3.3um @ 200V	510nF
P-820	travel 15um @ 100V	300nF

Gain 12.5 (LVPZT), 20 (MVPZT), 25 (HVPZT), and 36 (EHVPZT); Pole/zero at 1 Hz / 10 Hz

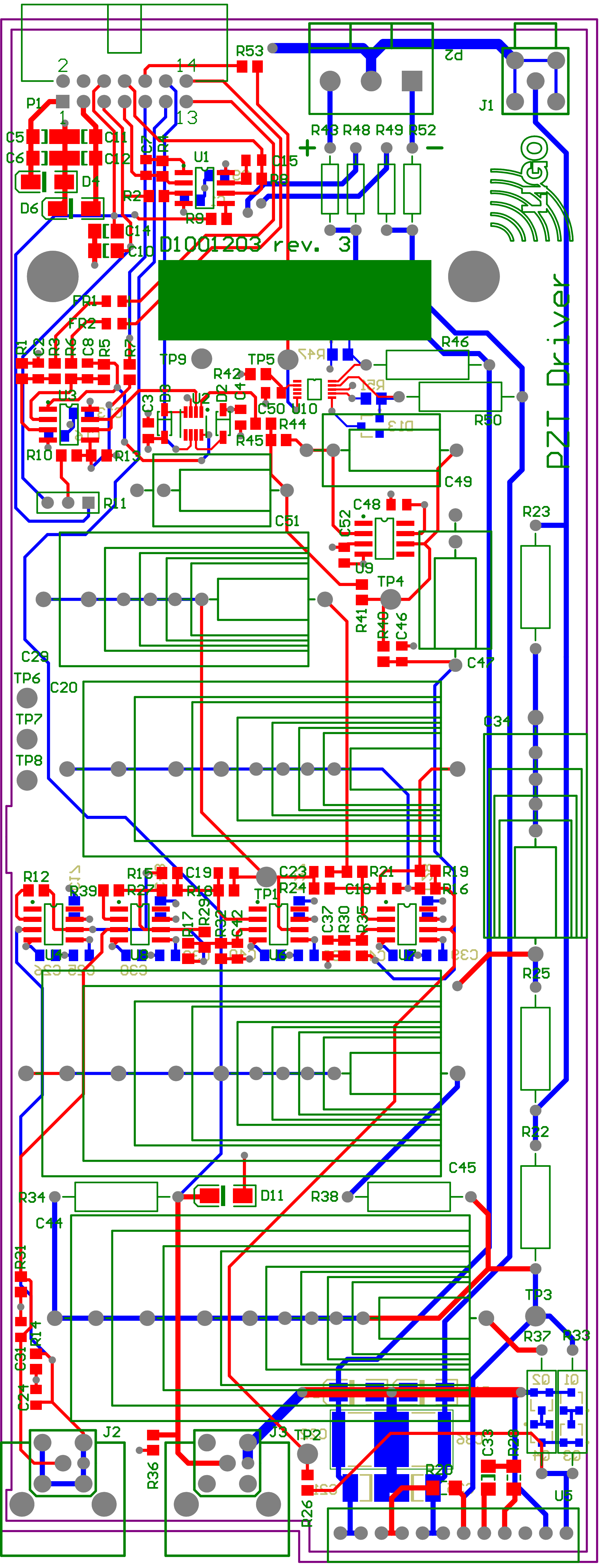
TVS diode capacitance forms additional pole

Positve: VTrip = (R46/R47 + 1) / 2
Negative: VTrip = (1 - R50/R51) / 2

R47=4.99K: VTrip = +100V
R51=49.9K: VTrip = -9.5V
P47=2.10K: VTrip = +240V
R51=4.99K: VTrip = -100V
R47=2.94K: VTrip = +170V
R47=1.65K: VTrip = +300V

High frequency monitor/input gain 0.56 (LVPZT), 0.67 (MVPZT), 0.71 (HVPZT), and 0.78 (EHVPZT)
Pole/zero at 6 Hz / 9 Hz (LVPZT), 7 Hz / 10 Hz (MVPZT/HVPZT), and 8 Hz / 10 Hz (EHVPZT)
With 50 Ohm termination: flat response / gain = 1/250

Title	PZT Interface Board		EHVPZT
Size	Number		Revision
B	D1001203		3
Date:	6/18/2025	Sheet 1of 1	
File:	C:\Users\..\PZTDriverBoard1.SchDoc	Drawn By:	Daniel Sigg


D1001203 rev. 3
PZT Driver
LIGO