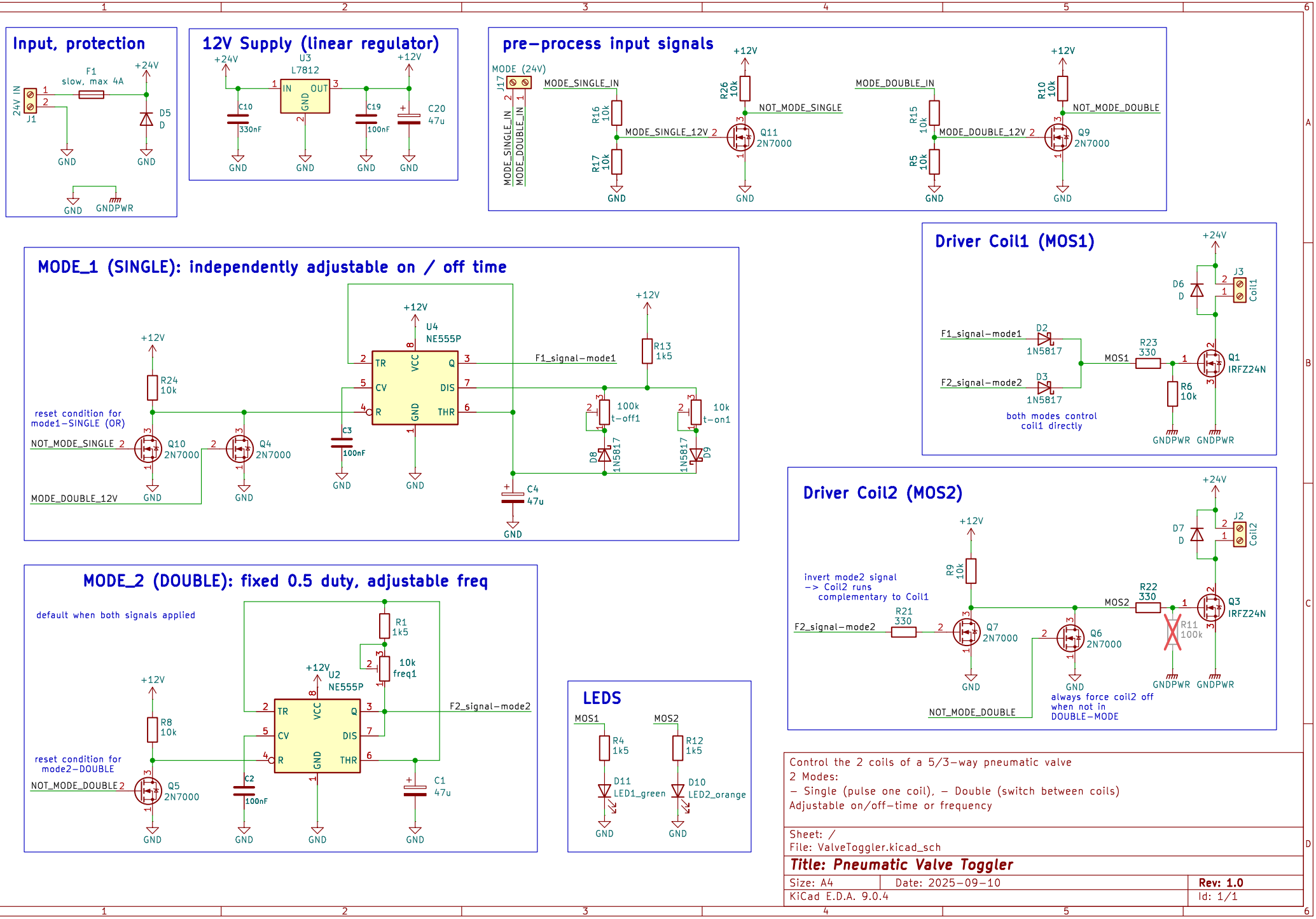
Input, protection
24V IN
J1
F1
slow, max 4A
+24V
D5
D
GND
GNDPWR
12V Supply (linear regulator)
U3
L7812
IN
OUT
GND
+24V
+12V
C10
330nF
C19
100nF
C20
47u
pre-process input signals
MODE (24V)
J17
MODE_SINGLE_IN
MODE_DOUBLE_IN
R16
10k
R17
10k
R26
10k
NOT_MODE_SINGLE
MODE_SINGLE_12V
Q11
2N7000
MODE_DOUBLE_IN
R15
10k
R5
10k
R10
10k
NOT_MODE_DOUBLE
MODE_DOUBLE_12V
Q9
2N7000
MODE_1 (SINGLE): independently adjustable on / off time
U4
NE555P
TR
CV
R
VCC
GND
Q
DIS
THR
F1_signal-mode1
R13
1k5
R24
10k
reset condition for
mode1-SINGLE (OR)
NOT_MODE_SINGLE
Q10
2N7000
Q4
2N7000
C3
100nF
100k
t-off1
10k
t-on1
D8
1N5817
D9
1N5817
C4
47u
MODE_DOUBLE_12V
Driver Coil1 (MOS1)
F1_signal-mode1
F2_signal-mode2
D2
1N5817
D3
1N5817
both modes control
coil1 directly
MOS1
R23
330
R6
10k
Q1
IRFZ24N
D6
D
J3
Coil1
GNDPWR
Driver Coil2 (MOS2)
invert mode2 signal
-> Coil2 runs
complementary to Coil1
R9
10k
R21
330
F2_signal-mode2
Q7
2N7000
Q6
2N7000
MOS2
R22
330
R11
100k
Q3
IRFZ24N
D7
D
J2
Coil2
NOT_MODE_DOUBLE
always force coil2 off
when not in
DOUBLE-MODE
MODE_2 (DOUBLE): fixed 0.5 duty, adjustable freq
default when both signals applied
U2
NE555P
R1
1k5
10k
freq1
F2_signal-mode2
R8
10k
reset condition for
mode2-DOUBLE
NOT_MODE_DOUBLE
Q5
2N7000
C2
100nF
C1
47u
LEDS
MOS1
MOS2
R4
1k5
R12
1k5
D11
LED1_green
D10
LED2_orange
Control the 2 coils of a 5/3-way pneumatic valve
2 Modes:
- Single (pulse one coil), - Double (switch between coils)
Adjustable on/off-time or frequency
Sheet: /
File: ValveToggler.kicad_sch
Title: Pneumatic Valve Toggler
Size: A4
Date: 2025-09-10
Rev: 1.0
KiCad E.D.A. 9.0.4
Id: 1/1