AND-2 / filtered 3.3 V logic / protected 5 V output

U2: in1=GND, in2=A, in3=B. D0->0 / D1->0 / D2->0 / D3->1. All same-name labels are connected.

J1/J2: Signal / Ground / 5V. J3: Ground / 5V / Signal. J4: 5V / Ground. Never use a straight-through input/output cable.

01 / POWER AND PROTECTION

J4
5V
GND
5V POWER

Q1
D_GATE
+5V
FUSED
AO3414 reverse protection

R1
D_GATE
GND
100k

U1
+5V
GND
+5V
EN
IN
SET
OUT
+3V3
AP2112K-3.3

C1
+5V
GND
1uF 25V

02 / LOGIC SUPPLY AND GATE

C2
+3V3
GND
1uF 25V

R9
+5V
LED_PWR
10k

D6
GND
LED_PWR
GREEN POWER
SAY TO DISABLE PW

U2
GND
GND
B
VCC
1DOC
+3V3
A
SN74LVC1G97 AND

C3
+3V3
GND
100nF 50V

R6
LOGIC
GND
100k

03 / INPUT A

J1
A_RAW
GND
+5V
INPUT A - S/L/5V

D3
A_RAW
GND
PESD5V0S1BA

D1
A_FULL
+3V3
BAT54WS

R2
A_FULL
A_RAW
10k

R4
A_RAW
A
4.7k

C7
A
GND
10nF 50V

04 / INPUT B

J2
B_RAW
GND
+5V
INPUT B - S/L/5V

D4
B_RAW
GND
PESD5V0S1BA

D2
B_FULL
+3V3
BAT54WS

R3
B_FULL
B_RAW
10k

R5
B_RAW
B
4.7k

C8
B
GND
10nF 50V

05 / PROTECTED OUTPUT

U3
+5V
GND
LOGIC
IN
GND
VCC
OUT
OUT
TPS2283

C4
+5V
GND
100nF 50V

C5
+5V
GND
10nF 16V

C6
OUT
GND
1uF 25V

R7
OUT
GND
10k

J3
GND
+5V
OUTPUT - C/5V/S

06 / OUTPUT INDICATOR

R8
OUT
LED_OUT
3.3k

D5
GND
LED_OUT
GREEN OUT
SAY TO DISABLE PO

PWR_FLAG
#PWR01

PWR_FLAG
#PWR02

PWR_FLAG
#PWR03

5V supply: 4.75–5.25V, 250mA total. Host regulator approx. 3A shared. OUT source 200mA; slow controls <=50Hz.

NC contacts: both must open for HIGH. Not an emergency-stop circuit. No externally driven or inductive output loads.

CERN-OHL-S-2.0 | KiCad only | CAD-verified prototype design; first-article electrical/thermal tests required.

SF1
VIN
VIN
P_gate_OC
P_gate_OC
P_gate_RTN
P_gate_RTN
GND
P_gate_ILIM
P_gate_ILIM
P_gate_FLT
FUSED
FUSED
P_gate_RTN
MP2553DJ-LF-Z
1752666074#4

RF1
VIN
P_gate_OC
20.7k 0.1%

RF2
P_gate_OC
P_gate_RTN
10k 0.1%

RF3
VIN
P_gate_OC
10.7k 0.1%

RF4
P_gate_OC
P_gate_RTN
10k 0.1%

RF5
P_gate_ILIM
P_gate_RTN
2k49 1%

CF1
P_gate_SLEW
P_gate_RTN
100nF 25V X7R

CF2
VIN
GND
100nF 50V X7R

CF3
FUSED
GND
1µF 25V X7R

RF1
P_gate_WARN
VIN
10k(1+0)x5-7-7

RF6
P_gate_WARN
P_gate_FLT_B
10k 1%

SJF1
P_gate_FLT_B
P_gate_FLT_A
SJT 3 TRACE LED

DF2
P_gate_FLT
P_gate_FLT_A
1707-1170KR07

DF3
P_gate_EN_C
P_gate_EN_REF
GND
CHENYI
REF
HOOD
TL431BIDBZR

RF7
P_gate_EN_GATE
P_gate_EN_REF
11.3k 0.1%

RF8
P_gate_EN_REF
GND
10k 0.1%

RF9
P_gate_WARN
P_gate_EN_C
1.8k 1W

RF10
P_gate_WARN
P_gate_EN_B
470R 1W

DF3
P_gate_EN_REF
GND
B0540WS-7-F

DF4
P_gate_EN_C
GND
B0702122K-7-F

SJF2
P_gate_EN_B
P_gate_EN_C
CUT ID LED

DF5
P_gate_EN_A
P_gate_EN_C
1707-1170KR07

DF6
P_gate_REV_FEED
GND
1N4148WS-7-F

RF11
P_gate_REV_FEED
P_gate_REV_ACC
680R 1W

RF7
P_gate_REV_ACC
VIN
B0702130WS-7-F

RF1
P_gate_B2
VIN
P_gate_C2
MMBT3904-7-F

QF2
P_gate_B2
VIN
P_gate_C2
MMBT3904-7-F

RF12
P_gate_REV_ACC
P_gate_B2
47k 1%

RF13
P_gate_REV_ACC
P_gate_B2
47k 1%

RF14
P_gate_REV_ACC
P_gate_C2
10k 1%

RF15
P_gate_REV_ACC
P_gate_C2
10k 1%

CF4
P_gate_C2
P_gate_B2
10nF 100V X7R 0204YC104

CF5
P_gate_C2
P_gate_B2
10nF 16V X7R 0402YC104

RF16
P_gate_REV_ACC
P_gate_REV_A
3.3k 1%

SJF3
P_gate_REV_A
P_gate_REV_A
CUT REVERSE LED

DF8
P_gate_C2
P_gate_REV_A
1707-1170KR07

DF9
P_gate_EN_A
GND
B0540WS-7-F

DF10
P_gate_FLT_A
P_gate_FLT
B0540WS-7-F

QF3
GND
P_gate_EN_GATE
VIN
SMP3906L-7

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Size: A0 | Date: 2026-09-05 | Rev: v10
KiCad 10.0.x 9.0.8 | Id: 1/1