129.3

82.4

15.9

31.8

78.7

Battery bypass

DESIGNED WITH
KiCad

github.com
/enph253-2025-team5/
robot-motherboard-pcb

open source
hardware

ROBOT v2.0.0
MOTHERBOARD
T5

Designed by
George Sleen

20 = Wing1.Servo
21 = I2C2.SDA
22 = I2C2.SCL
08 = Arm.Shoulder_PWM
09 = Arm.Shoulder_Dir
10 = Wing0.Servo
05 = I2C1.SCL
24 = Arm.Intake_PWM
10 = Arm.Intake_Dir
03 = RX0*
01 = TX0*
30 = IR0
34 = IR1
38 = Arm.Intake_Sw
37 = Arm.Position

VP = Encoder0.A
VN = Encoder0.B
26 = Encoder1.A
25 = Encoder1.B
33 = Wing0.SW
32 = Wing1.SW
27 = Drive_M1.Dir
14 = Drive_M1.PWM
13 = Drive_M0.Dir
12 = free*
15 = Basket.Servo
02 = free*
04 = Drive_M0.PWM
00 = I2C1.SDA

Pin strapping:
00 -> Pull-up
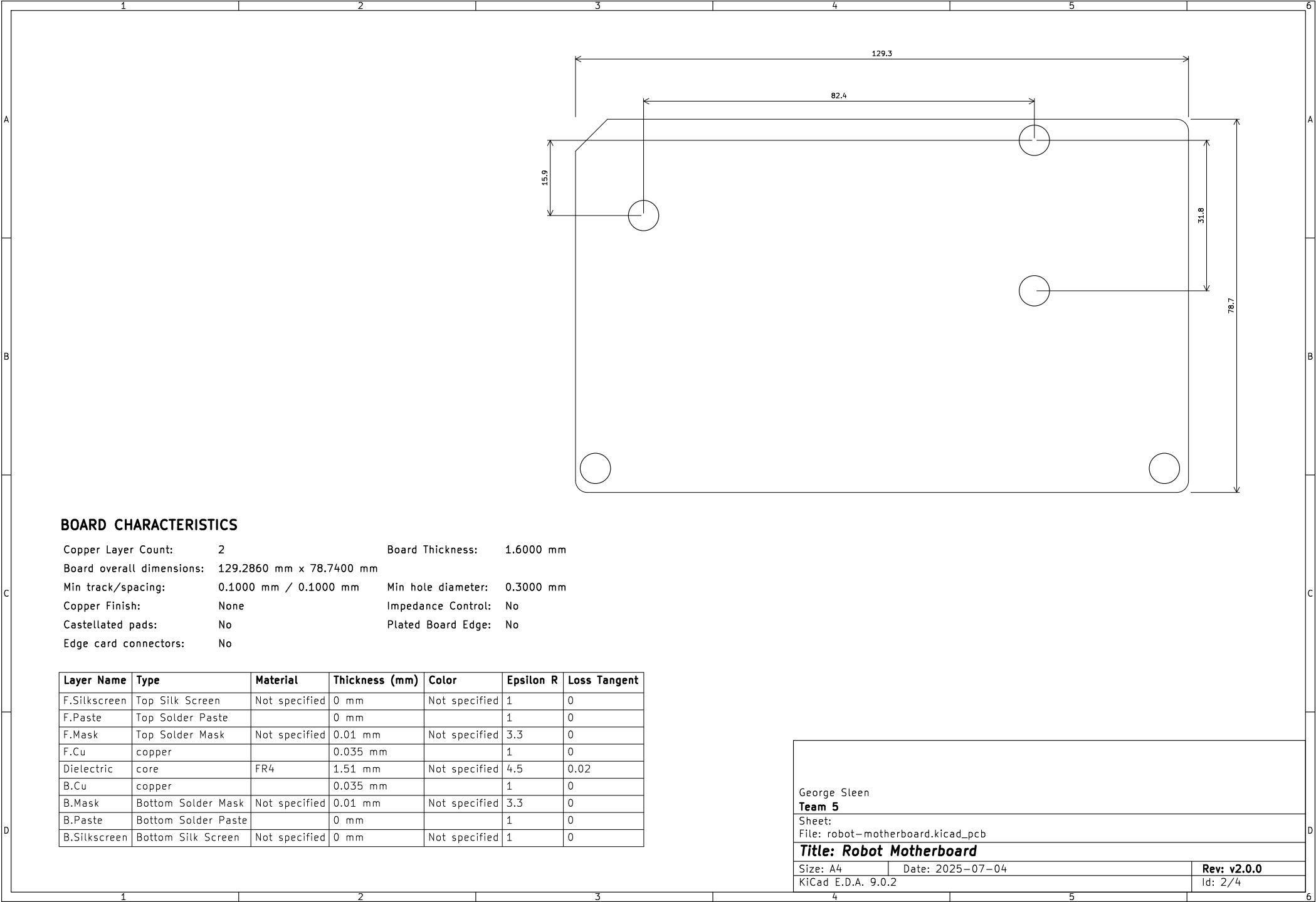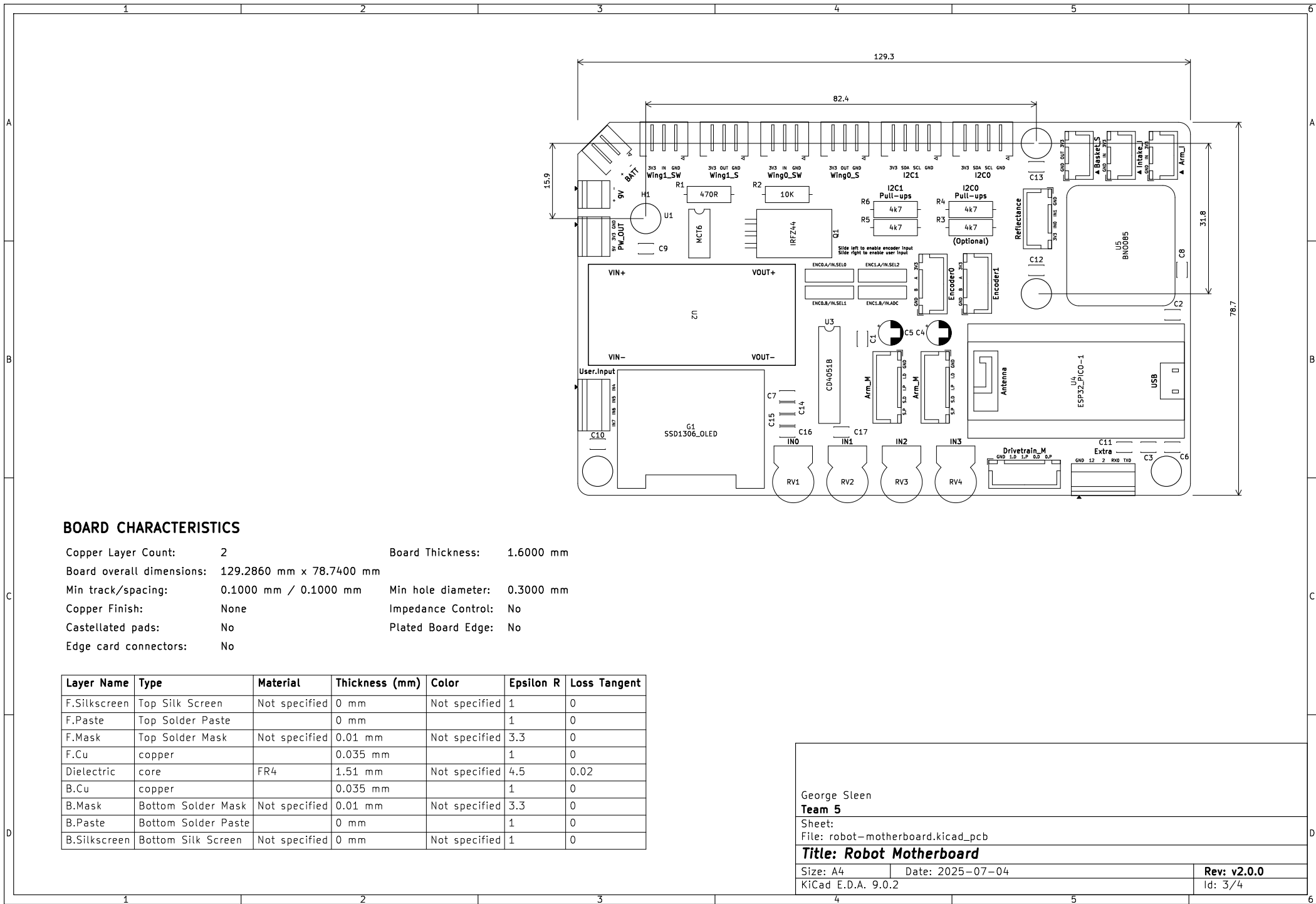03 -> Pull-down
05 -> Pull-down
12 -> Pull-down
15 -> Pull-up
06 -> Pull-up

BOARD CHARACTERISTICS

Copper Layer Count: 2
Board overall dimensions: 129.2860 mm x 78.7400 mm
Min track/spacing: 0.1000 mm / 0.1000 mm
Copper Finish: None
Castellated pads: No
Edge card connectors: No

Board Thickness: 1.6000 mm

Min hole diameter: 0.3000 mm
Impedance Control: No
Plated Board Edge: No

Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
F.Silkscreen	Top Silk Screen	Not specified	0 mm	Not specified	1	0
F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Not specified	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric	core	FR4	1.51 mm	Not specified	4.5	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Not specified	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	Not specified	1	0

BOARD CHARACTERISTICS
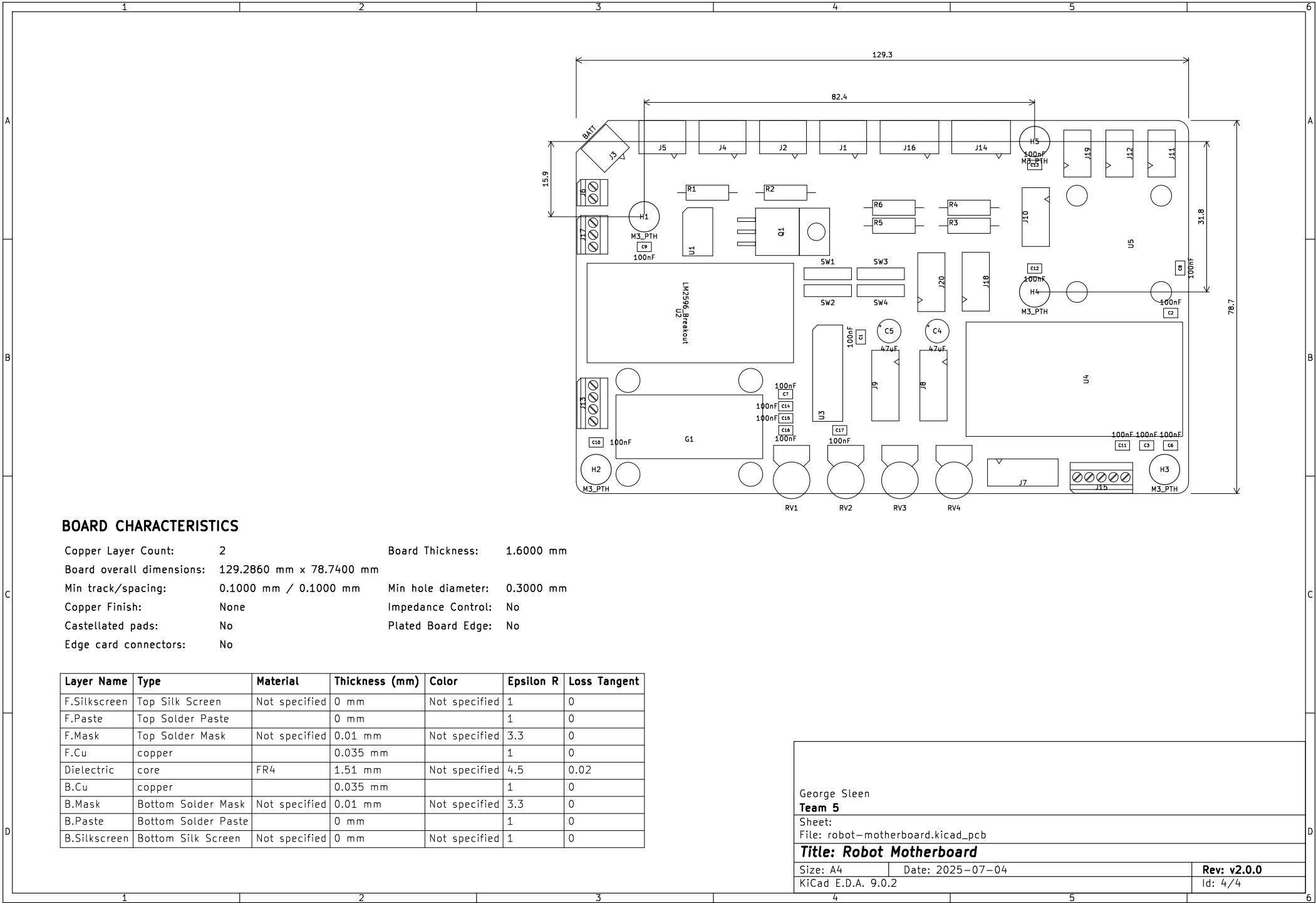
Copper Layer Count:	2	Board Thickness:	1.6000 mm
Board overall dimensions:	129.2860 mm x 78.7400 mm		
Min track/spacing:	0.1000 mm / 0.1000 mm	Min hole diameter:	0.3000 mm
Copper Finish:	None	Impedance Control:	No
Castellated pads:	No	Plated Board Edge:	No
Edge card connectors:	No		

Layer Name	Type	Material	Thickness (mm)	Color	Epsilon R	Loss Tangent
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F.Paste	Top Solder Paste		0 mm		1	0
F.Mask	Top Solder Mask	Not specified	0.01 mm	Not specified	3.3	0
F.Cu	copper		0.035 mm		1	0
Dielectric	core	FR4	1.51 mm	Not specified	4.5	0.02
B.Cu	copper		0.035 mm		1	0
B.Mask	Bottom Solder Mask	Not specified	0.01 mm	Not specified	3.3	0
B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	Not specified	1	0

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B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	Not specified	1	0

George Sleen
Team 5
Sheet:
File: robot—motherboard.kicad_pcb
Title: Robot Motherboard

Size: A4	Date: 2025-07-04	**Rev: v2.0.0**
KiCad E.D.A. 9.0.2		Id: 3/4

BOARD CHARACTERISTICS

Copper Layer Count:	2	Board Thickness:	1.6000 mm
Board overall dimensions:	129.2860 mm x 78.7400 mm		
Min track/spacing:	0.1000 mm / 0.1000 mm	Min hole diameter:	0.3000 mm
Copper Finish:	None	Impedance Control:	No
Castellated pads:	No	Plated Board Edge:	No
Edge card connectors:	No		

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B.Paste	Bottom Solder Paste		0 mm		1	0
B.Silkscreen	Bottom Silk Screen	Not specified	0 mm	Not specified	1	0

George Sleen
Team 5

Sheet:
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Title: Robot Motherboard

Size: A4	Date: 2025-07-04	Rev: v2.0.0
KiCad E.D.A. 9.0.2		Id: 4/4