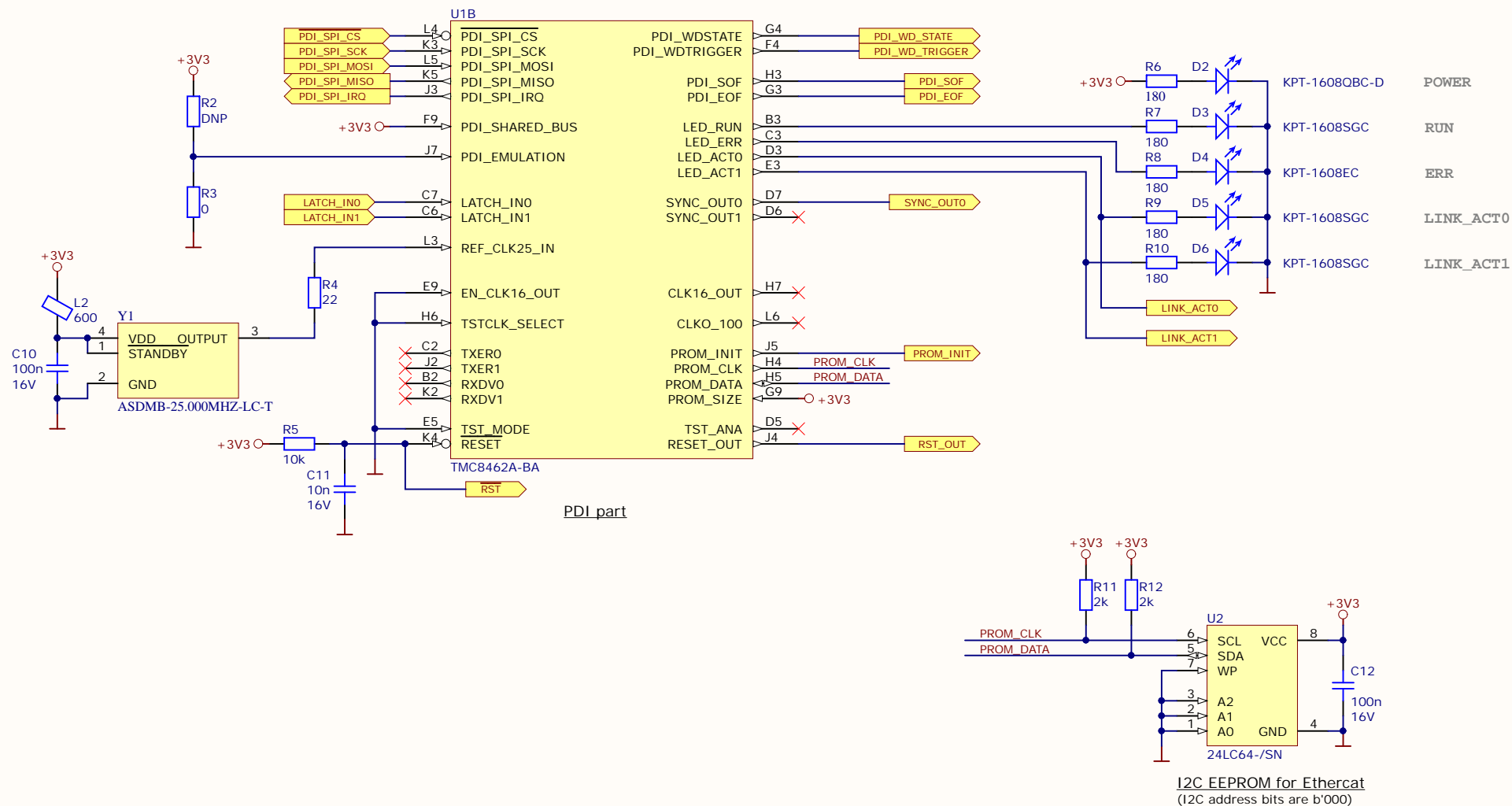


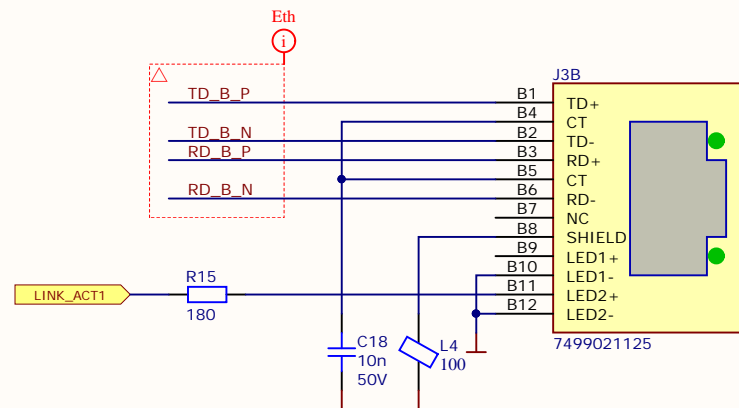
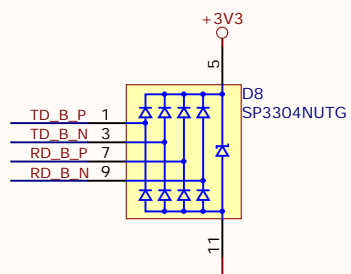
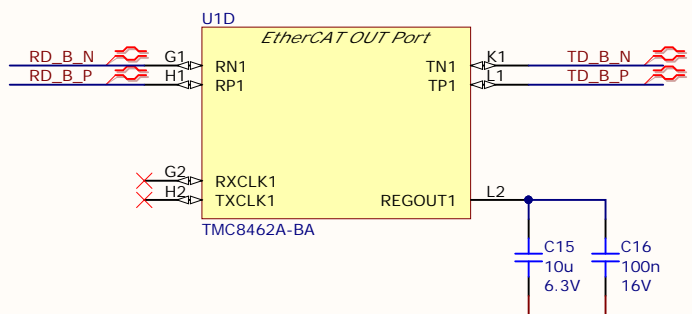
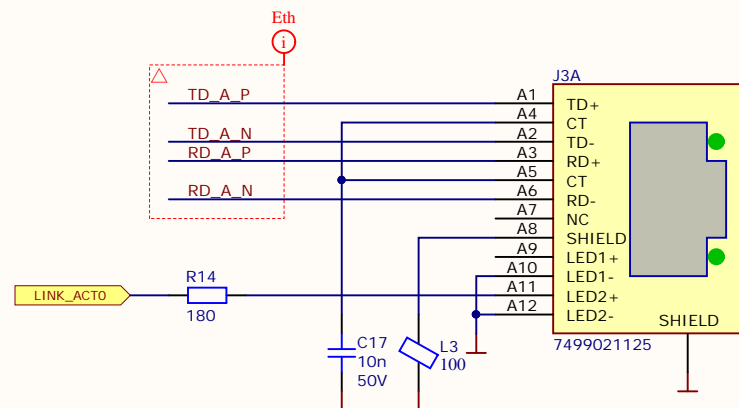
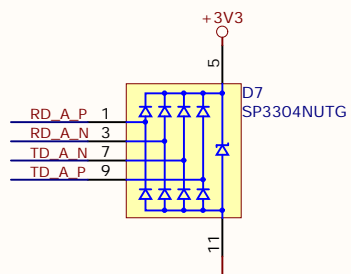
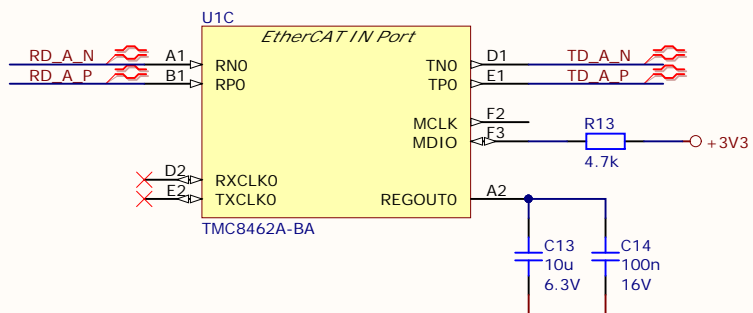
Drafted by: Peep Narusberg
 Checked by: ---
 Approved by: Stephan Kubisch

Title TMC8462A-B0B-ETH I/O & PSU		
Size: A4	Revision: V1.0	[No Variations]
Date: 2.08.2019	Time: 13:32:56	Sheet 1 of 4
File: TMC8462A-B0B-ETH Main.SchDoc		



Drafted by: Peep Narusberg
 Checked by: ---
 Approved by: Stephan Kubisch

Title TMC8462A-B0B-ETH PDI		
Size: A4	Revision: V1.0	[No Variations]
Date: 2.08.2019	Time: 13:32:56	Sheet 2 of 6
File: TMC8462A-B0B-ETH PDI.SchDoc		



Drafted by: Peep Narusberg
 Checked by: ---
 Approved by: Stephan Kubisch

Title TMC8462A-B0B-ETH PHY Ports		
Size: A4	Revision: V1.0	[No Variations]
Date: 2.08.2019	Time: 13:32:56	Sheet 4 of 6
File: TMC8462A-B0B-ETH PHY.SchDoc		

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1	2	3	4													
A	<div>Changelog: TMC8462-BOB-ETH V0.91 -> TMC8462A-BOB-ETH V1.0</div> <div>1. Created project with PCB from TMC8462-BOB-ETH V0.91 2. Redraw schematic with components from Hedgehog database 3. Used TMC8462A-BA 4. Changed clock to 25 MHz 5. Connected pin TSTCLK_SELECT to GND 6. Added optional pull-up to pin PDI_EMULATION 7. Used components with smaller footprint (0402) 8. Added TVS and 10uF cap to +3.3V net 9. New route 10. Moved LINK/ACT LEDs behind RJ-45 connector and added IN/OUT comments to connector 11. Added Trinamic logo to top silk</div> <div>TMC8462-BOB-ETH V0.9 -> V0.91 1. Adjusted power connect J1 location 2. Added for signal TSTCLK_SELECT 2 solderable resistors. Default is connection to +3.3V 3. Renumbered resistors</div>			A												
B				B												
C				C												
D	<div>Drafted by: Peep Narusberg Checked by: --- Approved by: Stephan Kubisch</div> <div><table><tr><td colspan="3">Title TMC8462A-BOB-ETH log and approval</td></tr><tr><td>Size: A4</td><td>Revision: V1.0</td><td>[No Variations]</td></tr><tr><td>Date: 2.08.2019</td><td>Time: 13:32:56</td><td>Sheet 6 of 6</td></tr><tr><td colspan="3">File: TMC8462A-BOB-ETH Log.SchDoc</td></tr></table></div>			Title TMC8462A-BOB-ETH log and approval			Size: A4	Revision: V1.0	[No Variations]	Date: 2.08.2019	Time: 13:32:56	Sheet 6 of 6	File: TMC8462A-BOB-ETH Log.SchDoc			D
Title TMC8462A-BOB-ETH log and approval																
Size: A4	Revision: V1.0	[No Variations]														
Date: 2.08.2019	Time: 13:32:56	Sheet 6 of 6														
File: TMC8462A-BOB-ETH Log.SchDoc																
1	2	3	4													



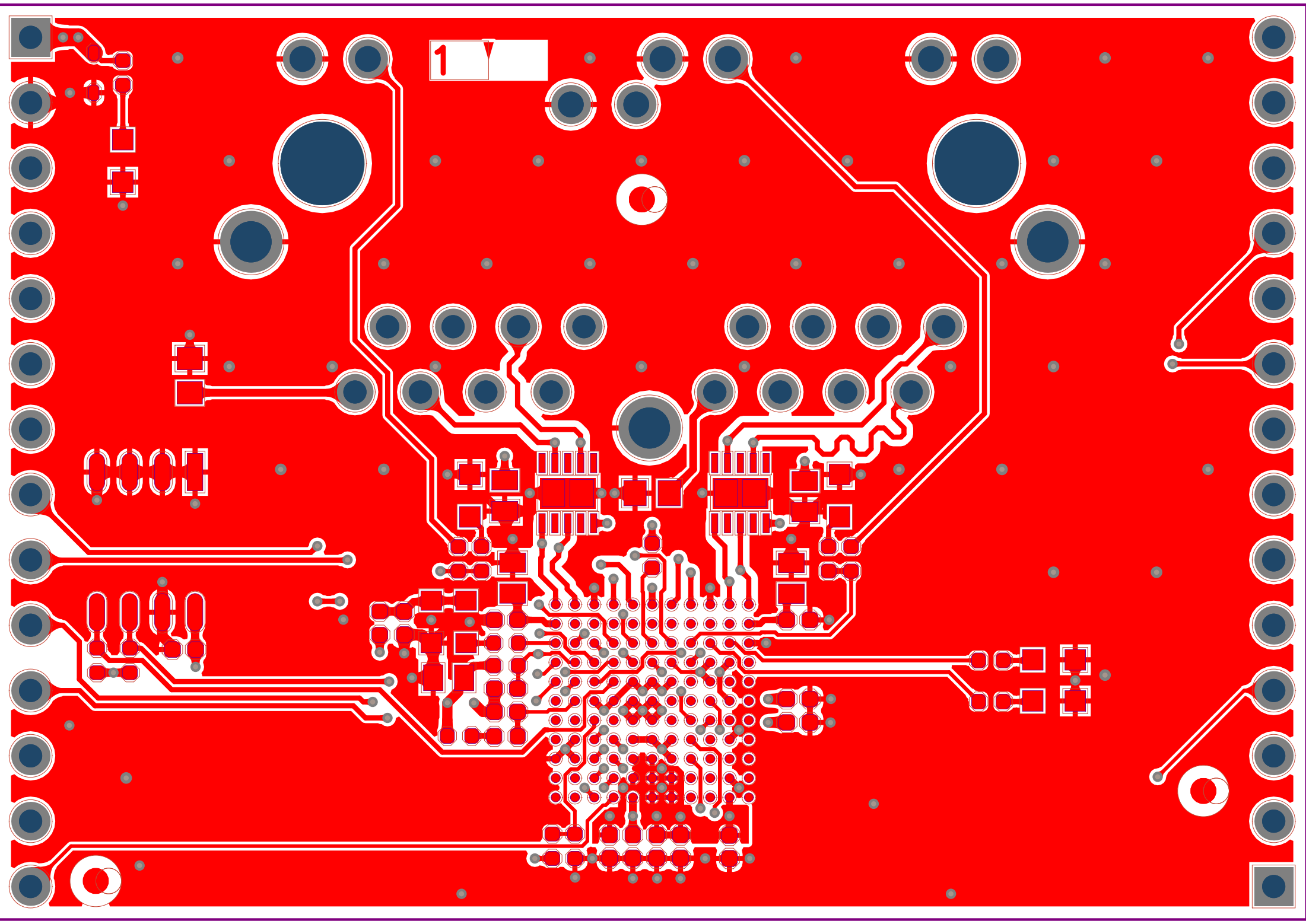
TRINAMIC
MOTION CONTROL

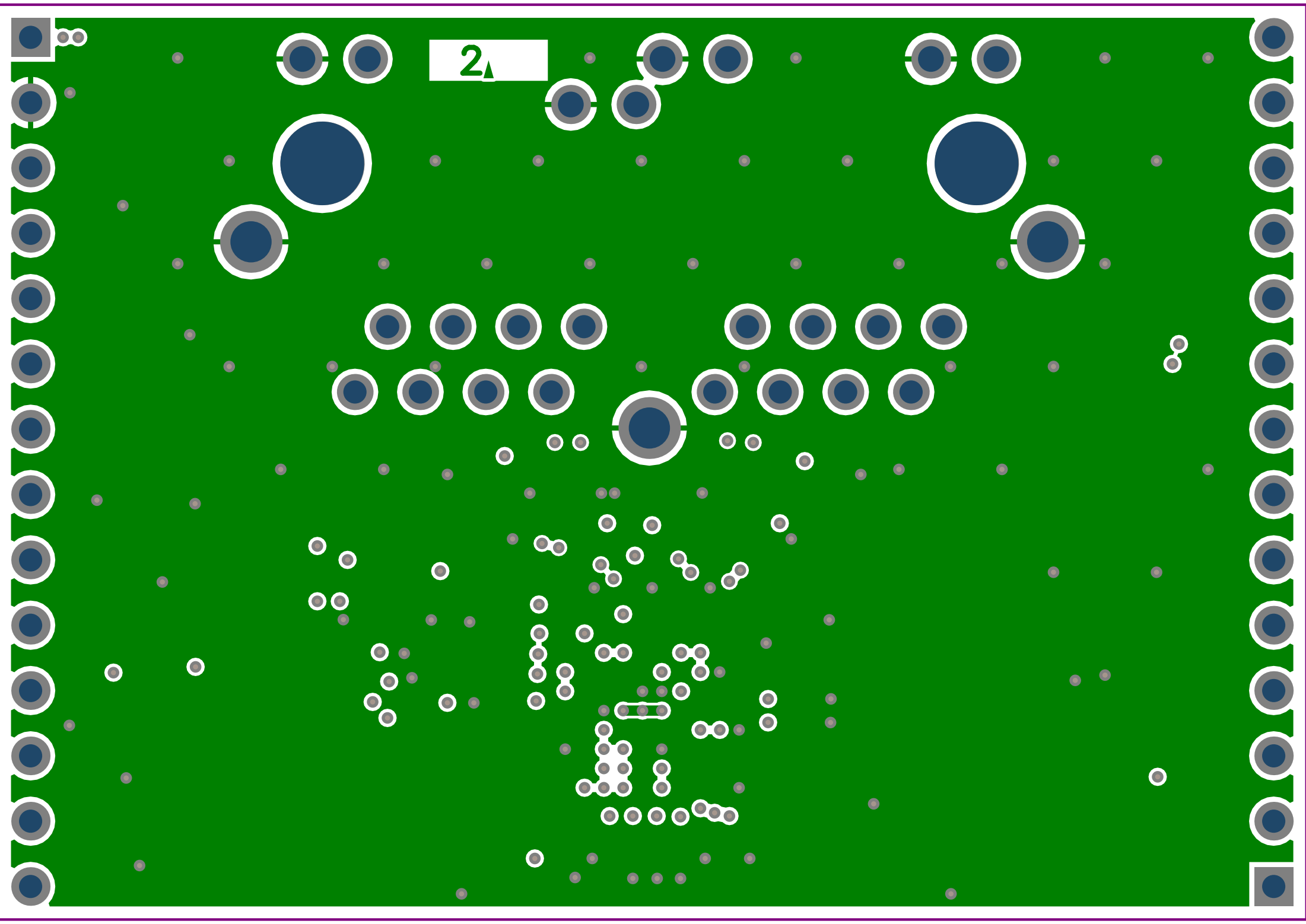
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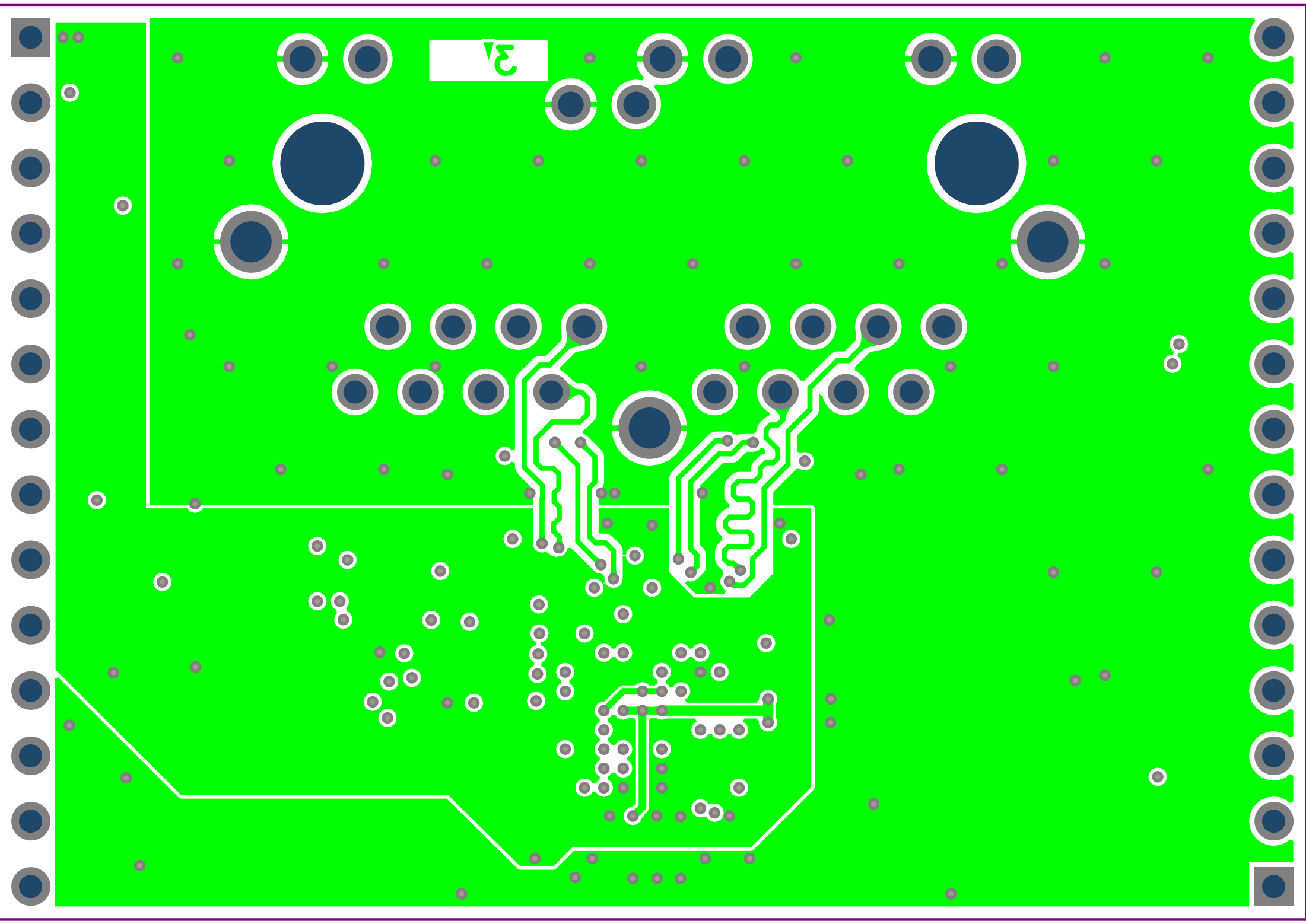
Designator	Quantity	Manufacturer	Part Number	Description	LibRef
C1, C13, C15	3	Any	10u, 6.3V, X5R, 0603 (1608 metric) chip capacitor	Ceramic chip capacitor	20012
C2, C3, C4, C5, C6, C7, C8, C9, C10, C12, C14, C11	12	Any	100n, 16V, X5R, 0402 (1005 metric) chip capacitor	Ceramic chip capacitor	20000
C17, C18	1	Any	10n, 16V, X5R, 0402 (1005 metric) chip capacitor	Ceramic chip capacitor	20014
D1	2	Any	10n, 50V, X5R, 0603 (1608 metric) chip capacitor	Ceramic chip capacitor	20038
D2	1	ON Semi	ESD5Z3.3	TVS, Pin1 Cathode	51211
D3, D5, D6	1	Kingbright	KPT-1608QBC-D	LED, pin 1 cathode	50003
D4	3	Kingbright	KPT-1608SGC	LED, pin 1 cathode	50005
D7, D8	1	Kingbright	KPT-1608EC	LED, pin 1 cathode	50002
J1, J2	2	Littelfuse	SP3304NUTG	TVS Diode Array	50693
J3	2			1x14 pin connector	51283
L1, L2	1	Wuerth	7499021125	Dual LAN-Transformer WE-RJ45LAN 10/100BaseT	50579
L3, L4	2	Murata	BLM15AX601SN1D	Ferrite bead	60056
R1	2	Murata	BLM18KG101TN1	Ferrite bead	60101
R2	1	Any	1, 1%, 62mW, 0402 (1005 metric) chip resistor	Chip Resistor	10223
R3	1	DNP	DNP	Chip Resistor	40006
R4	1	Any	0, -, -, 0402 (1005 metric) chip resistor	Chip Resistor	10052
R5	1	Any	22, 1%, 62mW, 0402 (1005 metric) chip resistor	Chip Resistor	10108
R6, R7, R8, R9, R10, R14, R15	1	Any	10k, 1%, 62mW, 0402 (1005 metric) chip resistor	Chip Resistor	10012
R11, R12	7	Any	180, 1%, 62mW, 0402 (1005 metric) chip resistor	Chip Resistor	10342
R13	2	Any	2k, 1%, 62mW, 0402 (1005 metric) chip resistor	Chip Resistor	10195
U1	1	Any	4.7k, 1%, 62mW, 0402 (1005 metric) chip resistor	Chip Resistor	10042
U2	1	Trinamic	TMC8462A-BA	Integrated EtherCAT Slave Controller	50844
Y1	1	Microchip	24LC64-/SN	I2C serial EEPROM in 8 pin case	50577
	1	Abracon	ASDMB-25.000MHZ-LC-T	Standard Clock Oscillators 3.3Volts 25ppm -40C +85C 15p	50846

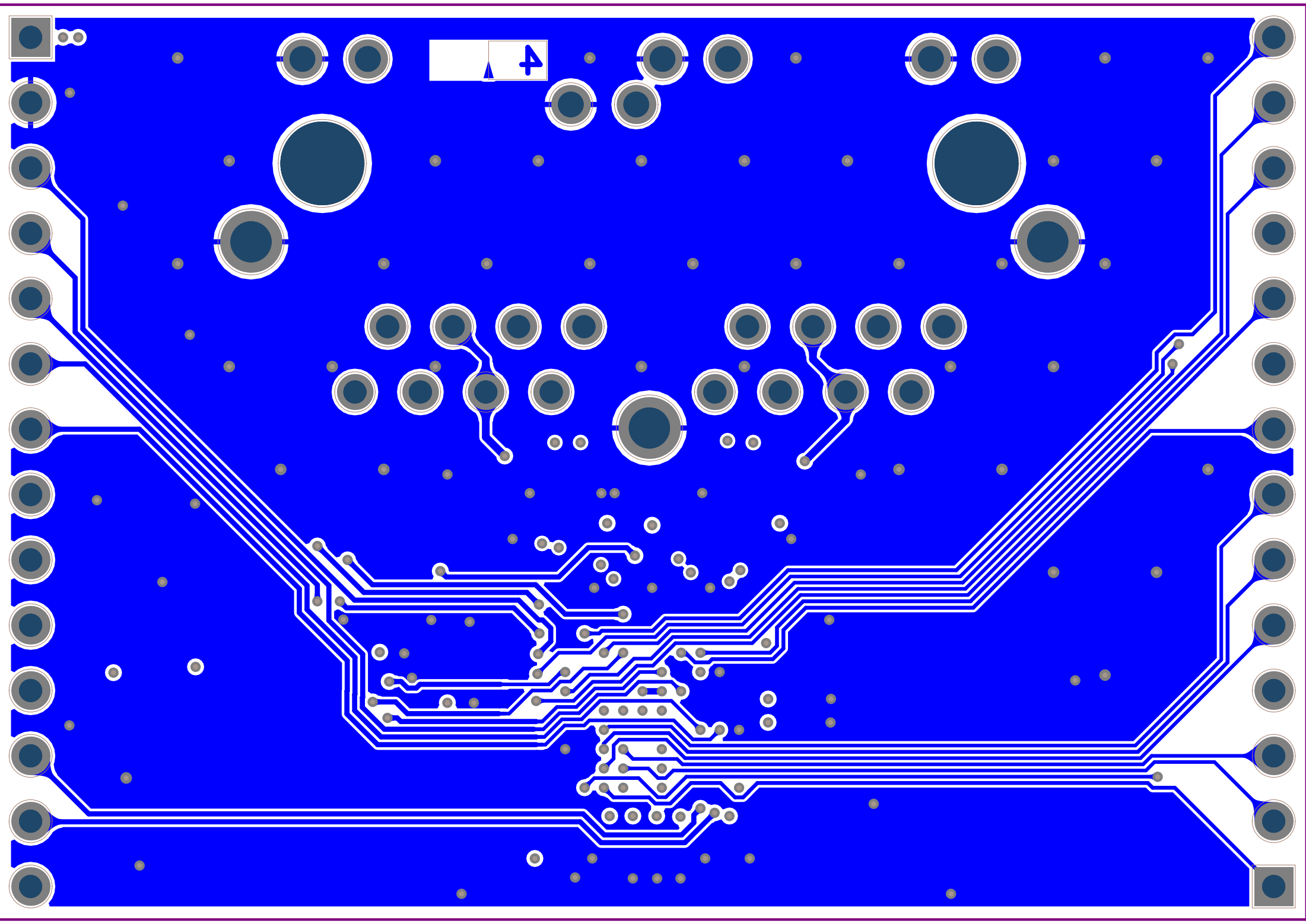
Board Stack Report

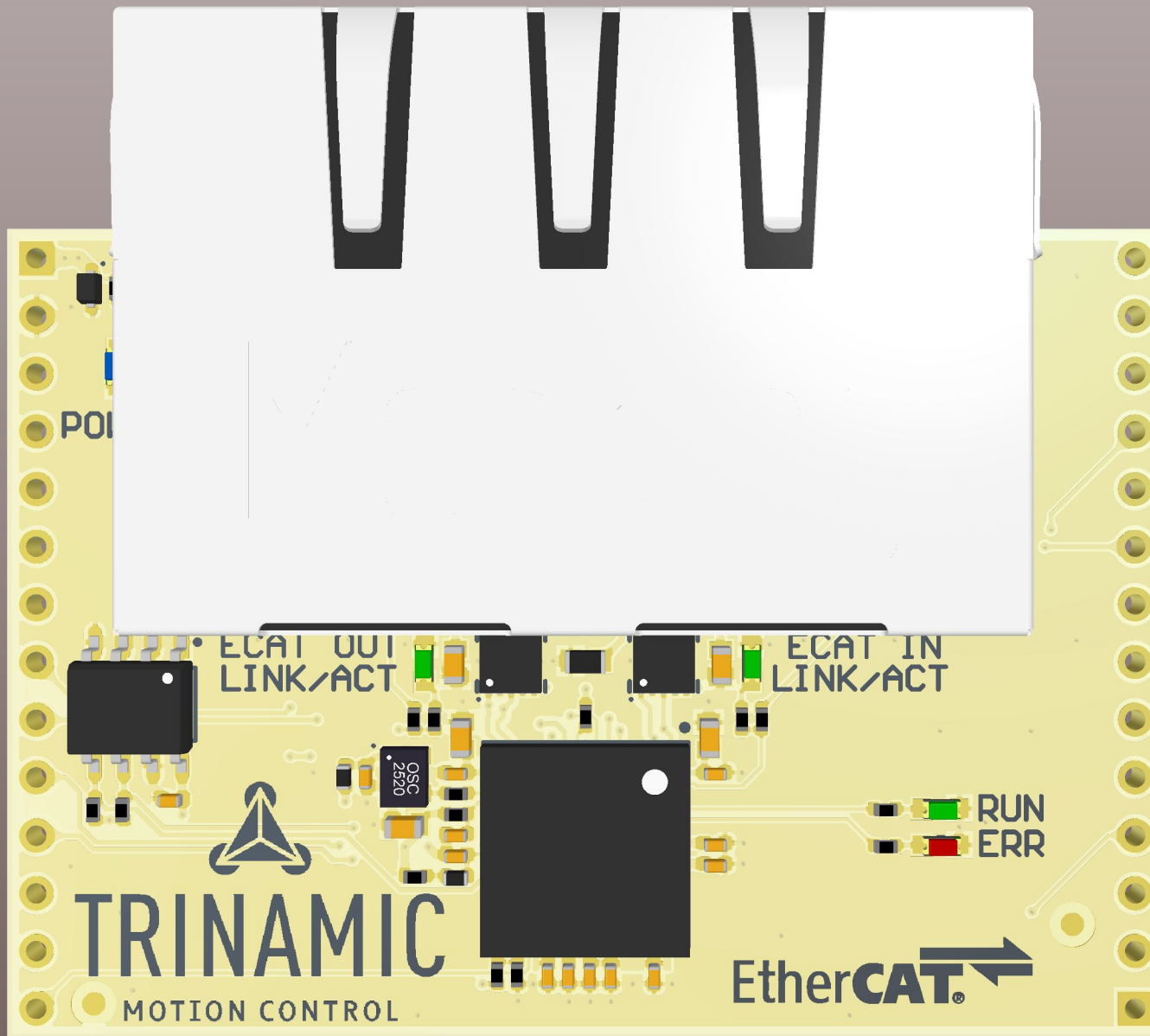
Stack Up		Layer Stack			
Layer	Board Layer Stack	Name	Material	Thickness	Constant
1		Top Paste			
2		Top Overlay			
3		Top Soldermask	Solder Resist	0.010mm	3.5
4		Top Layer	Copper	0.035mm	
5		Prepreg 7628-45		0.360mm	4.6
6		Mid1	Copper	0.036mm	
7		High Tg 1,08mm 35??m/35??m	FR-4	0.710mm	4.6
8		Mid2	Copper	0.036mm	
9		Prepreg 7628-45		0.360mm	4.6
10		Bottom Layer	Copper	0.035mm	
11		Bottom Soldermask	Solder Resist	0.010mm	3.5
12		Bottom Overlay			
13		Bottom Paste			
	Height : 1.592mm				

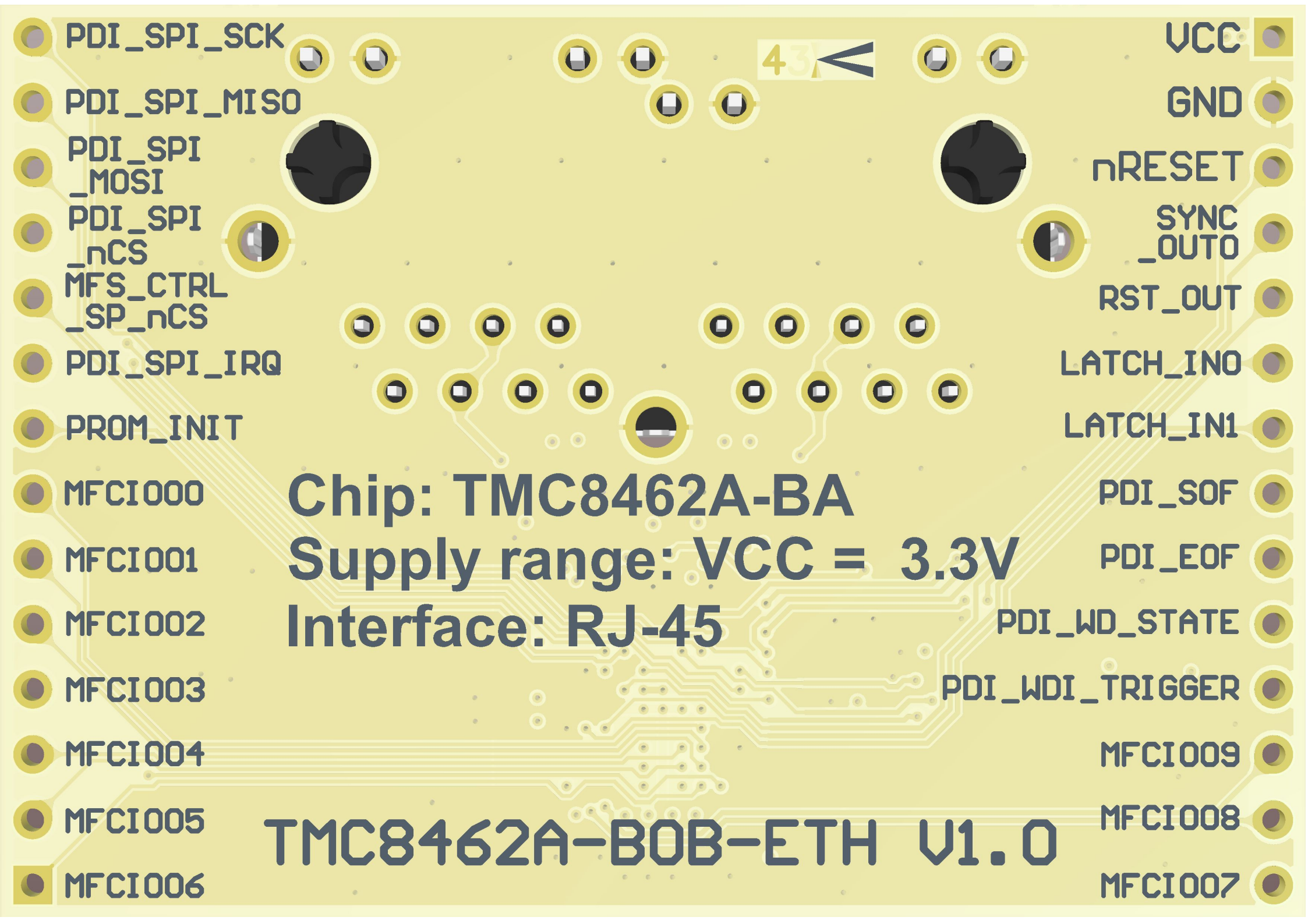












PDI_SPI_SCK

PDI_SPI_MISO

PDI_SPI_MOSI

PDI_SPI_nCS

MFS_CTRL_SP_nCS

PDI_SPI_IRQ

PROM_INIT

MFC1000

MFC1001

MFC1002

MFC1003

MFC1004

MFC1005

MFC1006

VCC

GND

nRESET

SYNC_OUT0

RST_OUT

LATCH_IN0

LATCH_IN1

PDI_SOF

PDI_EOF

PDI_WD_STATE

PDI_WDI_TRIGGER

MFC1009

MFC1008

MFC1007

Chip: TMC8462A-BA

Supply range: VCC = 3.3V

Interface: RJ-45

TMC8462A-BOB-ETH V1.0

A

B

C

D

1

1

2

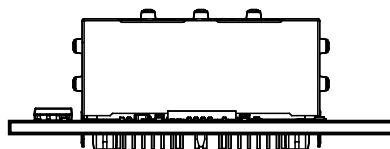
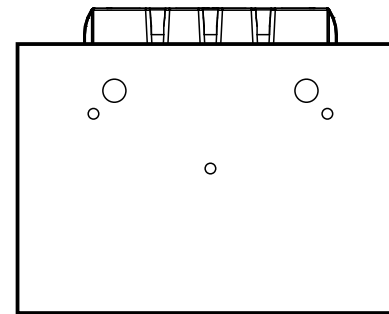
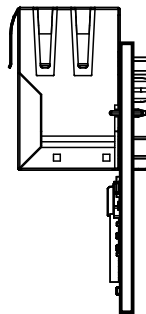
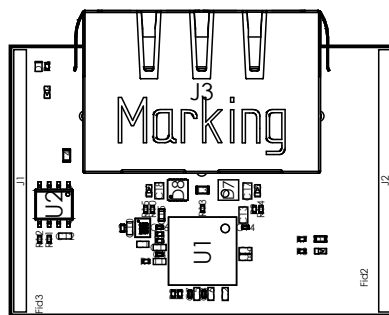
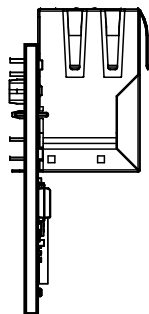
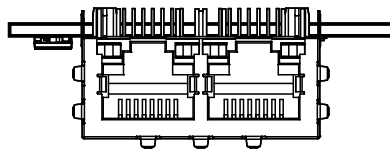
2

3

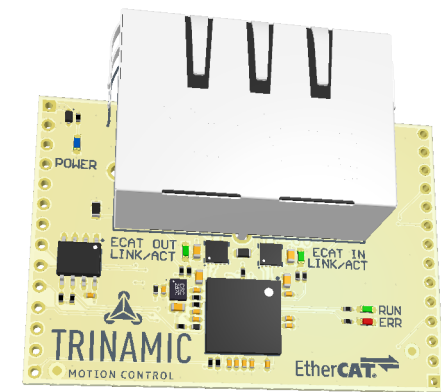
3

4

4



Realistic View




A

B

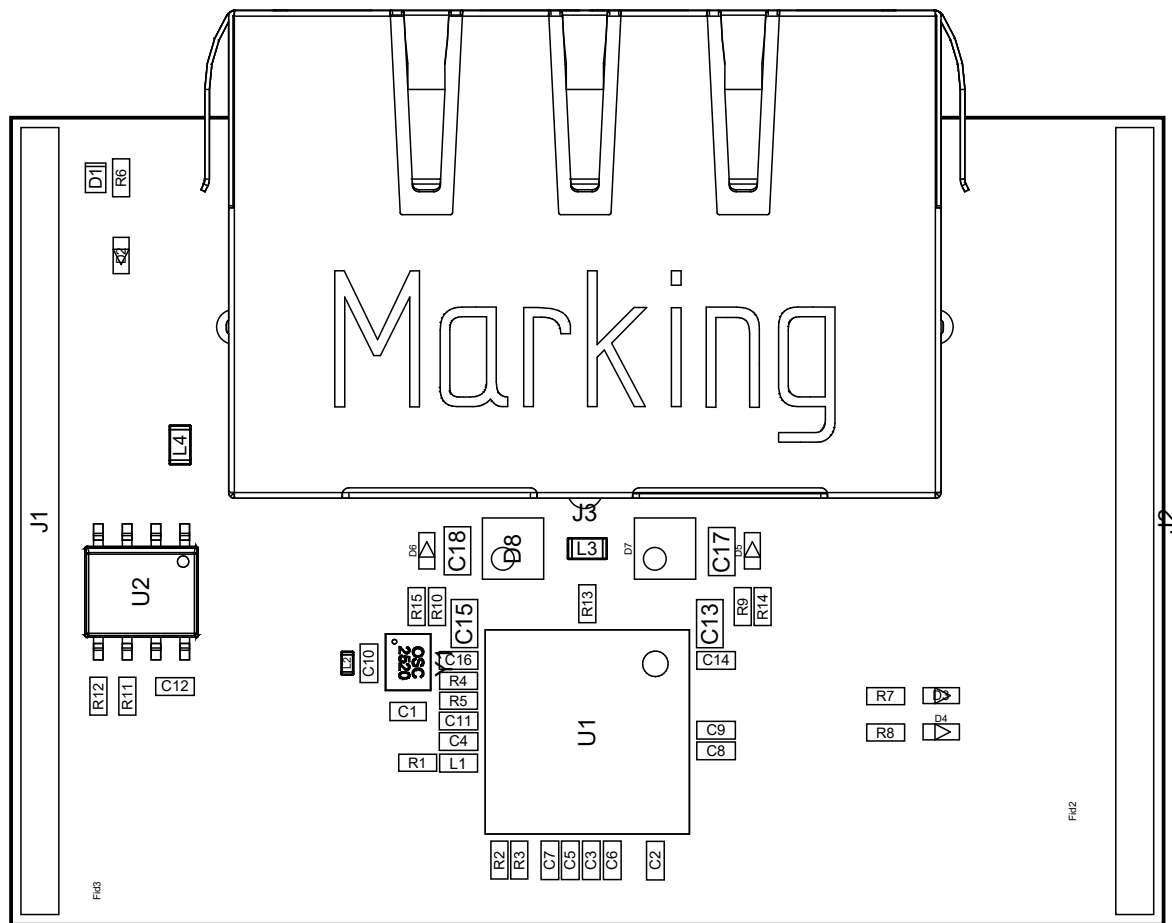
C

D

Title			Assembly Drawing	
Size A4	Revision V1.0	Project TMC8462A-BOB-ETH		
Date 2.08.2019 13:33			Sheet 1 of 2	
File TMC8462A-BOB-ETH-A.PCBDwf				



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Title		
Assembly Drawing		
Size	Revision	Project
A4	V1.0	TMC8462A-BOB-ETH
Date	2.08.2019 13:33	Sheet 2 of 2
File	TMC8462A-BOB-ETH-A.PCBDwf	



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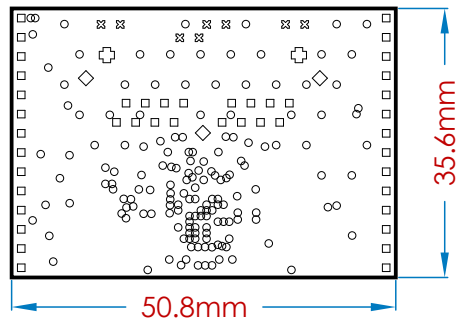
Layer Stack Legend

Material	Layer	Thickness	Gerber
Top Overlay			GTO
Surface Material	Top Soldermask	0.010mm	GTS
Copper	Top Layer	0.035mm	GTL
Prepreg		0.360mm	
Copper	Mid1	0.036mm	G1
Core		0.710mm	
Copper	Mid2	0.036mm	G2
Prepreg		0.360mm	
Copper	Bottom Layer	0.035mm	GBL
Surface Material	Bottom Soldermask	0.010mm	GBS
Bottom Overlay			GBO
Total thickness: 1.592mm			

Notes:

1. Use current revision of all standards.
2. Board is to be manufactured in accordance to IPC-6012 Class 2.
3. Laminate (core) and prepreg to be in accordance with IPC-4101/126
4. Board finish shall be ENIG
5. Soldermask colour shall be WHITE
6. Silkscreen colour shall be BLACK
7. All hole dimensions apply after plating
8. All copper dimensions apply after plating

Drill Drawing View (Scale 1:1)



Drill Table

Symbol	Count	Hole Size	Plated	Via / Pad	Hole Tolerance
○	162	0.20	Plated	Via	None
□	44	0.90	Plated	Pad	None
⊗	8	1.00	Plated	Pad	None
◇	3	1.60	Plated	Pad	None
⊕	2	3.25	Non-Plated	Pad	None
219 Total					

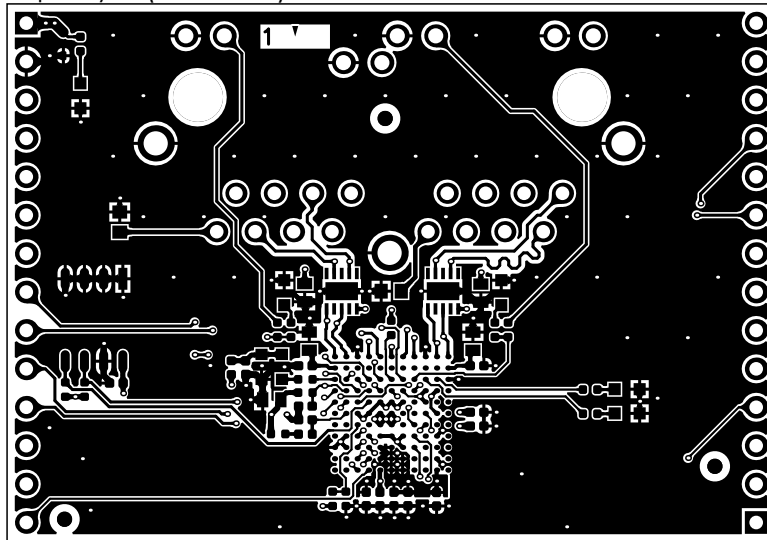
A

B

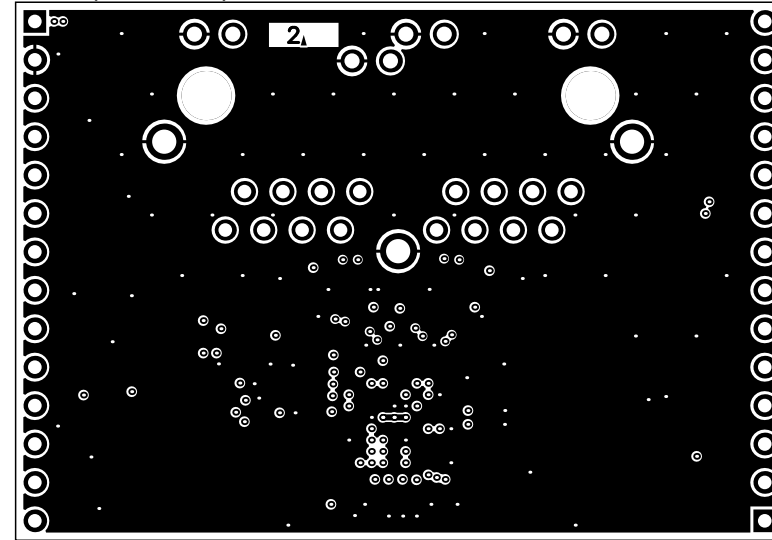
C

D

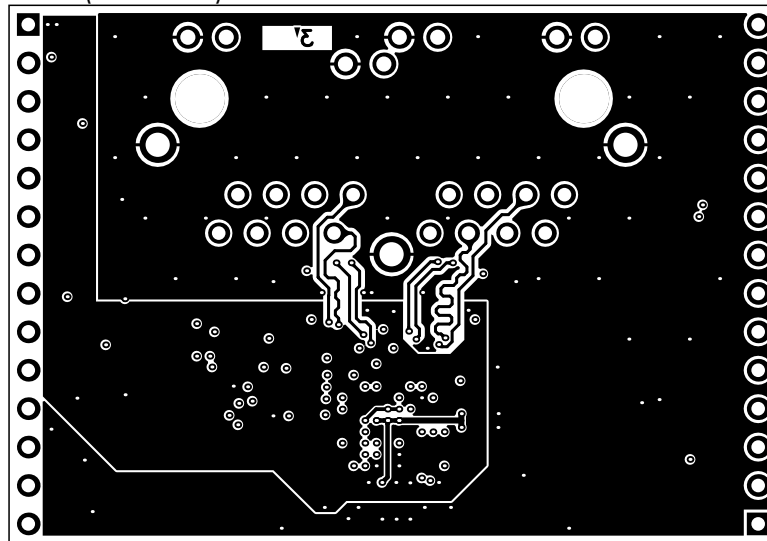
Top Layer (Scale 2:1)



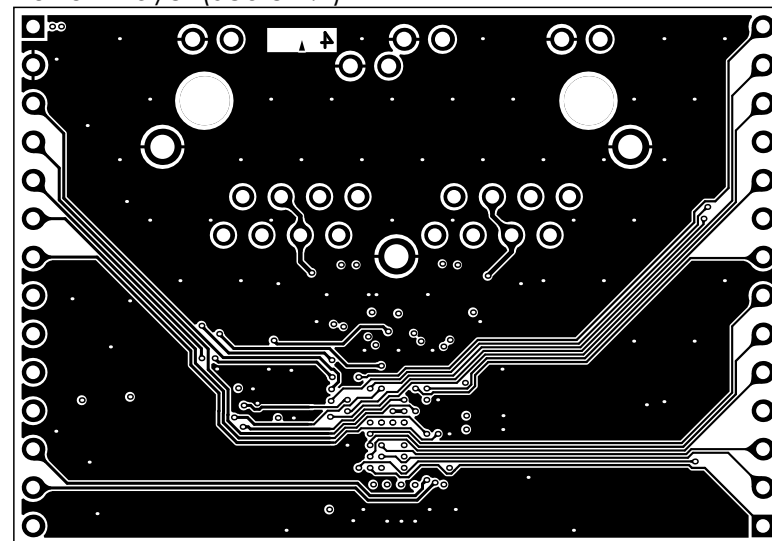
Mid1 (Scale 2:1)



Mid2 (Scale 2:1)



Bottom Layer (Scale 2:1)



Title		
Fabrication Drawing		
Size	Revision	Project
A4	V1.0	TMC8462A-BOB-ETH
Date	2.08.2019 13:33	Sheet 2 of 3
File	TMC8462A-BOB-ETH-F.PCBDwf	

A

B

C

D

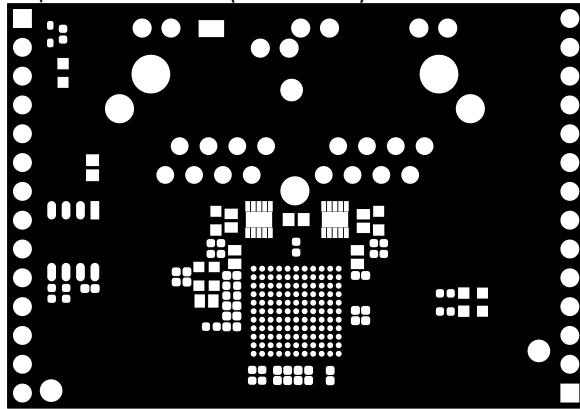
A

B

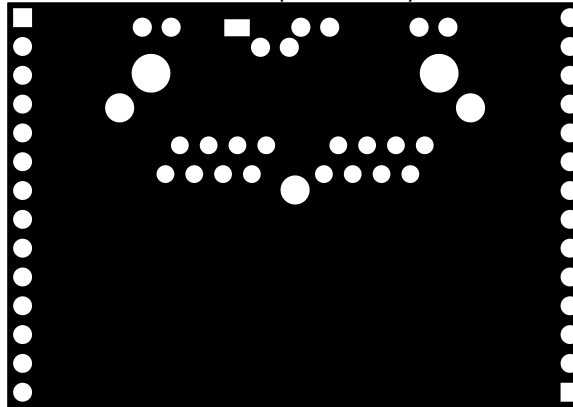
C

D

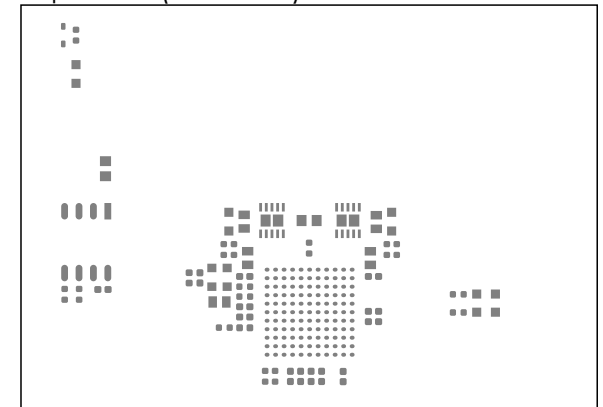
Top Soldermask (Scale 3:2)



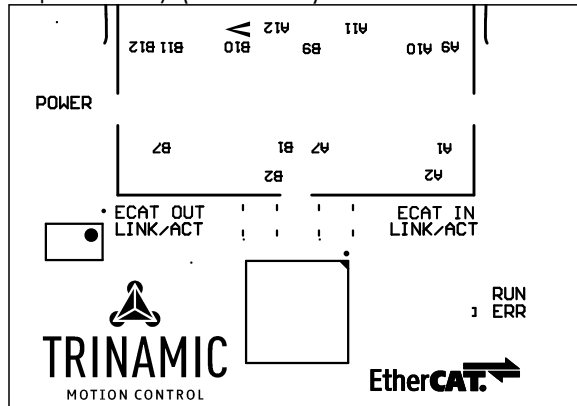
Bottom Soldermask (Scale 3:2)



Top Paste (Scale 3:2)



Top Overlay (Scale 3:2)



Bottom Overlay (Scale 3:2)

[illegible]

Title			Fabrication Drawing		
Size A4	Revision V1.0	Project TMC8462A-BOB-ETH			
Date 2.08.2019	13:33			Sheet 3 of 3	
File TMC8462A-BOB-ETH-F.PCBDwf					



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A

B

C

D

1

2

3

4