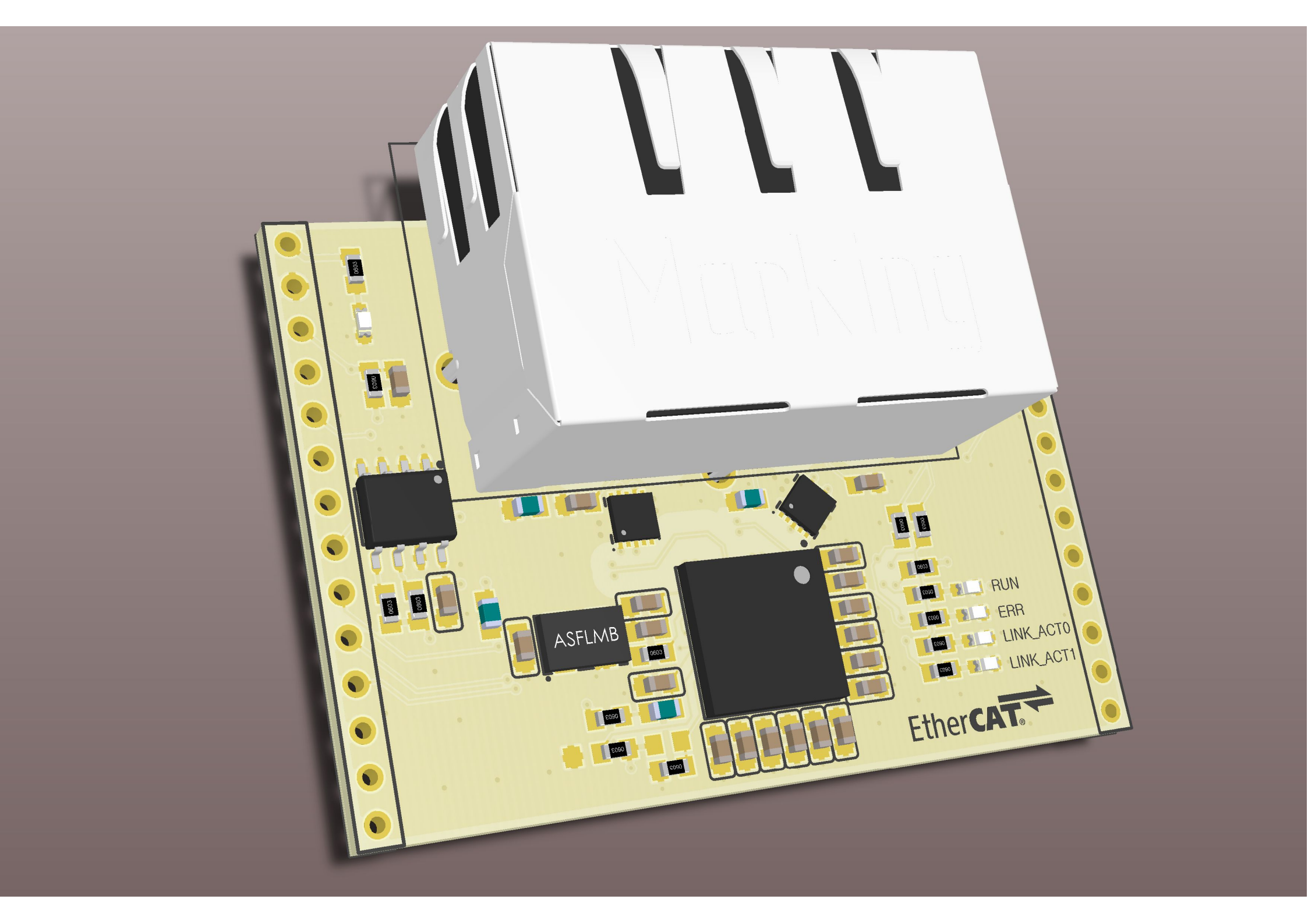
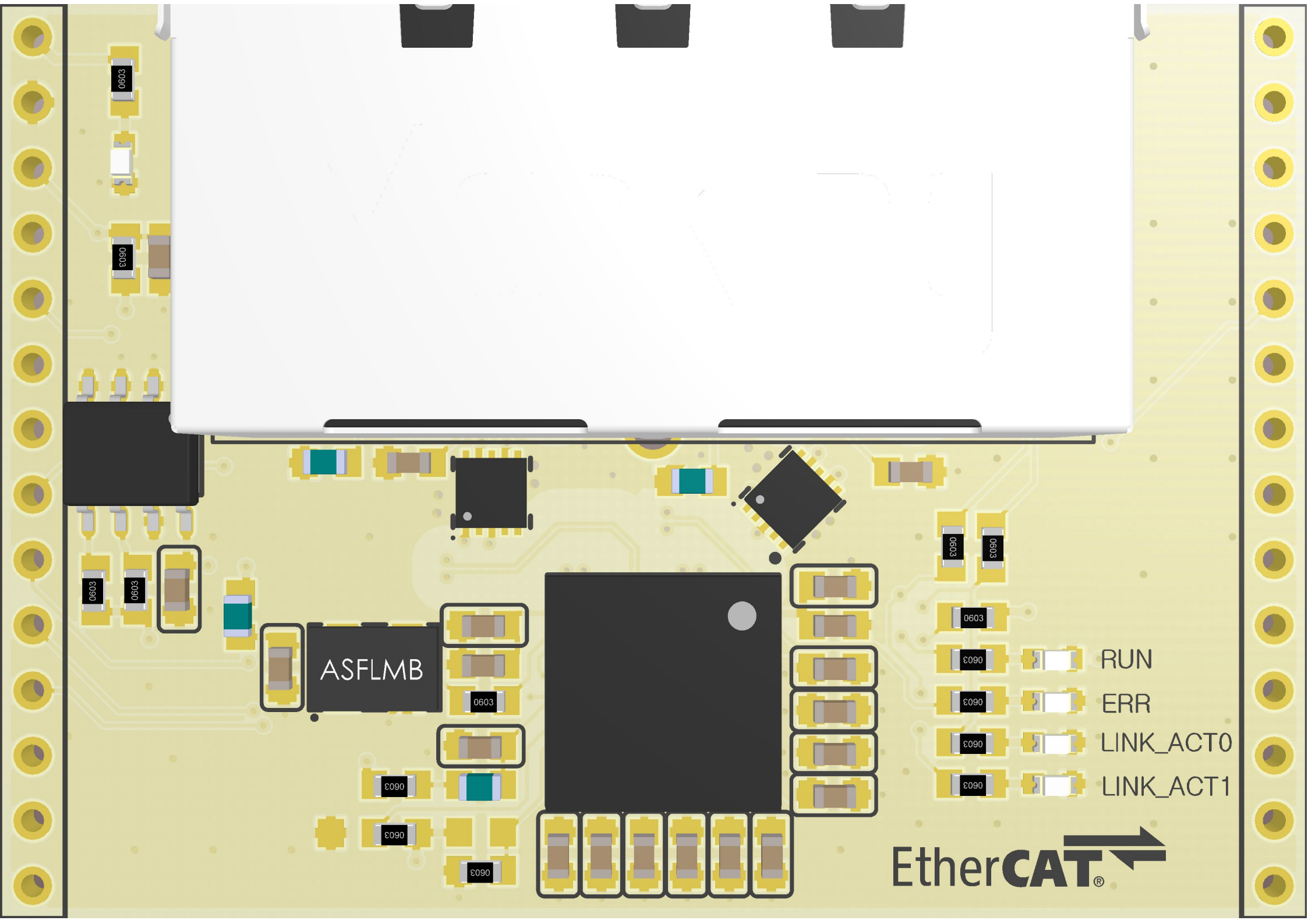
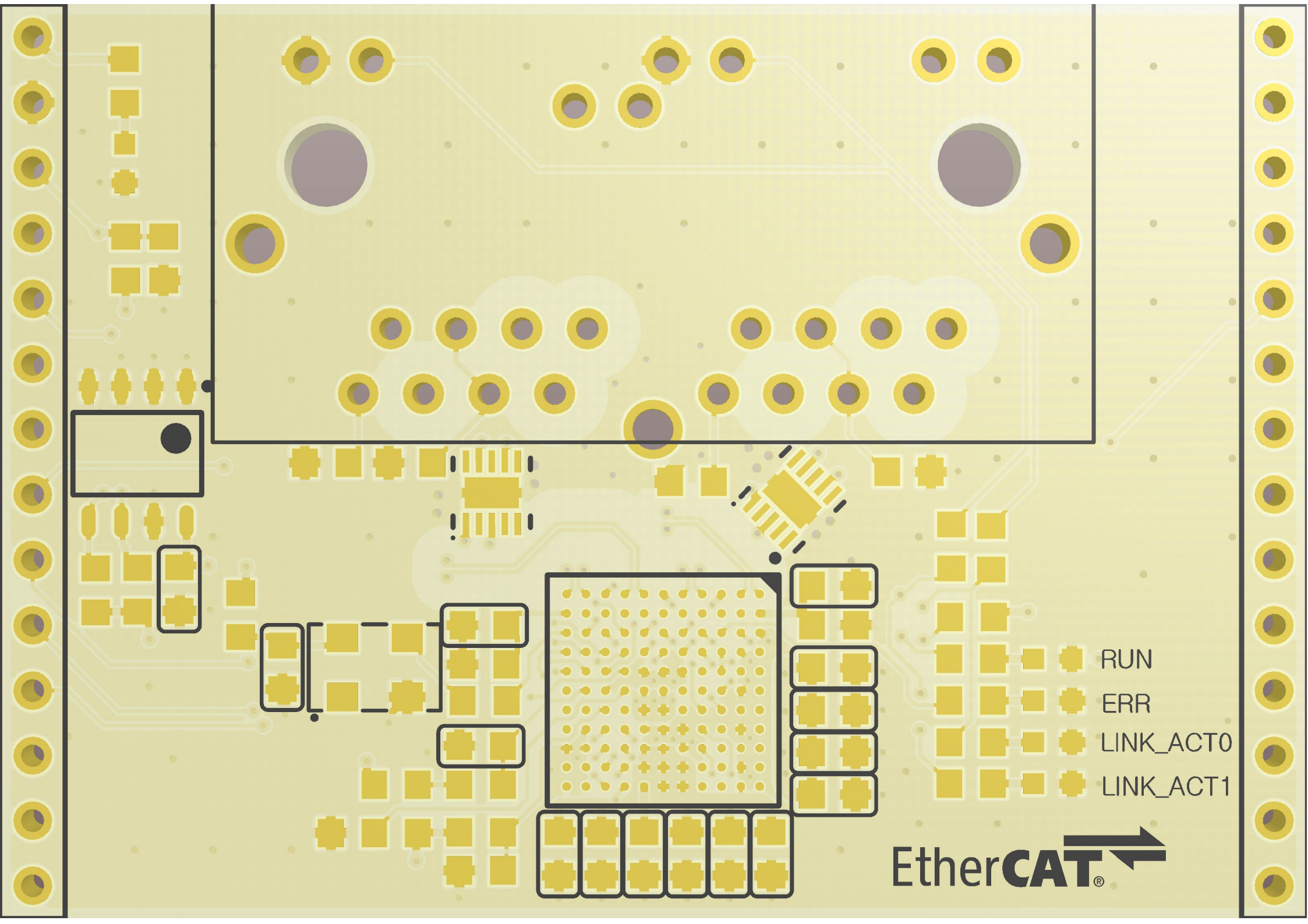
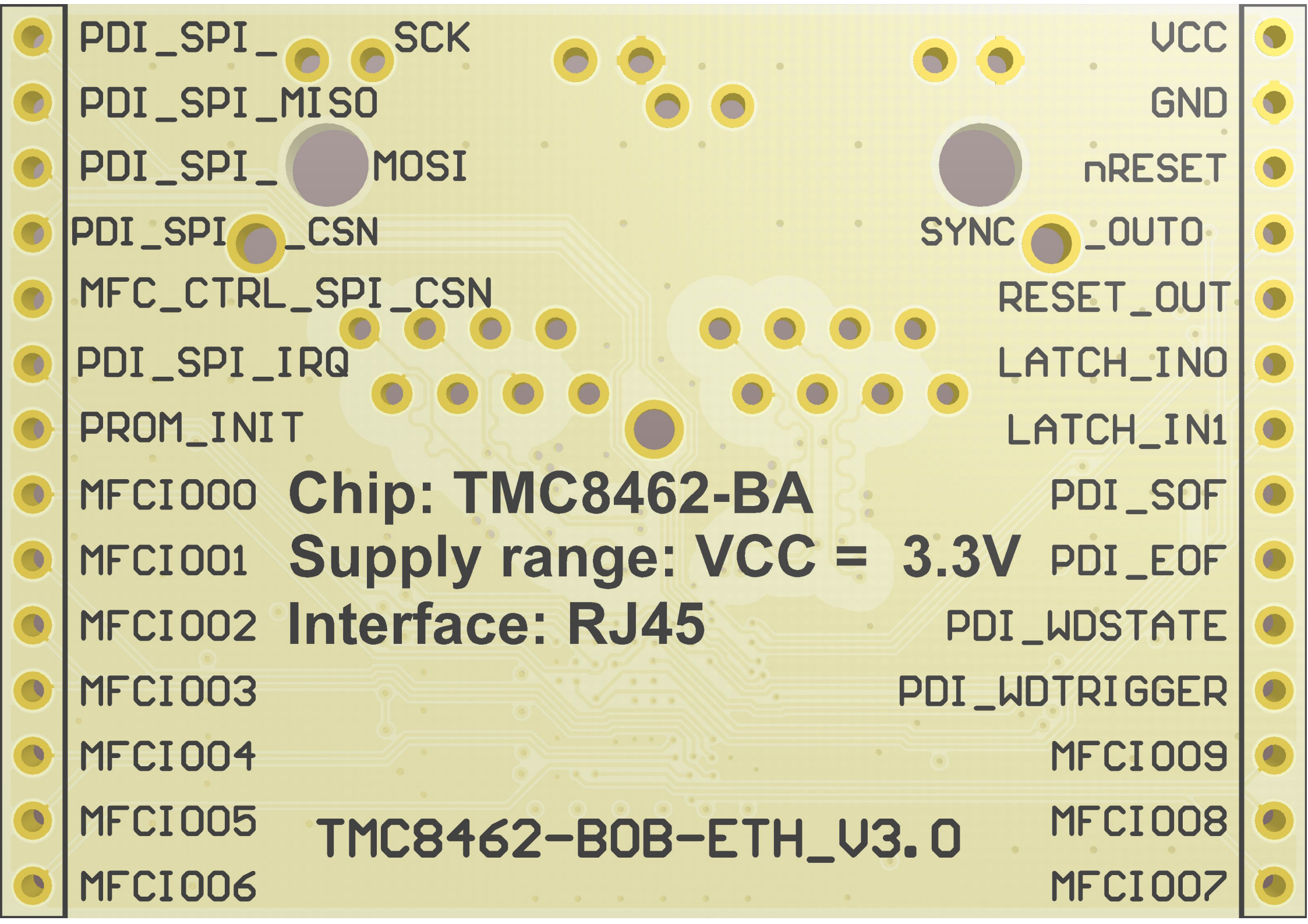
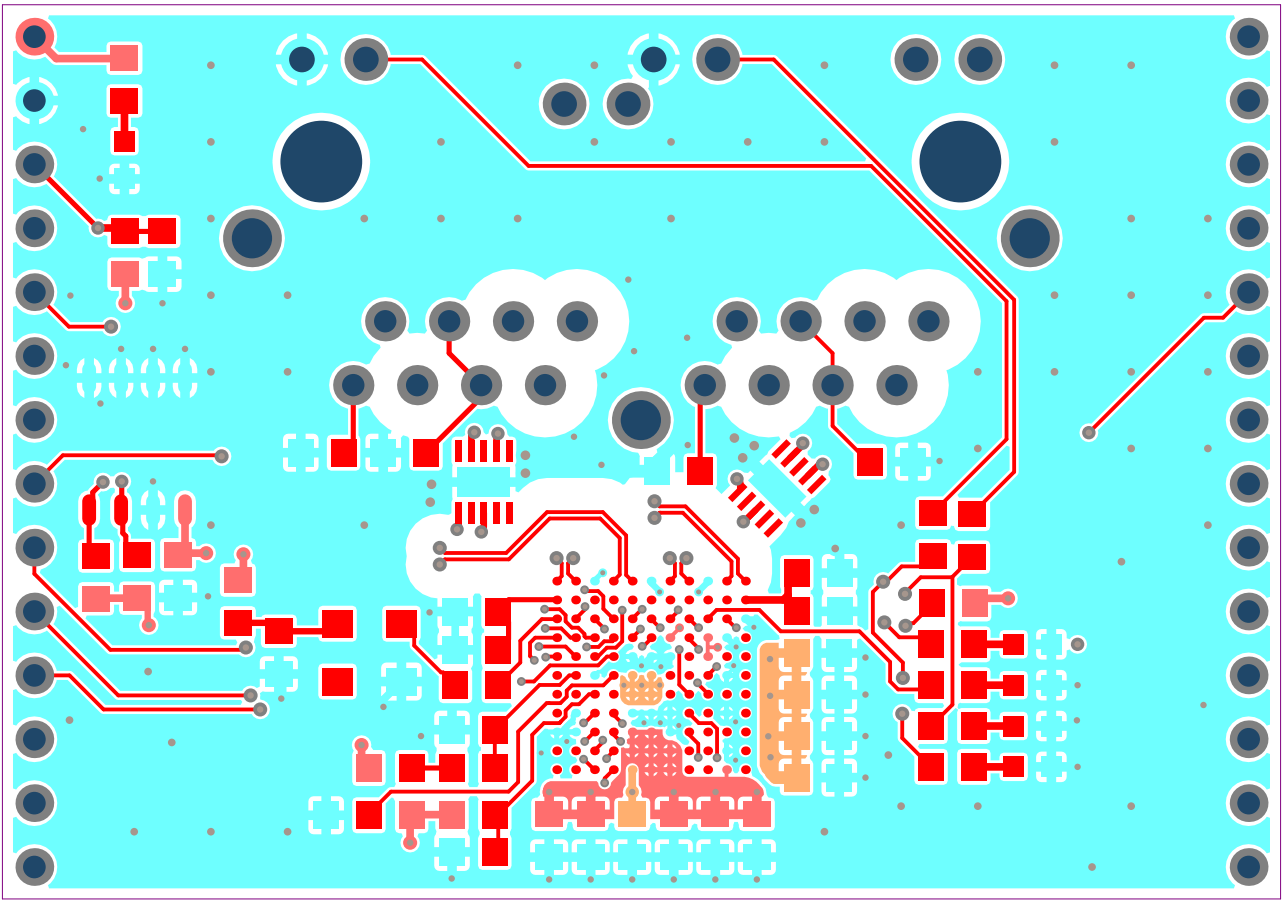
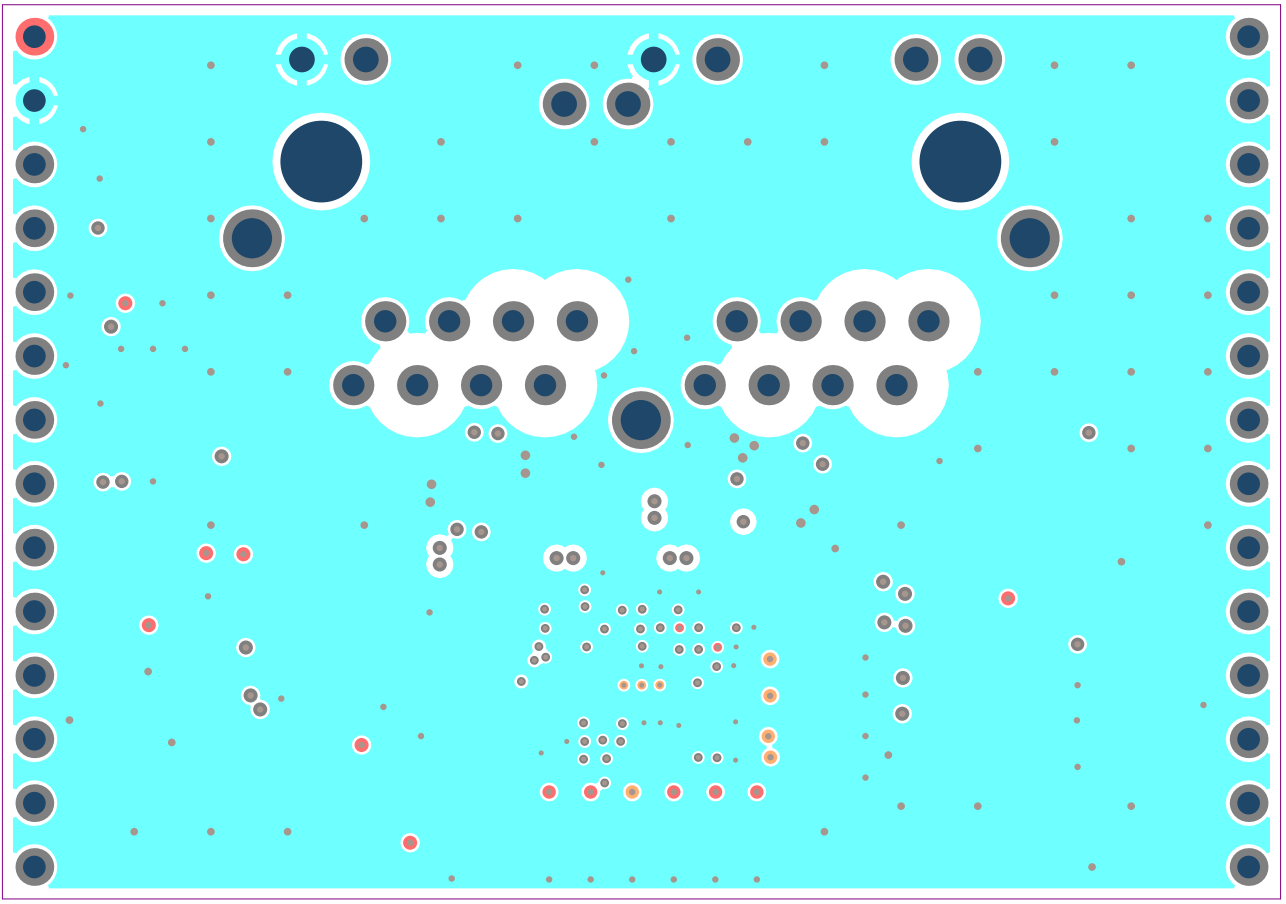

ASFLMB
RUN
ERR
LINK_ACT0
LINK_ACT1
EtherCAT

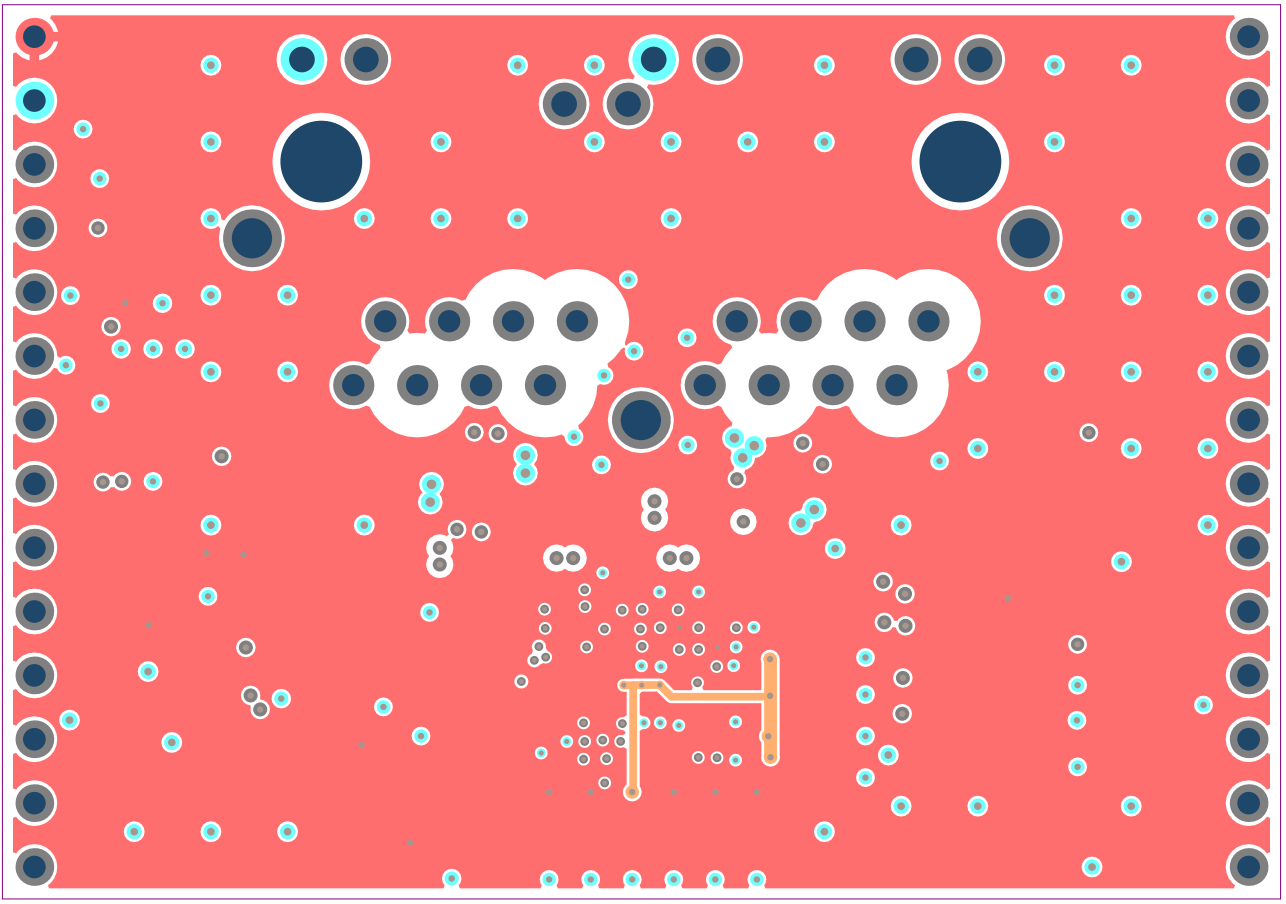

ASFLMB
RUN
ERR
LINK_ACT0
LINK_ACT1
EtherCAT®

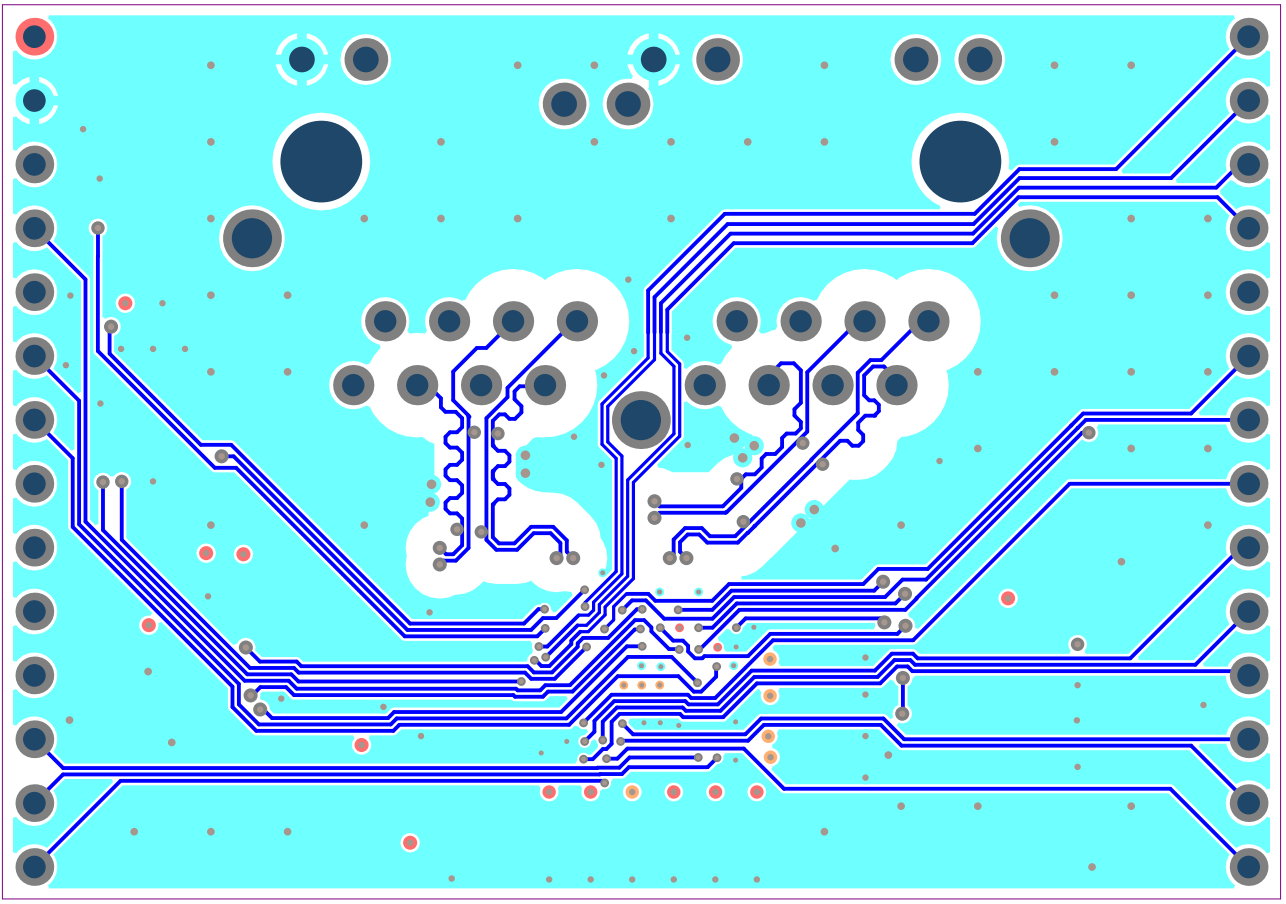

RUN
ERR
LINK_ACT0
LINK_ACT1
EtherCAT®


PDI_SPI_SCK
PDI_SPI_MISO
PDI_SPI_MOSI
PDI_SPI_CSN
MFC_CTRL_SPI_CSN
PDI_SPI_IRQ
PROM_INIT
MFCIO00
MFCIO01
MFCIO02
MFCIO03
MFCIO04
MFCIO05
MFCIO06
VCC
GND
nRESET
SYNC_OUT0
RESET_OUT
LATCH_IN0
LATCH_IN1
PDI_SOF
PDI_EOF
PDI_WDSTATE
PDI_WDTRIGGER
MFCIO09
MFCIO08
MFCIO07
Chip: TMC8462-BA
Supply range: VCC = 3.3V
Interface: RJ45
TMC8462-BOB-ETH_V3.0

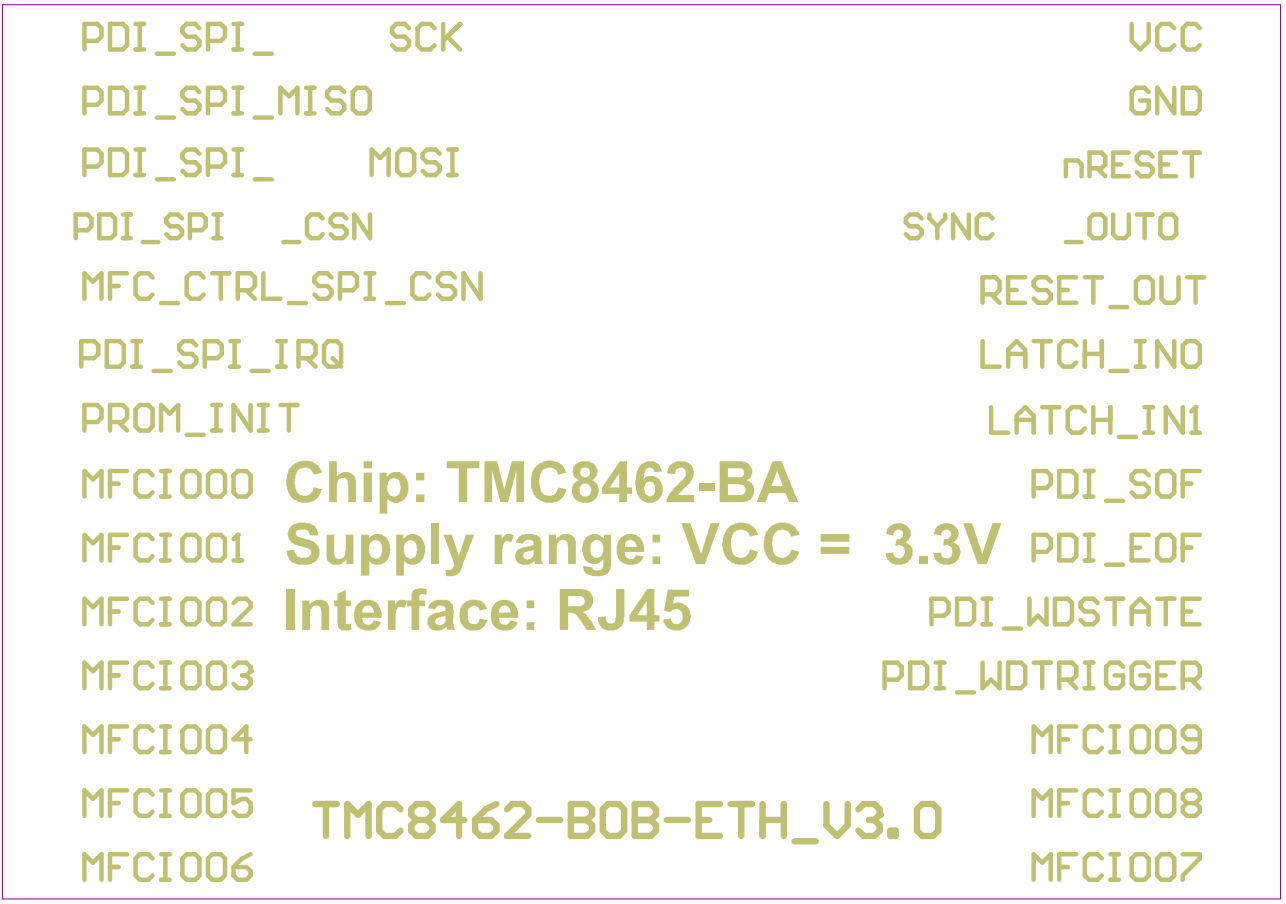


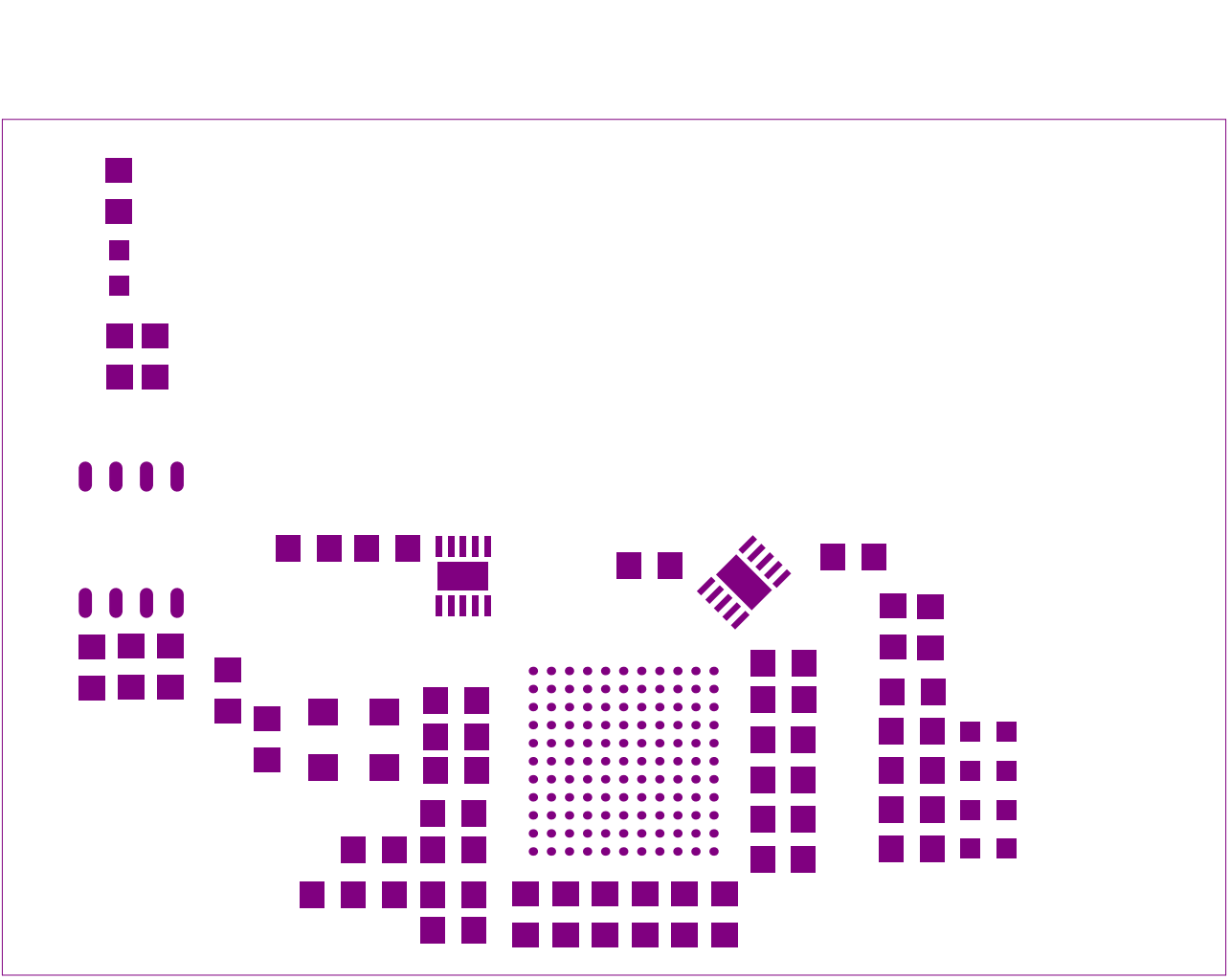


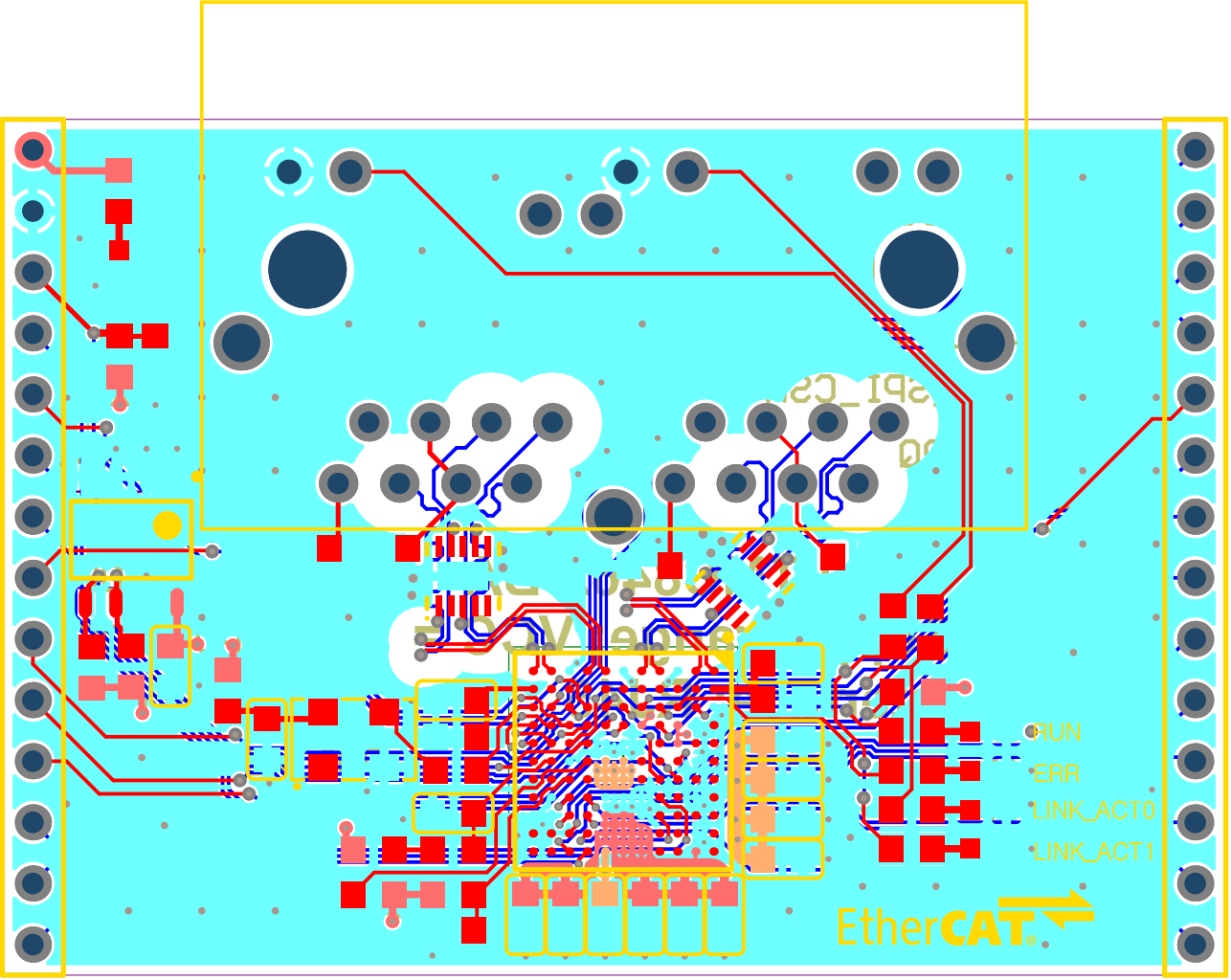




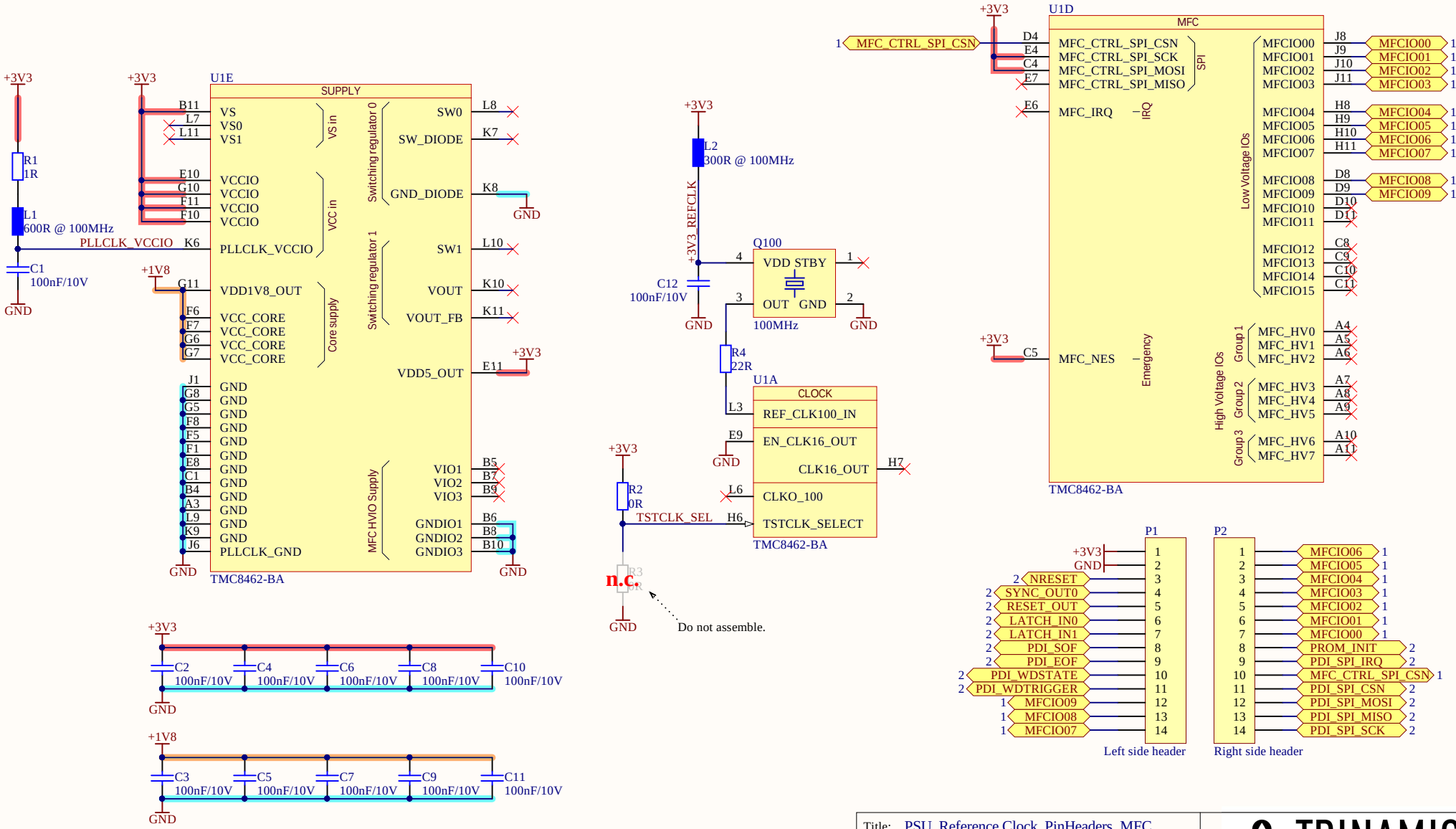
RUN
ERR
LINK_ACT0
LINK_ACT1
EtherCAT®


PDI_SPI_ SCK
PDI_SPI_MISO
PDI_SPI_ MOSI
PDI_SPI _CSN
MFC_CTRL_SPI_CSN
PDI_SPI_IRQ
PROM_INIT
MFCIO00
MFCIO01
MFCIO02
MFCIO03
MFCIO04
MFCIO05
MFCIO06
VCC
GND
nRESET
SYNC _OUTO
RESET_OUT
LATCH_INO
LATCH_IN1
PDI_SOF
PDI_EOF
PDI_WDSTATE
PDI_WDTRIGGER
MFCIO09
MFCIO08
MFCIO07
Chip: TMC8462-BA
Supply range: VCC = 3.3V
Interface: RJ45
TMC8462-BOB-ETH_V3.0



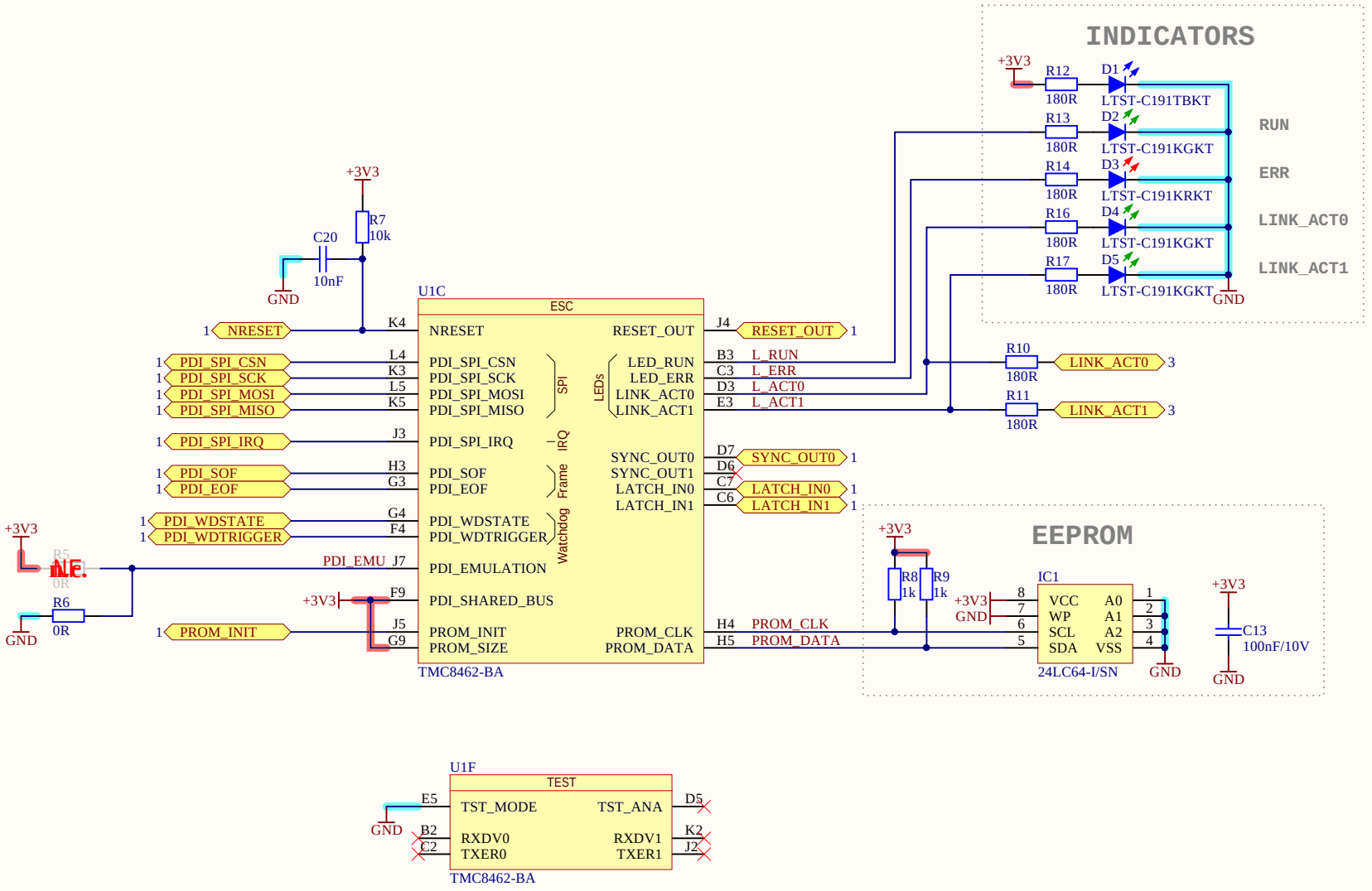

RUN
ERR
LINK_ACT0
LINK_ACT1
EtherCAT

PSU, Reference Clock, PinHeaders, MFC



Title: PSU, Reference Clock, PinHeaders, MFC			
Size: A4	Project: TMC8462-BOB-ETH		Version: 3.0
Date: 29.11.2017	Time: 16:45:21	Sheet 1 of 5	
File: [1]_PSU_RefClock_PinHeaders_MFC.SchDoc			

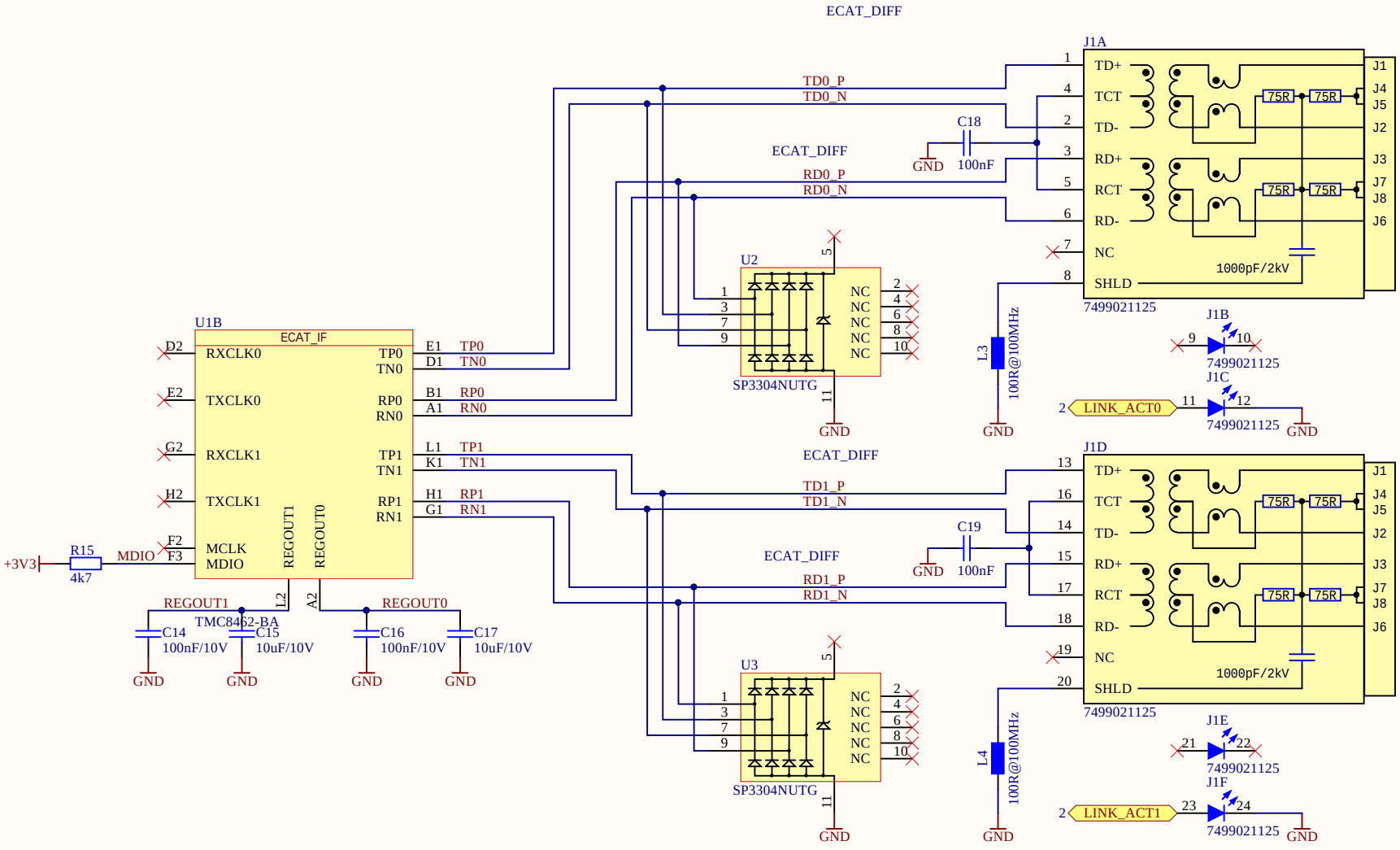
TRINAMIC MOTION CONTROL



Title: MCU, EEPROM, Indicators			
Size: A4	Project: TMC8462-BOB-ETH		Version: 3.0
Date: 29.11.2017	Time: 16:45:22	Sheet 2 of 5	
File: [2]_MCU_EEPROM_Indicators.SchDoc			

TRINAMIC MOTION CONTROL

EtherCAT, RJ45



Title: EtherCAT, RJ45			
Size: A4	Project: TMC8462-BOB-ETH		Version: 3.0
Date: 29.11.2017	Time: 16:45:22	Sheet 3 of 5	
File: [3]_EtherCAT.SchDoc			

TRINAMIC MOTION CONTROL

ChangeLog

V1.0 - Initial design

V2.0 # 22.09.2017
- Fixed Q1 FOX924B pinout bug (swapped pin 3 & 4).

V3.0 # 24.11.2017
- Fixed bottom silkscreen typo (RJ54 -> RJ45)
- Removed SYNC_OUT1 from header row. Connected RESET_OUT instead. SYNC_OUT1 remains unconnected
- Renamed the following pin names in the symbol:
  - CLK_IN_EN_100 renamed to TSTCLK_SELECT
  - CLKIO_100 renamed to CLKO_100
  - REF_CLK25_IN renamed to REF_CLK100_IN
- Removed R2 and R3
- Connected pin H6 (new TSTCLK_SELECT) directly to VCCIO (+3V3)
- Replaced Q1 with a 100MHz oscillator
- Modified NRESET connection: changed R7 to 10K and added a 10nF cap to GND.
- Added two additional green LEDs below the ERR and RUN led. One for LINK_ACT0 and one for One for LINK_ACT1.

27.11.2017
- Swapped RESET_OUT and LATCH_IN0 to have both LATCH_INx pins next to each other.
- Added EtherCAT logo to top silkscreen.

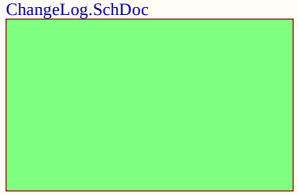
28.11.2017
- Renamed FXSDO to TXER0, FXSD1 to TXER1, FIB_MOD0 to RXDV0, FIB_MOD1 to RXDV1 and moved these signals to sub-part F where all the test signals are on the TMC8462 symbol.

29.11.2017
- Added the pull-up (VCCIO) and pull-down (GND) at pin TSTCLK_SELECT.

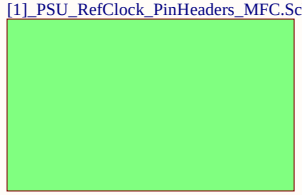
Title: ChangeLog			TRINAMIC MOTION CONTROL
Size: A4	Project: TMC8462-BOB-ETH	Version: 3.0	
Date: 29.11.2017	Time: 16:45:23	Sheet 4 of 5	
File: ChangeLog.SchDoc			

TMC8462-BOB-ETH_V3.0

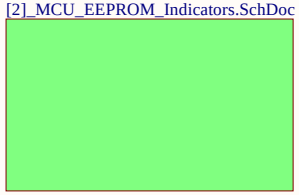
U_ChangeLog
ChangeLog.SchDoc



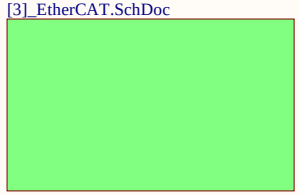
U_[1]_PSU_RefClock_PinHeaders_MFC
[1]_PSU_RefClock_PinHeaders_MFC.SchDoc



U_[2]_MCU_EEPROM_Indicators
[2]_MCU_EEPROM_Indicators.SchDoc



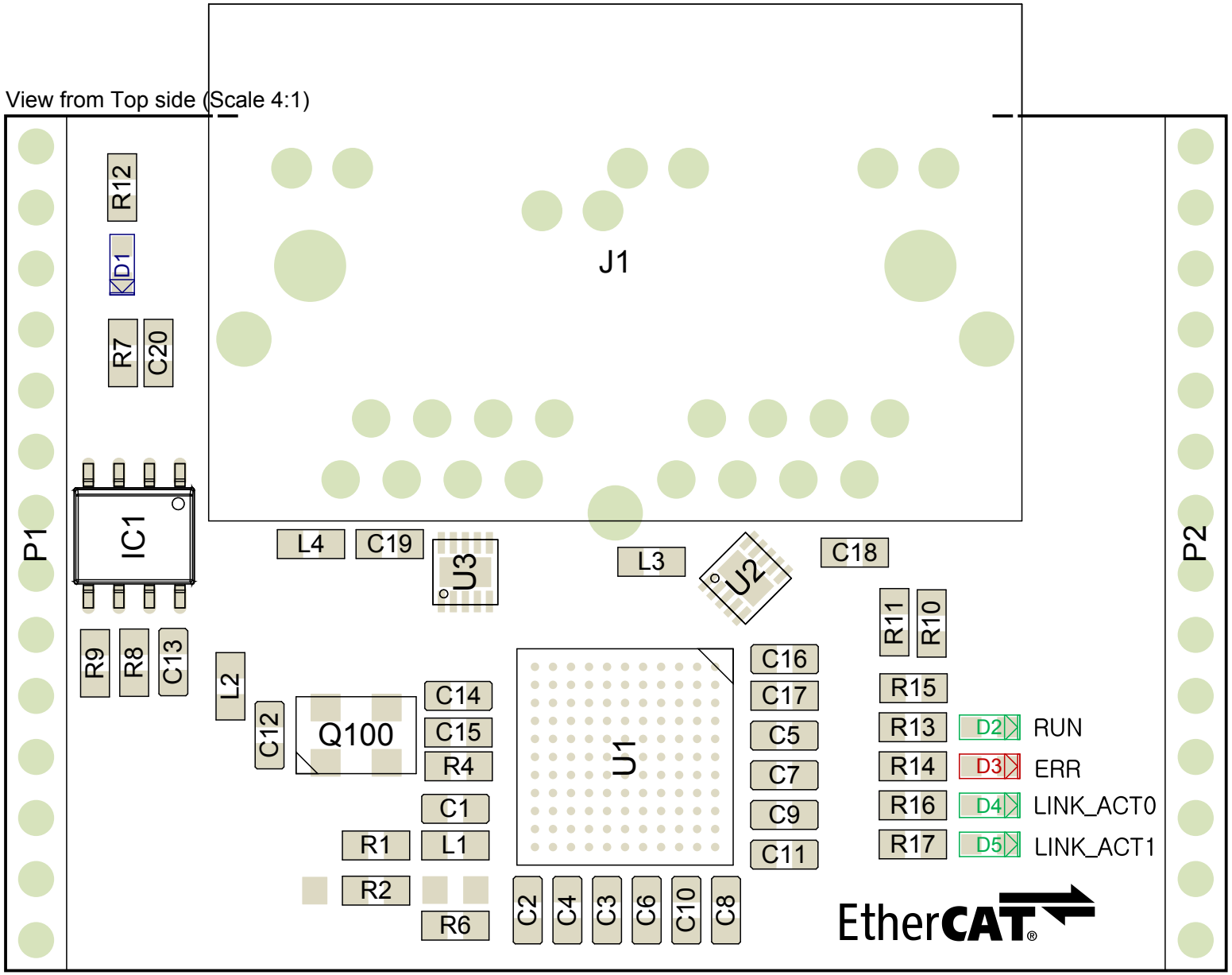
U_[3]_EtherCAT
[3]_EtherCAT.SchDoc



Title: TMC8462-BOB-ETH_V3.0			
Size: A4	Project: TMC8462-BOB-ETH		Version: 3.0
Date: 29.11.2017	Time: 16:45:23	Sheet 5 of 5	
File: TMC8462-BOB-ETH_V3_0.SchDoc			

TRINAMIC
MOTION CONTROL

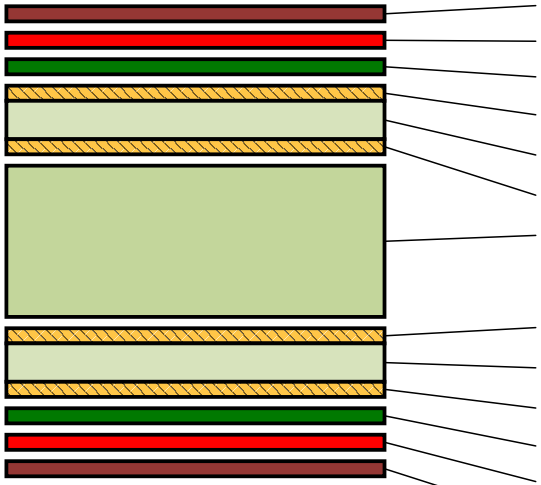
View from Top side (Scale 4:1)



Title: TMC8462-BOB-ETH	
Version: 3.0	
Date: 29.11.2017 Time: 16:45 16:45	

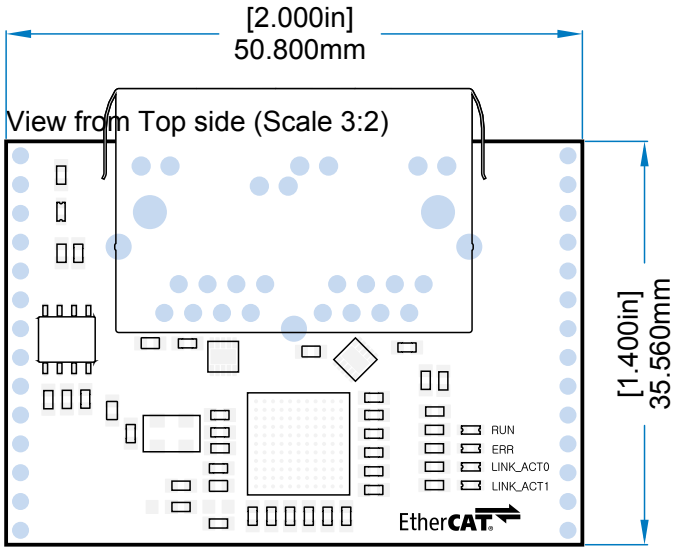
TRINAMIC MOTION CONTROL

Layer Stack Legend



Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Paste			Paste Mask	GTP
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.010mm(0.400mil)	Solder Resist	Solder Mask	GTS
Copper	**Top**	**0.018mm(0.689mil)**		**Signal**	**GTL**
Core		*0.254mm(10.000mil)*	*FR-4*	*Dielectric*	
Copper	**GND**	**0.035mm(1.378mil)**		**Signal**	**G1**
Prepreg		*1.000mm(39.370mil)*	*FR-4*	*Dielectric*	
Copper	**VM**	**0.035mm(1.378mil)**		**Signal**	**G2**
Core		*0.254mm(10.000mil)*	*FR-4*	*Dielectric*	
Copper	**Bottom**	**0.018mm(0.689mil)**		**Signal**	**GBL**
Surface Material	Bottom Solder	0.010mm(0.400mil)	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO
	Bottom Paste			Paste Mask	GBP

Total thickness: 1.633mm(64.304mil)



Notes:

1. MATERIAL : FR-4-2 NATURAL EPOXY/FIBERGLASS
2. APPLY SOLDERMASK ON BOTH SIDES
   COLOR: WHITE
   FABRICATOR SHALL MAKE NECCESSAY MODIFICATIONS TO SOLDERMASK PHOTOPLOT FILES FOR OPTIMAL SOLDERMASK COVERAGE BETWEEN FINE PITCH COMPONENT LEADS.
3. FINISH ALL EXPOSED COPPER SURFACES WITH IMMERSION GOLD.
4. HOLE SIZES APPLY AFTER PLATING.
5. APPLY SILKSCREEN TO BOTH SIDES
   COLOR: BLACK
   FABRICATOR SHALL MAKE NECESSARY MODIFICATIONS TO LEGEND PHOTOPLOT FILES TO ENSURE NO LEGEND INK COVERS ANY COMPONENT PAD OR VIA PAD.
6. MODIFIED PHOTOPLOT FILES ARE TO BE RETURNED BEFORE ORDER DELIVERED.
7. ALL PRINTED CIRCUITBOARD NETS SHALL BE ELECTRICALLY TESTED FOR OPENS AND SHORTS.
8. FABRICATION OF PCB TO COMPLY WITH IPC-A-600 CLASS II . CURRENT REVISION.

Title: TMC8462-BOB-ETH	TRINAMIC MOTION CONTROL
Version: 3.0	
Date: 29.11.2017 Time: 16:45 16:45	

BOM

Project: TMC8462-BOB-ETH

Version: 3.0

Date: 29.11.2017

#	Quantity	MPN	Comment	Designator	Footprint	Description	Note	MF
1	15	MC0603B104K100CT	100nF/10V	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C16	C0603_BYPASS	SMD Multilayer Ceramic Capacitor, 0603 [1608 Metric], 0.1 µF, 10 V, ± 10%, X7R, MC Series		Multicomp
2	2	LMK107BBJ106MALT	10uF/10V	C15, C17	C0603	SMD Multilayer Ceramic Capacitor, 0603 [1608 Metric], 10 µF, 10 V, ± 20%, X5R, M Series		TAIYO YUDEN
3	2	MC0603F104M500CT	100nF	C18, C19	C0603	Ceramic capacitor		
4	1	MC0603B103K500CT	10nF	C20	C0603	SMD Multilayer Ceramic Capacitor, 0603 [1608 Metric], 0.01 µF, 50 V, ± 10%, X7R, MC Series		MULTICOMP
5	1	LTST-C191TBKT	LTST-C191TBKT	D1	LED_0603	Blue 470nm LED Indication - Discrete 3.3V 0603 (1608 Metric)		Lite-On
6	3	LTST-C191KGKT	LTST-C191KGKT	D2, D4, D5	LED_0603	Green 571nm LED Indication - Discrete 2V 0603 (1608 Metric)		Lite-On
7	1	LTST-C191KRKT	LTST-C191KRKT	D3	LED_0603	Red 631nm LED Indication - Discrete 2V 0603 (1608 Metric)		Lite-On
8	1	24LC64-I/SN	24LC64-I/SN	IC1	SOIC127P600X175-8L	EEPROM, I2C, 64 Kbit, 8K x 8bit, 400 kHz, SOIC, 8 Pins		MICROCHIP
9	1	7499021125	7499021125	J1	RJ45_7499021125	Modular Connector, RJ45, WE-RJ45 Series, Jack, 8 Contacts, 8 Ways, 2 Ports		WURTH ELEKTRONIK
10	1	74279265	600R @ 100MHz	L1	L0603	Ferrite Bead, 600 ohm, 0603 [1608 Metric], 200 mA, 0.45 ohm, ± 25%		WURTH ELEKTRONIK
11	1	742792641	300R @ 100MHz	L2	L0603	Ferrite Bead, 300 ohm, 0603 [1608 Metric], 2 A, 0.15 ohm, ± 25%		WURTH ELEKTRONIK
12	2	MPZ1608S101A	100R@100MHz	L3, L4	L0603	Ferrite Bead, 100 ohm, 0603 [1608 Metric], MPZ Series, 3 A, 0.03 ohm, ± 25%		TDK
13	1	ASFLMB-100.000MHZ-LR-T	100MHz	Q100	ASFLMB-100.000MHZ-LR-T	100MHz MEMS (Silicon) LVCMOS Oscillator 1.8 V ~ 3.3 V Standby (Power Down) 4-SMD, No Lead		Abracon LLC
14	1	MCWR06W1R00FTL	1R	R1	R0603	SMD Chip Resistor, Thick Film, 1 ohm, 50 V, 0603 [1608 Metric], 100 mW, ± 1%, MCWR Series		MULTICOMP
15	2	MCWR06X000 PTL	0R	R2, R6	R0603	SMD Chip Resistor, Thick Film, 0 ohm, 0603 [1608 Metric], 100 mW, MCWR Series		MULTICOMP
16	1	MCWR06X22R0FTLV	22R / 100mW / 1%	R4	R0603	SMD Chip Resistor, Thick Film, 22 ohm, 50 V, 0603 [1608 Metric], 100 mW, ± 1%, MCWR Series		MULTICOMP
17	1	MC0063W0603110K	10k	R7	R0603	SMD Chip Resistor, Thick Film, 10 kohm, 50 V, 0603 [1608 Metric], 63 mW, ± 1%, MC Series		MULTICOMP
18	2	MC0063W060311K	1k	R8, R9	R0603	1 kohm, 50 V, 0603 [1608 Metric], 63 mW, ± 1%, MC Series		MULTICOMP
19	7	MCWR06X1800FTL	180R	R10, R11, R12, R13, R14, R16, R17	R0603	SMD Chip Resistor, Thick Film, 180 ohm, 50 V, 0603 [1608 Metric], 100 mW, ± 1%, MCWR Series		MULTICOMP
20	1	WR06X4701FTL	4k7	R15	R0603	SMD Chip Resistor, 4.7 kohm, 75 V, 0603 [1608 Metric], 100 mW, ± 1%, WR06 Series		WALSIN
21	1	TMC8462-BA	TMC8462-BA	U1	BGA121C75P11X11_900X900X140	Integrated EtherCAT Slave Controller, GPIOs, SPI, I2C, PWM, STEP/DIR, 2x 100-Mbit Ethernet PHYs,		TRINAMIC
22	2	SP3304NUTG	SP3304NUTG	U2, U3	SON50P260X55_HS-11N	TVS DIODE 3.3VWM 11.5VC UDFN10		Littelfuse Inc.

Approved

Notes