

The diagram illustrates the pin configuration for the ZL231-16KG module. The module is represented by a green rectangle with pins labeled X2-1 through X2-16. The connections are as follows:

- Left Side Pins (X2-1 to X2-15):**
  - X2-1: +12V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-2: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-3: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-4: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-5: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-6: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-7: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-8: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-9: PWR\_SSTART (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-10: I2C1\_SCL (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-11: FAULT (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-12: I2C1\_SDA (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-13: I2C1\_SDA (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-14: I2C1\_SDA (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-15: I2C1\_SDA (connected to a 10µF capacitor and a 100k resistor to GND)
- Right Side Pins (X2-2 to X2-16):**
  - X2-2: +12V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-3: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-4: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-5: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-6: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-7: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-8: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-9: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-10: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-11: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-12: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-13: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-14: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-15: +5V (connected to a 10µF capacitor and a 100k resistor to GND)
  - X2-16: +5V (connected to a 10µF capacitor and a 100k resistor to GND)

Additional connections include:

- PE (Protective Earth):** Connected to GND.
- +VAUX:** Connected to the module's +5V supply.
- PWR\_DIRECT:** Connected to the module's +5V supply.
- I2C1\_SDA:** Connected to the module's +5V supply.
- +3V3:** Connected to the module's +5V supply.

PE 1	○	○	2 PE
+12V 3	○	○	4 +12V
+5V 5	○	○	6 +5V
Gnd 7	○	○	8 Gnd
Gnd 9	○	○	10 +VAUX
PWR_SSTART 11	○	○	12 PWR_DIRECT
SSCL 13	○	○	14 SSDA
<u>FAULT</u> 15	○	○	16 +3V3

**ZL263-40DG**

Signal	Pin	Signal	Pin
OUT_SER	X1-1	OUT_PAR	X1-2
+VAUX	X1-3	RESET	X1-4
	X1-5	FAULT	X1-6
SPI5_IRQ	X1-7	OE_SYNC	X1-8
SPI5_CSA	X1-9	I2C1_SCL	X1-10
SPI5_CSB	X1-11	I2C1_SDA	X1-12
	X1-13		X1-14
SPI5_CLK	X1-15	SPI5_MISO	X1-16
SPI4_IRQ	X1-17	SPI5_MOSI	X1-18
SPI4_CSB	X1-19	SPI4_CSA	X1-20
SPI4_CLK	X1-21	SPI4_MISO	X1-22
SPI2_IRQ	X1-23	SPI4_MOSI	X1-24
SPI2_CSB	X1-25	SPI2_CSA	X1-26
	X1-27		X1-28
SPI2_MISO	X1-29	SPI2_CLK	X1-30
SPI2_MOSI	X1-31		X1-32
	X1-33		X1-34
	X1-35		X1-36
	X1-37		X1-38
	X1-39		X1-40

Power and Ground connections:

- +3V3 (Left) connects to X1-1, X1-3, X1-5, X1-7, X1-9, X1-11, X1-13, X1-15, X1-17, X1-19, X1-21, X1-23, X1-25, X1-27, X1-29, X1-31, X1-33, X1-35, X1-37, X1-39.
- +5V (Left) connects to X1-1, X1-3, X1-5, X1-7, X1-9, X1-11, X1-13, X1-15, X1-17, X1-19, X1-21, X1-23, X1-25, X1-27, X1-29, X1-31, X1-33, X1-35, X1-37, X1-39.
- +12V (Left) connects to X1-1, X1-3, X1-5, X1-7, X1-9, X1-11, X1-13, X1-15, X1-17, X1-19, X1-21, X1-23, X1-25, X1-27, X1-29, X1-31, X1-33, X1-35, X1-37, X1-39.
- GND (Left) connects to X1-1, X1-3, X1-5, X1-7, X1-9, X1-11, X1-13, X1-15, X1-17, X1-19, X1-21, X1-23, X1-25, X1-27, X1-29, X1-31, X1-33, X1-35, X1-37, X1-39.
- +5V (Right) connects to X1-2, X1-4, X1-6, X1-8, X1-10, X1-12, X1-14, X1-16, X1-18, X1-20, X1-22, X1-24, X1-26, X1-28, X1-30, X1-32, X1-34, X1-36, X1-38, X1-40.
- +12V (Right) connects to X1-2, X1-4, X1-6, X1-8, X1-10, X1-12, X1-14, X1-16, X1-18, X1-20, X1-22, X1-24, X1-26, X1-28, X1-30, X1-32, X1-34, X1-36, X1-38, X1-40.
- GND (Right) connects to X1-2, X1-4, X1-6, X1-8, X1-10, X1-12, X1-14, X1-16, X1-18, X1-20, X1-22, X1-24, X1-26, X1-28, X1-30, X1-32, X1-34, X1-36, X1-38, X1-40.

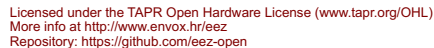
Gnd 1	○	○	2 Gnd
OUT_SER 3	○	○	4 OUT_PAR
+Vaux 5	○	○	6 NRESET
+3V3 7	○	○	8 NFAULT
CH3_IRQ 9	○	○	10 OE_SYNC
CH3_CSA 11	○	○	12 I2C_SCL
CH3_CSB 13	○	○	14 I2C_SDA
Gnd 15	○	○	16 Gnd
CH3_SCLK 17	○	○	18 CH3_MISO
CH2_IRQ 19	○	○	20 CH3_MOSI
CH2_CSB 21	○	○	22 CH2_CSA
CH2_SCLK 23	○	○	24 CH2_MISO
CH1_IRQ 25	○	○	26 CH2_MOSI
CH1_CSB 27	○	○	28 CH1_CSA
Gnd 29	○	○	30 Gnd
CH1_MISO 31	○	○	32 CH1_SCLK
CH1_MOSI 33	○	○	34 Gnd
+5V 35	○	○	36 +5V
+12V 37	○	○	38 +12V
Gnd 39	○	○	40 Gnd

The diagram illustrates a digital I/O interface circuit with various protection features. It includes a TPD4E001DRLR (IC1) for input protection, two SN74LVC2G34DBVR (IC2A, IC2B) inverters, and a BTS3408G (IC3) for output protection. The circuit is powered by +5V and +3V3 rails. Key components include resistors (R2, R3, R4, R6, R7, R8), capacitors (C1, C4, C7), fuses (F1, F2), and diodes (ZD1, ZD2). The circuit has five input lines (X3-1 to X3-5) and four output lines (DOUT1 to DOUT4).

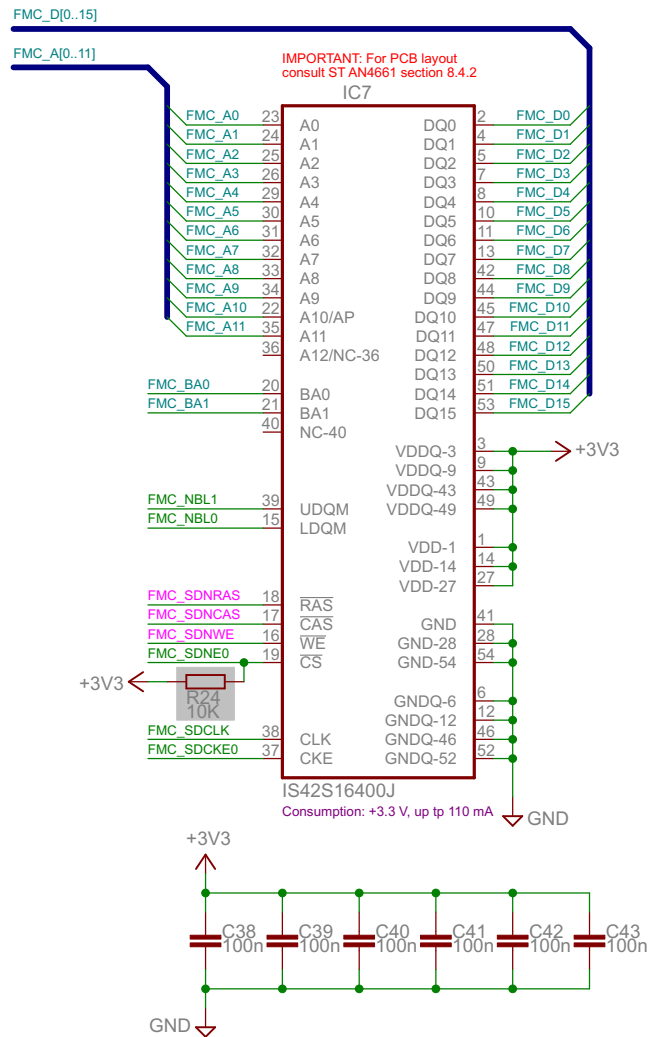
The schematic shows the electrical connections for the A321007 encoder. It includes two switches, SW-1 and SW-2, both labeled PEC16-2215F-S0024. SW-1 has positions A and B. The circuit features several resistors: R1 (4K7), R9 (4K7), R5 (10K), and R10 (10K). Capacitors C2 (10n) and C5 (10n) are connected between the +3V3 supply and ground. Capacitors C3 and C6 (both 10n) are connected between the ENC\_A and ENC\_B signals and ground. The power supply is +3V3, and ground is indicated by GND symbols.

Encoder shaft length: 15 mm  
Knob head: A3131068 (OKW), Knob cap: A3231007 (OKW)

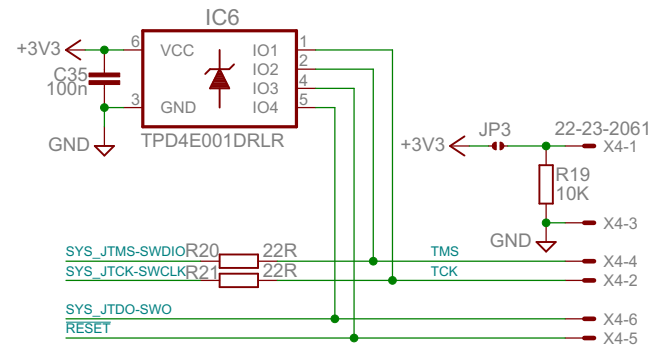
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## SDRAM



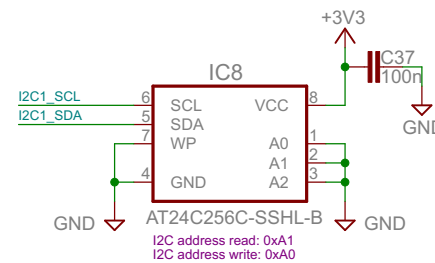
## JTAG (SWD)



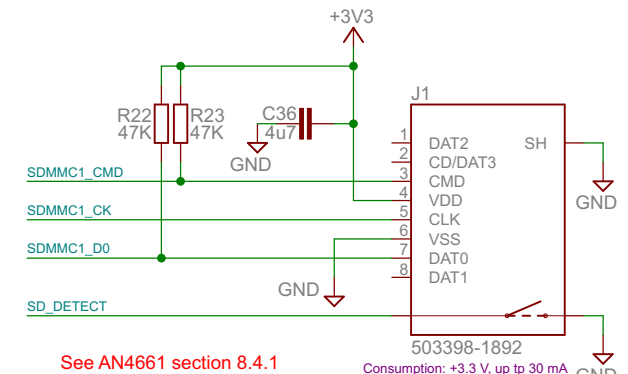
## STM-32 board SWD header

Vdd target 1	○
SWCLK 2	○
Gnd 3	○
SWDIO 4	○
NRST 5	○
SWO 6	○

## I2C EEPROM



## Micro SD card socket



SDRAM, JTAG, I2C EEPROM, SD Card

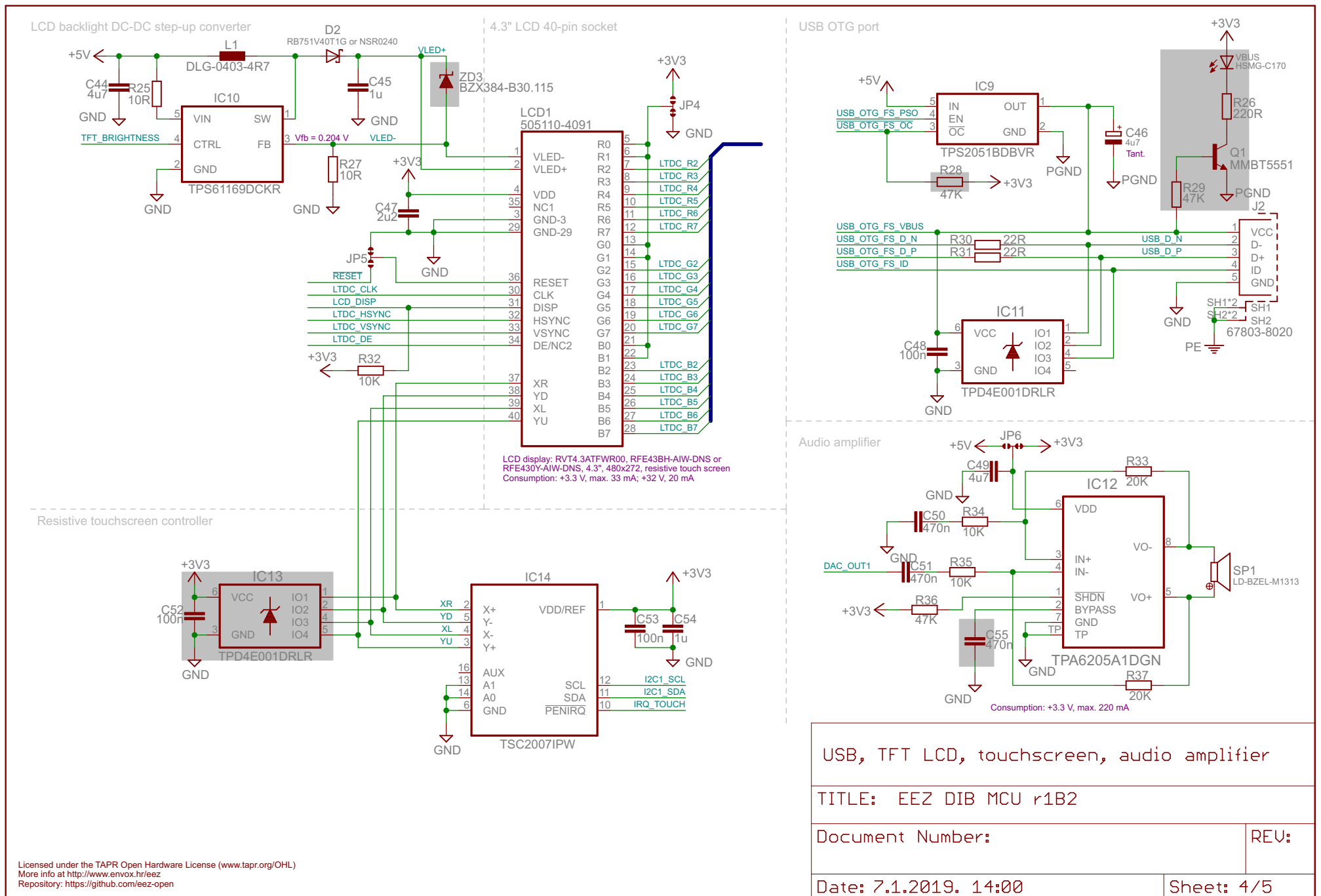
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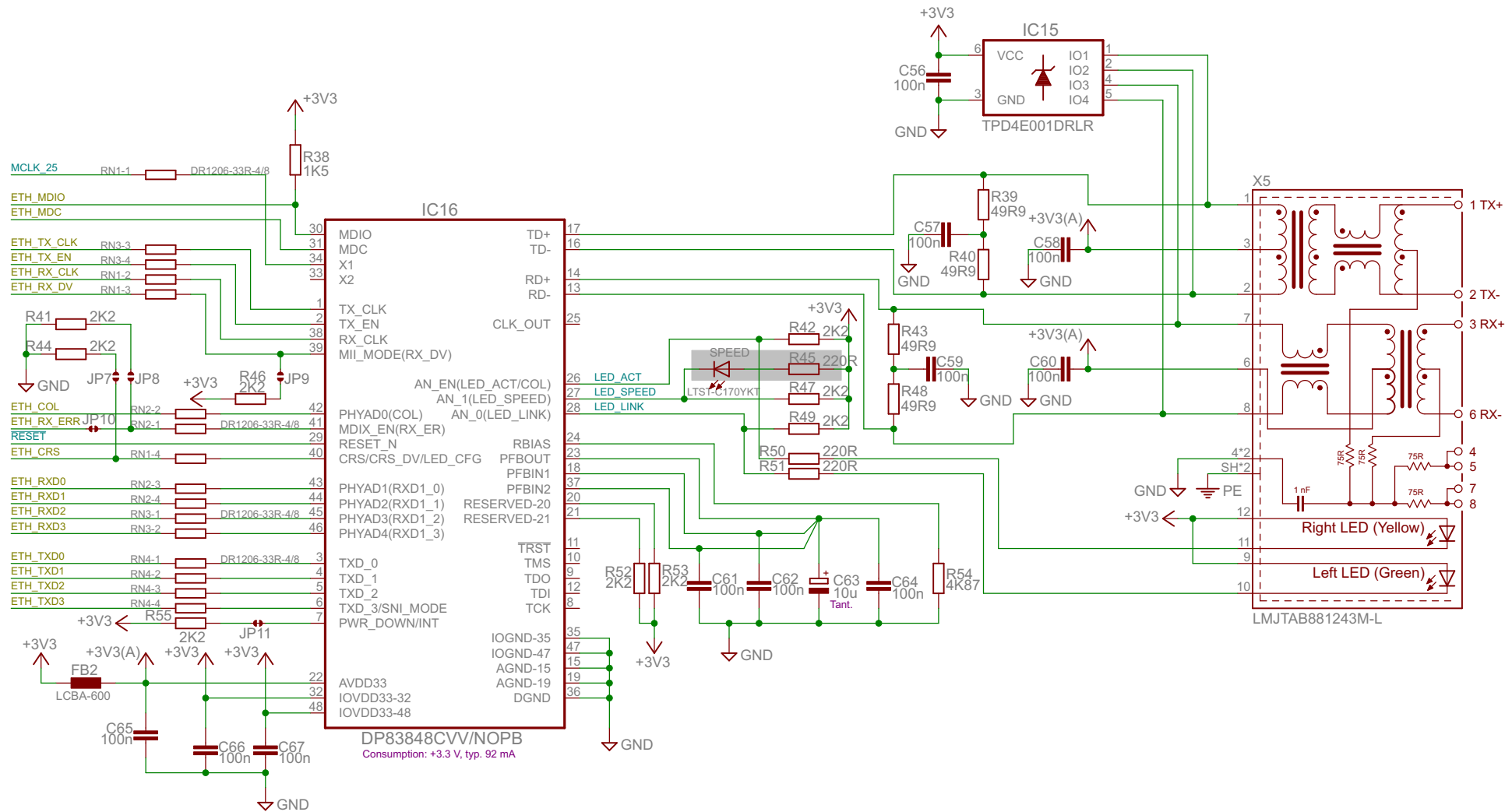
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