



W5300 IP 3D Camera over Single Pair Ethernet “ToffeCam” MCU and Power Supply Part

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MCU	1
Power Supply	1
Fig. 1. MCU schematics.....	2
Fig. 2. Power supply schematics.....	3

MCU

The [STM32U575ZI](#) was chosen for its low power consumption and high computing power.

Supply voltage 3.3V.

16MHz external quartz clock.

Interfaces used:

- I2C to control ToF sensors and camera
- SPI to emulate MDIO for ADIN1100
- USB for diagnostics
- DCMI for the OV2640 camera module
- FMC for the W5300 Internet coprocessor
- PWM for generating clock the OV2640 camera module

Power Supply

The device can be powered from three sources:

- Locally from a 24V power supply,
- Remotely via Power over Data Line
- Via USB with 5V voltage

PoDL and 24V power goes through the [TPS26400](#) protection chip which has the following thresholds set: 18V undervoltage, 30V overvoltage and 0.2A current limit. An isolated DC/DC converter provides an output voltage of 3.3 V.

Power from USB goes through the [LDL112PV3R](#) LDO with reverse current protection.

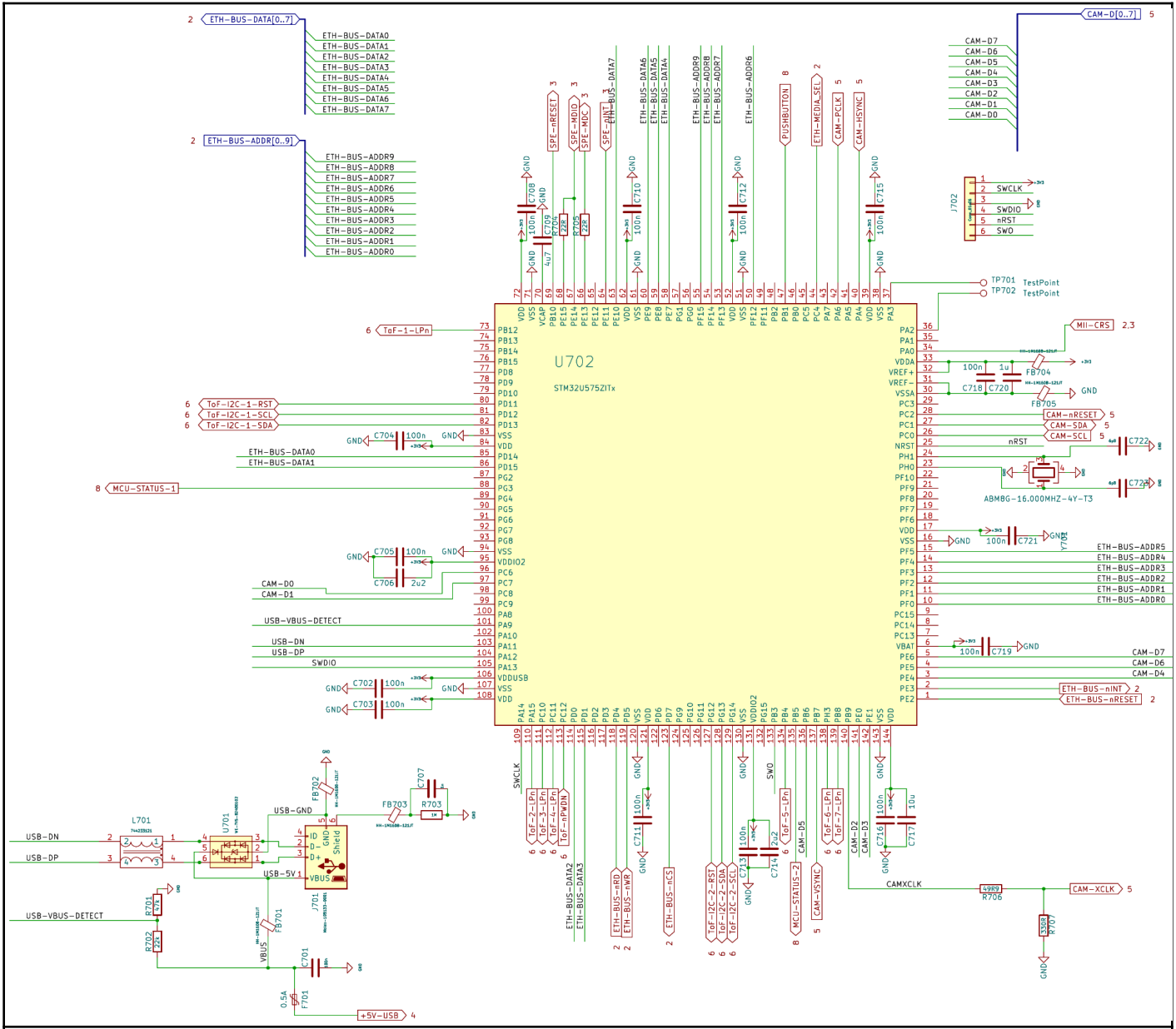


Fig. 1. MCU schematics

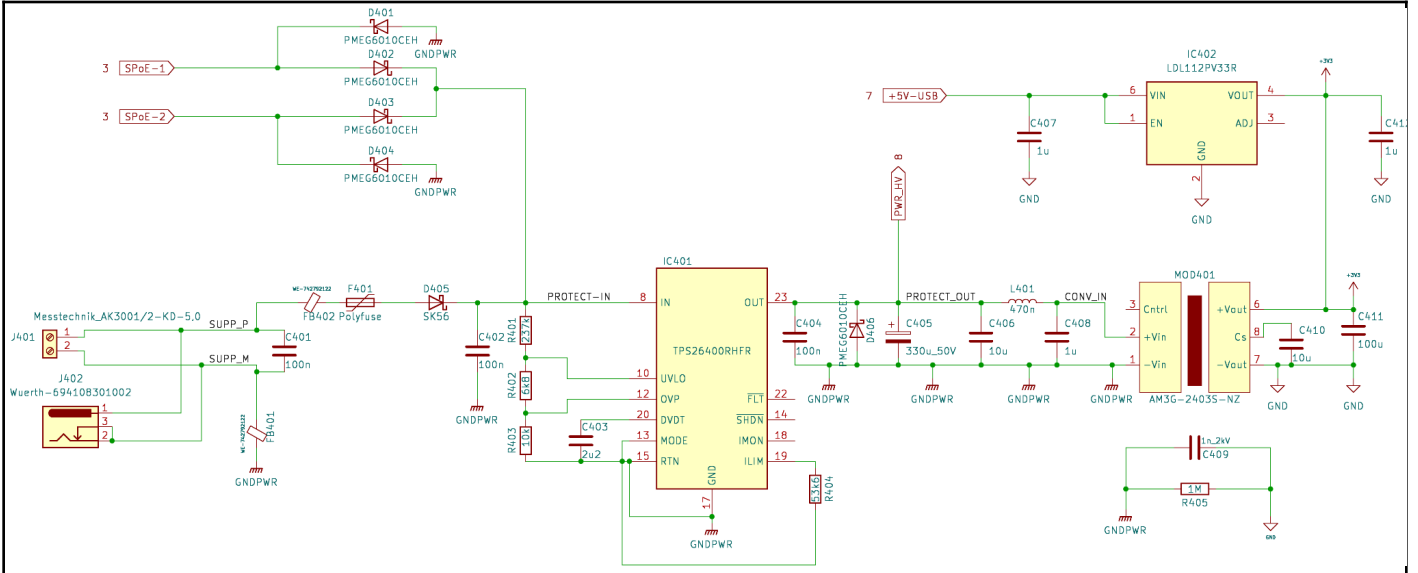


Fig. 2. Power supply schematics