

Gigabit Ethernet Controller II.

PCB V1.1

PCB Overview

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Using this Document

This document is intended for the software and hardware engineer’s reference and provides overview about the PCB of the Gigabit Ethernet Controller II. Though every effort has been made to ensure that this document is current and accurate, more information may have become available subsequent to the production of this guide. In that event, please contact ByteStudio (bytestudio@bytestudio.hu) for additional information that may help in the development process.

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1. PCB Overview

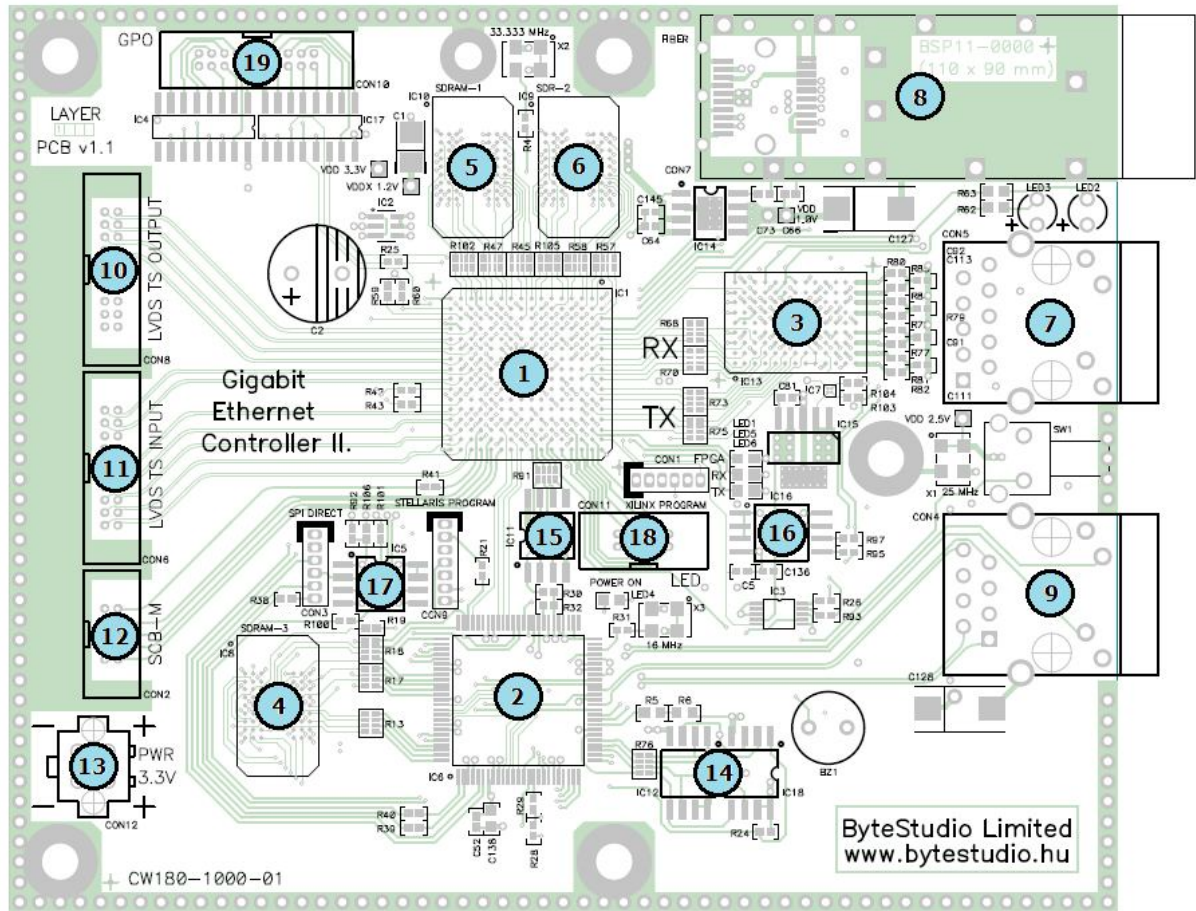


Figure 1. PCB top side

| Integrated Circuit | Description |
|--------------------|--|
| 1 | Xilinx Spartan-6 FPGA (XC6SLX16-2FTG256C) (XC6SLX25-2FTG256C on the PST version) |
| 2 | Texas Stellaris microcontroller (LM3S9B90-IQC80-C5) |
| 3 | Marvell Alaska 10/100/1000 Base-T PHY (88E1111-XX-BAB-C000) connected to the FPGA |
| 4 | 256-Mbit Micron SDRAM (MT48LC16M16) connected to the microcontroller |
| 5, 6 | 2 x 256-Mbit Micron SDRAM (MT48LC16M16) connected to the FPGA |
| 7 | RJ45 LAN Connector of the Marvell PHY |

| | |
|----|--|
| 8 | SFP Connector of the Marvell PHY |
| 9 | RJ45 LAN Connector of the microcontroller (10/100 Base-T) |
| 10 | 20-pin connector (Samtec SHF-110-01-L-D-TH) for data (e.g. Transport Stream) output (connected to the FPGA) |
| 11 | 20-pin connector (Samtec SHF-110-01-L-D-TH) for data (e.g. Transport Stream) input (connected to the FPGA) |
| 12 | 10-pin control (e.g. SPI, IIC, user defined serial bus) connector (Samtec SHF-105-01-L-D-TH, connected to the FPGA) |
| 13 | 3.3 V power connector (Tyco MATE-N-LOK3 2x2MH) |
| 14 | 2 x 64-Mbit SPI Flash (Winbond W25Q64CVSSIG) connected to the microcontroller |
| 15 | 64-Mbit SPI Flash (Winbond W25Q64CVSSIG) connected to the FPGA |
| 16 | 1-Mbit IIC EEPROM (Microchip 24LC1025-I/SM) connected to the microcontroller |
| 17 | FPGA Boot Flash (Winbond W25Q16CVSSIG, the microcontroller can overwrite the flash content to be able to perform firmware upgrade) |
| 18 | 10-pin LED connector (Samtec SHF-105-01-L-D-TH, connected to the FPGA) |
| 19 | 20-pin GPO connector (Samtec SHF-110-01-L-D-TH, driven by two Texas CD74HC595Ms) |

2. Layer stackup

The PCB of the Gigabit Ethernet Controller II. has 4 layers. The recommended layer stackup is the following:

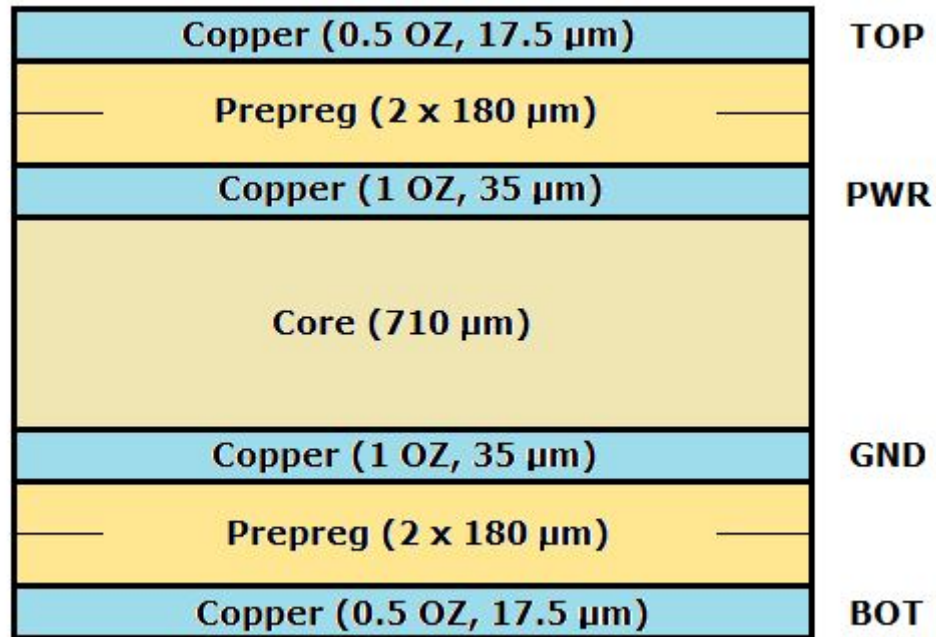


Figure 2. Layer stackup