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Microcontroller

TriBoard TC179X

Hardware: TriBoard-TC179X V5.0
Hardware Manual

User's Manual

V 5.0 2010-01

Microcontrollers

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Revision History: V 5.0 2010-01

Previous Versions: TriBoardManual TC179X V4.1	
Page	Subjects (major changes since last revision)
–	add support of TC1793 Microcontroller
–	change the default flash (was AM29BL162C is obsolete)
–	new schematic and layout

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1 Introduction

We congratulate you on your purchase of the TriCore Evaluation Board. This kit is a versatile tool, providing quick access to the capabilities of TriCore's powerful architecture.

Applications can be developed easily. The Evaluation Board is equipped with a variety of memories and peripherals for connection to the environment. There is also an interface for the On Chip Debugging Features (OCDS1 and DAP). The kit also includes several sets of development tools, which are stored on the included Evaluation Board CD-ROM.

The Evaluation Board allows easily the development of TriCore applications with the corresponding tools.

Subsequently, the applications can be downloaded and can be tested with the powerful debugger software.

This TriBoard Hardware Manual familiarizes you with the TriCore Evaluation Board and guides you through the initial configuration of the TriBoard.

For detailed technical information about the TC179X please refer to the User Manual of the corresponding device.

2 TriBoard Features

The TriBoard TC179X is soldered with a device of the TC179X. This device fit into all members of this product family so that there are no special TriBoards necessary.

2.1 Summary of Features

- Infineon's TC179X (TC1792,TC1796,TC1797) Controller in PG-BGA416 Package
- Infineon's TC1793 Controller in PG-LBGA416 Package
- Burst Flash up to 16MBytes
- asynchronous SRAM up to 1MByte
- synchronous SRAM up to 8 MByte
- FlexRay Transceivers (optional if not with TC1797 or TC1793)
- High Speed CAN Transceivers
- USB to UART bridge
- Crystal 20MHz (default), Oscillator or External Clock
- USB miniWiggler JDS for easy debugging
- 8 Low Power Status LEDs
- 8-DIP switches for configuration
- access to all pins of controller
- 100mm x 160mm (EURO-Board)

Connectors

The TC179X TriBoard offers a wide variety of connectors:

- Standard power connector
- USB connector for ASC Interface (ASC0) and miniWiggler
- 16-pin header for JTAG interface (OCDS)
- 10-pin header for DAP (only TC1797 and TC1793)
- 2 x 10pin (2x5) Header for CAN High Speed Transceiver (CAN0 and CAN1)
- 2 x SUB-D9 Plug connector for FlexRay (optional if not with TC1797 or TC1793)
- four 80-pin connectors (male) + four 80-pin connectors (female) with all I/O signals
- optional ETK connector

Components

- Infineon's Next generation micro controller supply TLE 7368-E (TLE7368-3E for TC1793 if available)
- Three LEDs to validate power supply (5Volt / 3,3 Volt / VCORE)
- LED indicating /HDRST (ESR0) active state
- LED indicating activ miniWiggler JDS
- LED switched via DAS software
- Infineon's FlexRay Communication Controller SAK-CIC310 (optional if not with TC1797 or TC1793)
- 2x FlexRay Transceiver AS8221(AMS) or TJA1080 (NXP) (optional if not woth TC1797 or TC1793)

- 2 x Infineon's High Speed CAN-Transceiver TLE 6250 GV33
- USB to UART bridge FT2232HL (FTDI)
- SPI eeprom (Atmel)

Zero Ohm Bridges

Zero Ohm resistors give the flexibility to configure the systems functionality

2.2 Block Diagram

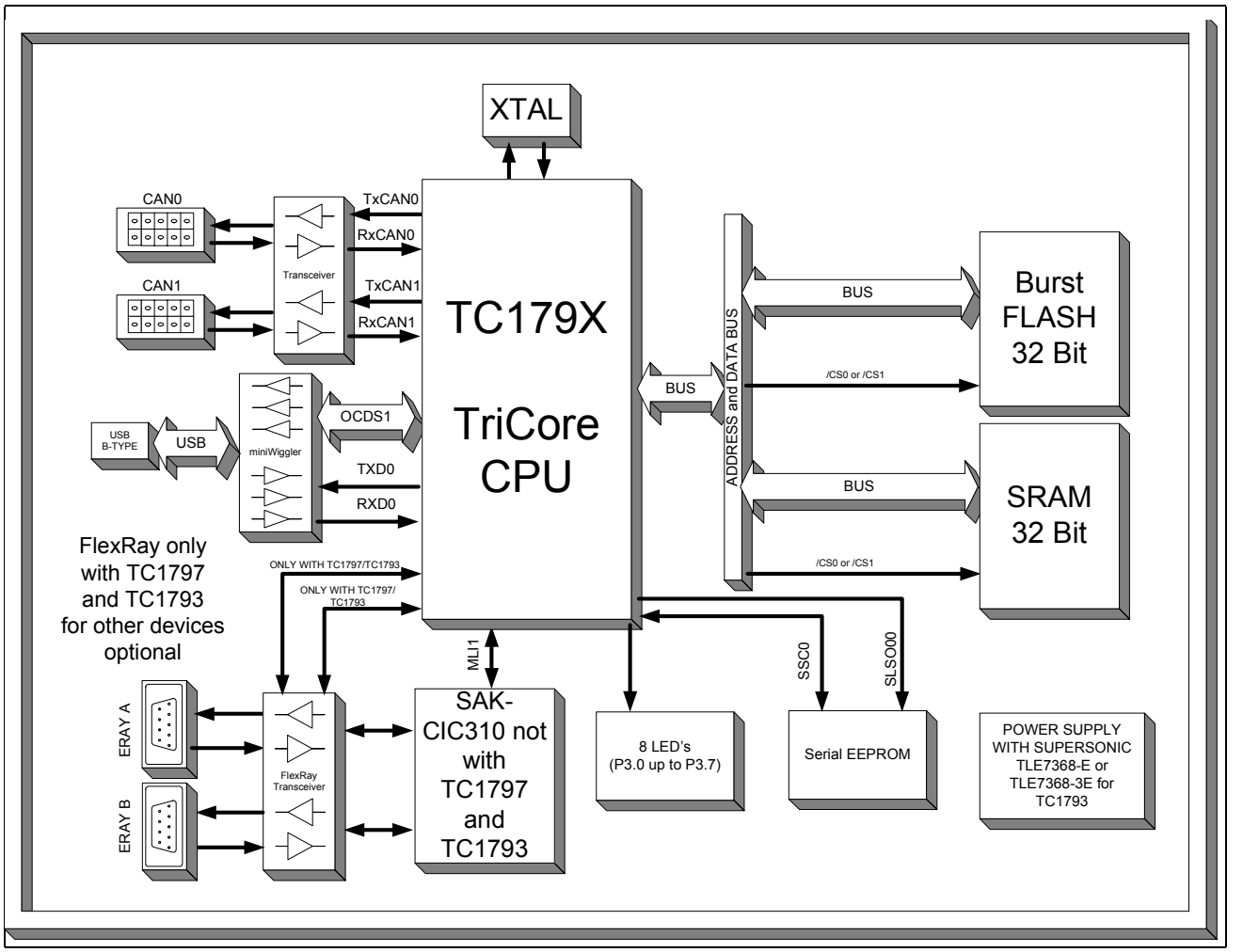

Figure 2-1 TriBoard Block Schematic

2.3 Placement

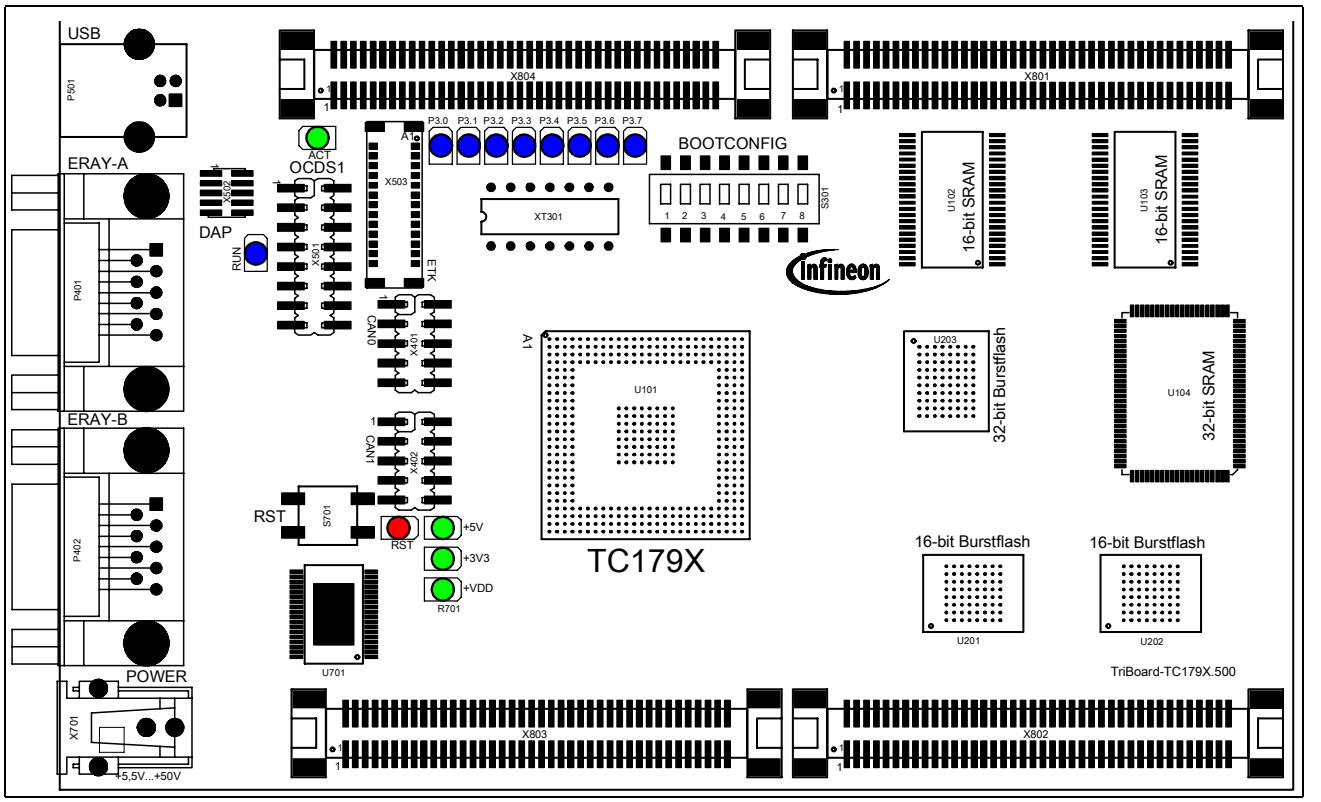

Figure 2-2 TriBoard TC179X V5.0 Placement

3 TriBoard Information

3.1 Power Supply

The Board has to be connected to a +5,5V to +50V DC power supply. The TriBoard generates internally +3.3V, +VDD and +5V. The power consumption is not specified yet but a supply with 6V and 500mA should be sufficient. The pinout for the supply connector is shown in **Figure 7-5**. There can be used any standard power pack with a connector where the positive line is surrounded by the ground line.

+VDD can be +1,3V (TC1793) or +1,5V (all other devices).

Applying a stable supply voltage causes the power on reset after a short period. The four LED's (+5V, +3.3V, +VDD) indicate the status of the on board generated voltage (if the LEDs are assembled).

A manual reset is executed by pressing the reset button.

3.2 LEDs

There are 14 on board:

- D501 up to D508 (blue) -> toogle LEDs connected to P3.0 ... P3.7
- D604 RST (red) -> RESET LED indicate the reset state of the board
- D505 +VDD (green) -> +VDD power supply indication (+1.3V/+1.5V)
- D606 +3V3 (green) -> +3,3V power supply indication
- D607 +5V (green) -> +5V power supply indication
- D402 ACT (green) -> on board miniWiggler JDS is ACTIV
- D401 RUN (blue) -> Debug RUN mode (switched by DAS Server)

3.3 Clock

There are three possibilities to apply the CPU clock.

- Large oscillator circuit (DIP14)
- Small oscillator circuit (DIP8)
- Crystal (default with 20MHz)
- External clock generator

The crystal oscillator and the oscillator circuit use the socket XT301. It's possible to apply a 14pol DIP oscillator package or an 8pol DIP oscillator package.

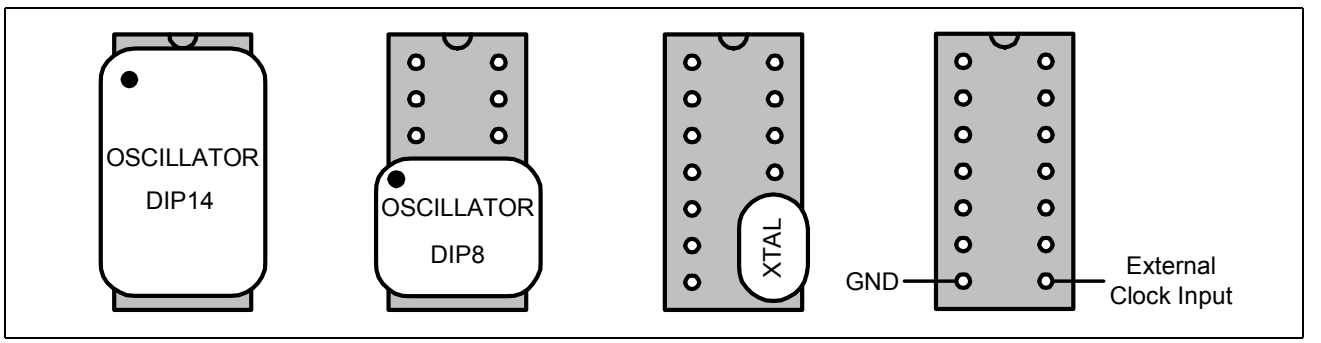

Figure 3-1 Clock socket usage (XT301)

3.4 Memory

The TriBoard supports the following memory configurations:

- up to 8 MBytes external Burst Flash (2x16Bit) or
- 4 MBytes external Burst Flash (1x32Bit) or
- up to 4MBytes external Burst Flash (1x16Bit) - only with TC1797 and TC1793
- 1 MBytes external asynchronous SRAM (2x16Bit) or
- up to 8 MBytes external synchronous SRAM (1x32Bit) or
- 512 KBytes external asynchronous SRAM (1x16Bit) - only with TC1797 and TC1793

For the OnBoardMemory are reserved chip select 0 and 1. Therefore only two parts, e.g. 2x16Bit Flash and 2x16Bit asynchronous SRAM, should be assembled and can be used at the same time. Chip Select 2 and 3 are not used on the board and can be used externally.

The Board supports programming though the JTAG port (OCDS1).

3.5 FLASH

The flash uses 32 Data Bits (AD0...AD31) and 20, 21 or 22 Address Bits (A0...A19,A20 or A21). It's accessed via /CS0 or /CS1. Each type of flash has its own resistor to connect to /CS0 or /CS1. To connect different flashs see **Table 4-5**.

Note: Only +3,3V Flash is usable with this board.

3.6 SRAM

The SRAM uses 32 Data Bits (AD0...AD31) and up to 22 Address Bits (A0...A20).

It's accessed via /CS0 or /CS1. Each type of SRAM has its own resistor to connect to /CS0 or /CS1. To connect different SRAMs see **Table 4-5**.

Note: Only +3,3V SRAM is usable with this board.

3.7 USB Connector

The USB connector is used for connection to a PC. Via the USB it is possible to power the board, using the ASC0 as serial connection via USB and Debugging via DAS. For the pinout of USB socket see **Figure 7-6**.

NOTE: Before connecting the board to the PC, make sure that the actual DAS software is installed on the PC. For actual DAS software please contact your local FAE.

The software can also be found on the

DAS website

3.7.1 Serial Connection to PC

After the first connection of USB to a PC the needed driver will be installed automatically. During this there will be created a new COM port on PC. This COM port can be used to communicate with the board via ASC0 of the device (e.g. bootstrap loader).

3.7.2 miniWiggler JDS

The miniWiggler JDS is a low cost debug tool which allows you access to the JTAG of the device. Make sure that you have the latest DAS release. Debugging is possible via the DAS Server 'UDAS'. Please contact your prefered debug vendor for support of DAS.

If you have connected the board to the PC and there runs the DAS server, then a working connection is visible via the blue ACTIV LED.

The status RUN LED is switched on/off through the DAS Server, depending on the used debugger (client).

IMPORTANT: Make sure that there is no or a tristated connection on X501 (OCDS1) and X502 (DAP) if the ACTIV LED is on.

3.8 FlexRay / E-Ray (optional if not with TC1797/TC1793)

The FlexRay devices are only assembled if the board is with TC1797, TC1793 or with the FlexRay option.

The board has 2 SUB-D connectors for FlexRay Communication with up to 10 Mbit/s.

If the controller has an E-Ray modul (like TC1797 and TC1793) then the transceiver are connected directly to the controller, else there is the SAK-CIC310 (IFlex) assembled and the transceiver are connected to the IFlex.

If the SAK-CIC310 is assembled, then the IFlex is connected to MLI1 of the controller. As interrupts inputs of TC179X are used P7.0, P7.1, P7.4 and P7.5.

For more information look in the user manual for TC1797, TC1793 or SAK-CIC310 and the schematics **Figure 8-5**.

3.8.1 FlexRay as option

If the board comes without FlexRay (e.g. with TC1796) then you can add the FlexRay option by assembling the following parts:

- U401 with SAK-CIC310 (Infineon)
- U402 and U403 with AS8221 (AMS) or TJA1080 (NXP) (if with TJA1080 then resistors R466-R471 and capacitor CB412 and CB416 must be assembled with 0R and 100n, package 0603)
- Y401 with 20MHz crystal (5x3mm SMD, e.g. NDK NX5032GA)
- T401 and T402 with B82790-S513-N (Epcos)

3.9 Serial Eeprom

The SSC0 of the TC179X is connected to a serial EEPROM with a size of 128K (16.384 x 8). As chip select for this EEPROM is used the line SLSO00 (P10.4). To disconnect (disable) the EEPROM remove resistor R453.

3.10 MultiCAN

On the board are two CAN transceiver connected to the MultiCAN on TC179X node 0 and 1. The transceivers are connected to two IDC10 plug. For the pinout of IDC10 plug see **Figure 7-8**. You can use a IDC female connector with crimpconnector, flat cable and SUB-D 9 plug with crimpconnector to have a 1:1 adapter to SUB-D 9.

3.11 Other peripherals

For all other peripherals there are no special plugs on the board. The peripheral signals are available on the different connectors. See **“Connector for TC1797/TC1793 - Pinout (Part I, Top View)” on Page 7-2** and **“Connector for other TC179X - Pinout (Part I, Top View)” on Page 7-4**.

Note: - SLSO00 is used as chip select for the serial eeprom on board.

3.12 Toggle LED’s

Port 3 pin 0 up to pin 7 are connected to single LED’s (D601... D608) and can be controlled by Software. This status LED’s are low active.

3.13 Debug System

3.13.1 OCDS1

The OCDS1 signals are connected to the IDC16 plug (X501). They work with the port supply of +3.3V. For pinout of the connector see **Figure 7-7**. You can connect any debugger to this connector.

The signals /BRKIN and /BRKOUT are not connected per default. If you need this signals in the connector then assemble R525 and R524 with a 0R resistor.

If you connect a debug hardware make sure that the miniWiggler JDS (see **“miniWiggler JDS” on Page 3-3**) is not activ (ACTIV LED is off) and on the DAP connector (X502) is no hardware connected or the hardware is tristated.

If the ACTIV LED is on, then stop the active DAS Server ’UDAS’ and/or remove the USB connection to the PC.

3.13.2 DAP

The board comes with a DAP connector (X502). For pinout of this connector see **Figure 7-9**. You can connect a DAP hardware here. If you use this connector make sure that the miniWiggler JDS is not activ (ACTIV LED is off) and a connected OCDS1 hardware is disconnected or tristated.

4 TriBoard Configuration

4.1 HW Boot Configuration TC1797 and TC1793

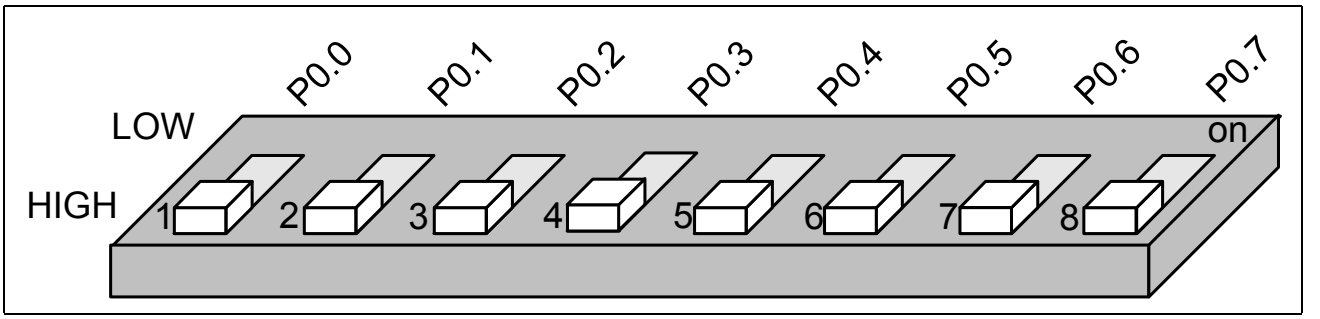

Figure 4-1 HW Configuration TC1797 and TC1793 DIP-Switch

The picture above shows the definition of the boot HW configuration switch. The meaning of the switches will be described in the following tables (**Table 4-1** / **Table 4-2**).

Note: The ON position of the switch is equal to a logical LOW at the dedicated pin.

Table 4-1 User Startup Modes for TC1793

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch numbers

HWCFG[7...0]	Type of Boot TC1793	1	2	3	4	5	6	7	8
11XXXXXX	Internal Start from Flash	X	X	X	X	X	X	OFF	OFF
011XXXXX	Internal Start from Flash	X	X	X	X	X	OFF	OFF	ON
010XXXXX	Bootstrap Loader Mode, Generic Bootloader at CAN pins	X	X	X	X	X	ON	OFF	ON
10101XXX	Bootstrap Loader Mode, ASC Bootloader	X	X	X	OFF	ON	OFF	ON	OFF
10100XXX	Internal Alternate Boot Mode, ASC Bootloader on fail	X	X	X	ON	ON	OFF	ON	OFF

Table 4-1 User Startup Modes for TC1793

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch numbers

HWCFG[7...0]	Type of Boot TC1793	1	2	3	4	5	6	7	8
1011XXXX	Internal Alternate Boot Mode, Generic Bootloader at CAN pins on fail	X	X	X	X	OFF	OFF	ON	OFF
1000XXXX	Internal Alternate Boot Mode, Generic Bootloader at CAN pins on fail	X	X	X	X	ON	ON	ON	OFF
1001011X	External Alternate Boot Mode (EBU arbiter), ASC Bootloader on fail	X	OFF	OFF	ON	OFF	ON	ON	OFF
1001010X	External Alternate Boot Mode (EBU participant), ASC Bootloader on fail	X	ON	OFF	ON	OFF	ON	ON	OFF
1001001X	External Alternate Boot Mode (EBU arbiter), ASC Bootloader on fail, FNA mode	X	OFF	ON	ON	OFF	ON	ON	OFF
1001000X	External Alternate Boot Mode (EBU participant), ASC Bootloader on fail, FNA mode	X	ON	ON	ON	OFF	ON	ON	OFF
1001111X	External Alternate Boot Mode (EBU arbiter), Generic Bootloader at CAN pins on fail	X	OFF	OFF	OFF	OFF	ON	ON	OFF
1001110X	External Alternate Boot Mode (EBU participant), Generic Bootloader at CAN pins on fail	X	ON	OFF	OFF	OFF	ON	ON	OFF
1001101X	External Alternate Boot Mode (EBU arbiter), Generic Bootloader at CAN pins on fail, FNA mode	X	OFF	ON	OFF	OFF	ON	ON	OFF
1001100X	External Alternate Boot Mode (EBU participant), Generic Bootloader at CAN pins on fail, FNA mode	X	ON	ON	OFF	OFF	ON	ON	OFF

Table 4-1 User Startup Modes for TC1793

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch numbers

HWCFG[7...0]	Type of Boot TC1793	1	2	3	4	5	6	7	8
0010011X	External Start from /CS0 (EBU arbiter), Default EBU Configuration	X	OFF	OFF	ON	ON	OFF	ON	ON
0010111X	External Start from /CS0 (EBU arbiter), Automatic EBU Configuration	X	OFF	OFF	OFF	ON	OFF	ON	ON
0010001X	External Start from /CS0 (EBU arbiter), Default EBU Configuration, FNA mode	X	OFF	ON	ON	ON	OFF	ON	ON
0010101X	External Start from /CS0 (EBU arbiter), Automatic EBU Configuration, FNA mode	X	OFF	ON	OFF	ON	OFF	ON	ON
0010010X	External Start from /CS0 (EBU participant), Default EBU Configuration	X	ON	OFF	ON	ON	OFF	ON	ON
0010110X	External Start from /CS0 (EBU participant), Automatic EBU Configuration	X	ON	OFF	OFF	ON	OFF	ON	ON
0010000X	External Start from /CS0 (EBU participant), Default EBU Configuration, FNA mode	X	ON	ON	ON	ON	OFF	ON	ON
0010100X	External Start from /CS0 (EBU participant), Automatic EBU Configuration, FNA mode	X	ON	ON	OFF	ON	OFF	ON	ON
0001X00X	Bootstrap Loader Mode, Generic Bootloader at CAN pins, FNA mode	X	ON	ON	X	OFF	ON	ON	ON
0001X01X	Bootstrap Loader Mode, ASC Bootloader, FNA mode	X	OFF	ON	X	OFF	ON	ON	ON

Table 4-1 User Startup Modes for TC1793

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch numbers

HWCFG[7...0]	Type of Boot TC1793	1	2	3	4	5	6	7	8
0001X10X	External ABM, Generic Bootloader, Default EBU Configuration, FNA mode	X	ON	OFF	X	OFF	ON	ON	ON
0001X11X	External ABM, ASC Bootloader, Default EBU Configuration, FNA mode	X	OFF	OFF	X	OFF	ON	ON	ON
all others	reserved; don't use this combination								

Table 4-2 User Startup Modes for TC1797

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch numbers

HWCFG[7...0]	Type of Boot TC1797	1	2	3	4	5	6	7	8
11XXXXXX	Internal Start from Flash	X	X	X	X	X	X	OFF	OFF
010XXXX0	Bootstrap Loader Mode, Generic Bootloader at CAN pins	ON	X	X	X	X	ON	OFF	ON
10101XX0	Bootstrap Loader Mode, ASC Bootloader	ON	X	X	OFF	ON	OFF	ON	OFF
10100XX0	Internal Alternate Boot Mode, ASC Bootloader on fail	ON	X	X	ON	ON	OFF	ON	OFF
1011XXXX	Internal Alternate Boot Mode, Generic Bootloader at CAN pins on fail	X	X	X	X	OFF	OFF	ON	OFF
10010110	External Alternate Boot Mode (EBU arbiter), ASC Bootloader on fail	ON	OFF	OFF	ON	OFF	ON	ON	OFF

Table 4-2 User Startup Modes for TC1797

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch numbers

HWCFG[7...0]	Type of Boot TC1797	1	2	3	4	5	6	7	8
10010100	External Alternate Boot Mode (EBU participant), ASC Bootloader on fail	ON	ON	OFF	ON	OFF	ON	ON	OFF
10010010	External Alternate Boot Mode (EBU arbiter), ASC Bootloader on fail, FNA mode	ON	OFF	ON	ON	OFF	ON	ON	OFF
10010000	External Alternate Boot Mode (EBU participant), ASC Bootloader on fail, FNA mode	ON	ON	ON	ON	OFF	ON	ON	OFF
10011110	External Alternate Boot Mode (EBU arbiter), Generic Bootloader at CAN pins on fail	ON	OFF	OFF	OFF	OFF	ON	ON	OFF
10011100	External Alternate Boot Mode (EBU participant), Generic Bootloader at CAN pins on fail	ON	ON	OFF	OFF	OFF	ON	ON	OFF
10011010	External Alternate Boot Mode (EBU arbiter), Generic Bootloader at CAN pins on fail, FNA mode	ON	OFF	ON	OFF	OFF	ON	ON	OFF
10011000	External Alternate Boot Mode (EBU participant), Generic Bootloader at CAN pins on fail, FNA mode	ON	ON	ON	OFF	OFF	ON	ON	OFF
00100110	External Start from /CS0 (EBU arbiter), Default EBU Configuration	ON	OFF	OFF	ON	ON	OFF	ON	ON
00101110	External Start from /CS0 (EBU arbiter), Automatic EBU Configuration	ON	OFF	OFF	OFF	ON	OFF	ON	ON
00100010	External Start from /CS0 (EBU arbiter), Default EBU Configuration, FNA mode	ON	OFF	ON	ON	ON	OFF	ON	ON

Table 4-2 User Startup Modes for TC1797

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch numbers

HWCFG[7...0]	Type of Boot TC1797	1	2	3	4	5	6	7	8
00101010	External Start from /CS0 (EBU arbiter), Automatic EBU Configuration, FNA mode	ON	OFF	ON	OFF	ON	OFF	ON	ON
00100100	External Start from /CS0 (EBU participant), Default EBU Configuration	ON	ON	OFF	ON	ON	OFF	ON	ON
00101100	External Start from /CS0 (EBU participant), Automatic EBU Configuration	ON	ON	OFF	OFF	ON	OFF	ON	ON
00100000	External Start from /CS0 (EBU participant), Default EBU Configuration, FNA mode	ON	ON	ON	ON	ON	OFF	ON	ON
00101000	External Start from /CS0 (EBU participant), Automatic EBU Configuration, FNA mode	ON	ON	ON	OFF	ON	OFF	ON	ON
0001X000	Bootstrap Loader Mode, Generic Bootloader at CAN pins, FNA mode	ON	ON	ON	X	OFF	ON	ON	ON
0001X010	Bootstrap Loader Mode, ASC Bootloader, FNA mode	ON	OFF	ON	X	OFF	ON	ON	ON
0001X100	External ABM, Generic Bootloader, Default EBU Configuration, FNA mode	ON	ON	OFF	X	OFF	ON	ON	ON
0001X110	External ABM, ASC Bootloader, Default EBU Configuration, FNA mode	ON	OFF	OFF	X	OFF	ON	ON	ON
all others	reserved; don't use this combination								

4.2 HW Boot Configuration all other TC179X

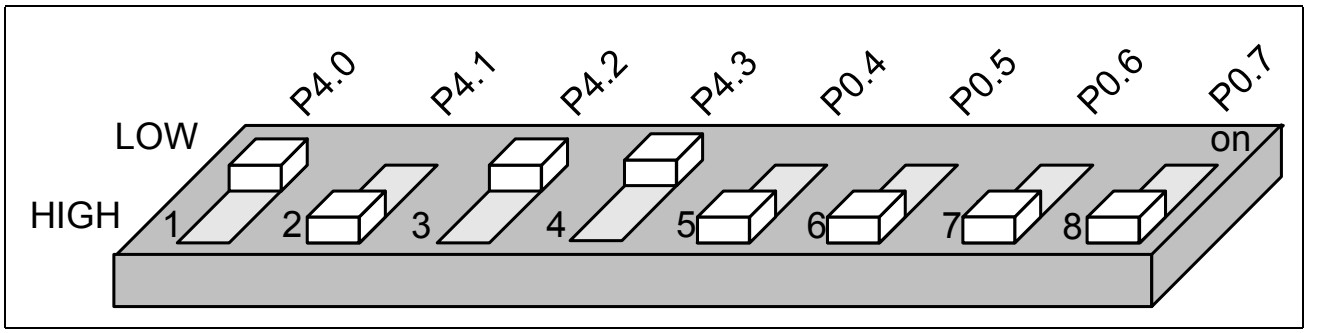

Figure 4-2 HW Configuration for all other TC179X DIP-Switch

The picture above shows the definition of the boot HW configuration switch. The meaning of the switches will be described in the following table (**Table 4-3**).

Note: The ON position of the switch is equal to a logical LOW at the dedicated pin.

Table 4-3 User Startup Modes for all other TC179X

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch number

P4[3...0]	P0[7...4]	Type of Boot TC179X	1	2	3	4	5	6	7	8
0000	XXXX	Serial boot from ASC0 to PMI scratchpad via ASC0 pins, run loaded program	ON	ON	ON	ON	X	X	X	X
0001	XXXX	Serial boot from CAN0 to PMI scratchpad, run loaded program	OFF	ON	ON	ON	X	X	X	X
0010	XXXX	Start from internal flash	ON	OFF	ON	ON	X	X	X	X
0011	XXXX	Alternate Boot Mode, Generic Boot Loader on fail depends on P0[2...0]	OFF	OFF	ON	ON	X	X	X	X
0100	XXXX	Start from external memory with EBU as master, using /CS0, automatic EBU Configuration	ON	ON	OFF	ON	X	X	X	X

Table 4-3 User Startup Modes for all other TC179X

Note: The shadowed line indicates the default setting.

Note: 'x' represents the don't care state.

Note: 1 to 8 are the Dip Switch number

P4[3...0]	P0[7...4]	Type of Boot TC179X	1	2	3	4	5	6	7	8
0101	XXXX	External ABM with EBU as master, using /CS0, automatic EBU Configuration, Generic Boot Loader on fail depends on P0[2...0]	OFF	ON	OFF	ON	X	X	X	X
0110	XXXX	Start from external memory with EBU as participant, using /CS0, automatic EBU Configuration	ON	OFF	OFF	ON	X	X	X	X
0111	XXXX	External ABM with EBU as participant, using /CS0, automatic EBU Configuration, Generic Boot Loader on fail depends on P0[2...0]	OFF	OFF	OFF	ON	X	X	X	X
1000	XXXX	Boot from emulation memory (ED only)	ON	ON	ON	OFF	X	X	X	X
1111	XXXX	Serial boot from ASC0 to PMI scratchpad via CAN0 pins, run loaded program	OFF	OFF	OFF	OFF	X	X	X	X
all others	all others	reserved; don't use this combination								

4.3 Assembly Options

Table 4-4 General optional resistors

Component	Description
R305	XTAL Rserial (default: assembled)
R306	XTAL Rparallel (default: not assembled)
R523	Connect /BRKOUT with miniWiggler JDS (default: not assembled)
R524	Connect /BRKOUT with OCDS1 connector (default: not assembled)
R527	Connect /BRKIN with USR1 of miniWiggler JDS (default: not assembled
R529	Connect /BRKIN with USR1 of DAP (default: not assembled
R525	Connect /BRKIN with OCDS1 connector(default: not assembled)
R528	Connect /TESTMODE with USR1 of miniWiggler JDS (default: not assembled
R530	Connect /TESTMODE with USR1 of DAP (default: not assembled
R526	Connect /TESTMODE with OCDS1 connector(default: not assembled)
R532	Connect debug reset with /PORST(default: assembled)
R531	Connect debug reset with /HDRST (default:not assembled)
R610	Connect +3,3V to all toggle LEDs (default: assembled)
R723	Connect reset switch with /PORST(default: assembled)
R724	Connect reset switch with /HDRST (default:not assembled)
R704	Connect P1.2 with MONSTBY of power device (default: not assembled)
R706	Connect P1.3 with WDO of power device (default: not assembled)
R709	Connect P1.15 with WDI of power device (default: not assembled)

Note: All resistors are red marked in the following figures

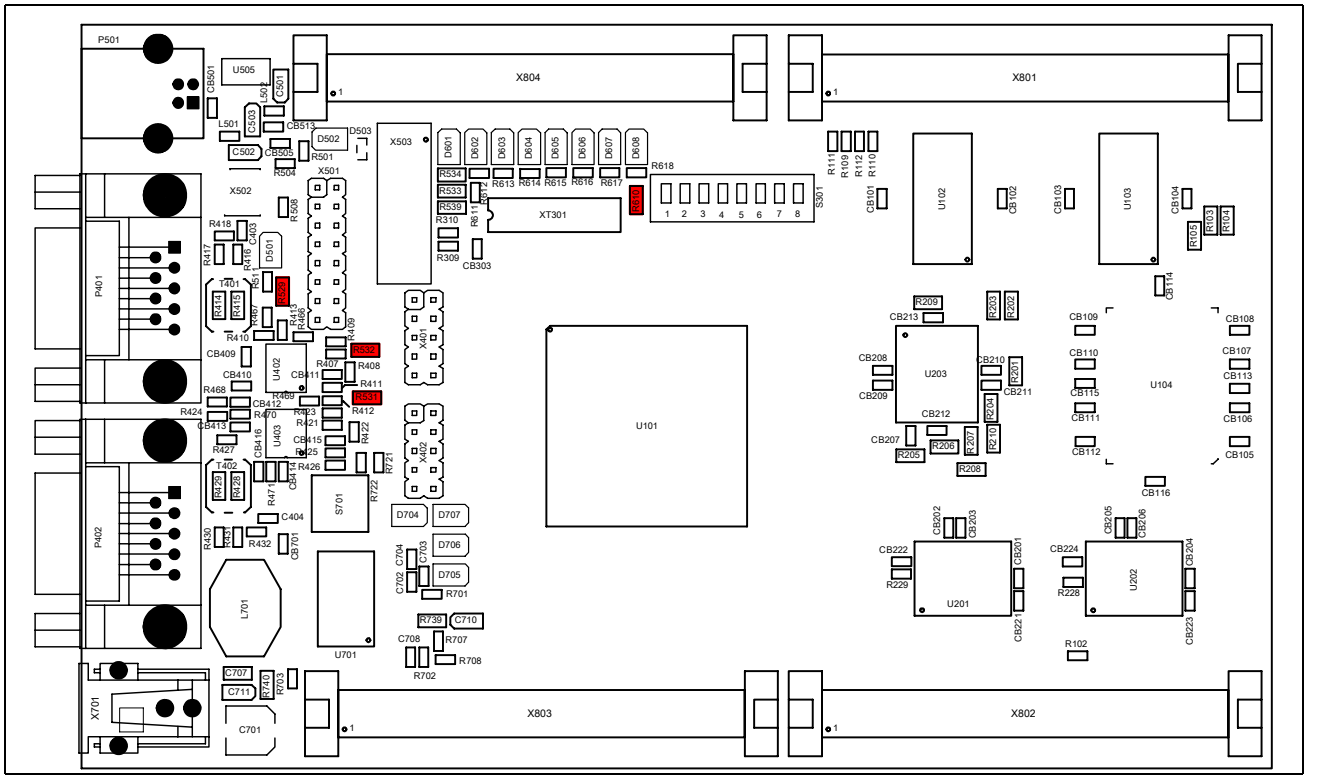

Figure 4-3 Location of general optional resistors on Top Side

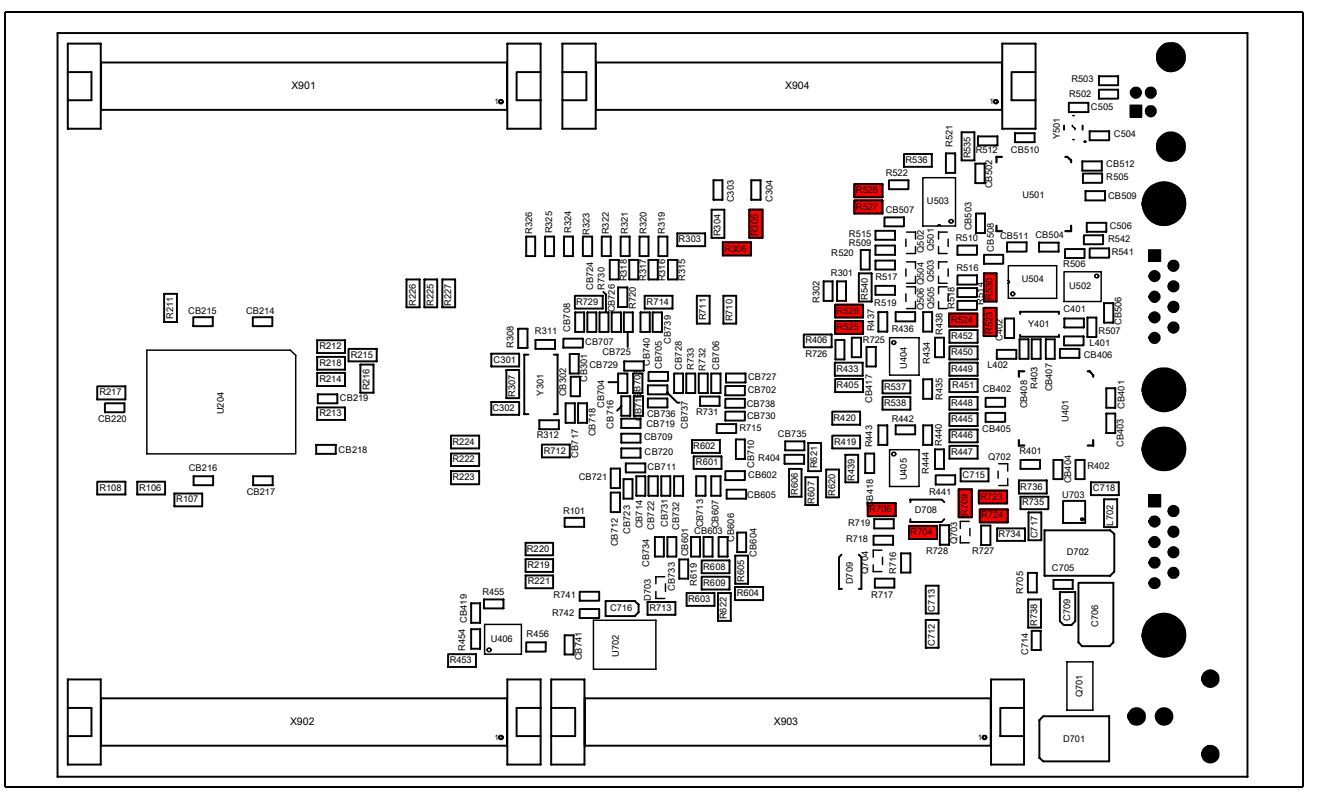

Figure 4-4 Location of general optional resistors on Bottom Side

Table 4-5 Resistors for peripherals

Component	Description
R433	Connect P6.8 with RXD of CAN0 transceiver (default: assembled)
R439	Connect P6.10 with RXD of CAN1 transceiver (default: assembled)
R453	Connect P10.4 (SLSO0) with /CS of Eeprom (default: assembled)
R540	Connect P5.0 with TXD of USB to UART (default: assembled)
R604	Connect VAREF0 with VDDM (default: assembled)
R605	Connect VAGND0 with VSSM (default: assembled)
R606	Connect VAREF1 with VDDM (default: assembled)
R607	Connect VAGND1 with VSSM (default: assembled)
R601	Connect VAREF2 with VDDM (default: assembled)
R608	Connect VFAREF with VDDMF (default: assembled)
R609	Connect VFAGND with VSSMF (default: assembled)
R620	Connect +5V with VDDM (default: assembled on TC1797/TC1793)
R621	Connect +3,3V with VDDM (default: assembled if not TC1797/TC1793)

Note: All resistors are red marked in the following figures

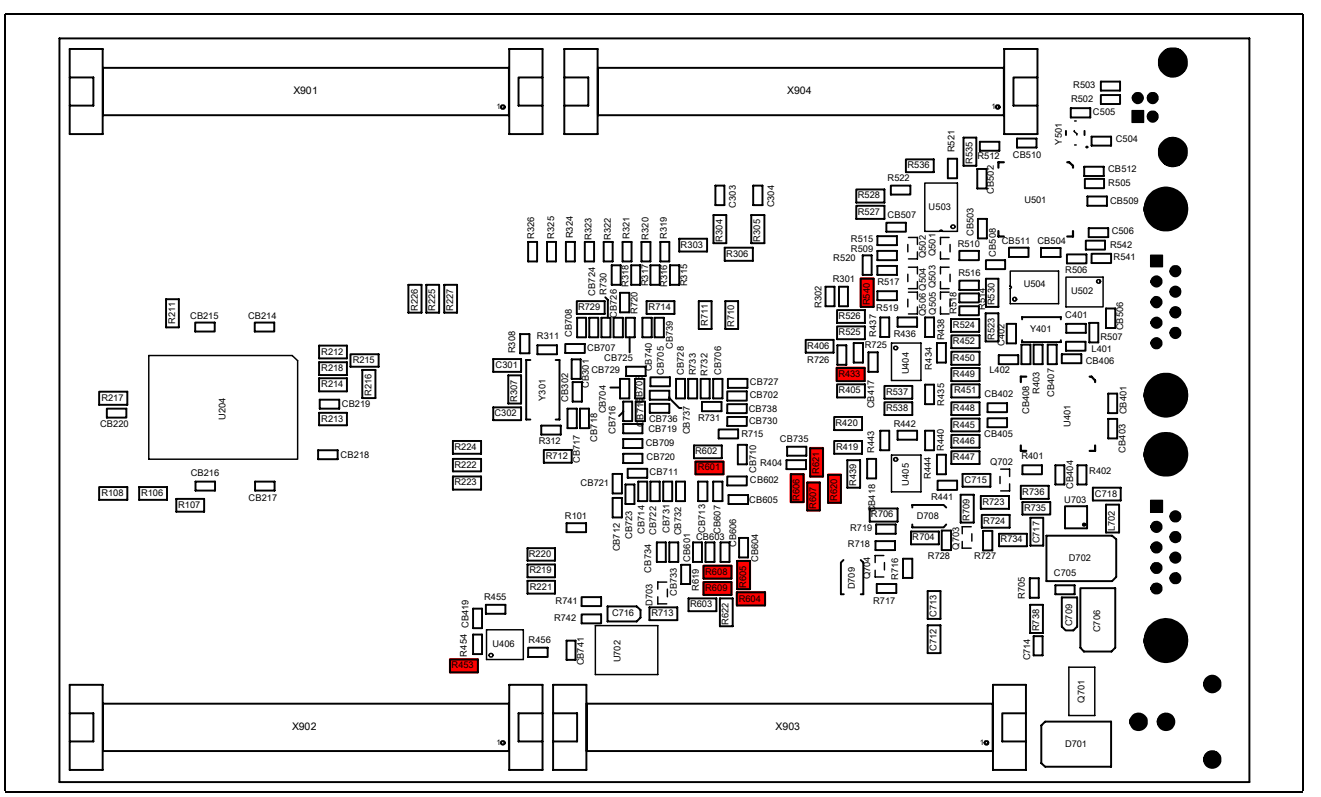

Figure 4-5 Location of peripheral resistors on Bottom Side

Table 4-6 Resistors for memories

Component	Description
R103	Connect /CS1 to 16-bit SRAMs (default: assembled)
R104	Connect /CS0 to 16-bit SRAMs (default: not assembled)
R106	Connect /CS1 to 32-bit SRAM (default: not assembled)
R107	Connect /CS0 to 32-bit SRAM (default: not assembled)
R219	Connect /CS0 to 16-bit Flashs (default: assembled)
R220	Connect /CS1 to 16-bit Flashs (default: not assembled)
R222	Connect /CS0 to 32-bit BGA Flash (default: not assembled)
R223	Connect /CS1 to 32-bit BGA Flash (default: not assembled)
R225	Connect /CS0 to 32-bit PQFP Flash (default: not assembled)
R226	Connect /CS1 to 32-bit PQFP Flash (default: not assembled)

Note: All resistors are red marked in the following figures

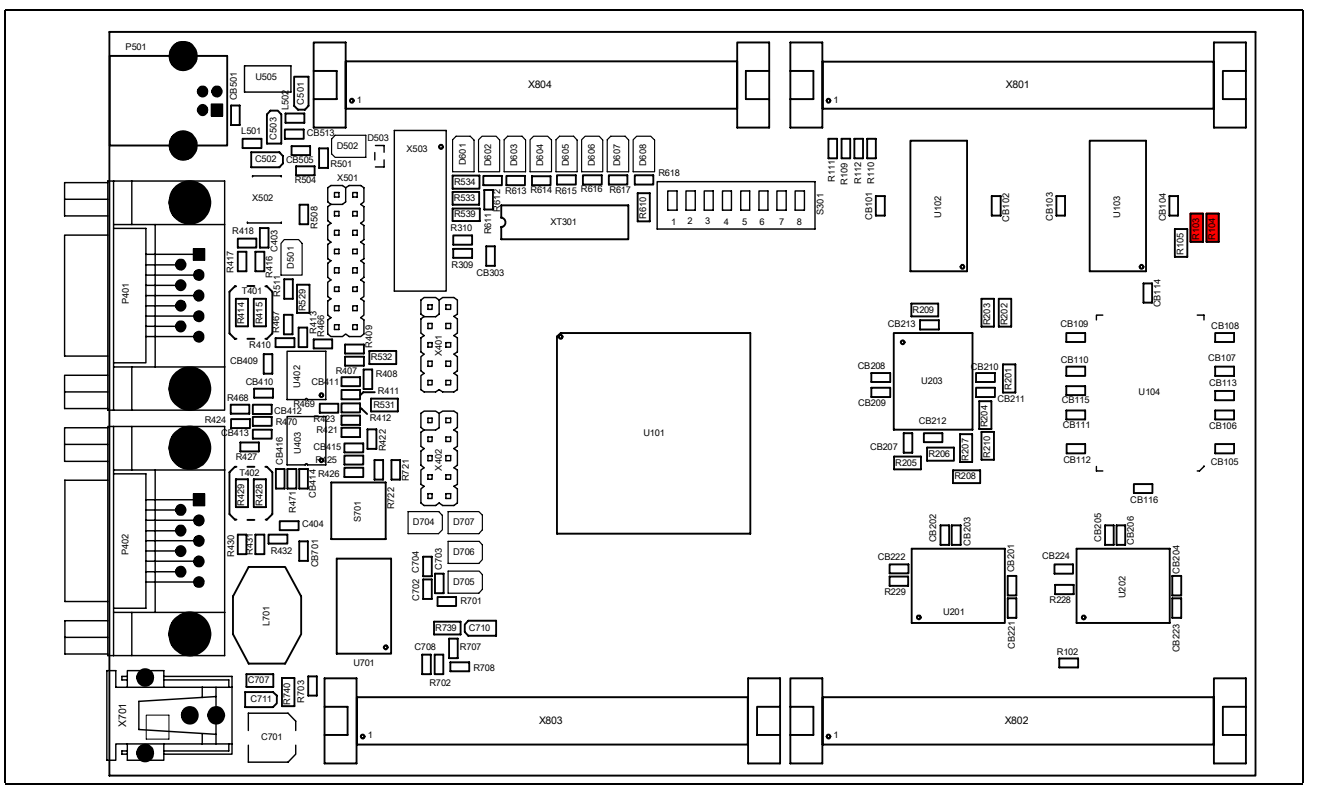

Figure 4-6 Location of memories resistors on Top Side

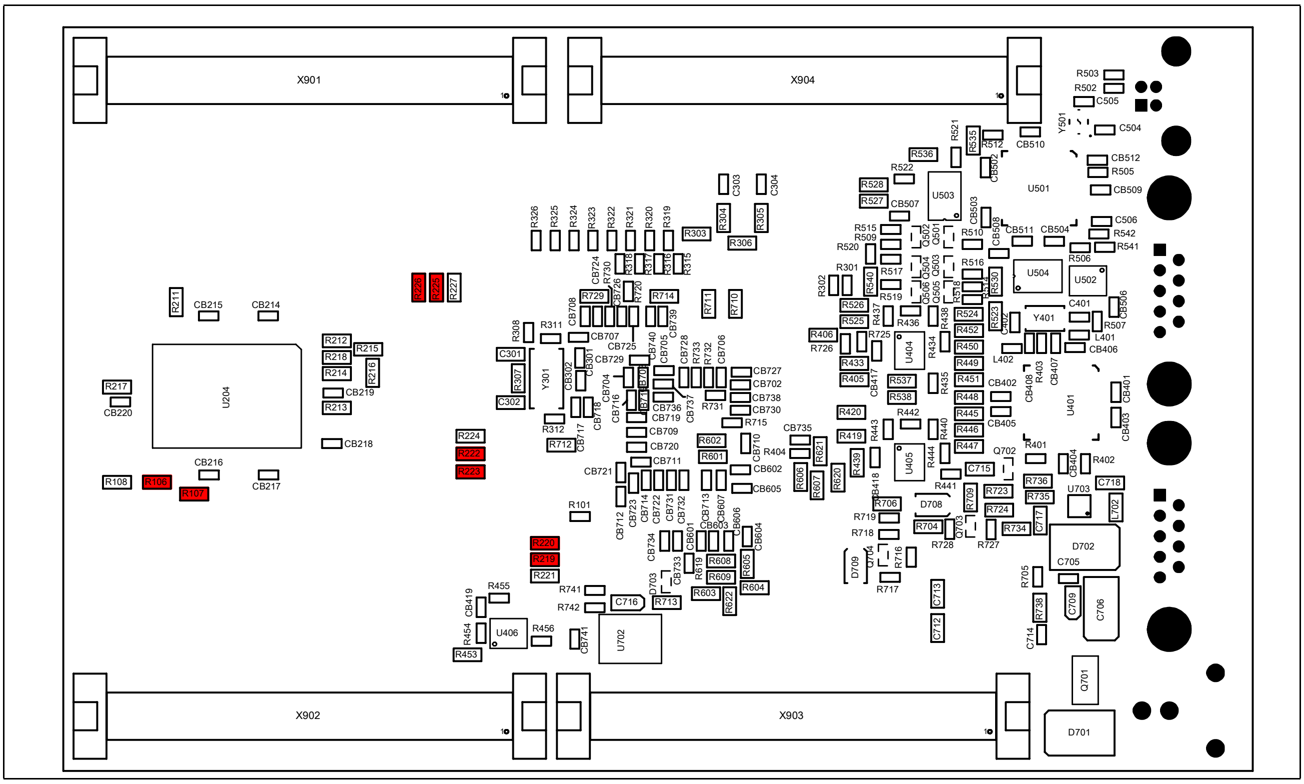

Figure 4-7 Location of memories resistors on Bottom Side

5 TriBoard Software

5.1 Requirements

To install the software from your TriBoard CD you need a PC with Windows95/98/ME, Windows 2000, Windows XP or Windows Vista.

5.2 Software Overview

The CD does not contain any tool. For the availablity for Demo Versions of the different Tools, please contact the toolvendor directly (e.g. Tasking, Hitex, Lauterbach, GreenHills, HighTec...). To install tools for compiling and debugging use seperat CD's from Toolvendors. There are also some application notes and software examples. The data sheets of all used parts can be found in the "TriBoard_Components" directory. The manuals for the microcontrollers and the TriBoard are located in the "Manual" folder. Some useful tools like Acrobat Reader are stored in the "Utilities" directory.

The current Errata Sheet can be found in the directory "Errata Sheet". To make sure you have always the most recent one, please contact your local FAE.

Note: For more details see the file ReadMe.txt.

5.3 Software Installation

To install tools for the TriCore insert the CD from the Toolvendor and start the file "setup.exe" if the CD is not automatically started. Follow the instructions of the installationprogram.

6 Signal Description

For more information about the signals please see the user manuals from TC179X.

Table 6-1 Power Signals

Short Name	Description
VCC_IN	Supply Input (5,5V...50V)
GND	Ground
VDD	Core Supply Voltage (1,5V or 1,3V for TC1793)
VDDP	Port Supply Voltage (3,3V)
VDDE	External Bus Supply Voltage (3,3V)
VDDFL3	Flash Supply Voltage (3,3V)
VDDESB	Emulation Stand-by SRAM Supply Voltage (1,5V or 1,3V for TC1793)
VDDOSC	Main Oscillator Supply Voltage (1,5V or 1,3V for TC1793)
VDDOSC3	Main Oscillator Supply Voltage (3,3V)
VSSOSC	Main Oscillator Ground
VDDPF	E-Ray PLL Supply Voltage (1,5V or 1,3V for TC1793)
VDDPF3	E-Ray PLL Supply Voltage (3,3V)
VSSM	ADC Analog Part Ground
VDDM	ADC Analog Part Supply Voltage (5V for TC1797/TC1793 other 3,3V)
VSSMF	FADC Analog Part Ground
VDDMF	FADC Analog Part Supply Voltage (3,3V)
VDDAF	FADC Analog Part Logic Supply Voltage (1,5V or 1,3V for TC1793)
VAGND0	ADC0 Reference Ground
VAREF0	ADC0 Reference Voltage (VDDM)
VAGND1	ADC1 Reference Ground
VAREF1	ADC1 Reference Voltage (VDDM)
VAREF2	ADC2 Reference Voltage (VDDM)
VFAGND	FADC Reference Ground
VFAREF	FADC Reference Voltage (VDDMF)

Table 6-2 Reset Signals

Short Name	Description
/PORST	External Power On Reset
/ESR0_/HDRST	Hardware Reset (/ESR0 for TC1797/TC1793)

Table 6-3 Interrupt Signals

Short Name	Description
/ESR1_/NMI	Non Maskable Interrupt (/ESR1 for TC1797/TC1793)
REQ[0...3] / P1[0...3]	External Trigger Input 0...3
REQ[4...5] / P7[0...1]	External Trigger Input 4...5
REQ[6...7] / P7[4...5]	External Trigger Input 6...7

Table 6-4 Clock Signals

Short Name	Description
XTAL1	Crystal Oscillator Input
XTAL2	Crystal Oscillator Output
BFCLKO	Burst Mode Flash Clock Output
BFCLKI	Burst Mode Flash Clock Input

Table 6-5 BUS Signals

Short Name	Description
D[0...31]	Data Bus
A[0...23]	Address Bus

Table 6-6 BUS Control Signals

Short Name	Description
/CS[0...3]	Chip Selects
/CSCOMB	Combined Chip Select Output
/BC[0...3]	Byte Controls
/RD	Read
/WR	Write
MR/W	Motorola-style Read/Write

Table 6-6 BUS Control Signals

/BAA	Burst address advance output
/ADV	Address Valid
/BREQ	Bus Request Output
/HOLD	Hold Request Input
/HLDA	Hold Acknowledge
/WAIT	Wait Input

Table 6-7 Debug Signals

Short Name	Description
/TRST	Test Reset
TCLK	Test Clock
TMS	Test Mode Select
TDI	Test Data Input
TDO	Test Data Output
TRCLK	Trace Clock for OCDS Level 2
TESTMODE	Test Mode Select Input
/BRKIN	TriCore Breakpoint Input
BYPASS	Bypass PLL
/BRKOUT	TriCore Breakpoint Output

Table 6-8 Peripheral Signals

Short Name	Description
P5.0	Receive Data ASC0
P5.1	Transmit Data ASC0
P5.2	Receive Data ASC1
P5.3	Transmit Data ASC1
SCLK0 / P10.3	Clock Line SSC0
MRST0 / P10.0	Master Receive / Slave Transmit SSC0
MTSR0 / P10.1	Master Transmit / Slave Receive SSC0
SLSI0 / P10.2	Slave Select Input SSC0
SLSO0 / P10.4	Slave Select Output 0 (SSC0)
SLSO1 / P10.5	Slave Select Output 1 (SSC0)

Table 6-8 Peripheral Signals

P6.6	Clock Line SSC1
P6.5	Master Receive / Slave Transmit SSC1
P6.4	Master Transmit / Slave Receive SSC1
P6.7	Slave Select Input SSC1
P2[2..7]	Slave Select Output 2..7
P6.9	CAN Transmitter Output 0
P6.8	CAN Receiver Input 0
P6.11	CAN Transmitter Output 1
P6.10	CAN Receiver Input 1
P6.13	CAN Transmitter Output 2
P6.12	CAN Receiver Input 2
P6.15	CAN Transmitter Output 3
P6.14	CAN Receiver Input 3
P0 [0...7]	General Purpose I/O Port 0 (HWCFG for TC1797/TC1793 else SWOPT)
P0 [8...15]	General Purpose I/O Port 0 (SWOPT if not TC1797/TC1793)
P1[12...15]	General Purpose I/O Port 1.12...1.15
P2[8...15]	General Pupose I/O Port 2
P3[0...15]	General Pupose I/O Port 3
P4[0...15]	General Pupose I/O Port 4
P9[0...8]	General Pupose I/O Port 9
AN[0...43]	Analog Inputs
P7[2...3]	ADC0 External Multiplexer Control
P7[6...7]	ADC1 External Multiplexer Control
FCLP0A / P5.11	MSC0 differential driver clock output positive A
FCLN0 / P5.10	MSC0 differential driver clock output negative
SOP0A / P5.9	MSC0 differential driver serial data output positive A
SON0 / P5.8	MSC0 differential driver serial data output negative
EN00 / P5.4	MSC0 device select output 0
SDI0 / P5.5	MSC0 serial data input
P5.15	MSC1 differential driver clock output positive A
P5.14	MSC1 differential driver clock output negative

Table 6-8 Peripheral Signals

P5.13	MSC1 differential driver serial data output positive A
P5.12	MSC1 differential driver serial data output negative
P5.6	MSC1 device select output 0
P5.7	MSC1 serial data input
P1.8	MLI0 receive channel clock
P1.9	MLI0 receive channel ready output
P1.10	MLI0 receive channel valid input
P1.11	MLI0 receive channel data input
P1.4	MLI0 transmit channel clock
P1.5	MLI0 transmit channel ready input
P1.6	MLI0 transmit channel valid output
P1.7	MLI0 transmit channel data output
P8.4	MLI1 receive channel clock
P8.5	MLI1 receive channel ready output
P8.6	MLI1 receive channel valid input
P8.7	MLI1 receive channel data input
P8.0	MLI1 transmit channel clock
P8.1	MLI1 transmit channel ready input
P8.2	MLI1 transmit channel valid output
P8.3	MLI1 transmit channel data output
P10[0...3] / P9[9..12]	General Purpose I/O Port 10 (used as HWCFG not for TC1797/TC1793)

7 Connector Pin Assignment

The TriBoard will be shipped with four male (plug) connectors on top layer and four female (socket) connectors on bottom layer. The default connectors are 80-pol. Board to Board connectors from Samtec:

http://www.samtec.com

Plug:

FTSH-140-02-L-DV-ES-A

Socket:

FLE-140-01-G-DV-A

Note: All connectors are pincompatible with the previous versions of TriBoard TC179X.

7.1 TC1797/TC1793 Connector / Top View

BUS EXPANSION (X801,X901)				PERIPHERALS (X802,X902)			
GND	1	2	GND	GND	1	2	GND
GND	3	4	GND	GND	3	4	GND
D0	5	6		VCC_IN	5	6	VCC_IN
D1	7	8		VCC_IN	7	8	VCC_IN
D2	9	10	A0	/ADV	9	10	/BAA
D3	11	12	A1	BFCLKO	11	12	
D4	13	14	A2	P0.5	13	14	
D5	15	16	A3	/ESR1	15	16	/ESR0
D6	17	18	A4		17	18	
D7	19	20	A5	GND	19	20	GND
D8	21	22	A6	P0.6	21	22	/PORST
D9	23	24	A7	P0.7	23	24	P0.8
D10	25	26	A8	EN00 / P5.4	25	26	EN10 / P5.6
D11	27	28	A9	SDI0 / P5.5	27	28	SDI1 / P5.7
D12	29	30	A10	FCLP0A / P5.1	29	30	FCLP1A / P5.15
D13	31	32	A11	FCLN0 / P5.10	31	32	FCLN1 / P5.14
D14	33	34	A12	SOP0A / P5.9	33	34	SOP1A / P5.13
D15	35	36	A13	SON0 / P5.8	35	36	SON1 / P5.12
D16	37	38	A14	RXCAN3 / P6.14	37	38	TXCAN3 / P6.15
D17	39	40	A15	SLSI0 / P10.2	39	40	SLSI1 / P6.7
D18	41	42	A16	SLSO0 / P10.4	41	42	SLSO1 / P10.5
D19	43	44	A17	SLSO2 / P2.2	43	44	SLSO3 / P2.3
D20	45	46	A18	SLSO4 / P2.4	45	46	SLSO5 / P2.5
D21	47	48	A19	SLSO6 / P2.6	47	48	SLSO7 / P2.7
D22	49	50	A20	GND	49	50	GND
D23	51	52	A21	XTAL1	51	52	EXTCLK0 / P1.12
D24	53	54	A22	XTAL2	53	54	BFCLKI
D25	55	56	A23	RXD0 / P5.0	55	56	RXD1 / P5.2
D26	57	58	/CS2	TXD0 / P5.1	57	58	TXD1 / P5.3
D27	59	60	/CS1	RXDCAN0 / P6.8	59	60	RXDCAN1 / P6.10
D28	61	62	/CS0	TXDCAN0 / P6.9	61	62	TXDCAN1 / P6.11
D29	63	64	/BC3	SCLK0 / P10.3	63	64	SCLK1 / P6.6
D30	65	66	/BC2	MTSR0 / P10.1	65	66	MTSR1 / P6.4
D31	67	68	/BC1	MRST0 / P10.0	67	68	MRST1 / P6.5
/RD	69	70	/BC0	RXDCAN2 / P6.12	69	70	TXDCAN2 / P6.13
/WR	71	72	/CSCOMB	REQ0 / P1.0	71	72	REQ1 / P1.1
MR/W	73	74		REQ2 / P1.2	73	74	REQ3 / P1.3
/HLDA	75	76	/WAIT	VDDESB	75	76	GND
	77	78	/BREQ	3V3	77	78	3V3
/HOLD	79	80	/CS3	3V3	79	80	3V3

Figure 7-1 Connector for TC1797/TC1793 - Pinout (Part I, Top View)

Note: The red marked fields have different names than the other TC179X devices, but the functionality is the same as on the other TC179X devices.

ADC (X803, X903)

VSSM	1	2	VSSM		
VSSM	3	4	VSSM		
AN0	5	6	AN16		
AN1	7	8	AN17		
AN2	9	10	AN18		
AN3	11	12	AN19		
AN4	13	14	AN20		
AN5	15	16	AN21		
AN6	17	18	AN22		
AN7	19	20	AN23		
AN8	21	22	AN24		
AN9	23	24	AN25		
AN10	25	26	AN26		
AN11	27	28	AN27		
AN12	29	30	AN28		
AN13	31	32	AN29		
AN14	33	34	AN30		
AN15	35	36	AN31		
VSSM	37	38	VSSMF		
VDDM	39	40	VDDMF		
VFAGND	41	42	VFAREF		
VAGND0	43	44	VAGND1		
VAREF0	45	46	VAREF1		
VSSM	47	48	VSSM		
AN32	49	50	AN38		
AN33	51	52	AN39		
AN34	53	54	AN40		
AN35	55	56	AN41		
AN36	57	58	AN42		
AN37	59	60	AN43		
VSSM	61	62	VSSM		
P0.8	63	64	P0.9		
P0.10	65	66	P0.11		
P0.12	67	68	P0.13		
3V3	69	70	3V3		
AD0EMUX0 / P7.2	71	72	AD1EMUX0 / P7.6		
AD0EMUX1 / P7.3	73	74	AD1EMUX1 / P7.7		
REQ5 / P7.1	75	76	P0.14		
P0.15	77	78	REQ4 / P7.0		
REQ7 / P7.5	79	80	REQ6 / P7.4		

GPTA / MLI (X804,X904)

GND	1	2	GND
GND	3	4	GND
GPTA0 / P2.8	5	6	GPTA32 / P4.8
GPTA1 / P2.9	7	8	GPTA33 / P4.9
GPTA2 / P2.10	9	10	GPTA34 / P4.10
GPTA3 / P2.11	11	12	GPTA35 / P4.11
GPTA4 / P2.12	13	14	GPTA36 / P4.12
GPTA5 / P2.13	15	16	GPTA37 / P4.13
GPTA6 / P2.14	17	18	GPTA38 / P4.14
GPTA7 / P2.15	19	20	GPTA39 / P4.15
GPTA8 / P3.0	21	22	GPTA40 / P8.0
GPTA9 / P3.1	23	24	GPTA41 / P8.1
GPTA10 / P3.2	25	26	GPTA42 / P8.2
GPTA11 / P3.3	27	28	GPTA43 / P8.3
GPTA12 / P3.4	29	30	GPTA44 / P8.4
GPTA13 / P3.5	31	32	GPTA45 / P8.5
GPTA14 / P3.6	33	34	GPTA46 / P8.6
GPTA15 / P3.7	35	36	GPTA47 / P8.7
GPTA16 / P3.8	37	38	GPTA48 / P9.0
GPTA17 / P3.9	39	40	GPTA49 / P9.1
GPTA18 / P3.10	41	42	GPTA50 / P9.2
GPTA19 / P3.11	43	44	GPTA51 / P9.3
GPTA20 / P3.12	45	46	GPTA52 / P9.4
GPTA21 / P3.13	47	48	GPTA53 / P9.5
GPTA22 / P3.14	49	50	GPTA54 / P9.6
GPTA23 / P3.15	51	52	GPTA55 / P9.7
GPTA24 / P4.0	53	54	P9.8
GPTA25 / P4.1	55	56	P9.9
GPTA26 / P4.2	57	58	EMGSTOP / P9.10
GPTA27 / P4.3	59	60	P9.11
GPTA28 / P4.4	61	62	P9.12
GPTA29 / P4.5	63	64	P1.13
GPTA30 / P4.6	65	66	P1.14
GPTA31 / P4.7	67	68	P1.15
TCLK0 / P1.4	69	70	RDATA0 / P1.11
TREADY0 / P1.5	71	72	RVALID0 / P1.10
TVALID0 / P1.6	73	74	RREADY0 / P1.9
TDATA0 / P1.7	75	76	RCLK0 / P1.8
3V3	77	78	3V3
3V3	79	80	3V3

Figure 7-2 Connector for TC1797/TC1793 - Pinout (Part II, Top View)

Note: The red marked fields have different names than the other TC179X devices, but the functionality is the same as on the other TC179X devices.

7.2 Other TC179X Connector / Top View

BUS EXPANSION (X801,X901)

GND	1	2	GND
GND	3	4	GND
D0	5	6	A0
D1	7	8	A1
D2	9	10	A2
D3	11	12	A3
D4	13	14	A4
D5	15	16	A5
D6	17	18	A6
D7	19	20	A7
D8	21	22	A8
D9	23	24	A9
D10	25	26	A10
D11	27	28	A11
D12	29	30	A12
D13	31	32	A13
D14	33	34	A14
D15	35	36	A15
D16	37	38	A16
D17	39	40	A17
D18	41	42	A18
D19	43	44	A19
D20	45	46	A20
D21	47	48	A21
D22	49	50	A22
D23	51	52	A23
D24	53	54	
D25	55	56	
D26	57	58	/CS2
D27	59	60	/CS1
D28	61	62	/CS0
D29	63	64	/BC3
D30	65	66	/BC2
D31	67	68	/BC1
/RD	69	70	/BC0
/WR	71	72	/CSCOMB
MR/W	73	74	
/HLDA	75	76	/WAIT
	77	78	/BREQ
/HOLD	79	80	/CS3

PERIPHERALS (X802,X902)

GND	1	2	GND
GND	3	4	GND
VCC_IN	5	6	VCC_IN
VCC_IN	7	8	VCC_IN
/ADV	9	10	/BAA
BFCLKO	11	12	
P0.5	13	14	
/NMI	15	16	/HDRST
	17	18	
GND	19	20	GND
P0.6	21	22	/PORST
P0.7	23	24	P0.8
EN00 / P5.4	25	26	EN10 / P5.6
SDI0 / P5.5	27	28	SDI1 / P5.7
FCLP0A	29	30	FCLP1A
FCLN0	31	32	FCLN1
SOP0A	33	34	SOP1A
SON0	35	36	SON1
RXCAN3 / P6.14	37	38	TXCAN3 / P6.15
SLSI0	39	40	SLSI1 / P6.7
SLSO0	41	42	SLSO1
SLSO2 / P2.2	43	44	SLSO3 / P2.3
SLSO4 / P2.4	45	46	SLSO5 / P2.5
SLSO6 / P2.6	47	48	SLSO7 / P2.7
GND	49	50	GND
XTAL1	51	52	SYSCLK / P1.12
XTAL2	53	54	BFCLKI
RXD0 / P5.0	55	56	RXD1 / P5.2
TXD0 / P5.1	57	58	TXD1 / P5.3
RXDCAN0 / P6.8	59	60	RXDCAN1 / P6.10
TXDCAN0 / P6.9	61	62	TXDCAN1 / P6.11
SCLK0	63	64	SCLK1 / P6.6
MTSR0	65	66	MTSR1 / P6.4
MRST0	67	68	MRST1 / P6.5
RXDCAN2 / P6.12	69	70	TXDCAN2 / P6.13
REQ0 / P1.0	71	72	REQ1 / P1.1
REQ2 / P1.2	73	74	REQ3 / P1.3
VDDSBRAM	75	76	GND
3V3	77	78	3V3
3V3	79	80	3V3

Figure 7-3 Connector for other TC179X - Pinout (Part I, Top View)

Note: The red marked fields have different names than the TC1797/TC1793 device, but the functionality is the same as on the TC1797/TC1793 device.

ADC (X803, X903)

VSSM	1	2	VSSM	GND	1	2	GND
VSSM	3	4	VSSM	GND	3	4	GND
AN0	5	6	AN16	GPTA0 / P2.8	5	6	GPTA32 / P4.8
AN1	7	8	AN17	GPTA1 / P2.9	7	8	GPTA33 / P4.9
AN2	9	10	AN18	GPTA2 / P2.10	9	10	GPTA34 / P4.10
AN3	11	12	AN19	GPTA3 / P2.11	11	12	GPTA35 / P4.11
AN4	13	14	AN20	GPTA4 / P2.12	13	14	GPTA36 / P4.12
AN5	15	16	AN21	GPTA5 / P2.13	15	16	GPTA37 / P4.13
AN6	17	18	AN22	GPTA6 / P2.14	17	18	GPTA38 / P4.14
AN7	19	20	AN23	GPTA7 / P2.15	19	20	GPTA39 / P4.15
AN8	21	22	AN24	GPTA8 / P3.0	21	22	GPTA40 / P8.0
AN9	23	24	AN25	GPTA9 / P3.1	23	24	GPTA41 / P8.1
AN10	25	26	AN26	GPTA10 / P3.2	25	26	GPTA42 / P8.2
AN11	27	28	AN27	GPTA11 / P3.3	27	28	GPTA43 / P8.3
AN12	29	30	AN28	GPTA12 / P3.4	29	30	GPTA44 / P8.4
AN13	31	32	AN29	GPTA13 / P3.5	31	32	GPTA45 / P8.5
AN14	33	34	AN30	GPTA14 / P3.6	33	34	GPTA46 / P8.6
AN15	35	36	AN31	GPTA15 / P3.7	35	36	GPTA47 / P8.7
VSSM	37	38	VSSMF	GPTA16 / P3.8	37	38	GPTA48 / P9.0
VDDM	39	40	VDDMF	GPTA17 / P3.9	39	40	GPTA49 / P9.1
VSSFAREF	41	42	VDDFAREF	GPTA18 / P3.10	41	42	GPTA50 / P9.2
VSSAREF0	43	44	VSSAREF1	GPTA19 / P3.11	43	44	GPTA51 / P9.3
VDDAREF0	45	46	VDDAREF1	GPTA20 / P3.12	45	46	GPTA52 / P9.4
VSSM	47	48	VSSM	GPTA21 / P3.13	47	48	GPTA53 / P9.5
AN32	49	50	AN38	GPTA22 / P3.14	49	50	GPTA54 / P9.6
AN33	51	52	AN39	GPTA23 / P3.15	51	52	GPTA55 / P9.7
AN34	53	54	AN40	GPTA24 / P4.0	53	54	P9.8
AN35	55	56	AN41	GPTA25 / P4.1	55	56	P10.0
AN36	57	58	AN42	GPTA26 / P4.2	57	58	EMGSTOP / P10.1
AN37	59	60	AN43	GPTA27 / P4.3	59	60	P10.2
VSSM	61	62	VSSM	GPTA28 / P4.4	61	62	P10.3
P0.8	63	64	P0.9	GPTA29 / P4.5	63	64	P1.13
P0.10	65	66	P0.11	GPTA30 / P4.6	65	66	P1.14
P0.12	67	68	P0.13	GPTA31 / P4.7	67	68	P1.15
3V3	69	70	3V3	TCLK0 / P1.4	69	70	RDATA0 / P1.11
AD0EMUX0 / P7.2	71	72	AD1EMUX0 / P7.6	TREADY0 / P1.5	71	72	RVALID0 / P1.10
AD0EMUX1 / P7.3	73	74	AD1EMUX1 / P7.7	TVALID0 / P1.6	73	74	RREADY0 / P1.9
REQ5 / P7.1	75	76	P0.14	TDATA0 / P1.7	75	76	RCLK0 / P1.8
P0.15	77	78	REQ4 / P7.0	3V3	77	78	3V3
REQ7 / P7.5	79	80	REQ6 / P7.4	3V3	79	80	3V3

GPTA / MLI (X804,X904)

Figure 7-4 Connector for other TC179X - Pinout (Part II, Top View)

Note: The red marked fields have different names than the TC1797/TC1793 device, but the functionality is the same as on the TC1797/TC1793 device.

7.3 Power connector pinout

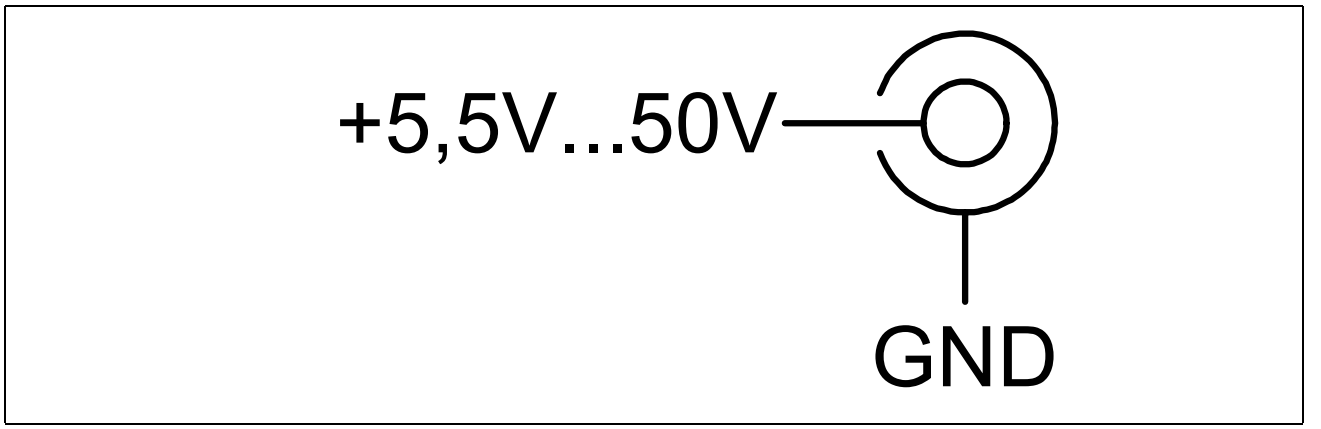

Figure 7-5 Power connector pinout

7.4 USB connector pinout

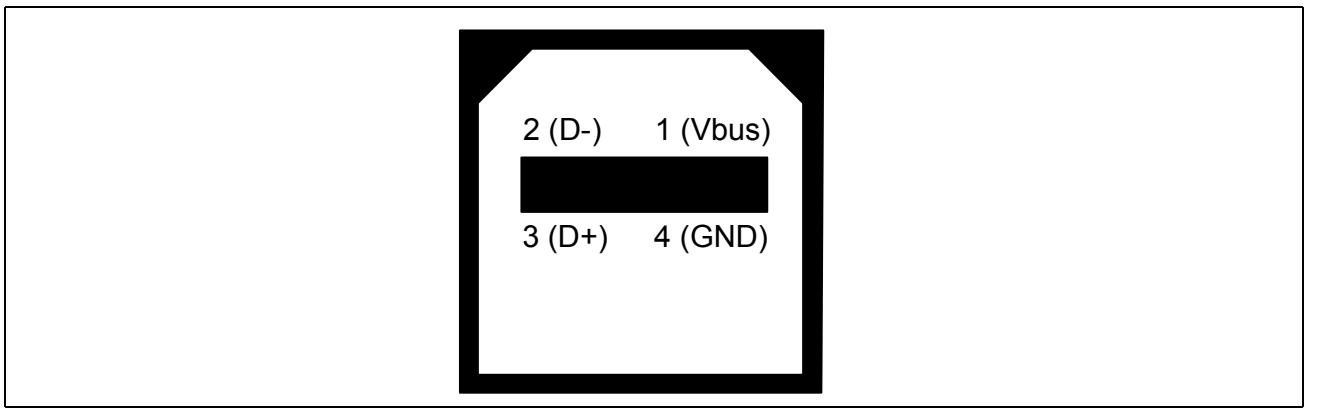

Figure 7-6 USB connector Pinout

7.5 Flexray Pinout

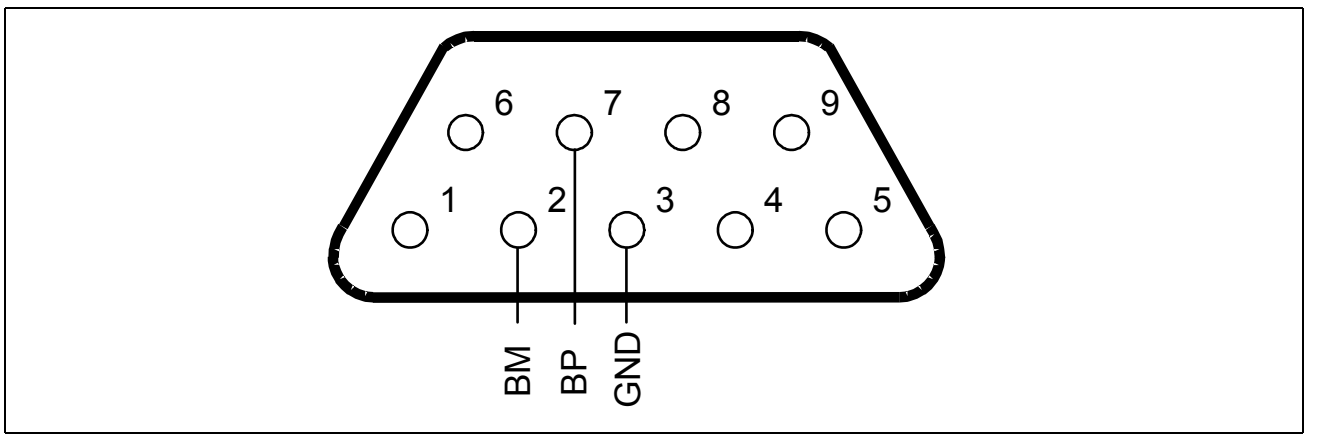

Figure 7-7 Flexray Pinout (SUBD-9 Plug)

7.6 CAN connector pinout

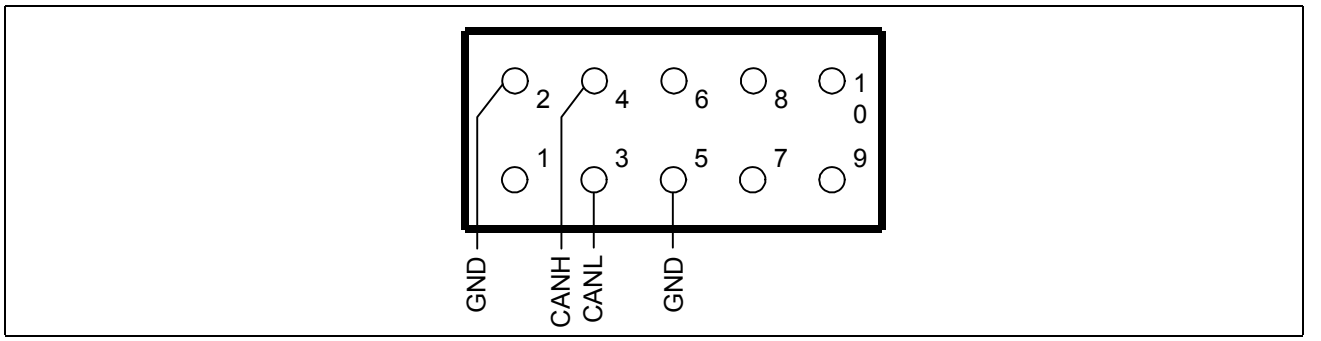

Figure 7-8 CAN connector pinout (IDC10)

7.7 OCDS connector pinout

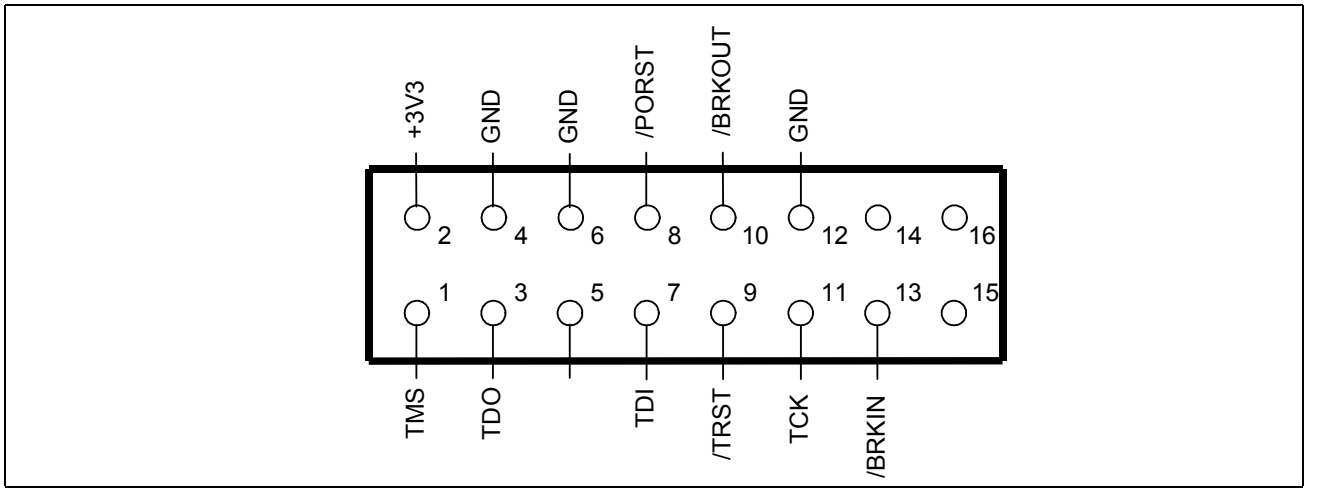

Figure 7-9 OCDS connector pinout (IDC16)

7.8 DAP connector pinout (only with TC1797/TC1793)

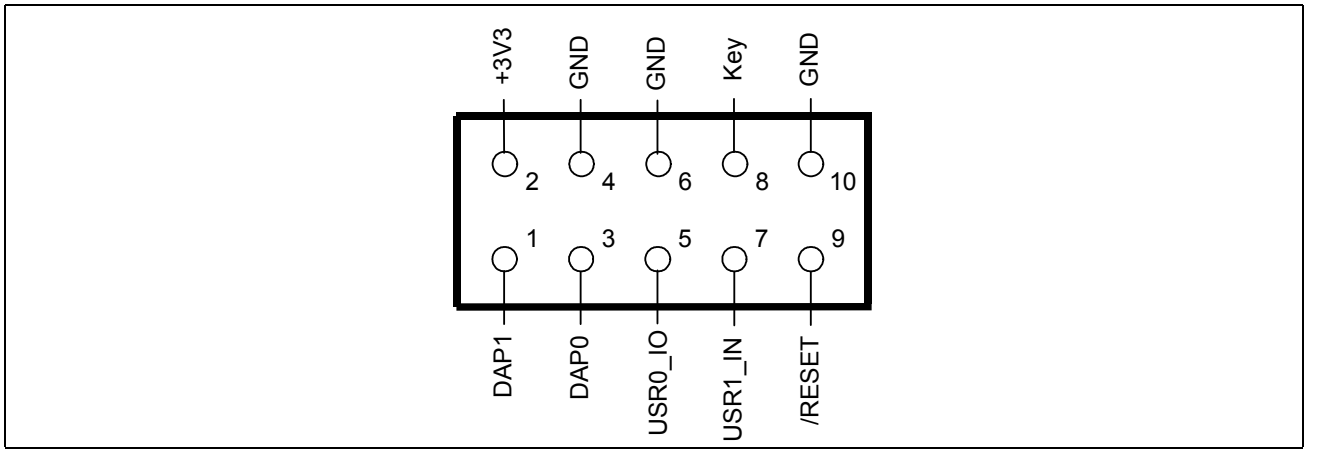

Figure 7-10 DAP connector pinout (FTSH10) - only with TC1797/TC1793

8 Schematic and Layout

8.1 Schematic

8.1.1 New and changes on schematic version V5.0

- Add TC1793 as microcontroller
- Change Power Supply to TLE7368E or TLE7368-3E
- Change miniWiggler to miniWiggler JDS

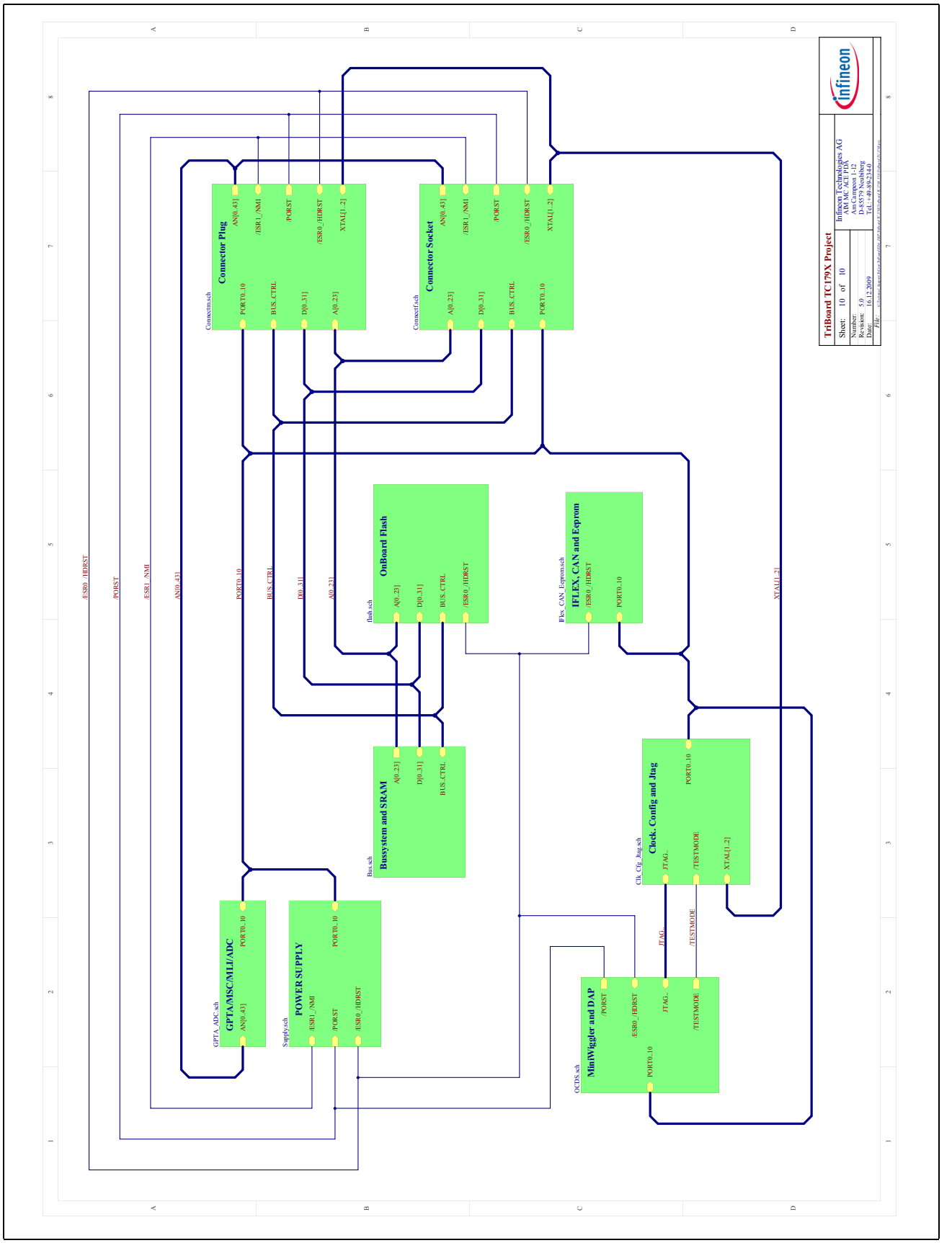

Figure 8-1 Schematic - Project

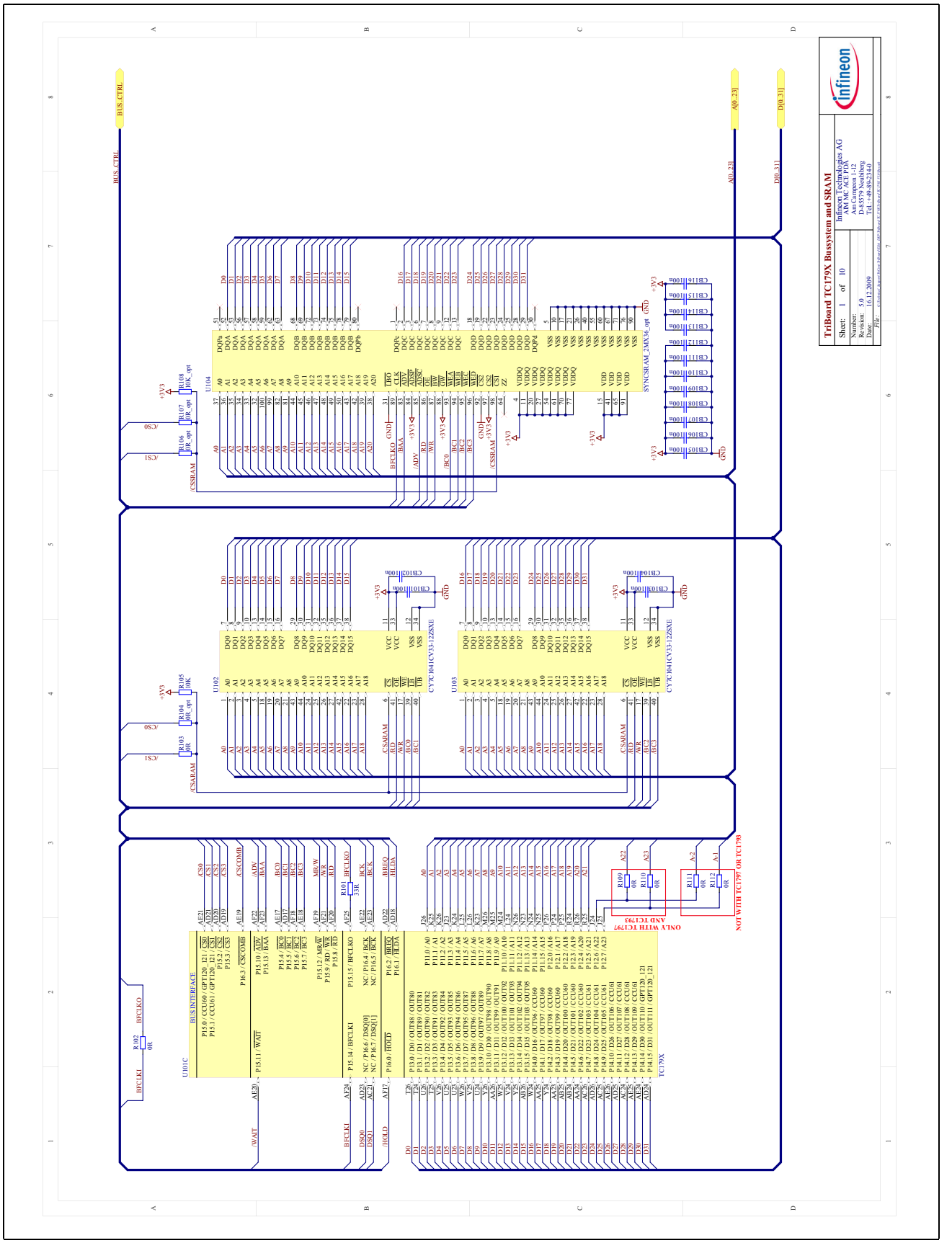

Figure 8-2 Schematic - Bussystem and SRAM

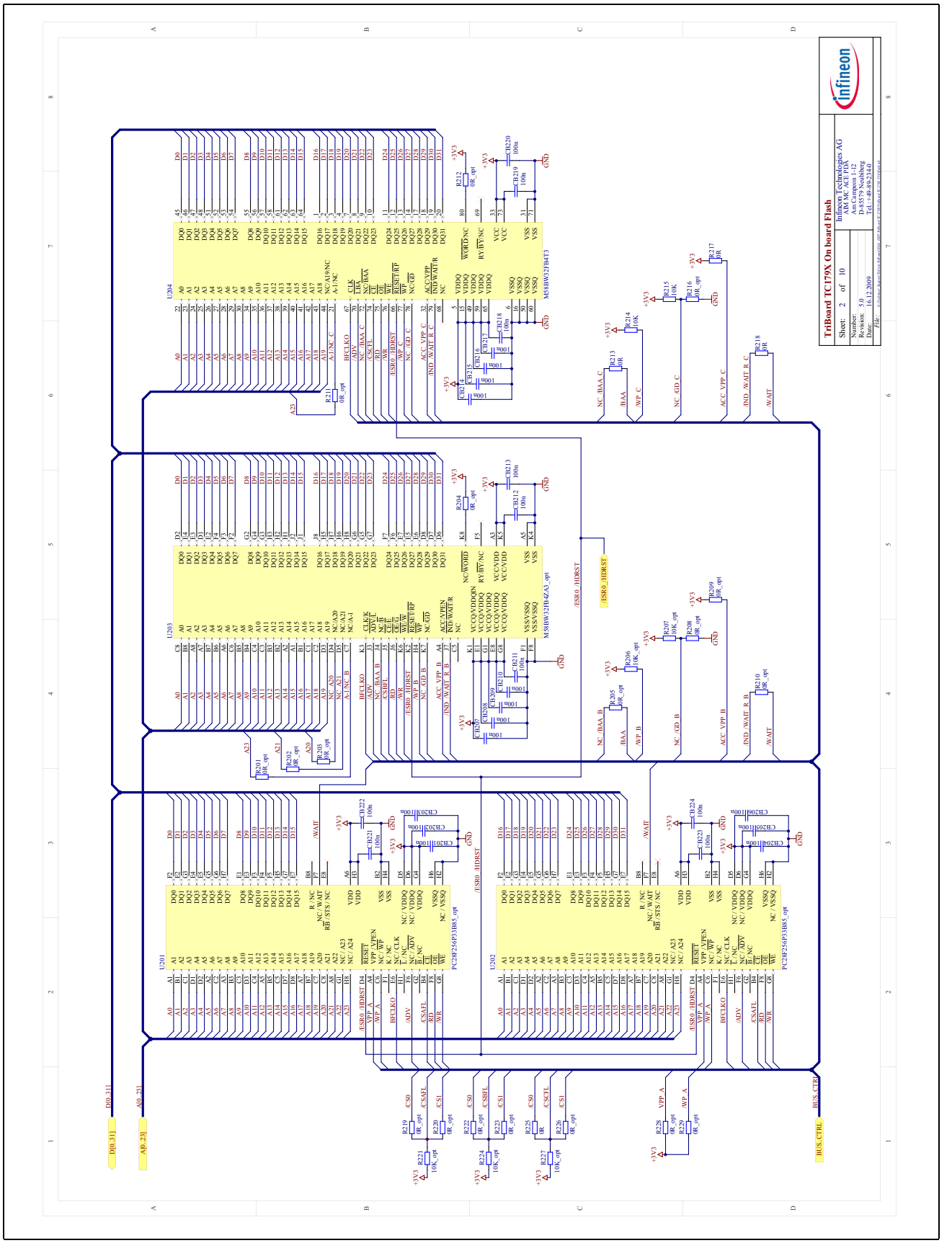

Figure 8-3 Schematic - On Board Flash Memory

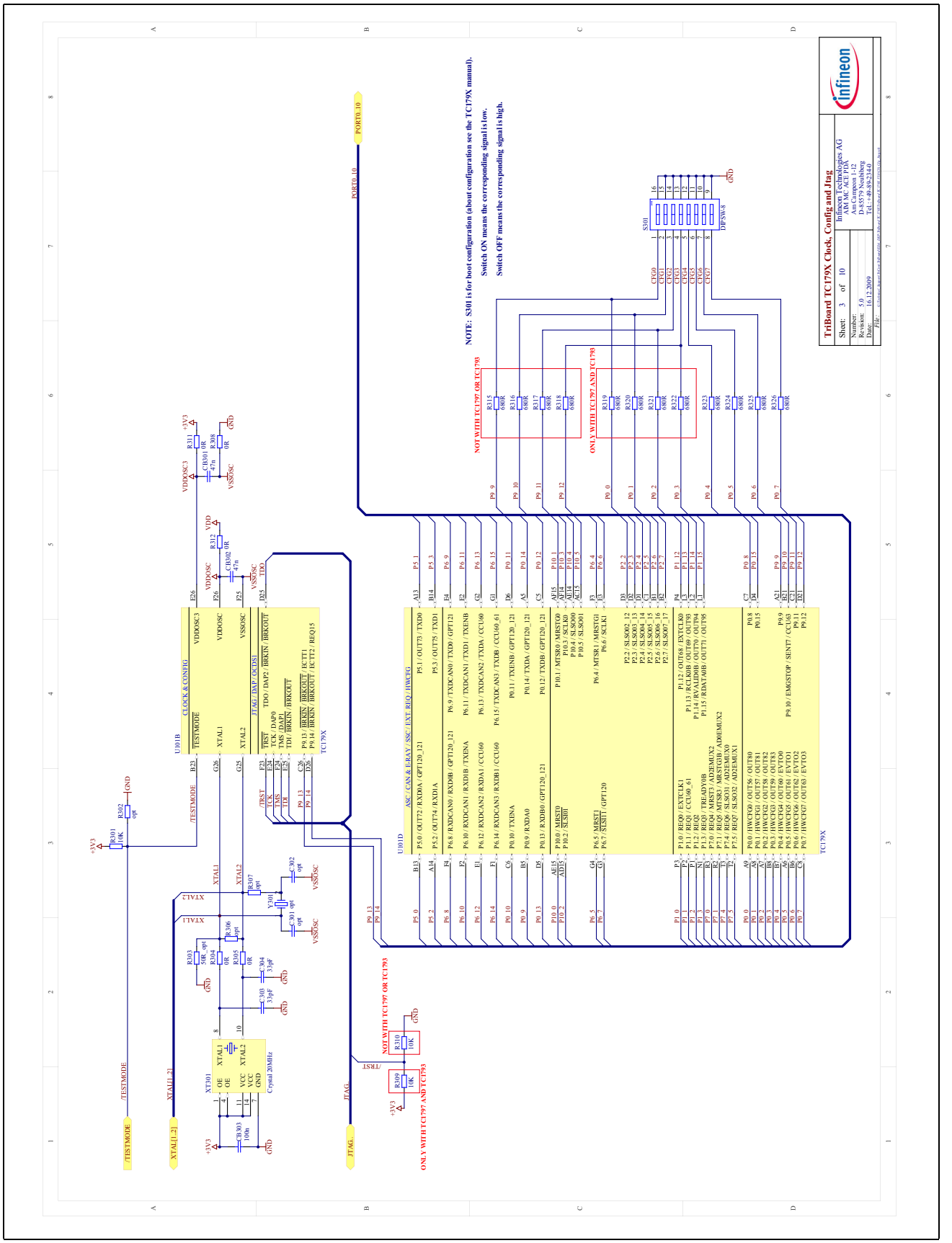

Figure 8-4 Schematic - Clock, Config and Jtag

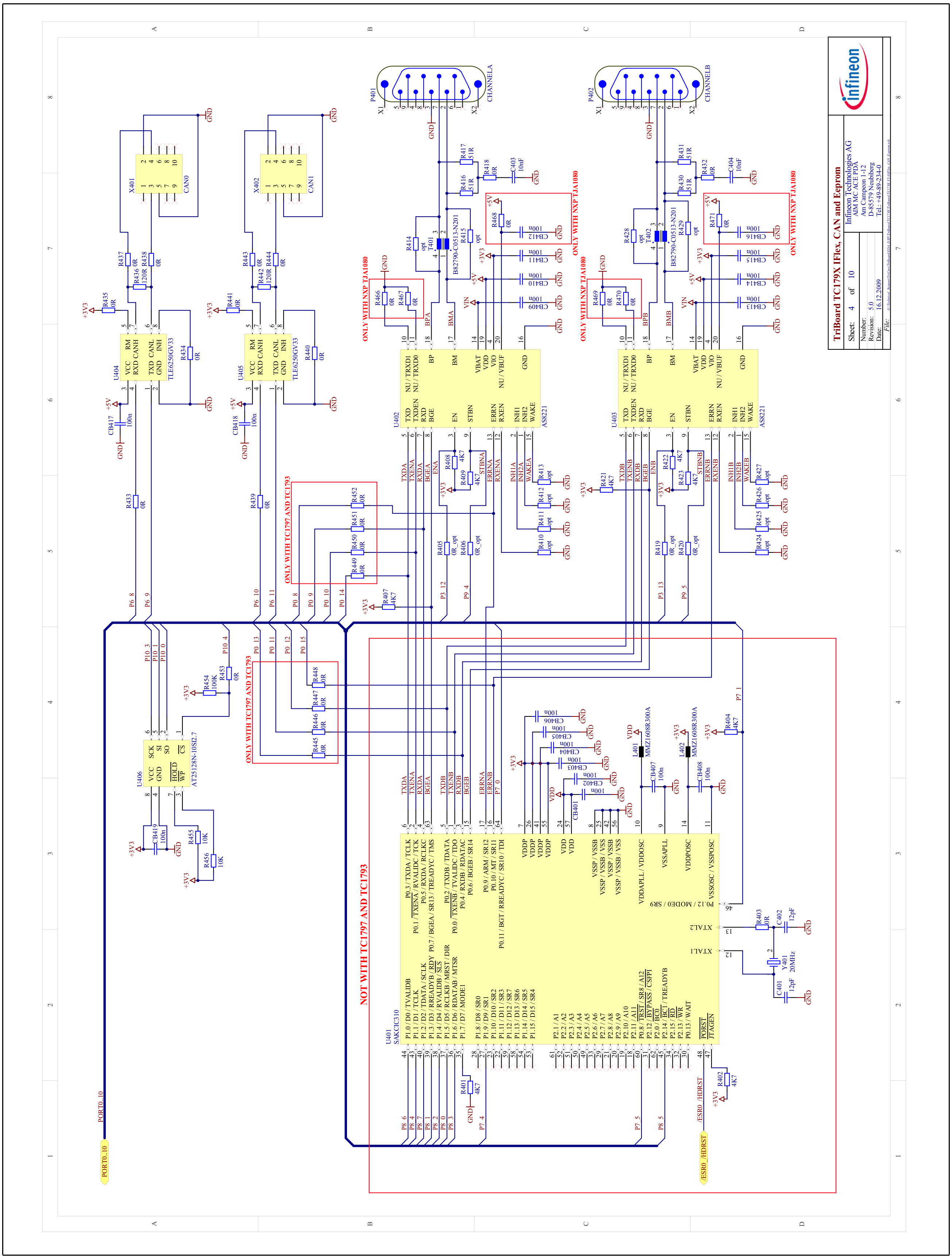

Figure 8-5 Schematic - IFlex, CAN and Eeprom

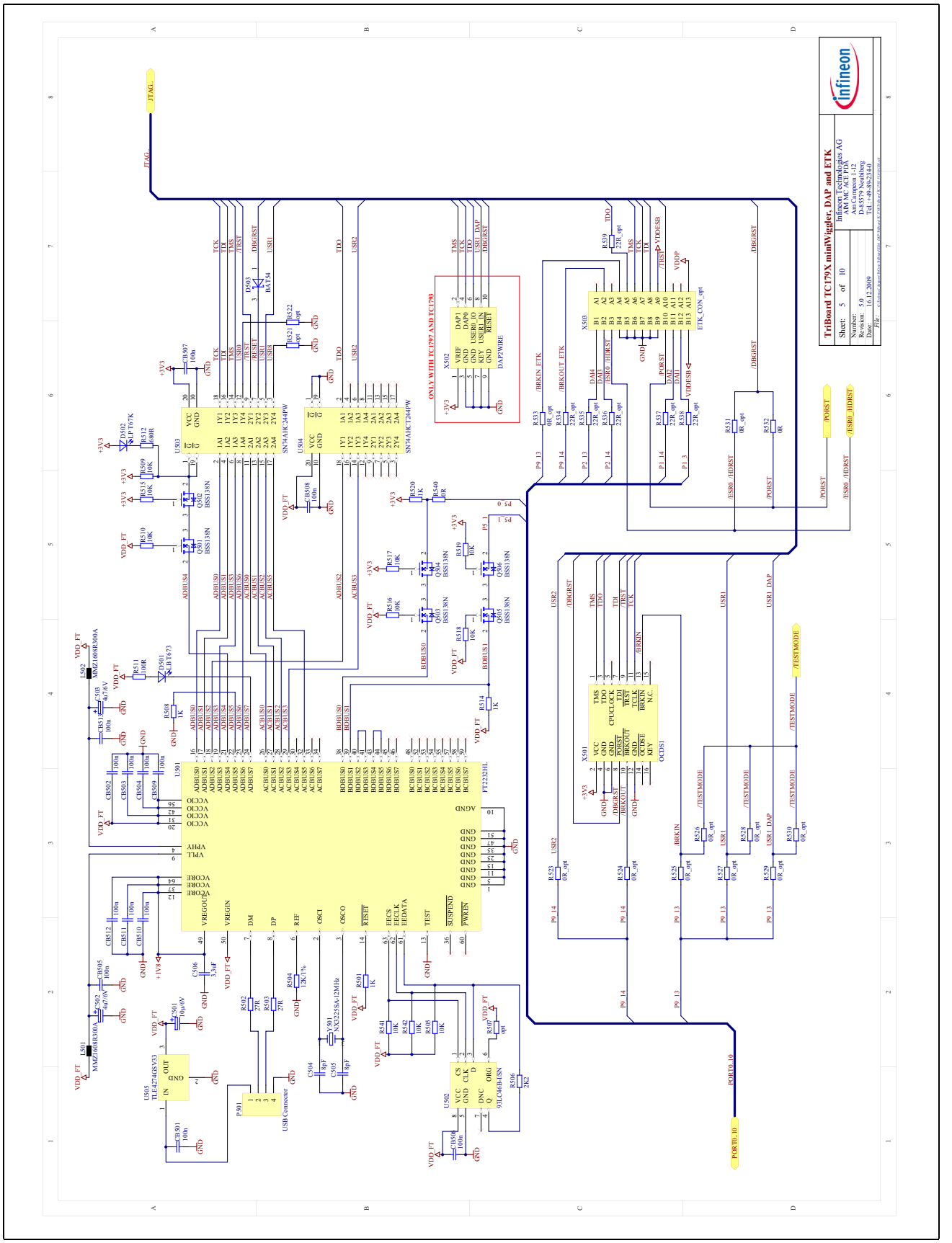

Figure 8-6 Schematic - miniWiggler JDS, DAP and ETK

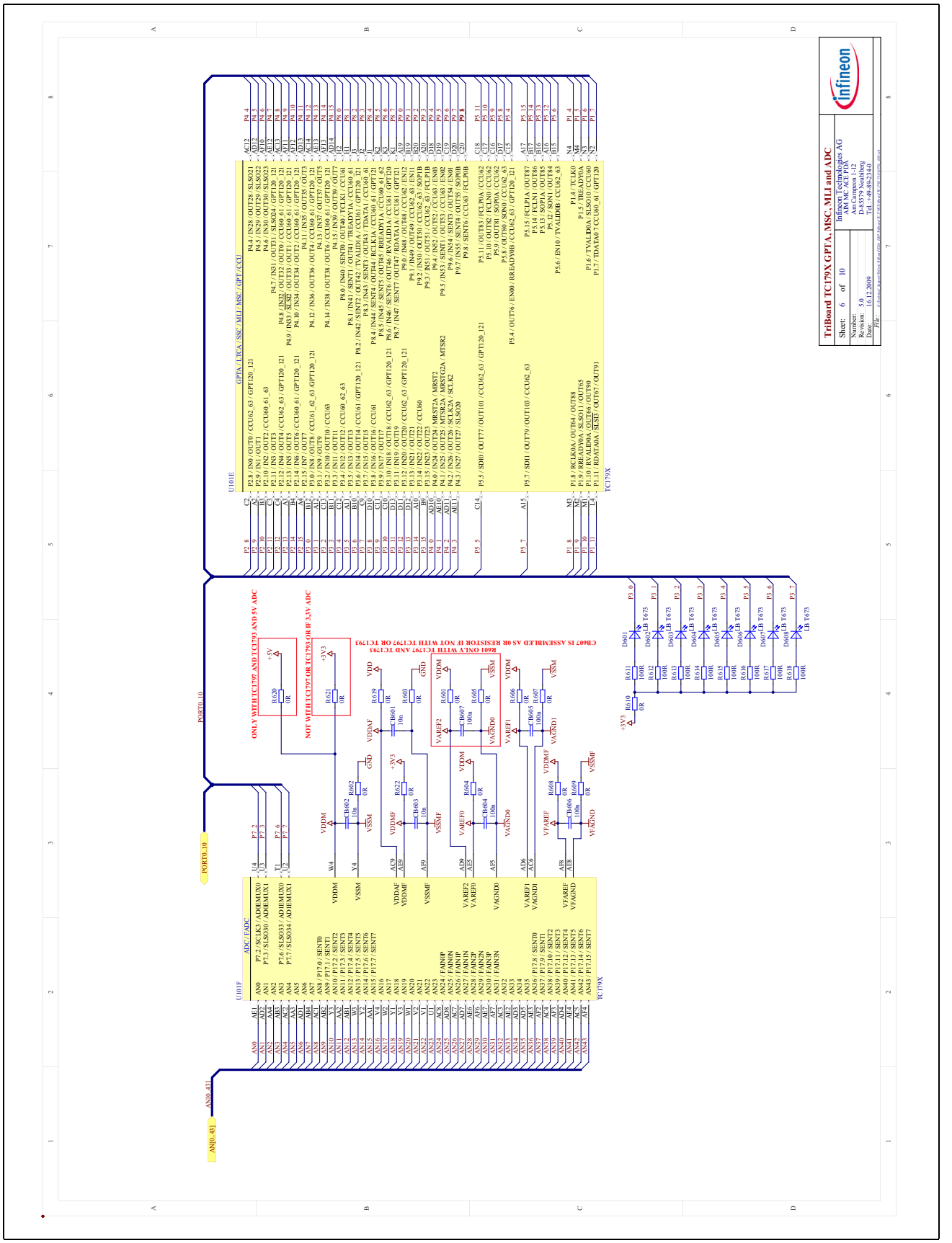

Figure 8-7 Schematic - GPTA, MSC, MLI and ADC

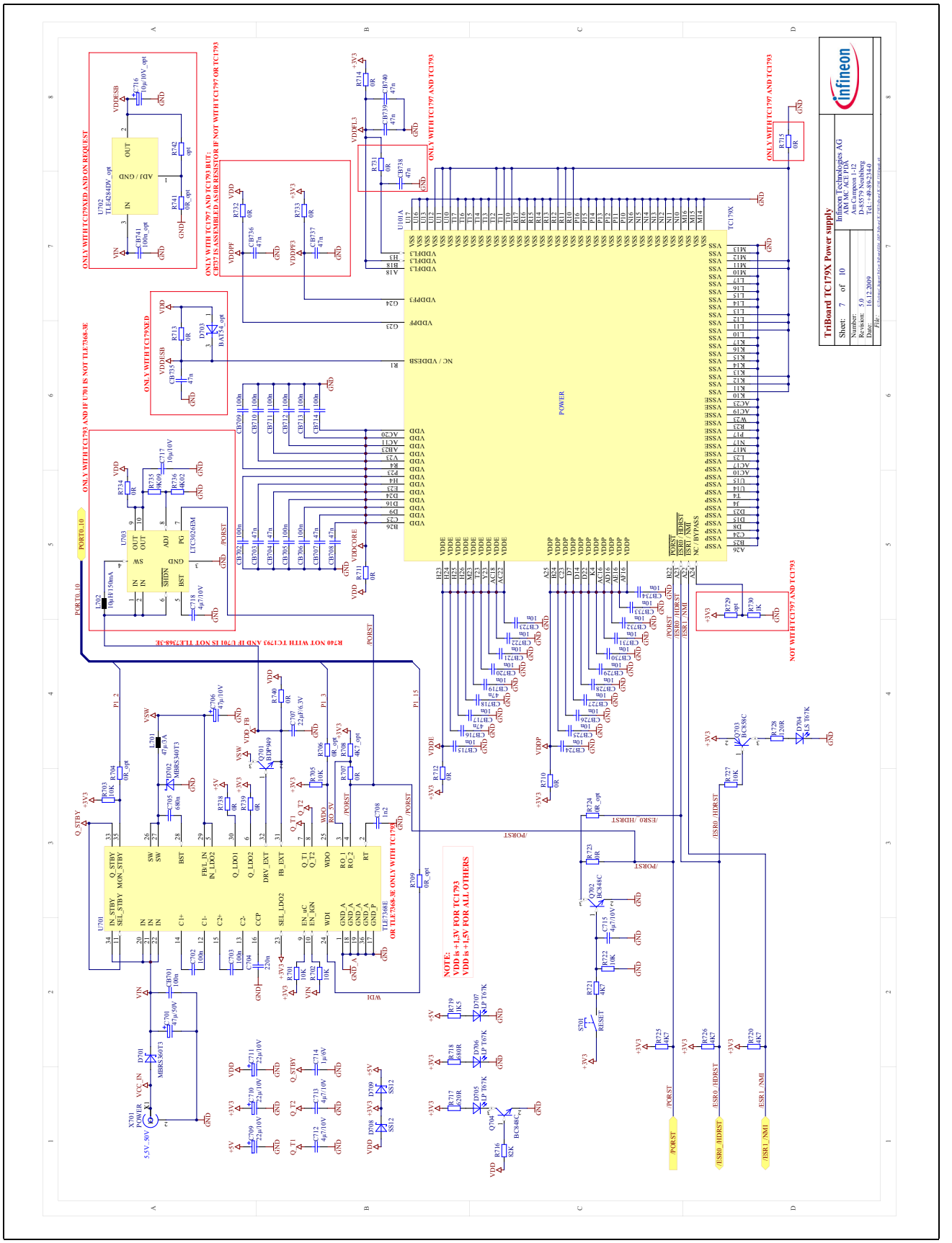

Figure 8-8 Schematic - Power Supply

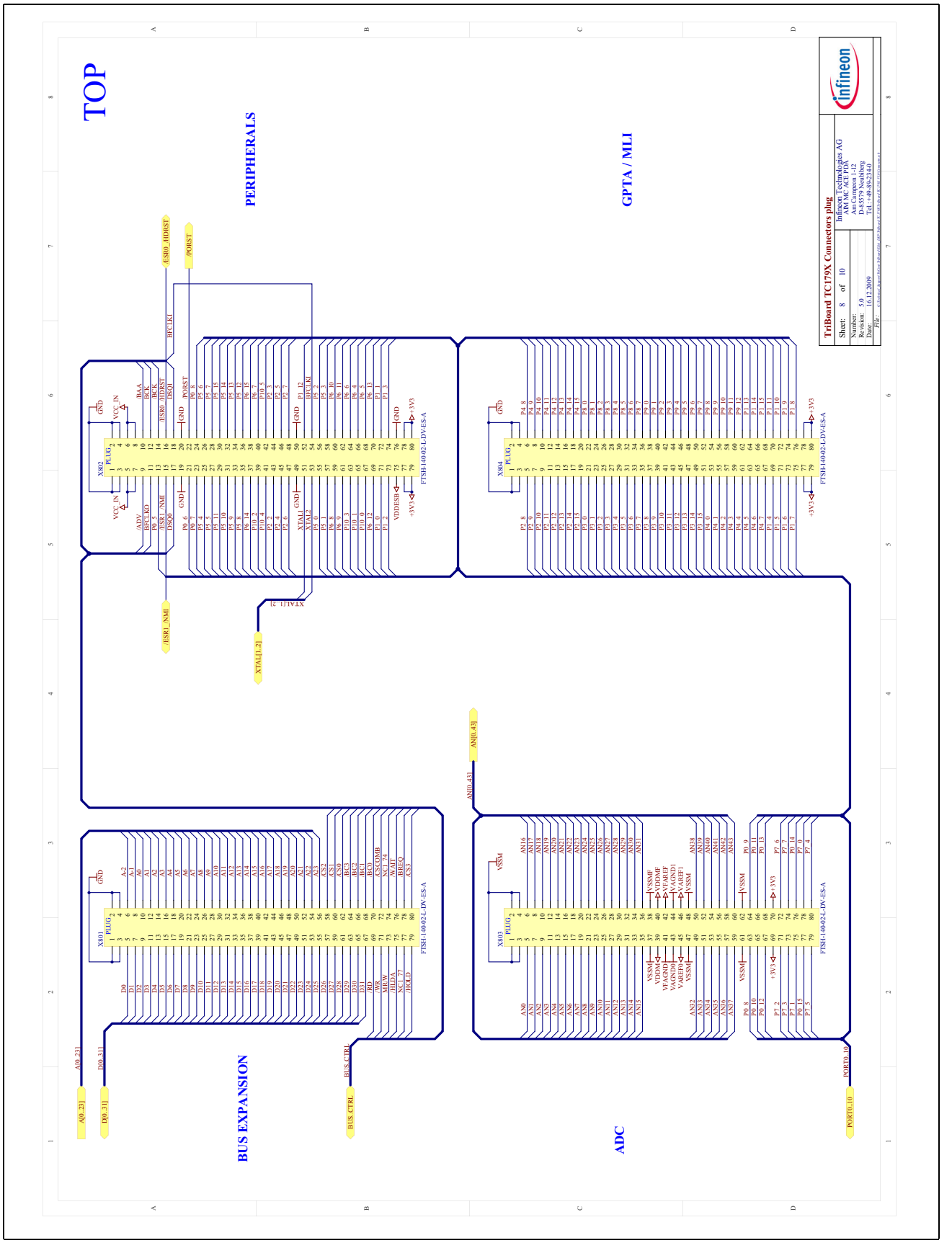

Figure 8-9 Schematic - Connectors (Plug)

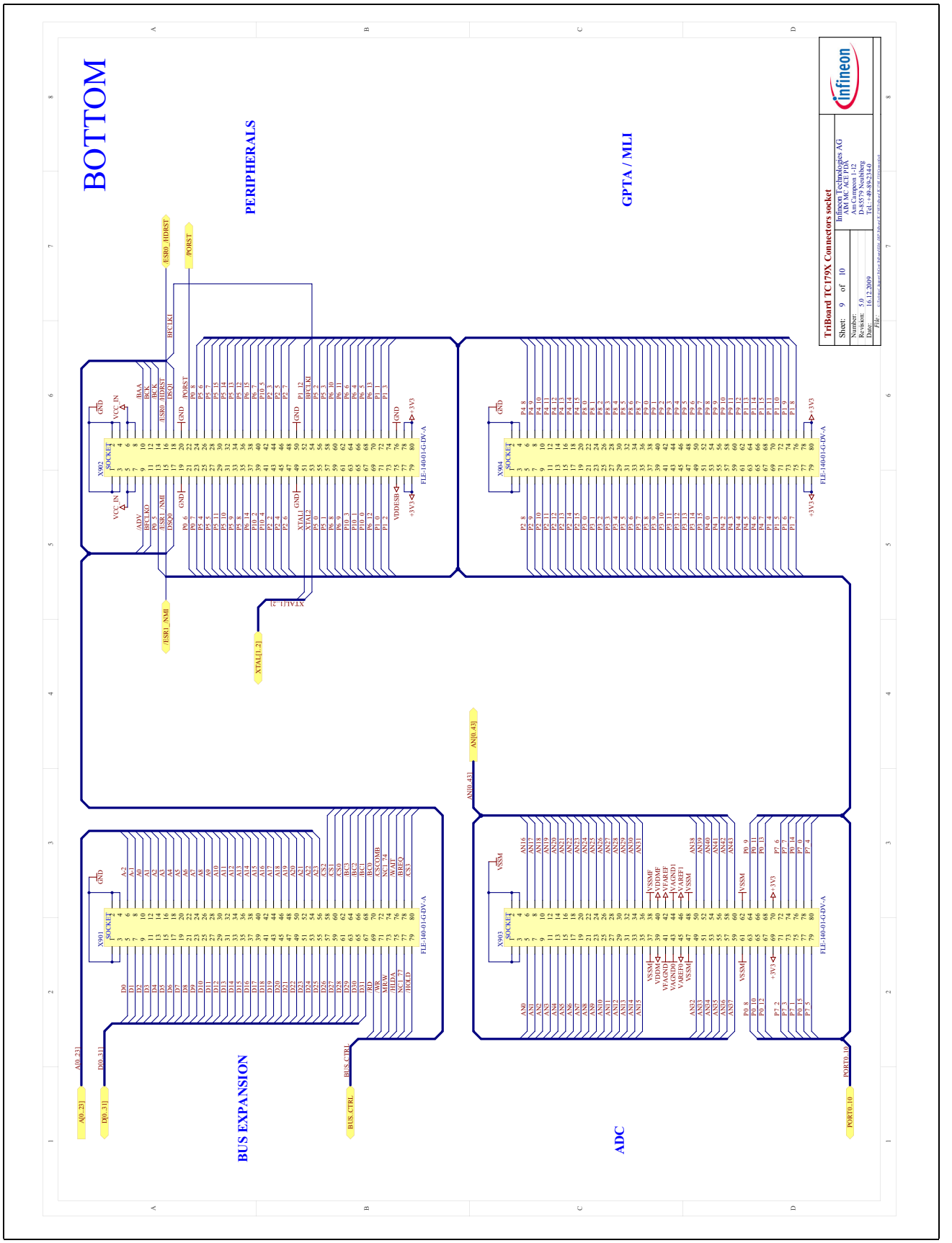

Figure 8-10 Schematic - Connectors (Socket)

8.2 Layout

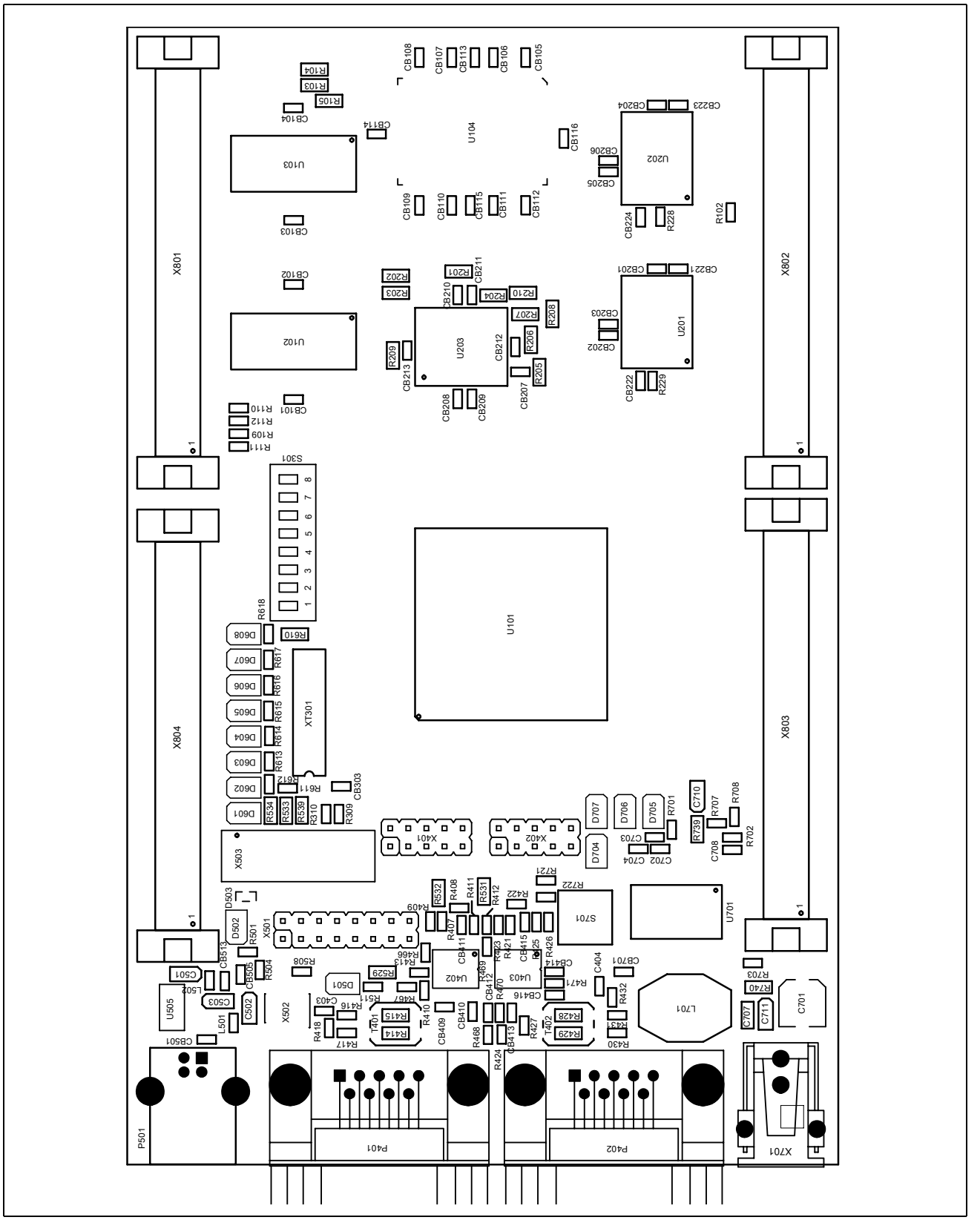

Figure 8-11 Component Plot Top Layer

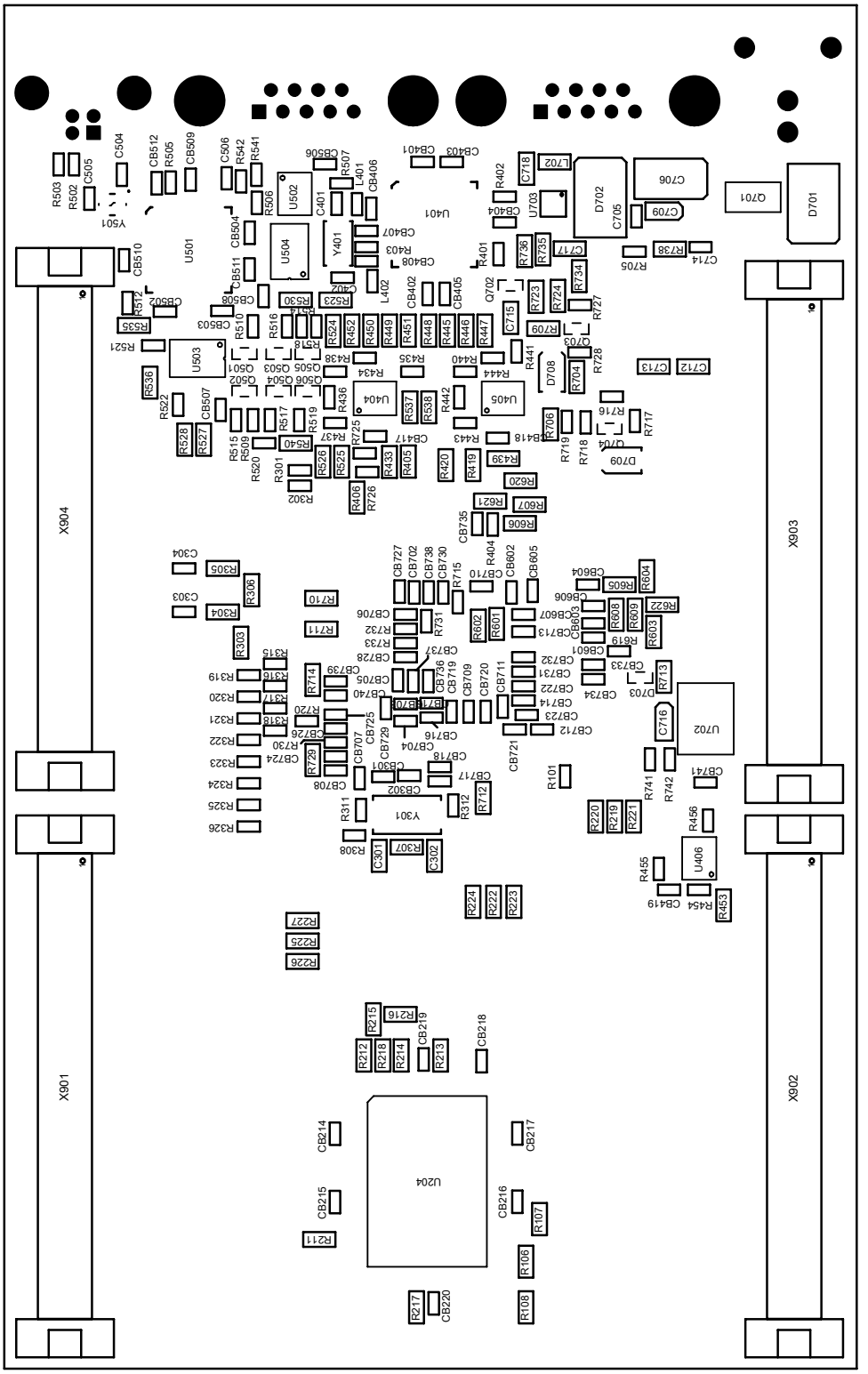

Figure 8-12 Component Plot Bottom Layer

8.3 Layout with Dimensioning

The following dimensions should be used for development of extension boards.

Note: these are the pictures from the TriBoard TC1798. Connectors X801...X804 are on the same place.

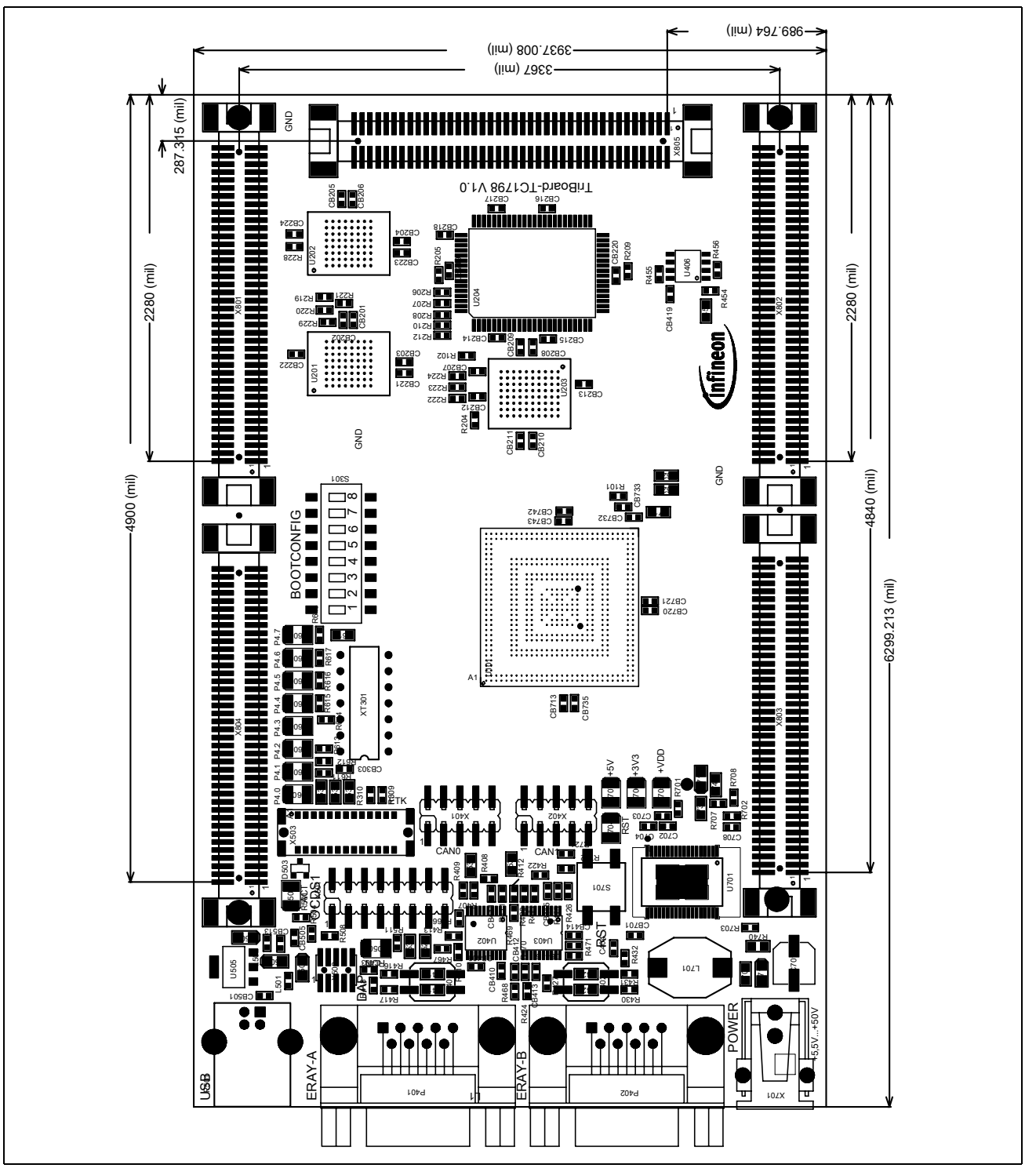

Figure 8-13 Dimensioning (mil)

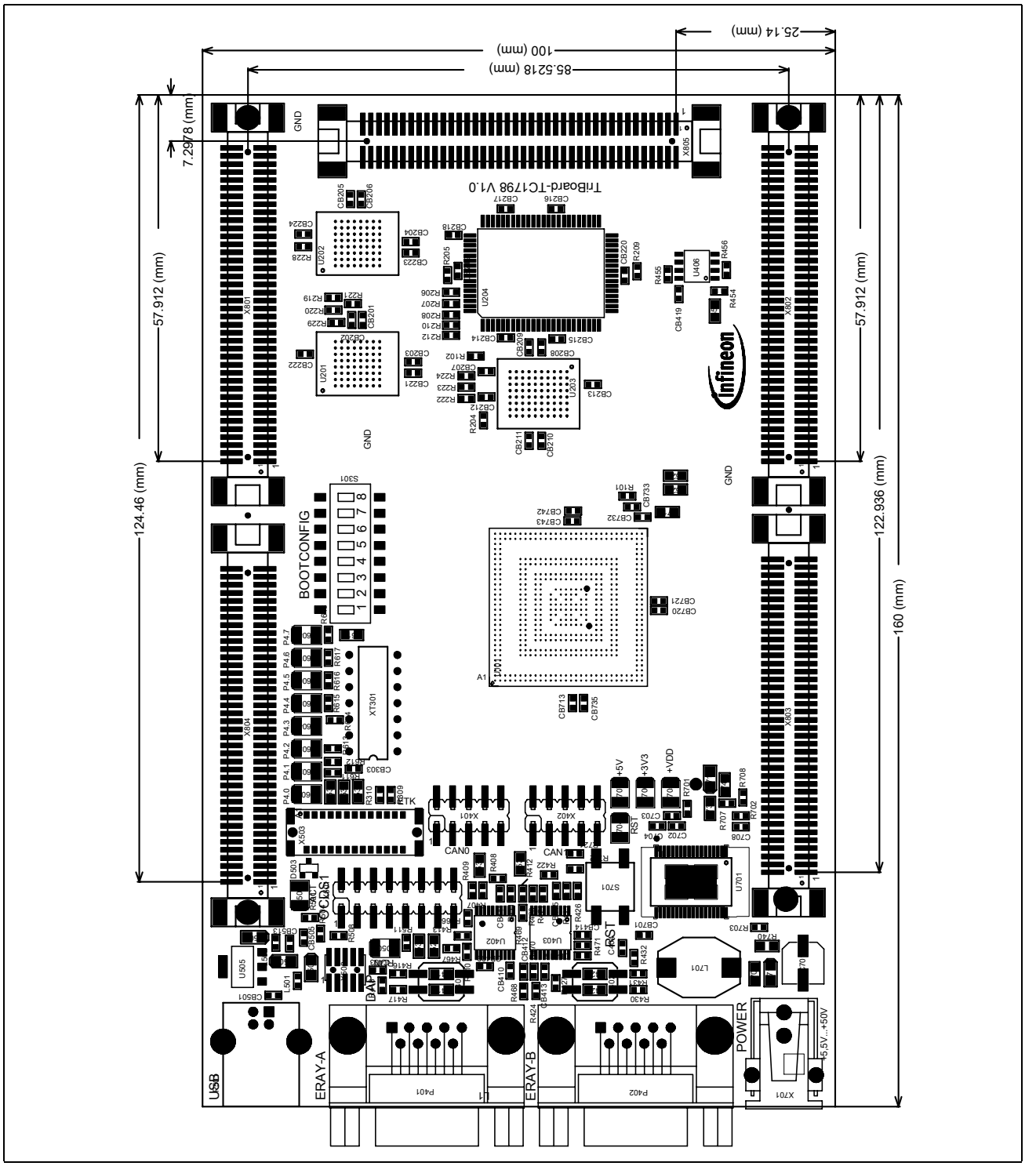

Figure 8-14 Dimensioning (mm)

Keyword Index

P

R

S

T

U

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