Hardware User Manual

EXT-BF518-ETH v1.x

...maximum performance at minimum space

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Table of Contents

BLACKFIN Products

Core Modules:

CM-BF533:   Blackfin Processor Module powered by Analog Devices' single core ADSP-BF533 processor; up to 600MHz, 32MB SDRAM, 2MB flash, 2x60 pin expansion connectors and a size of 36.5x31.5mm.

CM-BF537E: Blackfin Processor Module powered by Analog Devices' single core ADSP-BF537 processor; up to 600MHz, 32MB SDRAM, 4MB flash, integrated TP10/100 Ethernet physical transceiver, 2x60 pin expansion connectors and a size of 36.5x31.5mm.

CM-BF537U: Blackfin Processor Module powered by Analog Devices' single core ADSP-BF537 processor; up to 600MHz, 32MB SDRAM, 4MB flash, integrated USB 2.0 Device, 2x60 pin expansion connectors and a size of 36.5x31.5mm.

TCM-BF537:   Blackfin Processor Module powered by Analog Devices' single core ADSP-BF537 processor; up to 500MHz, 32MB SDRAM, 8MB flash, a size of 28x28mm, 2x60 pin expansion connectors, Ball Grid Array or Border Pads for reflow soldering, industrial temperature range -40°C to +85°C.

CM-BF561:   Blackfin Processor Module powered by Analog Devices' dual core ADSP-BF561 processor; up to 2x 600MHz, 64MB SDRAM, 8MB flash, 2x60 pin expansion connectors and a size of 36.5x31.5mm.

CM-BF527:   The new Blackfin Processor Module is powered by Analog Devices' single core ADSP-BF527 processor; key features are USB OTG 2.0 and Ethernet. The 2x60 pin expansion connectors are backwards compatible with other Core Modules.

CM-BF548:   The new Blackfin Processor Module is powered by Analog Devices' single core ADSP-BF548 processor; key features are 64MB DDR SD-RAM 2x100 pin expansion connectors.

TCM-BF518:   The new Core Module CM-BF518 is powered by Analog Devices' single core ADSP-BF518 processor; up to 400MHz, 32MB SDRAM, up to 8MB flash. The 2x60 pin expansion connectors are backwards compatible with other Core Modules.

Development Boards:

EVAL-BF5xx: Low cost Blackfin processor Evaluation Board with one socket for any Bluetechnix Blackfin Core Module. Additional interfaces are available, e.g. an SD-Card.

DEV-BF5xxDA-Lite: Get ready to program and debug Bluetechnix Core Modules with this tiny development platform including an USB-Based Debug Agent. The DEV-BF5xxDA-Lite is a low cost starter development system including a VDSP++ Evaluation Software License.

DEV-BF548-Lite: Low-cost development board with one socket for Bluetechnix CM-BF548 Core Module. Additional interfaces are available, e.g. an SD-Card, USB and Ethernet.

DEV-BF548DA-Lite: Get ready to program and debug Bluetechnix CM-BF548 Core Module with this tiny development platform including an USB-Based Debug Agent. The DEV-BF548DA-Lite is a low-cost starter development system including a VDSP++ Evaluation Software License.

EXT-Boards: The following Extender Boards are available: EXT-BF5xx-AUDIO, EXT-BF5xx-VIDEO, EXT-BF5xx-CAM, EXT-BF5xx-EXP-TR, EXT-BF5xx-USB-ETH2, EXT-BF5xx-AD/DA, EXT-BF548-EXP and EXT-BF518-ETH. Furthermore, we offer the development of customized extender boards for our customers.

Software Support:

BLACKSheep: The BLACKSheep VDK is a multithreaded framework for the Blackfin processor family from Analog Devices that includes driver support for a variety of hardware extensions. It is based on the real-time VDK kernel included within the VDSP++ development environment.

LabVIEW: LabVIEW embedded support for Bluetechnix Core Modules is done by Schmid-Engineering AG: http://www.schmid-engineering.ch

uClinux: All the Core Modules are fully supported by uClinux. The required boot loader and uClinux can be downloaded from: http://blackfin.uClinux.org.

Upcoming Products and Software Releases:

Keep up-to-date with all the changes to the Bluetechnix product line and software updates at: http://www.bluetechnix.com .

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BLACKFIN Design Service

Based on more than five years of experience with Blackfin, Bluetechnix offers development assistance as well as custom design services and software development.

1. Introduction

The EXT-BF518-ETH Board is a stackable extender board for the EVAL-BF5xx, the DEV-BF5xxDA-Lite and the DEV-BF5xx-Lite board. It provides the Ethernet functionality for the TCM-BF518.

1.1. Overview

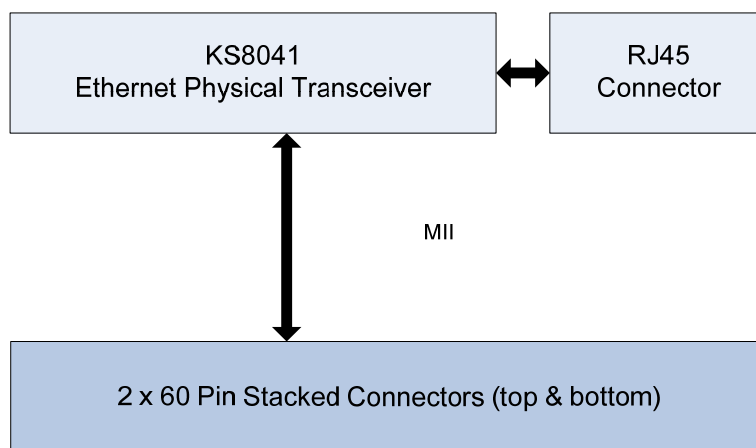The following figure gives an overview of the main components and the board interconnection.

```
┌─────────────────────────────┐      ┌──────────────┐
│        KS8041               │ ◄──► │    RJ45      │
│ Ethernet Physical Transceiver│      │  Connector   │
└─────────────────────────────┘      └──────────────┘
              ▲
              │  MII
              ▼
┌─────────────────────────────────────────────────────┐
│    2 x 60 Pin Stacked Connectors (top & bottom)      │
└─────────────────────────────────────────────────────┘
```

Figure 1-1: Overview of the EXT-BF518-ETH board

The EXT-BF518-ETH board features the following component:

KS8041 Ethernet physical chip

- 100BASE-TX/100BASE-FX/10BASE-T
- Fully compliant to IEEE 802.3u standard
- Auto negotiation as well as manual selection
- Half and Full Duplex mode
- On-chip built-in, analog front-end filtering for both 100BASE-T and 10BASE-T

For detailed description refer to the manufacturer's homepage: http://micrel.com/

2. Specification

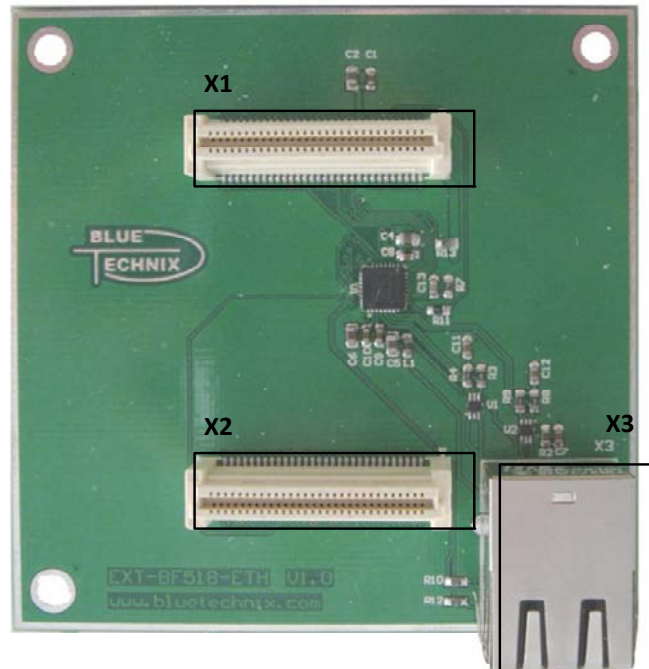### 2.1.   Placement of connectors

Figure 2-1: Placement of connectors

2.2.1. X3
RJ45 Ethernet socket.

2.2.2. X1, X2 Expansion Connectors

The Expansion Connectors have the same pin out as the baseboard. They are directly routed through. Please refer to the appropriate base board for the corresponding pin description.

The connectors on the EXT-BF518-ETH board allow a stacked height of 16mm. They are of the following type:

Part	Manufacturer	Manufacturer Part Nr.
X1, X2	AMP (Stacked Height = 16mm)	5-5179010-2
Matching connector	AMP	5179031-2

Table 2-1: EXT-BF5xx-ETH board connector types

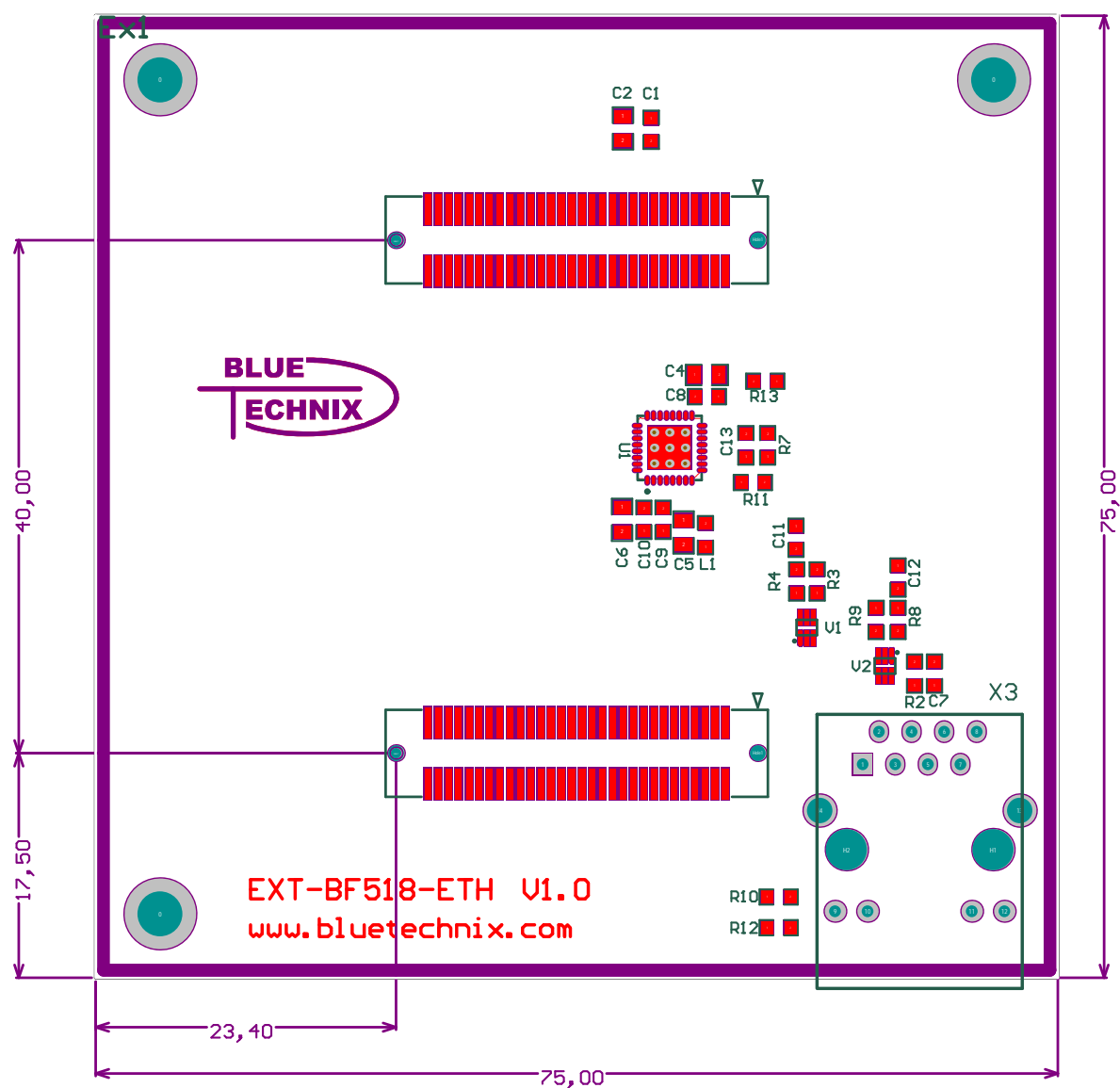These connectors can be ordered from Bluetechnix.

2.2. Mechanical Outline

Figure 2-2: Mechanical outline – Expansion Connector placement

3. Software Support

3.1.   BLACKSheep Driver

The current version of the BLACKSheep extender board driver can be downloaded at the Bluetechnix website (http://www.bluetechnix.com).

Please consult the software development documents.

3.2.   uClinux

uClinux comes with device drivers necessary for this board. Please visit http://blackfin.uclinux.org/gf/project/bluetechnix/ for more information.

4. Anomalies

For the latest information regarding product anomalies, please consult the product home page:

http://www.bluetechnix.com/goto/ext-bf518-eth

Version	Name	Description

5. Product Changes

Version	Changes
1.0.1	First release

Table 5-1: Product Changes

6. Document Revision History

Version	Date	Document Revision
1	2009-10-02	First release

Table 6-1: Document Revision History

7.   Abbreviations

n.c.   not connected

n.s.   not supported

MII   Media Independent Interface

A   List of Figures and Tables

Figures

Tables