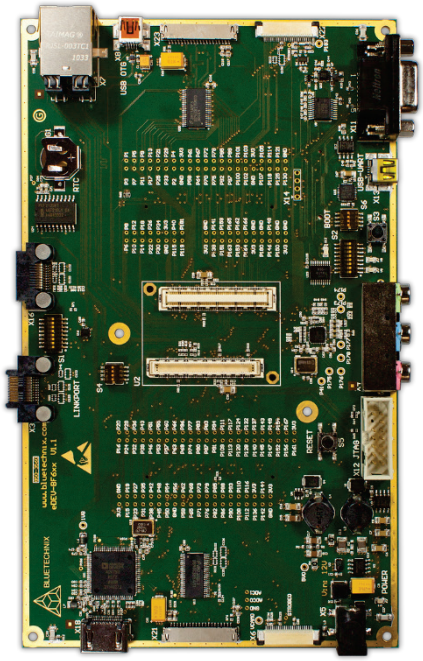
BLUETECHNIX
Embedding Ideas

eDEV-BF6xx



Hardware User Manual

Version 1.2

Contact

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Information

For further information on technology, delivery terms and conditions and prices please contact Bluetechnix http://www.bluetechnix.com.

Warning

Due to technical requirements components may contain dangerous substances.

1 Introduction

The eDEV-BF6xx Development Board is a feature rich, low cost rapid development platform designed to decrease time-to-market of customized applications. It is designed to support Bluetechnix latest powerful Blackfin® based Core Module the eCM-BF609. The development board provides all interfaces on dedicated connectors and has all Core Module pins routed to solder pads which can be easily accessed by the developers. This allows customers to connect their own hardware and enables comfortable measurements. The eDEV-BF6xx supports JTAG, ADIs USB Emulator-100B and features an extender socket (bottom side) for upcoming extender boards.

1.1 Overview

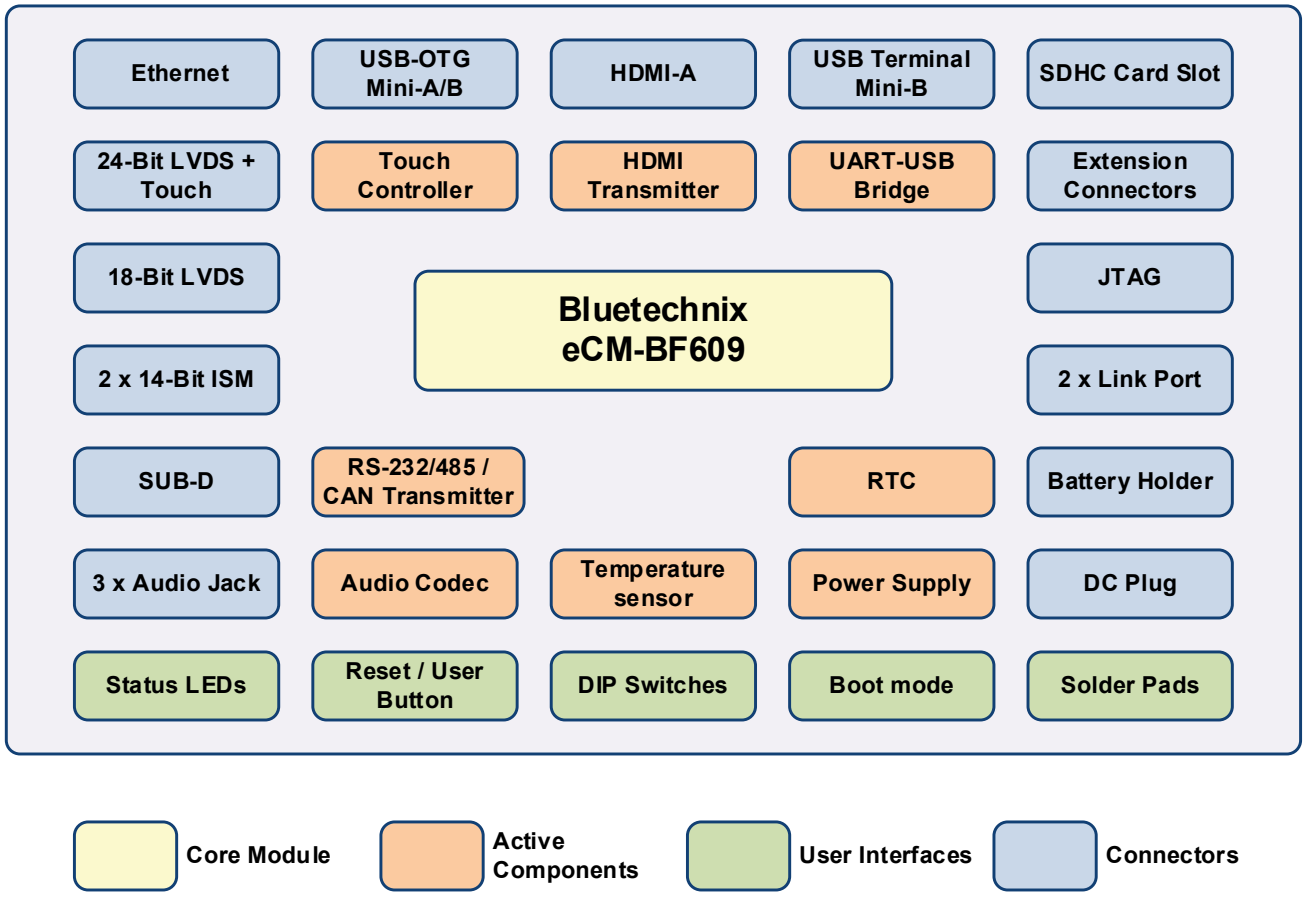


Figure 1-1 Overview of the main components

1.2 Key Features

1.2.1 eCM-BF609

The eCM-BF609 offers following features:

- Analog Devices Blackfin Dual-Core Processor ADSP-BF609

- 256MB DDR2 SDRAM
- 8MB SPI-Flash
- Ethernet-PHY KSZ8031RNLI
- Single power supply (3.3V)
- All peripherals available on connectors
- Industrial and commercial temperature range

For further information see the eCM-BF609 Hardware User Manual available at http://www.bluetechnix.com/.

1.2.2 Active components on eDEV-BF6xx

- 5V Voltage regulator (Analog Devices **ADP2301**)
- 3.3V Voltage regulator (Analog Devices **ADP2302**)
- 2.87V and 1.8V Voltage regulator (Analog Devices **ADP123**)
- HDMI Transmitter (Analog Devices **ADV7511**)
- Audio codec (Analog Devices **ADAU1761**)
- 24-Bit LVDS Transceiver (Texas Instruments **DS90C385A**)
- 18-Bit LVDS Transceiver (Texas Instruments **DS90CR217**)
- Touch-screen controller (Analog Devices **AD7843**)
- Real time clock with coin cell holder (NXP **PCF2129A**)
- RS-232 Transceiver (Intersil **ICL3222**)
- RS-485 Transceiver (Intersil **ISL3179E**)
- CAN Transceiver (Texas Instruments **SN65HVD232D**)
- USB-UART Bridge (Silicon Labs **CP2102**)
- Temperature sensor (Analog Devices **ADT7408**)

Please understand that these are only active parts and require additional connectors and passive parts as well. We provide information regarding these parts on request.

1.3 Applications

Machine Vision - **Object counting/detection**

Robotics – **Autonomous Path finding/Map building**

Surveillance Systems – **People tracking Parallel digital signal processing**

Automotive - **Vision Systems/Surround view**

2 General Description

The following chapters describes the functions of the board interfaces listed below.

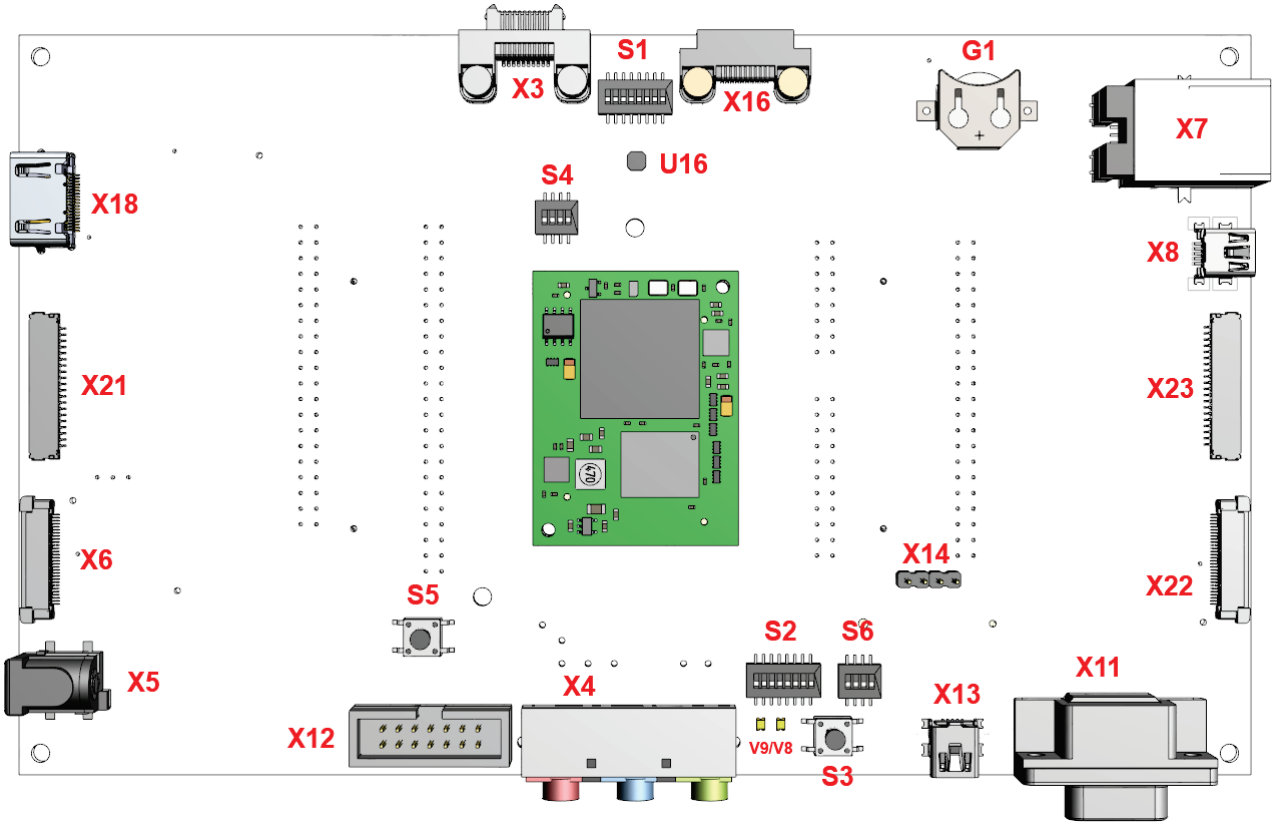


Figure 2-1 Position of user interfaces on top layer

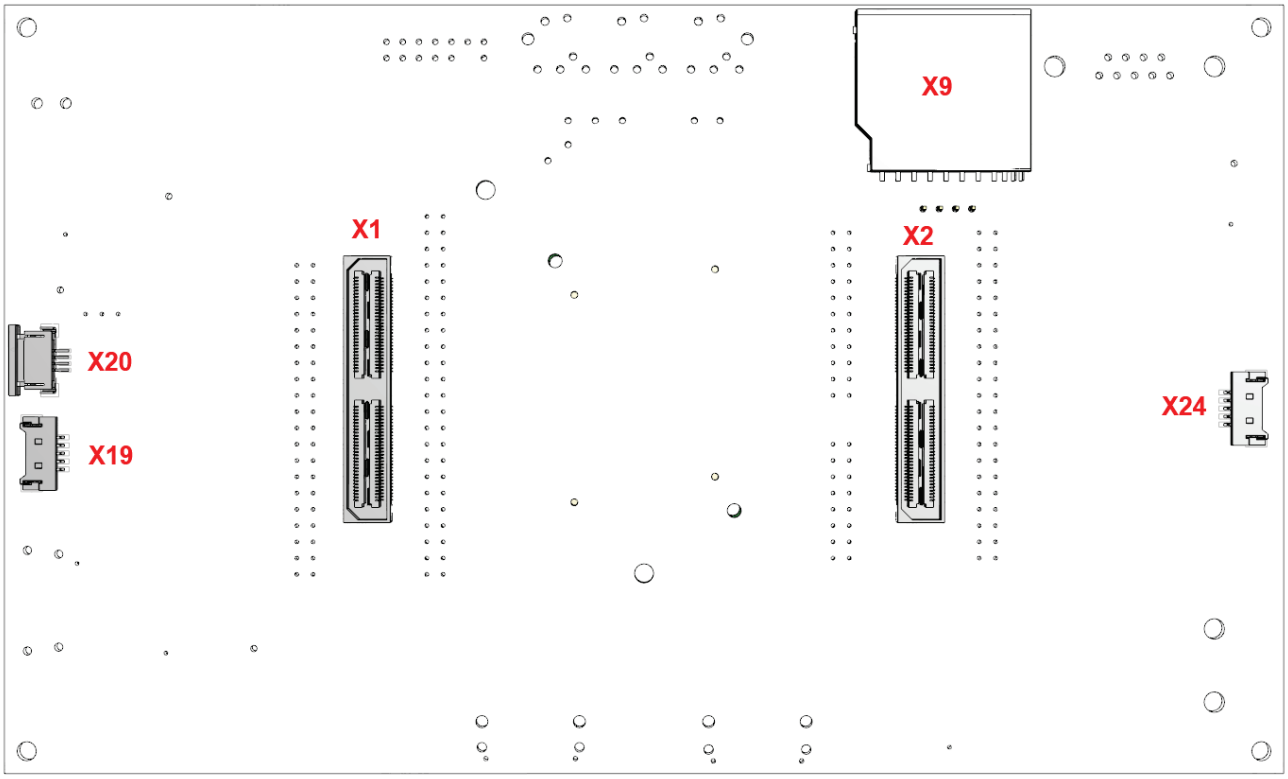


Figure 2-2 Position of user interfaces on bottom layer

2.1 Functional Description

2.1.1 Core Module

The eDEV-BF6xx provides two connectors in the middle of the board to connect a Bluetechnix eCM-BF6xx Core Module to the development board.

For further information see Hardware User Manual of eCM-BF609 available at http://www.bluetechnix.com/ .

2.1.2 Power Architecture

The eDEV-BF6xx must be powered by an external 12V power supply connected to X5. The minimum requirements for external power supply is 12V @ 1.5A.

The eDEV-BF6xx has four voltage domains: 3.3V, 5V, 2.87V, 1.8V.

Following voltage regulators are used to provide the necessary power domains to the board:

- U3 (Analog Devices ADP2302) provides 3.3V @ 2A.
- U4 (Analog Devices ADP2301) provides 5.0V @ 1A.
- U5 and U6 (Analog Devices ADP123) provides 2.87V @ 300mA.
- U7 (Analog Devices ADP123) provides 1.8V @ 300mA.

2.1.3 JTAG

The eDEV-BF6xx design enables a multi-processor JTAG session using connectors X3 and X16. By default, the board is set up in single-processor mode.

For a dual eDEV-BF6xx session, connect two eDEV-BF6xx via connectors X3 and X16. Flip one of the two eDEV-BF6xx by 180 degrees to allow the boards to mate (see Figure 2-3). For a multi-processor JTAG session only one external emulator connected to X12 is required. Note that each eDEV-BF6xx requires its own power supply.

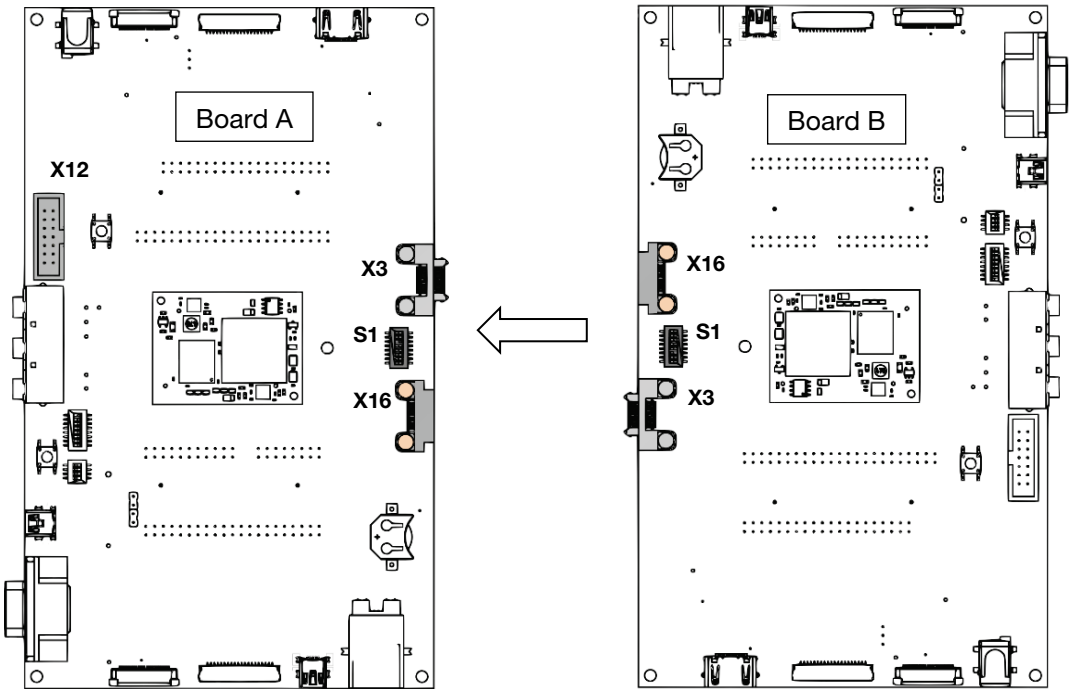


Figure 2-3 Multi-processor JTAG session

For three or more eDEV-BF6xx sessions, connect each of the boards with JTAG cables. The cables connect JTAG pins of each board and put the eDEV-BF6xx in a JTAG serial chain. For three eDEV-BF6xx, three JTAG cables are required. Similarly, for four eDEV-BF6xx, four JTAG cables are required. Part numbers for Samtec standard, off the shelf link port cables can be found in Table 4.2. Note that each respective eDEV-BF6xx board also requires its own power supply.

To switch between single- and multi-processor modes, use the DIP switch S1 (see Table 2.1).

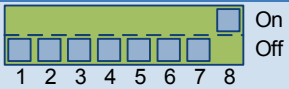
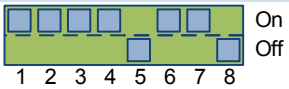
Session	S1 settings
Single-processor	
Multi-processor (Emulator connected – Board A)	
Multi-processor (no Emulator connected – Board B)	

Table 2.1: DIP switch S1 settings

2.1.4 Link Port

The ADSP-BF60x processors has 4 dedicated link ports. Each link port has a clock pin, an acknowledgment pin, and eight data pins. The ports can operate at up to 83 MHz and act as either a receiver or a transmitter. The ports are used to connect to other ADSP-BF60x processors which also have the link ports pins routed to dedicated connectors.

The eDEV-BF6xx enables access to link ports 0 and 1 via connectors X3 and X16, respectively. Two eDEV-BF6xx can be connected via the link port connectors (see Figure 2-3). The processors communicate via the link ports, all while performing independent tasks on each of the eDEV-BF6xx. To loopback the link port connectors on one eDEV-BF6xx or connect three or more eDEV-BF6xx, obtain a standard, off the shelf connector from Samtec. For more information, see Table 4.2: Connector description X3 and X16.

Link port 0 can be selected as the boot source by setting the boot mode according to Table 2.12.

2.1.5 RS-232 / RS-485

The eDEV-BF6xx provides a full-duplex RS-232 and a half-duplex RS-485 interface on the SUB-D connector X11. Both transceivers are sharing the UART0 interface of the Core Module.

The active transceiver can be selected with DIP switch S2 (see Table 2.2).

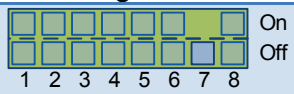
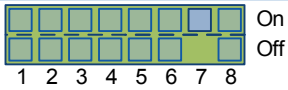
Function	S2 settings
RS-232 Transceiver enabled	
RS-485 Transceiver enabled	

Table 2.2: DIP switch S2 settings for RS-232/485 interfaces

If the RS-485 transceiver is activated, PD9 is used to switch between receive and transmit mode (see Table 2.3).

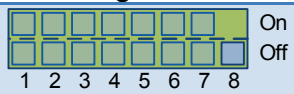
PD9 Level	RS-485 Transceiver Mode
Low	Receiver output enable
High	Driver output enable

Table 2.3: PD9 function

For further information see Table 4.3.

2.1.6 CAN Bus

The eDEV-BF6xx provides a CAN Bus interface on the SUB-D connector X11. A 120Ω termination resistor can be activated with the DIP switch S2.

Function	S2 settings
120Ω Termination resistor OFF	

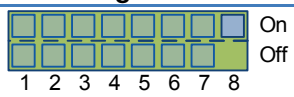
Function	S2 settings
120Ω Termination resistor ON	

Table 2.4: DIP switch S2 settings for CAN Bus termination resistor

For further information see Table 4.3 and Table 2.12.

2.1.7 GPIOs

The eDEV-BF6xx provides easy access to all GPIOs of the eCM-BF6xx Core Module. All GPIOs are routed to test pads with 2.54mm pitch.

The GPIOs PD10 and PG8 are also routed to the SUB-D connector X11.

For further information see Table 4.3.

2.1.8 Debug UART

The eDEV-BF6x provides a USB to UART Bridge (Silicon Labs CP2102) between the UART1 interface of the eCM-BF6xx and the USB connector X13.

The UART1 signals are also accessible through the connector X14.

For further information see Table 4.4 and Table 4.5.

2.1.9 Audio codec

The eDEV-BF6xx provides an audio interface to the eCM-BF6xx through the 3-way connector X4 and the audio codec ADAU1761 from Analog Devices.

The audio codec is connected to the SPORT2 and TWI0 interfaces of the eCM-BF6xx. The I²C slave address of the audio codec is set to 0x38.

The connector X4 provides an interface to the headphone (red jack), line-out (green jack) and line-in (blue jack) interface of the audio codec. Further interfaces are routed to test pads for debugging purposes.

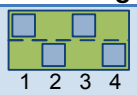
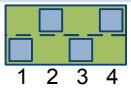
Function	S4 settings
Audio codec enabled	
CAN enabled	

Table 2.5: DIP switch S4 settings

For further information see Table 4.6.

2.1.10 Temperature sensor

The eDEV-BF6xx provides a temperature sensor (U16) connected to the TWI0 interface. The I²C slave address is set to 0x18.

2.1.11 User LEDs and push-button

The eDEV-BF6xx provides a red LED (V8) connected to PC15 and a green LED (V9) connected to PC14. This LEDs can be disconnected from GPIOs using the DIP switch S2 (see TBD).

The eDEV-BF6xx provides also a push-button (S3) connected to PC13. This push-button can be disconnected from PC13 using S2.

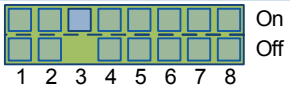
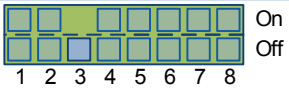
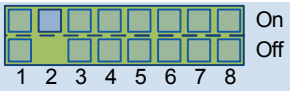
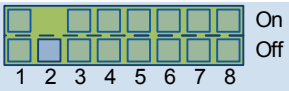
Part	S2 settings Connected to GPIO	S2 settings Disconnected from GPIO
Red LED V8		
Green LED V9		
Push-button S3		

Table 2.6: DIP switch S2 settings for LEDs and push-button

2.1.12 Reset button

The eDEV-BF6xx provides a reset button S5 to reset the board.

2.1.13 Ethernet

The eDEV-BF6xx provides a 10/100-Mbit Ethernet interface on the RJ45 connector X7.

For further information see Table 4.7.

NOTE: The eCM-BF609 provides only one LED signal connected to the yellow LED of X7 to show Ethernet activity.

2.1.14 USB-OTG

The eDEV-BF6xx provides a USB-OTG interface to the eCM-BF6xx through the USB Mini A/B connector X8.

The board allows 5V at 500mA to a peripheral by enabling the FET switch U8. The USB controller of the ADSP-BF6xx has native support for controlling the FET trough the USB_VBC signal.

For further information see Table 4.8.

2.1.15 SD-Card

The eDEV-BF6xx provides a SD-Card slot X9 connected to the RSI interface of the eCM-BF6xx.

The CD (card detect) pin is connected to PE13 and the WP (write protect) pin is connected to PE12.

For further information see Table 4.9.

2.1.16 Real Time Controller

The eDEV-BF6xx provides a real time controller (NXP PCF2129) connected to the TWI0 interface. The I²C slave address of the real time controller is set to 0x51.

A 3.0V backup battery can be inserted in the battery holder G1 to provide power to the RTC when the board isn't supplied by the external power supply.

For further information see Table 4.10.

2.1.17 ISM Camera Interfaces

The eDEV-BF6xx provides two ISM camera interface to connect a Bluetechnix ISM camera module to the board. Both interfaces support ISM modules up to 14-Bit of parallel data using the EPPI1 for ISM0 (X6) and EPPI2 for ISM1 (X22).

Both cameras can be configured through the TWI0 interface. Each ISM interface has its own I²C slave address and can be changed by the resistors R28 and R90 (see Table 2.7).

Interface	Resistor mount	Function
ISM0	R28 mounted	SADDR0 = 0
	R28 not mounted (default)	SADDR0 = 1
ISM1	R90 mounted (default)	SADDR0 = 0
	R90 not mounted	SADDR0 = 1

Table 2.7 ISM I²C slave addresses

For further information see Table 4.11.

2.1.18 LVDS0 with Touch Controller

The eDEV-BF6xx provides a 24-Bit LVDS interface connected to EPPI0 on connector X21. The LVDS signals are generated by a LVDS transmitter (Texas Instruments DS90C385A) and routed to connector X21. This interface can be used in conjunction with the connectors X19 (Backlight) and X20 (Resistive touch display) to control a TFT touch display.

The touch controller (Analog Devices AD7843) is connected to the SPI0 interface and SPI0_SEL3 (PD0) is used to control the nCS signal of the touch controller. The interrupt pin of the touch controller is connected to PB6 of the eCM-BF6xx Core Module.

The image on the display can be flipped by 180° using the DPS signal of the TFT display.

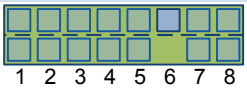
S2 settings	Function
	Reverse Scan Function Disabled
	Reverse Scan Function Enabled

Table 2.8: DIP switch S2 settings for DPS function of LVDS0

For further information see Table 4.11, Table 4.12 and Table 4.13.

2.1.19 LVDS1

The eDEV-BF6xx provides an 18-Bit LVDS interface connected to EPPI2 on connector X23. The LVDS signals are generated by a LVDS transmitter (Texas Instruments DS90CR217) and routed to connector X23. This interface can be used in conjunction with the connectors X24 (Backlight) to control a TFT display.

The image on the display can be flipped by 180° using the DPS signal of the TFT display.

S2 settings	Function
	Reverse Scan Function Disabled
	Reverse Scan Function Enabled

Table 2.9: DIP switch S2 settings for DPS function of LVDS1

For further information see Table 4.11 and Table 4.12

2.1.20 HDMI

The eDEV-BF6xx provides the high performance HDMI Transmitter ADV7511 from Analog Devices connected to the HDMI Type A connector X18.

The ADV7511 is a 225 MHz high-definition multimedia interface (HDMI) transmitter, which is ideal for home entertainment products including DVD players/receivers, digital set top boxes, A/V receivers, gaming consoles and PCs.

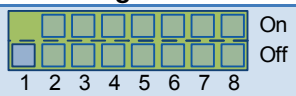
The digital video interface contains an HDMI v1.4 and a DVI v1.0 compatible transmitter and supports all HDTV formats (including 1080p with 12-bit Deep Color). The ADV7511 supports the HDMI v1.4 specific features, HEAC (ARC), and 3D video. In addition, the ADV7511 supports x.v.Color, high bit rate audio and programmable AVI Info Frames features. With the inclusion of HDCP, the ADV7511 allows the secure transmission of protected content as specified by the HDCP v1.4 protocol.

The ADV7511 high-performance HDMI transmitter with ARC connects to the 16-Bit EPPI0, SPORT0 and of the eCM-BF6xx.

The ADV7511 can be configured to generate an interrupt based on various events. The TWI0 interface is used for communication between the transmitter and processor. The EPPI0 is used for transmitting video data in YUV (UYVY) format. The SPORT0 is used for transmitting audio data.

The I²C slave address of the ADV7511 is set to 0x39.

The clock signal for the EPPI0 can be provide from an external 74.25MHz oscillator or can be generated by the EPPI0 of the eCM-BF6xx. Use the DIP switch S2 to select the clock source.

Function	S2 settings
External 74.25MHz Clock connected to EPPI0	

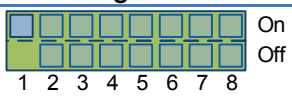
Function	S2 settings
External 74.25MHz Clock disconnected from EPPI0	

Table 2.10: DIP switch S2 settings for EN_74.25MHz

For further information see Table 4.15.

2.1.21 Extension connectors

The eDEV-BF6xx provides all signals of the eCM-BF6xx to the extension connectors X1 and X2.

The extension connectors are located on the bottom side of the board. The connectors allow a Bluetechnix extension board or a custom-design daughter board to be connected to the eDEV-BF6xx.

Limits to current and interface speed must be taken into consideration when using the extension connectors. Current for the extension board can be sources from the eDEV-BF6xx; therefore, the current should be limited to following limits:

Supply	Max. Current [mA]	Requirement
VIN	700	No display connected to eDEV-BF6xx
3V3	300	-

Table 2.11: Current limits for extension boards

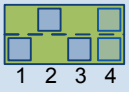
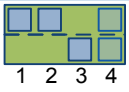
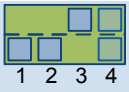
If more current is required, then a separate power connector and a regulator must be designed on the extension board. Additional circuitry can add extra loading to signals, decreasing their maximum effective speed.

NOTE: Bluetechnix is not responsible for the effects of additional circuitry.

For further information see Table 4.16.

2.2 Boot Mode

The eDEV-BF6xx supports following boot modes:

Boot mode	S6 settings
No boot / Idle	
Memory	
RSI0 Master	
SPI0 Master (onboard SPI Flash)	
SPI0 Slave	

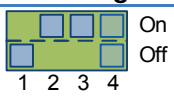
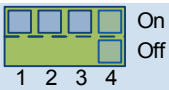
Boot mode	S6 settings
LP0 Slave	
UART0 Slave	

Table 2.12: DIP switch S6 settings

3 Specifications

3.1 Electrical Specifications

3.1.1 Operating Conditions

Symbol	Parameter	Min	Typical	Max	Unit
V_{IN}	Input supply voltage	-	12	-	V
I_{IN}	Input current	1500	-	2000	mA
V_{RTC}	RTC supply voltage	-	3	-	V
I_{RTC}	RTC current	-	50	100	nA

Table 3.1: Electrical characteristics

3.1.2 Maximum Ratings

Stressing the device above the rating listed in the absolute maximum ratings table may cause permanent damage to the device. These are stress ratings only. Operation of the device at these or any other conditions greater than those indicated in the operating sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Symbol	Parameter	Min	Max	Unit
V_{IN}	Input supply voltage	0	12.5	V
V_{IO}	Input or output voltage	-0.5	3.6	V
T_{AMB}	Ambient temperature	0	70	°C
T_{STO}	Storage temperature	-20	85	°C
φ_{AMB}	Relative ambient humidity		90	%

Table 3.2: Absolute maximum ratings

3.1.3 ESD Sensitivity

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

4 Connector Description

4.1 X5 - Power supply

This is the main power supply connector for the board. Use a standard DC power plug with 5.5x2.5mm diameter to power the board.

Minimum requirements for external power supply: 12V @ 1.5A.

Figure 4-1 Polarity of the external power supply

Descriptor	Description	Manufacturer	Part Number
X5	DC Power, RA	Cui	CUI-PJ-002AH-SMT
		Mating Connector	
	DC Power Plug	Cliff Electronic Components	DCPP2

Table 4.1: Connector description X5

4.2 X3 and X16 – Link Port and JTAG

The connectors X3 and X16 provide access to the Link Port and JTAG signals of the eCM-BF6xx Core Module. X3 supports link port 1 and the X16 connector is for link port 0.

Descriptor	Description	Manufacturer	Part Number
X3	ERM8 10x2, RA male	Samtec	ERM8-010-01-L-D-RA-TR
X16	ERF8 10X2, RA female	Samtec	ERF8-010-01-S-D-RA-L-TR
		Mating Connector	
	6" cable ERF8 to ERM8 10X2	Samtec	ERCD-010-06.00-TBL-SBR-1

Table 4.2: Connector description X3 and X16

4.3 X12 – JTAG

The JTAG interface of the Core Module is connected to the 14-pin 2.54mm header, X12. Pin 3 is missing to provide keying. Pin 3 in the mating connector must have a plug. For more information, see chapter 2.1.3.The JTAG connector is compliant with any Blackfin JTAG Emulator from Analog Devices.

4.4 X11 – RS-232/485, CAN Bus and GPIOs

The SUB-D connector X11 provides access to the RS-232, RS-485, CAN Bus and two GPIOs.

Descriptor	Description	Manufacturer	Part Number
X11	SUB-D, RA female	Multicomp	5504F1-09S-02A-03
		Mating Connector	
	SUB-D, RA male	Multicomp	5504F1-09P-02A-03

Table 4.3: Connector description X11

4.5 X13 – Debug UART

The USB Mini-B connector X13 provides access to the Debug UART (UART1) through the USB to UART Bridge.

Descriptor	Description	Manufacturer	Part Number
X13	USB Mini-B, RA	Molex	675031020
		Mating Cable	
	USB Mini-B OTG-STD A	Molex	88732-8600

Table 4.4: Connector description X13

4.6 X14 – UART1

The header connector X14 (not mounted) provides access to the UART1 signals of the eCM-BF6xx Core Module.

Descriptor	Description	Manufacturer	Part Number
X14	Header, 4-Pin	Harwin	M20-9990445
		Mating Connector	
	Crimp housing, 4-Way	Harwin	M20-1060400

Table 4.5: Connector description X14

4.7 X4 – Audio

The 3-way connector X4 provides an audio interface to the eCM-BF6xx through the audio codec.

Descriptor	Description	Manufacturer	Part Number
X4	3-way stereo 3.5mm, RA	Anytronic	SCJ374R5-3P
		Mating Connector	
	3.5mm stereo cable	Pro Signal	AV02559

Table 4.6: Connector description X4

4.8 X7 – Ethernet

The RJ45 connector X7 provides a 10/100Mbit Ethernet interface to the eCM-BF6xx.

Descriptor	Description	Manufacturer	Part Number
X7	10/100Mbit RJ45, RA	Taimag	RJSL-003TC1
		Mating Cable	
	CAT5 cable	Molex Premise Network	PCD-01000-0E

Table 4.7: Connector description X7

4.9 X8 – USB-OTG

The USB Mini A/B connector X8 provides the USB-OTG interface to the eCM-BF6xx.

Descriptor	Description	Manufacturer	Part Number
X8	USB Mini A/B, RA	Molex	56579-0576
		Mating Cable	
	USB cable, Mini-B OTG-STD A	Molex	88732-8600

Table 4.8: Connector description X8

4.10 X9 – SD-Card slot

The SD-Card slot X9 provides an interface to a SD-Card through the RSI interface.

Descriptor	Description	Manufacturer	Part Number
X9	SD-Card slot	Multicomp	MC34459
		Mating Card	
	SDHC Ultra II	Sandisk	SD4814

Table 4.9: Connector description X9

4.11 G1 – Backup battery holder

The backup battery holder provides a power supply to the RTC when no external power supply is applied to the board.

Descriptor	Description	Manufacturer	Part Number
G1	Battery holder, 1216/1220/1225	Keystone Electronics	3000TR
		Mating Battery	
	3V Lithium battery	Multicomp	CR1220

Table 4.10: Connector description G1

4.12 X6 and X22 – ISM Camera

The ISM connectors provides an interface to Bluetechnix ISM camera modules.

Descriptor	Description	Manufacturer	Part Number
X6 and X22	FFC/FPC Connector, 0.5mm, 30 Pos., RA	Samtec	ZF5-30-02-T-WT
	Mating Cable		
	ZIF Cable, 0.5mm, 50mm, 30Pos	Samtec	FJH-30-D-02.00-4
	Mating Modules		
	Aptina MT9M025	Bluetechnix GmbH	ISM-MT9M025
	Aptina MT9M131	Bluetechnix GmbH	ISM-MT9M131-Color
	Aptina MT9P031	Bluetechnix GmbH	ISM-MT9P031
	See www.bluetechnix.com		

Table 4.11: Connector description X6 and X22

4.13 X21 and X23 – LVDS Display

The LVDS display connectors provides interfaces to TFT (touch) displays.

Descriptor	Description	Manufacturer	Part Number
X21 and X23	DF19, 1mm, 20 Pos., RA	Hirose	DF19G-20P-1H(54)
	Mating Cable		
	DF19 cables, 20 Pos.*)	Various	-
	Mating Display		
	10.4” TFT-LCD Module*)	Promate	97G104S2N2F-2

Table 4.12: Connector description X21 and X23

*) Can be ordered from Bluetechnix GmbH.

4.14 X19 and X24 – Display Backlight

The display backlight connectors provides interfaces to TFT (touch) displays.

Descriptor	Description	Manufacturer	Part Number
X19 and X24	1.25mm, 5 Pos., RA	Molex	WM7602CT-ND
	Mating Cable		
	KR1253H-05P cables, 5 Pos.*)	Various	-
	Mating Display		
	10.4” TFT-LCD Module*)	Promate	97G104S2N2F-2

Table 4.13: Connector description X19 and X24

*) Can be ordered from Bluetechnix GmbH.

4.15 X20 – Touch screen

The touch screen connector provides an interface to a 4-wire resistive TFT touch screen display.

Descriptor	Description	Manufacturer	Part Number
X20	FFC/FPC, 1mm, 4 Pos., RA	Tyco Electronics	84953-4
		Mating Display	
	10.4" TFT-LCD Module*)	Promate	97G104S2N2F-2

Table 4.14: Connector description G1

*) Can be ordered from Bluetechnix GmbH.

4.16 X18 – HDMI

The HDMI Type A connector provides a high-definition multimedia interface to the eDEV-BF6xx.

Descriptor	Description	Manufacturer	Part Number
G1	HDMI Type A, RA	FCI	10029449-001RLF
		Mating Cable	
	HDMI-A-A, 1.8m	Pro Signal	127790

Table 4.15: Connector description X18

4.17 X1 and X2 – Extension

The extension connectors provides an interface to connect custom-designed extension boards to the eDEV-BF6xx.

Descriptor	Description	Manufacturer	Part Number
X1 and X2	QSH, 120 Pos.	Samtec	QSH-060-01-F-D-A
		Mating Connector	
	QTH, 120 Pos.	Samtec	QTH-060-01-L-D-A

Table 4.16: Connector description X1 and X2

5 Mechanical Outline

5.1 Top View

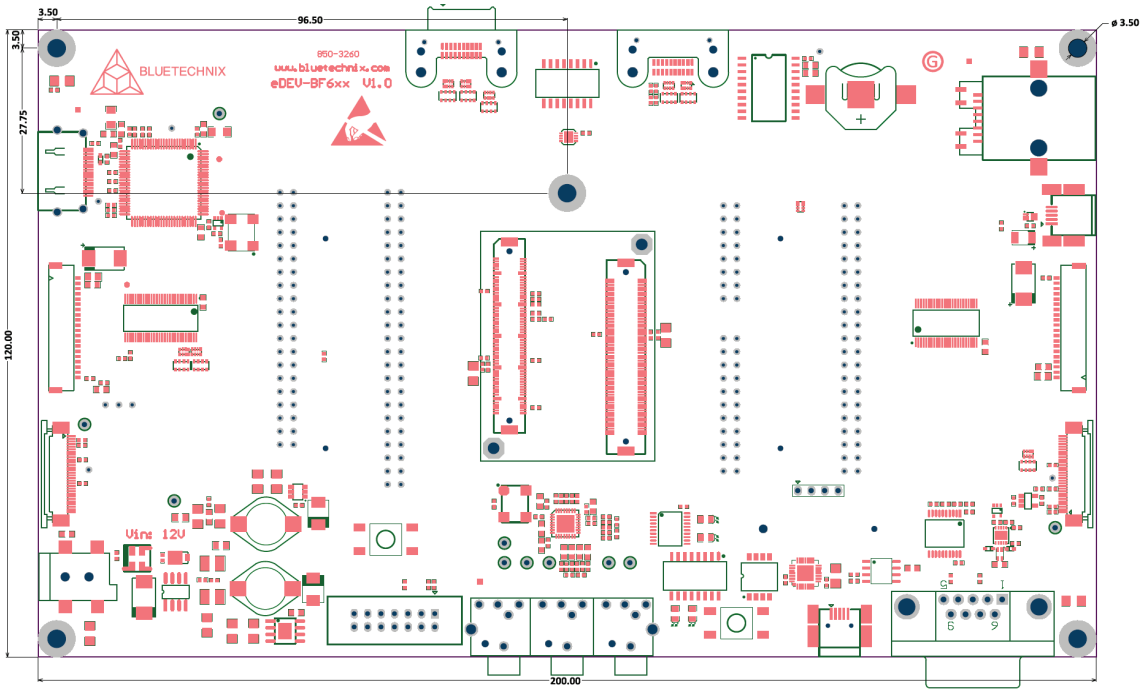


Figure 5-1 Mechanical outline top view

5.2 Bottom View

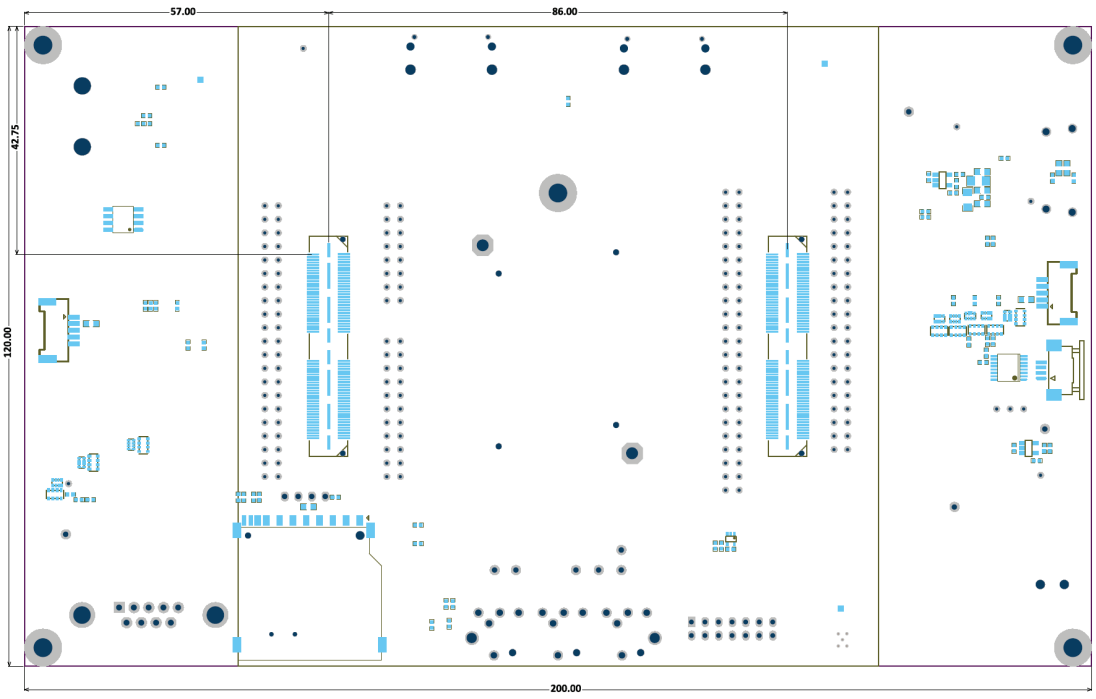


Figure 5-2 Mechanical outline bottom view

6 Support

6.1 General Support

General support for products can be found at Bluetechnix' support site https://support.bluetechnix.at/wiki

6.2 Board Support Packages

Board support packages and software downloads are for registered customers only
https://support.bluetechnix.at/software/

6.3 Blackfin® Software Support

6.3.1 BLACKSheep® OS

BLACKSheep® OS stands for a powerfully and multithreaded real-time operating system (RTOS) originally designed for digital signal processing application development on Analog Devices Blackfin® embedded processors. This high-performance OS is based on the reliable and stable real-time VDK kernel from Analog Devices that comes with VDSP++ IDE. Of course BLACKSheep® OS is fully supported by all Bluetechnix Core-Modules and development hardware.

6.3.2 LabVIEW

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

6.3.3 uClinux

You can get uClinux support (boot loader and uClinux) for Bluetechnix Core Modules at https://support.bluetechnix.at/wiki/.

6.4 Blackfin® Design Services

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

6.4.1 Upcoming Products and Software Releases

Keep up to date with all product changes, releases and software updates of Bluetechnix at http://www.bluetechnix.com.

7 Ordering Information

7.1 eDEV-BF6xx and Accessories

Article Number	Name	Temperature Range
100-2344-1	eDEV-BF6xx enhanced Blackfin development board	Commercial
100-3401-1	Blackfin Evaluation Starter Package with eCM-BF609	Industrial
100-1217-1	eCM-BF609-C-C-Q25S256F8	Commercial
100-1218-1	eCM-BF609-C-I-Q25S256F8	Industrial

Table 7.1: Ordering information

NOTE: Custom Core Modules are available on request! Please contact Bluetechnix (office@bluetechnix.com) if you are interested in custom Core Modules.

8 Dependability

8.1 MTBF

Please keep in mind that a part stress analysis would be the only way to obtain significant failure rate results, because MTBF numbers just represent a statistical approximation of how long a set of devices should last before failure. Nevertheless, we can calculate an MTBF of the Core Module using the bill of material. We take all the components into account. The PCB and solder connections are excluded from this estimation. For test conditions we assume an ambient temperature of 30°C of all Core Module components except the Blackfin® processor (80°C) and the memories (70°C). We use the MTBF Calculator from ALD (http://www.aldservice.com/) and use the reliability prediction MIL-217F2 Part Stress standard. Please get in touch with Bluetechnix (office@bluetechnix.com) if you are interested in the MTBF result.

9 Product History

9.1 Version Information

9.1.1 eDEV-BF6xx

Version	Component	Type
1.0.0	HDMI Transmitter	ADV7511KSTZ
	Audio Codec	ADAU1761BCPZ
	RTC	PCF2129AT/1
	RS-232 Transceiver	ICL3222CAZ
	RS-485 Transceiver	ISL3179EIRZ
	Temperature sensor	ADT7408CCPZ
1.1.0	HDMI Transmitter	ADV7511KSTZ
	Audio Codec	ADAU1761BCPZ
	RTC	PCF2129AT/1
	RS-232 Transceiver	ICL3222CAZ
	RS-485 Transceiver	ISL3179EIRZ
	Temperature sensor	ADT7408CCPZ

Table 9.1: Overview eDEV-BF6xx product changes

9.2 Anomalies

Version	Date	Description
V1.0	2013 05 23	No anomalies reported yet.

Table 9.2 – Product anomalies

10 Document Revision History

Version	Date	Document Revision
1	2013 05 23	First release V1.0 of the Document
2	2014 01 09	Update to eDEV-BF6xx V1.1

Table 10.1: Revision history

11 List of Abbreviations

Abbreviation	Description
ADI	Analog Devices Inc.
AI	Analog Input
AMS	Asynchronous Memory Select
AO	Analog Output
CM	Core Module
DC	Direct Current
DSP	Digital Signal Processor
eCM	Enhanced Core Module
EBI	External Bus Interface
ESD	Electrostatic Discharge
GPIO	General Purpose Input Output
I	Input
I²C	Inter-Integrated Circuit
I/O	Input/Output
ISM	Image Sensor Module
LDO	Low Drop-Out regulator
MTBF	Mean Time Between Failure
NC	Not Connected
NFC	NAND Flash Controller
O	Output
OS	Operating System
PPI	Parallel Peripheral Interface
PWR	Power
RTOS	Real-Time Operating System
SADA	Stand Alone Debug Agent
SD	Secure Digital
SoC	System on Chip
SPI	Serial Peripheral Interface
SPM	Speech Processing Module
SPORT	Serial Port
TFT	Thin-Film Transistor
TISM	Tiny Image Sensor Module
TSC	Touch Screen Controller
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus
USBOTG	USB On The Go
ZIF	Zero Insertion Force

Table 11.1: List of abbreviations

A List of Figures and Tables

Figures

Tables