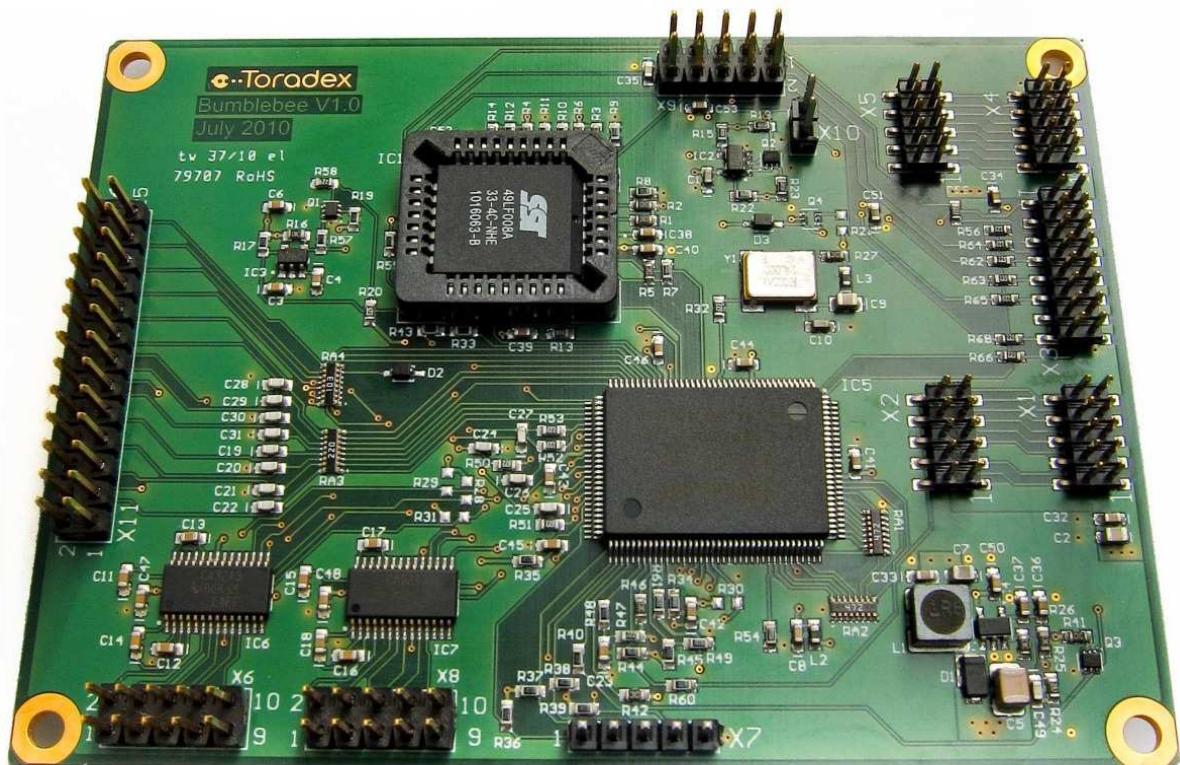


Bumblebee 1.0

Datasheet



Revision history

Date	Doc. Rev.	Bumblebee	Changes
03-Jen-11	Rev. 1.0	V1.0	Initial Release
24-Mar-11	Rev. 0.91	V1.0	RS-232 header (X6, X8), chapter 3.2.6, 3.2.7 Table order change (3.2.8, 3.2.9)



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1. Introduction

1.1 Overview

Bumblebee is an extension board for use in conjunction with the Daisy carrier board when fitted with a Robin NanoETX computer module. It connects to the Daisy carrier board through 2mm pitch pin headers using the provided ribbon cable. The principle features include a Super IO controller, which provides two Serial ports and a single Parallel port, and flash memory for supporting a secondary BIOS image which can be used to boot from instead of the internal BIOS on the installed Robin module. Bumblebee adheres to the Pico-ITX form factor and can therefore be stacked with the Daisy carrier board using screws and stand-offs to provide a space optimised solution.

1.2 Reference Document

For detailed technical information regarding the Daisy carrier board and the Pico-ITX standard, please refer to the documents listed below.

1.2.1 Daisy Carrier Board

<http://www.toradex.com/En/Products/Robin/Boards/Daisy>

1.2.2 Pico-ITX form Factor

http://www.via.com.tw/en/downloads/whitepapers/initiatives/spearhead/pico-itx_form_factor.pdf

2. Features

2.1 Overview

The LPC (Low Pin Count) bus from the Daisy carrier board is connected to the Super IO Controller, to an external Flash Memory used to store a BIOS image, and to a FlexyICE (programmable ROM emulator) compatible communication interface.

2.1.1 Super IO Controller

The Super IO controller features the following interfaces:

- Two serial communication ports (UARTs) available through a 10 way (2 rows x 5 way) 2.54mm pitch header with a pin key at pin 10 capable of being connected to an industry standard 10 way IDC to 9 way D-type male connector
- Parallel port available through a 26 way (2 rows x 13 way) 2.54 mm pitch header
- PS2 port available through a 5 way (1 row x 5 way) 2.54 mm header

2.1.2 External BIOS Flash Memory

By inserting jumper (X10) it is possible to force the Robin module connected to the Daisy carrier board to boot from the BIOS image which is stored in the flash memory. This feature can be used to recover a Robin module which can no longer boot from its own internal BIOS (e.g. due to BIOS corruption caused by an interruption to a BIOS update attempt).

2.1.3 FlexyICE Interface

FlexyICE is a USB ROM emulator featuring LPC BUS header interface that connects to the target via an LPC header and to a host via USB.

By connecting this device to connector X9 and ensuring jumper X10 is removed, the Robin connected to Daisy will boot from the BIOS emulated by the FlexyICE device.

For further information regarding this device please refer to the FlexyICE website:

<http://www.artecgroup.com/flexyice>.



The following table describes the supported configurations based on jumper X10 setting and the FlexyICE device connection:

Jumper X10	FlexyICE	Booting BIOS
Empty	Disconnected	Robin on board BIOS
Empty	Connected	FlexyICE
Installed	Disconnected	Bumblebee BIOS
Installed	Connected	FlexyICE

2.2 Block Diagram

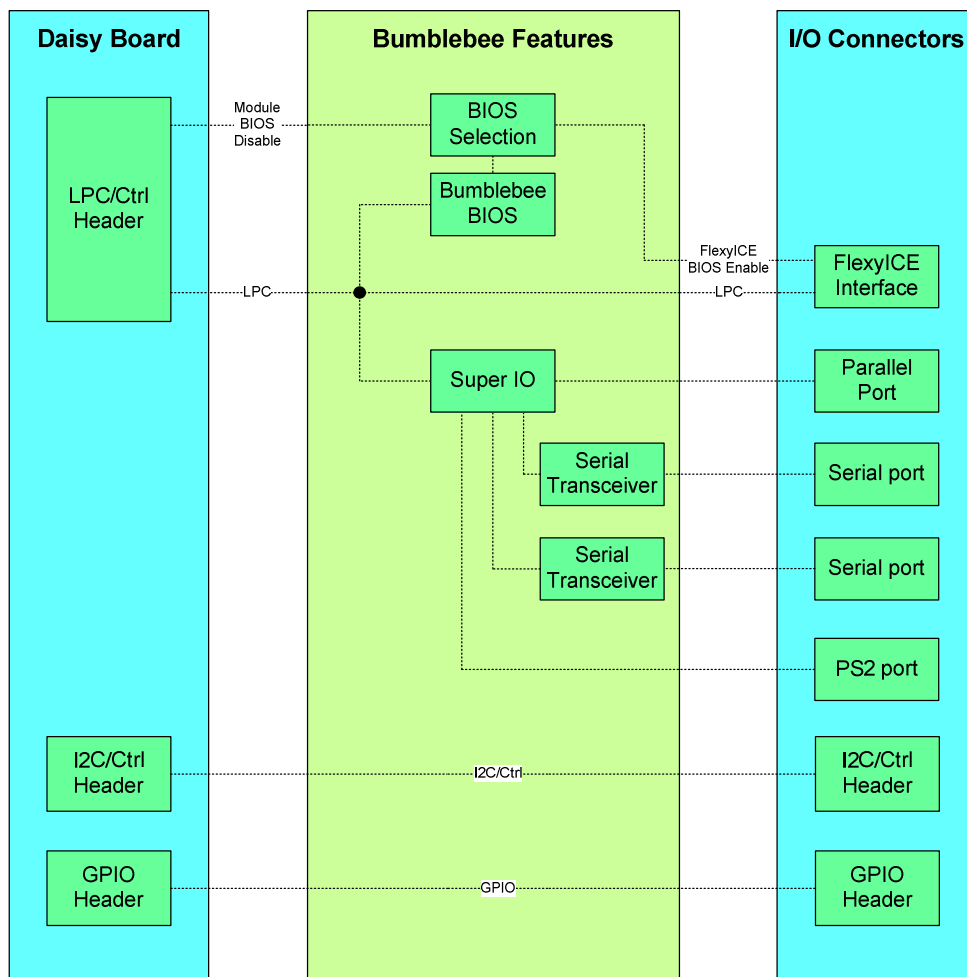


Fig.1 Bumblebee Block Diagram



3. Interfaces

3.1 Bumblebee connectors: Physical Drawing

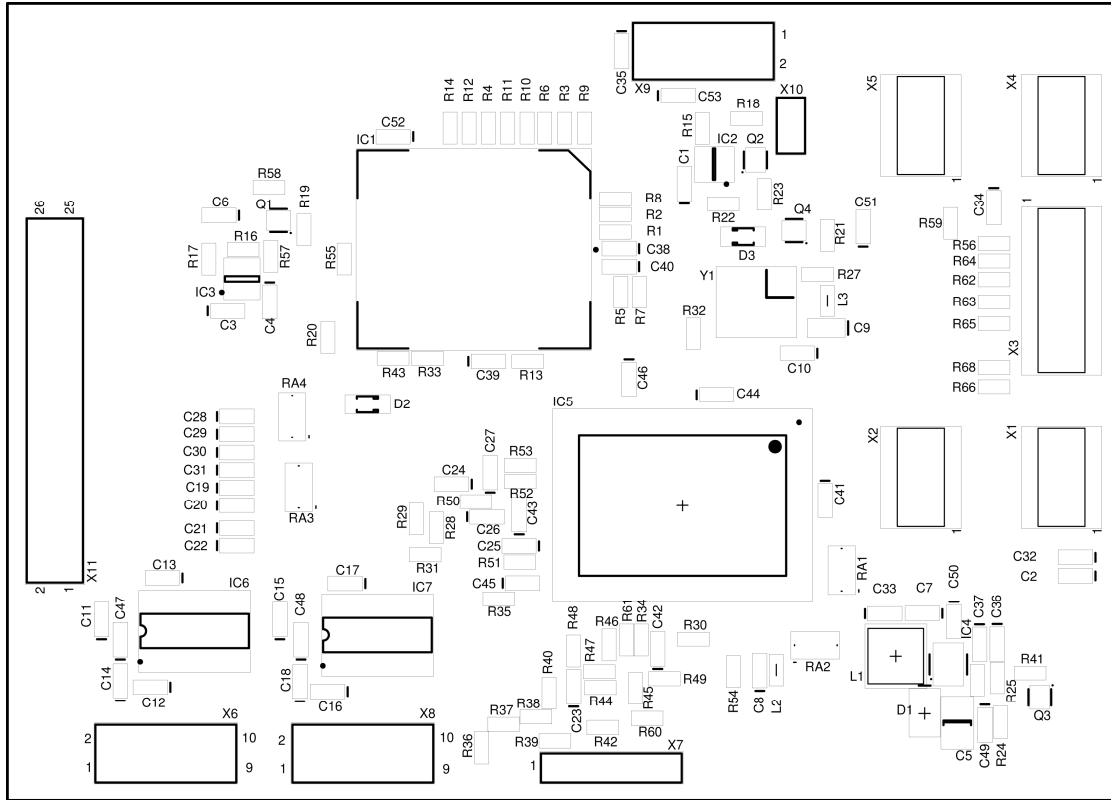


Fig 2: Assembly drawing of Bumblebee

Ref	Description	Remarks
X1	I ² C / SMB IN Header	By connecting Daisy to Bumblebee using a single 44 way Ribbon Cable, the I ² C / SMB signals will be available on Bumblebee through the header X2
X2	I ² C / SMB OUT Header	This Header is directly connected to the X1 Header
X3	LPC Header	
X4	GPIO IN Header	By connecting Daisy to Bumblebee using a single 44 way Ribbon Cable, the GPIO signals will be available on Bumblebee through the header X5
X5	GPIO OUT Header	This Header is directly connected to the X4 Header
X6	UART 0	Standard 10 way IDC to 9 way D-Type pin out
X8	UART 1	Standard 10 way IDC to 9 way D-Type pin out
X7	PS2 Header	This is not a standard pin out Header
X9	FlexyICE LPC interface Header	
X10	Bumblebee BIOS selecting Jumper	
X11	Parallel Port Header	



3.2 Bumblebee connectors: Pin Assignment

3.2.1 I²C / SMB IN Header (X1)

Pin	Description	Voltage	Active	Remarks
1	+3V3 EXP	+3.3V	S0	
2	CTRL PWR OK			
3	CTRL WAKE 1			
4	GND			
5	I ² C Clock			
6	I ² C Data			
7	SMB Clock			
8	SMB Data			
9	SMB Alert			
10	CTRL BATTLOW			

3.2.2 I²C / SMB OUT Header (X2)

Since the X2 Header is directly connected to the X1 Header, the pin assignment is the same.

3.2.3 LPC Header (X3)

Pin	Description	Voltage	Active	Remarks
1	CTRL System Reset			
2	CTRL Power Button			
3	CTRL SUS Status			
4	CTRL BIOS DISABLE			
5	LPC SERIRQ			
6	LPC FRAME			
7	LPC AD 0			
8	GND			
9	LPC AD 1			
10	LPC AD 2			
11	LPC AD 3			
12	GND			
13	LPC DRQ 0			
14	LPC DRQ 1			
15	LPC Clock			
16	GND			

3.2.4 GPIO IN Header (X4)

Pin	Description	Voltage / range	Active	Remarks
1	+3V3 EXP	+3.3V	S0	
2	GPIO4	0 – +3.3V	S5-S0	
3	GPIO0	0 – +3.3V	S5-S0	
4	GPIO5	0 – +3.3V	S5-S0	
5	GPIO1	0 – +3.3V	S5-S0	



3.2.5 GPIO OUT Header (X5)

Since the X5 Header is directly connected to the X4 Header, the pin assignment is the same.

3.2.6 RS-232 0 (X6)

This connector is a 10 way (2 rows x 5 way) 2.54mm pitch header capable of being connected to an industry standard DTK/INTEL 10 way IDC to 9 way D-type male connector.

Pin	Description	Voltage / range	Active	Remarks
1	DCD0#			
2	DSR0#			
3	RX0			
4	RTS0#			
5	TX0			
6	CTS0#			
7	DTR0#			
8	RI0#			
9	GND			

3.2.7 RS-232 1 (X8)

This connector is a 10 way (2 rows x 5 way) 2.54mm pitch header capable of being connected to an industry standard DTK/INTEL 10 way IDC to 9 way D-type male connector.

Pin	Description	Voltage / range	Active	Remarks
1	DCD1#			
2	DSR1#			
3	RX1			
4	RTS1#			
5	TX1			
6	CTS1#			
7	DTR1#			
8	RI1#			
9	GND			

3.2.8 FlexyICE LPC Interface Header (X9)

Pin	Description	Voltage	Active	Remarks
1	RESET#			
2	LPC AD 0			
3	LPC AD 1			
4	LPC AD 2			
5	LPC AD 3			
6	LPC FRAME#			
7	DEV PRESENT			
8	LPC Clock			
9	GND			
10	+3V3 EXP	+3.3V	S0	



3.2.9 PS2 Header(X7)

Pin	Description	Voltage / range	Active	Remarks
1	KCLK			
2	KDAT#			
3	MDAT			
4	MCLK#			
5	GND			

3.2.10 Parallel Port Header (X11)

Pin	Description	Voltage	Active	Remarks
1	STB#			
2	AFD#			
3	PD 0			
4	ERR#			
5	PD 1			
6	INIT#			
7	PD 2			
8	SLIN#			
9	PD3			
10	GND			
11	PD 4			
12	GND			
13	PD 5			
14	GND			
15	PD 6			
16	GND			
17	PD 7			
18	GND			
19	ACK#			
20	GND			
21	BUSY			
22	GND			
23	PE			
24	GND			
25	SCLT			
26	NC			

3.2.11 Bumblebee BIOS selecting Jumper (X10)

Pin	Description	Voltage / range	Active	Remarks
1	MODULE_BIOS_DISABLE#			
2	GND			



4. Mechanical Data

4.1 Dimensions

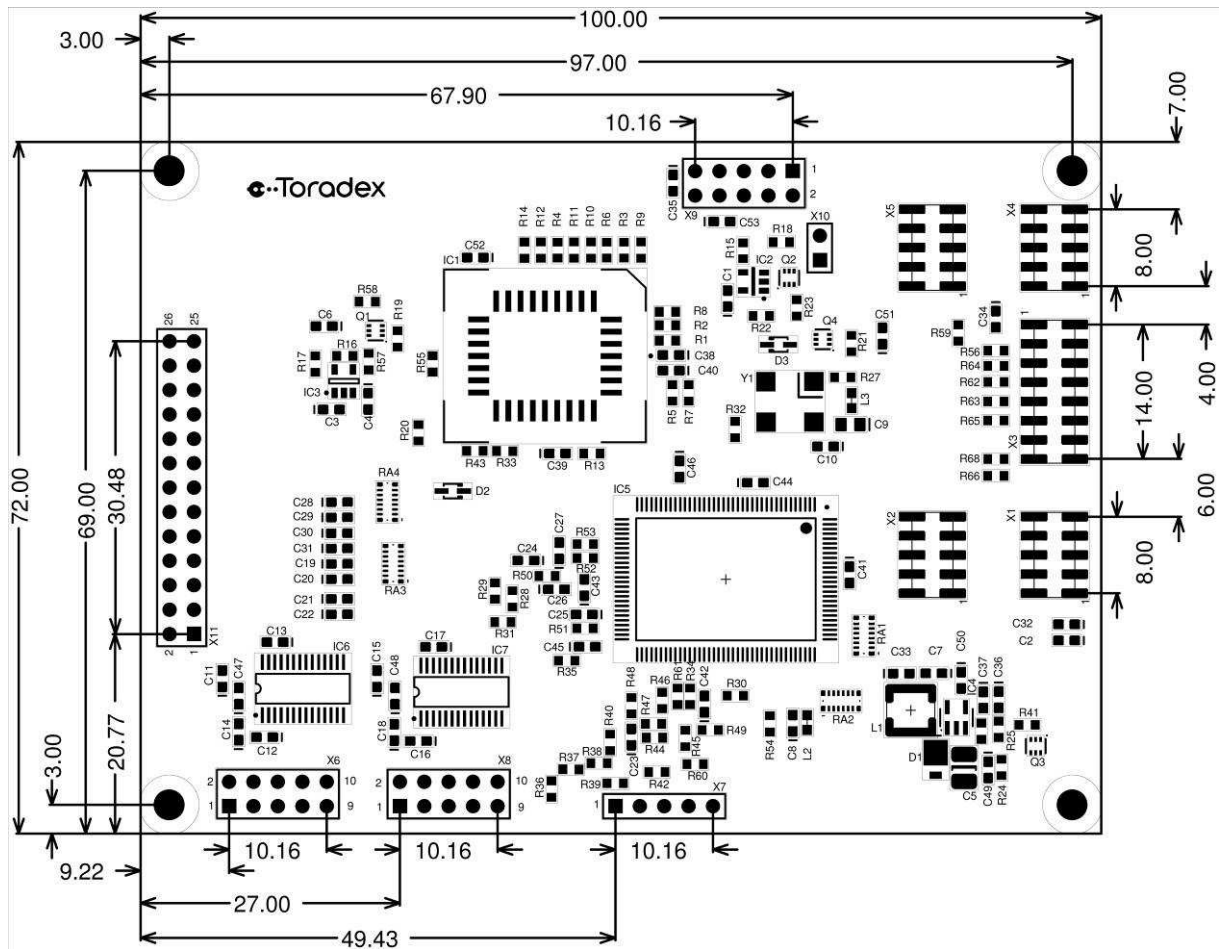


Fig 3: Bumblebee Dimensions

4.2 Mass

The mass of Bumblebee with the Flash Memory 49LF008A installed is 38g.



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