

REV-Q703

Mini-ITX Qseven Carrier Board

User's Manual

1st Ed – 20 October 2015

FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

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To receive the latest version of the user's manual; please visit our Web site at:

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1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x REV-Q703 Mini-ITX Qseven Carrier Board
- 4 x Screw



If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	October 2015	Avalue	Initial Release

1.4 Manual Objectives

This manual describes in details Avalue Technology REV-Q703 QSeven Module.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up REV-Q703 QSeven Module or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

I/O	
USB	2 x USB 2.0 (5 x 2) Header 1 x USB 2.0 (5 x 1) wafer box
GPIO	1 x GPIO (10 x 2) Header
Display	
LCD Interface	1 x LVDS connector 1 x Back light connector
Audio	
AC97 Codec	I2S/ HDA switch onboard for different Audio codec
Audio Amp	Line out/Line in/MIC in interface X86 platform => ALC892 ARM platform => WM8962
Internal I/O Connector	
Fan	1 x PWM CPU Fan (4 x 1) Header
Power ON	1 x 4P PWR Header
	1 x PCIe x1 1 x mPCIe x1 2 x SATA w/ PWR 1 x SPI 1 x CAN 1 x LPC 1 x JFP (Miscellaneous Setting Connector)
Rear I/O Connector	
USB	1 x USB 2.0 1 x USB 3.0
LAN	1 x Ethernet
HDMI	1 x HDMI
	1 x COM 1 x DP 1 x OTG (Mini USB OTG) 1 x SD socket 3 x Audio phone jack
Mechanical & Environmental	
Power Requirement	12V DC
Power Type	2.5 mm DC Jack

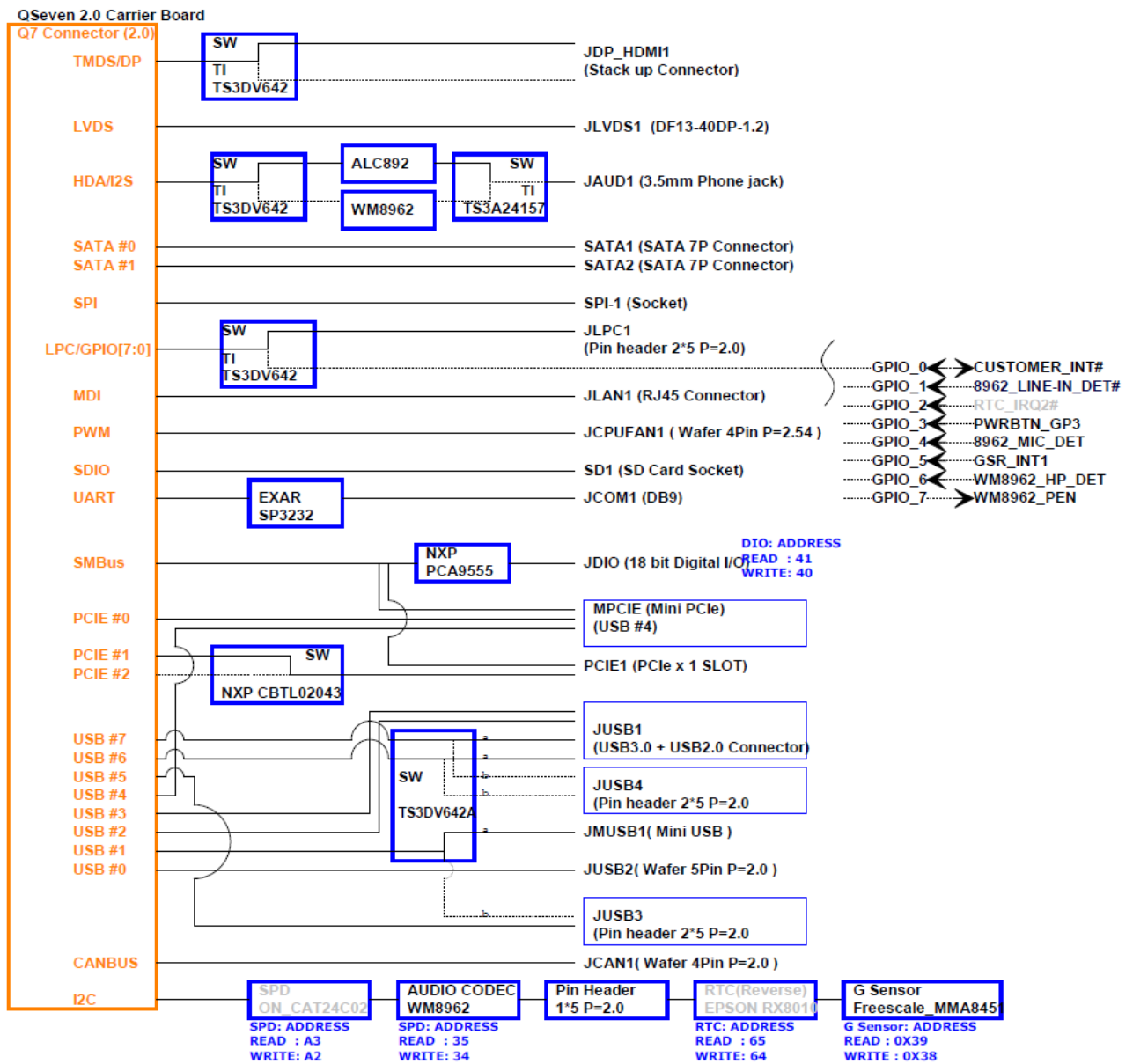
Operating Temp.	-40°C ~ 85°C
Storage Temp.	-40°C ~ 85°C
Operating Humidity	0% ~ 90% Relative Humidity, Non-condensing
Size (L x W) (Please consult product engineers for the production feasibility if the size is larger than 410 x 360mm or smaller than 80 x 70mm)	170mm x 170mm
Weight	TBD



Note: Specifications are subject to change without notice.

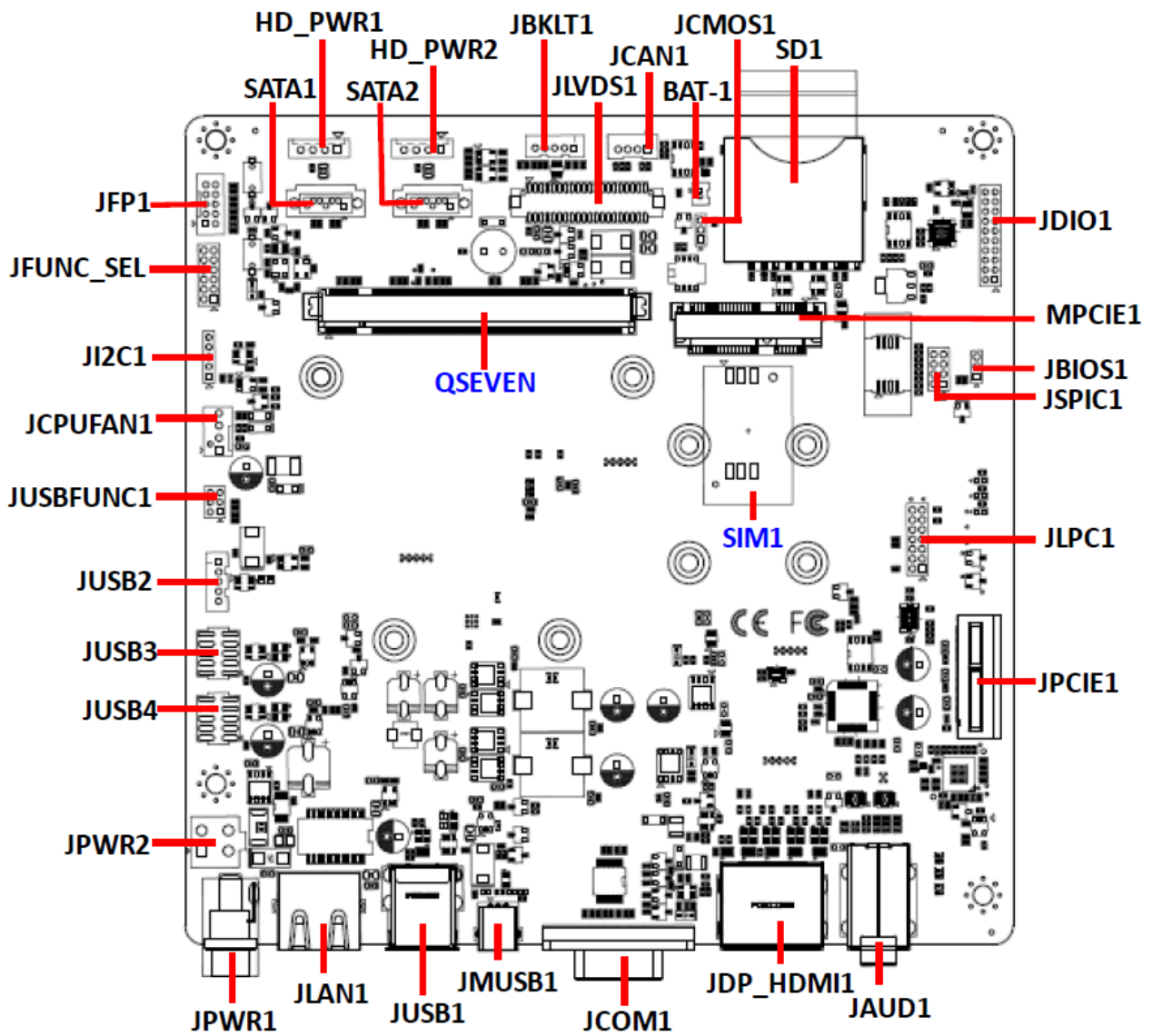
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of REV-Q703 QSeven Module.



2. Hardware Configuration

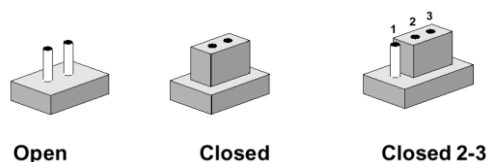
2.1 Product Overview



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

Label	Function	Note
	AT/ ATX Mode selector	
JFUNC_SEL	Platform selector PCI-e channel selector	6 x 2 header, pitch 2.00mm
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.00mm
JBIOS1	Module/Carrier BIOS selector	3 x 1 header, pitch 2.00mm
JUSBFUNC1	USB Port selector	3 x 2 header, pitch 2.00mm

Connectors

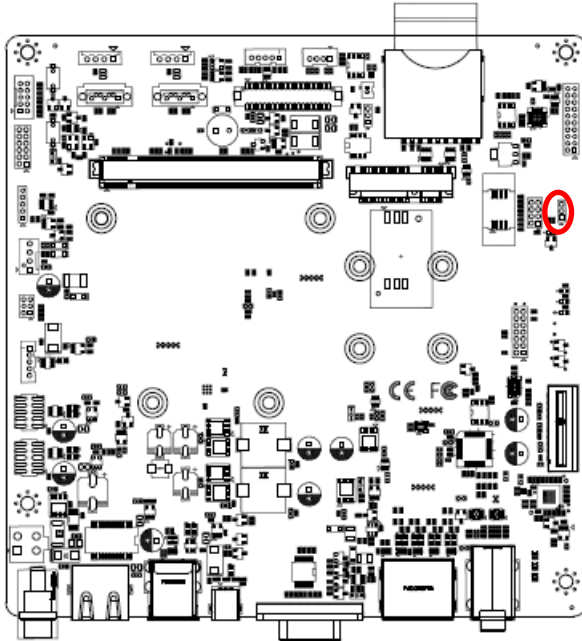
Label	Function	Note
SD1	SD card slot	
JCPUFAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
HD_PWR1/2	HD Power connector 1/2	4 x 1 wafer, pitch 2.50mm

REV-Q703

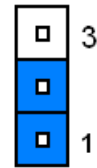
BAT-1	Battery connector	
JFP1	Miscellaneous setting connector	5 x 2 wafer, pitch 2.00mm
JBKLT1	LCD inverter connector	5 x 1 wafer, pitch 2.00mm
JCOM1	Serial Port 1 connector	D Sub 9 pin male
JDIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
JDP_HDMI1	DP connector HDMI connector	
JLAN1	LAN port connector	
JLVDS1	LVDS connector	20 x 2 wafer, pitch 1.25mm
JLPC1	LPC port connector	7 x 2 header, pitch 2.00mm
MPCIE1	Mini-PCI connector 1	
JPCIE1	PCIE connector	
JPWR1	DC Power-in connector	
JPWR2	Power connector	2 x 2 wafer, pitch 4.20mm
QSEVEN	Qseven connector	
SIM1	SIM card connector	
JSPIC1	Carrier board SPI FLASH programming	4 x 2 header, pitch 2.00mm
SATA1/2	SATA connector 1/2	
JAUD1	Audio connector	
JUSB1	USB connector 1	
JUSB2	USB connector 2	5 x 1 wafer, pitch 2.00mm
JUSB3	USB connector 3	5 x 2 header, pitch 2.00mm
JUSB4	USB connector 4	5 x 2 header, pitch 2.00mm
JMUSB1	Mini USB connector	
JCAN1	CAN Bus connector	4 x 1 wafer, pitch 2.00mm
JI2C1	Customer I2C connector	5 x 1 header, pitch 2.00mm

2.3 Setting Jumpers & Connectors

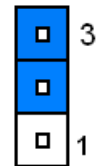
2.3.1 Module/Carrier BIOS selector (JBIOS)



Q7 Module BIOS*

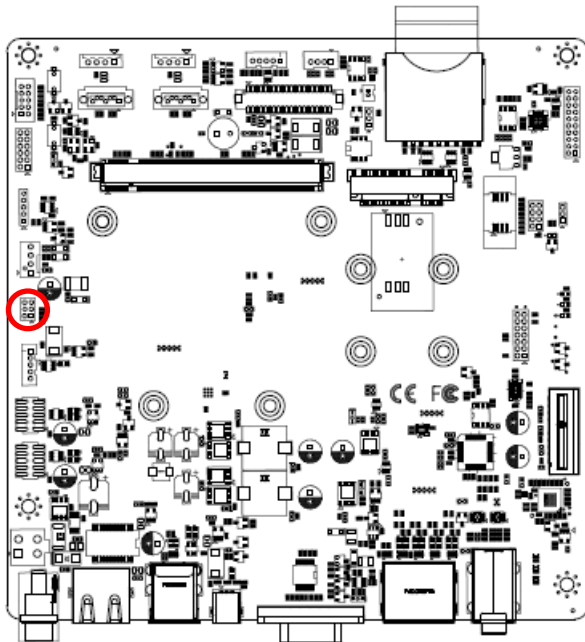


Carrier board BIOS

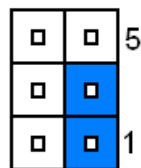


*Default

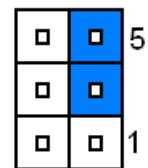
2.3.2 USB Port selector (JUSBFUNC1)



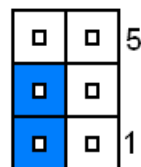
Port 1, 6, 7 to JUSB1 (Mini USB & USB3.0)*



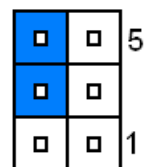
Port 1, 6, 7 to JUSB3 (USB2.0 & USB2.0)



Standby power to USB*

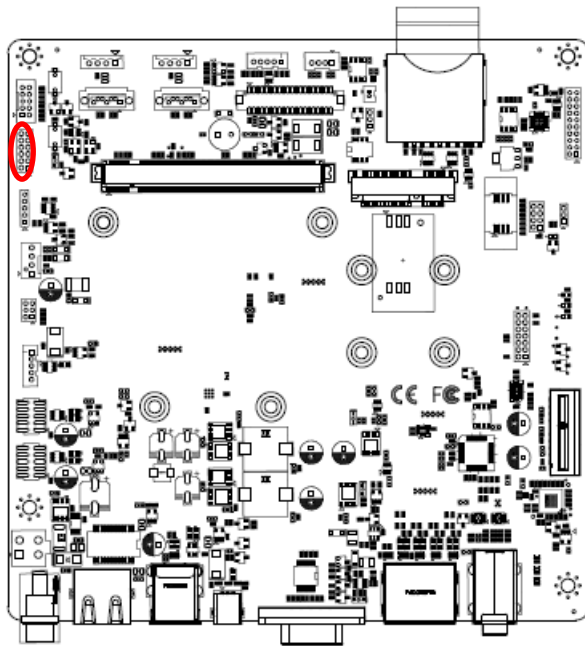


USB power when main power ok



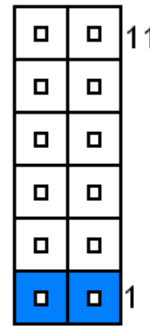
*Default

2.3.3 AT/ATX mode/ Platform/ PCI-e channel selector (JFUNC_SEL)

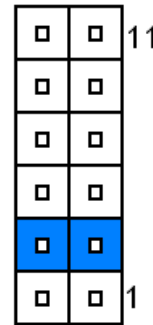


*Default

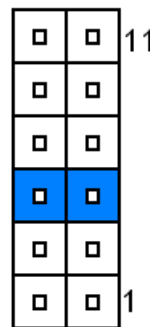
AT MODE*



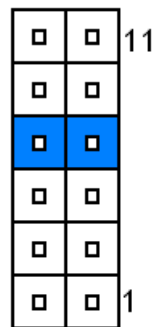
ATX MODE*



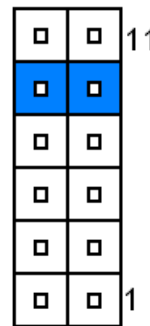
Intel platform



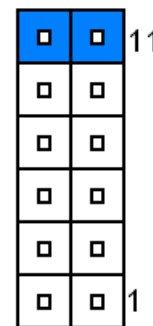
Freescaler platform



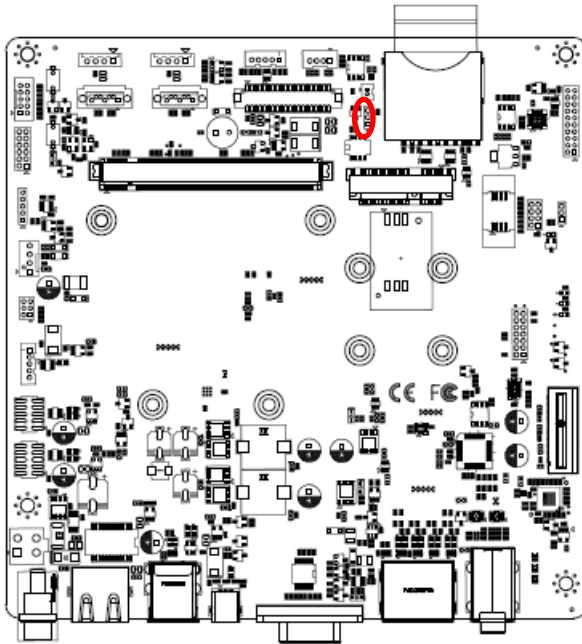
PCIe1



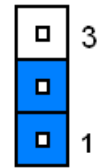
PCIe2



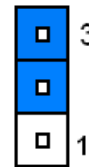
2.3.4 Clear CMOS (JCMOS1)



Normal*

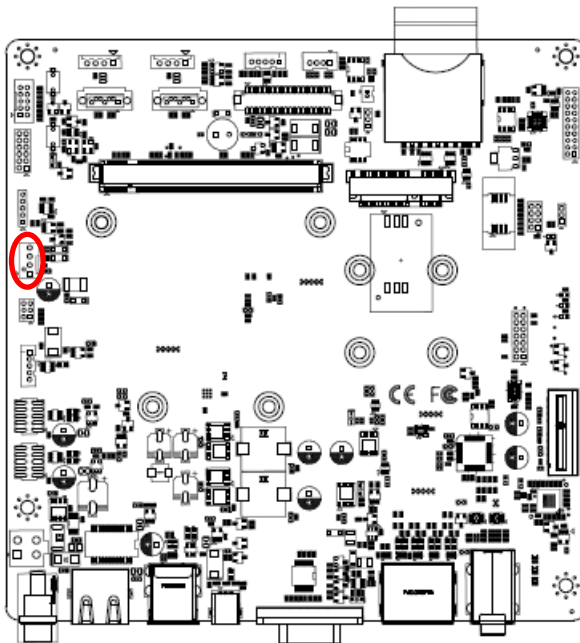


Clear CMOS



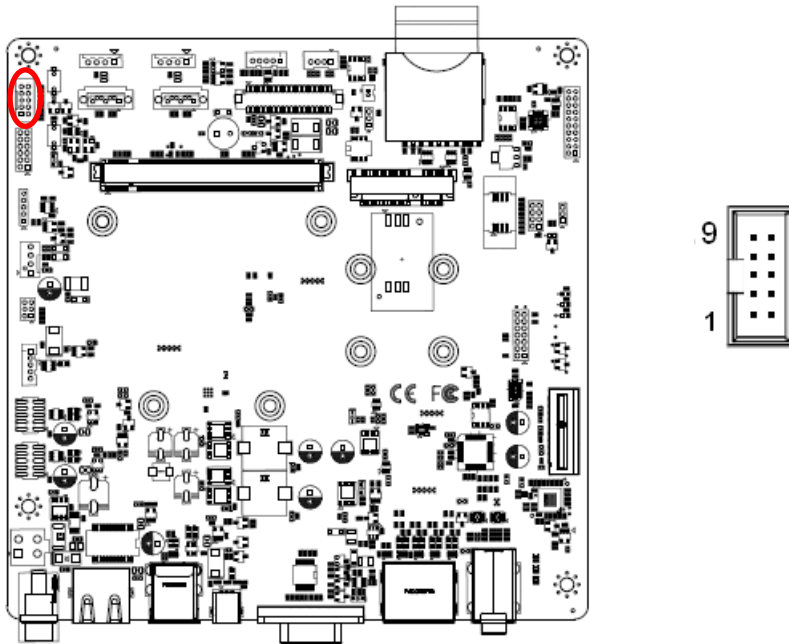
*Default

2.3.5 CPU fan connector (JCPUFAN1)



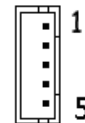
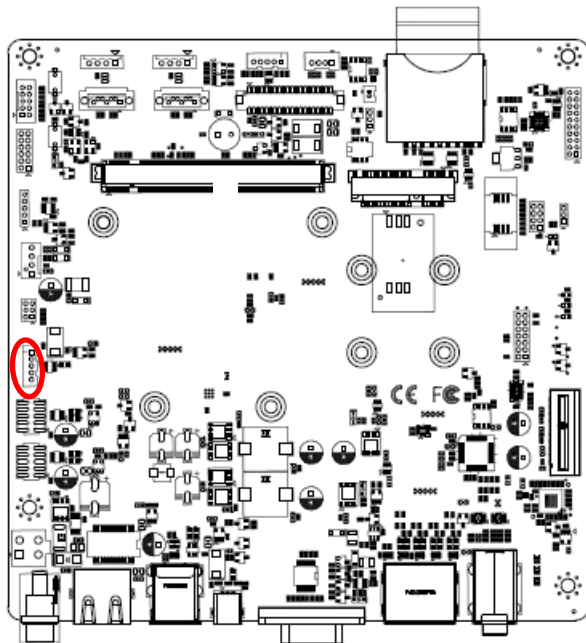
Signal	PIN
CPU_FAN_CTRL	4
FAN_TACHOIN	3
+12V	2
GND	1

2.3.6 Miscellaneous setting connector (JFP1)



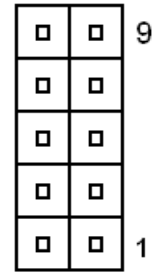
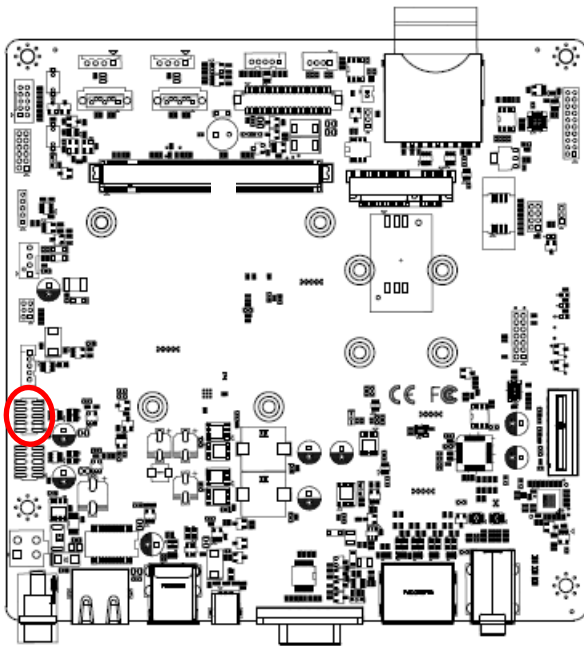
Signal	PIN
NC	10
	9
HDD-LED-	8
HDD-LED+	7
PWR-LED+	6
PWR-LED-	5
RST#	4
	3
PWBT	2
	1

2.3.7 USB connector 2 (JUSB2)



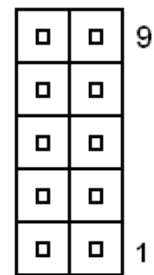
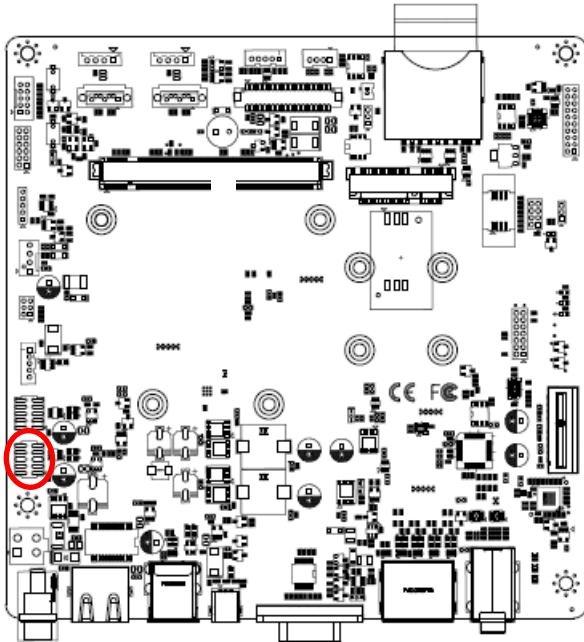
Signal	PIN
+5V	1
USB_NP0	2
USB_PP0	3
GND	4
GND	5

2.3.8 USB connector 3 (JUSB3)



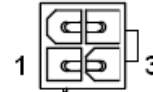
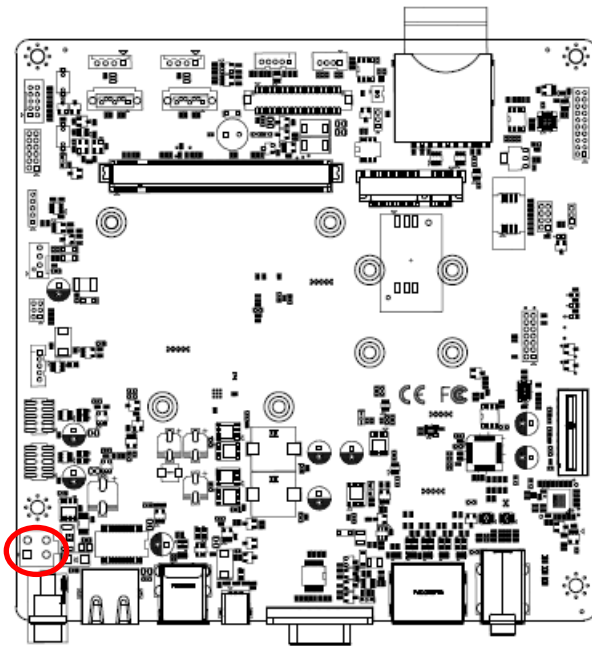
Signal	PIN	PIN	Signal
+5V	10	9	GND
USB_NP5	8	7	GND
USB_PP5	6	5	USB_PP1
GND	4	3	USB_NP1
GND	2	1	+5V

2.3.9 USB connector 4 (JUSB4)



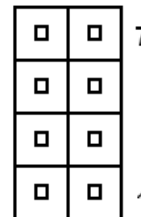
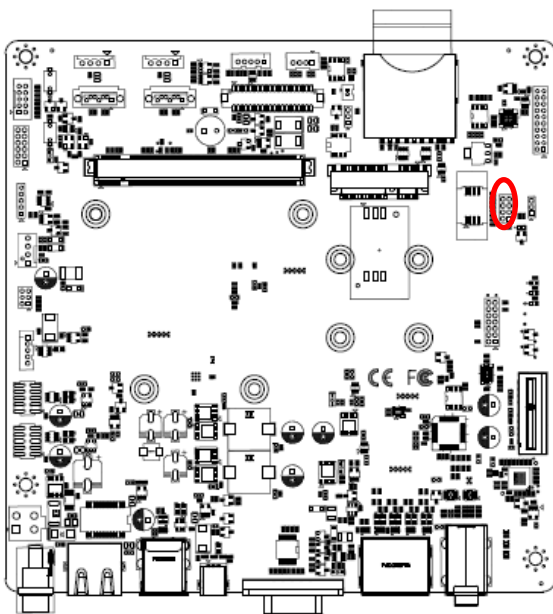
Signal	PIN	PIN	Signal
+5V	10	9	GND
USB_NP7	8	7	GND
USB_PP7	6	5	USB_PP6
GND	4	3	USB_NP6
GND	2	1	+5V

2.3.10 Power connector (JPWR2)



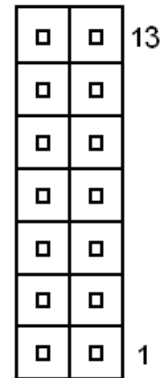
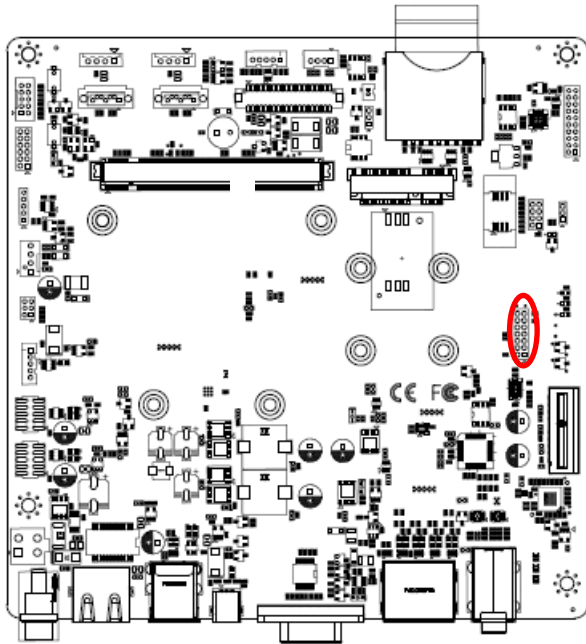
Signal	PIN	PIN	Signal
GND	2	4	+12V
GND	1	3	+12V

2.3.11 Carrier board SPI FLASH programming (JSPIC1)



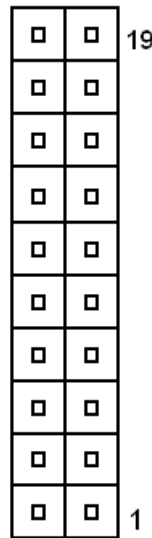
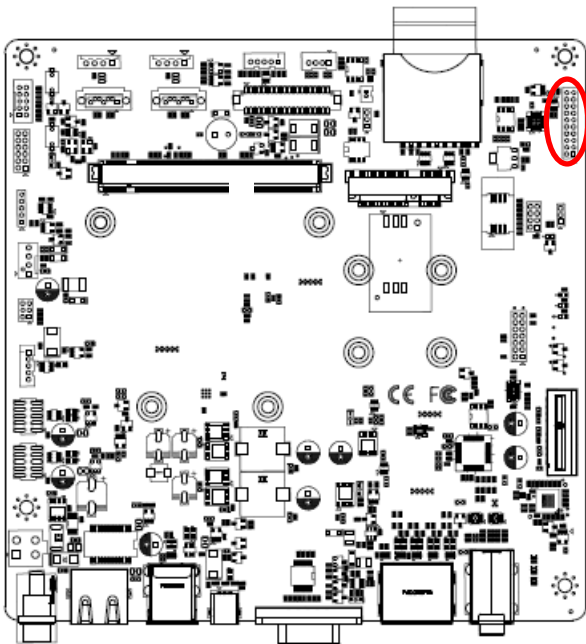
Signal	PIN	PIN	Signal
+3.3V	1	2	GND
SPI_CS#_C	3	4	SPI_CLK_C
SPI_SO_C	5	6	SPI_SI_C
SPI_HOLD#_C	7	8	NC

2.3.12 LPC port Connector (JLPC1)



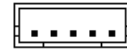
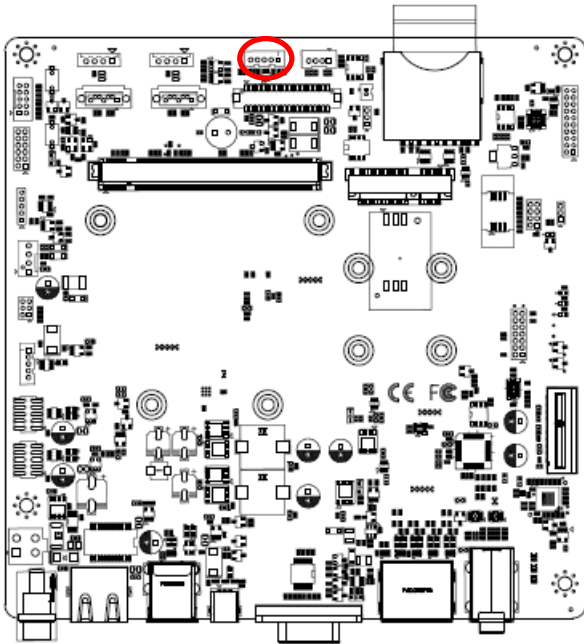
Signal	PIN	PIN	Signal
GND	14	13	+5VSB
GND	12	11	+5V
GND	10	9	SERIRQ
LPC_CLK_L	8	7	LPC_AD3
LPC_LFRAME#	6	5	LPC_AD2
PCIE_RST#	4	3	LPC_AD1
+3.3V	2	1	LPC_AD0

2.3.13 General Purpose I/O connector (JDIO1)



Signal	PIN	PIN	Signal
DIO_VDD5	20	19	GND
DIO_SMB_DATA	18	17	DIO_SMB_CLK
DO7	16	15	DI7
DO6	14	13	DI6
DO5	12	11	DI5
DO4	10	9	DI4
DO3	8	7	DI3
DO2	6	5	DI2
DO1	4	3	DI1
DO0	2	1	DI0

2.3.14 LCD Inverter connector (JBKLT1)

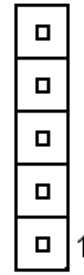
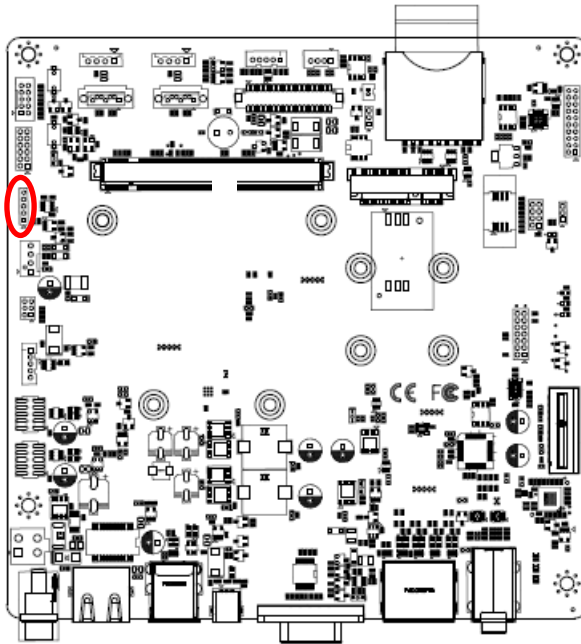


Signal	PIN
+12V (max 300mA)	1
GND	2
LVDS_BPEN	3
LVDS_BKLTCTL	4
+5V (max 400mA)	5

2.3.14.1 Signal Description – LCD Inverter connector (JBKLT)

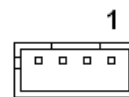
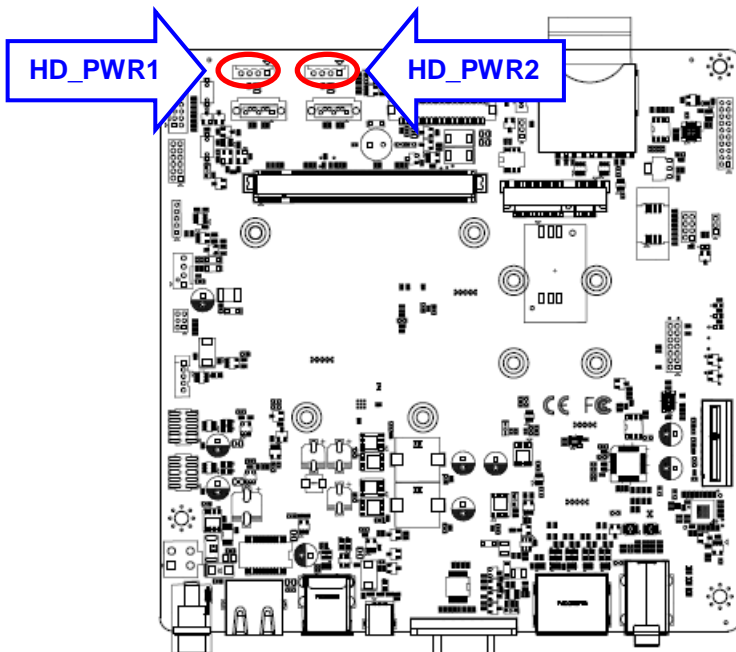
Signal	Signal Description
LVDS_BKLTCTL	LVDS backlight PWM control
LVDS_BPEN	LCD backlight Enable/Disable control signal
LVDS_EN level	selectable resistor to 5V or 3.3V (Default 5V level)

2.3.15 Customer I2C connector (JI2C1)



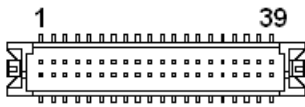
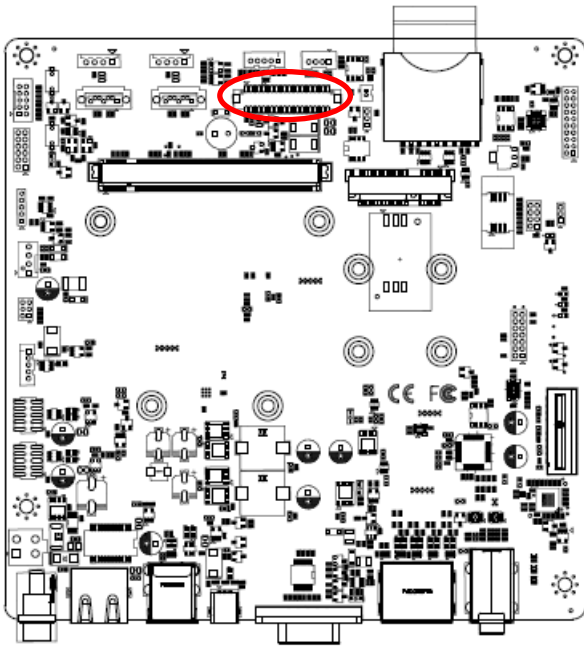
Signal	PIN
GND	5
CS_DAT	4
CS_CLK	3
CS_INT#	2
+3.3V	1

2.3.16 HD Power connector 1/2 (HD_PWR1/2)



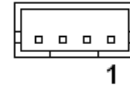
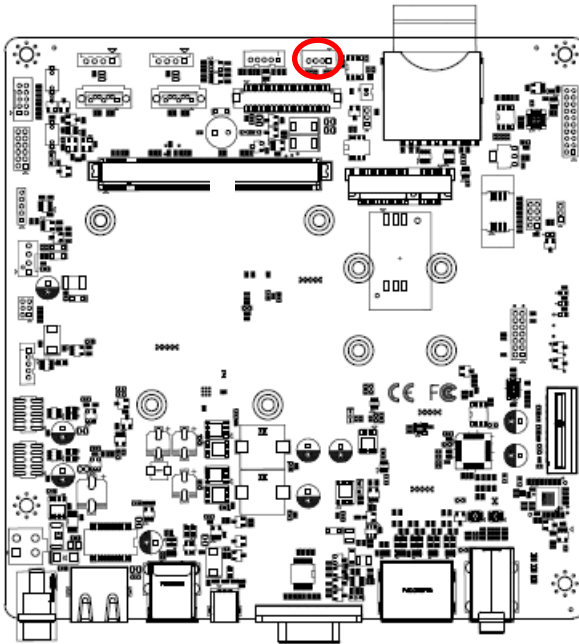
Signal	PIN
GND	1
GND	2
+5V (Max 1000Ma)	3
	4

2.3.17 LVDS connector (JLVDS1)



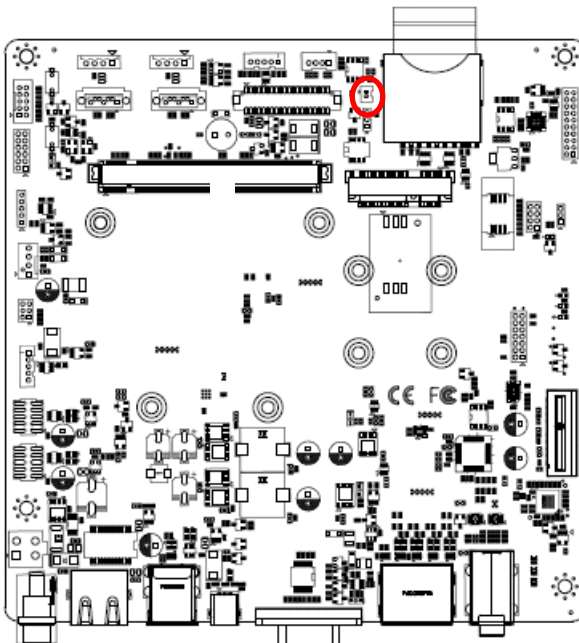
Signal	PIN	PIN	Signal
+3V	1	2	+5V
+3V	3	4	+5V
QC_LVDS_DDC_CLK	5	6	QC_LVDS_DDC_DATA
GND	7	8	GND
LVDS_A1+	9	10	LVDS_A0+
LVDS_A1-	11	12	LVDS_A0-
GND	13	14	GND
LVDS_A3+	15	16	LVDS_A2+
LVDS_A3-	17	18	LVDS_A2-
GND	19	20	GND
LVDS_B1+	21	22	LVDS_B0+
LVDS_B1-	23	24	LVDS_B0-
GND	25	26	GND
LVDS_B3+	27	28	LVDS_B2+
LVDS_B3-	29	30	LVDS_B2-
GND	31	32	GND
LVDS_B_CLK+	33	34	LVDS_A_CLK+
LVDS_B_CLK-	35	36	LVDS_A_CLK-
GND	37	38	GND
+12V	39	40	+12V

2.3.18 CAN Bus connector (JCAN1)



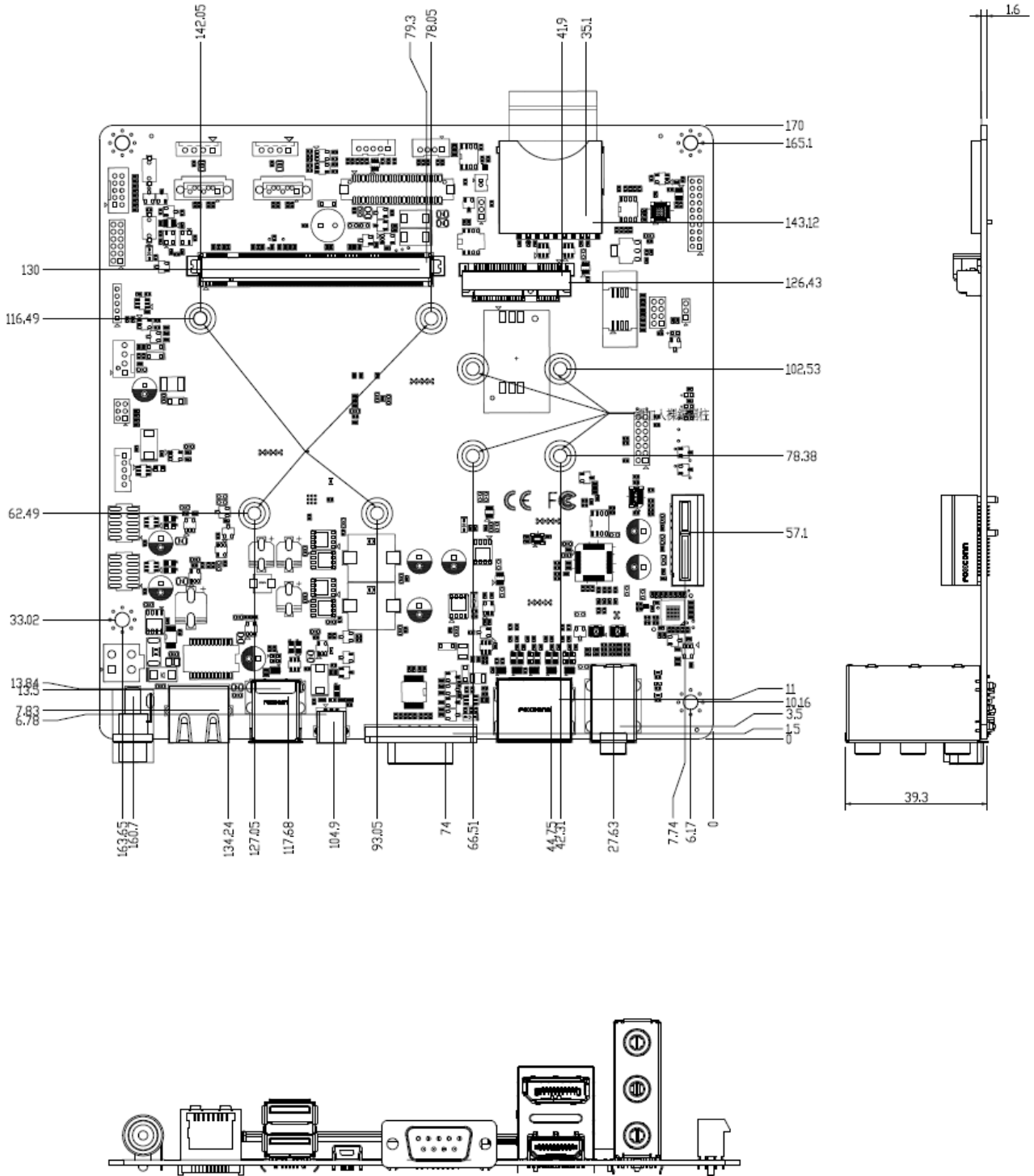
Signal	PIN
CAN0_H	1
GND	2
CAN0_L	3
GND	4

2.3.19 Battery connector (BAT-1)



Signal	PIN
+3.3V	1
GND	2

4. Mechanical Drawing



Unit: mm

